PLANS

FOR

SUBDIVISION IMPROVEMENTS

BRYANT, ARKANSAS

JOB NO. 139-ABC
WHISTLING PINES

INDEX OF DRAWINGS

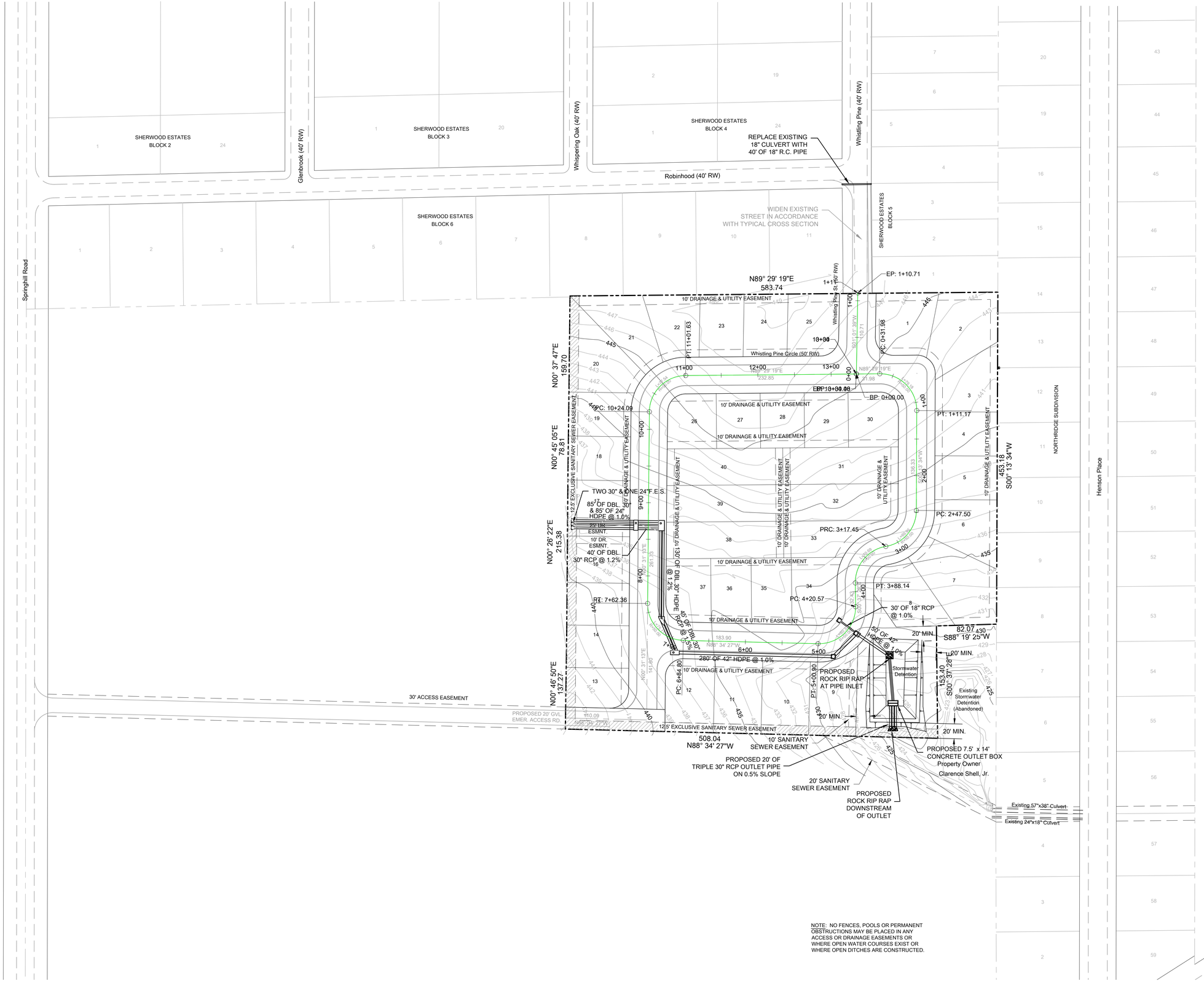
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MICHAEL BOLIN & ASSOCIATES, INC.
CONSULTING ENGINEERS

CERTIFICATE OF AUTHORIZATION
MICHAEL BOLIN & ASSOCIATES, INC.
NO. 1404
ARKANSAS ENGINEER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4197
MICHAEL BOLIN

MARCH 2021
REVISED MARCH 2026



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SUBDIVISION IMPROVEMENTS
WHISTLING PINES
BRYANT, ARKANSAS

STREET & DRAINAGE PLAN

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4197
MICHAEL BOLIN

AS-BUILT DATE:

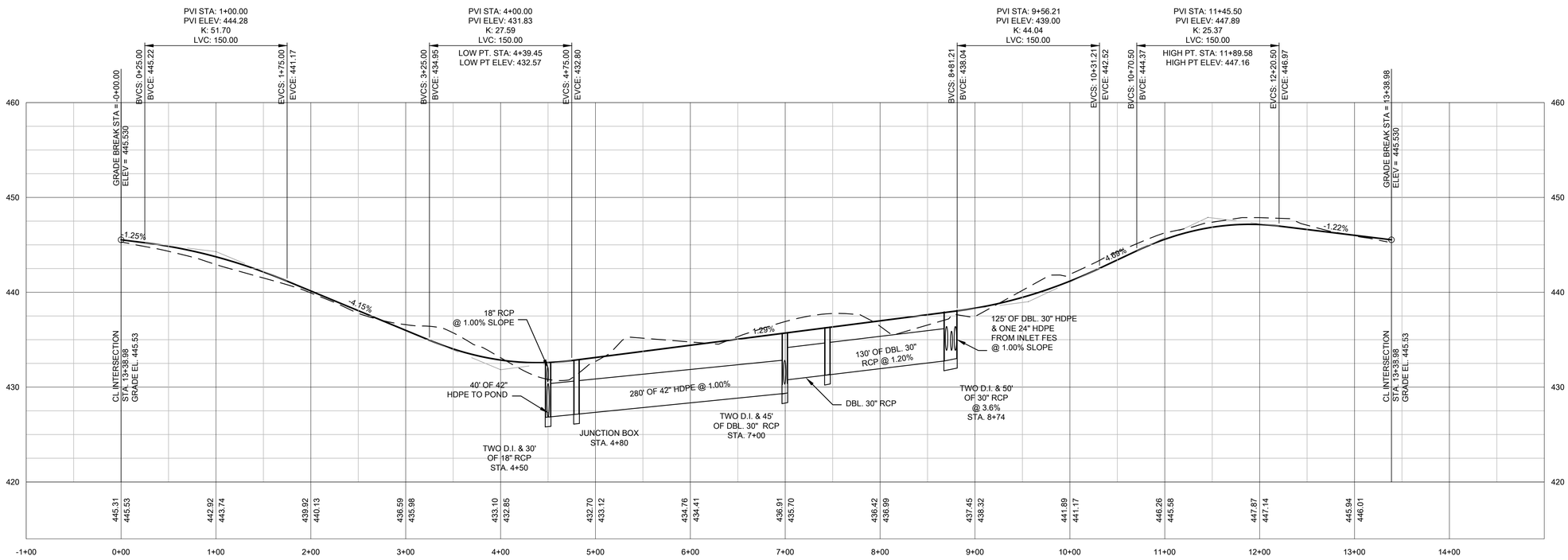
CONTACT PERSON:
M. BOLIN

SCALE:
1" = 60'

DATE: MARCH 2021

STREET
&
DRAINAGE
PLAN

JOB NO.	SHEET NO.
139-ABC	1 OF 8

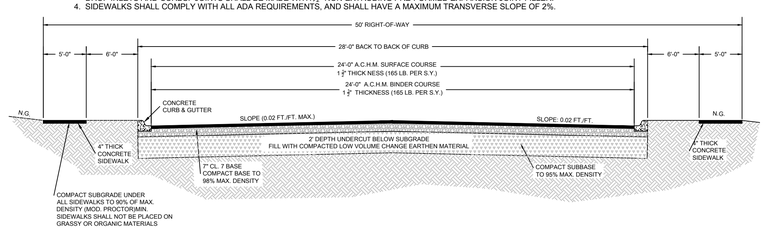


WHISTLING PINE CIRCLE PROFILE

SCALE: 1" = 60' HORIZ.
1" = 6' VERT.

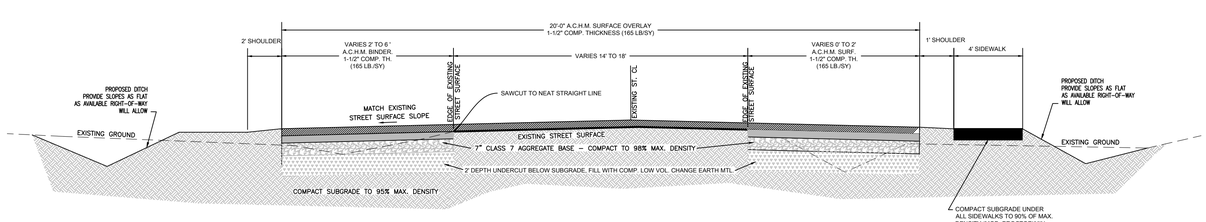
SIDEWALK NOTES:

1. ALL SIDEWALKS SHALL BE REINFORCED WITH WOVEN WIRE FABRIC REINFORCEMENT.
2. CONTRACTION JOINTS SHALL BE CONSTRUCTED PERPENDICULAR TO THE SIDEWALK AT 4'-0" INTERVALS.
3. EXPANSION JOINTS SHALL BE CONSTRUCTED PERPENDICULAR TO THE SIDEWALK AT 20'-0" INTERVALS, & AT DRIVEWAYS, DROP INLETS AND CURBS. JOINTS SHALL BE MADE WITH ½" NON-EXTRUDING PRE-FORMED EXPANSION JOINT FILLER.
4. SIDEWALKS SHALL COMPLY WITH ALL ADA REQUIREMENTS, AND SHALL HAVE A MAXIMUM TRANSVERSE SLOPE OF 2%.



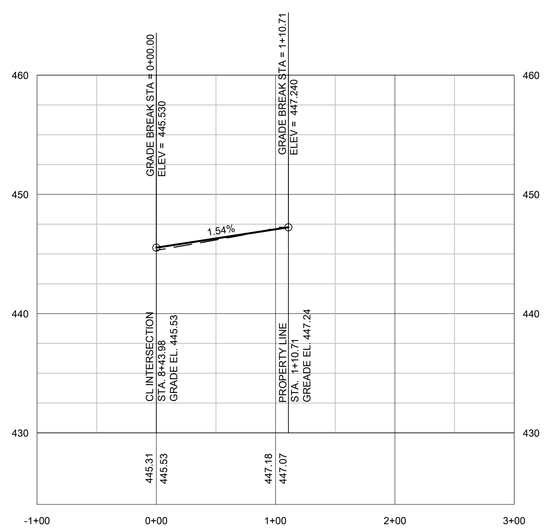
TYPICAL STREET & SIDEWALK SECTION

N.T.S.



EXISTING STREET WIDENING - TYPICAL SECTION

N.T.S.



WHISTLING PINE STREET PROFILE

SCALE: 1" = 60' HORIZ.
1" = 6' VERT.

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BRYANT, ARKANSAS

SUBDIVISION IMPROVEMENTS
WHISTLING PINES

STREET PROFILE & TYPICAL SECTION

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
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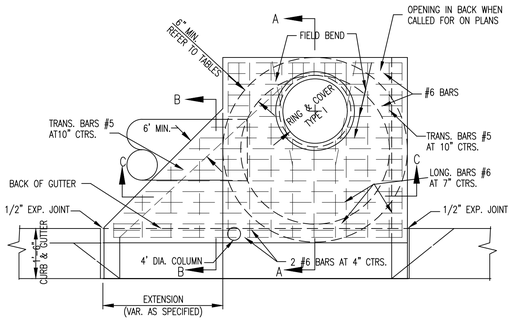
CONTACT PERSON:
M. BOLIN

SCALE:
AS SHOWN

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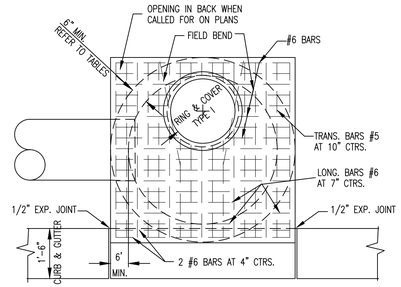
STREET PROFILE
&
TYPICAL SECTION

JOB NO.	SHEET NO.
139-ABC	2 OF 8

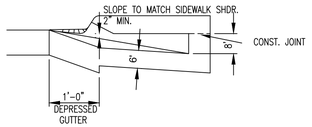


PLAN-W/SINGLE EXTENSION

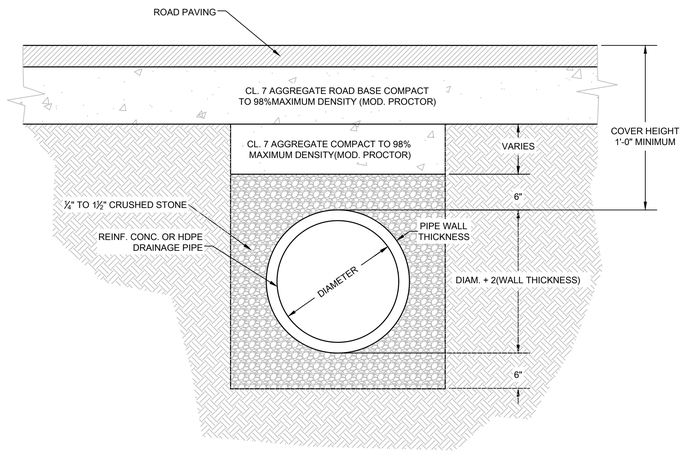
NOTE: FOR DOUBLE USE SINGLE ON BOTH SIDES



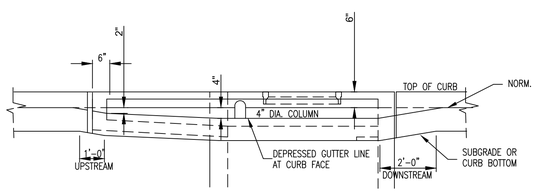
PLAN



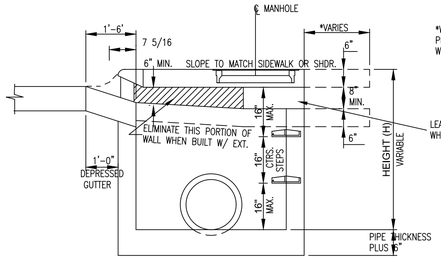
SECTION B-B



DRAINAGE PIPE BEDDING DETAIL FOR PIPE UNDER PAVEMENT



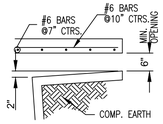
FRONT ELEVATION



*WHEN OPENING IN BACK IS CALLED FOR ON PLANS, EXTEND OPENING TO MATCH SIDEWALK WIDTH.

LEAVE OPENING IN BACK WHEN CALLED FOR ON PLANS

SECTION A-A

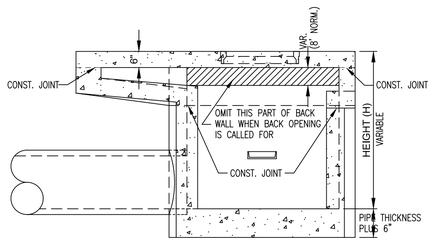


BACK OPENING

DIA. OF D.I.	DIA. OF OUTLET PIPE	MINIMUM WALL THICKNESS CAST IN PLACE	MINIMUM WALL THICKNESS PRECAST
4' I.D.	12" THRU 27"	6"	5"
5' I.D.	30" THRU 42"	8"	6"
6' I.D.	48" THRU 54"	8"	7"

GENERAL NOTES

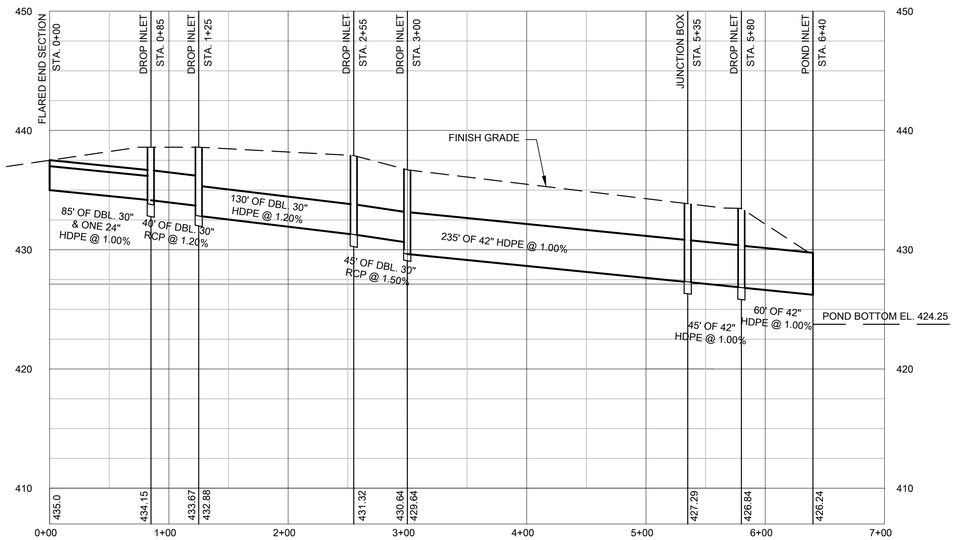
1. ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" AND OVER OR DIRECTED BY THE ENGINEER.
3. ALL REINF. BARS SHALL BE GRADE 60 AND HAVE MIN. 1 1/2" COVER.
4. DROP INLETS AND EXTENSIONS ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURVE.
5. 4" DIA. CONC. COLUMNS SPACED AT MAX. 4'-0" INTERVALS SHALL BE INSTALLED ALONG INLETS & EXTENSION TO SUPPORT TOPS.
6. BASE & INLET WALLS SHALL BE CAST MONOLITHICALLY.
7. THE THROAT SHALL BE CAST INTEGRALLY WITH THE CURB & GUTTER.
8. THE TOP SHALL BE CAST-IN-PLACE.
9. PIPE MAY ENTER DROP INLET FROM ANY ANGLE OR ELEVATION AS MAY BE APPROVED BY THE ENGINEER.



SECTION C-C

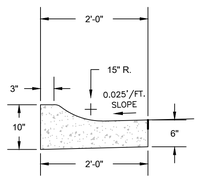
DROP INLET DETAILS

N.T.S.



STORM SEWER PROFILE

SCALE: 1" = 60' HORIZ.
1" = 6' VERT.

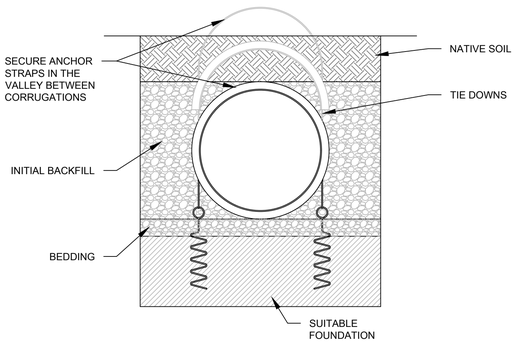


CONCRETE CURB SECTION

MINIMUM PIPE COVER TO PREVENT FLOTATION OF HDPE DRAINAGE PIPE

NOMINAL PIPE DIAMETER (INCHES)	MINIMUM COVER (INCHES)
12	9
15	11
18	13
24	17
30	22
36	25
42	29
48	33
60	40

NOTE: WHEN ANTI-FLOTATION ANCHORS ARE REQUIRED THEY SHALL BE INSTALLED WITH A MAXIMUM SPACING OF 10' ON CENTERS.



DRAINAGE PIPE ANCHOR DETAIL FOR PIPE WITH LESS THAN MIN. REQ'D COVER TO PREVENT FLOTATION

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BRYANT, ARKANSAS

SUBDIVISION IMPROVEMENTS

WHISTLING PINES

STREET & DRAINAGE MISCELLANEOUS DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4197
MICHAEL BOLIN

AS-BUILT DATE:

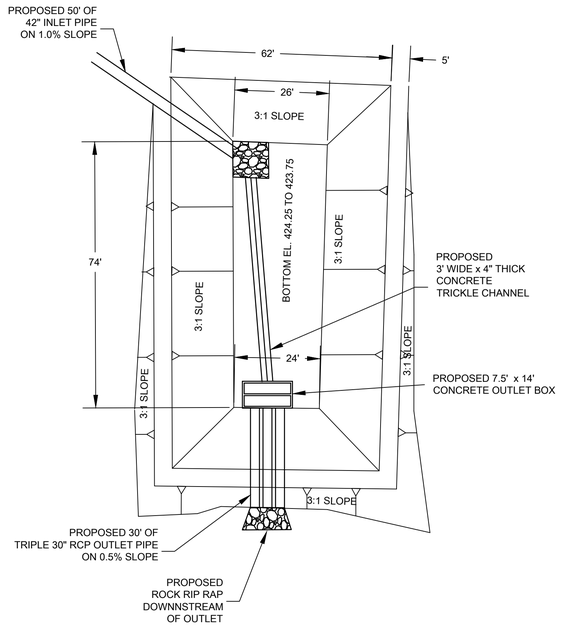
CONTACT PERSON: M. BOLIN

SCALE: AS SHOWN

DATE: MARCH 2021

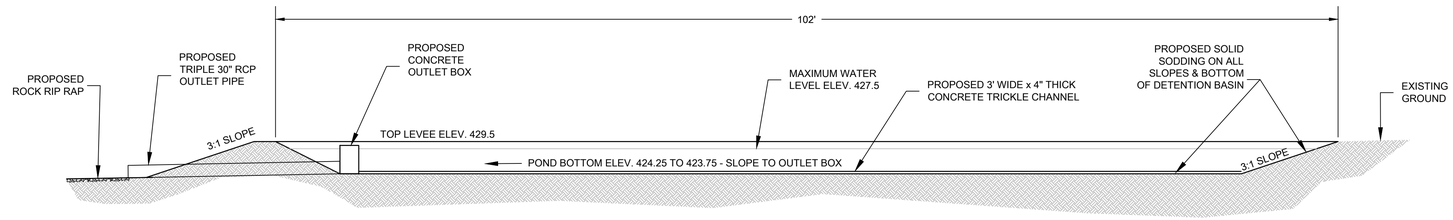
STREET & DRAINAGE MISCELLANEOUS DETAILS

JOB NO.	SHEET NO.
139-ABC	3 OF 8



STORMWATER DETENTION BASIN PLAN

SCALE: 1" = 20'



STORMWATER DETENTION BASIN SECTION

NOT TO SCALE

Stormwater Detention Basin:

Affected drainage area:

Off-site drainage area, A = 23.5 acres
On-site drainage area, A = 7.8 acres (Proposed)

Total effected drainage area, A = 31.3 acres

Off-Site Flow:

Length of overland flow = 150 feet, Slope of overland flow = 3%
Length of shallow concentrated flow = 675 feet, Slope of, shallow concentrated flow = 3%
Length of natural channel channelized flow = 850 feet, Slope of channelized flow = 2%

From nomographs with overland flow roughness coefficient = 0. 40, shallow and channelized flow roughness coefficient = 0.03:

Existing off-site time of concentration, t_c = 32.6 minutes
Existing off-site intensity, i_2 = 2.7 in/hr (2 year flood), i_5 = 3.7 in/hr (10 year flood) i_5 = 4.3 in/hr (25 year flood), i_{25} = 4.7 in/hr (50 year flood), i_{50} = 5.5 in/hr (100 year flood)

Existing off-site surface is undeveloped, clay soil, average slope, C_x = 0.50 (100 year flood)
= 0.44 (25 year flood)

Existing off-site flow, Q_2 = (0.44)(2.7)(23.5) = 27.9 cfs, Q_{10} = (0.44)(3.7)(23.5) = 38.3 cfs, Q_{25} = (0.44)(4.3)(23.5) = 44.5 cfs, Q_{50} = (0.44)(4.7)(23.5) = 48.6 cfs, Q_{100} = (0.44)(5.5)(23.5) = 64.6 cfs

Undeveloped Subdivision Site Flow:

Length of overland flow = 120 feet, Slope of overland flow = 1%
Length of shallow concentrated flow = 320 feet
Slope of, shallow concentrated flow = 5%
Length of natural channel channelized flow = 550 feet, Slope of channelized flow = 2%

From nomographs with overland flow roughness coefficient = 0. 30, shallow flow roughness coefficient = 0.03, channelized flow roughness coefficient = 0.02

Undeveloped Subdivision Site time of concentration, t_c = 26.1 minutes
Undeveloped Subdivision Site intensity, i_2 = 3.0 in/hr (2 year flood), i_5 = 4.3 in/hr (10 year flood), i_{25} = 5.0 in/hr (25 year flood), i_{50} = 5.4 in/hr (50 year flood), i_{100} = 6.2 in/hr (100 year flood)

Existing subdivision site surface is undeveloped, clay soil, average slope, C_u = 0.50 (100 year flood)
= 0.44 (25 year flood)

Undeveloped subdivision site flow, Q_{25} = (0.44)(5.0)(7.8) = 17.2 cfs, Q_{100} = (0.50)(6.2)(7.8) = 24.2 cfs

Developed Subdivision Site Flow:

Length of overland flow = 120 feet, Slope of overland flow = 1%
Length of shallow concentrated flow = 320 feet
Slope of, shallow concentrated flow = 5%
Length of channelized flow = 550 feet, Slope of channelized flow = 2%

From nomographs with overland flow roughness coefficient = 0. 30, shallow flow roughness coefficient = 0.03, channelized flow roughness coefficient = 0.013

Developed Subdivision Site time of concentration, t_c = 22.1 minutes (1,326 sec.)
Developed Subdivision Site intensity, i_{d} = 5.5 in/hr (25 year flood), i_{d} = 6.3 in/hr (100 year flood)

Developed subdivision site surface is single family residential, C_v = 0.70 (100 year flood)
= 0.60 (25 year flood)

Developed subdivision site flow, Q_{25} = (0.60)(5.5)(7.8) = 25.7 cfs, Q_{100} = (0.70)(6.3)(7.8) = 34.4 cfs

Required Detention Volume:

Volume required = (Dev. Q_{100} – Undev. Q_{100}) (Dev. t_c) = (34.4 – 24.2) (1,326) = 13,525 cubic feet

Pond top levee el. = 429.5, Bottom el. = 423.75, Max. water level el. = 427.5, Water depth = 3.75'
At 3.75' depth, the required average area = 3,940 sq. ft.

Use basin with dimensions as shown with 3:1 side slopes, which will provide a volume of 17,167 cubic feet plus one foot of freeboard at a depth of 12" above spillway.

The undeveloped 2-year runoff to the basin is 10.3 cfs + 27.9 =38.2 cfs
The undeveloped 10-year runoff to the basin is 14.8 cfs + 38.3 = 53.1 cfs
The undeveloped 25-year runoff to the basin is 17.2 cfs +44.5 = 61.7 cfs
The undeveloped 50-year runoff to the basin is 18.6 cfs +48.6 = 67.2 cfs

Use concrete outlet box with outlet orifices sized for 38.2 cfs (2-yr.) and 61.7 cfs (25-yr.) capacity, and overflow weirs sized for 53.1 cfs (10-yr.), 67.2 cfs (50-yr.) and 99.0 cfs (100-yr. developed) capacity.

One 18.95" diameter orifices through the outlet structure wall orifice will discharge 38.2 cfs (2-yr.).

A 4.75' long weir under a head of 12" will discharge 15.0 cfs. This weir plus the 2-year, 18.95" diameter orifice will discharge 53.1 cfs (10-yr.).

Two 28.75" diameter orifices through the outlet structure wall orifice will discharge 61.7 cfs (25-yr.).

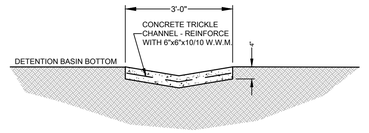
A 4.75' long weir under a head of 6" will discharge 5.5 cfs. This weir plus the 25-year orifices will discharge 67.2 cfs (50-yr.).

The 100-year developed flow from the area routing to the basin is: Q_{100} = Q_{100} (off-site) + Q_{100} (developed site) = 64.6 + 34.4 = 99.0 cfs, and the required additional overflow weir capacity is: 99.0 – 61.7 = 37.3 cfs

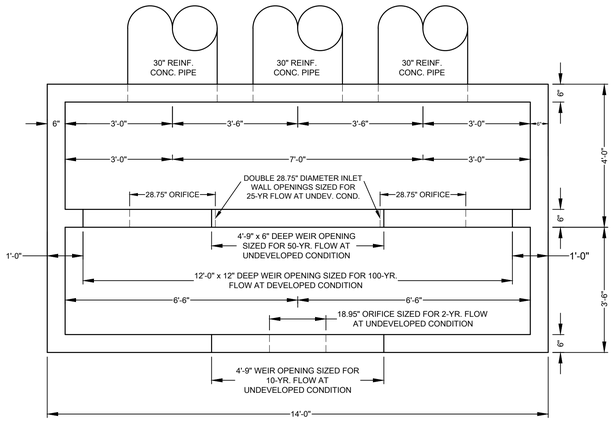
At a head of 12" on a rectangular weir a weir length of 11.4' is required to discharge approximately 37.3 cfs. Use a 12' long by 12" deep rectangular weir.

The required discharge for the proposed outlet is 99.0 cfs. Three 30" concrete pipes under an inlet head of 3.75' will discharge approximately 105 cfs (see attached headwater nomograph). Use three 30" concrete outlet pipes.

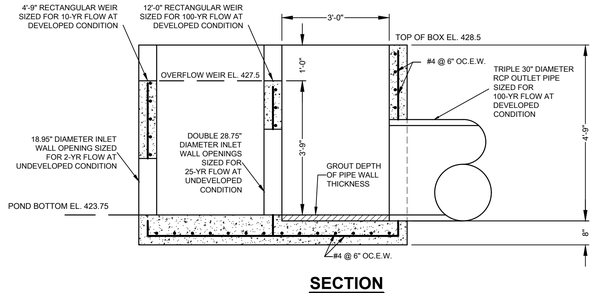
Proposed outlet structure is 7'-6" x 14' (exterior dimensions) concrete box with bottom el. = 423.75, top el. = 428.5, and top of overflow weir el. = 427.5. Outlet will be triple 30" dia. reinforced concrete pipes.



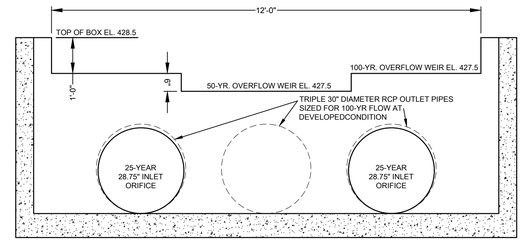
TRICKLE CHANNEL SECTION



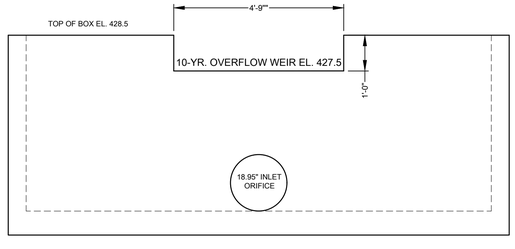
PLAN



SECTION



MID-BASIN UPSTREAM ELEVATION



UPSTREAM ELEVATION

DETENTION BASIN OUTLET STRUCTURE DETAILS

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

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STORMWATER DETENTION BASIN
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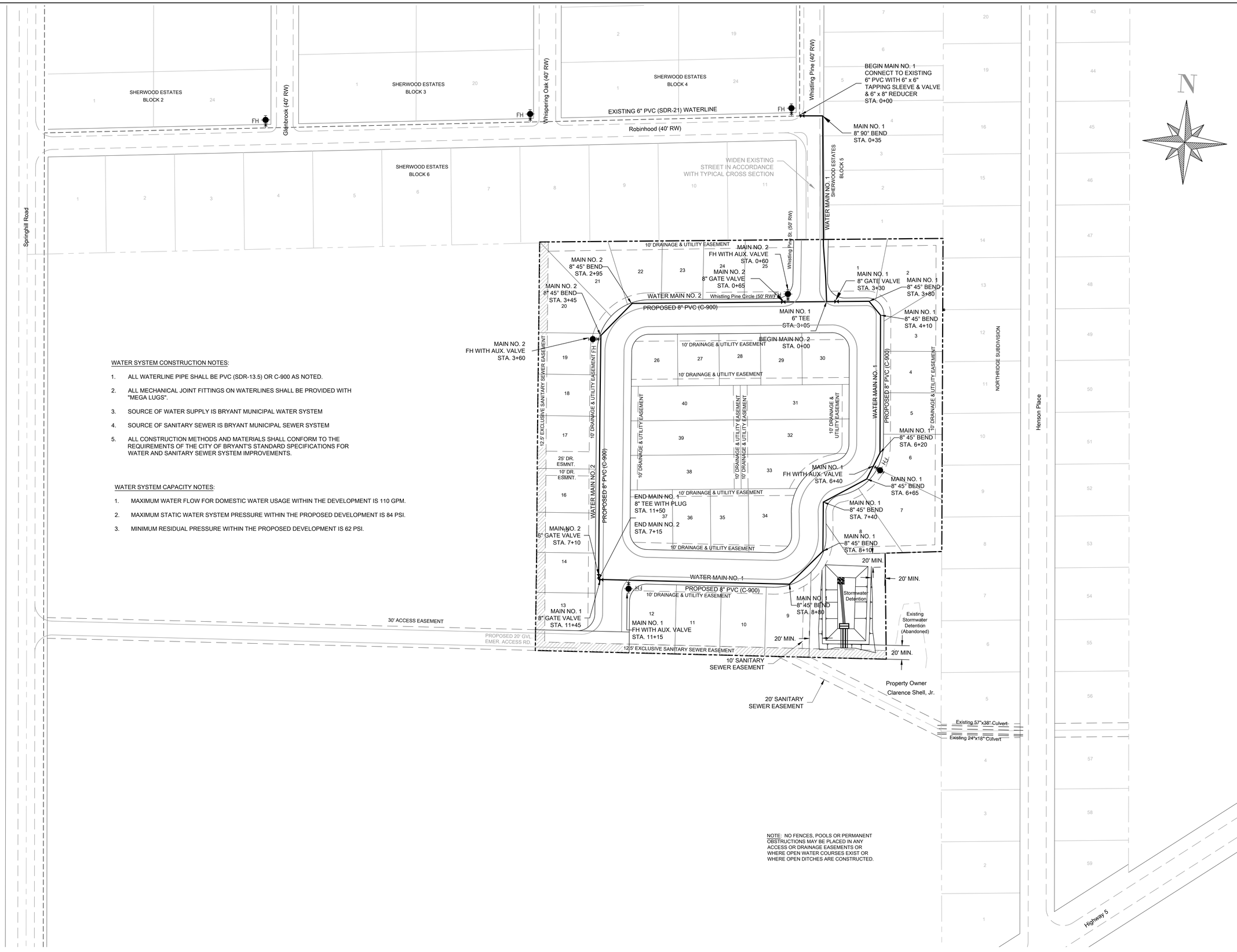
CONTACT PERSON:
M. BOLIN

SCALE:
AS SHOWN

DATE: MARCH 2021

STORMWATER
DETENTION BASIN

JOB NO.	SHEET NO.
139-ABC	4 OF 8



WATER SYSTEM CONSTRUCTION NOTES:

1. ALL WATERLINE PIPE SHALL BE PVC (SDR-13.5) OR C-900 AS NOTED.
2. ALL MECHANICAL JOINT FITTINGS ON WATERLINES SHALL BE PROVIDED WITH "MEGA LUGS".
3. SOURCE OF WATER SUPPLY IS BRYANT MUNICIPAL WATER SYSTEM
4. SOURCE OF SANITARY SEWER IS BRYANT MUNICIPAL SEWER SYSTEM
5. ALL CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF BRYANT'S STANDARD SPECIFICATIONS FOR WATER AND SANITARY SEWER SYSTEM IMPROVEMENTS.

WATER SYSTEM CAPACITY NOTES:

1. MAXIMUM WATER FLOW FOR DOMESTIC WATER USAGE WITHIN THE DEVELOPMENT IS 110 GPM.
2. MAXIMUM STATIC WATER SYSTEM PRESSURE WITHIN THE PROPOSED DEVELOPMENT IS 84 PSI.
3. MINIMUM RESIDUAL PRESSURE WITHIN THE PROPOSED DEVELOPMENT IS 62 PSI.

NOTE: NO FENCES, POOLS OR PERMANENT OBSTRUCTIONS MAY BE PLACED IN ANY ACCESS OR DRAINAGE EASEMENTS OR WHERE OPEN WATER COURSES EXIST OR WHERE OPEN DITCHES ARE CONSTRUCTED.

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SUBDIVISION IMPROVEMENTS
WHISTLING PINES

WATER PLAN

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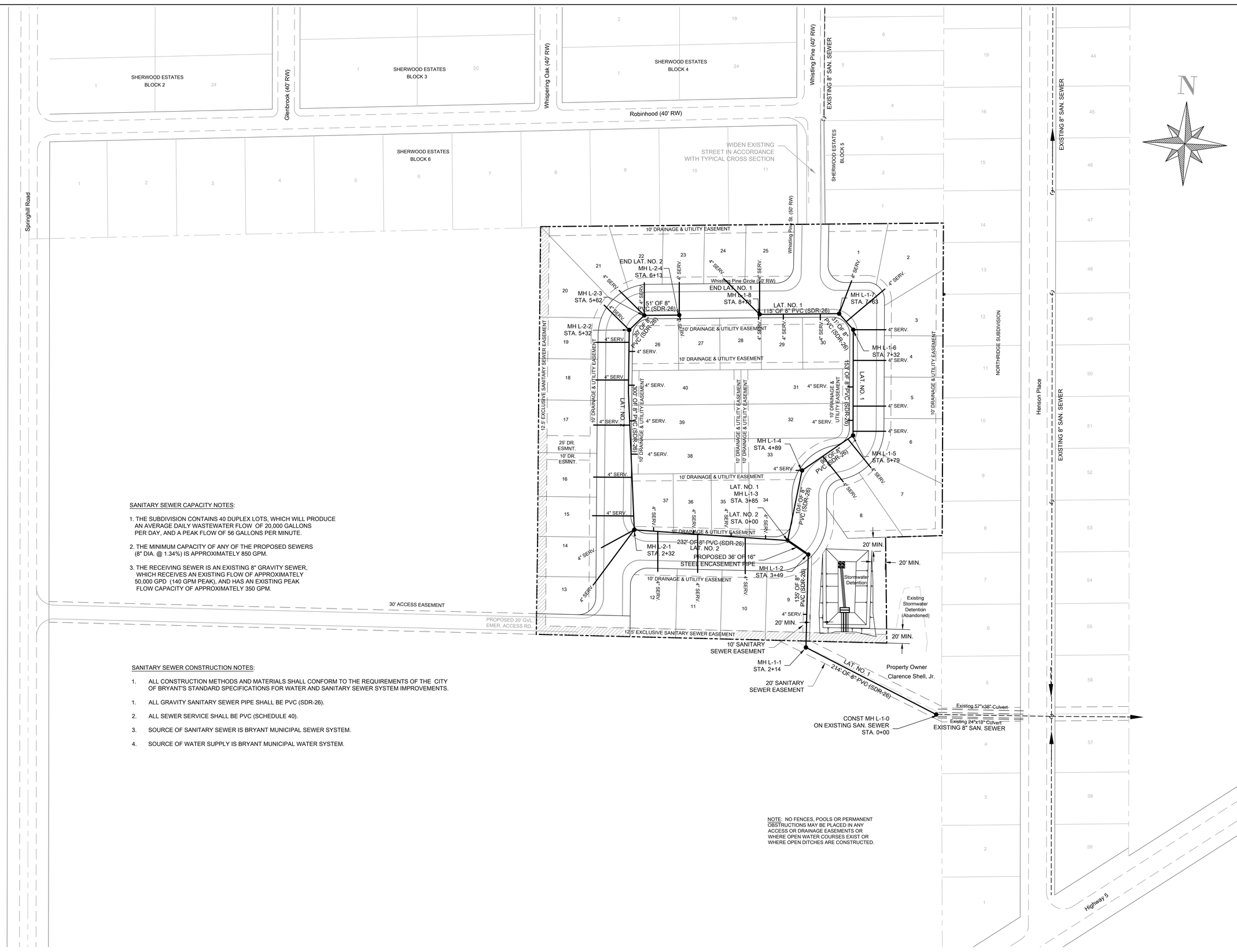
CONTACT PERSON:
M. BOLIN

SCALE:
1" = 60'

DATE: MARCH 2021

WATER PLAN

JOB NO.	SHEET NO.
139-ABC	5 OF 8



SANITARY SEWER CAPACITY NOTES:

1. THE SUBDIVISION CONTAINS 40 DUPLEX LOTS, WHICH WILL PRODUCE AN AVERAGE DAILY WASTEWATER FLOW OF 20,000 GALLONS PER DAY, AND A PEAK FLOW OF 56 GALLONS PER MINUTE.

2. THE MINIMUM CAPACITY OF ANY OF THE PROPOSED SEWERS (8" DIA. @ 1.34%) IS APPROXIMATELY 850 GPM.

3. THE RECEIVING SEWER IS AN EXISTING 8" GRAVITY SEWER, WHICH RECEIVES AN EXISTING FLOW OF APPROXIMATELY 50,000 GPD (140 GPM PEAK), AND HAS AN EXISTING PEAK FLOW CAPACITY OF APPROXIMATELY 350 GPM.

SANITARY SEWER CONSTRUCTION NOTES:

1. ALL CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF BRYANT'S STANDARD SPECIFICATIONS FOR WATER AND SANITARY SEWER SYSTEM IMPROVEMENTS.

1. ALL GRAVITY SANITARY SEWER PIPE SHALL BE PVC (SDR-26).

2. ALL SEWER SERVICE SHALL BE PVC (SCHEDULE 40).

3. SOURCE OF SANITARY SEWER IS BRYANT MUNICIPAL SEWER SYSTEM.

4. SOURCE OF WATER SUPPLY IS BRYANT MUNICIPAL WATER SYSTEM.

NOTE: NO FENCES, POOLS OR PERMANENT OBSTRUCTIONS MAY BE PLACED IN ANY ACCESS OR DRAINAGE EASEMENTS OR WHERE OPEN WATER COURSES EXIST OR WHERE OPEN DITCHES ARE CONSTRUCTED.

MICHAEL BOLIN
& ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 605, BENTON, AR 72018, (501) 776-2692
FAX (501) 776-2619 EMAIL: cmbolin@sbcglobal.net

BRYANT, ARKANSAS

SUBDIVISION IMPROVEMENTS
WHISTLING PINES

SANITARY SEWER PLAN

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4197
MICHAEL BOLIN

AS-BUILT DATE:

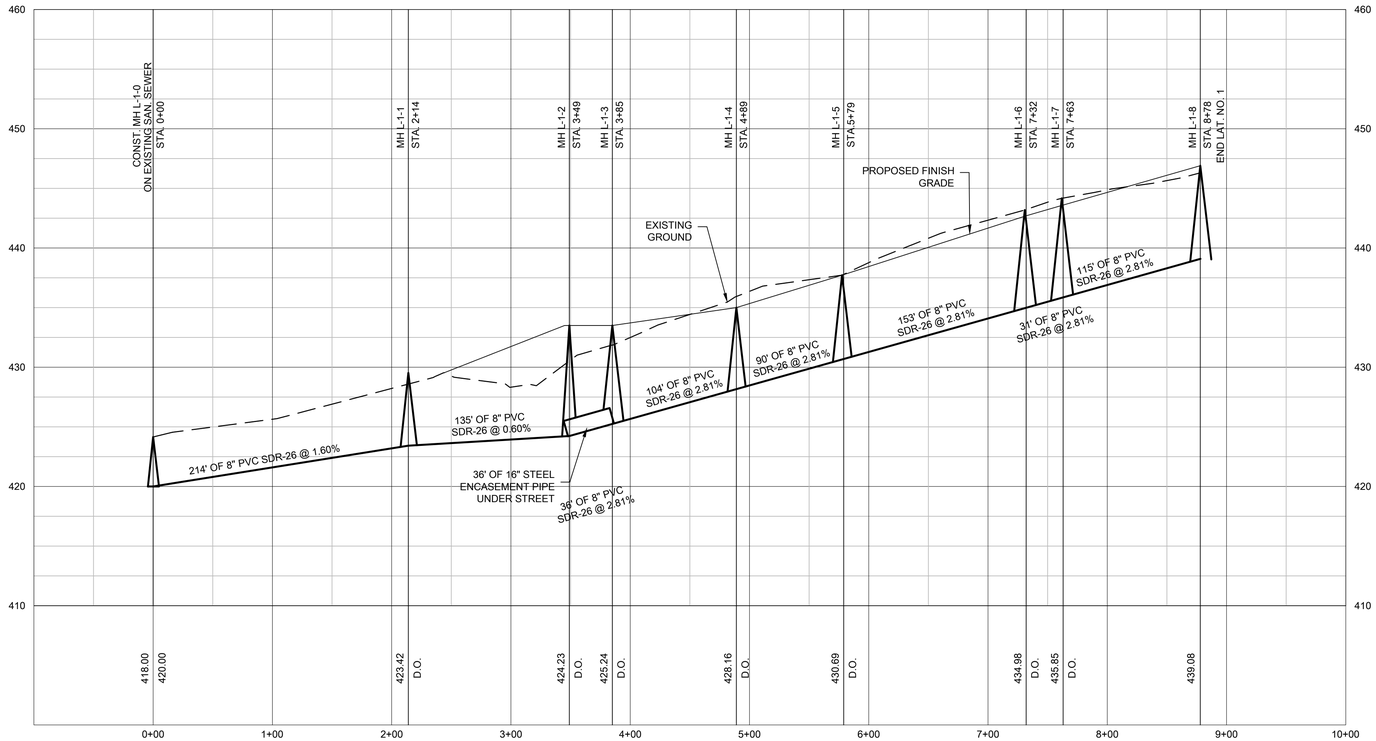
CONTACT PERSON:
M. BOLIN

SCALE:
1" = 60'

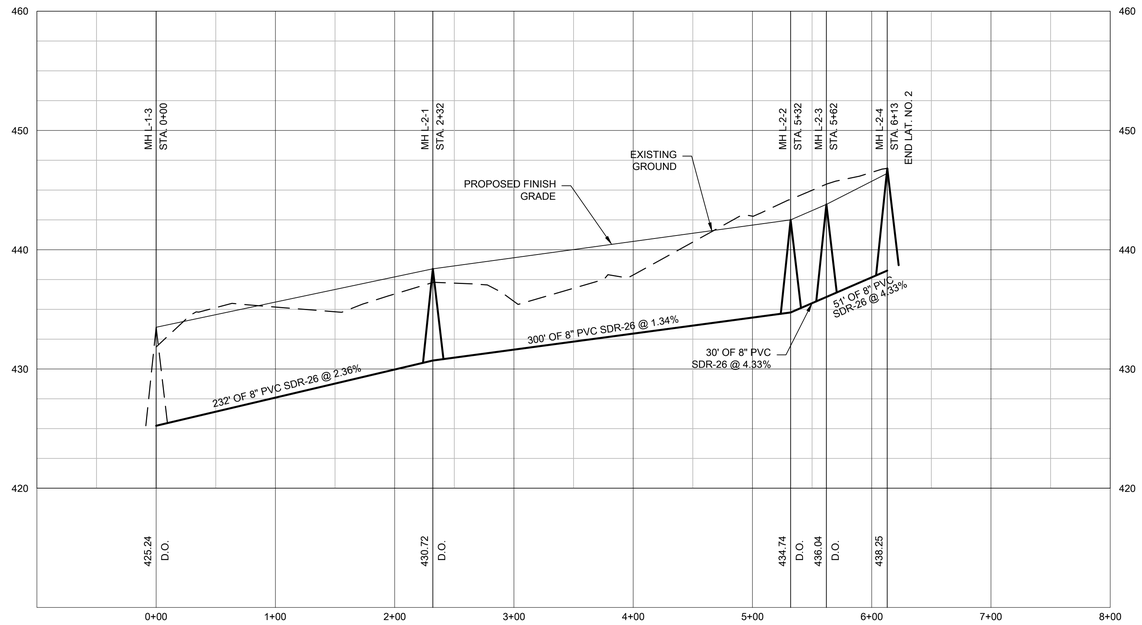
DATE: MARCH 2021

SANITARY
SEWER PLAN

JOB NO.	SHEET NO.
139-ABC	6 OF 8



SANITARY SEWER LATERAL NO. 1 PROFILE



SANITARY SEWER LATERAL NO. 2 PROFILE

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BRYANT, ARKANSAS

SUBDIVISION IMPROVEMENTS
WHISTLING PINES

SANITARY SEWER PROFILES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4197
MICHAEL BOLIN

AS-BUILT DATE:

CONTACT PERSON:
M. BOLIN

SCALE:
1" = 60' HORIZ.
1" = 6' VERT.

DATE: MARCH 2021

SANITARY SEWER PROFILES

JOB NO.	SHEET NO.
139-ABC	7 OF 8



THRUST BLOCK SCHEDULE

(2000 PSF SOIL, 200 PSI WATER PRESSURE, 150 PSI WATER HAMMER)

	BEARING AREA OF THRUST BLOCKS IN SQ. FT. (HORIZONTAL BENDS)					VOLUME OF THRUST BLOCK IN CU. FEET (VERTICAL BENDS)						
FITTING SIZE	PLUG 150 PSI CAP	BEND ANGLE				FITTING SIZE	BEND ANGLE				MJ01 SWM	EMBCO MEGA
		90°	45°	22 1/2°	11 1/4°		90°	45°	22 1/2°	11 1/4°		
2, 3, & 4	1.9	3.7	1.4	0.7	0.4	2, 3, & 4	35.5	19.2	9.8	4.9	30"	30"
6	5.6	7.8	4.3	2.2	1.1	6	105.8	57.2	29.3	14.7	75"	30"
8	9.8	13.8	7.4	3.8	1.9	8	181.9	98.5	50.2	25.2	75"	30"
10	15.5	21.6	11.7	5.9	3.0	10	283.5	153.5	78.4	39.3	75"	30"
12	22.3	30.6	17.1	8.5	4.3	12	407.9	220.9	112.8	56.7	75"	30"
18	44.6	63.4	34.3	17.5	10.9	18	844.7	457.2	233.5	117.1	75"	36"
24	76.4	110.5	60.0	30.8	15.5	24	1475.7	800.3	408.0	205.0	75"	36"

* 90 DEGREE BENDS SHALL ONLY BE USED ON A BY-EXCEPTION BASIS, AND MUST EACH BE SPECIFICALLY APPROVED BY CITY.

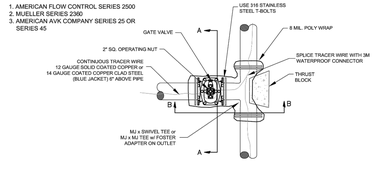
THRUST BLOCK NOTES:

1. CONCRETE FOR THRUST BLOCKS - CLASS A CONCRETE SHALL DEVELOP NOT LESS THAN 3000 P.S.I. COMPRESSIVE STRENGTH AT 28 DAYS AND BE PLACED AGAINST UNDISTURBED SOIL.
2. ALL BENDS, BOTH HORIZONTAL AND VERTICAL, SHALL BE BACKED WITH CONCRETE. VERTICAL BENDS SHALL BE PLACED ON CONCRETE PADS WHERE BENDS TURN UP, OR LOADED WHERE BENDS TURN DOWN.
3. WRAP PIPE JOINTS IN 8 MIL "POLYETHYLENE" BEFORE PLACING CONCRETE.
4. BEARING AREA SHOWN IN TABLE, IS BASED UPON A 2000 LB/SF SOIL BEARING, AND UPON A PIPELINE PRESSURE OF 200 psi, PLUS 100 psi, WATER HAMMER. AREAS SHOWN SHALL BE ADJUSTED, SHOULD FIELD CONDITIONS VARY.
5. MJ RESTRAINTS ARE REQUIRED FOR ALL FITTINGS.
6. USE LONG-RADIUS FITTINGS WHEREVER POSSIBLE.
7. ALL BOLTS FOR FITTINGS SHALL BE 316 STAINLESS STEEL.
8. ALL DUCTILE IRON FITTINGS SHALL BE FUSION-BONDED EPOXY COATED INSIDE AND OUTSIDE IN ACCORDANCE WITH ANSI/AWWA C116/A21.16.
9. UNIT WEIGHT OF CONCRETE FOR VERTICAL THRUST BLOCKS IS 150 LBS/CU. FT.

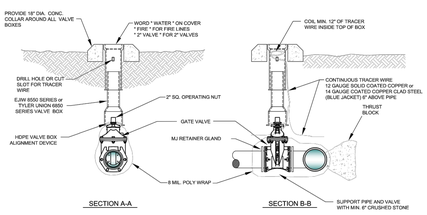
THRUST BLOCKING

PERMITTED VALVES

1. AMERICAN FLOW CONTROL SERIES 2500
2. MUELLER SERIES 2360
3. AMERICAN AVK COMPANY SERIES 25 OR SERIES 45



PLAN



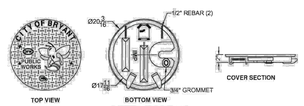
SECTION A-A SECTION B-B

NOTES:

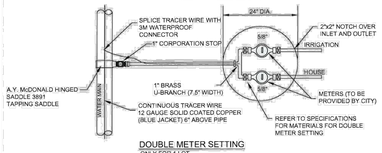
1. ALL VALVES SHALL BE SECURELY ANCHORED TO THE TEE.
2. ALL HARDWARE SHALL BE 316 STAINLESS STEEL.
3. IF DEPTH OF BURY EXCEEDS 4 FT., A VALVE STEM EXTENSION SHALL BE REQUIRED. THE VALVE STEM EXTENSION NUT SHALL BE WITHIN 24-INCHES TO 12-INCHES OF THE FINISHED SURFACE.

GATE VALVE DETAIL

2" - 12"

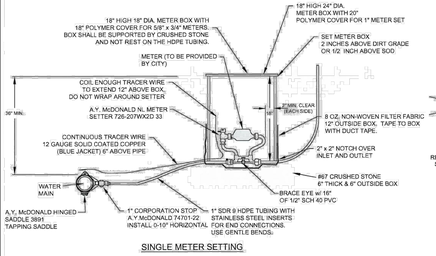


WATER METER LID

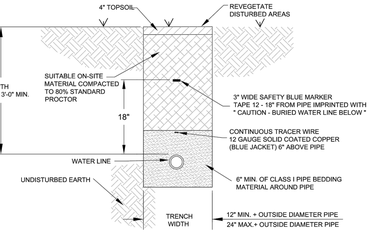


DOUBLE METER SETTING

ONLY FOR 1 LOT



SINGLE METER SETTING



WATER MAIN TRENCH

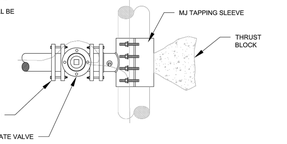
(NON-PAVED AREA)

NOTES:

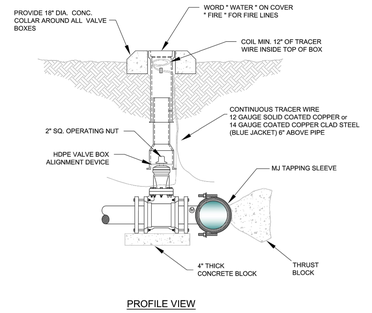
1. ALL VALVES, BENDS, ETC. SHALL BE RESTRAINED.
2. THE CONTRACTOR SHALL PROVIDE ALL ITEMS NECESSARY TO CONNECT WITH ANY PART OF THE EXISTING WATER SYSTEM THAT WILL REMAIN IN ORDER TO ESTABLISH A SATISFACTORY AND ACCEPTABLE WATER SYSTEM.
3. CONTRACTOR TO CONSTRUCT ALL TRENCH EXCAVATION IN ACCORDANCE WITH ALL OSHA REGULATIONS (29 CFR CH.XVII, SUBPART B)
4. TRENCH SHALL BE EXCAVATED BELOW GRADE REQUIRED TO PROVIDE A MINIMUM 36" OF PIPE COVER.
5. MAXIMUM PIPE COVER SHALL BE 60" UNDER NORMAL CONDITIONS. COVER GREATER THAN 60" MAY BE ALLOWED FOR SHORT DISTANCES WHERE REQUIRED BY FIELD CONDITIONS. NO HYDRANT SHALL BE ALLOWED WHERE LINES ARE GREATER THAN 60" DEEP.

NOTES:

1. TAPPING SLEEVE SHALL BE SMITH-BLAIR 662 OR FORD FAST.
2. AFTER THE TAP IS MADE, RE-TORQUE BOLTS ON SLEEVE TO SEAL TO FINAL SHAPE OF PIPE.
3. TAPPING SLEEVE AND VALVE SHALL BE WRAPPED WITH 8 MIL POLY WRAP.

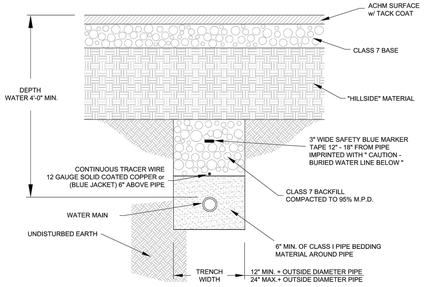


PLAN VIEW



PROFILE VIEW

TAPPING SLEEVE & VALVE DETAILS



WATER MAIN INSTALLATION PRIOR TO ROADWAY CONSTRUCTION

NOTES:

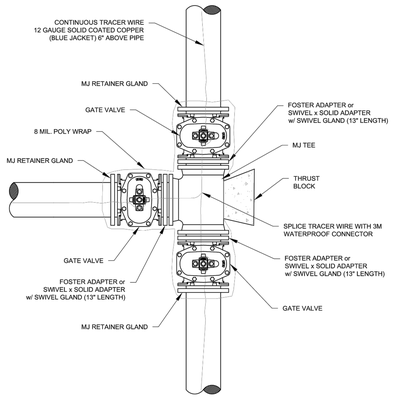
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PERMITTED VALVES

1. AMERICAN FLOW CONTROL SERIES 2500
2. MUELLER SERIES 2360
3. AMERICAN AVK COMPANY SERIES 25 OR SERIES 45

NOTES:

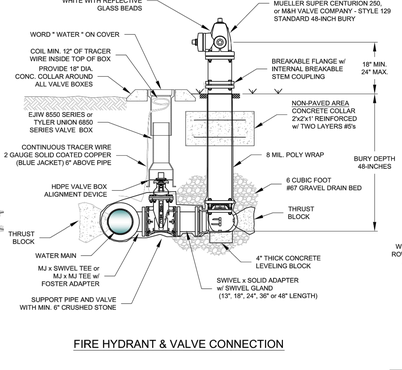
1. ALL VALVES SHALL BE SECURELY ANCHORED TO THE TEE.
2. ALL HARDWARE SHALL BE 316 STAINLESS STEEL.
3. IF DEPTH OF BURY EXCEEDS 4 FT., A VALVE STEM EXTENSION SHALL BE REQUIRED. THE VALVE STEM EXTENSION NUT SHALL BE WITHIN 24-INCHES TO 12-INCHES OF THE FINISHED SURFACE.



3-WAY GATE VALVE DETAIL

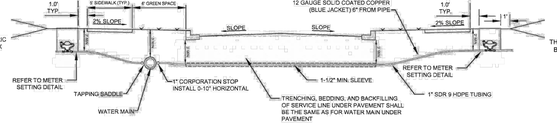
NOTES:

1. THE 6" GATE VALVE SHALL BE POSITIVELY RESTRAINED TO THE MAIN BY THE USE OF EITHER A SWIVEL TEE OR FOSTER ADAPTER.
2. FIRE HYDRANTS SHALL BE DESIGNED FOR A MINIMUM 48" BURY.
3. BURY LINE OF HYDRANT SHALL BE NO LESS THAN THE PROPOSED FINISHED ELEVATION OF BACK OF CURB, OR SIDEWALK, WHICHEVER IS GREATER.
4. EXTENSIONS SHALL BE WATEROUS K952 OR MUELLER A-320 WITH NO MORE THAN ONE EXTENSION PER HYDRANT.
5. 9" SIDEWALK IS PRESENT, HYDRANT SHALL BE INSTALLED 2' MINIMUM BEHIND THE BACK OF THE SIDEWALK OR CURB. VALVES SHALL BE INSTALLED 1' MINIMUM BEHIND THE BACK OF THE SIDEWALK OR CURB.
6. DO NOT COVER UP WEEP HOLE WITH CONCRETE.
7. MJ RETAINER GLANDS ARE REQUIRED FOR ALL FITTINGS.
8. 6" DUCTILE IRON PIPE IS REQUIRED FOR ALL FIRE HYDRANT LEADS GREATER THAN 48-INCHES FROM THE MAIN VALVE.
9. AN ADDITIONAL GUARDIAN VALVE IS REQUIRED FOR ALL FIRE HYDRANT LEADS GREATER THAN 30 FEET IN LENGTH.

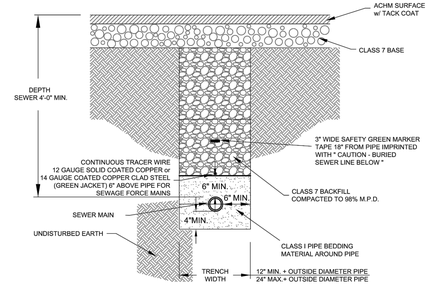


FIRE HYDRANT & VALVE CONNECTION

1. ALL WATER & SANITARY SEWER TRENCHES WHICH ARE UNDER THE PROPOSED STREETS MUST BE BACKFILLED AS SHOWN ON THE TRENCHING, BEDDING, AND BACKFILL STANDARD DETAIL.
2. WATER AND SEWER LINES SHALL MAINTAIN A MINIMUM OF HORIZONTAL SEPARATION DISTANCE OF 10 FEET AT ALL TIMES.
3. WATER AND SEWER LINES SHALL MAINTAIN A MINIMUM VERTICAL SEPARATION OF 18 INCHES WITH THE WATER LINE CROSSING ABOVE THE SEWER LINE.
4. ALL CORP. STOPS SHALL BE INSTALLED AT 0-10° ANGLE FROM HORIZONTAL.
5. A MINIMUM OF 24-INCHES OF SEPARATION IS REQUIRED BETWEEN SERVICE TAPS.
6. ALL METER BOXES SHALL BE INSTALLED ON THE CUSTOMER SIDE OF THE WATER MAIN.
7. ALL METER BOXES SHALL BE INSTALLED IN NON-PAVED AREAS. ANY METER BOX THAT GETS PLACED IN A PAVED AREA SHALL BE RELOCATED AT THE OWNER'S EXPENSE BEFORE A WATER METER WILL BE INSTALLED.



SERVICE METER WITH WATER MAIN UNDER PAVEMENT



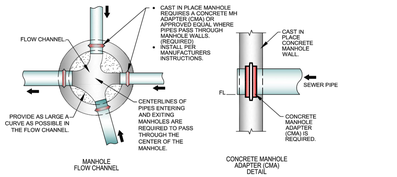
SEWER MAIN INSTALLATION PRIOR TO ROADWAY CONSTRUCTION

NOTES:

1. THE CONTRACTOR SHALL PROVIDE ALL ITEMS NECESSARY TO CONNECT WITH ANY PART OF THE EXISTING SEWER SYSTEM THAT WILL REMAIN IN ORDER TO ESTABLISH A SATISFACTORY AND ACCEPTABLE SEWER SYSTEM.
2. CONTRACTOR TO CONSTRUCT ALL TRENCH EXCAVATION IN ACCORDANCE WITH ALL OSHA REGULATIONS (29 CFR CH.XVII, SUBPART B)
3. TRENCH SHALL BE EXCAVATED BELOW GRADE REQUIRED TO PROVIDE A MINIMUM 36" OF PIPE COVER.

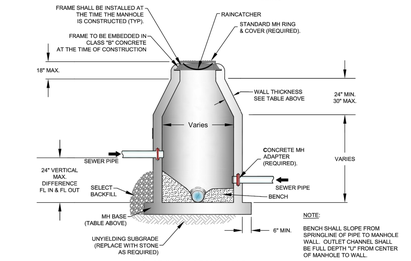
Inside Diameter of Manhole	Minimum Wall Thickness	Base Thickness	Minimum Ring & Cover Size
4' DIA	5"	6"	24" (< or Equal to 24" Pipes)
5' DIA	7"	8"	
6' DIA	8"	12"	36" (> 24" Pipes)

MANHOLE INFORMATION TABLE



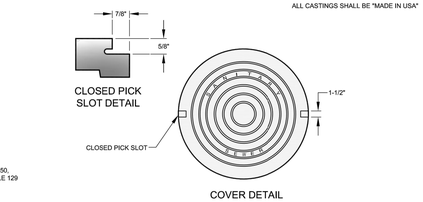
MANHOLE FLOW CHANNEL

CONCRETE MANHOLE ADAPTER (CMA) DETAIL



CAST-IN-PLACE MANHOLE

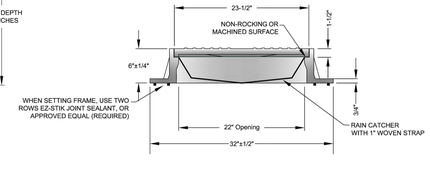
ALL CASTINGS SHALL BE "MADE IN USA"



COVER DETAIL

1. MINIMUM WEIGHT OF RING: 100 POUNDS
2. MINIMUM WEIGHT OF COVER: 110 POUNDS
3. COVERS ARE FURNISHED WITH TWO CLOSED PICK SLOTS.
4. CASTINGS SHALL BE "MADE IN USA"

* DIMENSIONAL TOLERANCES SHALL NOT EXCEED 1/16 INCH PER FOOT



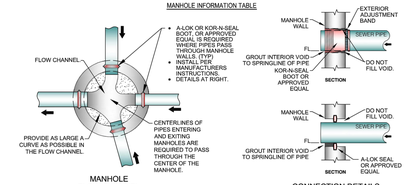
FRAME AND COVER DETAIL

SEWER TRENCH

(NON-PAVED AREA)

Inside Diameter of Manhole	Minimum Wall Thickness	Base Thickness	Minimum Ring & Cover Size
4' DIA	5"	6"	24" (< or Equal to 24" Pipes)
5' DIA	7"	8"	
6' DIA	7"	8"	36" (> 24" Pipes)

MANHOLE INFORMATION TABLE

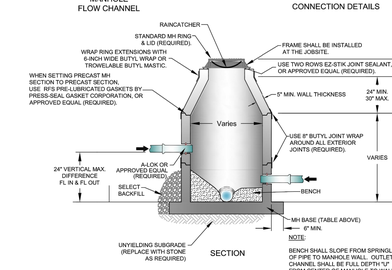


MANHOLE FLOW CHANNEL

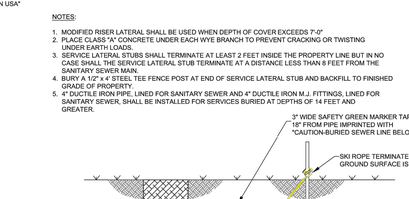
CONNECTION DETAILS

NOTES:

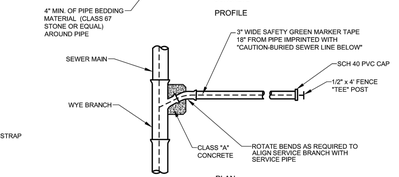
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2. CONTRACTOR TO CONSTRUCT ALL TRENCH EXCAVATION IN ACCORDANCE WITH ALL OSHA REGULATIONS (29 CFR CH.XVII, SUBPART B)
3. MODIFIED RISER LATERAL SHALL BE USED WHEN DEPTH OF COVER EXCEEDS 7'-0"
4. PLACE CLASS "A" CONCRETE UNDER EACH WYE BRANCH TO PREVENT CRACKING OR TWISTING UNDER EARTH LOADS.
5. SERVICE LATERAL STUBS SHALL TERMINATE AT LEAST 2 FEET INSIDE THE PROPERTY LINE BUT IN NO CASE SHALL THE SERVICE LATERAL STUB TERMINATE AT A DISTANCE LESS THAN 8 FEET FROM THE SANITARY SEWER MAIN.
6. BURY A 1/2" x 4' STEEL TEE FENCE POST AT END OF SERVICE LATERAL STUB AND BACKFILL TO FINISHED GRADE OF PROPERTY.
7. 4" DUCTILE IRON PIPE, LINED FOR SANITARY SEWER AND 4" DUCTILE IRON M.J. FITTINGS, LINED FOR SANITARY SEWER, SHALL BE INSTALLED FOR SERVICES BURIED AT DEPTHS OF 14 FEET AND GREATER.



PRECAST MANHOLE



PROFILE



PLAN

SEWER SERVICE LATERAL

MICHAEL BOLIN & ASSOCIATES, INC.
CONSULTING ENGINEERS
P.O. BOX 605, BENTON, AR 72018, (501) 776-2692
FAX (501) 776-2619 EMAIL: cmbolin@sbcglobal.net

SUBDIVISION IMPROVEMENTS
WHISTLING PINES

BRYANT, ARKANSAS

WATER & SAN. SEWER MISCELLANEOUS DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4197
MICHAEL BOLIN

AS-BUILT DATE:

CONTACT PERSON: M. BOLIN

SCALE: AS SHOWN

DATE: MARCH 2021

WATER & SANITARY SEWER MISCELLANEOUS DETAILS

JOB NO.	SHEET NO.
139-ABC	8 OF 8