

1316 COUNTY-CITY BUILDING
227 W. JEFFERSON BOULEVARD
SOUTH BEND, INDIANA 46601-1830



PHONE 574/ 235-9251
FAX 574/ 235-9171

CITY OF SOUTH BEND JAMES MUELLER, MAYOR
BOARD OF PUBLIC WORKS

February 23, 2021

Mr. Matthew Salamone
Four Horsemen Ventures, LLC
1533 Skippack Pike
Blue Bell, PA 19422
Fourhorsemenventures@gmail.com

RE: Belle Terre Water Extension Agreement

Dear Mr. Salamone:

At its February 23, 2021 meeting, the Board of Public Works approved the above referenced agreement which outlines the terms for the public sewer and water main extension at Bracken Fern Court.

Enclosed please find a copy of the agreement for your records.

If you have any further questions regarding this matter, please call this office at (574) 235-9251.

Sincerely,

/s/ Anne Fuchs

Anne Fuchs, Clerk

Enclosures
AF/lh

WATER EXTENSION AGREEMENT

23rd. February, 2021

This Water Extension Agreement ("Agreement") is made on the ____ day of _____, 20__ by and between Four Horseman Ventures, LLC, 1533 Skippack Pike, Blue Bell, PA, 19422 ("Owner") and the City of South Bend, a municipal corporation existing under the laws of Indiana, acting by and through its Board of Public Works ("City"), (each a "Party" and collectively referred to herein as the "Parties").

WHEREAS, Owner intends to develop 4.22 acres located on Bracken Fern Court South of Cleveland Rd for a subdivision consisting of 12 single family lots.; and

WHEREAS, the Owner desires to connect to the City's water system; and

WHEREAS, the City's water system does not currently extend to the Property, and, in order to connect to the Property, the water system will need to be extended in a manner consistent with the depiction on **Exhibit A** attached and incorporated hereto (hereafter referred to as "Dedicated Improvements"), and captured in a municipal water easement further described in **Exhibit D** that will be recorded in the Secondary Subdivision Plat to be prepared by the Owner; and

WHEREAS, the engineering design for said Dedicated Improvements has been, or will be, accomplished by competent professional engineers registered and licensed in the State of Indiana; and

WHEREAS, the Parties desire to accomplish the Dedicated Improvements in that manner and under the terms set forth herein; and

NOW, THEREFORE, in consideration of the obligations, terms and conditions contained herein, the adequacy of which the Parties expressly acknowledge, Owner and the City agree as follows:

1. Design

The Owner shall consult the City and allow the City Engineer or her designee input prior to designating the project engineer who shall be responsible for the engineering design and inspection in connection with the installation of the Dedicated Improvements (the "Project Engineer"). The Owner shall inspect the site during construction to ensure the Project Engineer's conformance to area planning requirements, adequacy of design, and conformance to the City's specifications and standards regarding location, size and depth of line, and quality of construction of the Dedicated Improvements. The Owner shall provide the plans with a City of South Bend cover sheet and specifications for the Dedicated Improvements along with a cost estimate to the City. Upon request of the City, the certification shall be substantiated by material affidavits from suppliers and by applicable test results for inflow/infiltration, exfiltration, deflection, pressure, leaks, bacteria, compaction and other tests required by the City. All construction, engineering and inspection cost in connection with the Dedicated Improvements shall be borne by the Owner.

2. Construction Inspection

The City acknowledges that the Dedicated Improvements as described and depicted in Exhibit A, conform to the City's standards. The Owner shall allow the City to inspect the Dedicated Improvements during construction to ensure conformance to the agreed standards set forth in Exhibit A, in particular with regard to adequacy of design, and quality of construction. The Owner shall contact the City's Engineering Department at least two (2) business days in advance to arrange for the attendance of a City inspector at key milestones throughout work. Key milestones shall include but not be limited to water main taps. The Owner agrees to perform any necessary

adjustments as reasonably required by the City Engineer (or her designee) in her sole discretion, as a result of such inspections. The failure of Owner to comply with this Section shall be a material breach of this Agreement.

3. Permits

It shall be Owner's sole responsibility and expense to obtain any and all permits associated with the construction and installation of the Dedicated Improvements.

4. Performance Bond

Owner shall provide the City with a performance bond for an amount equal to one hundred twenty-five percent (125%) of the Engineer's Estimate covering all work performed or to be performed pursuant to this Agreement. Owner's failure to provide the performance bond as prescribed herein shall cause this Agreement to be immediately terminated and of no effect, without the requirement of notice. Surety shall be posted in perpetuity until the acceptance of the Completion Affidavit, Maintenance Bond, and Waiver of Lien. The performance bond shall be provided concurrently with the execution of this Agreement and attached hereto as **Exhibit B**.

5. Maintenance Bond

Within ten (10) days of City's acceptance of the Dedicated Improvements, Owner shall provide the City with a maintenance bond equal to ten percent (10%) of the construction cost covering all work performed or to be performed pursuant to this Agreement, and such bond shall remain in effect for three (3) years after dedication as described in Section 8 below.

6. System Development Charges

Simultaneously with the execution of this Agreement, the Owner shall pay the City a sum of \$5,130 for access to the City's water system, as set forth in **Exhibit C**, attached and incorporated herein as the water service System Development Charge (the "SDC").

For purposes of this Section 6 of the Agreement, an equivalent residential unit ("ERU") shall mean a single-family residence. For customers that are not single-family residences, one ERU shall equal estimated wastewater and water flows of 310 gallons per day, respectively. No customer will be less than one ERU.

For every new connection to the South Bend Municipal Water Works, a SDC of four hundred seventy-five dollars (\$475.00) shall be collected per ERU and additional portion thereof to be connected. All charges shall be billed by the City at the time the application for service is filed. For all other types of structures, the ERU calculation shall be based upon the ratio of Average Daily Flow as computed pursuant to 327 IAC 3-6-11 in relationship to three hundred ten (310) gallons per day. For structures not listed in 327 IAC 3-6-11, the ERU shall be calculated as the relationship between the Average Daily Flow reported in the water capacity certification for the structure and three hundred ten (310) gallons per day.

For customers with greater than twenty (20) ERUs, the ERU shall be adjusted based upon the Peaking Factor as computed herein. The Peaking Factor shall be calculated by dividing the Peak Daily Flow by the Average Daily Flow, both as reported in the water capacity certification. In no event will a Peaking Factor less than 2.0 be used for purposes of the adjustment. The Peaking Factor divided by 4.0 (the Peaking Factor for residential connections) will be multiplied by the number of ERUs for purposes of computing the system development charge owed by the customer. The Board may execute a contract with the customer authorizing an increase to the initial System Development Charge based upon actual usage data that is collected after connection.

The Parties acknowledge and agree the Estimate for the SDC is subject to change depending upon the City's receipt of new or additional information. Moreover, the SDC is subject to adjustment in accordance with applicable City ordinances.

7. Dedication

Upon completion of the construction of the Dedicated Improvements substantially as depicted in **Exhibit A**, the Owner shall dedicate to the City the Dedicated Improvements as public infrastructure. The Owner shall use its best efforts to work with the City to ensure that the Dedicated Improvements are dedicated to the City in a timely manner. Additionally, prior to dedication, the following must be satisfied:

- a. All parts and labor must meet the standards and requirements stated in the design specifications as presented to and accepted by the City Engineering Department.
- b. Lien waivers must be received with regard to all workmanship and materials used in connection with these improvements.
- c. The Completion Affidavit must be furnished to Owner by the Board of Public Works.
- d. Owner must provide copies of test reports or cut sheets on all materials supplied.
- e. Owner must provide As-Built drawings in accordance with the City of South Bend Prevailing Specifications for Public Works, which may be found at https://southbendin.gov/wp-content/uploads/2018/07/SBN-Spec-Stand-FINAL-062618-REV-2_BPWSignature.pdf

Owner's failure to comply with this Section 7 shall be a material breach of this Agreement.

8. Indemnification

Owner agrees and undertakes to indemnify and hold the City, and its respective agents, employees, successors, and assigns, harmless from any liability, loss, costs, damages or expenses, including attorneys' fees, which the City may suffer or incur as a result of any claims or actions which may be brought by any person or entity arising out of this Agreement and which accrued prior to the dedication to the City of the Dedicated Improvements. If any action is brought against the City or its respective agents, employees, successors, or assigns, in connection with this Agreement for claims accruing prior to the dedication to the City of the Dedicated Improvements, Owner agrees to defend such action or proceedings at its own expense and to pay any judgment rendered therein.

9. Insurance

Until dedication to the City and acceptance by the City of the Dedicated Improvements, Owner, or the owner's contractor, at Owner's sole expense, shall maintain during the term of this Agreement commercial general liability insurance covering the Owner and the Dedicated Improvements in an amount not less than Five Million Dollars (\$5,000,000.00) per occurrence. Owner agrees to include the City as an additional insured on any such policy and provide to the City a certificate of insurance evidencing the same. To the extent that the City is harmed as a result of the Owner's connection to the City's water system for occurrences prior to dedication to the City of the Dedicated Improvements, Owner hereby grants the City first priority on any proceeds received from the Owner's insurance. Notwithstanding anything in this Agreement to the contrary, the City does not waive any governmental immunity or liability limitations available to it under Indiana law.

10. Assignment

This Agreement may not be assigned by the Owner without the express written consent of the City which such consent may be withheld for any reason. Any violation of this limitation shall terminate the City's obligation and forfeit the Owner's rights under this Agreement.

11. Governing Law

This Agreement shall be construed and interpreted according to the laws of the State of Indiana. It is further agreed that all provisions of law now or hereafter in effect relating to water and sewer service by the City shall be applicable to this Agreement.

12. Entire Agreement

This Agreement sets forth the entire agreement and understanding between the Owner and the City as to the subject matter hereof, and merges and supersedes all prior discussions, agreements, and understanding of any and every nature between them.

13. Corporate Authority

The person signing on behalf of the Owner represents that he/she has been duly authorized to execute this Agreement on behalf of said Owner.

(Remainder of page intentionally left blank)

IN WITNESS WHEREOF, the Owner and the City, through their duly authorized representatives, have caused this Agreement to be executed as of the date first written above. The Parties have read and understand the foregoing terms of this Agreement and do, by their respective signatures, hereby agree to its terms.

"OWNER"

By: 

Printed: Matthew Salamone

Title: Member/Partner

"CITY"

CITY OF SOUTH BEND, INDIANA
BOARD OF PUBLIC WORKS



Elizabeth A. Maradik, President



Gary A. Gilot, Member



Jordan V. Gathers, Member



Joseph R. Molnar, Member

ATTEST:



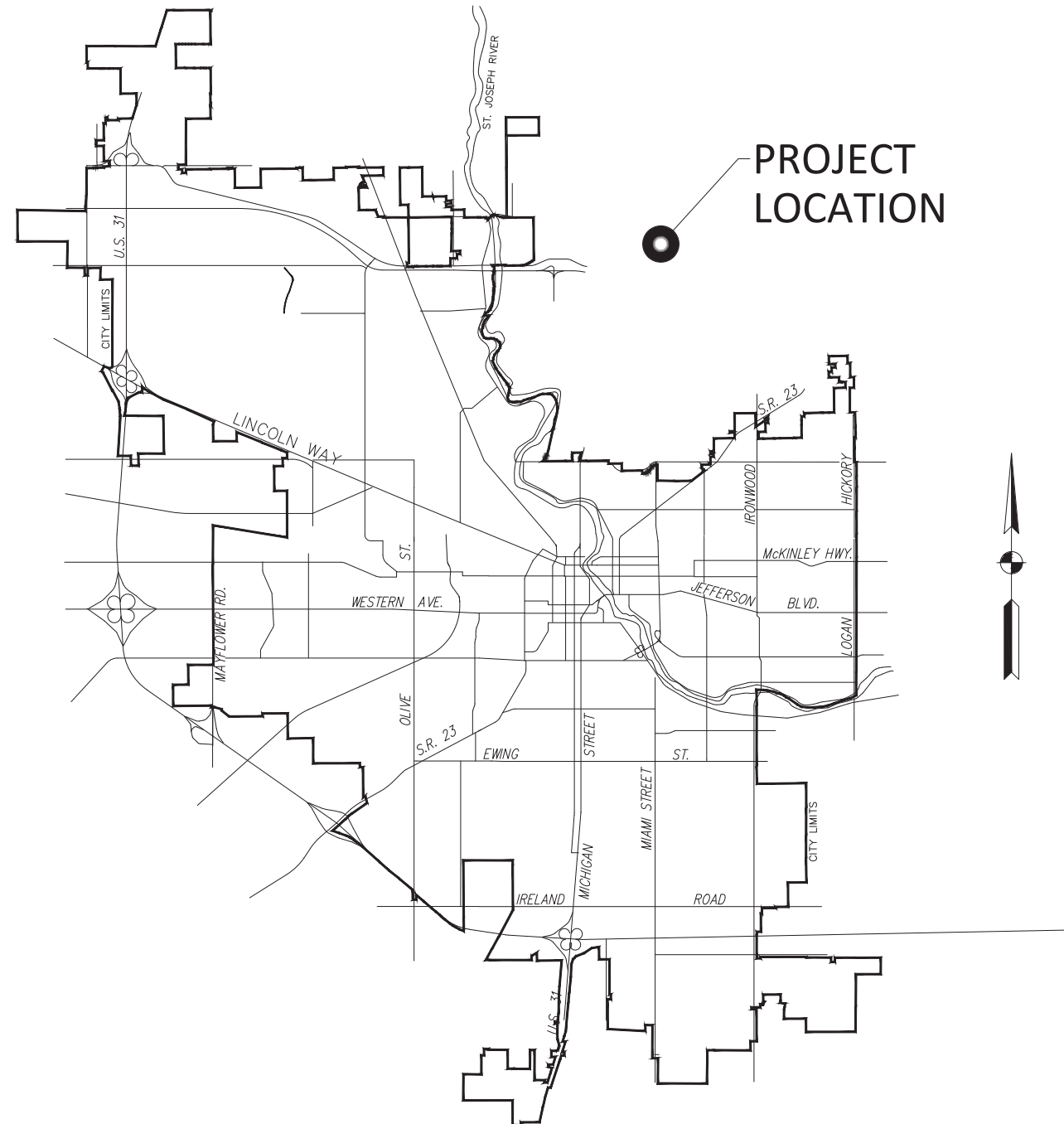
Anne Fuchs, Clerk

EXHIBIT A

DEDICATED IMPROVEMENTS

CITY OF SOUTH BEND, INDIANA DEPARTMENT OF PUBLIC WORKS

PROJECT SEWER WATER TRAFFIC STREET OTHER



BRACKEN FERN WATER MAIN EXTENSION AND SANITARY SEWER CONNECTION

FEBRUARY, 2021

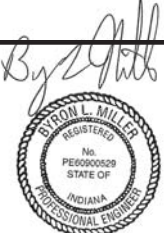
BOARD OF PUBLIC WORKS		RECOMMENDATIONS OF CITY STAFF	
CITY OF SOUTH BEND, INDIANA BOARD OF PUBLIC WORKS			
			2/10/21 DATE
Elizabeth A. Maradik, President	Jordan V. Gathers, Member	KYLE W. SILVEUS, PE	DESIGN AND ADMINISTRATION
			2/16/2021 DATE
Gary A. Gilot, Member	Joseph R. Molnar, Member	KARA M. BOYLES, P.E., PE	CITY ENGINEER
			2/10/21 DATE
Attest: Anne Fuchs, Clerk		KEN SMITH	WATER WORKS
			02/10/2020 DATE
		TOY VILLA	CONSTRUCTION MANAGER

TABLE OF CONTENTS		STANDARD DRAWINGS			
SHEET 1 - TITLE SHEET	C3.4 - UTILITY DETAILS	2-25	3-1	4-8	5-3
C0.1 - SITE DEMOLITION PLAN	C5.0-5.2 SPECIFICATIONS & DETAILS	2-29	3-5	4-9	5-4
C1.2 - SITE LAYOUT PLAN	C6.0-6.2 - SOIL EROSION CONTROL	2-35	3-10	4-11	5-6
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C3.0-3.3 - UTILITY PLAN/PROFILES		2-47	4-7	5-2	5-10

PLANS PREPARED BY:
DANCH, HARNER, & ASSOC., INC.
1643 COMMERCE DRIVE
SOUTH BEND, IN 46628

PLANS PREPARED FOR:
CITY OF SOUTH BEND
ENGINEERING DIVISION
1316 COUNTY-CITY BUILDING
SOUTH BEND, IN 46601

Danch, Harner & Associates, Inc.
DHA Land Surveyors • Professional Engineers
Landscape Architects • Land Planners
Office: (574)234-4003 / (800)594-4003 • Fax: (574)234-4119
1643 Commerce Drive • South Bend, IN 46628



SHEETS
1 OF 17

CITY OF SOUTH BEND, INDIANA PREVAILING SPECIFICATIONS LATEST EDITION,
TO BE USED WITH THESE PLANS.

1800005 COVER.dwg
2-24-2020

**BOARD OF PUBLIC WORKS
AGENDA ITEM REVIEW REQUEST FORM**

Date	<u>February 15, 2021</u>	Department	<u>Engineering</u>
Name	<u>Kyle Silveus</u>	Phone Extension	
BPW Date	<u>February 23, 2021</u>		

Review and Approval Required Prior to Submittal to Board

Diversity Compliance and Inclusion Officer	<input type="checkbox"/>	Officer Name	
BPW Attorney	<input checked="" type="checkbox"/>	Attorney Name	<u>Clara McDaniels</u>
Dept. Attorney	<input type="checkbox"/>	Attorney Name	_____
Purchasing	<input type="checkbox"/>		_____

Check the Appropriate Item Type – Required for All Submissions

<input type="checkbox"/> Professional Services Agreement	<input type="checkbox"/> Contract	<input type="checkbox"/> Proposal	
<input type="checkbox"/> Open Market Contract	<input type="checkbox"/> Amendment/Addendum	<input type="checkbox"/> Special Purchase, QPA	
<input type="checkbox"/> Bid Opening	<input type="checkbox"/> Bid Award	<input type="checkbox"/> Req. to Advertise	<input checked="" type="checkbox"/> Title Sheet
<input type="checkbox"/> Quote Opening	<input type="checkbox"/> Quote Award	<input type="checkbox"/> Reject Bids/Quotes	
<input type="checkbox"/> Proposal Opening	<input type="checkbox"/> C/O & PCA No. _____	<input type="checkbox"/> PCA	
<input type="checkbox"/> Chg. Order, No. _____	<input type="checkbox"/> Traffic Control	<input type="checkbox"/> Resolution	
<input checked="" type="checkbox"/> Other: <u>Agreement</u>		<input type="checkbox"/> Ease./Encroach	

Required Information

Company or Vendor Name	<u>Four Horsemen Ventures, LLC</u>		
New Vendor	<input type="checkbox"/> Yes <input type="checkbox"/> If Yes, Approved by Purchasing		
	<input checked="" type="checkbox"/> No		
MBE/WBE Contractor	<input checked="" type="checkbox"/> MBE	Completed E-Verify Form Attached	<input type="checkbox"/> Yes
	<input type="checkbox"/> WBE		<input type="checkbox"/> No
Project Name	<u>Belle Terre Water Extension Agreement</u>		
Project Number	<u>DP19-049</u>		
Funding Source	<u>N/A</u>		
Account No.	<u>N/A</u>		
Amount	<u>N/A</u>		
Terms of Contract	_____		
Purpose/Description	<u>Outlines the terms for a public water main extension in Bracken Fern Court.</u>		

For Change Orders Only

Amount of	<input type="checkbox"/>	Increase	\$ _____	
	<input type="checkbox"/>	Decrease	(\$ _____)	
Previous Amount			\$ _____	
		Increase	_____ %	
Current Percent of Change:		Decrease	(_____ %)	
New Amount			\$ _____	
		Increase	_____ %	
Total Percent of Change:		Decrease	(_____ %)	
Time Extension Amount:			_____	
New Completion Date:			_____	

BELLE TERRE AT SOUTH BEND MAJOR



STRUCTURE CHART	
CI-1246 RIM ELEV. = 734.15 I.E. 12" RCP N. 730.53 I.E. 6" CPP E. 731.63 I.E. 12" RCP S. 730.43	ST-1248 RIM ELEV. = 735.82 I.E. 12" RCP N. 730.53 I.E. 18" RCP E. 730.53 I.E. 24" RCP W. 730.43
CI-2503 RIM ELEV. = 729.72 I.E. 12" RCP N. 725.82 I.E. 12" RCP S. 725.92	ST-2064 RIM ELEV. = 730.33 I.E. 12" RCP N. 725.63 I.E. 24" RCP E. 725.53 I.E. 24" RCP W. 725.33
CI-2526 RIM ELEV. = 730.36 I.E. 12" RCP N. 726.56 I.E. 12" RCP S. 726.66	ST-2065 RIM ELEV. = 730.97 I.E. 12" RCP N. 726.17 I.E. 24" RCP E. 725.97 I.E. 24" RCP W. 725.87
CI-2546 RIM ELEV. = 730.93 I.E. 12" RCP N. 727.16 I.E. 12" RCP S. 727.26	ST-2558 RIM ELEV. = 733.73 I.E. 12" RCP N. 728.93 I.E. 24" RCP E. 728.73 I.E. 24" RCP W. 728.63
CI-2557 RIM ELEV. = 732.71 I.E. 12" RCP N. 729.51 I.E. 12" RCP S. 729.61	ST-2547 RIM ELEV. = 731.57 I.E. 12" RCP N. 726.87 I.E. 24" RCP E. 726.77 I.E. 24" RCP W. 726.67

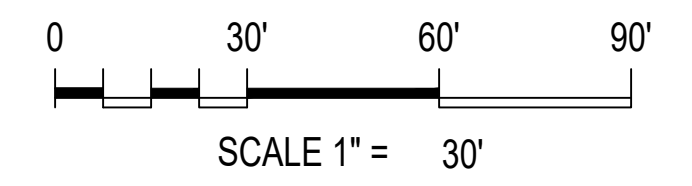


GENERAL NOTES

- ALL LOTS ARE TO BE SERVICED BY MUNICIPAL WATER AND PRIVATE SANITARY SEWER. SANITARY SEWER TO BE BUILT TO SB STANDARDS.
- NO SUBSTITUTION IN ANY MATERIALS OR ANY DEVIATION IN THE PLANS IS PERMITTED WITHOUT WRITTEN APPROVAL OF THE ENGINEER.
- WATER MAIN AND SANITARY SEWER APPURTENANCES SHALL BE FURNISHED, INSTALLED, AND TESTED IN ACCORDANCE WITH CURRENT CONSTRUCTION SPECIFICATIONS OF SOUTH BEND.
- NO WORK SHALL BE PERFORMED IN THE RIGHT-OF-WAY LIMITS UNTIL APPROVED PLANS HAVE BEEN OBTAINED FROM ST. JOSEPH COUNTY AND SOUTH BEND.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS, INCLUDING UTILITY PERMITS FROM THE ST. JOSEPH COUNTY ENGINEERING AND SOUTH BEND ENGINEERING DEPARTMENTS.
- ALL UTILITIES SUCH AS NATURAL GAS, ELECTRIC, TELEPHONE, AND CABLE TELEVISION SHALL BE UNDERGROUND.
- CONTRACTOR SHALL PERFORM COMPACTION ACCORDING TO GOVERNING AGENCIES STANDARDS.
- PRIOR TO COMMENCING ACTIVITIES, CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES FOR UNDERGROUND UTILITIES CONDUITS AND PIPING.
- ANY DISTURBED PAVEMENT OR CONCRETE CURB TO BE REMOVED, SHALL BE SAW CUT AND REPLACED USING SAME TYPE MATERIAL AND BROUGHT BACK TO ITS ORIGINAL GRADE AND ALIGNMENT.

KEYNOTES

- ASPHALT PAVEMENT (SHADED AREA)
- CONCRETE CURB AND GUTTER, TYPE A
- STANDARD (STRAIGHT) CURB
- DEPRESSED CURB FOR PRIVATE DRIVES ACCESS LANE (5' TRANSITION, SOUTH SIDE)
- MATCH EXISTING CURB
- CONCRETE CURB AND GUTTER, TYPE C (MATCH ADJACENT EX. CURB FACE HEIGHT)
- PRIVATE ACCESS LANE, 20' WIDE
1 1/2" HMA SURFACE
2" HMA BASE (2 LIFTS)
6" COMPACTED AGG. BASE, #53
- CONSTRUCTED BERM, SEE SHEET C2.0 FOR TYP. SECTION



EXISTING LEGEND	
△ SET P.K. NAIL	● FOUND IRON
(M) MEASURED DISTANCE	○ CAPPED REBAR
(R) RECORD DISTANCE	IN. REG. F-0044
	MI. REG. #22436
☆ PINE TREE	⊗ SOIL BORING
⊙ BUSH	⊙ WATER MANHOLE
⊙ TREE	⊙ WATER METER
⊙ FOUNTAIN/RR.	⊙ END SECTION
⊙ BOLLARD/POLE	⊙ ELEC. VAULT
⊙ LIGHT POLE	⊙ ELEC. TRANSFORMER
⊙ UTILITY POLE	⊙ PHONE VAULT
⊙ GUY ANCHOR	⊙ SPOT ELEVATION
⊙ SIGN	⊙ MAILBOX
⊙ WELL	⊙ A/C UNIT
⊙ VALVE	⊙ EX. ELEVATION
⊙ FIRE HYDRANT	⊙ WIRE FENCE
⊙ CURB INLET	⊙ CHAIN LINK FENCE
⊙ DRYWELL	⊙ WOOD FENCE
⊙ SANITARY MANHOLE	⊙ ONE ELECTRIC
⊙ STORM MANHOLE	⊙ TWO ELECTRIC
⊙ CLEAN-OUT	⊙ UT PHONE
⊙ FIBER OPTIC MANHOLE	⊙ UT GAS
	⊙ CTV CABLE TV
	⊙ W WATER
	⊙ FIBER OPTIC
	⊙ STORM LINE
	⊙ SANITARY LINE

GENERAL SURVEY DISCLAIMER NOTES:

THE INFORMATION SHOWN ON THIS DRAWING IS INTENDED FOR THE CLIENT ONLY. ANY REUSE WITHOUT WRITTEN VERIFICATION AND ADAPTATION BY THE LAND SURVEYOR FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO THE LAND SURVEYOR.

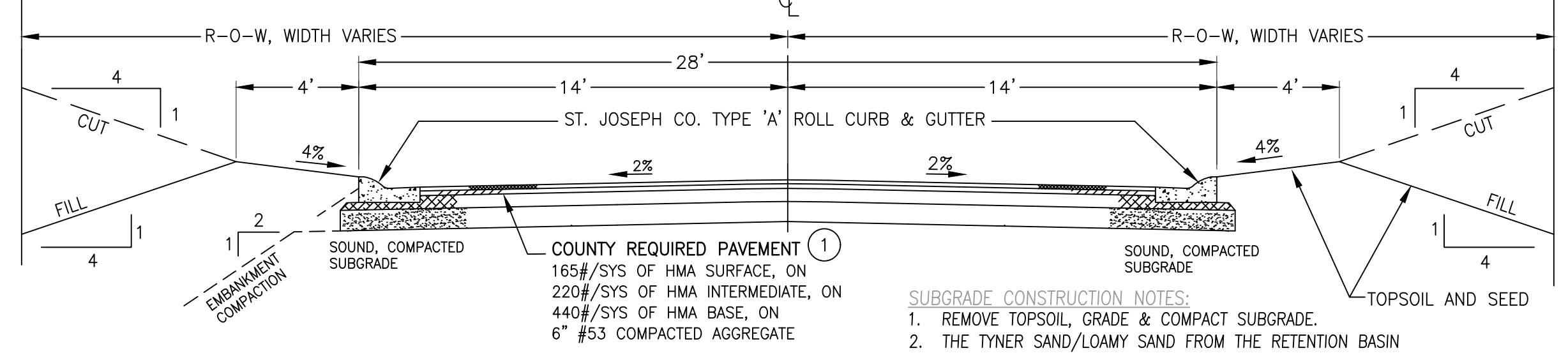
ANY UTILITY OR EASEMENT LOCATIONS, IF SHOWN, ARE APPROXIMATE. THE CLIENT MUST FIELD VERIFY UTILITY LOCATIONS WITH THE RESPECTIVE UTILITY COMPANY. THIS LAND SURVEYOR ASSUMES NO LIABILITY FOR THE ACCURACY OF THE LOCATION OR SIZE OF EXISTING UTILITIES OR THE EXISTENCE OR NONEXISTENCE OF ADDITIONAL UNDERGROUND UTILITIES OR STRUCTURES.

NO IMPROVEMENTS SHOULD BE MADE ON THE BASIS OF THIS PLAT ALONE. FIELD MONUMENTATION OF CRITICAL POINTS SHOULD BE ESTABLISHED PRIOR TO COMMENCEMENT OF ANY AND ALL CONSTRUCTION. FOR BUILDING LINES, EASEMENTS AND OTHER RESTRICTIONS NOT SHOWN HEREON REFER TO YOUR DEED, ABSTRACT, TITLE POLICY, CONTRACTS AND LOCAL BUILDING, ZONING AND SUBDIVISION ORDINANCES.

UNLESS SPECIFICALLY SHOWN HEREON, THIS SURVEY DOES NOT PURPORT TO INDICATE THE PRESENCE OR ABSENCE OF HAZARDOUS OR ENVIRONMENTALLY INJURIOUS MATERIALS. THE SURVEYOR EXPRESSLY DISCLAIMS ANY RESPONSIBILITY OR LIABILITY FOR THE SAME.

ANY INFORMATION ON THIS DRAWING IS NOT INTENDED TO BE SUITABLE FOR REUSE BY ANY PERSON, FIRM OR CORPORATION OR ANY OTHERS ON EXTENSION OF THIS PROJECT OR FOR ANY USE ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION AND ADOPTION BY THE ENGINEER, ARCHITECT OR SURVEYOR FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO THE ENGINEER, ARCHITECT OR SURVEYOR.

ALL UNDERGROUND UTILITIES MUST BE FIELD VERIFIED BY THE CONTRACTOR BEFORE ANY CONSTRUCTION MAY BEGIN.



TYPICAL BRACKEN FERN CROSS SECTION
SCALE: 1/4" = 1'-0"

- SUBGRADE CONSTRUCTION NOTES:**
- REMOVE TOPSOIL, GRADE & COMPACT SUBGRADE.
 - THE TYNER SAND/LOAMY SAND FROM THE RETENTION BASIN EXCAVATION SHALL BE USED TO CONSTRUCT THE ROADWAY SUBBASE. CLAYEY LOAM MAY BE PLACED BEYOND THE EMBANKMENT LIMIT.
 - COMPACTION IN CUTS SHALL BE TO 100% OF M.D.D.
 - COMPACTION IN FILLS SHALL BE TO 95% OF M.D.D.
 - COMPACTED EMBANKMENT & SUBGRADE SHALL EXTEND OUTWARD AT A 2:1 SLOPE FROM THE TOP-BACK OF CURB.

LAYOUT PLAN

DATE 2/22/19	DRAWN BY: BLM
SCALE 1" = 30'	CHECKED BY: MJD
FILE # 180120.5	PROJ. MGR: BLM

REVISIONS	
DATE	BY

Danch, Harmer & Associates, Inc.
Land Surveyors • Professional Engineers
Landscape Architects • Land Planners

DHA

By: *[Signature]*

1843 Commerce Drive • South Bend, IN 46628
Office: (574)334-4003 / (800)994-4003 • Fax: (574)334-4119



2017-2-09 10:01:01 AM UPDATED BY: HAMES/AMW 2/29/2017 11:00 AM SWM

STORM SEWER SYSTEM DESIGN																									For St Joseph Co.						
Map Area ID		Structure No.	D.S. STRUCT.	ADDED AREA (AT U.S. INLETS)	TOTAL AREA	RUNOFF COEF. C	Impervious Area (Sq Ft)	TOTAL IMPERVIOUS AREA (TOTAL C A I)	TIME Tc	RAINFALL INTENSITY I(10-yr)	PEAK FLOW Q = CIA	PIPE CAPACITY FLOWING FULL	LENGTH OF PIPE	PIPE SIZE PER DEFAULT SLOPE	DIAMETER OF PIPE	PIPE AREA (GROSS)	Mannings n	PIPE SLOPE PER MANNINGS	SLOPE OF PIPE	MANNING VELOCITY	TIME OF FLOW	Vf	MANHOLE DROP	UPPER END (IE.)	LOWER END	U.S. TIC EL.	depth to inv.	T.O.P. (Inv. Cr.)	COVER	EGL SLOPE	HYDRAULIC Friction INCREMENT
	1	2	0.87	0.87	0.60	0.52	30.00	1.20	0.63	2.75	62	7.1	12	0.79	0.013	0.031	0.600	3.51	0.29	0.80	0.00	726.58	726.21	730.28	3.70	727.58	2.51	0.031	0.0192		
	2	3	0.16	1.03	0.60	0.10	0.62	30.29	1.20	0.74	2.75	63	7.6	12	0.79	0.013	0.043	0.600	3.51	0.30	0.94	0.00	726.21	725.83	729.87	3.66	727.21	2.47	0.043	0.0273	
	3	4	0.38	1.41	0.60	0.23	0.85	30.59	1.20	1.02	2.75	78	8.5	12	0.79	0.013	0.081	0.600	3.51	0.37	1.29	0.00	725.83	725.36	729.50	3.67	726.83	2.48	0.081	0.0633	
	4	4A	0.00	1.41	0.60	0.00	0.00	30.96	1.20	1.02	4.20	30	8.5	12	0.79	0.013	0.081	1.400	5.37	0.09	1.29	0.00	725.36	724.94	730.08	4.72	726.36	3.53	0.081	0.0244	
	5	6	0.92	0.92	0.60	0.55	0.55	30.00	1.20	0.66	2.51	40	7.3	12	0.79	0.013	0.035	0.500	3.21	0.21	0.84	0.00	726.35	726.15	730.64	4.29	727.35	3.10	0.035	0.0138	
	6	7	0.23	0.23	0.60	0.14	0.69	30.21	1.20	0.83	2.51	73	7.9	12	0.79	0.013	0.054	0.500	3.21	0.38	1.05	0.00	726.15	725.79	730.15	4.00	727.15	2.81	0.054	0.0394	
	7	8	0.41	0.64	0.60	0.25	0.94	30.59	1.20	1.12	2.51	28	8.9	12	0.79	0.013	0.099	0.500	3.21	0.15	1.43	0.00	725.79	725.65	729.71	3.93	726.79	2.74	0.099	0.0278	
	8	8A	0.17	0.81	0.60	0.10	1.04	30.73	1.19	1.24	4.20	58	9.2	12	0.79	0.013	0.120	1.400	5.37	0.18	1.57	0.00	725.65	724.83	729.71	4.07	726.65	2.88	0.120	0.0697	

INLET CALCULATIONS

Upstream		Downstream		Longitudinal Grade, S _L	Cross Slope, S _x	Lane Width (ft)	Gutter Width (ft)	Allowable Spread (ft)	Allowable Depth (ft)	Inlet Parameters						Q _{total} (cfs) [includes previous bypass]	Inlet Calculations							
Structure Number	Station	Structure Number	Station							Inlet Type	Grate Width (ft)	Grate Length (ft)	Drainage Area (sq ft)	Area (ac)	Runoff Coefficient, C		Rainfall Intensity (in/hr)	Flow, Q (cfs)	Manning's Roughness Coefficient, n	Depth, d (ft)	Spread, T (ft)	Efficiency of Inlet, E	Grate Capacity, Q _g (cfs)	Bypass Flow, Q _{over} (cfs)
-	-	1	-	0.60%	2.0%	12.0	1.0	8.0	0.16	R-3501-L1A	1.24	1.93	22110	0.51	0.6	3.10	0.94	0.94	0.013	0.14	7.19	0.505	0.48	0.47
1	-	2	-	0.60%	2.0%	12.0	1.0	8.0	0.16	R-3501-L1A	1.24	1.93	6940	0.16	0.6	3.10	0.30	0.76	0.013	0.13	6.64	0.536	0.41	0.35
2	-	3	-	0.00%	2.0%	12.0	1.0	8.0	0.16	R-3287-15	1.88	3.75	16380	0.38	0.6	3.10	0.70	1.05	0.013	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
-	-	5	-	1.64%	2.0%	12.0	1.0	8.0	0.16	R-3501-L1A	1.24	1.93	22650	0.52	0.6	3.10	0.97	0.97	0.013	0.12	6.01	0.518	0.50	0.47
-	-	6	-	1.07%	2.0%	12.0	1.0	8.0	0.16	R-3501-L1A	1.24	1.93	9560	0.22	0.6	3.10	0.41	0.41	0.013	0.09	4.71	0.642	0.26	0.15
6	-	7	-	0.00%	2.0%	12.0	1.0	8.0	0.16	R-3287-15	1.88	3.75	16070	0.37	0.6	3.10	0.69	0.83	0.013	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
-	-	8	-	0.00%	2.0%	12.0	1.0	8.0	0.16	R-3501-L1A	1.24	1.93	7430	0.17	0.6	3.10	0.32	0.32	0.013	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

SAG INLET CALCULATIONS

Structure Number	Station	Cross Slope, S _x	Side 1 Flow, Q1 (cfs)	Side 2 Flow, Q2 (cfs)	Flow, Q (cfs)	Inlet Type	Grate Perimeter (ft)	Depth, d (ft)	Spread, T (ft)
3	0	2.0%			1.05	R-3287-15	5.63	0.16	7.8
7	0	2.0%			0.83	R-3287-15	5.63	0.13	6.6
8	0	2.0%			0.32	R-3501-L1A	3.17	0.10	5.2

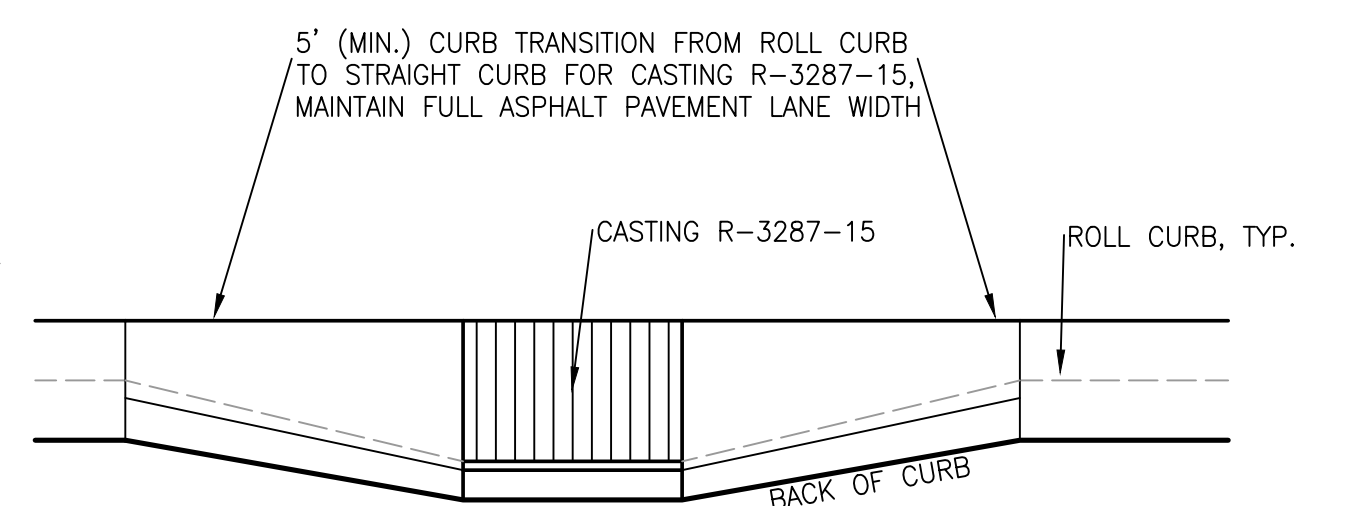
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CURB TRANSITION DETAIL
 SCALE: NTS

STORM SEWER DESIGN CALCULATIONS

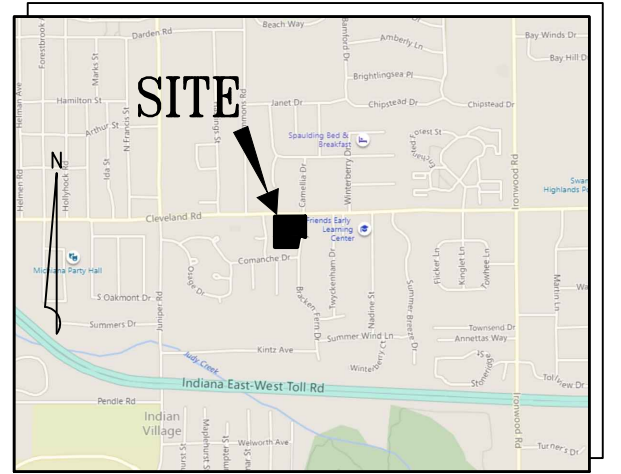
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SCALE 1" = 40'	CHECKED BY: BLM	DATE	BY	DESCRIPTION	
FILE # 180120.5	PROJ. MGR: MJD	4/16/19	BLM	CURB TRANSITION DETAIL ADDED	

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SHEET
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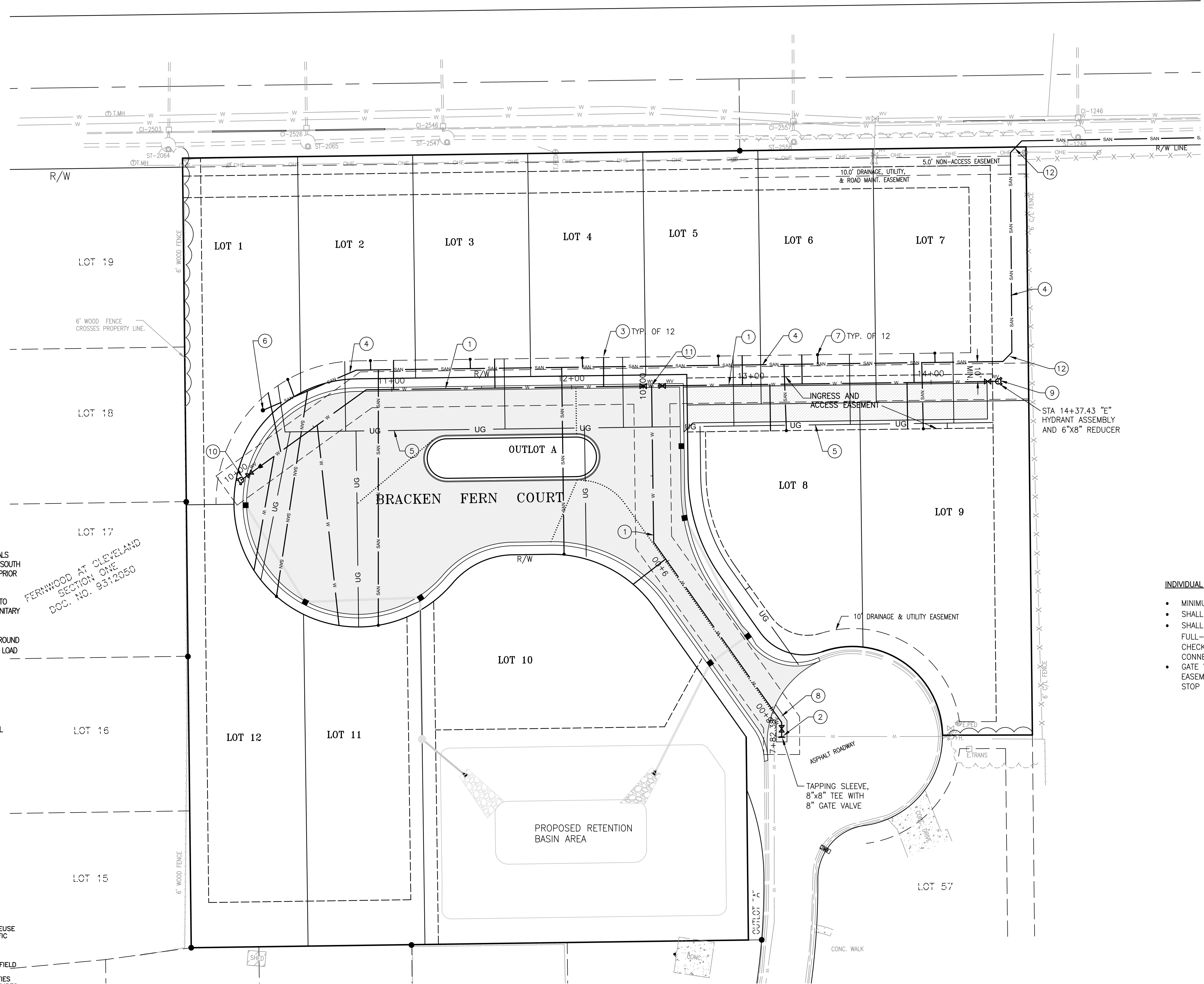
BELLE TERRE AT SOUTH BEND MAJOR



SITE LOCATION MAP
N.T.S.

PROPOSED LEGEND	
■	PROPOSED CATCH BASIN
●	PROPOSED CLEAN OUT
○	PROPOSED HYDRANT
—	PROPOSED LIGHT
○	PROPOSED MANHOLE
○	PROPOSED VALVE
○	PROPOSED POLE
○	PROPOSED DRY WELL
▶	PROPOSED END SECTION
XXX.XX	PROPOSED ELEVATION
TW	TOP OF WALL
TA	TOP OF ASPHALT
TC	TOP OF CURB
BC	BOTTOM OF CURB
—	PROPOSED UTILITY
—	PROPOSED CONTOUR

EXISTING LEGEND	
△	SET P.K. NAIL
☆	PINE TREE
○	BUSH
○	TREE
○	FOUNTAIN/IRR.
○	BOLLARD/POLE
○	LIGHT POLE
○	UTILITY POLE
○	GUY ANCHOR
○	SIGN
○	WELL
○	VALVE
○	FIRE HYDRANT
○	CURB INLET
○	DRYWELL
○	SANITARY MANHOLE
○	STORM MANHOLE
○	CLEAN-OUT
○	FIBER OPTIC MANHOLE
●	FOUND IRON
(M)	MEASURED DISTANCE
(R)	RECORD DISTANCE
○	SET FLUSH 5/8" CAPPED REBAR INL. RES. F-0344 MI. REG. #22436
○	GAS METER
○	WATER MANHOLE
○	ELEC. VAULT
○	ELEC. TRANSFORMER
○	PHONE VAULT
○	SPOT ELEVATION
○	SOIL BORING
○	WATER METER
○	CABLE PED.
○	PHONE PED.
○	ELEC. PED.
○	MAILBOX
○	A/C UNIT
—	EX. ELEVATION
—	WIRE FENCE
—	CHAIN LINK FENCE
—	WOOD FENCE
—	ELECTRIC
—	ELECTRIC
—	PHONE
—	GAS
—	CABLE TV
—	WATER
—	FIBER OPTIC
—	STORM LINE
—	SANITARY LINE



- UTILITY KEYNOTES:**
- 8" WATER MAIN
 - 8"x 8" TEE, TAP, AND VALVE
 - 1" COPPER WATER SERVICE LINE, TYP.
 - 3" SANITARY FORCE MAIN
 - NATURAL GAS SERVICE, FINAL LAYOUT PER GAS CO.
 - FORCE MAIN CLEANOUT IN STRUCTURE
 - 1 1/4" SAN. SERVICE, SDR 21 PIPE, TYP.
 - REMOVE/REPLACE FULL DEPTH PAVEMENT (FULL LANE WIDTH) FOR WATER MAIN CONNECTION, SAWCUT EDGES
 - FIRE HYDRANT AND VALVE ASSEMBLY PER SB WATER WORKS STDS.
 - FIRE HYDRANT AND VALVE ASSEMBLY WITH 8"x6" REDUCER PER SB WATER WORKS STDS.
 - 8"x8" TEE AND TWO 8" VALVES
 - 2 - 45° BENDS WITH THRUST BLOCKS

- UTILITY NOTES:**
- INSTALL WATER MAIN, TAP, VALVES, AND HYDRANTS USING METHODS AND MATERIALS PER SOUTH BEND STANDARD SPECIFICATIONS. COORDINATE ALL ACTIVITIES WITH SOUTH BEND WATER DEPARTMENT. FIELD VERIFY ALL EXISTING WATER LINE LOCATIONS PRIOR TO CONSTRUCTION.
 - FIELD VERIFY LOCATION, SIZE, AND INVERT OF EXISTING SANITARY SEWER PRIOR TO INSTALLATION. NOTIFY ENGINEER OF ANY CONFLICTS PRIOR TO INSTALLATION. SANITARY SEWER CONNECTIONS PER CITY OF SOUTH BEND STANDARD SPECIFICATIONS.
 - PROPOSED ELECTRIC SERVICE/TRANSFORMER: "POWER CO." TO PROVIDE UNDERGROUND SERVICE. CONTRACTOR TO COORDINATE WITH ARCHITECT AND "POWER CO." FOR LOAD REQUIREMENTS, INSTALLATION AND SPECIFICATIONS.
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 - A MINIMUM DISTANCE OF 18" VERTICAL SHALL BE MAINTAINED WHENEVER STORM SEWER AND/OR SANITARY SEWER CROSS WATER MAIN. MAINTAIN 10' HORIZONTAL CLEARANCE OF WATER MAIN FROM ANY SEWER MAIN OR FORCE MAIN.
 - ANY UTILITY CONNECTION WITHIN A PUBLIC STREET SHALL HAVE FULL DEPTH PAVEMENT REPLACEMENT FOR ENTIRE LANE WIDTH.
 - LOCATE AND PLUG (ABANDON) SANITARY SEWER LATERAL FROM DEMOLISHED RESIDENTIAL HOMES.
 - INDIVIDUAL WATER VALVES SHALL BE LOCATED IN GRASS AREAS, NOT WITHIN CONCRETE/ASPHALT BETWEEN THE WATER MAIN AND THE BUILDINGS.

- INDIVIDUAL LOT SEWER SERVICE LINE NOTES:**
- MINIMUM COVER DEPTH 5 FEET.
 - SHALL INCLUDE 3"x1-1/4" "WYE" CONNECTION TO F.M. (NO TEE CONNECTIONS)
 - SHALL INCLUDE 3"x 1-1/4" WYE, 1-1/4" NIPPLE, 1"- 45° BEND, 1-1/4" FULL-FLOW BALL TYPE STOP VALVE, VALVE BOX W/COVER MARKED "SEWER", CHECK VALVE, TEMPORARY CAP, TRACER WIRE, AND MARKER FOR FUTURE CONNECTION BY HOMEOWNER.
 - GATE VALVE & CHECK VALVE SHALL BE LOCATED WITHIN THE UTILITY & DRAINAGE EASEMENT. CHECK VALVE SHALL BE PRESSURE TESTED, AFTER PRESSURE TESTING, STOP VALVE SHALL BE CLOSED.

FERNWOOD AT CLEVELAND
SECTION ONE
DOC. NO. 9312050

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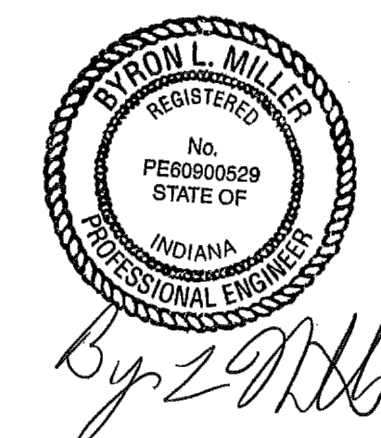
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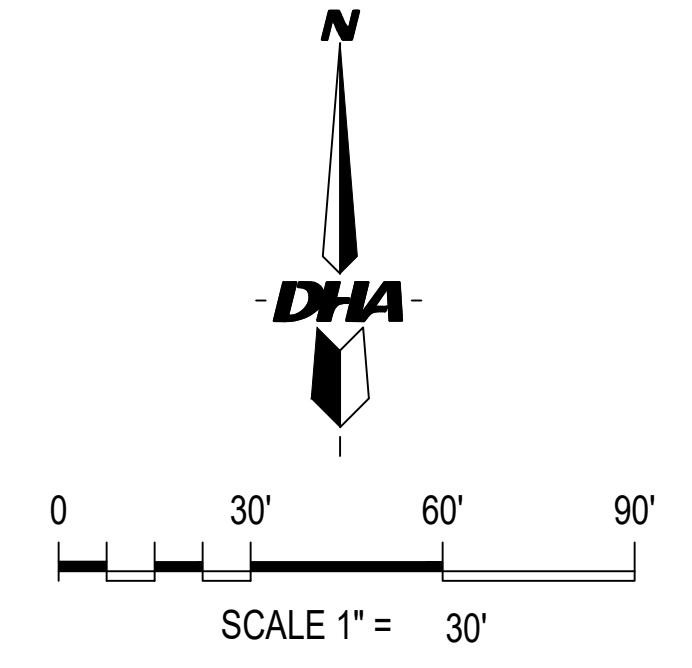


OVERALL UTILITY PLAN

DATE	2/22/19
SCALE	1" = 30'
FILE #	180120.5
DRAWN BY:	BLM
CHECKED BY:	MJD
PROJ. MNGR:	BLM

REVISIONS			
DATE	BY	DESCRIPTION	REVISIONS
2/14/20	BLM	LOW PRESSURE SEWER SYSTEM	

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C3.0



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DHA

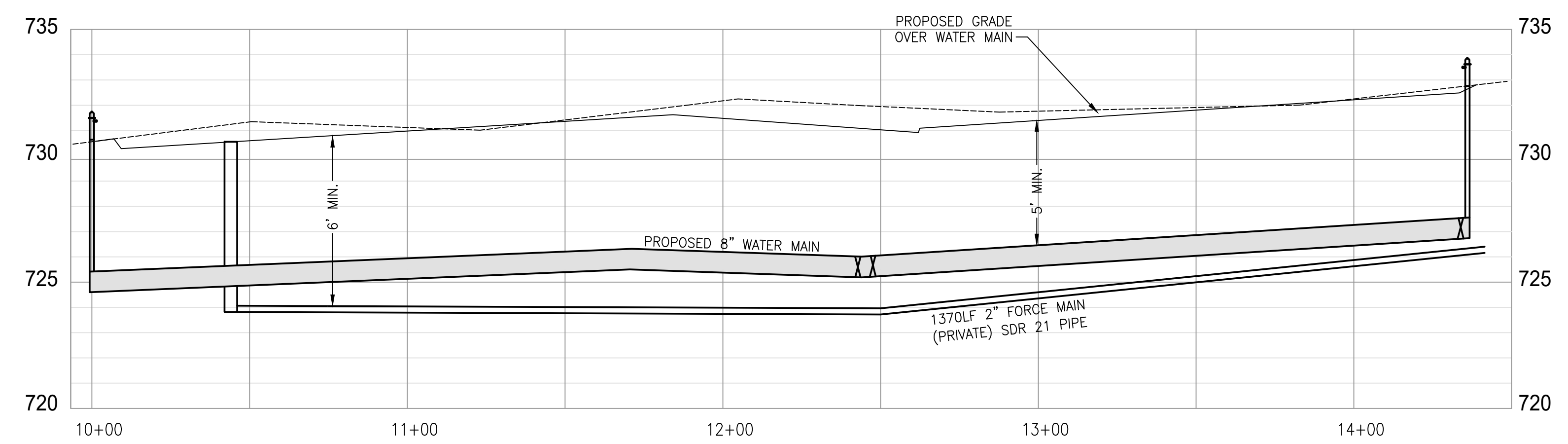
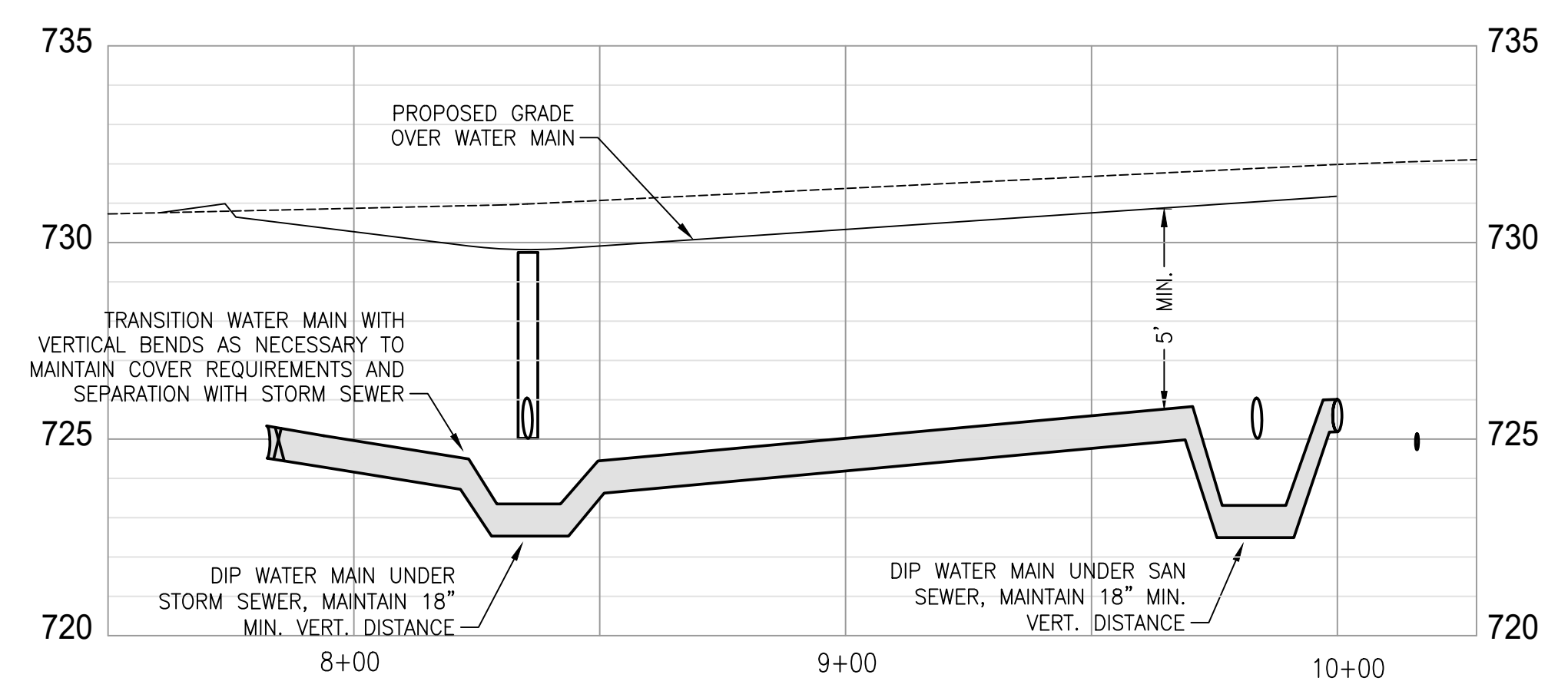
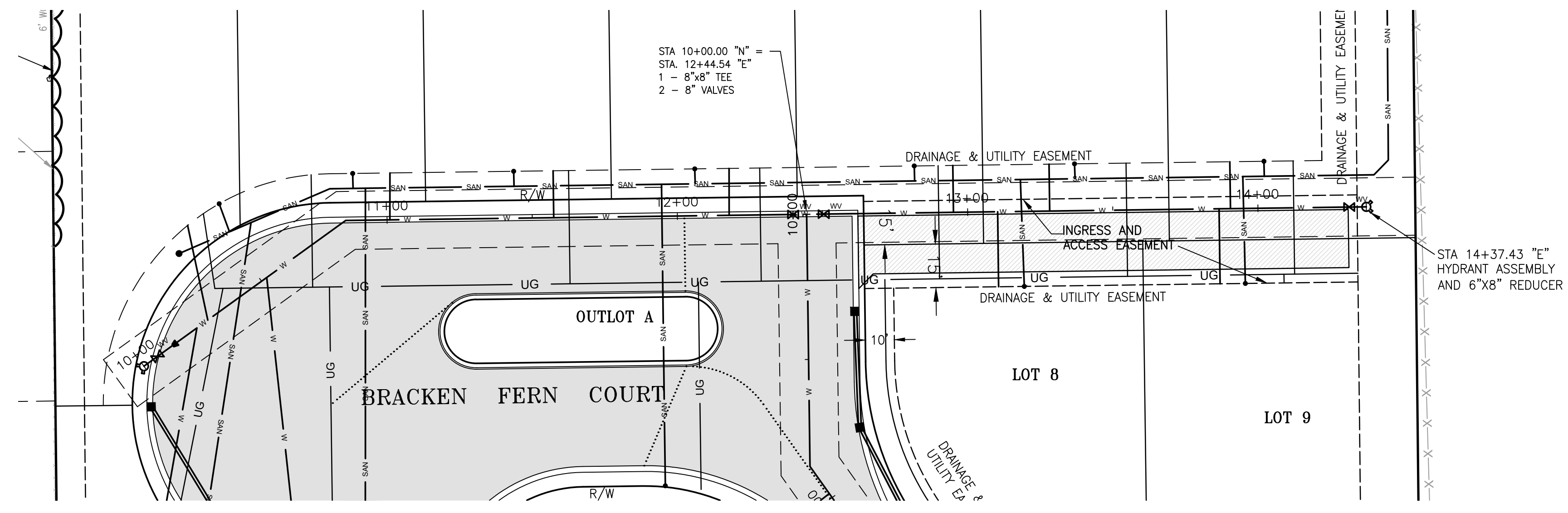
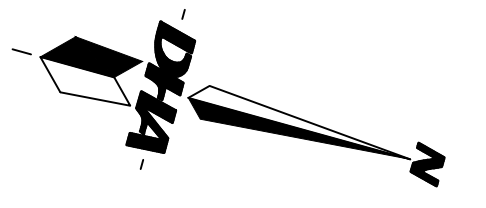
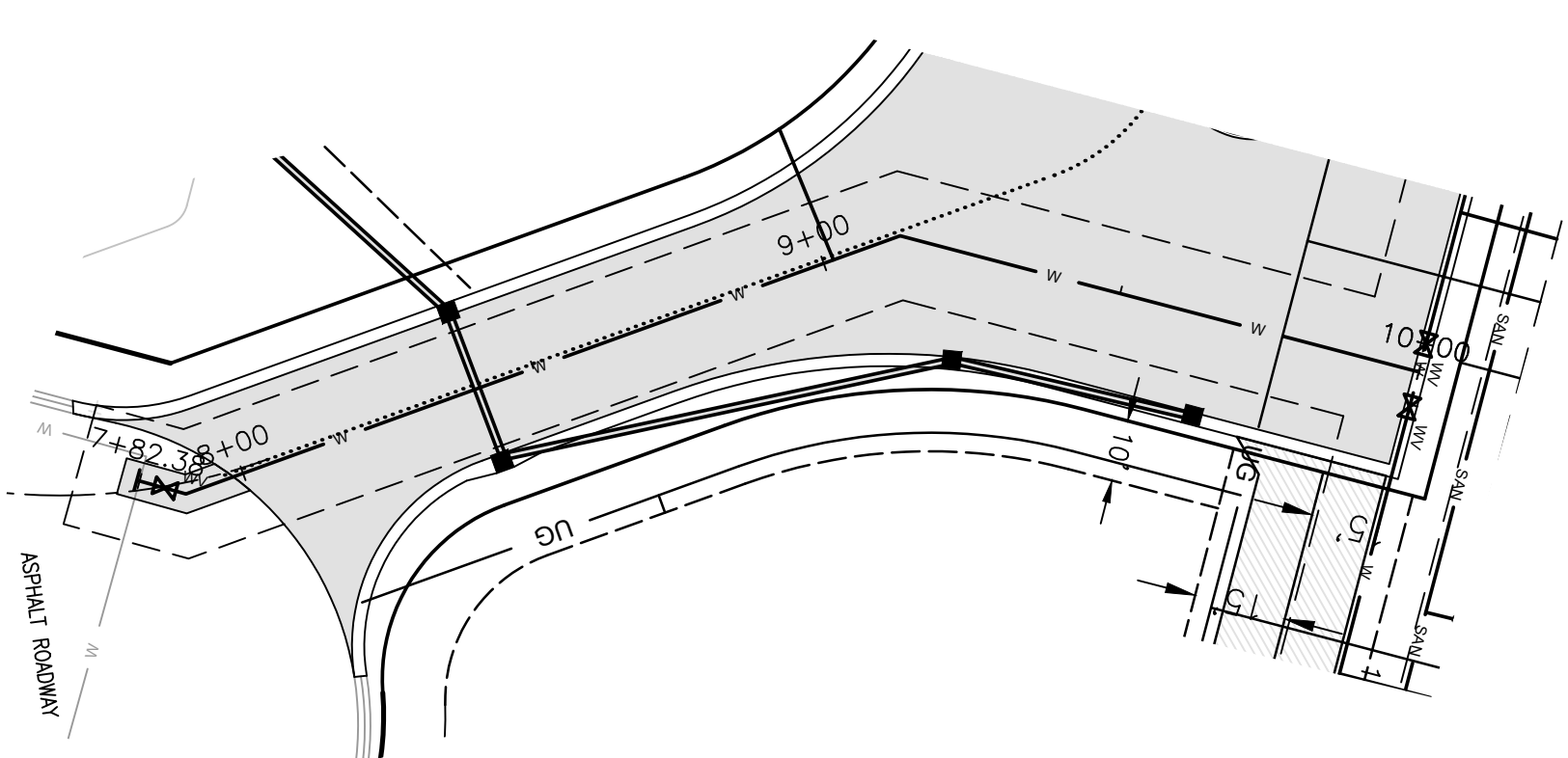
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2017-2-29 10:01:01 P: 030 updated: 030 H:\MCS\404
2/29/2017 11:00 AM SW

BELLE TERRE AT SOUTH BEND MAJOR



SEE SHEET C3.2 FOR CONTINUATION OF FORCE MAIN PLAN AND PROFILE



Byron L. Miller

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WATER MAIN PLAN AND PROFILE

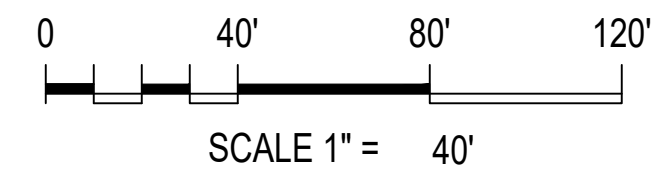
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FILE #	180120	PROJ. MANGR:	BLM				

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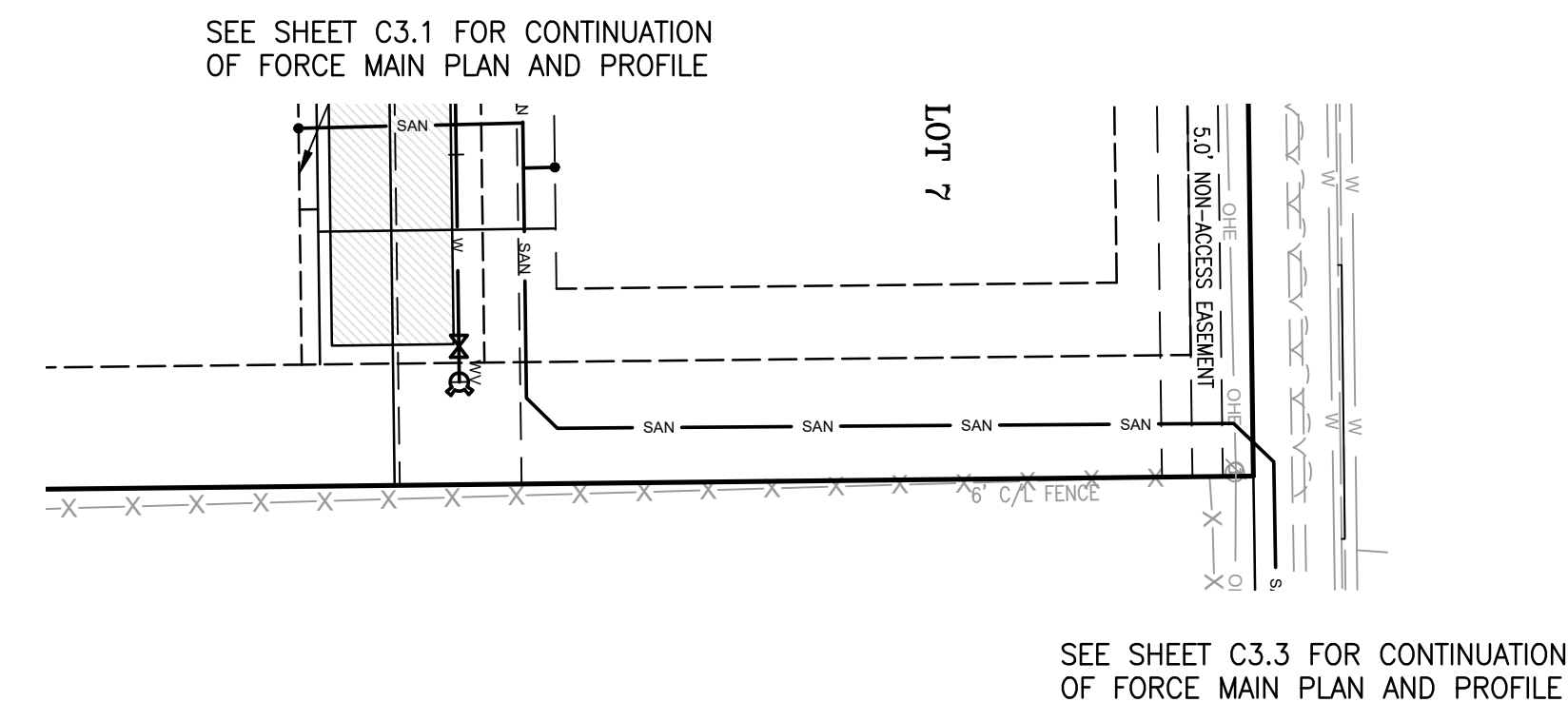
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BELLE TERRE AT SOUTH BEND MAJOR



PROPOSED LEGEND	
■	PROPOSED CATCH BASIN
●	PROPOSED CLEAN OUT
○	PROPOSED HYDRANT
—	PROPOSED LIGHT
○	PROPOSED MANHOLE
⊗	PROPOSED VALVE
⊗	PROPOSED POLE
⊗	PROPOSED DRY WELL
▶	PROPOSED END SECTION
XXX.XX	PROPOSED ELEVATION
TW	TOP OF WALL
TA	TOP OF ASPHALT
TC	TOP OF CURB
BC	BOTTOM OF CURB
—	PROPOSED UTILITY
—	PROPOSED CONTOUR

EXISTING LEGEND					
△	SET P.K. NAIL	●	FOUND IRON	○	SET FLUSH 5/8" CAPPED REBAR
☆	PINE TREE	(M)	MEASURED DISTANCE	○	INL. REG. F-0344
⊙	BUSH	(R)	RECORD DISTANCE	○	ML. REG. #22436
⊙	TREE	⊗	GAS METER	⊗	SOIL BORING
⊙	FOUNTAIN/IRR.	⊗	WATER MANHOLE	⊗	WATER METER
⊙	BOLLARD/POLE	⊗	ELEC. VAULT	⊗	CABLE PED.
⊙	LIGHT POLE	⊗	ELEC. TRANSFORMER	⊗	PHONE PED.
⊙	UTILITY POLE	⊗	PHONE VAULT	⊗	ELEC. PED.
⊙	GUY ANCHOR	⊗	SPOT ELEVATION	⊗	MAILBOX
⊙	SIGN	⊗	EX. ELEVATION	⊗	A/C UNIT
⊙	WELL	⊗	WIRE FENCE		
⊙	VALVE	⊗	CHAIN LINK FENCE		
⊙	FIRE HYDRANT	⊗	WOOD FENCE		
⊙	CURB INLET	—	ONE	—	ELECTRIC
⊙	DRYWELL	—	ONE	—	ELECTRIC
⊙	SANITARY MANHOLE	—	ONE	—	PHONE
⊙	STORM MANHOLE	—	ONE	—	GAS
⊙	CLEAN-OUT	—	ONE	—	CABLE TV
⊙	FIBER OPTIC MANHOLE	—	ONE	—	WATER
		—	ONE	—	FIBER OPTIC
		—	ONE	—	STORM LINE
		—	ONE	—	SANITARY LINE



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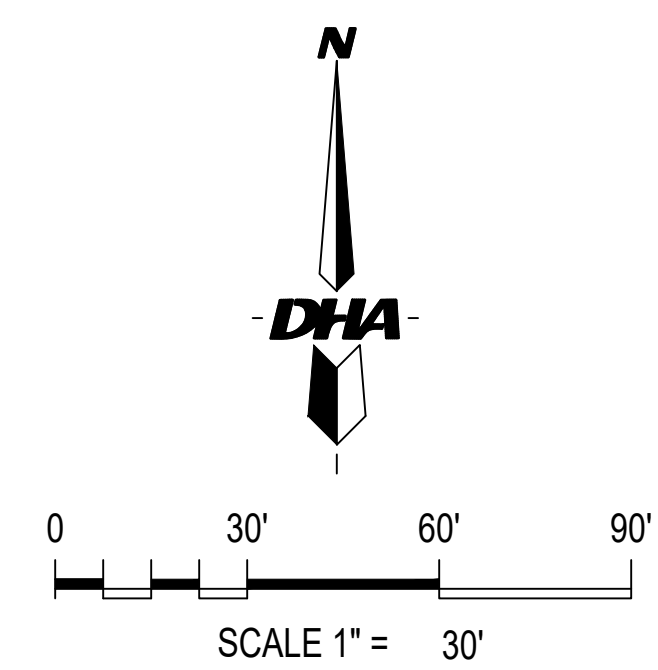
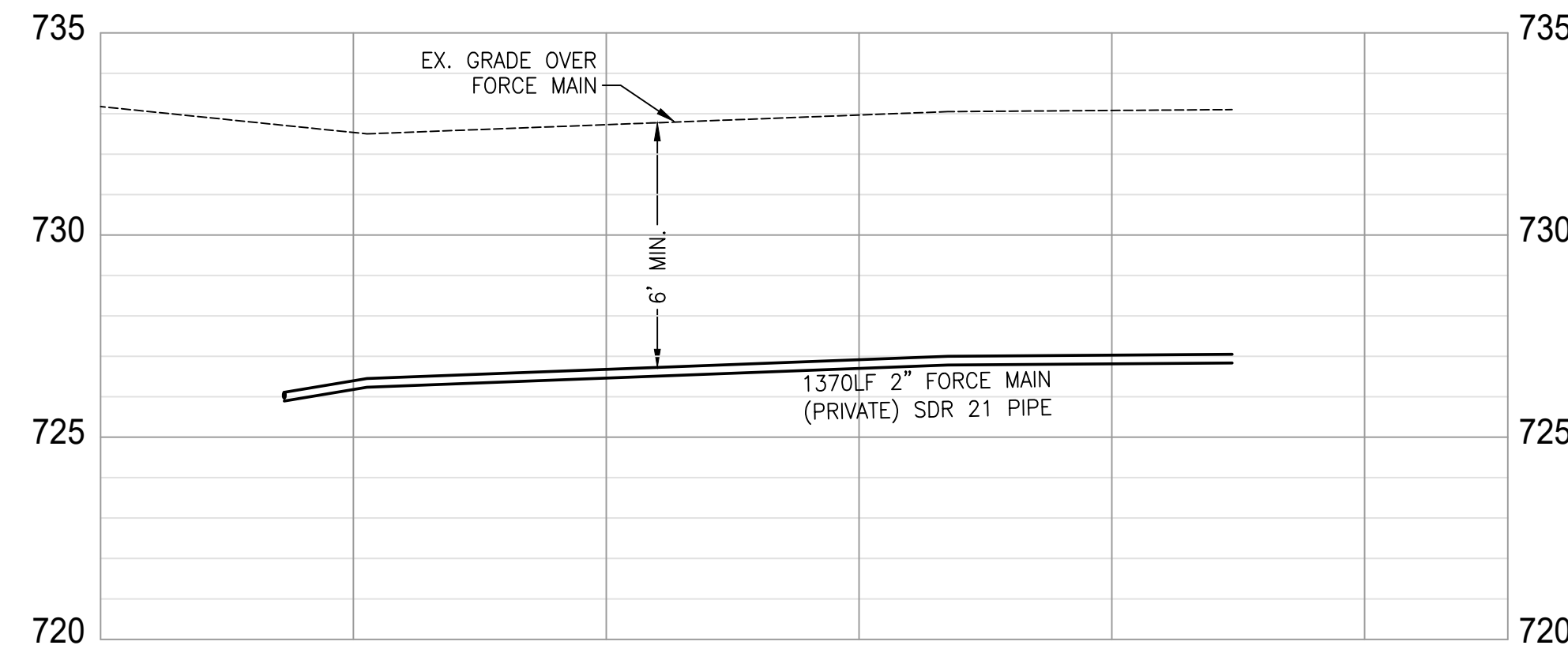
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ALL UNDERGROUND UTILITIES MUST BE FIELD VERIFIED BY THE CONTRACTOR BEFORE ANY CONSTRUCTION MAY BEGIN.



HOMEOWNER REQUIREMENTS:

- HOME WASTEWATER DISPOSAL SYSTEMS SHALL BE PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNER, INCLUDING BUT NOT LIMITED TO THE GRINDER PUMP SYSTEM, AND THE FORCE MAIN LEAD UP TO AND INCLUDING THE POINT OF CONNECTION TO THE HOMEOWNER ASSOCIATION'S CHECK VALVE WITHIN THE UTILITY AND DRAINAGE EASEMENT(S); HOME WASTEWATER DISPOSAL SYSTEMS (GRINDER PUMPS AND APPURTENANCES SHALL CONFORM TO THE FOLLOWING TECHNICAL REQUIREMENTS:
 - HOME WASTEWATER DISPOSAL SYSTEMS (GRINDER PUMPS) SHALL BE FERGUSON, 30"x96" SIMPLEX GRINDER STATION, LIBERTY LSG202M SYSTEMS, OR APPROVED EQUAL. SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS, AND CONFORMING TO THE FOLLOWING REQUIREMENTS:
 - 2-H.P. GRINDER PUMP, 1-PHASE, 208-230 VOLTS.
 - 90 GALLON MINIMUM TANKS, ANTI-SIPHON/CHECK VALVE, BALL VALVE AND 1-1/4" PRESSURE PIPE CONNECTIONS TO THE RECEIVING FORCE MAIN LEAD PLACED AT A MINIMUM DEPTH OF
 - SHALL CONFORM TO APPLICABLE BUILDING/ELECTRICAL CODES.
 - ONLY SANITARY WASTE WATER, AND NO EXCESSIVE GREASE OR SOLIDS, OR OTHER HARMFUL MATERIALS SHALL BE ALLOWED INTO THE SYSTEM.
 - NO STORM WATER SHALL BE ADMITTED INTO THE SYSTEM.
 - THE HOMEOWNER'S ASSOCIATION SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL FORCE MAIN AND APPURTENANCES UP TO AND INCLUDING THE STOP VALVE AND CHECK VALVE WITHIN THE UTILITY AND DRAINAGE EASEMENTS.
 - THE HOMEOWNER'S ASSOCIATION SHALL HAVE THE RIGHT TO ENTER THE EASEMENT FOR ANY REPAIRS OR MAINTENANCE OF THE FORCE MAIN AND APPURTENANCES.
 - HOMEOWNER SHALL MAINTAIN FREE ACCESS TO THE EASEMENT AND FORCE MAIN, AND SHALL NOT OBSTRUCT THE FORCE MAIN, APPURTENANCES, OR UTILITY AND DRAINAGE EASEMENTS WITH FENCES, LANDSCAPING OR STRUCTURES.
 - REPORT IMMEDIATELY TO THE HOMEOWNER'S ASSOCIATION OR THEIR APPOINTED CONTRACTOR/AGENT, ANY SUSPECTED DAMAGE OR PROPOSED EXCAVATION WITHIN THE EASEMENT.

THE HOMEOWNER'S ASSOCIATION ARTICLES MAY CONTAIN FURTHER RESTRICTIONS.

NOTE: THE SANITARY SEWER FORCE MAIN MAY NOT BE EXTENDED TO SERVICE ANY ADDITIONAL PROPERTIES WITHOUT APPROVAL OF THE HOMEOWNER'S ASSOCIATION AND PLAN APPROVAL BY THE CITY OF SOUTH BEND AND THE ST. JOSEPH COUNTY REGIONAL WATER & SEWER DISTRICT. ANY ADDITIONAL FLOWS MAY NOT PRODUCE AN ULTIMATE FLOW VELOCITY EXCEEDING 8 FEET-PER-SECOND, NOR AN OPERATING PRESSURE EXCEEDING 80 PSIG AT ANY POINT IN THE SANITARY FORCE-MAIN SYSTEM.

NOTES

- FORCE MAIN SHALL BE SDR-21 PIPE W/RESTRAINED COMPRESSION TYPE JOINTS AND LOCATOR TAPE.
 - ALL FORCE MAIN SHALL BE SDR-21 PIPE AWWA C901/PE3408 160 PSI.
 - ALL JOINTS AND PIPING MATERIAL SHALL BE RATED AT A MINIMUM OF 160 PSI.
 - MECHANICAL TYPE JOINTS CONFORMING TO ASTM F714 THAT ARE COMPRESSION FITTED TO THE O.D. OF THE PIPE SHALL HAVE THE MANUFACTURER'S MATCHING STIFFENER (COMPRESSION) RINGS SIZED FOR THE SPECIFIED PIPE DIAMETER INSERTED INSIDE THE PIPE JOINT.
 - FORCE MAIN SHALL BE MARKED TO SHOW THAT IT IS A SANITARY FORCE MAIN.
- ALL FORCE MAIN SHALL BE HYDROSTATICALLY TESTED TO PRESSURES SPECIFIED IN THE PPI PE PIPE MANUAL, IN ACCORDANCE WITH ASTM F2164.
- HOPE FORCE MAIN SHALL BE CONTINUOUS AND SHALL HAVE NO JOINTS LOCATED UNDER PAVEMENT.
- ANY FORCE MAIN TRENCHED IN PLACE SHALL BE IN ACCORDANCE WITH THE TRENCH DETAIL SHOWN ON SHEET C3.5 OF THIS PLAN SET.
- ALL GRAVITY SEWER SHALL BE LOW-PRESSURE AIR ACCEPTANCE TESTED IN ACCORDANCE WITH ASTM F1417.



UTILITY PLAN

DATE	DRAWN BY:	REVISIONS			
2/22/19	BLM				
SCALE	CHECKED BY:	DATE	BY	DESCRIPTION	
1" = 30'	MJD	2/14/20	BLM	LOW PRESSURE SEWER SYSTEM	
FILE #	PROJ. MANGR:				
180120.5	BLM				

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SHEET
C3.2

BELLE TERRE AT SOUTH BEND MAJOR

SECTION 4 - SANITARY

PIPE BEDDING DETAIL

NOTES:

- These trench and bedding details are for pipe structural requirements only. The contractor is solely responsible for safety of operations. The contractor shall slope trench walls, provide protective work boxes, and/or shore and brace all excavations as the contractor determines necessary for safety of operations, and in conformance to OSHA Regulation 29 C.F.R. 1926, Subpart P for Trench Safety Systems.
- All PVC pipe for sanitary sewers shall be installed in accordance with ASTM D2231.
- There shall be no rocks or stones greater than 2" in any dimension within 6" of the pipe wall or bed.
- Flexible Pipe: Embedment materials for bedding, haunching and initial backfill shall comply with the requirements of ASTM D2231, Classes I (INDOT #8 or #9), II (INDOT #5, #7, or B-Borrow), or III and shall be compacted as noted. Refer to pipe manufacturers recommended bedding and embedment material class type requirements. Removable flowable backfill shall be placed for all areas within 5 feet of pavements to 12" above pipe crown. Above this limit structure backfill shall be used.
- Rigid Pipe: Embedment materials for bedding, haunching and initial backfill shall comply with the requirements of ASTM C12 (VCP Classes A, B, C or crushed stone (INDOT #8, #9 or B-Borrow)) and shall be compacted as noted. Removable flowable backfill shall be placed for all areas within 5 feet of pavements to 12" above pipe crown. Above this limit structure backfill shall be used.
- Final backfill shall not contain debris, organic material, frozen material, unstable material or boulders or stones greater than 2" in any dimension. Flowable fill optional.
- The placement and compaction of backfill shall not cause displacement of the pipe.
 - For multiple pipes in same trench:
 - Place bedding to Spring Line of first pipe across entire trench width.
 - Placement of next pipe, re-compact trench as needed.
 - Then place bedding as noted above.
 - For additional pipes repeat as required.
 - Refer to INDOT Standard Specification Section 213 for flowable fill (removable) requirements.

REF STD SPEC SEC 4-2 and 4-3
APPROVED/REVISED BY THE BOARD OF PUBLIC WORKS
EFFECTIVE DATE: June 26, 2018

Item	Revision	Approved Date

CITY OF SOUTH BEND
STANDARDS FOR DESIGN AND CONSTRUCTION
STANDARD 4-11

SECTION 5 - WATER WORKS

TYPICAL WATER SERVICE CONNECTION

NOTES:

- Service shut-off box shall be placed in the public right-of-way in grass between curb and sidewalk.
- For a 2" service the corporation stop shall be located at 90° (level).

REF STD SPEC SEC 5-2.1 and 5-2.5(g)
APPROVED/REVISED BY THE BOARD OF PUBLIC WORKS
EFFECTIVE DATE: June 26, 2018

Item	Revision	Approved Date

CITY OF SOUTH BEND
STANDARDS FOR DESIGN AND CONSTRUCTION
STANDARD 5-3

SECTION 5 - WATER WORKS

TRENCH DETAIL FOR WATER MAIN IN SUITABLE SOIL

NOTES:

- These trench and bedding details are for pipe structural requirements only. The contractor is solely responsible for safety of operations. The contractor shall slope trench walls, provide protective work boxes, and/or shore and brace all excavations as the contractor determines necessary for safety of operations, and in conformance to OSHA Regulation 29 C.F.R. 1926, Subpart P for Trench Safety Systems.
- For multiple pipes in same trench:
 - Place bedding to Spring Line of first pipe across entire trench width.
 - Placement of next pipe, re-compact trench as needed. Then place bedding as noted above.
 - For additional pipes repeat as required.
- Minimum easement width for water main shall be 15'.
- Minimum obstruction setback requirement from water main shall be 10'. Obstructions shall include structures, other utilities, trees, and landscaping.

REF STD SPEC SEC 5-3.2 and 5-3.9
APPROVED/REVISED BY THE BOARD OF PUBLIC WORKS
EFFECTIVE DATE: June 26, 2018

Item	Revision	Approved Date

CITY OF SOUTH BEND
STANDARDS FOR DESIGN AND CONSTRUCTION
STANDARD 5-6

SECTION 5 - WATER WORKS

TYPICAL GATE VALVE AND BOX

NOTES:

- Gate valves shall be manufactured by Clow, Mueller, or approved equal.
- Valve box shall be manufactured by Tyler Pipe Industries Model 66-5 or approved equal.
- Gate valves shall be used on water main pipe 12-inches and smaller.
- Valve spacing shall be no greater than 1,000 feet. A main line valve shall be placed at each intersection. Valve locations shall be configured to be within 3 ft. of adjoining fittings.

REF STD SPEC SEC 5-2.5(g)
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EFFECTIVE DATE: June 26, 2018

Item	Revision	Approved Date

CITY OF SOUTH BEND
STANDARDS FOR DESIGN AND CONSTRUCTION
STANDARD 5-8

SECTION 5 - WATER WORKS

FIRE HYDRANT ASSEMBLY

NOTES:

- Any subgrade disturbed beneath hydrant shall be thoroughly compacted or suitable material shall be furnished, placed and compacted to provide a firm foundation for the hydrant.
- Hydrant drainage: To prevent freezing of the hydrant barrel if it were not drained, a drainage air 2"x2" shall be excavated below the hydrant and filled with coarse gravel or crushed stone mixed with sand to a depth of 6" above the hydrant opening, providing sufficient aggregate void space to more than equal the volume of the barrel. The drainage pit should neither be near, nor have a connection to a sewer.
- Hydrant painting: Hydrants to be painted red, white and blue per manufacturers paint specs.
- All pipe, fitting and valve joints shall be restrained with wedge action restraints.

REF STD SPEC SEC 5-2.6 and 5-3.10
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Item	Revision	Approved Date

CITY OF SOUTH BEND
STANDARDS FOR DESIGN AND CONSTRUCTION
STANDARD 5-11

SECTION 5 - WATER WORKS

TAPPING SLEEVE AND VALVE

NOTES:

- Tapping valves shall be Clow, Mueller, or approved equal.
- The physical tapping of the existing water main shall be performed by the city's utility distribution department. All excavation and preparation work shall be performed by the contractor, and the contractor shall provide all materials. The utility will only perform the physical tap. Contractor shall coordinate with the Water Department.

REF STD SPEC SEC 5-2.5(e)
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EFFECTIVE DATE: June 26, 2018

Item	Revision	Approved Date

CITY OF SOUTH BEND
STANDARDS FOR DESIGN AND CONSTRUCTION
STANDARD 5-2

SECTION 5 - WATER WORKS

CROSS OVER

NOTES:

- Proposed main may pass over existing main if existing main is deep enough to provide adequate clearance between main and cover over proposed main.
- All pipe, fittings and valve joints shall be restrained with wedge action restraints.

REF STD SPEC SEC 5-2.2 and 5-2.5(e)
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Item	Revision	Approved Date

CITY OF SOUTH BEND
STANDARDS FOR DESIGN AND CONSTRUCTION
STANDARD 5-4

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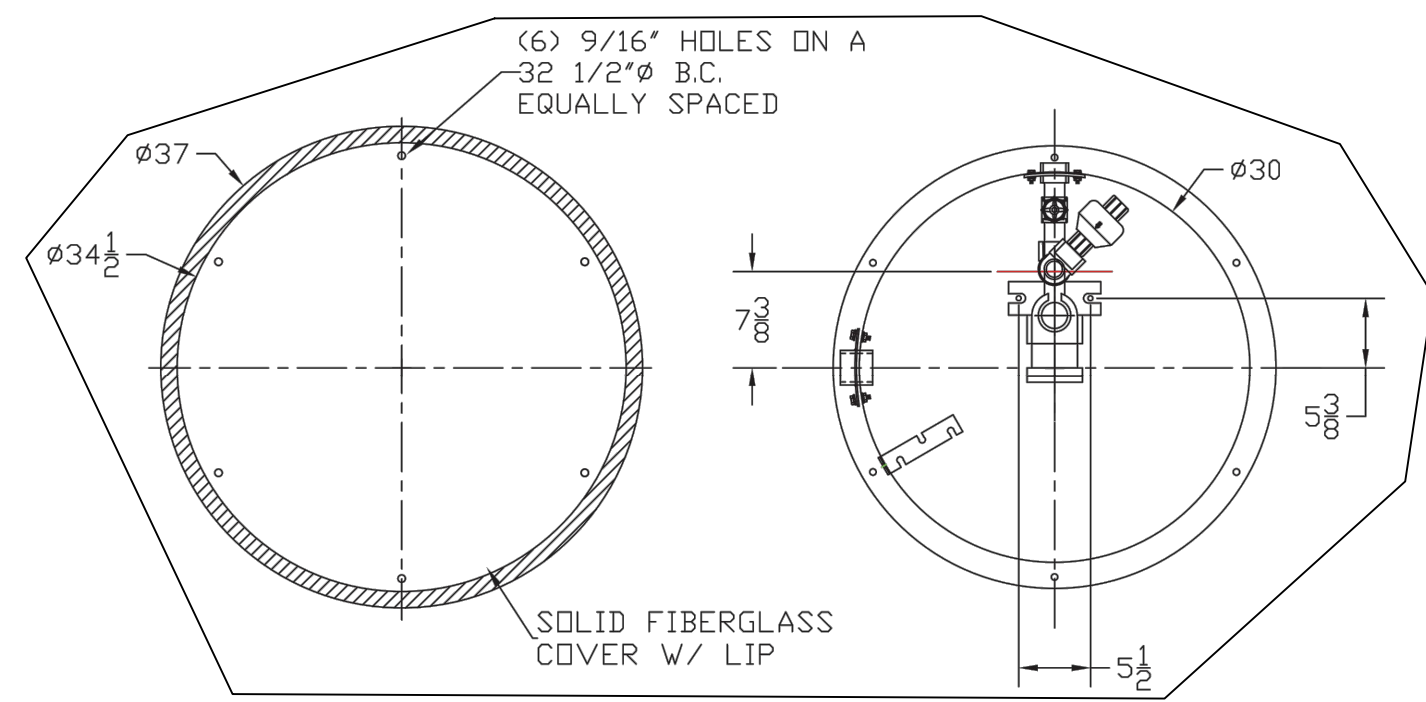
WATER MAIN PLAN AND PROFILE

DATE	DRAWN BY:	REVISIONS			
2/22/19	BLM				
SCALE	CHECKED BY:	DATE	BY		
1" = 30'	MJD				
FILE #	PROJ. MNGR:				
180120	BLM				

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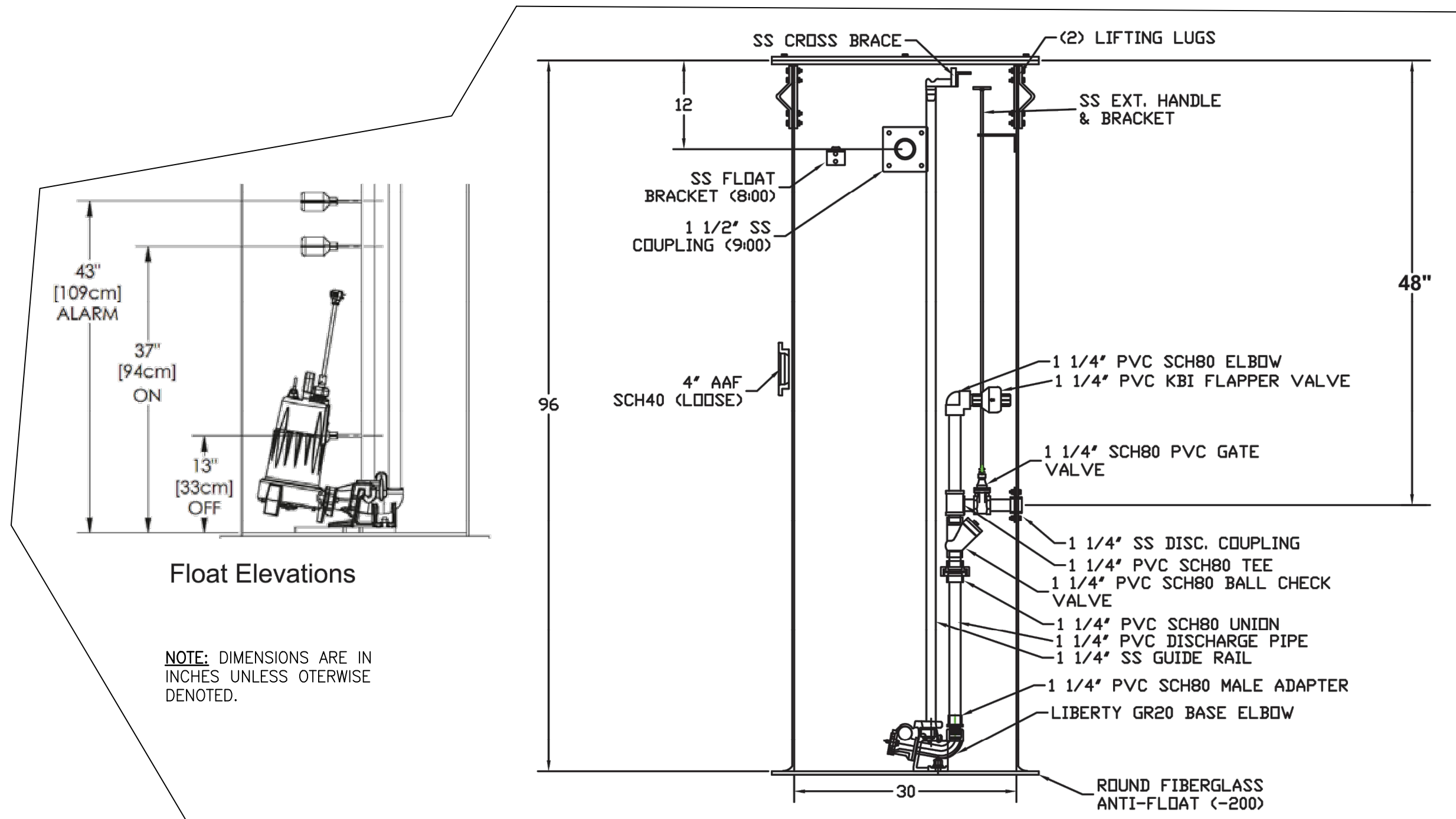
SHEET
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BELLE TERRE AT SOUTH BEND MAJOR



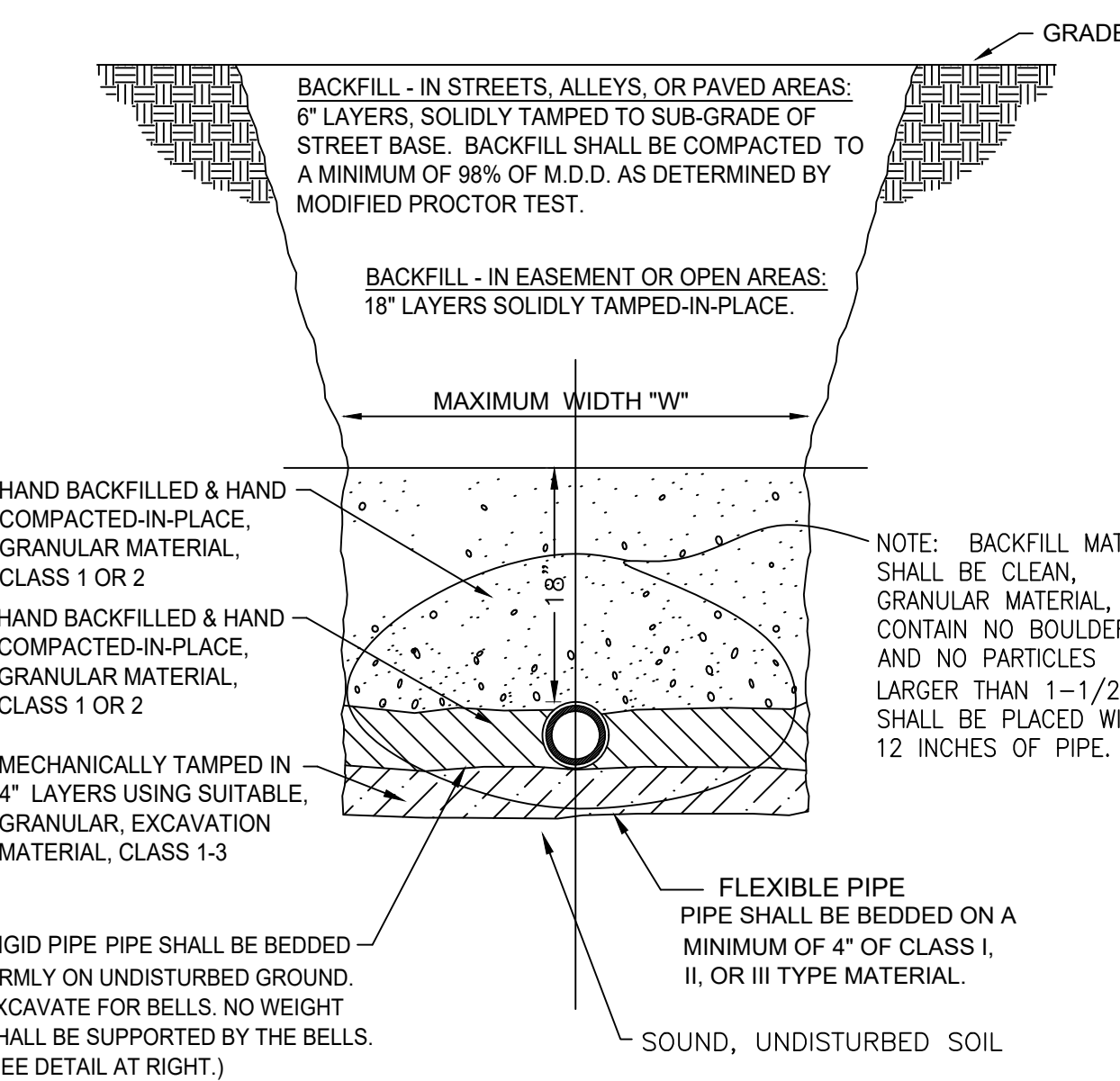
HOUSE GRINDER PUMP - PLAN

SCALE: N.T.S.



HOUSE GRINDER PUMP - PROFILE

SCALE: N.T.S.

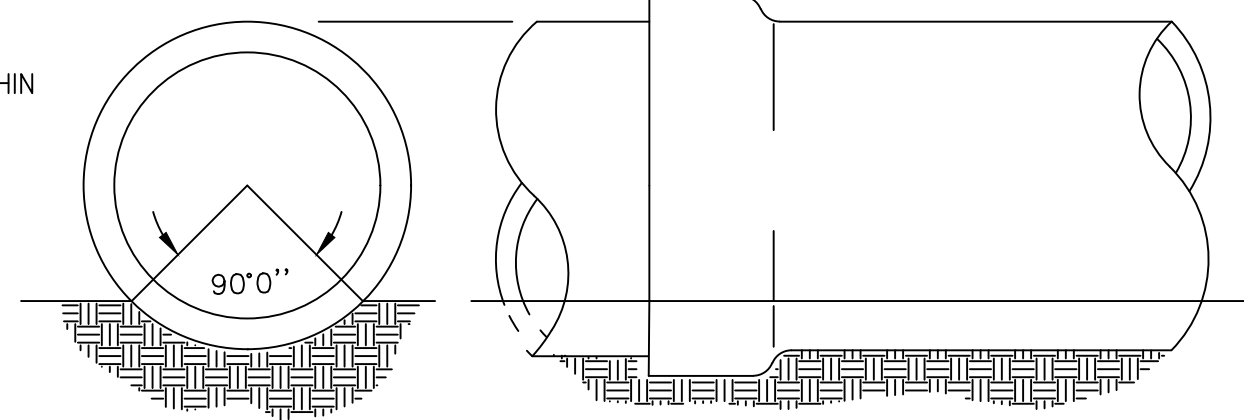


FORCE MAIN TRENCH DETAIL

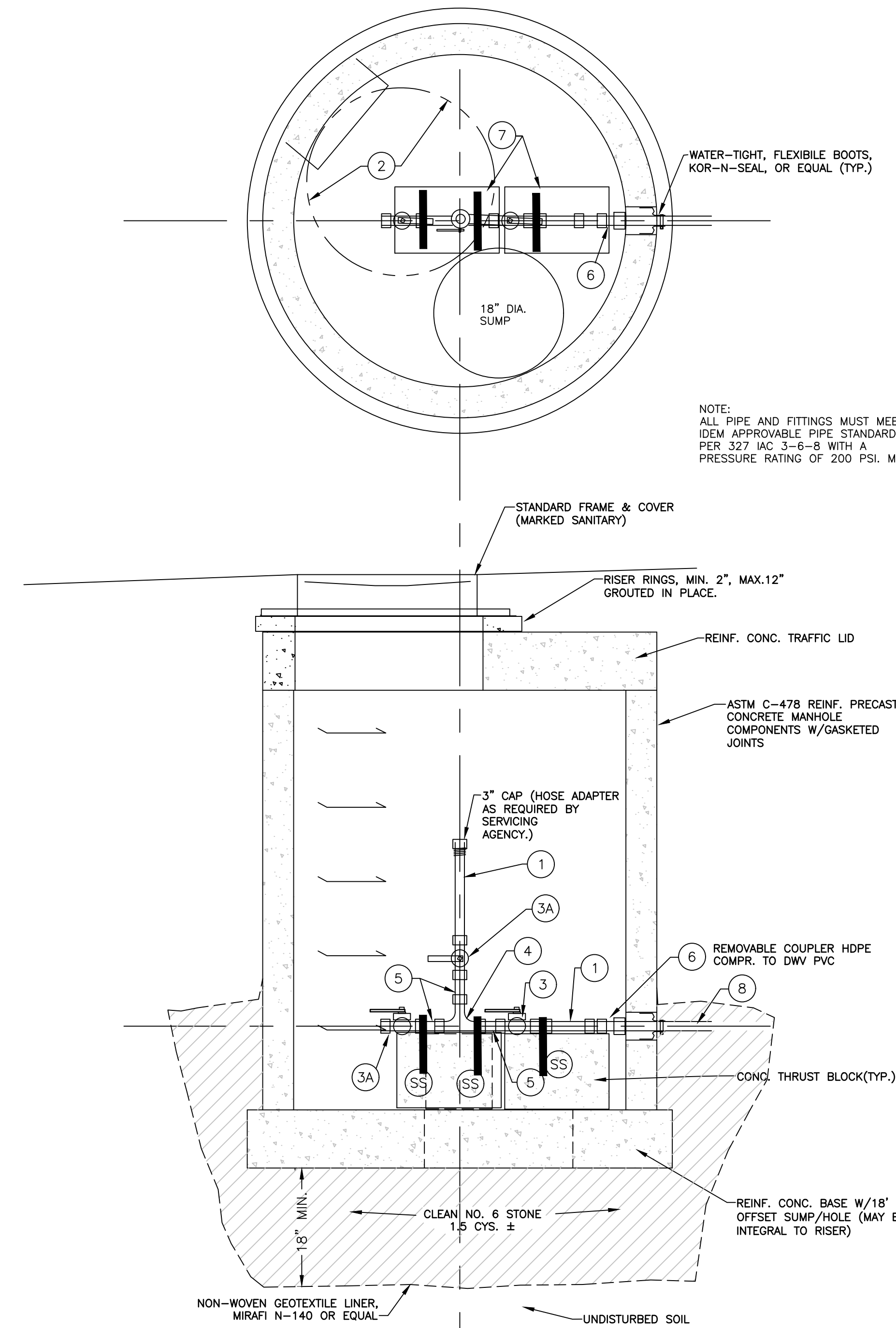
SCALE: N.T.S.

ALLOWABLE MAXIMUM WIDTH OF TRENCH AT TOP OF PIPE	
PIPE DIAM.	"W"
6" & SMALLER	18"
8"	24"
10"	24"
12"	30"
15"	35"

AN ALLOWABLE "W" OF 30" WILL BE PERMITTED WHERE DEPTH OF CUT EXCEEDS 12 FT. AND EXTRA STRENGTH PIPE IS SPECIFIED.



RIGID PIPE DETAIL



CLEANOUT MANHOLE (W/LATERAL CONNECTION)

SCALE: N.T.S.

- NOTES: (MIN. 200 PSIG ALL COMPONENTS)**
- 3" DIA. THREADED PVC PRESSURE PIPE W/S.S. TIE-DOWN STRAPS
 - MANHOLE OPENING (W/STEPS IN SERVICEABLE LOCATION)
 - FFT THREADED FULL-FLOW BRONZE BALL VALVE (NORMALLY OPEN)
 - (NORMALLY CLOSED)
 - 3"x3"x3" THREADED TEE (WATER SPEC.)
 - 3" AWWA DCIP, 4" THREADED NIPPLE
 - COUPLER HDPE COMPR. TO DCIP. (WATER SPEC.) W/S.S. TIE-DOWN STRAPS
 - CONC. THRUST BLOCK(TYP.) SUPPORT PIPE-WORK MIN. 12" OFF FLOOR OF STRUCTURE
 - SPECIFIED CONTINUOUS HDPE

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FORCE MAIN DETAILS

DATE	DRAWN BY:	REVISIONS	
2/22/19	BLM	DATE	BY
SCALE	CHECKED BY:	12/14/20	BLM
1" = 30'	MJD	LOW PRESSURE SEWER SYSTEM	
FILE #	PROJ. MANGR:		
180120	BLM		

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BELLE TERRE AT SOUTH BEND MAJOR

UTILITY MATERIAL REQUIREMENTS:

- ALL WATER PIPE 2" AND SMALLER SHALL BE TYPE "K" COPPER.
- ALL WATER PIPE 2 1/2" AND LARGER SHALL BE CLASS 52 DUCTILE IRON.
- ALL STORM SEWERS SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH COUNTY STANDARDS. PRIOR TO ACCEPTANCE BY THE OWNER, THE ENGINEER SHALL WITNESS THE TESTS. COPIES OF THE TEST RESULTS SHALL BE FURNISHED TO THE OWNER, THE COUNTY, AND THE ENGINEER.
- ALL STORM SEWER SHALL BE CLASS III RCP OR HDPE DOUBLE WALL.
- ALL SANITARY SEWER SHALL BE ESWCP (ASTM C700) OR SDR 35 PVC (ASTM 3034). ESWCP JOINTS SHALL CONFORM TO ASTM C425. PVC PIPE JOINTS SHALL CONFORM TO ASTM D3212 AND ASTM F477.
- ALL MANHOLES SHALL BE REINFORCED CONCRETE PRECAST (ASTM C478).
- BACKFLOW/CROSS CONNECTION REQUIREMENTS:
- USE RPZ ON DOMESTIC LINES, INSIDE BUILDING. THE RPZ SHALL BE MOUNTED IN A HORIZONTAL ORIENTATION.
- USE DDCV ON FIRE LINES. THE DDCV SHALL BE LISTED ON THE USC APPROVED LIST. MOUNT IN APPROVED ORIENTATION.
- USE PVC ON LAWN SPRINKLER LINES.

SANITARY SEWER, STORM SEWER, AND WATER LINES GENERAL NOTES:

- ALL LOCAL PERMITS SHALL BE OBTAINED BEFORE CONSTRUCTION IS BEGUN ON THIS PROJECT.
- IF POLLUTION OR NUISANCE CONDITIONS ARE CREATED, IMMEDIATE CORRECTIVE ACTION SHALL BE TAKEN BY THE PERMITTEE.
- SEWER TO WATER MAIN SEPARATION DISTANCES SHALL COMPLY WITH SECTION 38 OF THE RECOMMENDED STANDARDS FOR WASTEWATER FACILITIES, 2004 EDITION & IDEM REGULATIONS. SEE ITEM 8 BELOW.
- IF NEEDED, ALL TRENCHES SHALL BE DEWATERED USING DEEP WELLS OR WELL POINTS PRIOR TO EXCAVATION. IF NEEDED, THE CONTRACTOR SHALL PROVIDE SHEETING, SHORING, BRACING AND/OR A TRENCH BOX, IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS, FOR EXCAVATION WORK.
- MINIMUM COVER FOR WATER LINES IS 5.0 FEET.
- PVC SANITARY SEWERS SHALL BE TESTED FOR DEFLECTION USING MANDRELL WHICH IS 95% OF THE INSIDE OF THE PIPE, AS DEFINED IN THE APPLICABLE A.S.T.M. STANDARDS. ANY PIPE FAILING THE TEST SHALL BE RE-EXCAVATED AND REPLACED, SO THAT ALL COMPLETED PIPE PASSES A RE-TEST. THE DEFLECTION TEST SHALL BE PERFORMED NOT LESS THAN 30 DAYS AFTER BACKFILL OF THE TRENCHES. ALL OTHER DETAILS OF THE MANDRELL TEST SHALL BE IN ACCORDANCE WITH "TEN STATES STANDARDS" AND IDEM REGULATIONS.
- ALL SANITARY SEWERS SHALL BE TESTED FOR INFILTRATION OF EXFILTRATION HYDROSTATICALLY, WITH A MINIMUM TESTING HEAD OF 2 FT., TAKING INTO CONSIDERATION THE STATIC GROUNDWATER ELEVATION WITH RESPECT TO THE PIPE AT THE TIME OF TEST. THE MAXIMUM ALLOWABLE LEAKAGE SHALL BE 200 GALLONS PER DAY PER INCH DIAMETER PER MILE OF PIPE.
- ALL SANITARY SEWERS LAID PARALLEL TO WATER MAINS SHALL BE SEPARATED AT LEAST 10 FT. MEASURED EDGE TO EDGE, FROM SAID WATER MAINS. WHENEVER A SANITARY SEWER CROSSES A WATER MAIN, THE MINIMUM VERTICAL SEPARATION SHALL BE 18", ALL IN ACCORDANCE WITH IDEM REGULATIONS AND "TEN STATES STANDARDS".
- THE RESULTS OF ALL TESTS ON THE COMPLETED SEWER SHALL BE SUBMITTED TO DANCH, HARNER, & ASSOC., INC. WITHIN THREE MONTHS OF COMPLETION OF CONSTRUCTION.
- ALL NEW WATER LINES, INCLUDING NEW FIRE HYDRANTS, SHALL BE DISINFECTED IN ACCORDANCE WITH CITY, STATE, AND FEDERAL REGULATIONS. THE NEW LINES SHALL BE FLUSHED PRIOR TO DISINFECTION. COPIES OF ACCEPTABLE BACTERIAL TEST RESULTS SHALL BE FURNISHED TO THE OWNER, THE ENGINEER, AND THE CITY PRIOR TO ACTIVATING THE NEW WATER PIPING.
- ALL WATER LINES SHALL BE PRESSURE TESTED AT 150 PSI FOR TWO HOURS.
- ALL SANITARY SEWER MANHOLES SHALL BE INSPECTED AFTER COMPLETION FOR GENERAL CONDITION, CRACKS, LEAKAGE OF GROUNDWATER OR OTHER DEFECTS. THE MANHOLE SHALL BE TESTED FOR WATER TIGHTNESS IN ACCORDANCE WITH APPLICABLE PROVISION OF "TEN STATES STANDARDS", LATEST EDITION, AND IDEM REGULATIONS.
- NO ROOF DRAINS, FOOTING DRAINS, AND/OR SURFACE WATER DRAINS MAY BE CONNECTED TO THE SANITARY SEWER SYSTEM, INCLUDING TEMPORARY CONNECTIONS DURING CONSTRUCTION.
- SANITARY FEATURES SHALL COMPLY WITH ANY ADDITIONAL REQUIREMENTS OF THE CITY OF SOUTH BEND AND/OR ST. JOSEPH COUNTY REGIONAL WATER AND SEWER DISTRICT.

PHONE, GAS, ELECTRIC, FIBER OPTIC, CATV UTILITIES AND IRRIGATION NOTES:

- CONTRACTOR IS TO UNCOVER AND CONFIRM ALL TAP CONNECTION LOCATIONS. IF DISCREPANCIES EXIST, NOTIFY ENGINEER PRIOR TO COMMENCING WORK.
- ROUTINGS SHOWN ARE APPROXIMATE.
- CONTRACTOR IS TO COORDINATE AND ASSURE THAT ANY REQUIRED IRRIGATION SLEEVES ARE PLACED PRIOR TO PAVING.
- TELEPHONE, ELECTRIC, AND CATV ROUTINGS ARE TO BE COORDINATED WITH THE APPROPRIATE UTILITIES. CONTRACTOR IS TO PROVIDE CONDUIT UNDER PAVED AREAS AS REQUIRED BY APPROPRIATE UTILITY.
- GRANULAR BACKFILL MATERIAL IS REQUIRED IN ALL UTILITY TRENCHES LOCATED UNDER SIDEWALK OR PAVEMENT. BACKFILL SHALL BE COMPACTED TO 100% STANDARD PROCTOR DENSITY PER SOILS REPORT.

UTILITY INFORMATION:

THE ENGINEER HAS INDICATED UNDERGROUND UTILITIES ON THESE PLANS BASED UPON INFORMATION PROVIDED BY VARIOUS UTILITIES. THE ACCURACY AND COMPLETENESS OF THIS INFORMATION IS UNKNOWN AND THE ENGINEER ACCEPTS NO LIABILITY FOR UTILITY INFORMATION. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THEIR WORK WITH THE UTILITIES, PROTECTING ALL UTILITIES, PAYING ALL COSTS FOR DAMAGE TO UTILITY FACILITIES, AND RESTORING UTILITIES TO A CONDITION WHICH IS BETTER THAN ORIGINAL CONDITION AT THE START OF THIS PROJECT. THE CONTRACTOR SHALL NOT BEGIN UNDERGROUND WORK UNTIL ALL UTILITIES HAVE BEEN ACCURATELY LOCATED ON THE GROUND.

CITY OF SOUTH BEND SANITARY SEWER CONSTRUCTION STANDARDS & SPECIFICATIONS: (AS NECESSARY)

- ALL MATERIALS AND WORKMANSHIP FOR CONNECTION TO EXIST. MANHOLE SHALL MEET THE CITY OF SOUTH BEND DESIGN & CONSTRUCTION STANDARDS AND PREVAILING SPECIFICATIONS FOR PUBLIC WORKS, AND TITLE 327 OF THE INDIANA ADMINISTRATION CODE, ARTICLE 3 (STATE CODE).
- PIPE BEDDING - CLASS "F" FOR FLEXIBLE PIPE SHALL BE BEDDED IN GRANULAR FILL, WHICH SHALL BE CARRIED 12-INCHES ABOVE THE TOP OF THE PIPE. ALL BEDDING, HAUNCHING AND INITIAL BACKFILL SHALL BE CLASS I, II, OR III PER ASTM D2321-89.
- ALL SEWER TRENCHES WITHIN THE ROAD RIGHT-OF-WAY AND EXISTING PIPES SHALL BE BACKFILLED ABOVE THE PIPE BEDDING MATERIAL WITH FLOWABLE FILL, 150 PSI, UNLESS OTHERWISE NOTED.
- ANY EXISTING PIPE OR TILE(S), WHICH ARE CUT DURING CONSTRUCTION, SHALL BE REPLACED WITH EQUAL OR BETTER MATERIALS AND CONSTRUCTION METHODS.
- ANY PAVEMENT OR IMPROVED ROAD SURFACE OR SIDEWALK CUT DURING CONSTRUCTION SHALL BE REPLACED WITH EQUAL OR BETTER MATERIALS AND CONSTRUCTION METHODS.
- ALL GRASSED AREAS WHICH ARE DISTURBED DURING THE COURSE OF CONSTRUCTION, SHALL BE SEEDED WITH COMPARABLE GRASS SEED AND COVERED WITH STRAW. WATER SHALL BE APPLIED AS REQUIRED TO ASSURE GROWTH.
- ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE REGRADED TO THE ORIGINAL CONTOURS PRIOR TO COMPLETION OF THE PROJECT.
- ALL MANHOLES TO BE 48-INCH DIAMETER PRECAST REINFORCED CONCRETE, UNLESS NOTED OTHERWISE.
- ALL PRE-CAST CONCRETE MANHOLE COMPONENTS (CONES, ADJUSTING RINGS, SECTIONS, ETC.) SHALL CONFORM TO ASTM SPECIFICATION C478-96.
- ALL MANHOLE FRAMES TO BE NEENAH R-1772 CASTING WITH SOLID LIDS OR EQUAL UNLESS OTHERWISE NOTED.
- INFILTRATION/EXFILTRATION INTO PIPE SHALL NOT EXCEED 200 GALLONS PER INCH OF PIPE DIAMETER PER DAY PER MILE OF PIPE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ARRANGE FOR THE TESTING AND TO PROVIDE CERTIFIED TESTS TO THE ENGINEER. THE RESULTS OF THE TESTING SHALL BE PROVIDED TO THE OFFICE THIRTY (30) DAYS AFTER COMPLETION OF CONSTRUCTION.
- ALL PERMITS (AREA CONNECTION, INSPECTION, TAP, ETC.) REQUIRED FOR THE EXECUTION OF THE WORK SHALL BE OBTAINED AND PAID FOR BY THE DEVELOPER.
- SEWER TO WATER MAIN SEPARATION DISTANCES SHALL CONFORM TO LATEST EDITION OF THE "TEN STATES STANDARDS". WHENEVER SEWERS MUST CROSS UNDER WATER MAINS, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE TOP OF THE SEWER IS AT LEAST 18" BELOW THE WATER MAIN. WHEN THE ELEVATION OF THE SEWER CANNOT BE BURIED TO MEET SAID REQUIREMENTS, THE SEWER SHALL BE RECONSTRUCTED WITH MECHANICAL JOINT DUCTILE IRON PIPE OR AWWA C-900 CLASS 150, SDR 18, PVC FOR A DISTANCE OF TEN (10) FEET ON EACH SIDE OF THE WATER MAIN. ONE FULL LENGTH OF SEWER SHOULD BE CENTERED OVER THE WATER MAIN SO THAT BOTH JOINTS WILL BE AS FAR FROM THE WATER MAIN AS POSSIBLE. IN ALL OCCURRENCES, WHERE WATER LINES AND SANITARY SEWER LINES DO NOT PERMIT A MINIMUM OF TEN (10) FEET HORIZONTAL SEPARATION, THE SEWER MUST BE CONSTRUCTED EQUAL TO WATER PIPE WITH COMPRESSION JOINTS AND SHALL BE PRESSURE TESTED TO ASSURE WATER TIGHTNESS PRIOR TO BACKFILLING.
- DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE* PIPE AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST THIRTY (30) DAYS. NO PIPE SHALL EXCEED A VERTICAL DEFLECTION OF 5% ACTUAL INSIDE DIAMETER (AS LISTED IN ASTM STANDARDS). DEFLECTION TEST RESULTS SHALL BE SUBMITTED WITH THE INFILTRATION/EXFILTRATION TEST RESULTS. (*THE FOLLOWING ARE CONSIDERED NONFLEXIBLE PIPES: VITRIFIED CLAY PIPE, CONCRETE PIPE, DUCTILE IRON PIPE, CAST IRON PIPE, ASBESTOS CEMENT PIPE).
- ALL MANHOLES SHALL BE AIR TESTED IN ACCORDANCE WITH ASTM C1244-93, STANDARD TEST METHOD FOR CONCRETE SEWER MANHOLES BY NEGATIVE AIR PRESSURE (VACUUM) TEST.
- ALL SANITARY SEWER MAINS TO BE PVC CONFORMING TO ASTM D-3034.
- ALL SANITARY SEWER JOINTS SHALL BE GASKETED "PUSH ON TYPE" WITH A CONFINED ELASTOMETRIC SEAL (RUBBER GASKET). JOINT TO CONFORM WITH ASTM-D3212 AND SEAL TO CONFORM WITH ASTM F-477-99.
- ALL GRAVITY SEWER PIPE SHALL BE TESTED USING ONE (1) OF THE FOLLOWING LEAKAGE TEST TYPES:
 - A HYDROSTATIC TEST SHALL BE PERFORMED WITH MINIMUM OF TWO (2) FEET OF POSITIVE HEAD. THE RATE OF EXFILTRATION OR INFILTRATION SHALL NOT EXCEED TWO HUNDRED (200) GALLONS PER INCH OF PIPE DIAMETER PER LINEAR MILE PER DAY.
 - AN AIR TEST SHALL CONFORM TO ASTM F1477-92, STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW-PRESSURE AIR, FOR PLASTIC PIPE.
- AS-BUILT DRAWINGS TO BE PROVIDED TO CITY OF SOUTH BEND UPON COMPLETION OF SANITARY SEWER.
- FULL-TIME INSPECTION MUST BE PROVIDED FOR ALL SEWER CONSTRUCTION AND PAID FOR BY THE CONTRACTOR OR DEVELOPER.

MATERIAL REQUIREMENTS SANITARY FORCE MAIN:

- SANITARY SEWER FORCE MAIN PIPING ON DISCHARGE OF ALL PUMPS SHALL BE HDPE SDR11 FORCE MAIN.
- SANITARY SEWER DWV PLASTIC PIPE FITTINGS PER ASTM D2655. INSTALLATION OF THE PVC PIPE AND FITTINGS SHALL BE IN ACCORDANCE WITH ASTM F1866-98. ALL OF WHICH IS AT THE LATEST STANDARD.
- ALL SANITARY SEWERS SHALL BE TESTED FOR INFILTRATION OR EXFILTRATION HYDROSTATICALLY, WITH A MINIMUM TESTING HEAD OF 2 FEET, TAKING INTO CONSIDERATION THE STATIC GROUNDWATER ELEVATION WITH RESPECT TO THE PIPE AT THE TIME OF THE TEST. THE MAXIMUM ALLOWABLE LEAKAGE SHALL BE 200 GALLONS PER DAY PER INCH DIAMETER PER MILE OF PIPE.
- THE RESULTS OF THE INFILTRATION/EXFILTRATION TEST ON THE COMPLETED SEWER SHALL BE SUBMITTED TO DANCH, HARNER & ASSOCIATES, INC. WITHIN THREE MONTHS OF COMPLETION OF CONSTRUCTION.

GRADING, DRAINAGE & PAVING NOTES:

PAVING, STRIPING & CURB NOTES

- WORKMANSHIP AND MATERIALS FOR ALL PAVING TO CONFORM TO STATE AND LOCAL STANDARD DRAWINGS AND SPECIFICATIONS, LATEST EDITION.
- PARKING LOT SUBGRADE SHALL BE FINE GRADED TO ASSURE POSITIVE DRAINAGE AWAY FROM THE BUILDING AND TOWARDS THE COLLECTION LOCATIONS.
- ALL ASPHALT PAVING SHALL BE LAID ON A STRAIGHT, EVEN, AND UNIFORM GRADE WITH A MINIMUM 1% AND MAXIMUM 3% SLOPE TOWARDS THE COLLECTION POINTS. DO NOT ALLOW NEGATIVE GRADES OR PONDING OF WATER.
- SLOPE BUILDING SIDEWALKS AWAY FROM BUILDING AT A MINIMUM OF 1%.
- PAVED AREAS ARE TO BE ROUGH GRADED TO +/- 0.10 FT AND PROOF ROLLED. ANY NON-ACCEPTABLE AREAS MUST BE CORRECTED PRIOR TO THE PLACEMENT OF STONE.
- EXPANSION JOINTS - 1/2" ASPHALT IMPREGNATED FULL DEPTH, 40 FT O.C. MAXIMUM AND AT SIDEWALK INTERSECTIONS. CRACK CONTROL SCORING AT SIDEWALK WIDTH DIMENSION, OR AS NOTED ON THE PLANS.
- STRIPING OF PARKING STALLS AND OTHER AREAS TO BE AS SHOWN ON THE PLANS. ALL LINES TO BE SINGLE STRIPE, YELLOW, 4" WIDE, STRAIGHT, EVENLY SPACED, AND UNIFORM IN LENGTH.
- HANDICAP PARKING AND RAMP SHALL COMPLY WITH ALL GOVERNMENTAL CODES AND STANDARDS AND ANY OTHER REQUIRED STANDARDS. HANDICAP SPACES TO BE MARKED WITH THE INTERNATIONAL HANDICAP SYMBOL IN A BLUE FIELD. EACH SPACE SHALL BE ADDITIONALLY MARKED WITH APPROPRIATE SIGNAGE.
- REFER TO THE PROJECT DETAIL SHEET FOR PAVING DETAILS.

DIMENSIONS, COURSES AND THICKNESSES, OFFSITE CONSTRUCTION NOTES

- ALL WORK TO COMPLY WITH LOCAL AND STATE CODES & STANDARDS OF CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR EXAMINING ALL SITE CONDITIONS PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR SHALL COORDINATE THE WATER AND SEWER WORK IN THE RIGHT OF WAY WITH ALL APPROPRIATE AGENCIES.
- RIGHT OF WAY DRAINAGE PATTERNS SHALL ALSO BE MAINTAINED.
- ANY AREAS DISTURBED ARE TO BE REPAIRED TO A CONDITION EQUAL TO OR BETTER THAN EXISTED PRIOR TO DISTURBANCE.
- CONTRACTOR TO INSTALL IMPROVEMENTS SHOWN AND TO COORDINATE WITH THE APPROPRIATE GOVERNMENTAL AGENCY FOR CLARIFICATION AND ANY NECESSARY INSPECTIONS.

SITE GRADING

- STRIP BUILDING AND PAVING AREAS OF ALL ORGANIC TOPSOIL MATERIALS. STOCKPILE SUITABLE TOPSOIL'S FOR RESPREADING ONTO LANDSCAPE AREAS. ALL EXCESS EXCAVATED MATERIALS SHALL BE REMOVED FROM THE SITE AT THE CONTRACTORS EXPENSE.
- ALL SOILS SHALL BE GRADED TO PROVIDE SMOOTH CONTOURS AND POSITIVE DRAINAGE AWAY FROM BUILDINGS. DO NOT ALLOW FOR PONDING OF WATER.
- AFTER TOPSOIL REMOVAL, CONTRACTOR IS TO PROOF ROLL THE BUILDING AND PAVING AREAS. ANY NON-ACCEPTABLE AREAS MUST BE CORRECTED PRIOR TO BEGINNING ANY FILL OPERATIONS.
- AFTER COMPLETION OF PROOF ROLLING, FILL CAN BE PLACED USING SUITABLE ONSITE OR BORROW MATERIALS IN MAXIMUM 8" LIFTS. FILL TO BE COMPACTED TO 100% STANDARD PROCTOR DENSITY.
- PAVED AREAS ARE TO BE ROUGH GRADED TO +/- 0.10 FT AND PROOF ROLLED. ANY NON-ACCEPTABLE AREAS MUST BE CORRECTED PRIOR TO THE PLACEMENT OF STONE.
- PARKING LOT SHALL BE GRADED TO ASSURE POSITIVE DRAINAGE AND NO PONDING OF WATER.
- CURBS TO BE WHERE SHOWN ON THE PLAN AND INTEGRAL WITH SIDEWALK AT PAVING EDGE, AS APPROPRIATE.

DRAINAGE

- ALL WORK TO COMPLY WITH APPLICABLE ST. JOSEPH COUNTY CONSTRUCTION STANDARDS.
- PARKING AREAS SHALL BE GRADED TO ASSURE POSITIVE FLOW AWAY FROM THE BUILDING. NO PONDING OF WATER IS TO BE ALLOWED.
- CONTRACTOR IS TO CONFIRM ALL UTILITY LOCATIONS. IF DISCREPANCIES EXIST, NOTIFY ENGINEER PRIOR TO COMMENCING WORK.
- GRANULAR BACKFILL MATERIAL IS REQUIRED IN ALL PIPE TRENCHES LOCATED UNDER PAVEMENT OR SIDEWALKS. BACKFILL SHALL BE COMPACTED TO 100% STANDARD PROCTOR DENSITY.
- REFER TO STANDARD DETAILS FOR SPECIFICATIONS FOR PIPE TRENCHING, MATERIALS, INLETS, AND CASTING INFORMATION.

ENGINEER'S NOTES:

- ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE RE-GRADED TO THE PROPOSED CONTOURS, OR TO THE EXISTING CONTOURS WHERE CHANGE OF GRADE IS NOT PROPOSED.
- ANY CHANGE OF CONDITIONS DUE TO UNDERGROUND OR OTHER CONDITIONS SHALL BE PROMPTLY REPORTED TO THE ENGINEER.

EROSION CONTROL NOTES:

EROSION CONTROL:

- GENERAL CONTRACTOR IS RESPONSIBLE FOR ASSURING COMPLIANCE WITH ALL LOCAL AND STATE REQUIREMENTS FOR EROSION CONTROL. PRIMARY RESPONSIBILITY FOR MAINTENANCE OF THE EROSION CONTROL PROTECTION WILL REMAIN WITH THE GENERAL CONTRACTOR. GENERAL CONTRACTOR WILL ALSO BE REQUIRED TO CLEAN OUT ALL DRAINAGE STRUCTURES IMMEDIATELY PRIOR TO PROJECT TURNOVER.
- LAND DISTURBANCE WHICH REMOVES VEGETATION SHALL BE DONE IN A WAY THAT WILL MINIMIZE EROSION.
- THE DURATION OF TIME WHICH AN AREA REMAINS EXPOSED SHALL BE KEPT TO A PRACTICAL MINIMUM. THE AREA SHALL BE STABILIZED AS QUICKLY AS PRACTICAL.
- TEMPORARY VEGETATION OR MULCHING SHALL BE USED WHERE REQUIRED TO PROTECT EXPOSED AREAS DURING SITE DEVELOPMENT IF A DISTURBED AREA IS TO REMAIN INACTIVE FOR A PERIOD EXCEEDING 14 DAYS. TEMPORARY RYE GRASS SEEDING WILL BE PLACED TO PROVIDE VEGETATION.
- PERMANENT AND FINAL VEGETATION SHALL BE INSTALLED AS SOON AS PRACTICAL.
- STRAW BALE CHECK DAMS AND SILT FENCING SHALL BE PLACED AROUND ANY SOIL STOCKPILE THAT BECOMES INACTIVE FOR A PERIOD OF TIME EXCEEDING 15 DAYS.
- "SILT SACK", "DANDY BAGS" OR STONE FILLED BAGS SHALL BE PLACED AND MAINTAINED AROUND NEWLY CONSTRUCTED DRAINAGE STRUCTURES TO PREVENT SILT AND DEBRIS FROM ENTERING DOWNSTREAM DRAINAGE FACILITIES DURING ALL CONSTRUCTION AND SHALL REMAIN IN PLACE UNTIL SITE WORK IS COMPLETED.

GENERAL NOTES

- ALL WORK TO COMPLY WITH LOCAL AND STATE CODES & STANDARDS OF CONSTRUCTION.
- ALL TESTING REQUIRED BY GOVERNMENTAL AUTHORITIES IS TO BE PERFORMED BY THE CONTRACTOR.
- THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES. QUANTITIES GIVEN ARE APPROXIMATE AND MUST BE VERIFIED. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ENGINEER.
- THE CONTRACTOR IS RESPONSIBLE FOR EXAMINING ALL SITE CONDITIONS PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE OWNER WITH TWO COPIES OF "RED LINED" AS-BUILT PLANS OF THE DESIGNATED IMPROVEMENTS.
- CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO THE START OF THE WORK AND BRING ANY DISCREPANCIES TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION. PLANS INDICATE APPROXIMATE ELEVATIONS AND ROUTING. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY DIMENSIONAL OR ELEVATION DISCREPANCIES WHICH HAVE NOT BEEN BROUGHT TO HIS ATTENTION PRIOR TO CONSTRUCTION.
- CONTRACTOR TO LOCATE ALL UNDERGROUND UTILITIES ON THE SITE AND RIGHT OF WAY PRIOR TO STARTING WORK AND SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER AS TO ENSURE THAT THOSE UTILITIES WILL NOT BE DAMAGED OR DISTURBED. CONTRACTOR SHALL ALSO CONTACT ALL APPROPRIATE UTILITY COMPANIES, INCLUDING MUNICIPAL UTILITIES, TO COORDINATE ALL UTILITY INSTALLATIONS.
- CONTRACTOR IS TO COMPLY WITH RECOMMENDATIONS MADE IN THE GEOTECHNICAL REPORT.
- DETAILS AND SPECIFICATIONS SHOWN ON THIS PLAN ARE INTENDED TO COMPLEMENT THE PROJECT PLANS AND STANDARD DETAILS. IN CASES OF CONFLICTS BETWEEN THESE PLANS AND OTHER SPECIFICATIONS, THE MORE RESTRICTIVE CASE APPLIES, UNLESS SPECIFICALLY OVERRIDDEN.
- THESE TECHNICAL SPECIFICATIONS ARE INTENDED TO COMPLEMENT AND COORDINATE WITH THE REQUIREMENTS CONTAINED IN THE PROJECT MANUAL. IN THE CASE OF CONFLICTING REQUIREMENTS, THE MOST RESTRICTIVE SPECIFICATION SHALL BE ENFORCED. REFER ALSO TO THE ST. JOSEPH COUNTY PREVAILING SPECIFICATIONS AND RELATED DOCUMENTS WHICH ARE CONTAINED HEREIN BY REFERENCE, FOR WORK WITHIN PUBLIC RIGHTS-OF-WAY.

SPECIFICATIONS

DATE		DRAWN BY:		REVISIONS				SHEET
2/22/19	BLM							
SCALE	CHECKED BY:	DATE	BY					
NTS	MJD							
FILE #	PROJ. MNGR:							
180120.5	BLM							



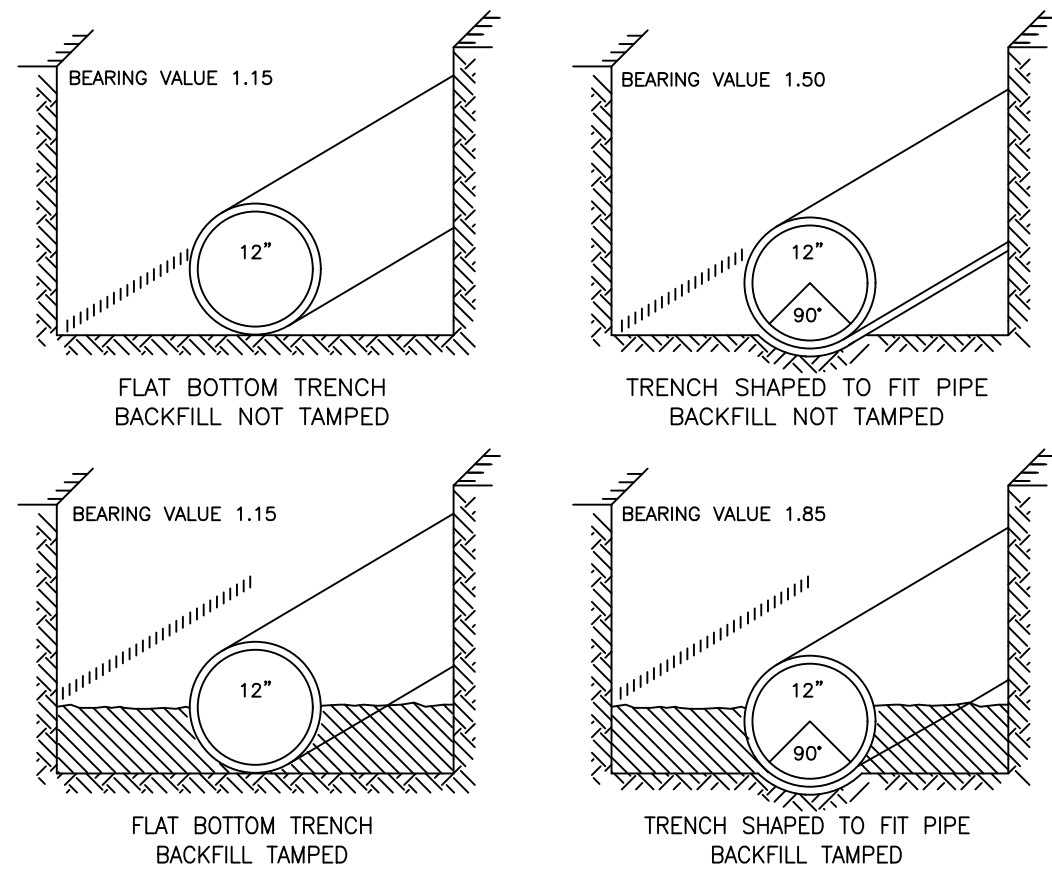
Danch, Harner & Associates, Inc.
 Land Surveyors • Professional Engineers
 Landscape Architects • Land Planners
 Office: (571)234-4003 / (800)994-4003 • Fax: (571)234-4119
 1843 Commerce Drive • South Bend, IN 46628



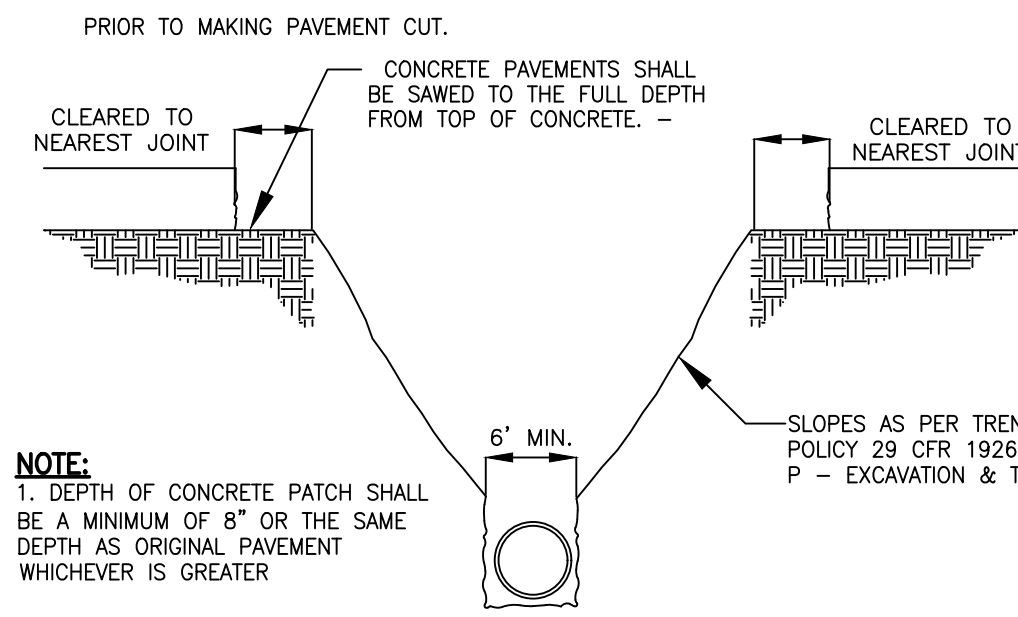
SHEET

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BELLE TERRE AT SOUTH BEND MAJOR



NO SCALE
PIPE BEDDING DETAIL



NO SCALE
TYPICAL PAVEMENT CUT & PATCH

ST. JOSEPH CO. CURB NOTES:

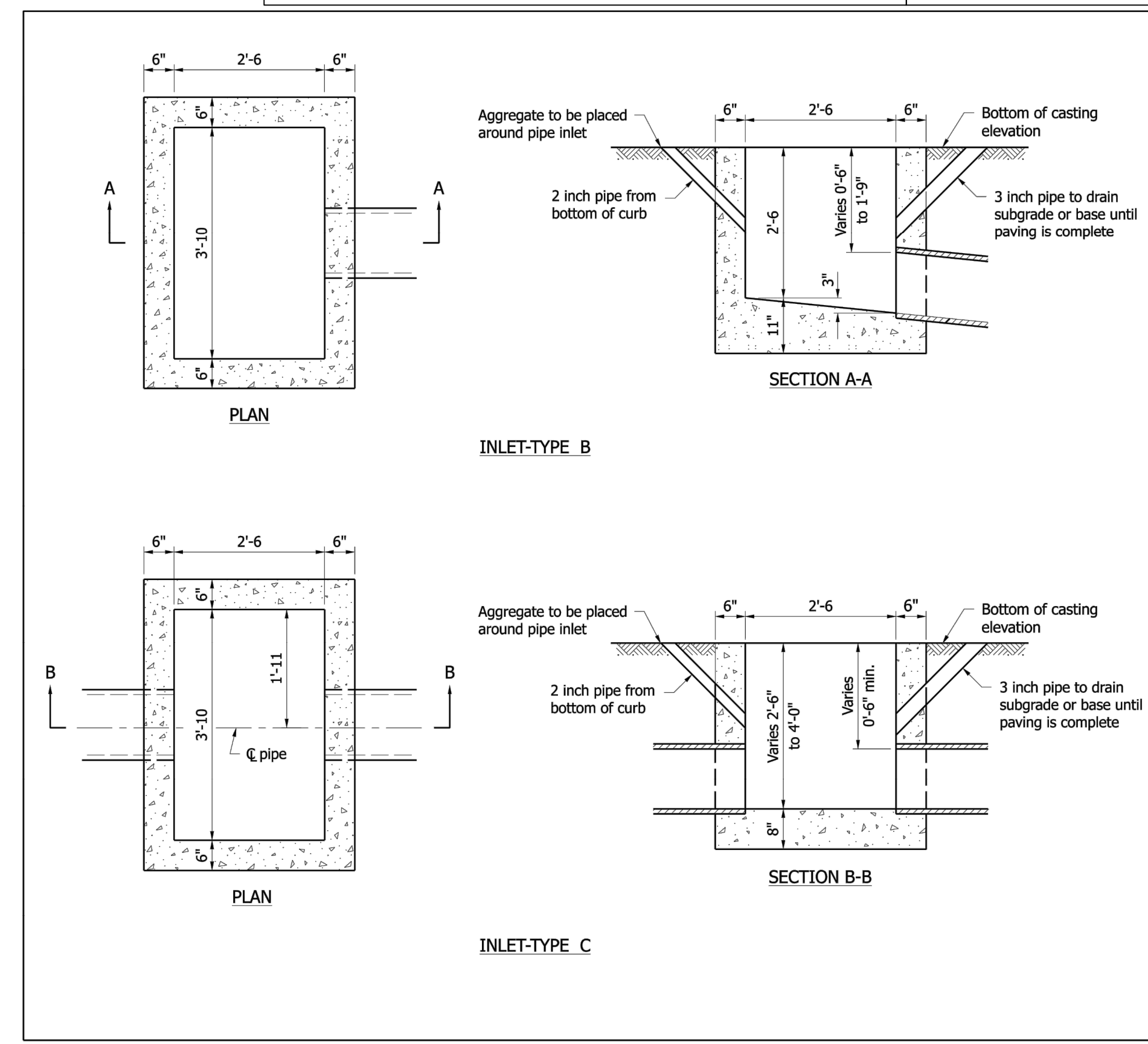
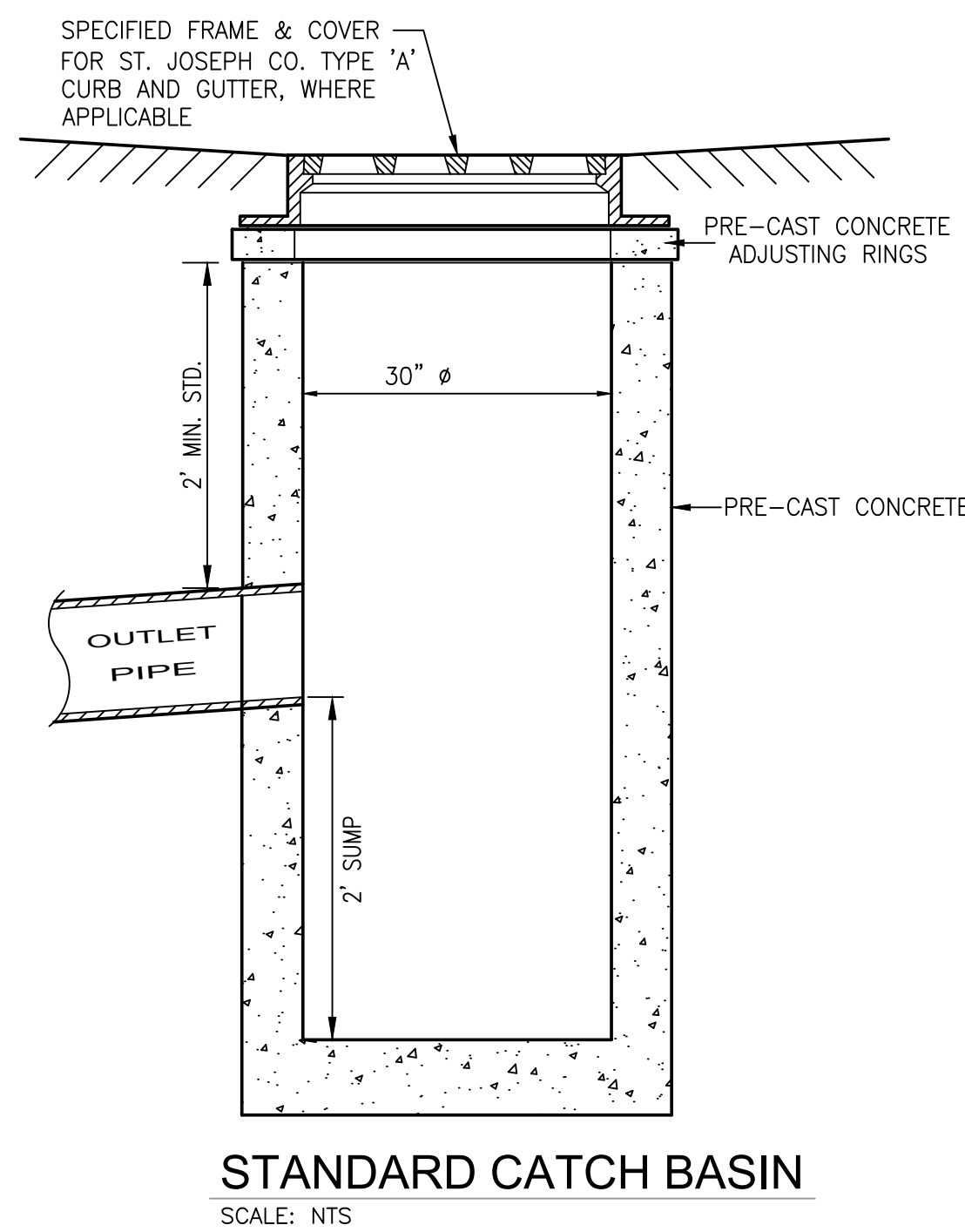
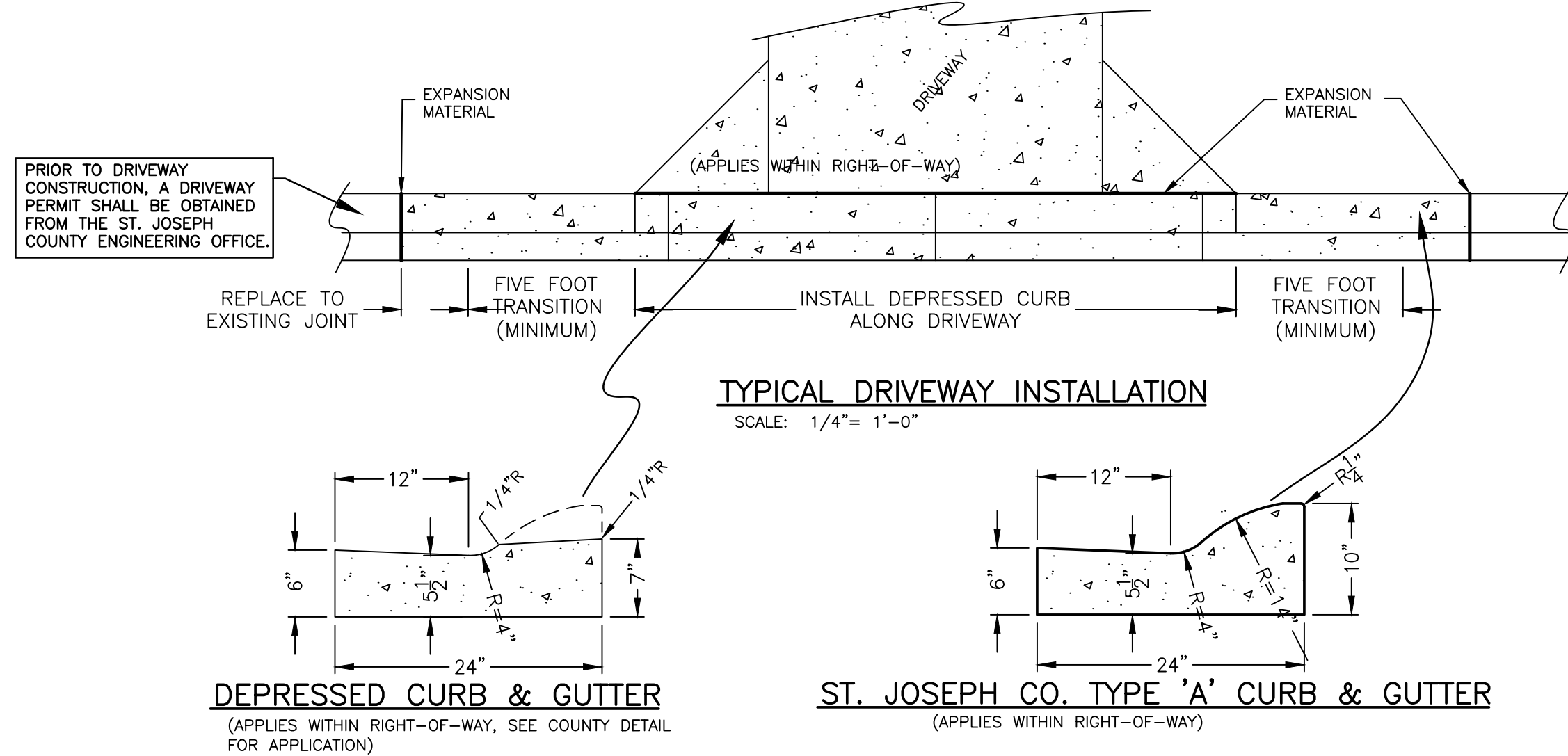
- EXISTING CONCRETE CURB SHALL BE SAWCUT, REMOVED, AND REPLACED TO THE NEAREST EXISTING JOINT.
- EXPANSION MATERIAL SHALL BE INSTALLED AT THE JOINT OF THE NEW CURB WITH THE EXISTING CURB.
- EXPANSION MATERIAL SHALL BE PLACED BETWEEN THE CURB AND DRIVEWAY.
- THE CONTRACTOR SHALL MAINTAIN THE DIRECTION & FLOW OF WATER IN THE CURBLINE AND SUBMIT A DRAWING SHOWING THE EXISTING CURBLINE ELEVATIONS AND THE PROPOSED CURB WORK.
- A MINIMUM FIVE FOOT TRANSITION SHALL BE REQUIRED FROM THE DEPRESSED CURB TO THE COMB. CURB & GUTTER, TYPE 'A'.
- CLASS 'A' CONCRETE SHALL BE USED.
- CONTRACTION JOINTS SHALL BE PLACED EVERY TEN FEET.
- AN INSPECTION SHALL BE REQUIRED PRIOR TO ANY WORK. A SECOND INSPECTION SHALL BE REQUIRED BEFORE POURING THE DEPRESSED CURB.
- A FINAL INSPECTION SHALL BE REQUIRED UPON COMPLETION OF CURB WORK & PRIOR TO ANY ASPHALT REPAIR. ALL ASPHALT REPAIR, ALL ASPHALT REPAIR SHALL BE COMPLETED PER COUNTY STANDARDS & AT THE COUNTY ENGINEER'S DIRECTION.
- DEPRESSED CURB SHALL NOT BE ALLOWED WHEN THE DRIVEWAY APPROACH SLOPES DOWNWARD FROM THE ROADWAY TOWARD A HOME OR GARAGE.
- DEPRESSED CURB MAY NOT BE ALLOWED WHEN AN EXISTING STRUCTURE IS LOCATED WITHIN THE DRIVEWAY APPROACH.
- THE COUNTY ENGINEER MUST APPROVE THE INSTALLATION OF A DEPRESSED CURB.
- ALL DEPRESSED CURB WORK REQUIRES A DRIVEWAY PERMIT PER THE ORDINANCE.

ENGINEER'S NOTES:

- ALL PAVEMENTS, ROADWAY WORK AND TESTING SHALL CONFORM TO ST. JOSEPH COUNTY AND INDOT SPECIFICATIONS
- ALL CURB & GUTTER SHALL BE OF "CLASS A" CONCRETE, AIR ENTRAINED, AND FROM THE SAME SOURCE AS THE PROPOSED CONCRETE PAVEMENTS.
- CONTRACTOR SHALL OBTAIN & PAY FOR REQUIRED RIGHT-OF-WAY AND/OR DRIVEWAY PERMITS FROM THE COUNTY ENGINEER, AND SHALL COORDINATE WITH THE COUNTY ENGINEER FOR ALL COUNTY REQUIRED INSPECTIONS AND TESTING.
- CONCRETE AND ASPHALT MIX DESIGNS SHALL BE PROVIDED TO THE ENGINEER A MINIMUM OF 5 BUSINESS DAYS PRIOR TO ANY PLACEMENT.
- CONTRACTOR SHALL HIRE AND PAY A QUALIFIED GEOTECHNICAL FIRM FOR ALL COMPACTION & MATERIALS TESTING ON-SITE. INSPECTION & TESTING SHALL BE PERFORMED AT REPRESENTATIVE INTERVALS, AND PER INDOT SPECIFICATIONS.
- INSPECTION & TESTING REPORTS SHALL BE DELIVERED TO THE ENGINEER IN A TIMELY MANNER.
- CONTRACTOR SHALL RETAIN ALL MATERIAL DELIVERY SLIPS SHOWING THE SOURCES, TYPE, QUANTITY AND PLACEMENT LOCATIONS/TIMES. DELIVERY SLIPS SHALL BE MADE AVAILABLE TO THE TESTING TECHNICIAN AND ENGINEER UPON REQUEST.

CURB & GUTTER NOTES:

- TRANSITION PER COUNTY STANDARDS TO MATCH THE EXISTING CURB & GUTTER AT TIE-INS & EXISTING DRIVES.
- PLACE EXPANSION JOINTS TO ALIGN WITH PAVEMENT JOINTS, AT TIE-INS, ON EACH SIDE OF STRUCTURES, AND AT CHANGES OF ALIGNMENT PER COUNTY/INDOT STANDARDS.
- PLACE ADDITIONAL EXPANSION JOINTS AT MINIMUM OF 80 FT. INTERVALS.
- ROADWAY COMPACTED BASE COURSE AND SUBGRADE SHALL EXTEND UNDER ALL CURB & GUTTER, AND TO A MINIMUM DISTANCE OF 6" BEHIND BACK OF CURB. SUBGRADE SHALL BE TRIMMED TO DRAIN TOWARD ANY UNDERDRAINS.



INDIANA DEPARTMENT OF TRANSPORTATION

INLET TYPE B AND C

SEPTEMBER 2008

STANDARD DRAWING NO. E 720- INST-02

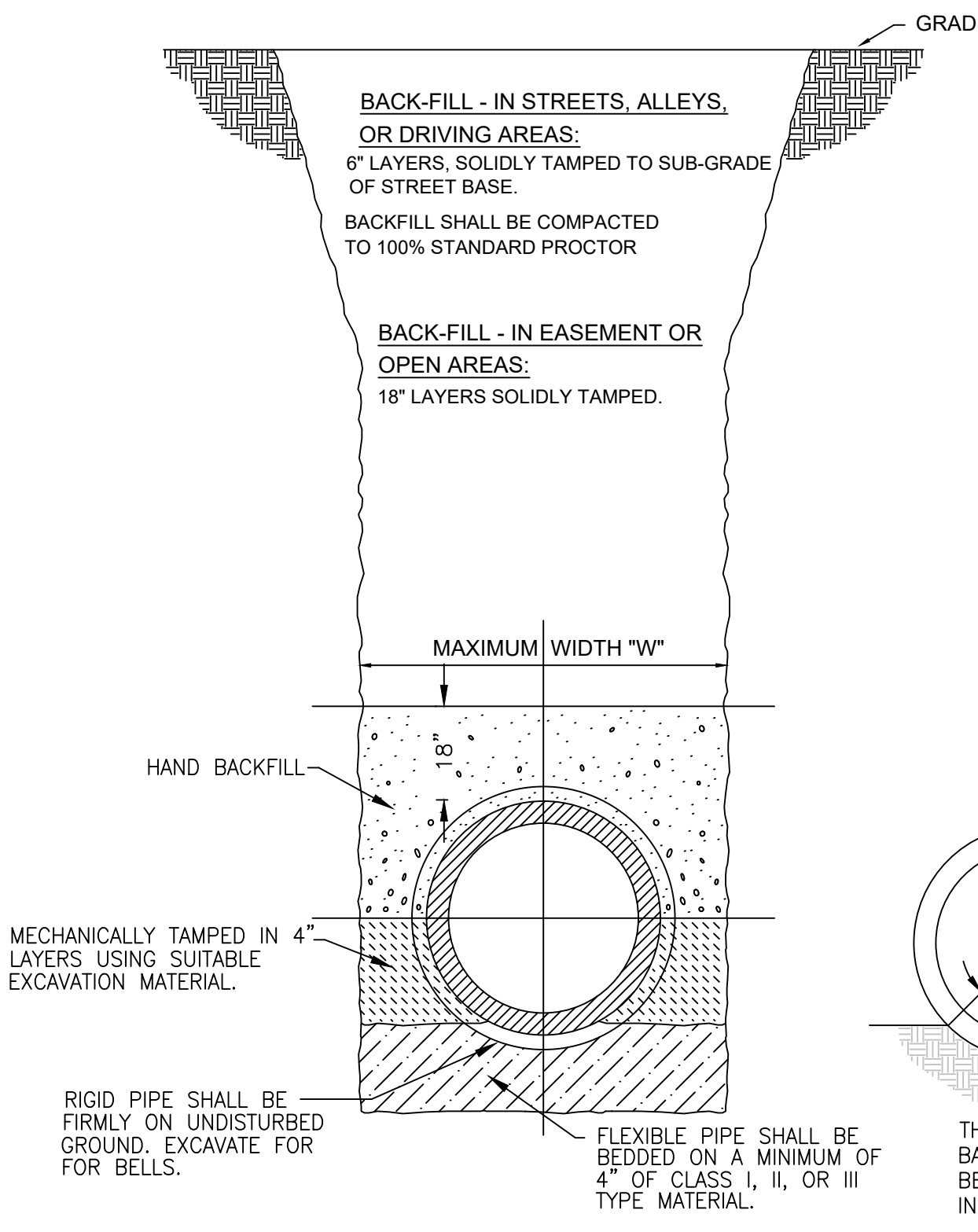
REGISTERED PROFESSIONAL ENGINEER

No. 9750 STATE OF INDIANA

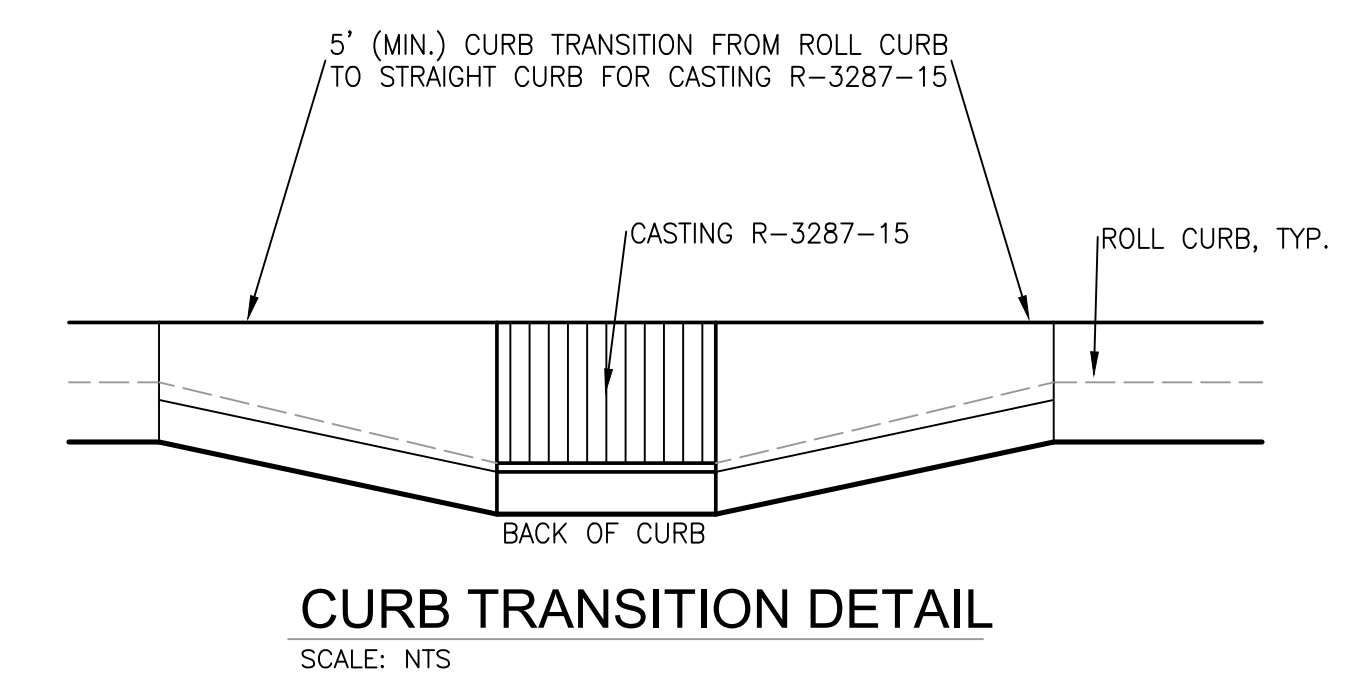
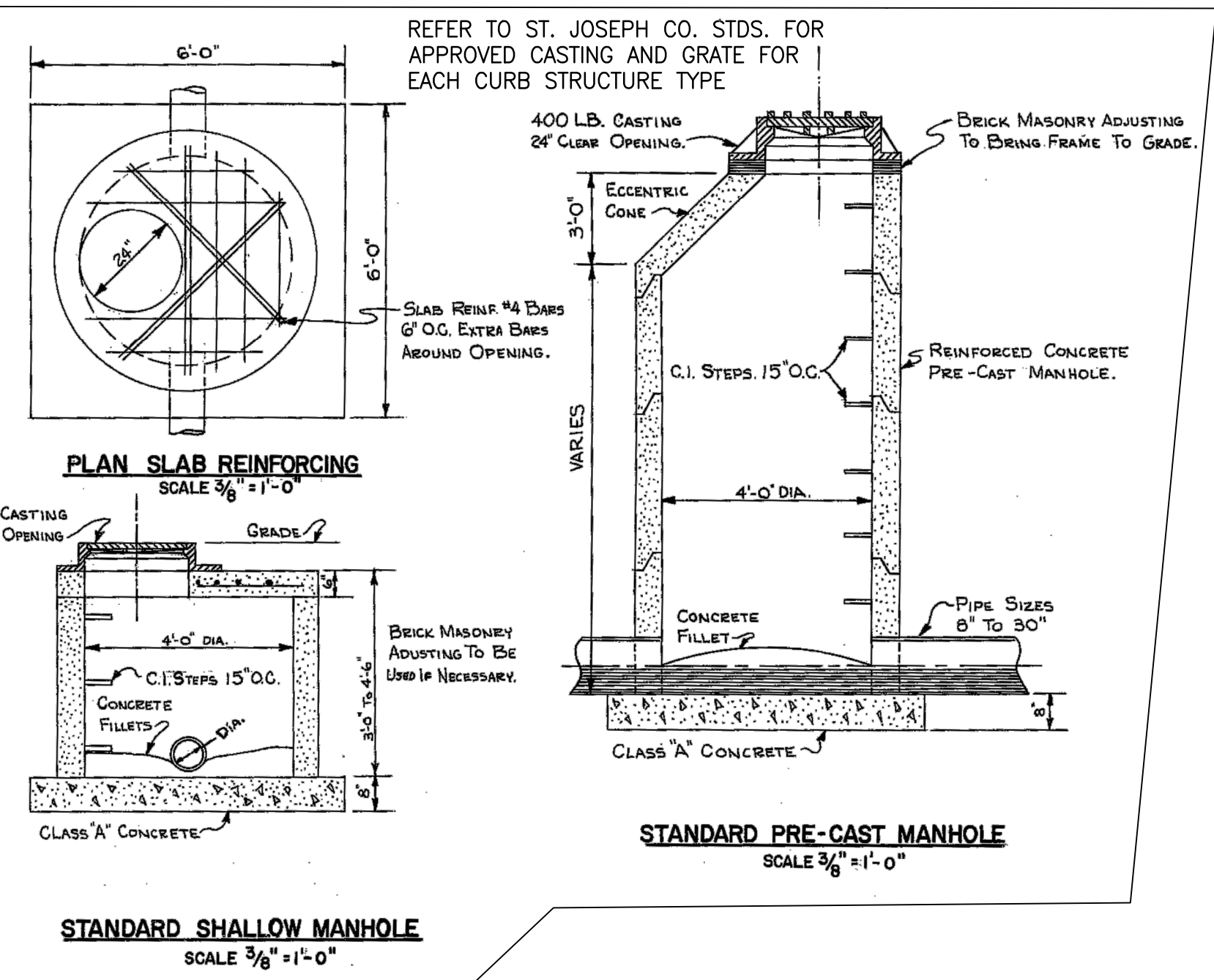
/s/ Richard L. VanCleave 09/02/08
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/02/08
CHIEF HIGHWAY ENGINEER DATE

PIPE DIAM.	"W"
6"	18"
8"	24"
10"	24"
12"	30"
15"	35"
18"	39"
21"	42"
24"	45"



PIPE TRENCH
SCALE: NTS



DETAILS

ANY INFORMATION ON THIS DRAWING IS NOT INTENDED TO BE SUITABLE FOR REUSE BY ANY PERSON, FIRM OR CORPORATION OR ANY OTHERS ON EXTENSION OF THIS PROJECT OR FOR ANY USE ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION AND ADOPTION BY THE ENGINEER, ARCHITECT OR SURVEYOR FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO THE ENGINEER, ARCHITECT OR SURVEYOR.

ALL UNDERGROUND UTILITIES MUST BE FIELD VERIFIED BY THE CONTRACTOR BEFORE ANY CONSTRUCTION MAY BEG.

- NOTES:
- ALL ROAD WORK AND STORM DRAINAGE SHALL BE IN ACCORDANCE WITH ST. JOSEPH CO. STANDARDS AND SPECIFICATIONS.
 - ALL STORM DRAIN PIPE SHALL BE ASTM C76-3 R.C.P. WITH PREMIUM JOINTS EXCEPT WHERE OTHERWISE SHOWN ON THE APPROVED PLANS.

BRYAN L. MILLER
REGISTERED PROFESSIONAL ENGINEER
No. PE00000529
STATE OF INDIANA

By: [Signature]

DATE	DRAWN BY:	REVISIONS	
2/22/19	BLM	DATE	BY
SCALE NTS	CHECKED BY: MJD		
FILE # 180120.5	PROJ. MNGR: BLM		

SHEET C5.1

Danch, Harmer & Associates, Inc.
Land Surveyors • Professional Engineers
Landscape Architects • Land Planners

1643 Commerce Drive • South Bend, IN 46628

DHA

2017-2-29 10:10:15 P: 07: updated: 07: HMM: 07: 2/29/2017 11:00 AM SW

BELLE TERRE AT SOUTH BEND MAJOR

LEGAL DESCRIPTION:

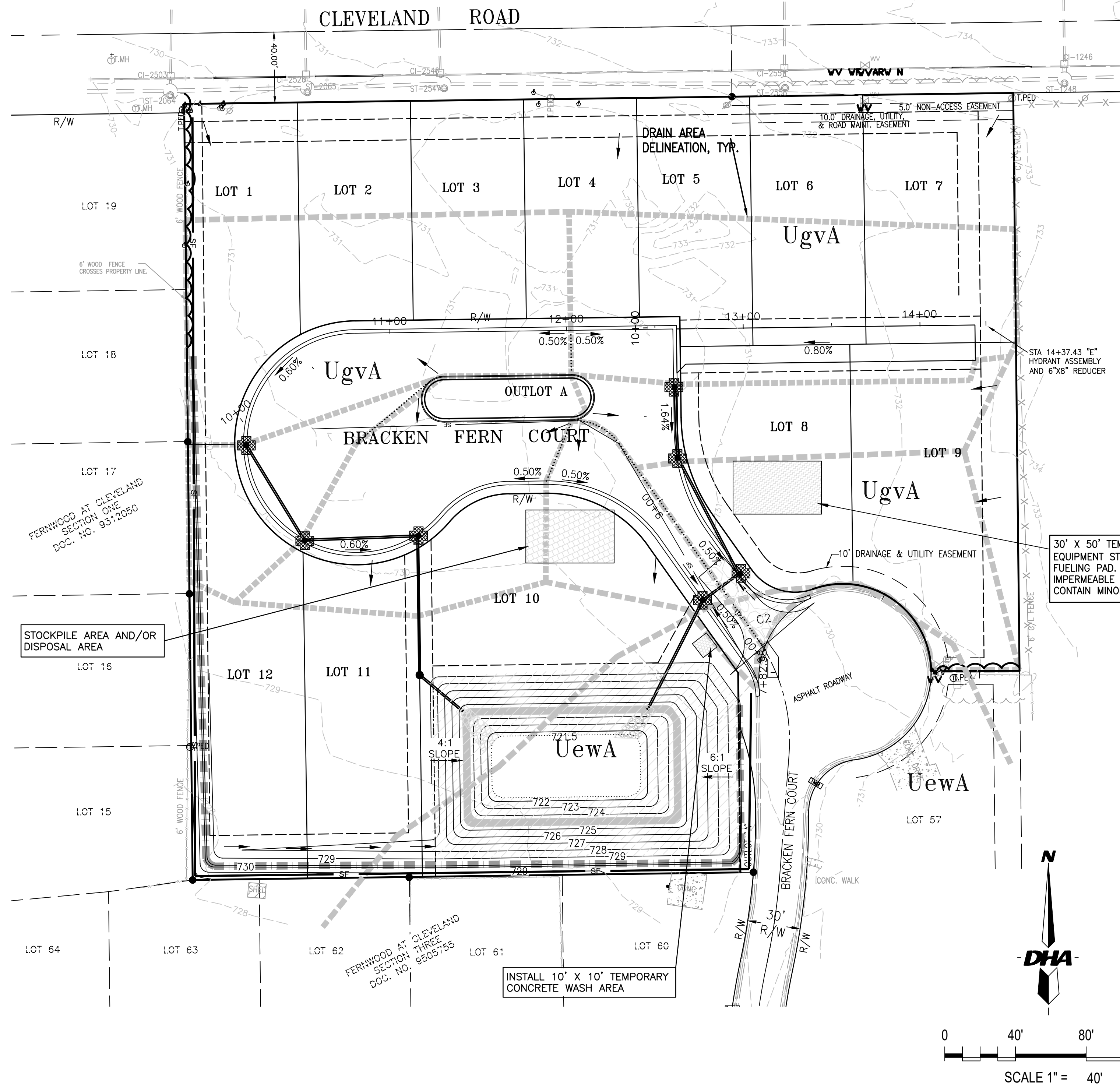
THAT PART OF THE NORTHWEST QUARTER OF SECTION 30, TOWNSHIP 38 NORTH, RANGE 3 EAST, CLAY TOWNSHIP, ST. JOSEPH COUNTY, INDIANA WHICH IS DESCRIBED AS: BEGINNING AT THE NORTHEAST CORNER OF LOT # 19 OF THE PLAT OF "FERNWOOD AT CLEVELAND SECTION ONE" AS RECORDED BY DOCUMENT NUMBER 9312050 IN THE RECORDS OF THE ST. JOSEPH COUNTY, INDIANA RECORDER'S OFFICE; THENCE N. 89°14'06" E., A DISTANCE OF 309.96 FEET (REC. N. 90°00'00" E., 310.00 FEET) ALONG THE SOUTH RIGHT-OF-WAY LINE OF CLEVELAND ROAD TO THE NORTHWEST CORNER OF LOT # 59 IN THE PLAT OF "FERNWOOD AT CLEVELAND SECTION THREE" AS RECORDED BY DOCUMENT NUMBER 9505755 IN THE RECORDS OF SAID COUNTY; THENCE ALONG THE WEST LINE OF SAID LOT # 59, THE WEST RIGHT-OF-WAY LINE OF BRACKEN FERN COURT AND OUTLOT "A" IN SAID SUBDIVISION PLAT, S. 00°37'32" E. A DISTANCE OF 438.95 FEET (REC. S. 00°08'29" W., 439.10 FEET) TO THE NORTH LINE OF LOT # 60 IN SAID PLAT; THENCE S. 89°12'28" W. ALONG THE NORTH LINE OF LOTS # 60, 61, 62, AND A PORTION OF LOT # 63 IN SAID PLAT, A DISTANCE OF 309.91 FEET (REC. S. 90°00'00" W., 310.00 FEET) TO THE SOUTHEAST CORNER OF LOT # 15 IN THE PLAT OF "FERNWOOD AT CLEVELAND SECTION ONE"; THENCE N. 00°37'54" W (REC. N. 00°08'29" E.), ALONG THE EAST LINE OF SAID LOT # 15, AND LOTS # 16, 17, 18 AND 19 OF SAID PLAT, A DISTANCE OF 439.10 FEET (REC. 439.10 FEET) TO THE POINT OF BEGINNING.

ALSO,

LOTS 58, AND 59 OF THE RECORDED PLAT OF FERNWOOD AT CLEVELAND SECTION THREE AS RECORDED BY DOCUMENT NUMBER 9505755 IN THE OFFICE OF THE RECORDER OF ST. JOSEPH COUNTY, INDIANA.

CONTAINING 4.22 ACRES MORE OR LESS.

SUBJECT TO ALL LEGAL HIGHWAYS, EASEMENTS AND RESTRICTIONS OF RECORD.



PLAN REQUIREMENT NOTES:

- THERE ARE NO WETLANDS, LAKES, AND WATER COURSES ON AND ADJACENT TO THE SITE.
- PROJECT PURPOSE IS TO DEVELOP THE SITE FOR RESIDENTIAL SINGLE-FAMILY HOUSING.
- NO OFF-SITE CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT WITH THE EXCEPTION OF RIGHT-OF-WAY IMPROVEMENTS AT ENTRY DRIVE AND UTILITY CONNECTIONS.
- THERE ARE NO STATE OR FEDERAL WATER QUALITY PERMITS REQUIRED OR ACTIVE.
- ALL STORM WATER WILL BE RETAINED ON SITE PER COUNTY STANDARDS.
- POTENTIAL DISCHARGE TO GROUNDWATER WOULD BE THROUGH PERCOLATION FROM THE PROPOSED UNDERGROUND DRAINAGE SYSTEM
- RECEIVING WATERS TO ST JOSEPH RIVER LOCATED 1.09 MILES WEST OF PROJECT SITE VIA THE AUTEN DITCH AND SUB-SURFACE FLOW.
- PROJECT IS NOT LOCATED IN A FLOOD PLAIN, FLOODWAY OR FLOODWAY FRINGES.
- VEGETATIVE COVER CONSISTS OF HEAVILY FORESTED TREES.

Stabilization Practice	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Permanent Seeding			A				*IIIIIIII*					
Dormant Seeding	B											B
Temporary Seeding			C					D				
Sodding			E									
Mulching			F**									

- A = Kentucky Bluegrass 40 lbs/acre; or 40 lbs. tall Fescue; plus 2 tons straw mulch/acre or add Annual Ryegrass 20 lbs/acre.
- B = Kentucky Bluegrass 60 lbs/acre; or 40 lbs. tall Fescue; plus 2 tons straw mulch/acre or add Annual Ryegrass 30 lbs/acre.
- C = Spring Oats 100 lbs/acre
- D = Wheat or Rye 150 lbs/acre.
- E = Annual Ryegrass 40 lbs/acre. (1 lb/1000 sq. ft.)
- F = Sod
- G = Straw Mulch 2 tons/acre.
- *II* Irrigation needed during June, July, and/or September.
- ** Irrigation needed for 2 to 3 weeks after applying sod.

MAINTENANCE
Inspect weekly and after each 1/2" rainfall event, until the stand is successfully established. (Characteristics of a successful stand include: vigorous dark green or bluish-green seedlings; uniform density with nurse plants, legumes, and grasses well inter-mixed; green leaves; and the perennials remaining green throughout the summer, at least at the plant base.)

Plan to add fertilizer the following growing season according to soil test recommendations.

Repair damaged, bare, or sparse areas by filling any gullies, re-planting, over- or re-seeding, and mulching. If plant cover is sparse or patchy, review the plant materials chosen, soil fertility, moisture condition, and mulching; then repair the affected area either by over-seeding or by re-seeding and mulching after re-preparing the seedbed.

If vegetation fails to grow, consider soil testing to determine acidity or nutrient deficiency problems. (Contact your SWCD or Cooperative Extension office for assistance.)

If additional fertilization is needed to get a satisfactory stand, do so according to the soil test recommendations.

All swales shall be seeded with 2 lbs. Adelpi bluegrass and 2 lbs. Perennial Darby rye, or equivalent per 1000 square feet. mulch with one bale of straw per 1000 square feet. Fertilize with 5 lbs. of 20-5-5 per 1000 square feet unless specified otherwise.

GENERAL SURVEY DISCLAIMER NOTES:

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STABILIZATION METHOD PER SEASON

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ALL UNDERGROUND UTILITIES MUST BE FIELD VERIFIED BY THE CONTRACTOR BEFORE ANY CONSTRUCTION MAY BEGIN.

POST-CONSTRUCTION MAINTENANCE
ALL INLET STRUCTURES TO BE CLEANED OUT TWICE PER YEAR
VISUALLY INSPECT ALL INLET STRUCTURES ONCE PER YEAR. CLEAN ANY DEBRIS AS NECESSARY.
CONTACT: FOUR HORSEMEN VENTURES, LLC (CARLO IIIIIIIIIII)
PHONE: (484)614-7419

HYDROLOGIC UNIT CODE:
04050001240050
LATITUDE /LONGITUDE:
41°43'21.91"N 86°13'44.12"W

SOILS DATA		
CODE	NAME	% SLOPE
Uewa	Urban land-Brems-Morocco complex	0 to 1
Ugva	Urban land-Tyner complex	0 to 1

EROSION CONTROL LEGEND

- [Symbol] = INSTALL INLET PROTECTION FOR EROSION CONTROL
- SF = INSTALL SILT FENCE FOR EROSION CONTROL
- [Symbol] = INSTALL 60' X 20' TEMPORARY GRAVEL DRIVE
- [Symbol] = STRAW MULCH BLANKET

PROPOSED SITE PLAN (ST. JOSEPH COUNTY, INDIANA) EROSION CONTROL SCHEDULE

ITEM	ELAPSED TIME (WEEKS)
1. INSTALL SILT FENCE	0
2. ROUGH GRADE SITE	0
3. INSTALL GRAVEL APPROACH (NA)	0
4. INSTALL STORM STRUCTURES & PIPING	0
5. INSTALL INLET EROSION CONTROL PROTECTION	0
6. FINISH GRADE DRIVE	0
7. INSTALL CURBS	0
8. REMOVE GRAVEL APPROACH (NA)	0
9. INSTALL PAVEMENT BASE	0
10. REMOVE INLET EROSION PROTECTION	0
11. ADD FILTER CLOTH TO STORM INLET CASTINGS	0
12. FINISH GRADE TURF AREAS	0
13. SEED/SOD & MULCH SITE	0
14. FINAL PAVING	0
15. REMOVE FILTER CLOTH AT INLETS	0
16. REMOVE SILT FENCE	0

EROSION CONTROL MAINTENANCE MEASURES:

- TEMPORARY SEEDING - 15 DAYS AFTER COMPLETE GRADING OR INTERIM STOCKPILES.
- CLEAN OUT SEDIMENT TRAPS - WEEKLY OR AFTER EACH 1/2" RAINFALL EVENT AS NEEDED UNTIL ALL DISTURBED EARTH IS STABILIZED.
- CLEAN OUT INLETS / FILTER CLOTH - WEEKLY OR AFTER EACH 1/2" RAINFALL EVENTS NEEDED UNTIL ALL DISTURBED EARTH IS STABILIZED.
- RESTORE ERODED AREAS - AFTER EACH 1/2" RAINFALL EVENT OR MONTHLY AS NEEDED.
- EQUIPMENT STAGING PAD CLEANUP - AFTER EACH SPILL OR WEEKLY AS NEEDED. (REMOVE CONTAMINATED SOIL)
- GRAVEL DRIVE REPAIR - REPLACE DRIVE GRAVEL AS NECESSARY TO PREVENT TRACKING OF MUD ON ROADS. STREET SWEEPING TO BE DONE ON A REGULAR BASIS TO REDUCE THE TRACKING OF MUD INTO THE ROAD.
- SILT FENCE REPAIR - CHECK AFTER EACH 1/2" RAINFALL EVENT AND REPAIR, OR WEEKLY AS NEEDED.
- THE HOA (PROPERTY OWNERS) WILL BE RESPONSIBLE FOR MAINTAINING POST CONSTRUCTION EROSION CONTROL MEASURES.

SOIL EROSION CONTROL

DATE	DRAWN BY:	REVISIONS	
2/22/19	BLM		
SCALE	CHECKED BY:	DATE	BY
1"=40'	MJD	8/14/19	BLM
FILE #	PROJ. MANGR:	BASIN SAFETY LEDGE ADDED	
180120.5	BLM		

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SHEET
C6.0

BELLE TERRE AT SOUTH BEND MAJOR

G:\2010\100153.5 Mishawaka Utilities Parking lot\EROSION_IMAGES\SILT FENCE-3.TIF

G:\2010\100153.5 Mishawaka Utilities Parking lot\EROSION_IMAGES\SILT FENCE-4.TIF

G:\2010\100153.5 Mishawaka Utilities Parking lot\EROSION_IMAGES\SILT FENCE-6.TIF

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G:\2010\100153.5 Mishawaka Utilities Parking lot\EROSION_IMAGES\CONCRETE WASHOUT-1.TIF

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G:\2010\100153.5 Mishawaka Utilities Parking lot\EROSION_IMAGES\CONCRETE WASHOUT-3.TIF

G:\2010\100153.5 Mishawaka Utilities Parking lot\EROSION_IMAGES\CONCRETE WASHOUT-4.TIF

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G:\2010\100153.5 Mishawaka Utilities Parking lot\EROSION_IMAGES\CONCRETE WASHOUT-6.TIF

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SOIL EROSION DETAILS

DATE	DRAWN BY:	REVISIONS	
2/22/19	BLM	DATE	BY
SCALE	CHECKED BY:		
NTS	MJD		
FILE #	PROJ. MANGR:		
180120.5	BLM		

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BELLE TERRE AT SOUTH BEND MAJOR

CONCRETE WASHOUT

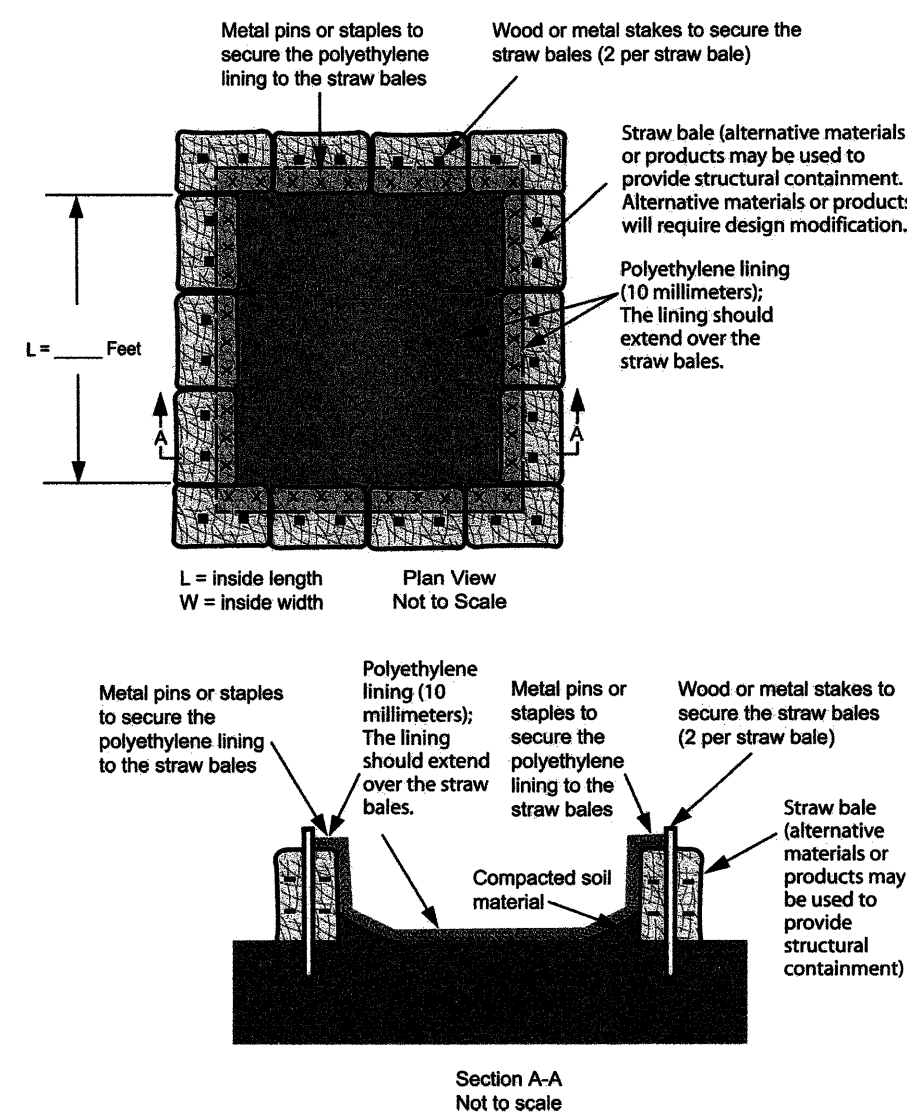
- When concrete washout systems are no longer required, the concrete washout systems shall be closed. Dispose of all hardened concrete and other materials used to construct the system.
- Holes, depressions and other land disturbances associated with the system should be backfilled, graded, and stabilized.

October 2007

Chapter 7 253

CONCRETE WASHOUT

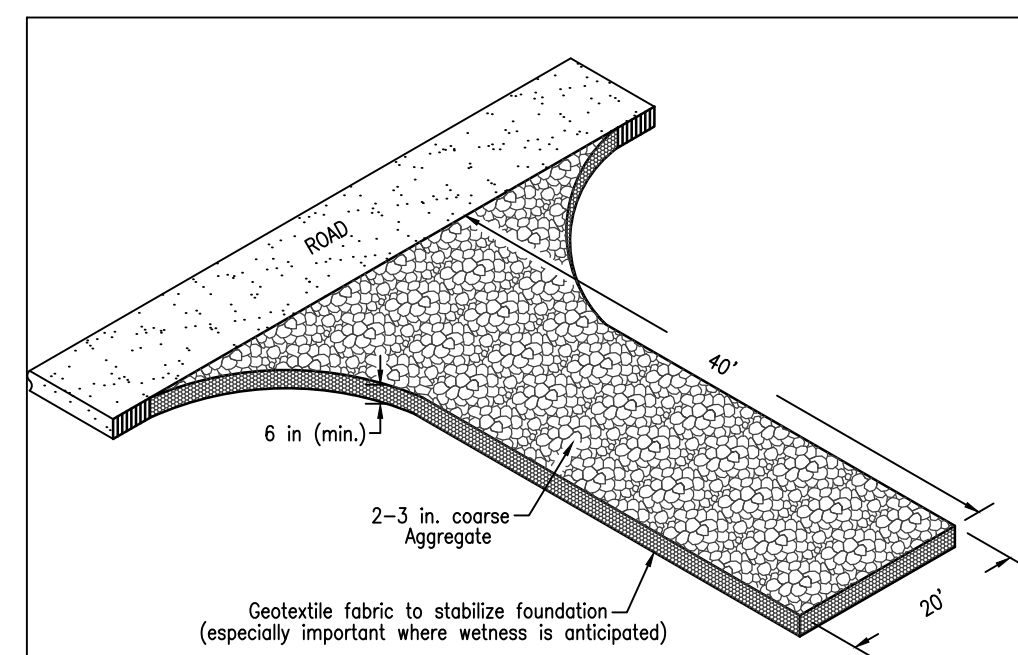
Concrete Washout (Above Grade System) Worksheet



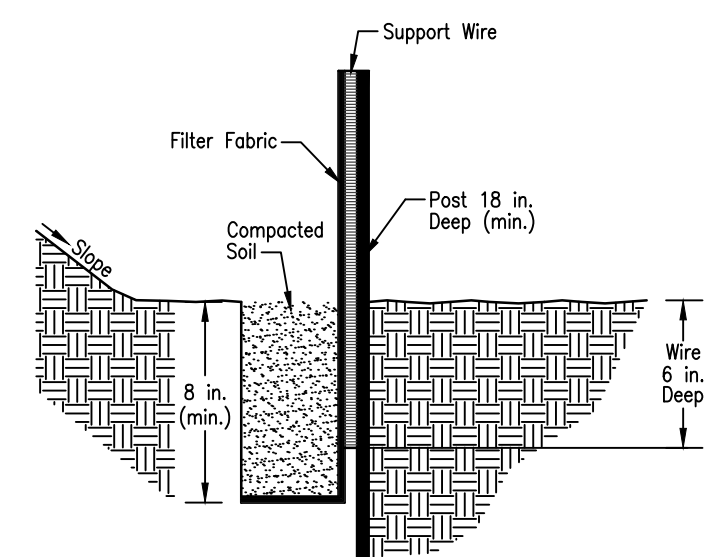
254

Chapter 7

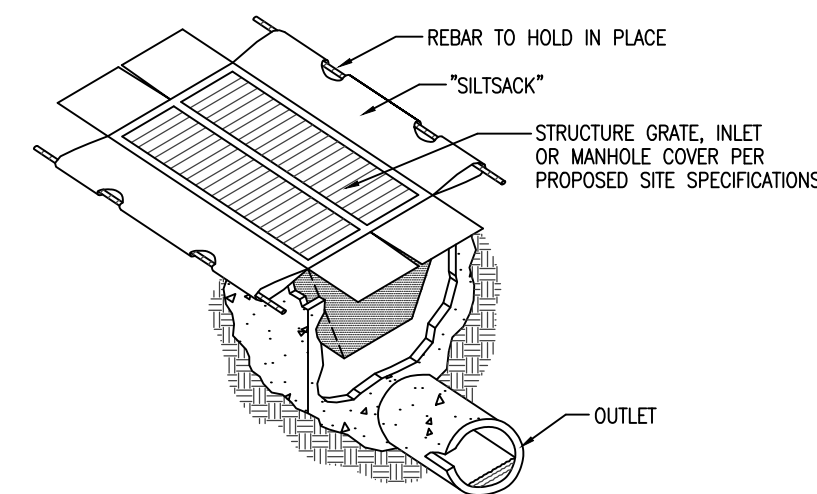
October 2007



EC1 TEMPORARY GRAVEL DRIVE
SCALE: NTS



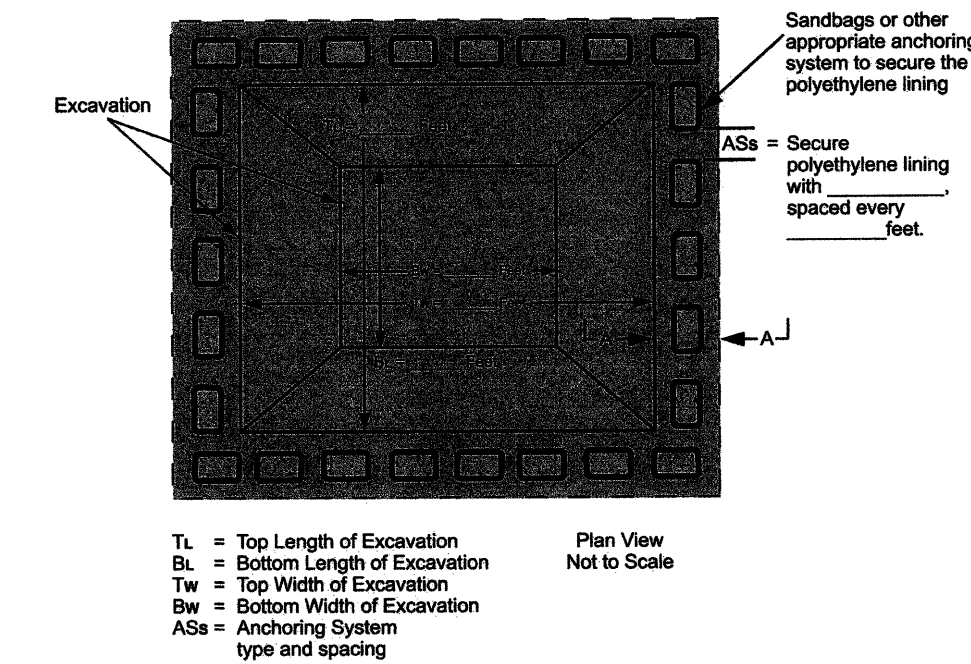
EC2 SILT FENCE
SCALE: NTS



EC3 SILT SACK DETAIL
SCALE: NTS

CONCRETE WASHOUT

Concrete Washout (Below Grade System) Worksheet



October 2007

Chapter 7 255

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2/22/19	BLM	DATE	BY
SCALE	CHECKED BY:		
NTS	MJD		
FILE #	PROJ. MANGR:		
180120.5	BLM		

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EXHIBIT B

PERFORMANCE BOND

EXHIBIT C

SYSTEM DEVELOPMENT CHARGES

Estimate for System Development Charges

Estimate Provided On: 12/5/2019

Estimate Provided By: C. Brach

Belle Terre South Bend, IN

****Estimate is based on projected uses and calculations provided by owner/consultant****

	Values	Unit Type
Single Family Homes # of Unit Types	12	houses
Estimated Flow (gpd) for Single Family Homes	310	per house
Estimated Total Flow for Single Family Homes	3720	gpd
Estimated Total Flow for Belle Terre	3720	gpd
ERU calculation	12.000	ERU
ERU rounddown	12	ERU
Sewer SDC Calculation (\$1145 per ERU)	\$	13,740.00
Water SDC Calculation (\$475 per ERU)	\$	5,700.00
Estimated Amount Due for Belle Terre	\$	19,440.00
Estimated 10% Discounted Total (Payment in full)	\$	17,496.00

Per the Ordinance of the Common Council of the City of South Bend, System Development Charges are summarized below from Sections 17-79 and 17-80:

Sec. 17-79. - System Development Charge for Wastewater inside and outside City limits.

(1) For purposes of this section "ERU" shall be defined as an equivalent residential unit which means a single family residence. For purposes of customers that are not single family residences, one (1) ERU shall equal estimated wastewater flows of three hundred ten (310) gallons per day. No customer will be less than one (1) ERU. There will be no partial ERU's. The City shall round down to the closest applicable ERU calculation at all times.

(2) Except as provided in Subsections (5) and (6) of this section, for every new connection to the South Bend Municipal Sewer Works, a system development charge of one thousand one hundred forty-five dollars (\$1,145.00) shall be collected per ERU and additional portion thereof to be connected. All charges shall be billed by the City at the time the application for service is filed.

(3) System development charges per ERU shall also be collected from existing customers undertaking activities producing a permanent increase in wastewater flow of greater than three hundred ten (310) gallons per day. This subsection shall not apply to an existing customer who has, by contract, purchased reserved capacity from the City so long as the customer's flows remain within the reserved capacity. A permanent increase shall be deemed to have occurred when the average flow rate for six (6) consecutive months exceeds the current flow rate by at least three hundred ten (310) gallons per day.

(4) For multifamily structures (e.g., apartments, condominiums, mobile home communities), each individual unit shall be one (1) ERU. For all other types of structures, the ERU calculation shall be based upon the ratio of Average Daily Flow as computed pursuant to 327 IAC 3-6-11 in relationship to three hundred ten (310) gallons per day. For structures not listed in 327 IAC 3-6-11, the ERU shall be calculated as the relationship between the Average Daily Flow reported in the sewer capacity certification for the structure and three hundred then (310) gallons per day.

(5) For customers with greater than twenty (20) ERUs as calculated pursuant to subsection (4) of this section, the ERU shall be adjusted based upon the Peaking Factor as computed herein. The Peaking Factor shall be calculated by dividing the Peak Daily Flow by the Average Daily Flow, both as reported in the sewer capacity certification. In no event will a Peaking Factor less than 2.0 be used for purposes of the adjustment described in this subsection. The Peaking Factor divided by 4.0 (the Peaking Factor for residential connections) will be multiplied by the number of ERUs for purposes of computing the system development charge owed by the customer. The City Board of Works may execute a contract with the customer authorizing an increase to the initial System Development Charge based upon actual usage data that is collected after connection.

(6) Where a prospective customer seeks to connect a new structure on property which replaces a prior structure of a similar use what was located on the same property and which was connected to the South Bend Municipal Sewer Works, no system development charge will be collected. For instance, if the prior structure was a single family structure and the new structure is to be used as a multi-family structure, a system development charge, as contemplated herein this section, shall be charged. The Board of Public Works shall make the final determination of whether the new property structure is a similar use to the prior property structure for the purposes of this subsection.

Sec. 17-80. - System Development Charge for Water inside and outside City limits.

(1) For purposes of this section "ERU" shall be defined as an equivalent residential unit which means a single family residence. For purposes of customers that are not single family residences, one (1) ERU shall equal estimated water flows of three hundred ten (310) gallons per day. No customer will be less than one (1) ERU. There will be no partial ERU's. The City shall round down to the closest applicable ERU calculation at all times.

(2) Except as provided in Subsections (5) and (6) of this section, for every new connection to the South Bend Municipal Water Works, a system development charge of five hundred dollars (\$500.00) shall be collected per ERU and additional portion thereof to be connected. All charges shall be billed by the City at the time the application for service is filed.

(3) System development charges per ERU shall also be collected from existing customers undertaking activities producing a permanent increase in water flow of greater than three hundred ten (310) gallons per day. This subsection shall not apply to an existing customer who has, by contract, purchased reserved capacity from the City so long as the customer's flows remain within the reserved capacity. A permanent increase shall be deemed to have occurred when the average flow rate for six (6) consecutive months exceeds the current flow rate by at least three hundred ten (310) gallons per day.

(4) For multifamily structures (e.g., apartments, condominiums, mobile home communities), each individual unit shall be one (1) ERU. For all other types of structures, the ERU calculation shall be based upon the ratio of Average Daily Flow as computed pursuant to 327 IAC 3-6-11 in relationship to three hundred ten (310) gallons per day. For structures not listed in 327 IAC 3-6-11, the ERU shall be calculated as the relationship between the Average Daily Flow reported in the water capacity certification for the structure and three hundred ten (310) gallons per day.

(5) For customers with greater than twenty (20) ERUs as calculated pursuant to subsection (4) of this section, the ERU shall be adjusted based upon the Peaking Factor as computed herein. The Peaking Factor shall be calculated by dividing the Peak Daily Flow by the Average Daily Flow, both as reported in the water capacity certification. In no event will a Peaking Factor less than 2.0 be used for purposes of the adjustment described in this subsection. The Peaking Factor divided by 4.0 (the Peaking Factor for residential connections) will be multiplied by the number of ERUs for purposes of computing the system development charge owed by the customer. The City Board of Works may execute a contract with the customer authorizing an increase to the initial System Development Charge based upon actual usage data that is collected after connection.

(6) Where a prospective customer seeks to connect a new structure on property which replaces a prior structure of a similar use what was located on the same property and which was connected to the South Bend Municipal Water Works, no system development charge will be collected. For instance, if the prior structure was a single family structure and the new structure is to be used as a multi-family structure, a system development charge, as contemplated herein this section, shall be charged. The Board of Public Works shall make the final determination of whether the new property structure is a similar use to the prior property structure for the purposes of this subsection.

Sec. 17-85. - Methods of payment; prepayment with discount; installment plan.

(a) The property owner may pay all charges in full prior to time the installation work is commenced. Prepayment of expenses in advance under this section shall entitle the owner to a ten (10) percent *discount* of the total charge.

EXHIBIT D

WATER MAIN EASEMENT EXHIBIT

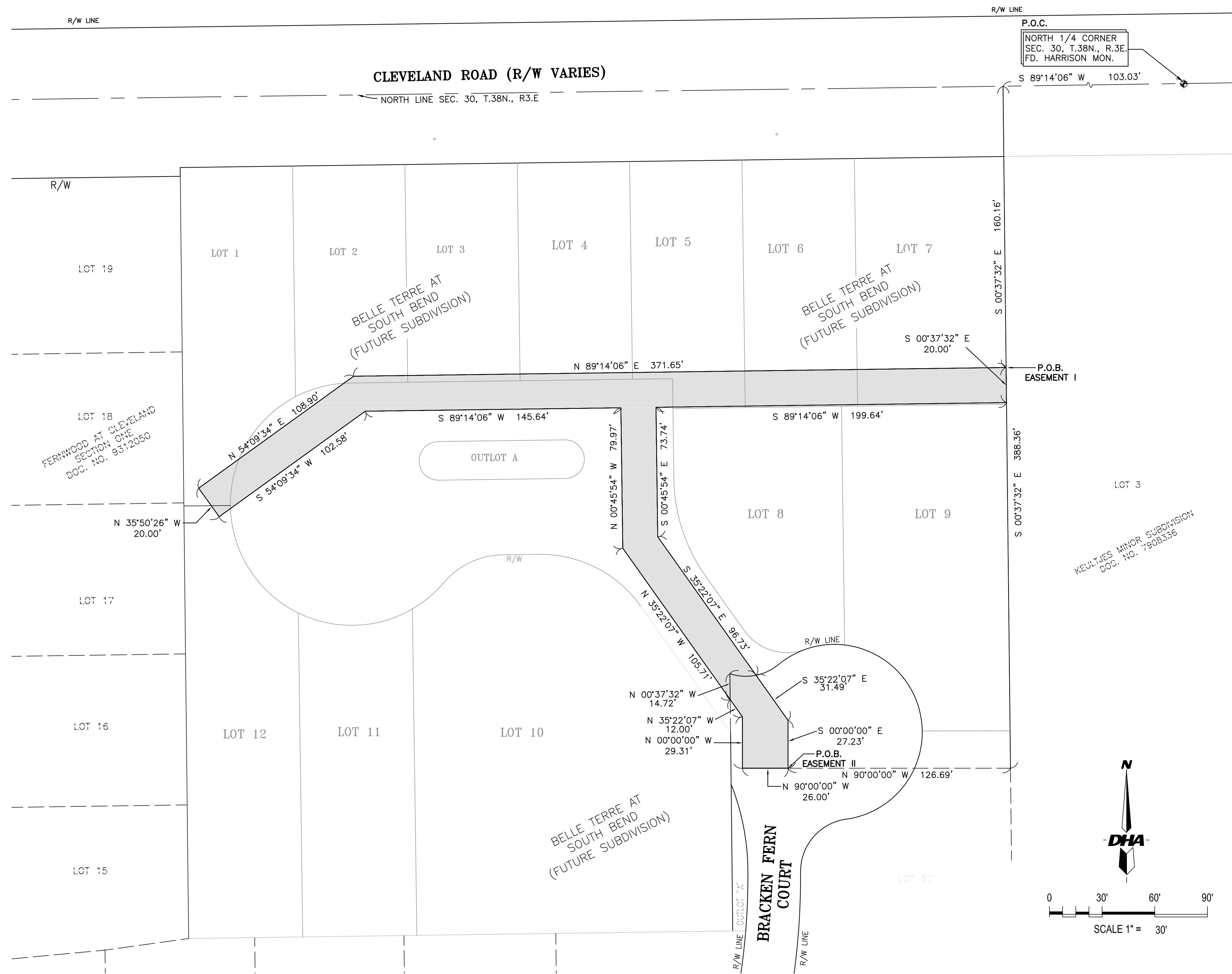
BELLE TERRE AT SOUTH BEND MUNICIPAL WATER UTILITY EASEMENT EXHIBIT

PART OF THE NORTHWEST QUARTER OF SECTION 30, TOWNSHIP 38 NORTH, RANGE 3 EAST,
CLAY TOWNSHIP. ST. JOSEPH COUNTY, INDIANA.

MUNICIPAL WATER UTILITY EASEMENT LEGAL DESCRIPTION:

A PART OF THE NORTHWEST QUARTER OF SECTION 30, TOWNSHIP 38 NORTH, RANGE 3 EAST, CLAY TOWNSHIP, ST. JOSEPH COUNTY, INDIANA. COMMENCING AT NORTH QUARTER CORNER OF SAID SECTION, TOWNSHIP AND RANGE; THENCE SOUTH 89°14'06" WEST ALONG THE NORTH LINE OF SAID SECTION, A DISTANCE 103.03 TO THE POINT OF INTERSECTION WITH THE NORTHERLY EXTENSION LINE OF THE WEST LOT LINE OF LOT NUMBER THREE (3) OF KEULTJES MINOR SUBDIVISION AS RECORDED IN DOCUMENT NUMBER 7908336 IN THE OFFICE OF THE RECORDER OF ST. JOSEPH COUNTY, INDIANA; THENCE SOUTH 00°37'32" EAST ALONG SAID WEST LOT LINE, A DISTANCE 160.16 FEET TO THE POINT OF BEGINNING; THENCE CONTINUING SOUTH 00°37'32" EAST ALONG SAID WEST LOT LINE, A DISTANCE OF 20.00 FEET; THENCE SOUTH 89°14'06" WEST, A DISTANCE OF 199.64 FEET; THENCE SOUTH 00°45'54" EAST, A DISTANCE OF 73.74 FEET; THENCE SOUTH 35°22'07" EAST, A DISTANCE OF 128.22 FEET; THENCE SOUTH 00°00'00" EAST, A DISTANCE OF 27.23 FEET; THENCE SOUTH 00°00'00" WEST, A DISTANCE OF 26.00 FEET; THENCE NORTH 00°00'00" WEST, A DISTANCE OF 29.31 FEET; THENCE NORTH 35°22'07" WEST, A DISTANCE OF 117.70 FEET; THENCE NORTH 00°45'54" WEST, A DISTANCE OF 79.97 FEET; THENCE SOUTH 89°14'06" WEST, A DISTANCE 145.64 FEET; THENCE SOUTH 54°09'34" WEST, A DISTANCE OF 102.58 FEET; THENCE NORTH 35°50'26" WEST, A DISTANCE OF 20.00 FEET; THENCE NORTH 54°09'34" EAST, A DISTANCE OF 108.90 FEET; THENCE NORTH 89°14'06" EAST, A DISTANCE OF 1078.91 FEET TO THE POINT OF BEGINNING.

CONTAINING 0.33 ACRES MORE OR LESS. SUBJECT TO ALL RIGHT-OF-WAY, EASEMENTS, AND RESTRICTIONS OF RECORD.



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DATE 7/22/20	DRAWN BY: GGS	REVISIONS	
SCALE 1" = 30'	CHECKED BY: MJD	DATE	BY
FILE # 180120.5	PROJ. MANGR: BLM		

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