

THIS INSTRUMENT PREPARED BY:
DENNIS D. OLMSTEAD, R.L.S.
STOEPPEL WERTH & ASSOCIATES, INC.
7965 E. 106TH STREET
FISHERS, INDIANA 46038
PHONE: (317) 849-5935

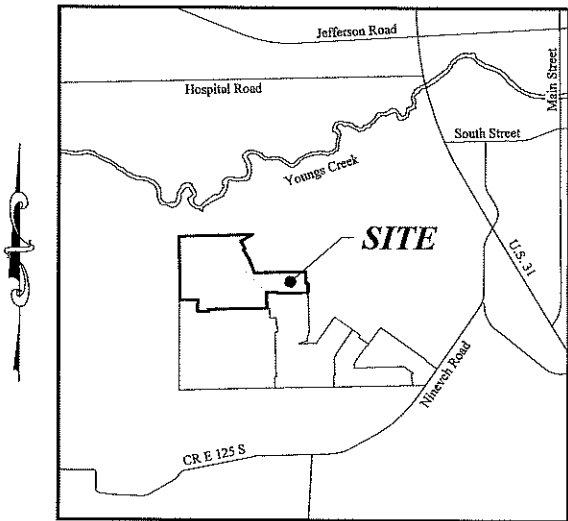
THIS INSTRUMENT PREPARED FOR:
WINDSTAR HOMES, LLC
5374 CAYMAN DRIVE
CARMEL, INDIANA 46033
PHONE: (317) 223-4257
CONTACT: MARK ALT

THE BLUFFS AT YOUNGS CREEK

SECTION 4

MAJOR SUBDIVISION

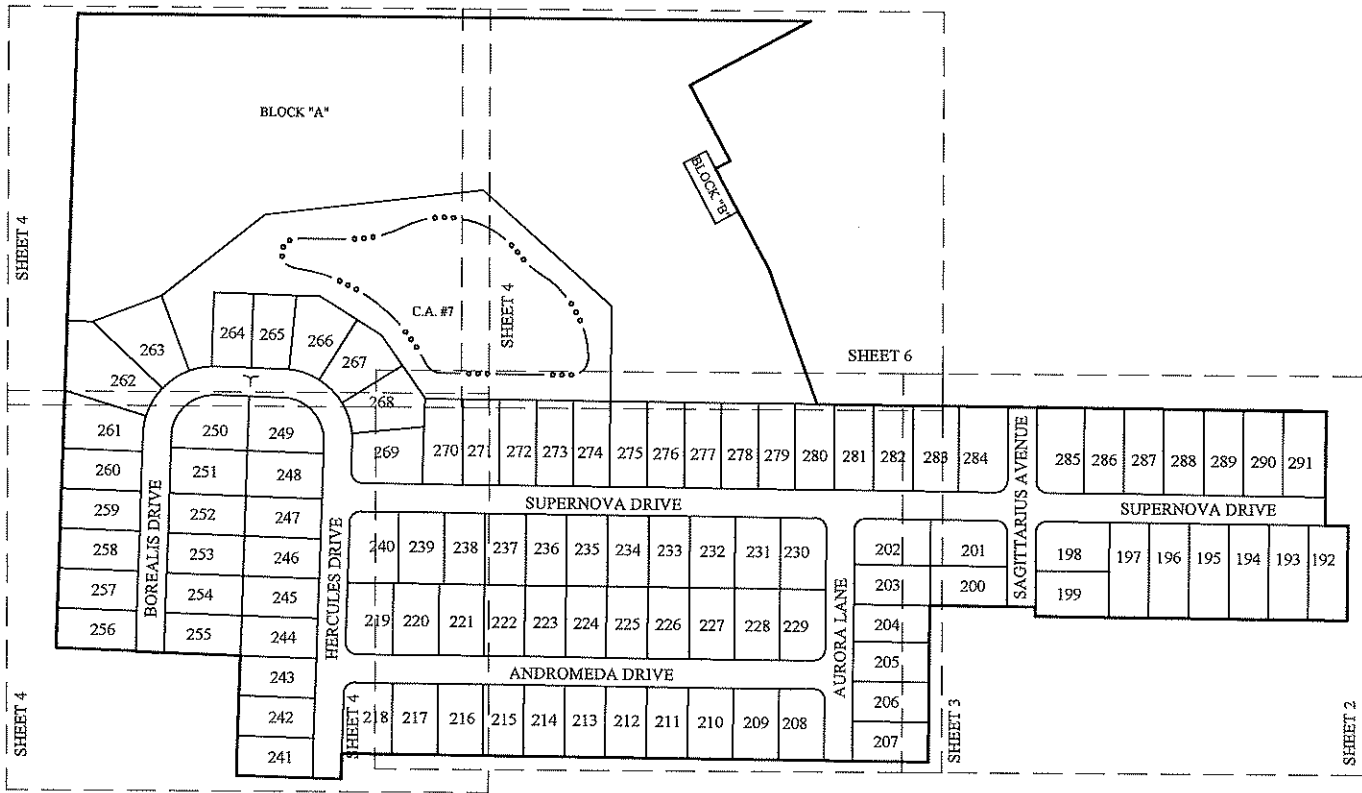
SECONDARY PLAT



LOCATION MAP
SCALE: 1" = 2,000'

CURVE TABLE: CENTERLINE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING	DELTA
C1	100.00'	157.08'	100.00'	141.42'	N43°13'00"W	90°00'00"
C2	100.00'	157.08'	100.00'	141.42'	S46°47'00"W	90°00'00"

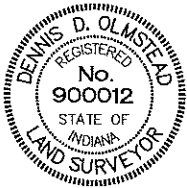
CURVE TABLE: PARCEL						
CURVE	RADIUS	LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING	DELTA
C3	20.00'	31.42'	20.00'	28.28'	N44°33'00"W	90°00'00"
C4	20.00'	31.42'	20.00'	28.28'	S45°27'00"W	90°00'00"
C5	20.00'	31.88'	20.47'	28.61'	N43°53'00"W	91°20'00"
C6	125.00'	16.56'	8.29'	16.55'	N02°00'42"W	7°35'25"
C7	125.00'	56.94'	28.97'	56.45'	N18°51'26"W	26°06'02"
C8	125.00'	56.94'	28.97'	56.45'	N44°57'28"W	26°06'02"
C9	125.00'	56.94'	28.97'	56.45'	N71°03'30"W	26°06'02"
C10	125.00'	8.96'	4.48'	8.96'	N86°09'16"W	4°06'28"
C11	125.00'	8.90'	4.45'	8.90'	S89°44'35"W	4°04'51"
C12	125.00'	40.02'	20.18'	39.83'	S78°31'53"W	18°20'32"
C13	125.00'	56.94'	28.97'	56.45'	S56°18'36"W	26°06'02"
C14	125.00'	56.94'	28.97'	56.45'	S30°12'34"W	26°06'02"
C15	125.00'	33.54'	16.87'	33.44'	S09°28'16"W	15°22'32"
C16	75.00'	117.81'	75.00'	106.07'	N46°47'00"E	90°00'00"
C17	75.00'	117.81'	75.00'	106.07'	S43°13'00"E	90°00'00"
C18	20.00'	30.95'	19.54'	27.95'	N46°07'00"E	88°40'00"
C19	20.00'	31.42'	20.00'	28.28'	S44°33'00"E	90°00'00"
C20	20.00'	31.42'	20.00'	28.28'	S45°27'00"W	90°00'00"
C21	20.00'	31.88'	20.47'	28.61'	N43°53'00"W	91°20'00"
C22	20.00'	30.95'	19.54'	27.95'	N46°07'00"E	88°40'00"
C23	20.00'	31.42'	20.00'	28.28'	S44°33'00"E	90°00'00"
C24	20.00'	31.42'	20.00'	28.28'	N45°27'00"E	90°00'00"
C25	20.00'	31.42'	20.00'	28.28'	S44°33'00"E	90°00'00"
C26	20.00'	31.42'	20.00'	28.28'	N45°27'00"E	90°00'00"



KEY MAP
SCALE: 1" = 200'

SUBDIVISION MONUMENTATION	
PER INDIANA ADMINISTRATIVE CODE (IAC), TITLE 865 IAC 1-12-18, AN AFFIDAVIT, CROSS-REFERENCED TO THIS PLAT, WILL BE RECORDED AFTER THE SUBDIVISION MONUMENTATION HAS BEEN COMPLETED AND MAY BE DELAYED FOR UP TO TWO YEARS FROM THE DATE OF RECORDATION OF THIS PLAT. MONUMENTS SET OR TO BE SET INCLUDE SUBDIVISION PERIMETER CORNERS, CENTERLINE INTERSECTIONS, CENTERLINE POINTS OF CURVATURE, CENTERLINE POINTS OF TANGENCY AND INTERIOR LOT/ PARCEL CORNERS (INCLUDING BEGINNING AND ENDS OF CURVES AND THE INTERSECTION OF LOT/ PARCEL LINES).	
○	A 5/8"X30" REBAR WITH CAP STAMPED "S&A FIRM #0008" SHALL BE SET AT ALL LOT OR PARCEL CORNERS, INCLUDING BEGINNING AND ENDING OF CURVES AND THE INTERSECTION OF LINES.
●	DENOTES A 2" MAG NAIL WITH WASHER STAMPED "S&A FIRM #0008".
□	DENOTES A 4"X4"X36" LONG PRECAST CONCRETE MONUMENT WITH A CROSS CAST IN THE TOP, SET FLUSH WITH THE FINISH GRADE.
●	DENOTES A STREET CENTERLINE MONUMENT. EITHER A "COPPERWELD", A 5/8" DIA. STEEL ROD 12" LONG WITH 1-1/2" DIA. TAPERED BRASS CAP HAVING A CUT "X" IN TOP, SET FLUSH WITH THE FINISHED SURFACE COAT OR A 2" MAG NAIL, TEMPORARILY SET FLUSH WITH THE INTERMEDIATE COAT (BINDER).
LEGEND	
[0000]	ADDRESS
25	LOT NUMBER
VAR.	VARIABLE
R/W	RIGHT-OF-WAY
B.L.	BUILDING SETBACK LINE
C.A.	COMMON AREA
D.&U.E.	DRAINAGE & UTILITY EASEMENT
D.U.&S.S.E.	DRAINAGE UTILITY & SANITARY SEWER EASEMENT
L.M.A.E.	LANDSCAPE & LAKE MAINTENANCE ACCESS EASEMENT
△	SECTION CORNER

Dennis D. Olmstead
Registered Land Surveyor
No. 900012



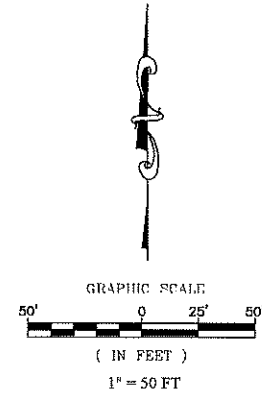
DATED: 02/04/2021

JOB No. 83540MMA-S4
SHEET 1 OF 6

THIS INSTRUMENT PREPARED BY:
DENNIS D. OLMSTEAD, RLS
STOEPPEL WERTH & ASSOCIATES, INC.
7965 E. 106TH STREET
FISHERS, INDIANA 46038
PHONE: (317) 849-5935

THIS INSTRUMENT PREPARED FOR:
WINDSTAR HOMES, LLC
5374 CAYMAN DRIVE
CARMEL, INDIANA 46033
PHONE: (317) 223-4257
CONTACT: MARK ALT

NOTE
REFER TO SHEET 1 FOR GENERAL
NOTES, LEGEND, CURVE TABLES,
AND ABBREVIATIONS.

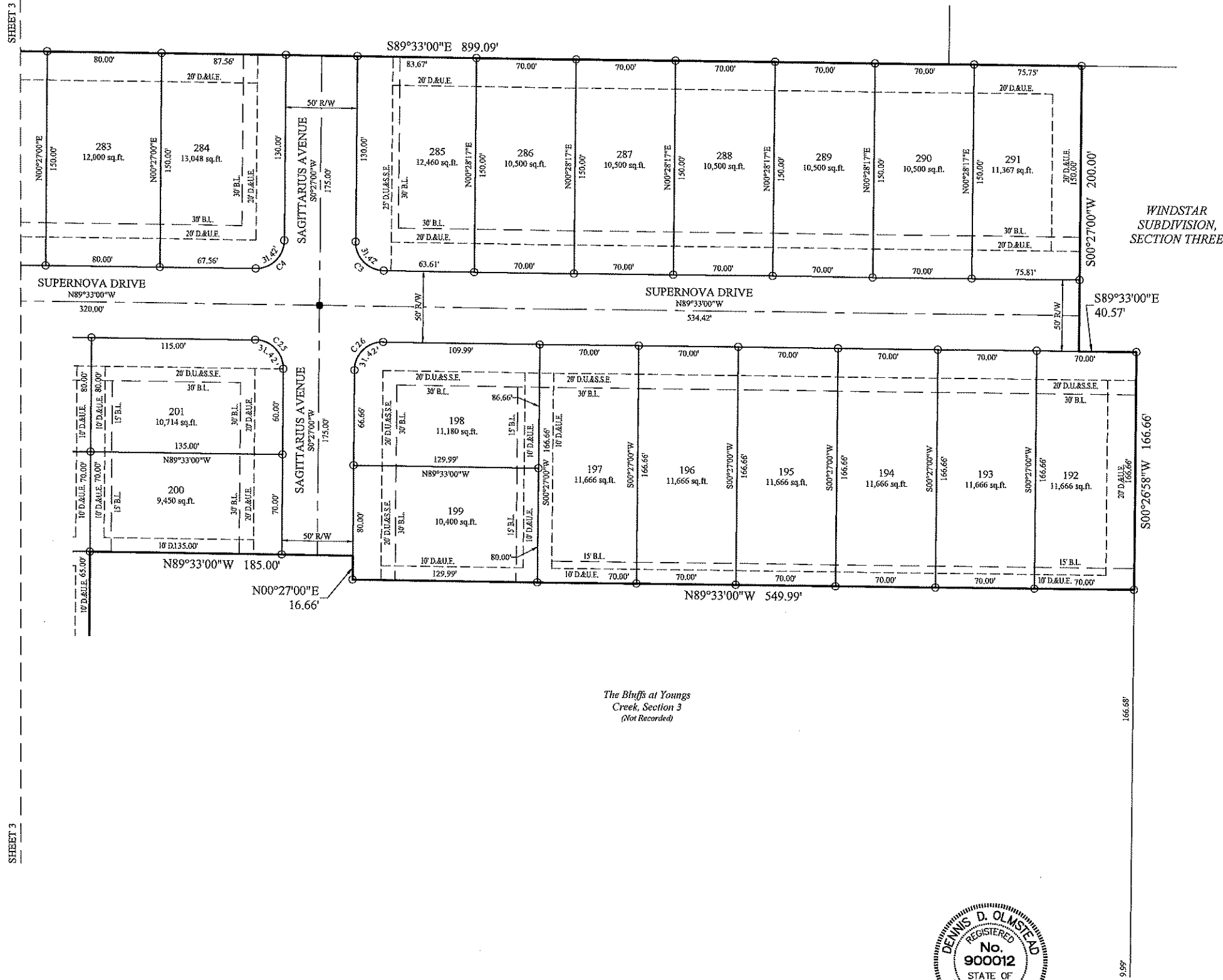


THE BLUFFS AT YOUNGS CREEK

SECTION 4

MAJOR SUBDIVISION

SECONDARY PLAT



The Bluffs at Youngs
Creek, Section 3
(Not Recorded)

Dennis D. Olmstead
Registered Land Surveyor
No. 900012



DATED: 02/04/2021

JOB No. 83540MMA-S4
SHEET 2 OF 6

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THIS INSTRUMENT PREPARED FOR:
WINDSTAR HOMES, LLC
5374 CAYMAN DRIVE
CARMEL, INDIANA 46033
PHONE: (317) 223-4237
CONTACT: MARK ALT

NOTE

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NOTES, LEGEND, CURVE TABLES,
AND ABBREVIATIONS.

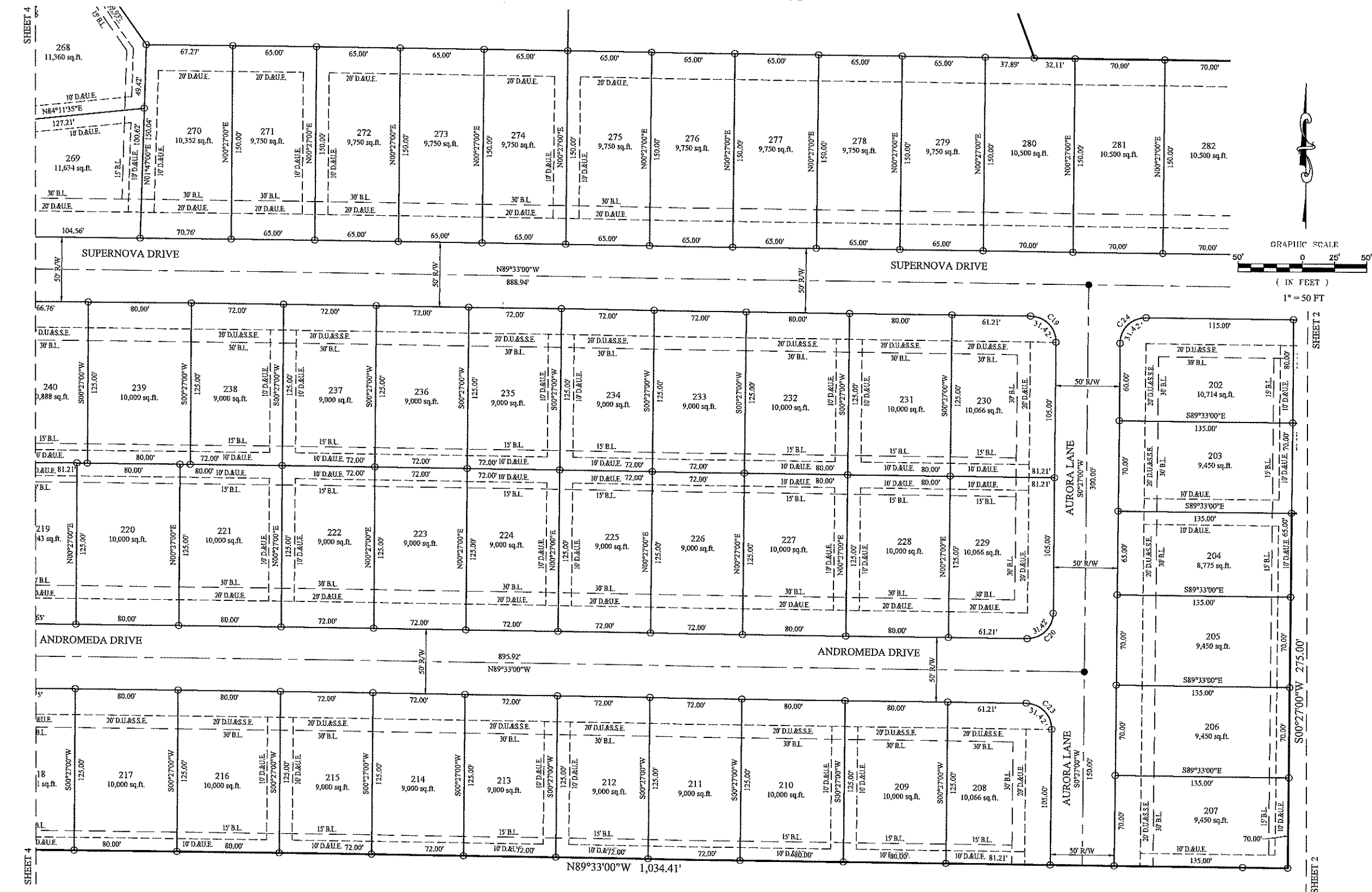
THE BLUFFS AT YOUNGS CREEK

SECTION 4

MAJOR SUBDIVISION

SECONDARY PLAT

Dennis D. Olmstead
Registered Land Surveyor
No. 900012



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THIS INSTRUMENT PREPARED FOR:
WINDSTAR HOMES, LLC
5374 CAYMAN DRIVE
CARMEL, INDIANA 46033
PHONE: (317) 223-4257
CONTACT: MARK ALT

NOTE

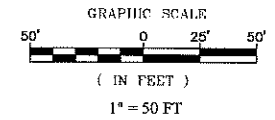
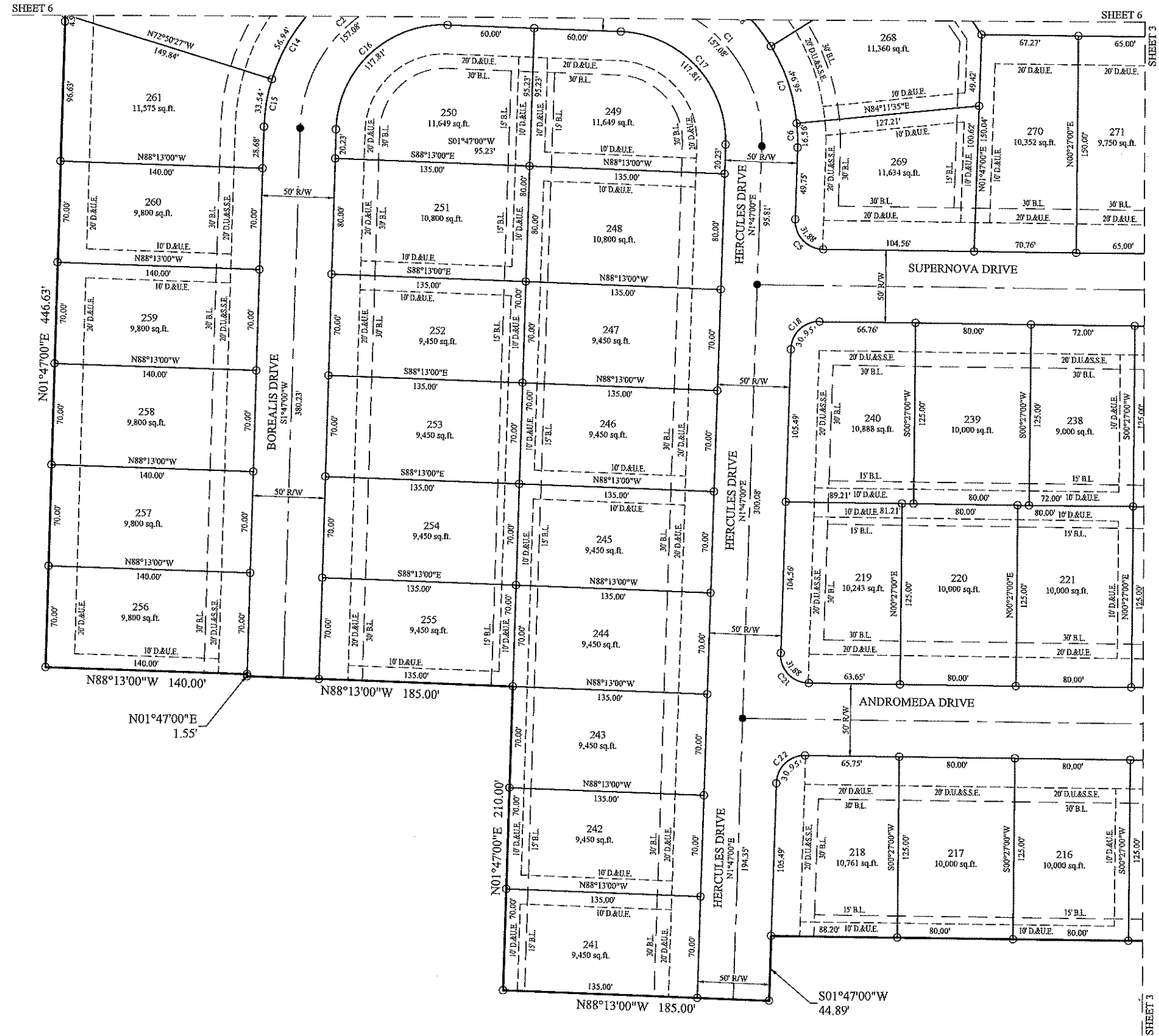
REFER TO SHEET 1 FOR GENERAL
NOTES, LEGEND, CURVE TABLES,
AND ABBREVIATIONS.

THE BLUFFS AT YOUNGS CREEK

SECTION 4

MAJOR SUBDIVISION

SECONDARY PLAT



Dennis D. Olmstead
Registered Land Surveyor
No. 900012

DATED: 02/04/2021

JOB No. 83540MMA-S4
SHEET 4 OF 6

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THIS INSTRUMENT PREPARED FOR:
WINDSTAR HOMES, LLC
5374 CAYMAN DRIVE
CARMEL, INDIANA 46033
PHONE: (317) 223-4257
CONTACT: MARK ALT

THE BLUFFS AT YOUNGS CREEK

SECTION 4

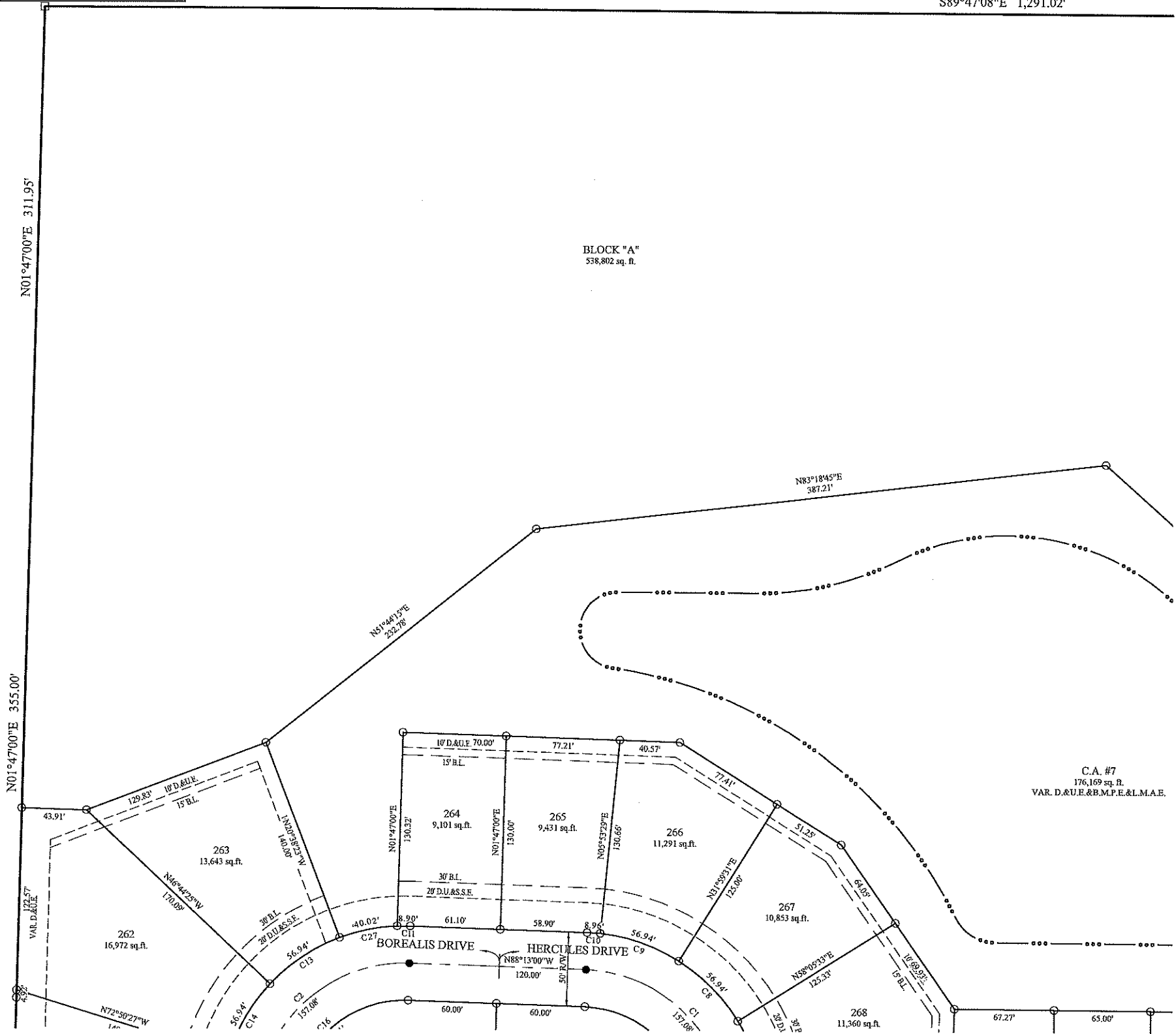
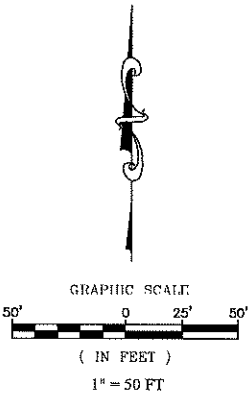
MAJOR SUBDIVISION

SECONDARY PLAT

NOTE
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NOTES, LEGEND, CURVE TABLES,
AND ABBREVIATIONS.

S89°47'08"E 1,291.02'

BLOCK "A"
538,802 sq. ft.



Dennis D. Olmstead
Registered Land Surveyor
No. 900012



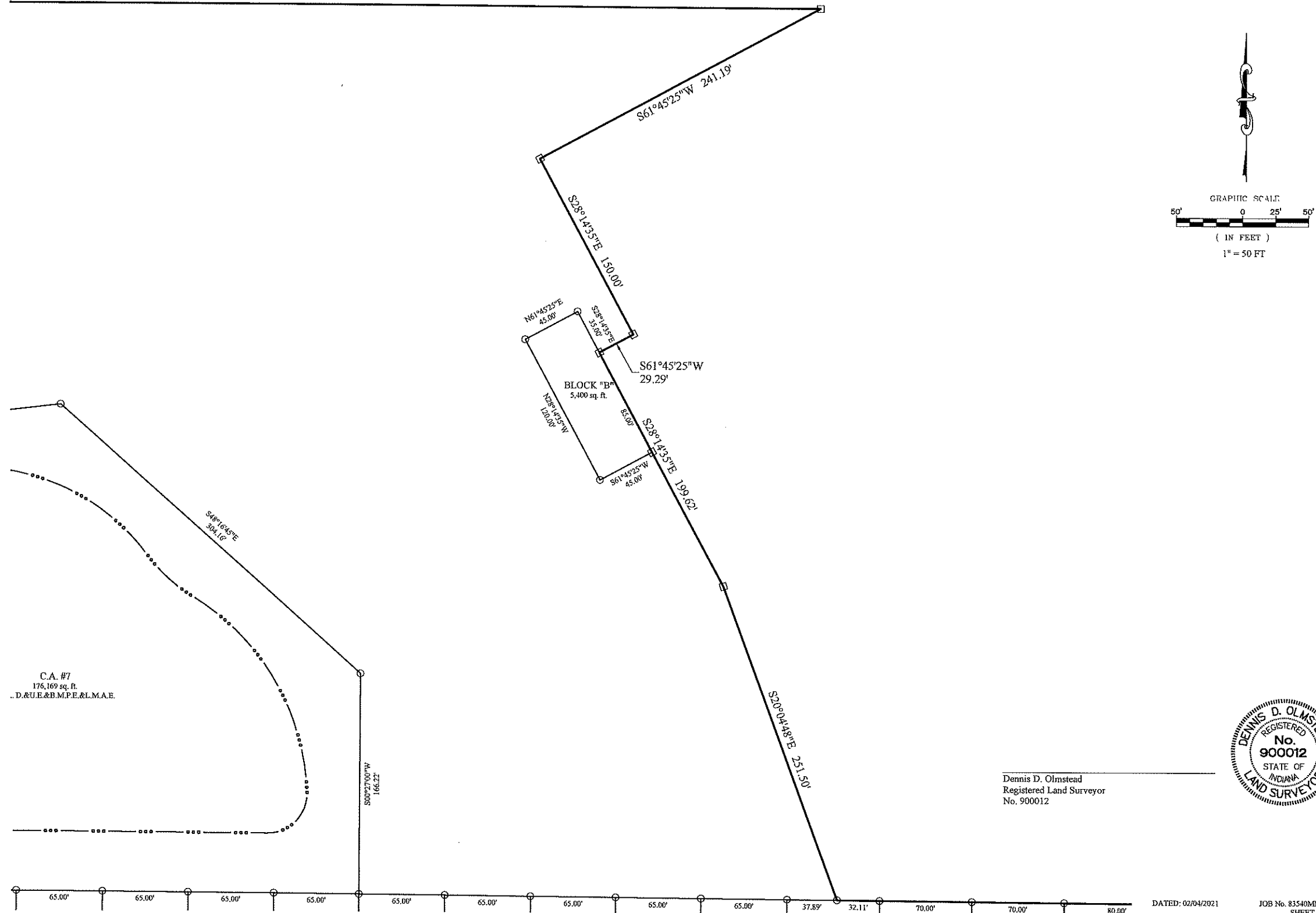
DATED: 02/04/2021

JOB No. 83540MMA-S4
SHEET 5 OF 6

THIS INSTRUMENT PREPARED FOR:
WINDSTAR HOMES, LLC
5374 CAYMAN DRIVE
CARMEL, INDIANA 46033
PHONE: (317) 223-4257
CONTACT: MARK ALT

**THE BLUFFS AT YOUNGS CREEK
SECTION 4
MAJOR SUBDIVISION
SECONDARY PLAT**

REFER TO SHEET 1 FOR GENERAL
NOTES, LEGEND, CURVE TABLES,
AND ABBREVIATIONS.



Dennis D. Olmstead
Registered Land Surveyor
No. 900012



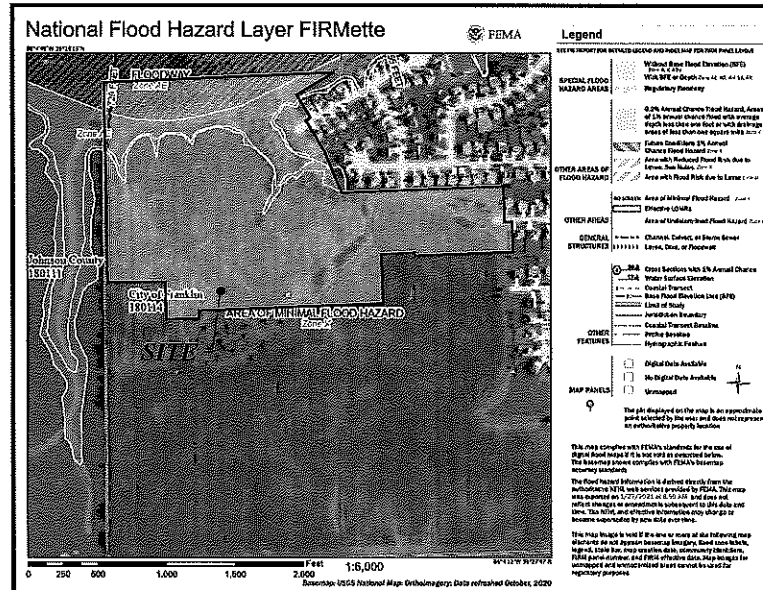
DATED: 02/04/2021

JOB No. 83540MMA-S4
SHEET 6 OF 6

THE BLUFFS AT YOUNGS CREEK

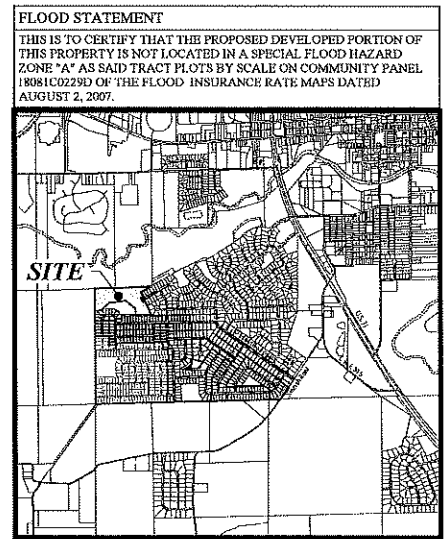
Section 4

Developed by:
Windstar Homes, LLC
5374 Cayman Drive
Carmel, Indiana 46033
Contact: Mark Alt
Phone: (317) 223-4257



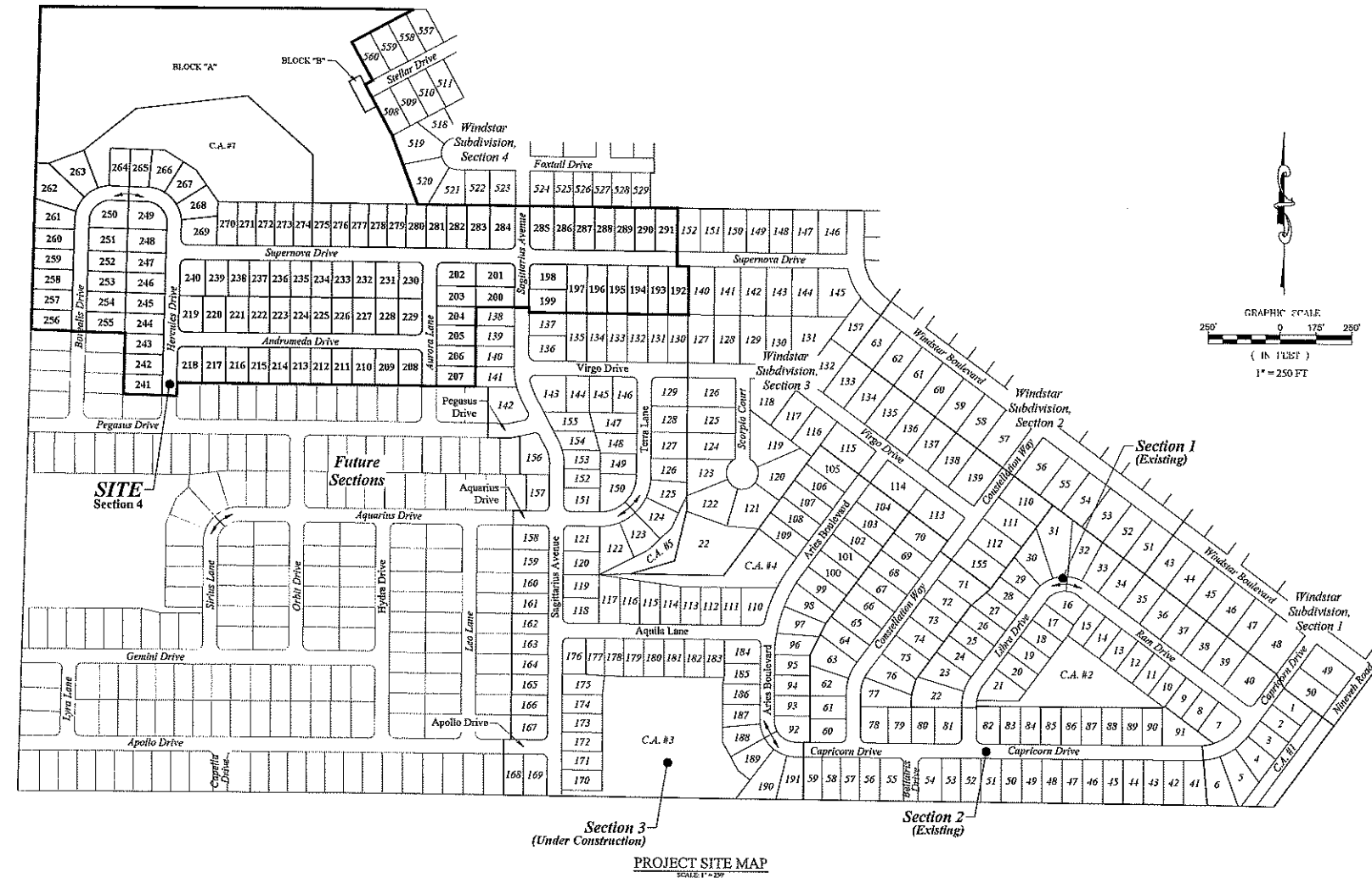
FLOOD MAP
NOT-TO-SCALE

Panel 18081C0229D
Effective August 2, 2007



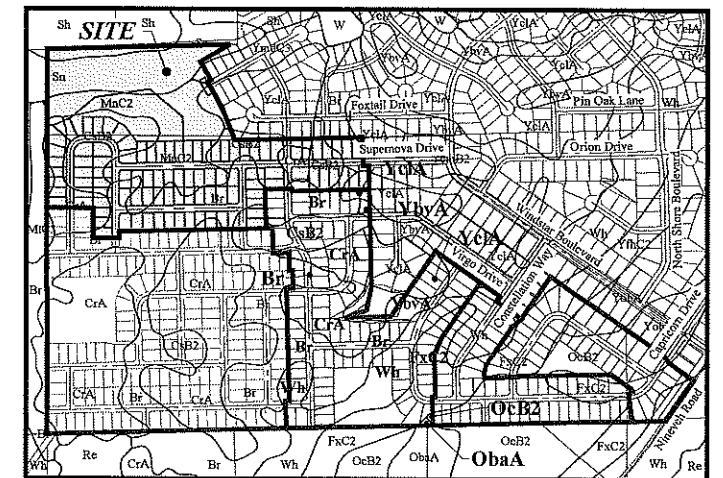
LOCATION MAP
SCALE 1" = 2,000'

INDEX	
SHT. NO.	DESCRIPTION
C001	COVER SHEET
C100 - C102	TOPOGRAPHICAL SURVEY/DEMO PLAN
C200 - C205	SITE DEVELOPMENT PLAN EMERGENCY FLOOD ROUTE PLAN
C301 - C315	INITIAL STORM WATER POLLUTION & PREVENTION PLAN TEMPORARY STORM WATER POLLUTION & PREVENTION PLAN PERMANENT SEDIMENT & EROSION CONTROL PLAN STORM WATER POLLUTION & PREVENTION SPECIFICATIONS STORM WATER POLLUTION & PREVENTION DETAILS
C400 - C407	STREET PLAN & PROFILES INTERSECTION DETAIL STREET SIGN PLAN
C500 - C503	SANITARY PLAN & PROFILES
C600 - C604	STORM PLAN & PROFILES
C700 - C703	WATER PLANS WATER PROFILES
C800 - C803	CONSTRUCTION SPECIFICATIONS & DETAILS
C900 - C901	STREET TREE PLAN



PROJECT SITE MAP
SCALE: 1" = 200'

REVISIONS			
SHT. NO.	DESCRIPTION	DATE	BY



SOILS MAP
SCALE: 1" = 60'

UTILITY CONTACTS	
City of Franklin - Stormwater 796 South State Street Franklin, Indiana 46131 Contact: Tyler Urban Ph: (888) 736-3640 x1213	
Johnson County REMC 750 International Drive Franklin, Indiana 46131 Contact: John Hendricks Ph: (317) 738-7618	
Indiana American Water 153 East Emerson Avenue Greensburg, Indiana 46143 Contact: Tracy White Ph: (317) 885-2426	
Century Link 50 North Jackson Street Franklin, Indiana 46131 Contact: Eddie Fields Ph: (317) 736-5338	
City of Franklin - Wastewater 796 South State Street Franklin, Indiana 46131 Contact: Sally Brown Ph: (888) 736-3640	
Vectren Energy 600 Industrial Drive Franklin, Indiana 46131 Contact: Dave Sherry Ph: (317) 776-5385	
Comcast Cable 5330 East 65th Street Indianapolis, Indiana 46220 Contact: Matt Stringer Ph: (317) 275-6493	
SOILS LEGEND	
MAP UNIT	BRIEF DESCRIPTION
Br	Brookston silt clay loam, 0 to 2 percent slopes
CsA	Crawley silt loam, fine-limney subsoil, 0 to 2 percent slopes
CsB2	Crawley-silt loam, 2 to 4 percent slopes, eroded
MacC2	Miami silt loam, 6 to 12 percent slopes, eroded
SsC	Miami clay loam, 6 to 12 percent slopes, severely eroded
Sh	Shoals silt loam
Ss	Shoals clay loam
YdA	Brokenston silt clay loam - Urban land complex, 0 to 2 percent slopes
YdC	Crawley silt loam, fine-honey subsoil - Urban land complex, 0 to 2 percent slopes
YndC3	Miami clay loam-Urban land complex, 6 to 12 percent slopes, severely eroded
DESIGN DATA	
DESIGN SPEED LIMIT	25 M.P.H.
100 LOTS	
ACREAGE	45.361 AC. ±
DENSITY	2.20 LOTS/ACRE
ANDROMEDA DRIVE	895.92 L.F.
AURORA LANE	450.00 L.F.
BORNEALIS DRIVE	598.41 L.F.
HERCULES DRIVE	911.95 L.F.
SAGITTARIUS AVENUE	350.00 L.F.
SUPERNOVA DRIVE	1,423.36 L.F.
TOTAL	4,629.64 L.F.

CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING ONSITE UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE IS NOT ANY CONFLICTS WITH OTHER UTILITIES, STORM SEWERS OR STREETS. CONFLICTS AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.

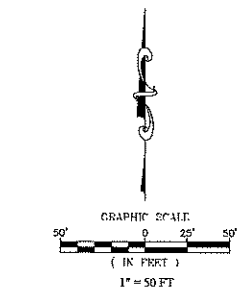
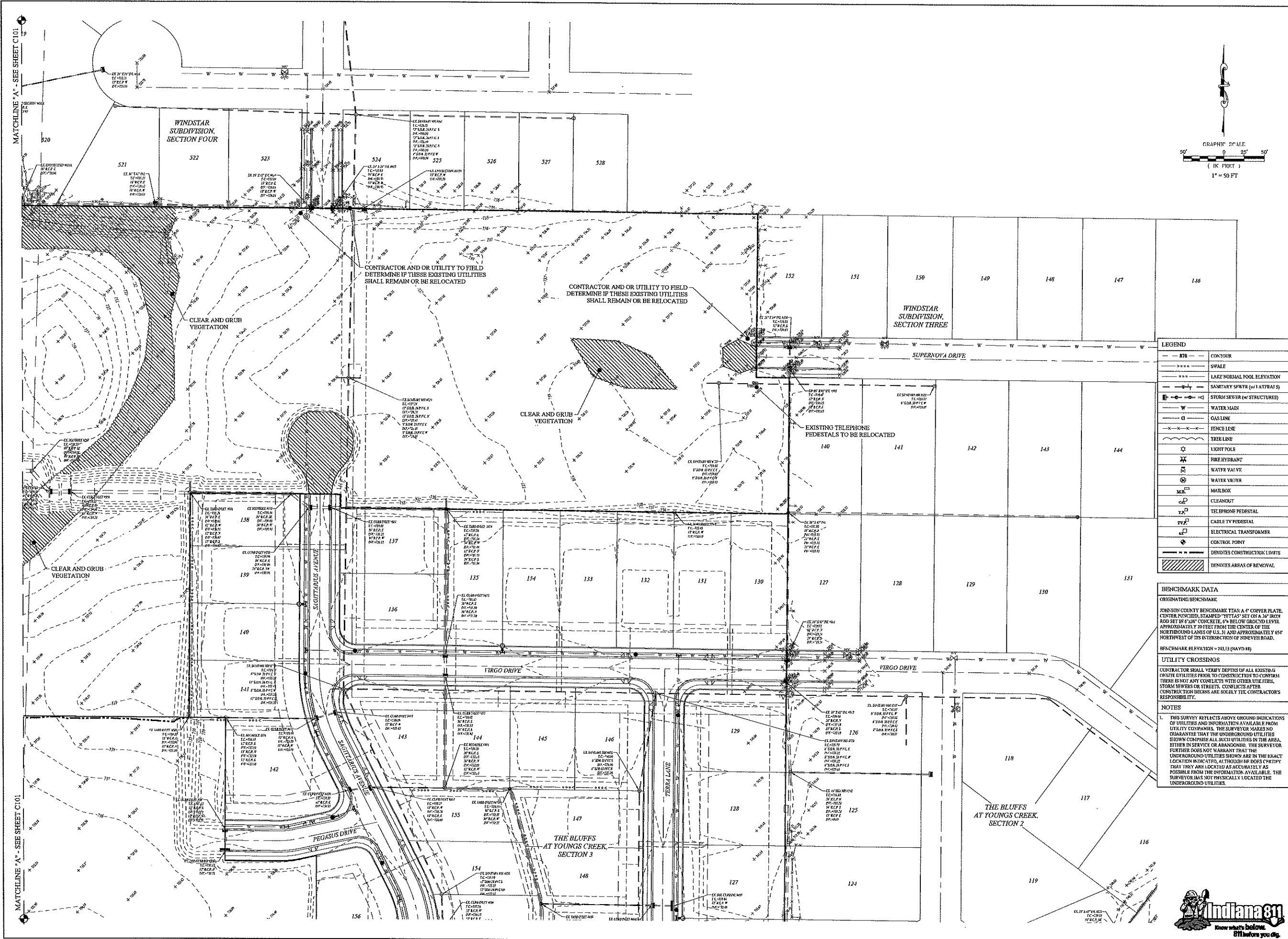
INDIANA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS LATEST EDITION TO BE USED WITH THESE PLANS UNLESS ALTERNATE SPECIFICATIONS ARE SHOWN WITHIN.

PLANS PREPARED BY:
STOEPPELWERTH & ASSOCIATES, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
7965 E. 106th STREET, FISHERS, INDIANA 46038
PHONE: (317) 849-5935
FAX: (317) 849-5942
CONTACT: BRIAN K. ROBINSON
EMAIL: brobinson@stoepfelwerth.com

PLANS CERTIFIED BY:

David J. Stoepelwerth 02/04/21
DAVID J. STOEPELWERTH
PROFESSIONAL ENGINEER





LEGEND	
---	876
---	SWALE
---	LAKE NORMAL POOL ELEVATION
---	SANITARY SEWER (w/ 1 ATFRAS)
---	STORM SEWER (w/ STRUCTURES)
---	WATER MAIN
---	GAS LINE
---	FENCE LINE
---	TREE LINE
---	LIGHT POLE
---	FIRE HYDRANT
---	WATER VALVE
---	WATER VETER
---	MAILBOX
---	CLEANOUT
---	TELEPHONE PEDESTAL
---	CABLE TV PEDESTAL
---	ELECTRICAL TRANSFORMER
---	CONTROL POINT
---	DEMOTES CONSTRUCTION LIMITS
---	DEMOTES AREAS OF REMOVAL

BENCHMARK DATA
ORIGINATING BENCHMARK
JOHNSON COUNTY BENCHMARK T145: A 4" COVER PLATE, CENTER PUNCHED, STAMPED "T145" SET ON A 3/4" IRON ROD SET IN 4" x 6" CONCRETE, 4" BELOW GROUND LEVEL, APPROXIMATELY 20 FEET FROM THE CENTER OF THE NORTHBOUND LANES OF U.S. 31 AND APPROXIMATELY 65' NORTHWEST OF ITS INTERSECTION OF VIRGEVER ROAD.
BENCHMARK ELEVATION = 743.13 (NAVD 83)

UTILITY CROSSINGS
CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING ON-SITE UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE IS NOT ANY CONFLICTS WITH OTHER UTILITIES, STORM SEWERS OR STREETS. CONFLICTS AFTER CONSTRUCTION BECOME ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.

NOTES
1. THIS SURVEY REFLECTS ABOVE GROUND INDICATIONS OF UTILITIES AND INFORMATION AVAILABLE FROM UTILITY COMPANIES. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPREHEND ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

TOPOGRAPHICAL SURVEY / DEMO PLAN
THE BLUFFS AT YOUNGS CREEK
SECTION 4

STOEPELWERTH
ALWAYS ON
7965 East 18th Street, Elkhart, IN 46020-2505
phone: 877.849.2505 fax: 877.849.5942

JOHNSON COUNTY, INDIANA
FRANKLIN TOWNSHIP

DAVID J. STOEPELWERTH
REGISTERED
No. 19358
STATE OF INDIANA
PROFESSIONAL ENGINEER

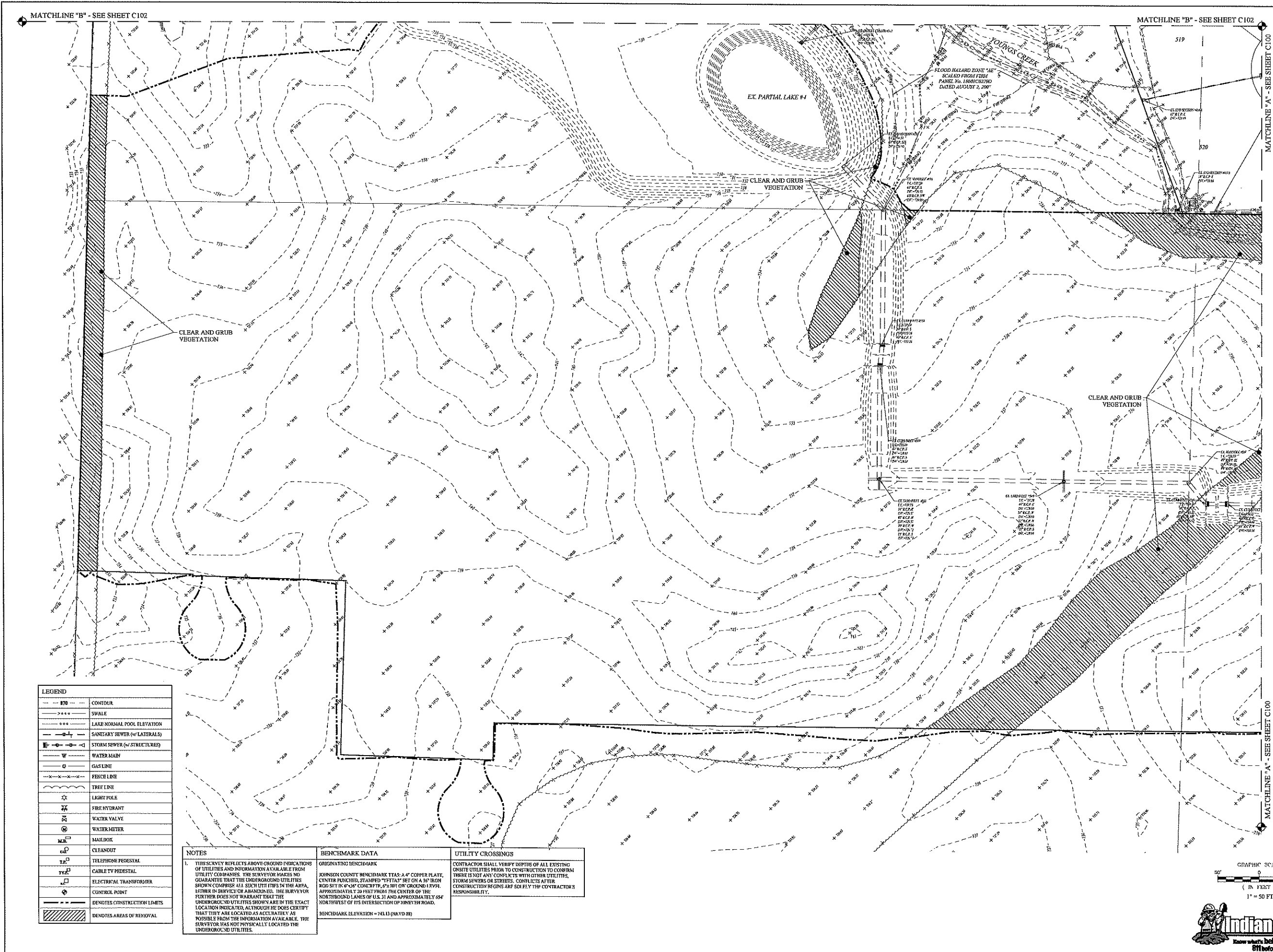
THIS DRAWING IS NOT INTENDED TO BE USED AS A REPRESENTATION OR RESTATEMENT OF THE SURVEYOR'S LOCATION REPORT.
CERTIFIED 02/04/21
David J. Stoepelwerth

DATE NAME REVISIONS

DRAWN BY: AEC
CHECKED BY: BKR
SHEET NO. C100
S & A JOB NO. 83540MMA-S4

Indianan8n
Know what's below.
Only before you dig.

File Name: S:\83540MMA-SO\DMG\C101 - Topographical Survey.dwg - C101
Modified / By: February 8, 2021 11:15:09 AM / ecarson
Plotted / By: February 8, 2021 1:28:53 PM / Erik Carson

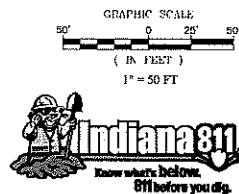


LEGEND	
	CONTOUR
	SWALE
	LAKE NORMAL POOL ELEVATION
	SANITARY SEWER (w/ LATERALS)
	STORM SEWER (w/ STRUCTURES)
	WATER MAIN
	GAS LINE
	FENCE LINE
	TREE LINE
	LIGHT POLE
	FIRE HYDRANT
	WATER VALVE
	WATER METER
	MAILBOX
	CLEANOUT
	TELEPHONE PEDESTAL
	CABLE TV PEDESTAL
	ELECTRICAL TRANSFORMER
	CONTROL POINT
	DENOTES CONSTRUCTION LIMITS
	DENOTES AREAS OF REMOVAL

NOTES
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BENCHMARK DATA
ORIGINATING BENCHMARK JOHNSON COUNTY BENCHMARK TTAS: A 4" COPPER PLATE, CENTER PUNCHED, STAMPED "TTTAY" SET ON A 36" IRON ROD SET IN 6" x 6" CONCRETE, 6.5' RT OF GROUND LEVEL, APPROXIMATELY 20 FEET FROM THE CENTER OF THE NORTHBOUND LANES OF U.S. 31 AND APPROXIMATELY 65' NORTHWEST OF ITS INTERSECTION OF RIVERVIEW ROAD. BENCHMARK ELEVATION = 243.13 (NAVD 83)

UTILITY CROSSINGS
CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING ON-SITE UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE IS NOT ANY CONFLICTS WITH OTHER UTILITIES, STORM SEWERS OR STREETS. CONFLICTS AFTER CONSTRUCTION ARE NOT SOLELY THE CONTRACTOR'S RESPONSIBILITY.



TOPOGRAPHICAL SURVEY / DEMO PLAN
THE BLUFFS AT YOUNGS CREEK
SECTION 4
FRANKLIN, FRANKLIN TOWNSHIP
JOHNSON COUNTY, INDIANA

STOEPELWERTH
ALWAYS ON
7945 East 164th Street, Fishers, IN 46038-2335
phone: 317.846.5755 fax: 317.846.5942

DAVID J. STOEPELWERTH
REGISTERED
No. 19358
STATE OF INDIANA
PROFESSIONAL ENGINEER
CREATED: 03/04/21
David J. Stoepelwerth

THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A RETRACTION OF OR SUPPLEMENT TO ANY PREVIOUS SURVEY OR A SURVEYOR LOCATION REPORT.

BY: _____
DATE: _____
REVISIONS: _____

DRAWN BY: AEC
CHECKED BY: BKR
SHEET NO: C101
S & A KIM NO: 83540MMA-S4

MATCHLINE "B" - SEE SHEET C202

MATCHLINE "B" - SEE SHEET C202

MATCHLINE "A" - SEE SHEET C200

MATCHLINE "A" - SEE SHEET C200

LEGEND	
	EXISTING SANITARY SEWER
	EXISTING STORM SEWER
	EXISTING WATER LINE
	EXISTING CONTOUR
	PROPOSED SANITARY SEWER
	PROPOSED STORM SEWER
	PROPOSED WATER LINE
	PROPOSED WALL
	PROPOSED GRADE ELEVATION
	PROPOSED SIDEWALK (BY HOME BUILDER)
	PROPOSED CURB W/ 6' UNDERDRAIN
	PROPOSED 6' SUB-SURFACE DRAIN
	LOT NUMBER
	MINIMUM FINISH FLOOR ELEVATION
	MINIMUM FLOOD PROTECTION GRADE
	MINIMUM FLOOD PROTECTION GRADE (LAKE/FLOOD PROTECTION)
	BUILDING SETBACK LINE
	MATCH EXISTING
	HIGH POINT
	LOW POINT
	POINT OF VERTICAL INTERSECTION
	GRADE CHANGE

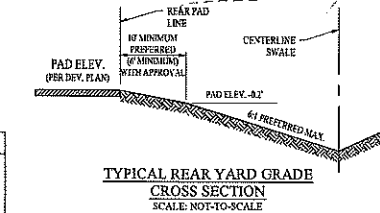
EARTHWORK NOTES

- EXISTING MATERIAL THAT IS STABLE MAY BE USED PER PERMITS. ALL UNDESIRABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH FILL. ALL UNDESIRABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH FILL. ALL UNDESIRABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH FILL.
- PROPOSED SANITARY SEWER SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES. THE SEWER SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
- PROPOSED STORM SEWER SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES. THE SEWER SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
- PROPOSED WATER LINE SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES. THE WATER LINE SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
- PROPOSED WALL SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES. THE WALL SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
- PROPOSED GRADE ELEVATION SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES. THE GRADE ELEVATION SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
- PROPOSED SIDEWALK (BY HOME BUILDER) SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES. THE SIDEWALK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
- PROPOSED CURB W/ 6' UNDERDRAIN SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES. THE CURB SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
- PROPOSED 6' SUB-SURFACE DRAIN SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES. THE DRAIN SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.

BENCHMARK DATA	
ORIGINATING BENCHMARK	JOHNSON COUNTY BENCHMARK T145: 3" X 4" COPPER PLATE, CENTER FORGED, STAMPED "T145" SET ON A 36" IRON ROD SET IN 36" CONCRETE, 6" BELOW GROUND LEVEL APPROXIMATELY 20 FEET FROM THE CENTER OF THE NORTHBOUND LANES OF U.S. 31 AND APPROXIMATELY 64' NORTHWEST OF ITS INTERSECTION OF KENYON ROAD.
BENCHMARK ELEVATION	745.13 (NAD 83)

UTILITY CROSSINGS

CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING UTILITY LINES PRIOR TO CONSTRUCTION TO AVOID DAMAGE TO ANY UTILITIES. IF ANY UTILITIES ARE FOUND TO BE DEEPER THAN SHOWN ON THE PLAN, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF SUCH UTILITIES.



LAKE #4 DATA	
SURFACE AREA AT 739.00 (NORMAL POOL)	17,691.00 sq. ft.
SURFACE AREA AT 699.00 (6' DEPTH)	16,771.00 sq. ft.
PERCENTAGE OF NORMAL POOL	21.4%



THIS DRAWING IS NOT INTENDED TO BE USED FOR ANY OTHER PURPOSES THAN THE SURVEY OR A SURVEYOR'S LOCATION REPORT.

DAVID J. STOEPPELWERTH
REGISTERED PROFESSIONAL ENGINEER
No. 19358
STATE OF INDIANA

David J. Stoepfelwerth
CERTIFIED: 02/04/21

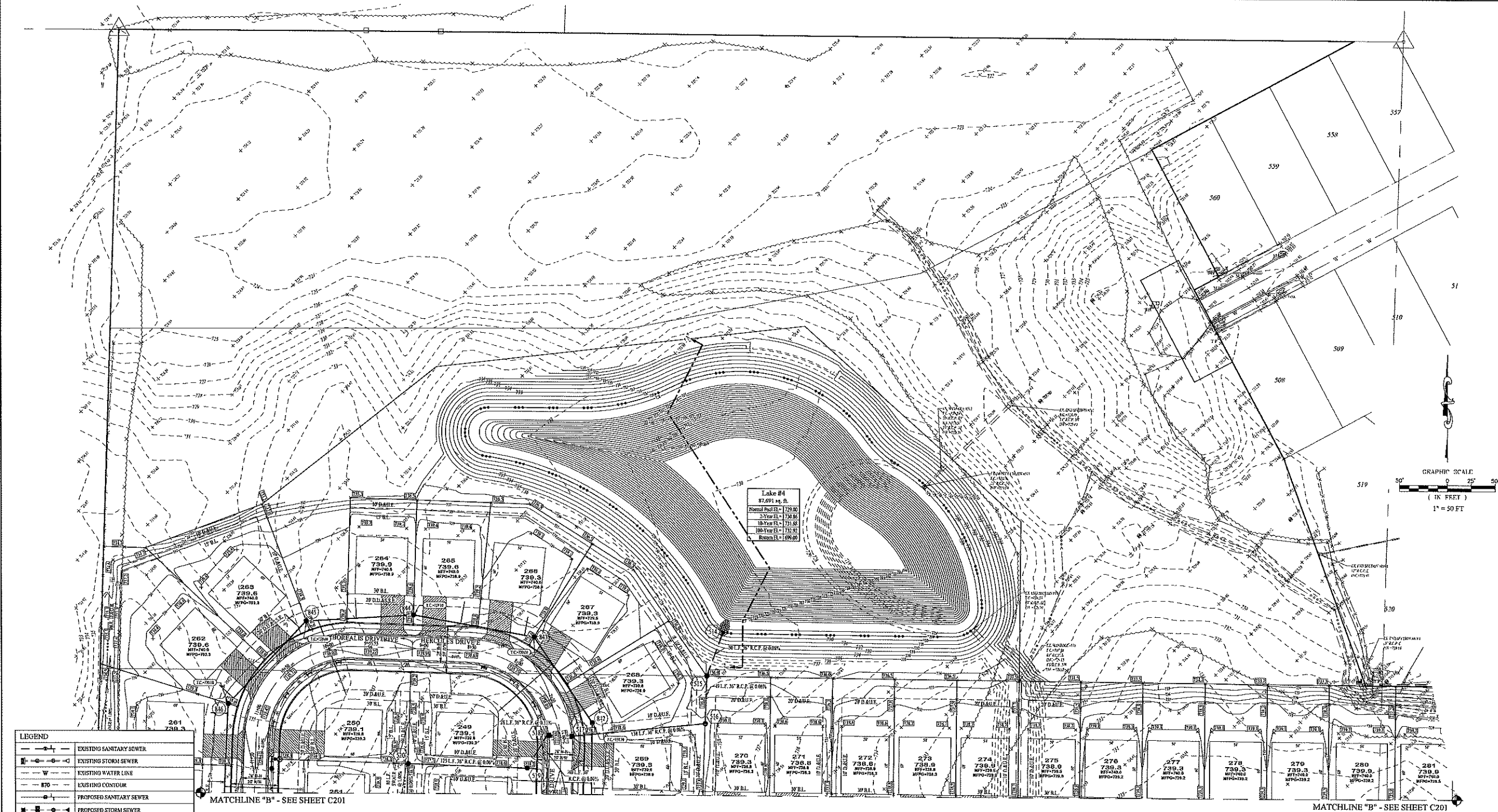
STOEPPELWERTH
ALWAYS ON

7945 East 10th Street, Ellettsville, IN 46033-2505
Phone: 317.849.5345 Fax: 317.841.5442

SITE DEVELOPMENT PLAN
THE BLUFFS AT YOUNGS CREEK
SECTION 4

JOHNSON COUNTY, INDIANA
FRANKLIN TOWNSHIP

DRAWN BY: AEC
CHECKED BY: BKR
SHEET NO: C201
S.A.A. NO: 83540MMA-S4

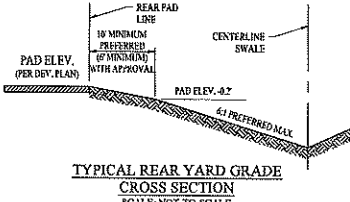


LEGEND	
	EXISTING SANITARY SEWER
	EXISTING STORM SEWER
	EXISTING WATER LINE
	EXISTING CONTOUR
	PROPOSED SANITARY SEWER
	PROPOSED STORM SEWER
	PROPOSED CONTOUR
	PROPOSED WATER LINE
	PROPOSED WALL
	PROPOSED GRADE ELEVATION
	PROPOSED 5' SIDEWALK (BY HOME BUILDER)
	PROPOSED CURB W/ 6' UNDERDRAIN
	PROPOSED 6' SUB-SURFACE DRAIN
	LOT NUMBER
	PAD GRADE
	MINIMUM FINISH FLOOR ELEVATION
	MINIMUM FLOOD PROTECTION GRADE
	MINIMUM FLOOD PROTECTION GRADE (LAKE / FLOOD PROTECTION)
	BUILDING SETBACK LINE
	MATCH EXISTING
	HIGH POINT
	LOW POINT
	POINT OF VERTICAL INTERSECTION
	GRADE CHANGE

EARTHWORK NOTES	
1. EXISTING	A. EXISTING MATERIAL SHALL BE REMOVED FROM ALL AREAS TO BE REDEVELOPED. ALL EXISTING MATERIAL SHALL BE REMOVED FROM THE SITE.
2. FILL	A. FILL SHALL BE PLACED IN 4" LAYERS. FILL SHALL BE PLACED IN 4" LAYERS. FILL SHALL BE PLACED IN 4" LAYERS. FILL SHALL BE PLACED IN 4" LAYERS.
3. REMOVAL OF FILL	A. ALL FILL SHALL BE REMOVED FROM ALL AREAS TO BE REDEVELOPED. ALL FILL SHALL BE REMOVED FROM THE SITE.
4. PROTECTION OF FILL	A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF FILL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF FILL.
5. REMOVAL OF FILL	A. ALL FILL SHALL BE REMOVED FROM ALL AREAS TO BE REDEVELOPED. ALL FILL SHALL BE REMOVED FROM THE SITE.
6. PROTECTION OF FILL	A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF FILL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF FILL.

BENCHMARK DATA	
ORIGINATING BENCHMARK	JOHNSON COUNTY BENCHMARK TTAS-A 4" COPPER PLATE, CENTER PUNCHED, STAMPED "TTAS-A" SET ON A 30" IRON ROD SET BY CP&S
BENCHMARK ELEVATION	740.13 (NAD 83)

UTILITY CROSSINGS
CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING ON-SITE UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE IS NOT ANY CONFLICTS WITH OTHER UTILITIES, STORM SEWERS OR STREETS. CONFLICTS AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.



LAKE #4 DATA	
SURFACE AREA AT 729.00 (NORMAL POOL)	87,691.00 sq. ft.
SURFACE AREA AT 699.00 (ON DEPTH)	18,777.00 sq. ft.
PERCENTAGE OF NORMAL POOL	21.41%



THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A RETRACTION OR REVISION OF A PREVIOUS SURVEY. A ROUTE REPORT ON A SURVEY OR LOCATION REPORT.

CERTIFIED: 02/04/21

David J. Stoepfelwerth

REGISTERED PROFESSIONAL ENGINEER

No. 19358

STATE OF INDIANA

DATE

MARK

REVISIONS

BY

SITE DEVELOPMENT PLAN

THE BLUFFS AT YOUNGS CREEK

SECTION 4

JOHNSON COUNTY, INDIANA

FRANKLIN TOWNSHIP

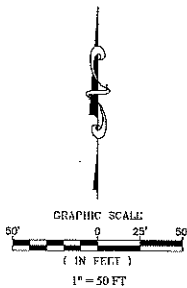
DRAWN BY: AEC

CHECKED BY: BKR

SHEET NO. C202

DATE: 02/04/21

83540MMA-S4



LEGEND	
	EXISTING SANITARY SEWER
	EXISTING STORM SEWER
	EXISTING CONTOUR
	PROPOSED SANITARY SEWER
	PROPOSED STORM SEWER
	PROPOSED CONTOUR
	PROPOSED SWALE
	PROPOSED GRADE ELEVATION
	LOT NUMBER PAD GRADE MINIMUM FINISH FLOOR ELEVATION MINIMUM FLOOD PROTECTION GRADE
	MINIMUM FINISH FLOOR ELEVATION IS BASED OFF OF THE FOLLOWING CRITERIA: 1. 12' (4.0m) ABOVE THE NEAREST UPSTREAM OR DOWNSTREAM SANITARY MANHOLE, WHICHEVER IS LOWEST. 2. 6' (1.8m) ABOVE THE MFG
	EMERGENCY OVERFLOW PONDING (FOR 100-YEAR STORM, ASSUMING ALL INLETS ARE COMPLETELY CLOGGED.)
	EMERGENCY FLOOD ROUTING
	LOCATION OF STORMWATER DISCHARGE FROM SITE
THIS SHEET IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT TO BE USED FOR CONSTRUCTION.	

EMERGENCY FLOOD ROUTE PLAN
THE BLUFFS AT YOUNGS CREEK
SECTION 4
FRANKLIN, FRANKLIN TOWNSHIP
JOHNSON COUNTY, INDIANA

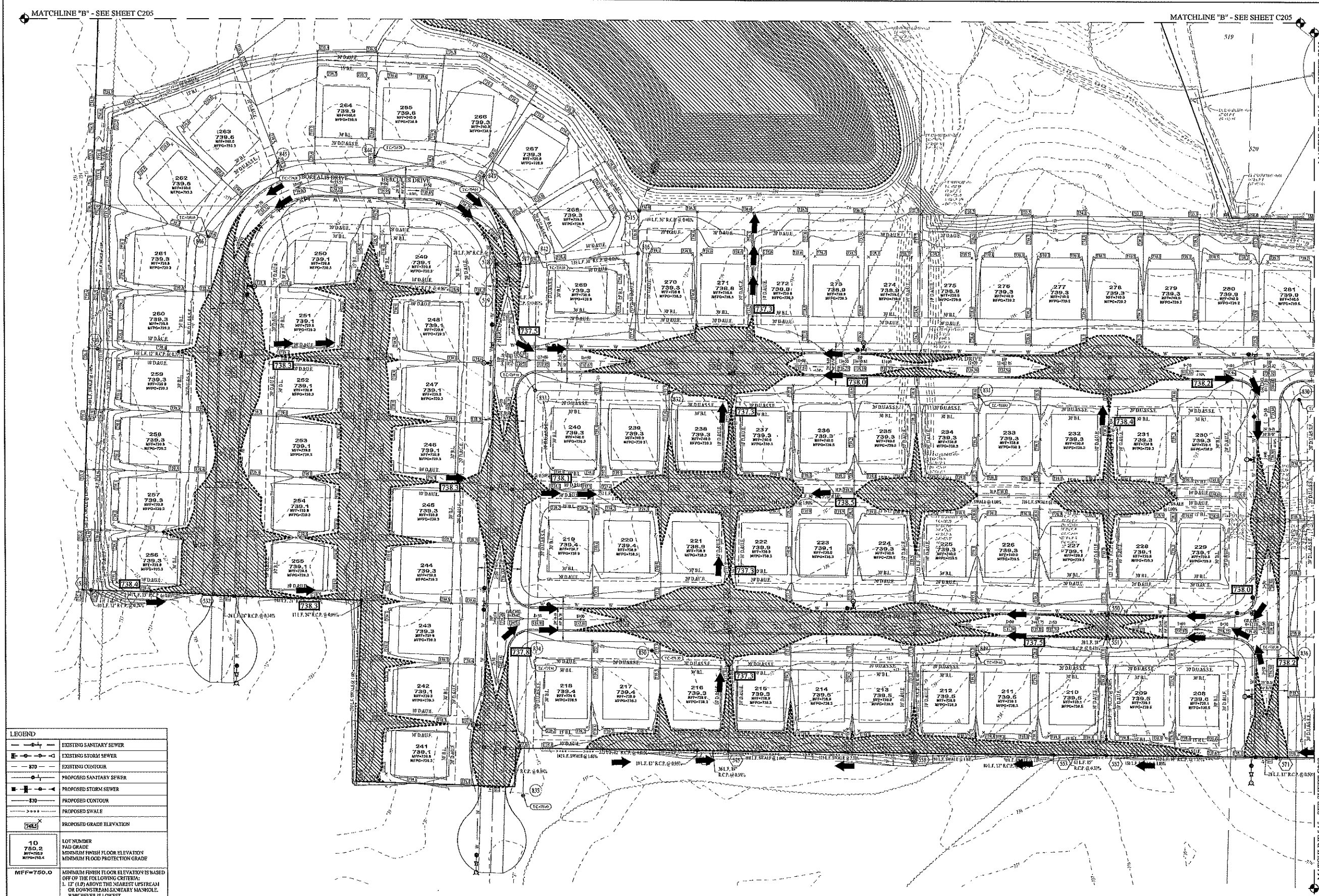
STOEPPELWERTH

ALWAYS ON
7905 East 10th Street, Indianapolis, IN 46240-5305
Phone: 317.440.5305 Fax: 317.845.5342

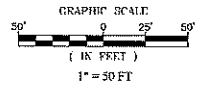
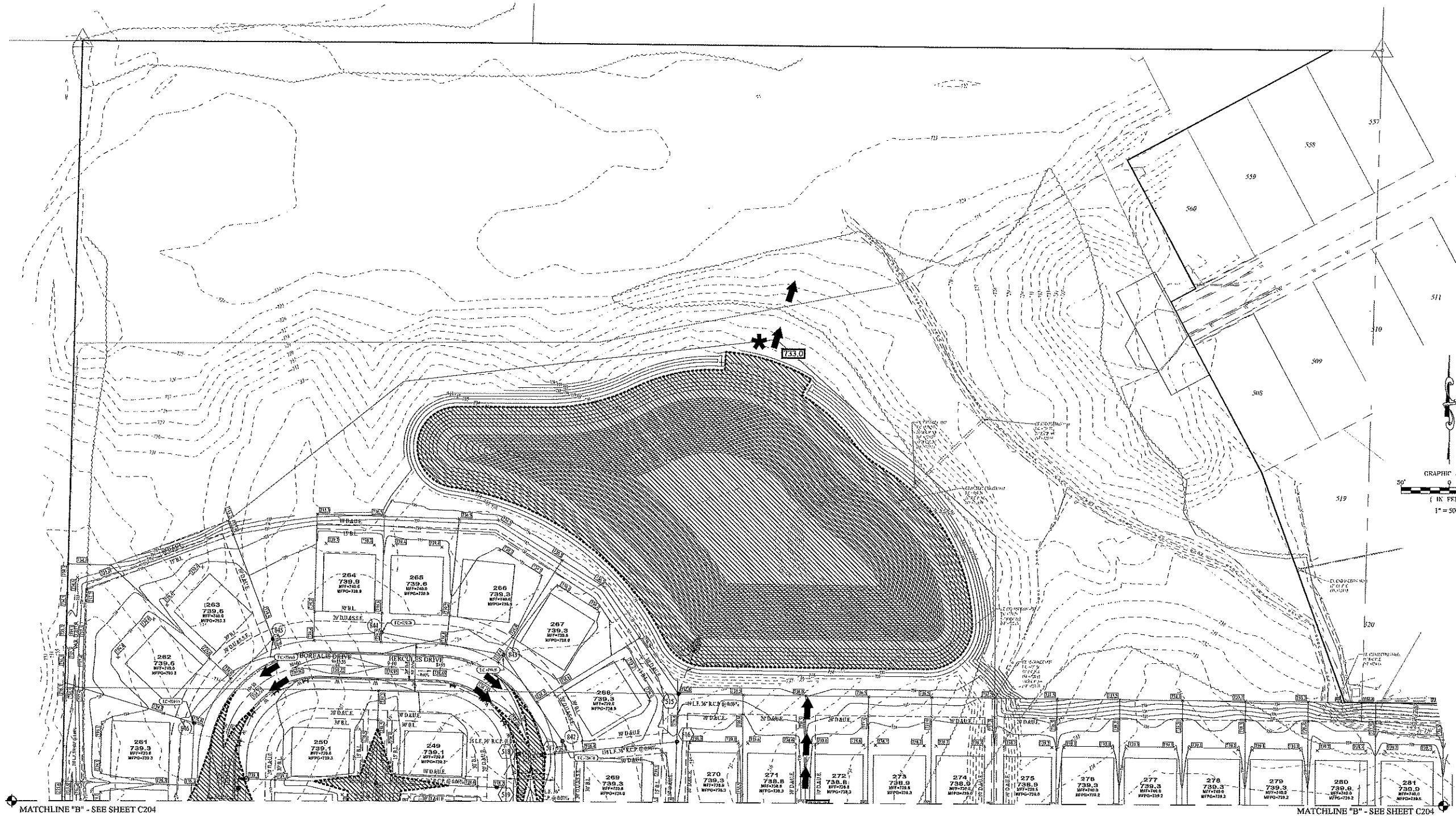
DAVID J. STOEPPELWERTH
REGISTERED
No. 19358
STATE OF INDIANA
PROFESSIONAL ENGINEER

CERTIFIED: 02/04/21
David J. Stoeppelwerth

DRAWN BY: AEC
CHECKED BY: BKR
SHEET NO: C203
S&A JOB NO: 83540MMA-S4



File Name: S:\3540\3540MMA-84\3540MMA-84-001 - Emergency Flood Route.dwg - C205
Modified: February 8, 2021 11:15:44 AM / User: ECR
Plotted: February 8, 2021 11:13:37 PM / User: ECR



LEGEND	
	EXISTING SANITARY SEWER
	EXISTING STORM SEWER
	EXISTING CONTOUR
	PROPOSED SANITARY SEWER
	PROPOSED STORM SEWER
	PROPOSED CONTOUR
	PROPOSED SWALE
	PROPOSED GRADE ELEVATION
	LOT NUMBER PAD GRADE MINIMUM FINISH FLOOR ELEVATION MINIMUM FLOOD PROTECTION GRADE
	MINIMUM FINISH FLOOR ELEVATION IS BASED OFF OF THE FOLLOWING CRITERIA: 1. 12\"/>
	EMERGENCY OVERFLOW PONDING (FOR 100-YEAR STORM ASSUMING ALL INLETS ARE COMPLETELY CLOGGED)
	EMERGENCY FLOOD ROUTING
	LOCATION OF STORMWATER DISCHARGE FROM SITE

THIS SHEET IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT TO BE USED FOR CONSTRUCTION.



EMERGENCY FLOOD ROUTE PLAN
THE BLUFFS AT YOUNGS CREEK
SECTION 4

JOHNSON COUNTY, INDIANA
FRANKLIN TOWNSHIP

STOEPPELWERTH
ALWAYS ON

7865 East 18th Street, Elkhart, IN 46039-2555
Phone: 317.249.2555 Fax: 317.249.5742

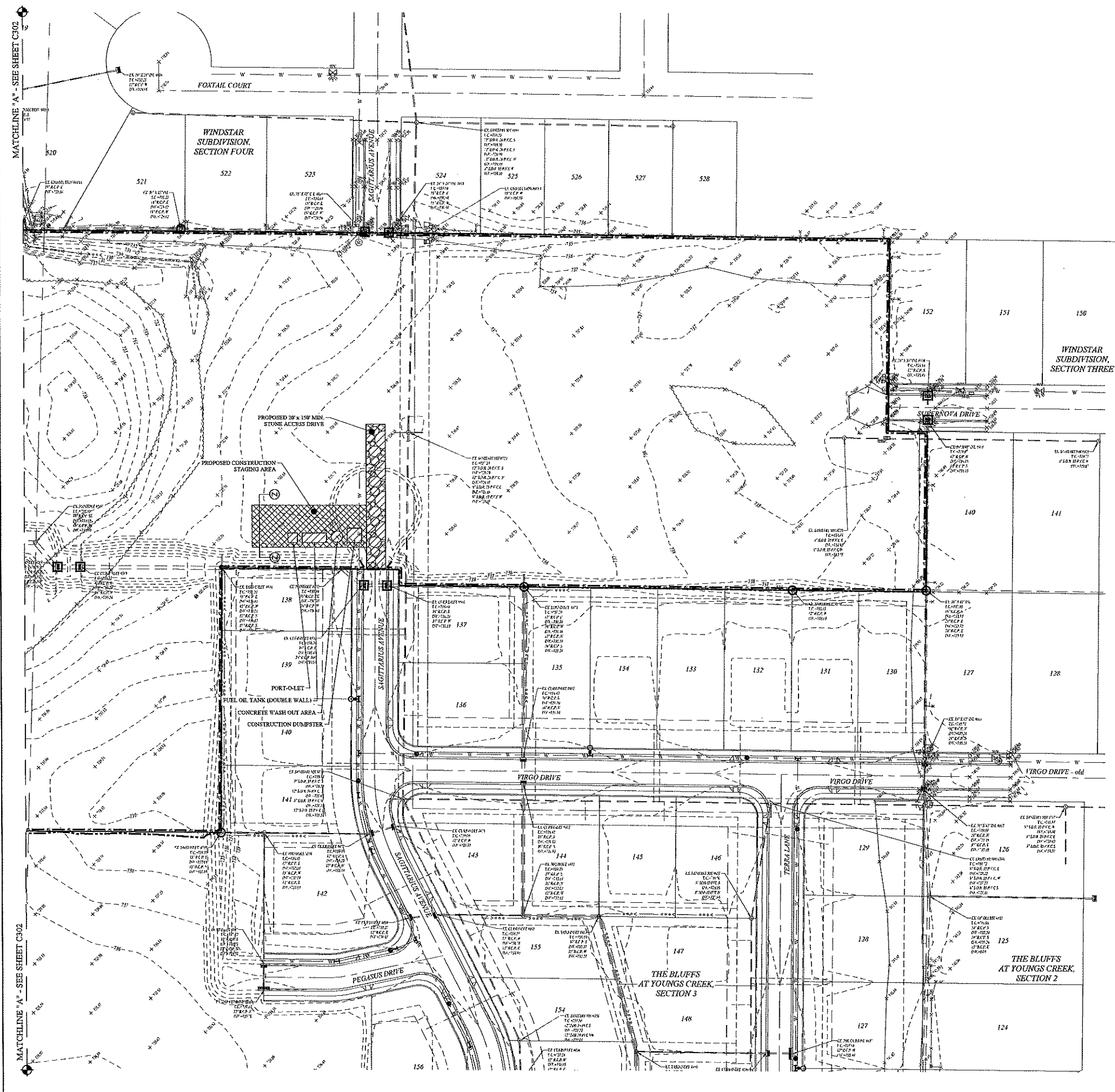
DAVID J. STOEPPELWERTH
REGISTERED
No. 19358
STATE OF INDIANA
PROFESSIONAL ENGINEER

THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A RETRACTION OR SUPPLEMENT TO A PREVIOUS REPORT.
CERTIFIED: 02/04/21
David J. Stoepelwerth

DRAWN BY: AEC
CHECKED BY: BKR
SHEET NO.: C205
S&A EIR NO.: 83540MMA-S4

REVISIONS
DATE
MARK
BY

File Name: S:\8540\MMAS4\DWG\C301 - Erosion Control - Initial.dwg - C301
Modified / By: February 8, 2021 12:21:00 PM / caaron
Plotted / By: February 8, 2021 1:47:43 PM / Erik Carson



LEGEND

- DENOTES CONSTRUCTION LINE IS
- DENOTES SILT FENCE
- TEMPORARY "DROP INLET PROTECTION BASKET"
- TEMPORARY "DROP INLET PROTECTION BASKET", "SEDIMENT CONTROL DEVICES"
- ⌒ ROCK HORSE SHOE DAM
- ⌒ ROCK CHECK DAM
- * LOCATION OF STORMWATER DISCHARGE FROM SITE (SEE SECTION A ON SHEET C300)

THIS SHEET TO BE USED FOR EROSION CONTROL ONLY.

PERSON ON SITE RESPONSIBLE FOR EROSION CONTROL:
MARK ALT - WINDSTAR HOMES, LLC
MARK ALT
PHONE: (317) 223-4257

NOTES

1. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED IN THE FIELD BY THE INSPECTOR.
2. NO EARTH DISTURBING ACTIVITIES MAY TAKE PLACE WITHOUT AN APPROVED STORM WATER MANAGEMENT PLAN.
3. ANY DISTURBED LAND WHICH WILL BE LEFT UNDISTURBED FOR 14 DAYS OR MORE SHALL RECEIVE TEMPORARY MULCH SEEDING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE ADEQUATE VEGETATIVE GROWTH OCCURS TO STABILIZE THESE AREAS. IF THE VEGETATION DOES NOT EXHIBIT SUFFICIENT GROWTH TO PROVIDE STABILIZATION, THE WORK MUST EITHER BE REPEATED OR OTHER MEANS UNDERTAKEN TO ACHIEVE REQUIREMENT.

GRAPHIC SCALE:
1" = 50 FT



STOEPPELWERTH
ALWAYS ON

7855 East 18th Street, Evans, IN 46626-2595
Phone: 817.849.2825 Fax: 817.849.2842

INITIAL STORM WATER POLLUTION PREV. PLAN
THE BLUFFS AT YOUNGS CREEK
SECTION 4

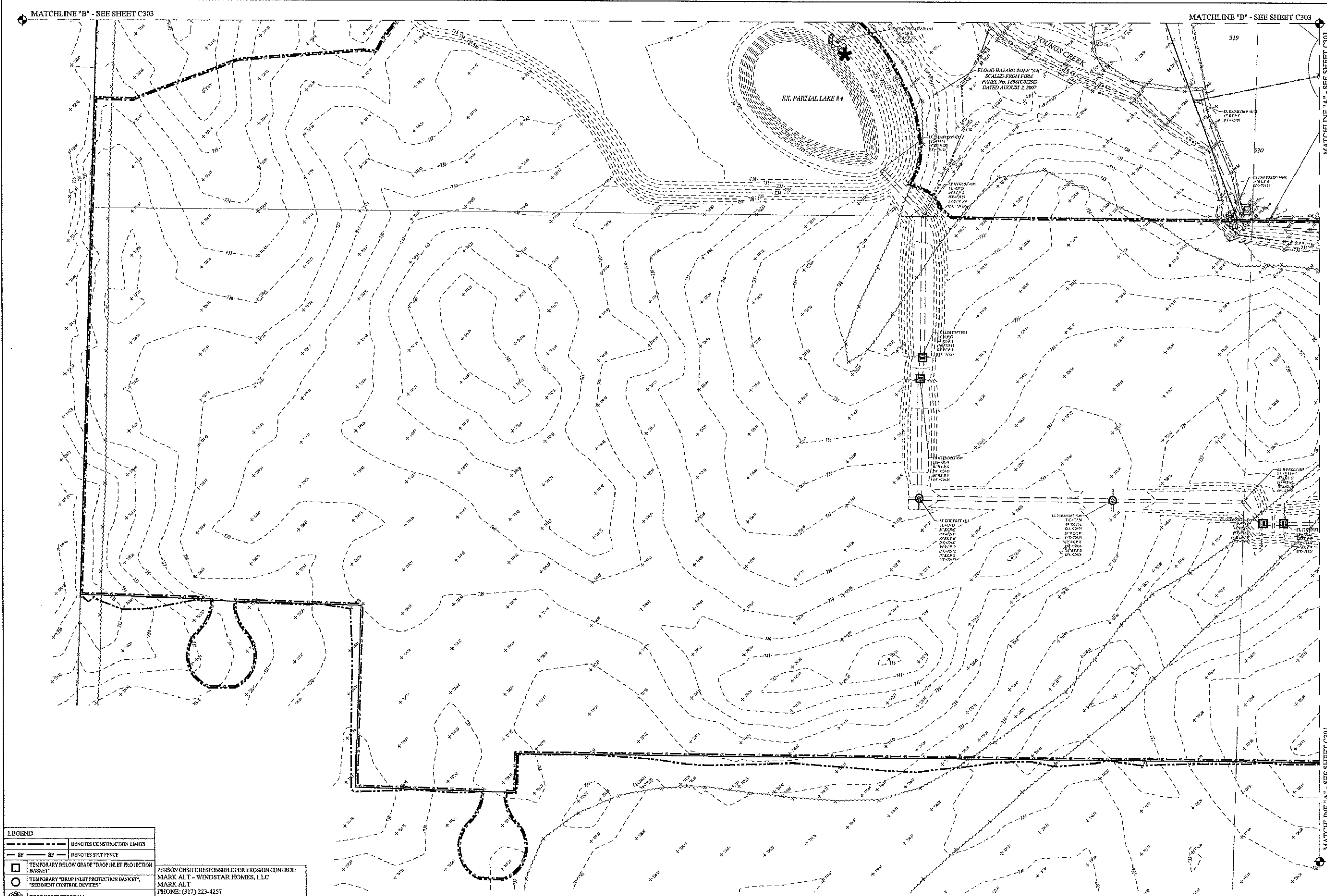
FRANKLIN, FRANKLIN TOWNSHIP JOHNSON COUNTY, INDIANA

REGISTERED PROFESSIONAL ENGINEER
No. 19358
STATE OF INDIANA
David J. Stoepelwerth
CERTIFIED: 02/04/21

THIS DRAWING IS NOT INTENDED TO BE USED FOR ANY OTHER PURPOSES THAN THE ORIGINAL BOUNDARY SURVEY, NOT A SURVEY OR A SURVEYOR LOCATION REPORT.

DATE: _____ NAME: _____ REVISIONS: _____

DRAWN BY: AEC CHECKED BY: BKR
SHEET NO: C301
S & A JOB NO: 83540MMA-S4



LEGEND	
	DENOTES CONSTRUCTION LIMITS
	DENOTES SILT FENCE
	TEMPORARY BELOW GRADE "DROP INLET PROTECTION BASKET"
	TEMPORARY "DROP INLET PROTECTION BASKET", "SEDIMENT CONTROL DEVICES"
	ROCK HORSE SHOE DAM
	ROCK CHECK DAM
	LOCATION OF STORMWATER DISCHARGE FROM STP (SEE SECTION A1 ON SHEET C302)

PERSON ON-SITE RESPONSIBLE FOR EROSION CONTROL:
MARK ALT - WINDSTAR HOMES, LLC
MARK ALT
PHONE: (317) 223-4257

NOTES

- ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED IN THE FIELD BY THE INSPECTOR.
- NO EARTH DISTURBING ACTIVITIES MAY TAKE PLACE WITHOUT AN APPROVED STORM WATER MANAGEMENT PERMIT.
- ANY DISTURBED LAND WHICH WILL BE LEFT UNDISTURBED FOR 14 DAYS OR MORE SHALL RECEIVE TEMPORARY MULCH SEEDING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE ADEQUATE VEGETATIVE GROWTH OCCURS TO STABILIZE THOSE AREAS. IF THE VEGETATION DOES NOT EXHIBIT SUFFICIENT GROWTH TO PROVIDE STABLE EROSION, THE WORK MUST EITHER BE REPEATED OR OTHER MEANS UNDERTAKEN TO ACHIEVE REQUIREMENT.

**THIS SHEET TO BE
USED FOR EROSION
CONTROL ONLY.**



INITIAL STORM WATER POLLUTION PREV. PLAN
THE BLUFFS AT YOUNGS CREEK
SECTION 4

FRANKLIN, FRANKLIN TOWNSHIP
JOHNSON COUNTY, INDIANA

STOEPPELWERTH
ALWAYS ON
7955 East 16th Street, Indianapolis, IN 46226-2505
Phone: 317.649.2835 Fax: 317.649.5942

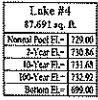
DAVID J. STOEPPELWERTH
REGISTERED
No. 193558
STATE OF INDIANA
PROFESSIONAL ENGINEER

THIS DRAWING IS NOT INTENDED TO BE
USED FOR ANY OTHER PURPOSES
OTHER THAN THE SPECIFIC PURPOSE
FOR WHICH IT WAS PREPARED. NO
RESPONSIBILITY FOR ANY SURVEYOR
REPORT.

CERTIFIED: 02/04/21
David J. Stoepfelwirth

DRAWN BY: ABC
CHECKED BY: BKR
SHEET NO.
C302
P.A. PROJECT NO.
83540MMA-S4

MATCHLINE "B" - SEE SHEET C306



FLOOD HAZARD ZONE "AE"
SCALED FROM FIRM
PANEL No. 18031-C0229D
DATED AUGUST 2, 2007

MATCHLINE "A" - SEE SHEET C304

MATCHLINE "A" - SEE SHEET C304

NOTES	
1.	ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED IN THE FIELD BY THE INSPECTOR.
2.	NO EARTH DISTURBING ACTIVITIES MAY TAKE PLACE WITHOUT AN APPROVED STORM WATER MANAGEMENT PERMIT.
3.	ANY DISTURBED LAND WHICH WILL BE LEFT UNDISTURBED FOR 14 DAYS OR MORE SHALL RECEIVE TEMPORARY MULCH SEEDING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE ADEQUATE VEGETATIVE GROWTH OCCURS TO STABILIZE THOSE AREAS. IF THE VEGETATION DOES NOT EXHIBIT SUFFICIENT GROWTH TO PROVIDE STABILIZATION, THE WORK MUST EITHER BE REPEATED OR OTHER MEANS UNDERTAKEN TO ACHIEVE REQUIREMENT.

PERSON ON SITE RESPONSIBLE FOR EROSION CONTROL:
MARK ALT - WINDSTAR HOMES, LLC
MARK ALT
PHONE: (317) 223-4257

NOTES	
1.	ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED IN THE FIELD BY THE INSPECTOR.
2.	NO EARTH DISTURBING ACTIVITIES MAY TAKE PLACE WITHOUT AN APPROVED STORM WATER MANAGEMENT PERMIT.
3.	ANY DISTURBED LAND WHICH WILL BE LEFT UNDISTURBED FOR 14 DAYS OR MORE SHALL RECEIVE TEMPORARY MULCH SEEDING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE ADEQUATE VEGETATIVE GROWTH OCCURS TO STABILIZE THOSE AREAS. IF THE VEGETATION DOES NOT EXHIBIT SUFFICIENT GROWTH TO PROVIDE STABILIZATION, THE WORK MUST EITHER BE REPEATED OR OTHER MEANS UNDERTAKEN TO ACHIEVE REQUIREMENT.



C305
3 & A JOB NO.
92540444 A C4

THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A RETRACEMENT OR

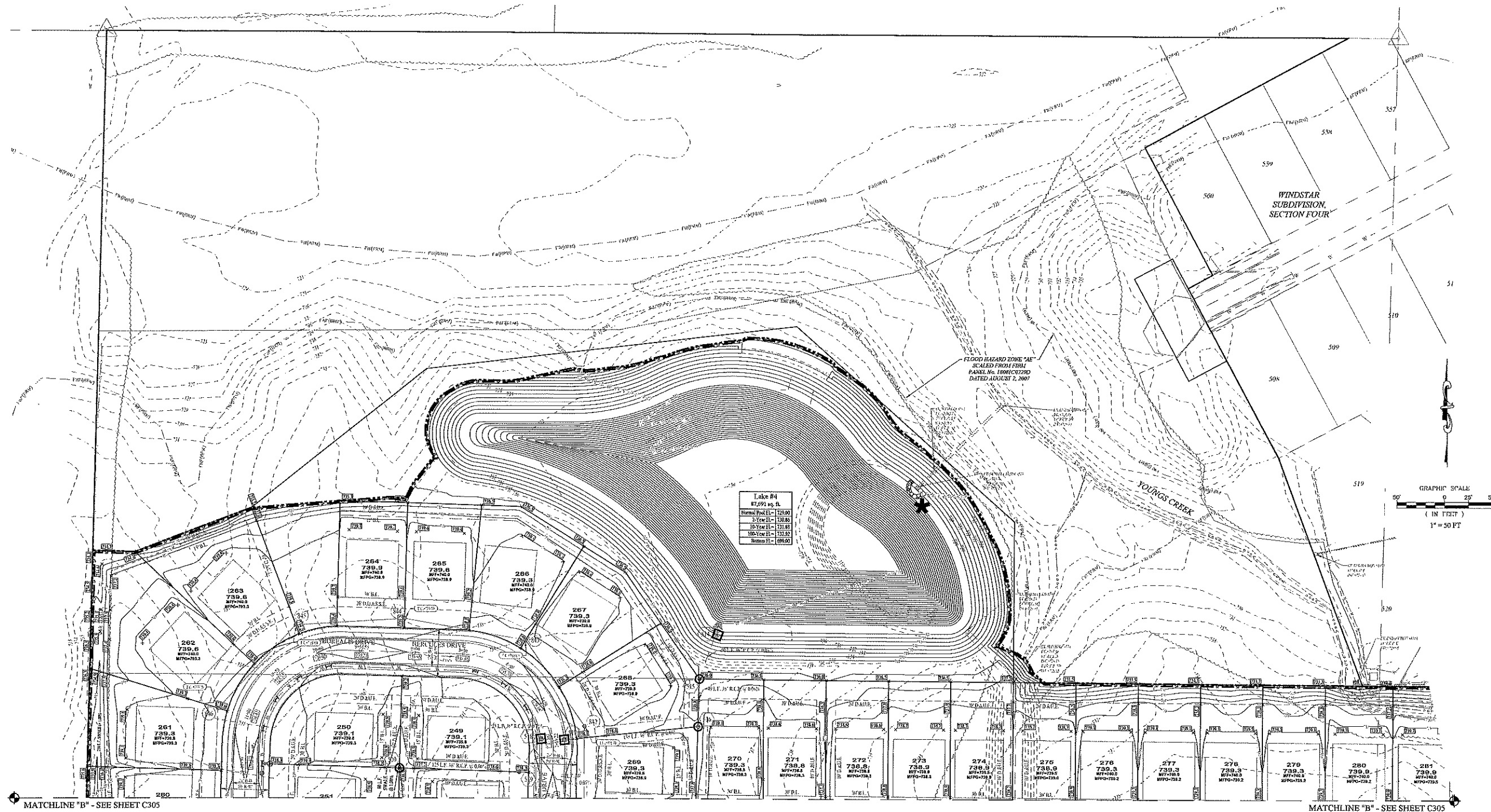
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FRANKLIN, FRANKLIN TOWNSHIP		JOHNSON COUNTY, INDIANA	▼	phones: 317.840.5935 fax: 317.840.5942	DATE _____	BY _____	REVISIONS _____

File Name: S:\43540\MA-S04\DWG\C304 - Erosion Control - Temporary.dwg - C306
Modified / By: February 8, 2021 12:21:13 PM / eason
Plotted / By: February 8, 2021 1:51:07 PM / Erik Carson



THIS SHEET TO BE USED FOR EROSION CONTROL ONLY.

PERSON ON SITE RESPONSIBLE FOR EROSION CONTROL:
MARK ALT - WINDSTAR HOMES, LLC
PHONE: (317) 223-4257

NOTES

- ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED IN THE FIELD BY THE INSPECTOR.
- NO EARTH DISTURBING ACTIVITIES MAY TAKE PLACE WITHOUT AN APPROVED STORM WATER MANAGEMENT PERMIT.
- ANY DISTURBED LAND WHICH WILL BE LEFT UNDISTURBED FOR 14 DAYS OR MORE SHALL RECEIVE TEMPORARY MULCH SEEDING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE ADEQUATE VEGETATIVE GROWTH OCCURS TO STABILIZE THOSE AREAS. IF THE VEGETATION DOES NOT EXHIBIT SUFFICIENT GROWTH TO PROVIDE STABILIZATION, THE WORK MUST EITHER BE REPEATED OR OTHER MEANS UNDERTAKEN TO ACHIEVE REQUIREMENT.

LEGEND

---	DENOTES CONSTRUCTION LIMITS
SP	DENOTES SILT FENCE
□	TEMPORARY BELOW GRADE "DROP INLET PROTECTION BASKET"
○	TEMPORARY "DROP INLET PROTECTION BASKET", "SEDIMENT CONTROL DEVICES"
⌒	ROCK HORSE SHOULDER DAM
⌒	ROCK CHECK DAM
★	LOCATION OF STORMWATER DISCHARGE FROM SITE (SEE SECTION A9 ON SHEET C304)
---	APPROXIMATE LIMITS OF FLOODWAY FRINGE (ZONE "AE"), AS SCALED FROM FIRMA MAP PANEL No. 16881C02290 DATED: AUGUST 2, 2007

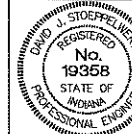


TEMPORARY STORM WATER POLLUTION PREV. PLAN

THE BLUFFS AT YOUNGS CREEK
SECTION 4

JOHNSON COUNTY, INDIANA

STOEPPELWERTH



THIS DRAWING IS NOT INTENDED TO BE
ORIGINAL BOUNDARY SURVEY, A ROUTE
SURVEY OR A SURVEYOR LOCATION
REPORT.
CERTIFIED: 02/04/21
David J. Stoepfelwerth

ALWAYS ON

7950 East 18th Street, Fishers, IN 46038-2205
Phone: 317.595.5355 Fax: 317.595.5942

DRAWN BY:

ABC

CHECKED BY:

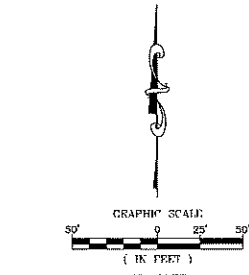
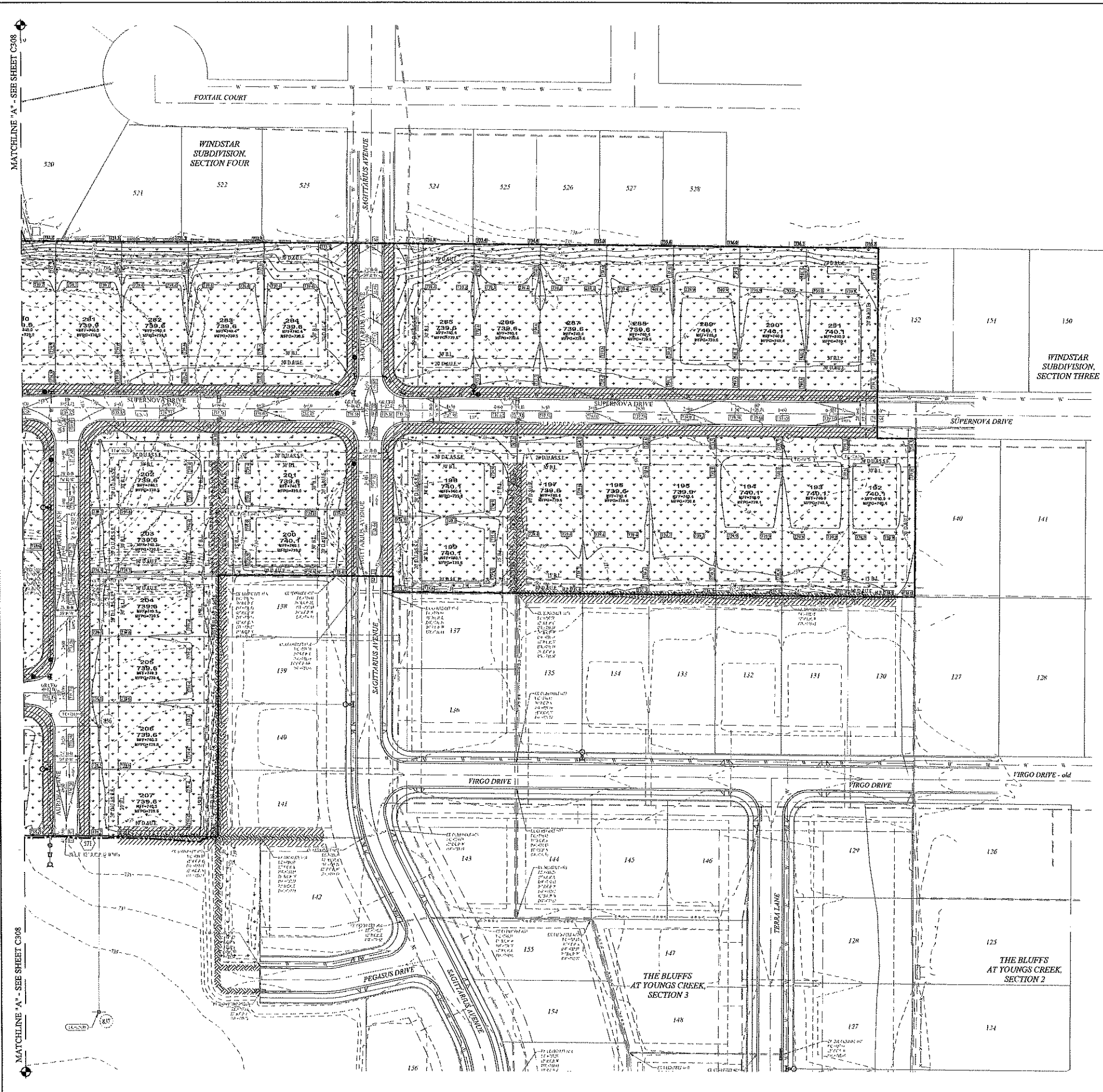
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SHEET NO.

C306

FILE NO. 83540MMA-S4

File Name: S:\2540MMA-S\04\03\0307 - Erosion Control - Permanent.dwg - C307
Modified / By: February 8, 2021 12:23:49 PM / acaron
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LEGEND

- DENOTES CONSTRUCTION LIMITS
- SF - SF - DENOTES SILT FENCE
- [Pattern] DENOTES PERMANENT SEEDING & MULCH AREAS
- [Pattern] DENOTES SEEDING W/ FIBER BLANKET #575 BY NORTH AMERICAN GREEN
- [Pattern] DENOTES TEMPORARY SEEDING & MULCH AREAS

REFER TO SHEETS C307 & C308-C311 FOR SEEDING & MULCH SPECIFICATIONS

THIS SHEET TO BE USED FOR EROSION CONTROL ONLY.

PERSON ON SITE RESPONSIBLE FOR EROSION CONTROL:
MARK ALT - WINDSTAR HOMES, LLC
MARK ALT
PHONE: (317) 223-4257

NOTES

1. ANY DISTURBED LAND WHICH WILL BE LEFT UNDISTURBED FOR 14 DAYS OR MORE SHALL RECEIVE TEMPORARY MULCH SEEDING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE ADEQUATE VEGETATIVE GROWTH OCCURS TO STABILIZE THOSE AREAS. IF THE VEGETATION DOES NOT EXHIBIT SUFFICIENT GROWTH TO PROVIDE STABILIZATION, THE WORK MUST EITHER BE REPEATED OR OTHER MEANS UNDERTAKEN TO ACHIEVE REQUIREMENT.



PERMANENT STORM WATER POLLUTION PREV. PLAN
THE BLUFFS AT YOUNGS CREEK SECTION 4
FRANKLIN, FRANKLIN TOWNSHIP JOHNSON COUNTY, INDIANA

STOEPPELWERTH
ALWAYS ON
7965 East 18th Street, Indianapolis, IN 46226-2205
Phone: 317.849.2555 Fax: 317.849.3942

REGISTERED PROFESSIONAL ENGINEER
No. 19358
STATE OF INDIANA
David J. Stoepfelwirth
CERTIFIED: 02/04/21

THIS DRAWING IS NOT INTENDED TO BE USED FOR ANY OTHER PURPOSES THAN THE ORIGINAL BOUNDARY SURVEY, A ROUTE SURVEY OR A SURVEYOR LOCATION REPORT.

DATE: _____ MARK: _____ BY: _____

DRAWN BY: AEC CHECKED BY: BKR
SHEET NO: **C307**
P.L.A. NO.: 83540MMA-S4

MATCHLINE "B" - SEE SHEET C309

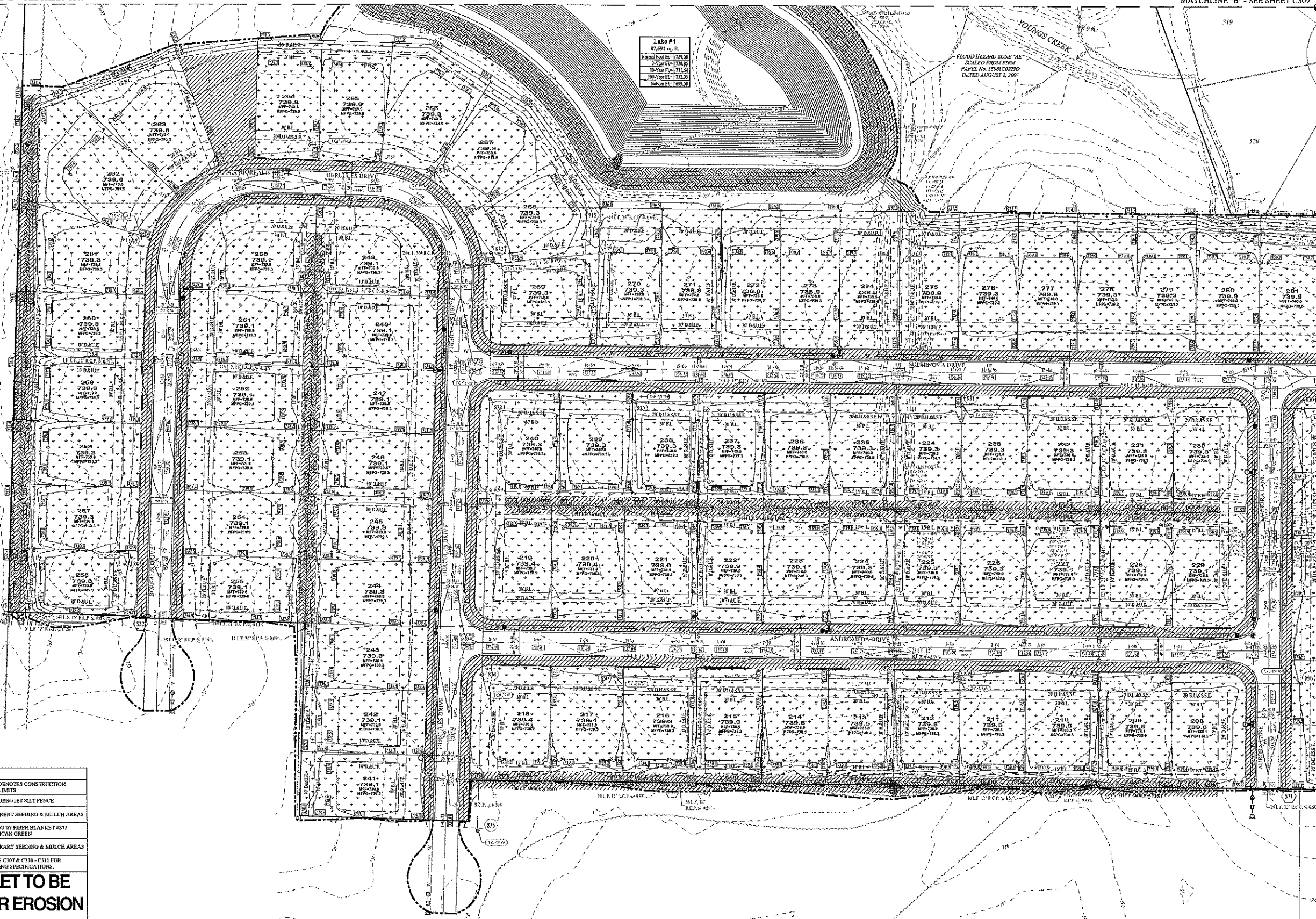
MATCHLINE "B" - SEE SHEET C309

MATCHLINE "A" - SEE SHEET C307

Lake #4
87,691 sq. ft.
Normal Pool EL = 179.00
1% Slope to 178.51
10% Year Flood EL = 171.64
100 Year Flood EL = 171.50
Bottom EL = 169.00

FLOOD HAZARD ZONE "A5"
K-LEAD FROM FIRM
PARCEL No. 1801C02250
DATED AUGUST 2, 2007

519
520



LEGEND

- DENOTES CONSTRUCTION LIMITS
- DENOTES SILT FENCE
- DENOTES PERMANENT SEEDING & MULCH AREAS
- DENOTES SEEDING W/ FIBER BLANKET #575 BY NORTH AMERICAN GREEN
- DENOTES TEMPORARY SEEDING & MULCH AREAS

REFER TO SHEETS C307 & C310 - C311 FOR SEEDING/MULCHING SPECIFICATIONS.

THIS SHEET TO BE USED FOR EROSION CONTROL ONLY.

PERSON ON SITE RESPONSIBLE FOR EROSION CONTROL:
MARK ALT - WINDSTAR HOMES, LLC
MARK ALT
PHONE: (317) 223-4257

NOTES

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File Name: S:\3540MMA-S4\DWG\C307 - Erosion Control - Permanent.dwg - C308
February 8, 2021 12:23:49 PM / jason
February 8, 2021 1:53:24 PM / Erik Carson
Mark Alt
Printed By:

GRAPHIC SCALE
0' 25' 50'
(IN FEET)
1" = 50 FT



THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A RETRACTION OR SURVEY OR A SURVEYOR LOCATION REPORT.

CERTIFIED: 02/04/21
David J. Stoepelwerth
Professional Engineer
No. 19358
STATE OF INDIANA

STOEPPELWERTH
ALWAYS ON
7955 East 10th Street, Indianapolis, IN 46226-2905
Phone: 317.845.0505 Fax: 317.845.5942

PERMANENT STORM WATER POLLUTION PREV. PLAN
THE BLUFFS AT YOUNGS CREEK
SECTION 4
JOHNSON COUNTY, INDIANA
FRANKLIN, FRANKLIN TOWNSHIP

DRAWN BY: AEC
CHECKED BY: BKR
SHEET NO.: C308
S.A.A. KIRNO
83540MMA-S4

THIS SHEET TO BE USED FOR EROSION CONTROL ONLY.

THE BLUFFS AT YOUNGS CREEK, SECTION 4

SITE NAME

The area scheduled for construction is known as "The Bluffs at Youngs Creek, Section 4" (hereinafter referred to as the "Project").

PROJECT LOCATION

The property is located south of the Windstar Subdivision, approximately 0.5 miles west of S Nineveh Road (Airport Road) and Windstar Blvd.
Latitude is 39° 28' 00" N
Longitude is 86° 04' 17" W

OWNER'S INFORMATION

Windstar Homes, LLC
5374 Cayman Drive
Carmel, Indiana 46033
Phone: (317) 223-4257
Contact Person: Mark Alt, Member

OPERATOR'S INFORMATION

Windstar Homes, LLC
5374 Cayman Drive
Carmel, Indiana 46033
Phone: (317) 223-4257
Contact Person: Mark Alt, Member

NOTICE OF INTENT

All parties defined as owners or operators must submit a Notice of Intent (NOI) at least 48 hours prior to commencement of on-site construction activities. Submittal of late NOIs is not prohibited; however, authorization under the construction general permit is only for discharges that occur after permit coverage is granted. Unpermitted discharges may be subject to enforcement actions by the EPA. For the purposes of this permit, an operator is defined as any party meeting either of the following requirements:

- The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications.
- The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with a stormwater pollution prevention plan for the site or other permit conditions.

A1 - Plan Index

Cover Sheet

A2 - 11" x 17" PLAT

This drawing is attached in the O & M Manual.

A3 - PROJECT NARRATIVE

This project includes the construction of 100 lots, 1 common area, and 2 blocks which consists of approximately 35.646 acres. Construction will include pad grades for homes, associated roadways, landscaping, drainage infrastructure.

A4 - VICINITY MAP

A copy of the vicinity map is shown on the Cover Sheet.

A5 - LEGAL DESCRIPTION OF PROJECT SITE

The site is part of a tract of land as described on the Final Plat.

A6 - LOCATION OF ALL LOTS AND PROPOSED SITE IMPROVEMENTS

The site will be subdivided as shown on the Site Plans. Please refer to Sheets C200 - C202 for detail.

A7 - HYDROLOGIC UNIT CODE (HUC14)

05120204090040, Youngs Creek - Ray Creek

A8 - STATE AND FEDERAL WATER QUALITY PERMITS

IDEM Rule 5

A9 - SPECIFIC POINT WHERE STORMWATER DISCHARGE WILL LEAVE THIS SITE

Stormwater will leave the site through proposed and existing storm sewers and lakes.

A10 - LOCATION AND NAME OF ALL WETLANDS, LAKES, AND WATERCOURSES ON AND ADJACENT TO THIS SITE

Youngs Creek approximately 900' northwest of this site.

A11 - IDENTIFICATION OF ALL RECEIVING WATERS

The overall site outlets to existing storm sewer system and existing lake to the north within Windstar, Subdivision, and northwest to Lake #4, and ultimately Youngs Creek - Buckhart Creek.

A12 - IDENTIFICATION OF ALL POTENTIAL DISCHARGES TO GROUND WATER

None

A13 - 100-YEAR FLOODPLAINS, FLOODWAYS, AND FLOODWAY FRINGES

No portion of the developed site is located within a Special Flood Hazard Area (Zone AE). This information was obtained from Flood Insurance Rate Map (FIRM) Panel 18061C0229D for Johnson County, Indiana dated August 02, 2007.

A14 - PRE-CONSTRUCTION AND POST-CONSTRUCTION ESTIMATE OF PEAK DISCHARGE

Outlet 4 (North)

Allowable 10-year discharge:	141.48 cfs	Post-construction 2-year discharge:	14.67 cfs
Allowable 100-year discharge:	273.19 cfs	Post-construction 10-year discharge:	33.42 cfs
		Post-construction 100-year discharge:	43.54 cfs

A15 - ADJACENT LAND USE

North: Residential
East: Residential
South: Agricultural
West: Agricultural

A16 - LOCATIONS AND APPROXIMATE BOUNDARIES OF ALL DISTURBED AREAS

See Sheets C200 - C202 and C301 - C308.

A17 - IDENTIFICATION OF EXISTING VEGETATIVE COVER

Existing site consists of vegetation and crops.

A18 - SOILS MAP INCLUDING SOIL DESCRIPTIONS AND LIMITATIONS

Soil information from the Johnson County Soil Survey is shown on the Cover Sheet and Sheet C310.

A19 - LOCATIONS, SIZE, AND DIMENSIONS OF PROPOSED STORMWATER SYSTEMS

Locations of stormwater systems: See Sheets C200 - C202 and C600 - C604.
Size of storm sewers: See Sheets C200 - C202 and C600 - C604.
Details of storm inlets and manholes: See Sheets C600 - C604 and details on Sheets C801A - C801B.

A20 - PLANS FOR ANY OFF-SITE CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT

Additional grading and storm sewer northwest for outlet to Youngs Creek.

A21 - LOCATIONS OF PROPOSED SOIL STOCKPILES AND/OR BORROW/DISPOSAL AREAS

None.

A22 - EXISTING SITE TOPOGRAPHY

Refer to Sheets C100 - C102 for the existing site topography plan.

A23 - PROPOSED FINAL SITE TOPOGRAPHY

Refer to Sheets C200 - C202 for the proposed final site topography plan.

B1 - DESCRIPTION OF POTENTIAL POLLUTANT SOURCES ASSOCIATED WITH CONSTRUCTION ACTIVITIES

The following potential pollutant sources may be associated with construction activities on site:

- Material storage areas (more specifically described below)
- Construction waste material
- Fuel storage areas and fueling stations
- Exposed soils
- Leaking vehicles and equipment
- Sanitary waste from temporary toilet facilities
- Litter
- Windblown dust
- Soil tracking off site from construction equipment
- Water from concrete washout.

The following construction materials will be staged or stored on site at various points during development of the site.

- Structural fill
- Road base
- Concrete drainage pipe
- Concrete culverts
- Precast concrete manholes

B2 - SEQUENCE DESCRIBING STORMWATER QUALITY MEASURE IMPLEMENTATION RELATIVE TO LAND-DISTURBING ACTIVITIES

- The Contractor shall schedule a Pre-construction meeting with the City of Franklin prior to any constructing on the site being started. The Contractor and/or Developer shall notify IDEM and the City of Franklin 48 hours prior to start of construction.
- Following the required pre-construction meeting the Contractor shall install the "posting information center". The location of the posting information center is shown on Sheets C300 and C303. The posting information center is the location where a copy of the approved IDEM Rule 5 Permit, Approved SWPPP Plan, signed O&M Manual and Maintenance Logs are to be located. The Contractor shall proceed to construct the construction entrance after all posting requirements have been met.
- Immediately following the installation of the construction entrance, the Contractor shall construct the maintenance and reducing area. Please refer to the maintenance and reducing area details and specifications on Sheets C307 - C308.
- Prior to any earth moving, the Contractor shall install all silt fence as shown on Sheets C300 - C301. The details and specifications for silt fence installation are located on Sheet C309.
- The Contractor shall protect existing curb inlets with drop inlet protection baskets and end section inlets with rock horse shoe dams as shown on Sheets C301 - C303. Refer to rock horseshoe dam detail on Sheet C307. Refer to drop inlet protection basket details and specifications on Sheets C308.
- When the "existing" site/construction limits are completely protected, the Contractor shall begin stripping the existing top soil within the construction limits and utilize in non-structural fill areas.
- The Contractor shall install Lake inlet pipes from structures 422 - 423 and install associated erosion control methods as show on C302 - C303. Immediately following construction, the Contractor shall stabilize the banks with erosion control blanket as shown on Sheets C304 - C305. Refer to erosion control blanket details and specifications on Sheet C307.
- The Contractor shall install the proposed storm sewers and cut the proposed swales as shown on Sheets C200 - C201. Swales shall be stabilized with an erosion control blanket immediately following their construction.
- All inlets shall be protected with drop inlet baskets immediately following their installation. Refer to drop inlet protection basket details and specifications on Sheets C309.
- The Contractor shall continue to grade the remainder of the site as shown on Sheets C200 - C201.
- The Contractor shall excavate around the existing sanitary manholes and storm structures and expose the proposed connection points for the gravity sanitary sewer and storm sewer for this project.
- The proposed onsite storm sewer and sanitary sewer shall be installed concurrently with each other when crossings are encountered.
- The Contractor shall install water main.
- The Contractor shall prepare the sub-grade for the proposed road system. If time stabilization is the method chosen, dust shall be kept to a minimum. Dust shall be removed from the construction vehicles prior to leaving the site.
- The Contractor shall install all concrete curb.
- The Contractor shall have all other appropriate utilities installed. It is ultimately the responsibility of the Contractor to ensure that the trench area is seeded and mulched immediately following the installation of each utility.
- The Contractor shall install all asphalt pavement.
- The Contractor shall install the proposed erosion control blanket in the remaining swales as shown on Sheets C304 - C305.
- The Contractor shall permanent seed all areas between the back of curb and the constructed pads and all other areas that are illustrated on Sheets C204 - C305. Refer to the seed mixture details and specifications on Sheets C310 - C311.
- The Contractor shall schedule a site inspection with the City of Franklin to ensure that the site is stabilized. After the Inspector approves the site conditions, the Contractor shall remove all temporary erosion control practices.
- The post-construction erosion control practices then become the responsibility of the Developer of this project.
- The Developer of this project shall continue to monitor this site for good house keeping on the post-construction BMP's until a NOT is filed with IDEM.

B3 - STABLE CONSTRUCTION ENTRANCE LOCATIONS AND SPECIFICATIONS

Construction entrance will be in place prior to this phase of construction. Entrance is shown for reference on Sheet C301.

Refer to Sheets C308 for details and specifications.

B4 - SEDIMENT CONTROL MEASURES FOR SHEET FLOW AREAS

Sheet flow areas will be protected by seed and mulch or hydrosedding. Erosion control blankets will be installed on sloped areas where the slope exceeds 3:1 (horizontal to vertical). Silt fencing will be utilized to minimize runoff from construction areas, as identified on Sheets C301 - C303.

Refer to Sheets C307 - C308 for details and specifications.

B5 - SEDIMENT CONTROL MEASURES FOR CONCENTRATED FLOW AREAS

Erosion control blankets will be used in swales and the banks of Lake #1 as shown on Sheets C304 - C305. Sheet flow areas will be protected by seed and mulch or hydrosedding. Erosion control blankets will be installed on sloped areas where the slope exceeds 3:1 (horizontal to vertical). Silt fencing will be utilized to minimize runoff from construction areas, as identified on Sheets C301 - C303.

Refer to erosion control blanket details and specifications on Sheet C307.

B6 - STORM SEWER INLET PROTECTION MEASURE LOCATIONS AND SPECIFICATIONS

The Contractor has the option to use one of several storm sewer inlet protection methods, depending on the inlet location and the stage of construction. Manufactured products such as the Catch-All products may also be used at the Contractor's discretion. Manufactured products shall be installed in accordance with the manufacturer's specifications. Straw bales will not be allowed as inlet protection measures. Coconut fiber mats are recommended.

Refer to Sheets C301-C306 for locations and refer to Sheets C307 - C308 for details and specifications.

B7 - RUNOFF CONTROL MEASURES

The silt fencing will be utilized to slow runoff and minimize sediment discharge.

Refer to Sheets C301 - C303 for additional information.

B8 - STORMWATER OUTLET PROTECTION SPECIFICATIONS

Rip-rap revement will be used at each of the stormwater outlets where not connecting into existing manholes.

Refer to Sheets C302 - 303 for additional information.

Refer to Sheet C309 for details.

B9 - GRADE STABILIZATION STRUCTURE LOCATIONS AND SPECIFICATIONS

Erosion control blankets will be utilized as grade-stabilization structures.

Refer to Sheets C304 - C305 for additional information.

B10 - LOCATION, DIMENSIONS, SPECIFICATIONS, AND CONSTRUCTION DETAILS OF EACH STORMWATER QUALITY MEASURE

Temporary "Coconut Fiber Mat", Below Grade "Drop Inlet Protection Basket", Temporary "Drop Inlet Protection Basket", Sediment Control Devices". Each measure is shown on Sheets C301 - C305.

Refer to details and specifications on Sheets C309.

B11 - TEMPORARY SURFACE STABILIZATION METHODS APPROPRIATE FOR EACH SEASON

Refer to Sheets C308 - C309 for specifications.

B12 - PERMANENT SURFACE STABILIZATION SPECIFICATIONS

Refer to Sheets C308 - C309 for specifications.

PERSON ONSITE RESPONSIBLE FOR EROSION CONTROL:

MARK ALT - WINDSTAR HOMES, LLC
MARK ALT
PHONE: (317) 223-4257

B13 - MATERIAL HANDLING AND SPILL PREVENTION PLAN

Solid Waste Disposal

No solid material, including building materials, is permitted to be discharged to surface waters or buried on site. All solid waste materials, including disposable materials incidental to the construction activity, must be collected in containers or closed dumpsters. The collection containers must be emptied periodically and the collected material hauled to a landfill permitted by the State and/or appropriate local municipality to accept the waste for disposal.

A foreman or supervisor should be designated in writing to oversee, enforce, and instruct construction workers on proper solid waste procedures.

Hazardous Waste

Whenever possible, minimize the use of hazardous materials and generation of hazardous wastes. All hazardous waste materials will be disposed in the manner specified by federal, state, or local regulations or by the manufacturer.

Use containment berms in fueling and maintenance areas and where potential for spills is high.

A foreman or supervisor should be designated in writing to oversee, enforce and instruct construction workers on proper hazardous waste procedures. The location of any hazardous waste storage areas should be indicated on the stormwater pollution prevention plan by the operator following on-site location of the facility.

Dust Control/Off-site Vehicle Tracking

During construction, water trucks should be used, as needed, by each contractor or subcontractor to reduce dust. After construction, the site should be stabilized to reduce dust.

Construction traffic should enter and exit the site at a Construction Entrance with a rock pad or equivalent device. The purpose of the rock pad is to minimize the amount of soil and mud that is tracked into existing streets. If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize off-site impacts.

Sanitary/Septic

Contractors and subcontractors must comply with all state and local sanitary sewer, portable toilet, or septic system regulations. Sanitary facilities shall be provided at the site by each contractor or subcontractor throughout construction activities. The sanitary facilities shall be utilized by all construction personnel and be serviced regularly. All expenses associated with providing sanitary facilities are the responsibility of the contractors and subcontractors.

The location of any sanitary facilities should be indicated on the stormwater pollution prevention plan by the operator following on-site location of said facilities.

Water Source

Water used to establish and maintain grass, to control dust, and for other construction purposes must originate from a public water supply or private well approved by the State or local health department.

Equipment Fueling and Storage Areas

Equipment fueling, maintenance, and cleaning should only be completed in protected areas (i.e., bermed areas). Leaking equipment and maintenance fluids will be collected and not allowed to discharge into soil where they may be washed away during a rain event.

Equipment wash down (except for wheel washes) should take place within an area surrounded by a berm. The use of detergents is prohibited.

Hazardous Material Storage

Chemicals, paints, solvents, fertilizers, and other toxic or hazardous materials should be stored in their original containers (if original container is not resalable, store the products in clearly labeled, waterproof containers). Except during application, the containers should be kept in trucks or in bermed areas within covered storage facilities. Runoff containing such materials shall be collected, removed from the site, and disposed of in accordance with the federal, state, and local regulations.

As may be required by federal, state, or local regulations, the Contractor should have a Hazardous Materials Management Plan and/or Hazardous Materials Spill Prevention Program in place. A foreman or supervisor should be designated in writing to oversee, enforce, and instruct construction workers on proper hazardous materials storage and handling procedures. The location of any hazardous material storage areas should be indicated on the stormwater pollution prevention plan by the operator following on-site location of the storage areas.

Spill Response Directions

In the event of small spills, please contact the construction supervisor. In the event of spills that require removal of soils or other materials, please contact the construction supervisor, developer, County Surveyor's Office and the Local Fire Department.

In the event of spills that have potential groundwater or surface water contamination, please contact the construction supervisor, developer, County Surveyor's Office, Local Fire Department and IDEM.

Contact Numbers

Emergency Response	911
Franklin Fire Department	(888) 736-3650
Franklin Police Department	(317) 736-3670
Indiana Department of Natural Resources	(317) 477-8773
Indiana Department of Environmental Management	(317) 233-7745
Johnson County Soil and Water	(317) 736-9540
Windstar Homes, LLC	(317) 223-4257
Johnson County Surveyor's Office	(317) 346-4341

B14 - MONITORING AND MAINTENANCE GUIDELINES FOR EACH PROPOSED STORMWATER QUALITY MEASURE

Inspection Schedule/Reporting

All impacted areas, as well as all erosion and sediment control devices, will be inspected every seven (7) calendar days and within 24 hours after a rainfall of 0.5 inch or greater. Where sites have been final or temporarily stabilized or on sites where runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or frozen ground exists), such inspections shall be conducted at least once every month.

Inspections shall be conducted and a written report prepared, by a designated and qualified person familiar with the USEPA NPDES Storm Water General Permit, and the Project.

Inspection reports shall be completed including scope of the inspection, name(s) and qualifications of personnel making the inspection, the date of the inspection, observations relating to the implementation of the SWPPP, and any actions taken as a result of incidents of noncompliance noted during the inspection. The inspection report should state whether the site was in compliance or identify any incidents of noncompliance. The contractor shall keep a copy of the inspection reports on site and permanently for a period of two years following construction. The on-site reports may be requested by inspections conducted by the local MS-4.

Construction Entrance

Locations where vehicles exit the site shall be inspected for evidence of off-site sediment tracking. Each contractor and subcontractor shall be responsible for maintaining the Construction Entrance and other controls.

Material Storage Inspections

Inspectors must evaluate areas used for storage of materials that are exposed to precipitation. The purpose is to ensure that materials are protected and/or impounded so that pollutants cannot discharge from storage areas. Off-site material storage areas used solely by the subject project are considered to be part of the project and must be included in the erosion control plans and the site inspection reports.

Soil Stabilization Inspections

Seeded areas will be inspected to confirm that a healthy stand of vegetation is maintained. The site has achieved final stabilization once all areas are covered with pavement or have a stand of vegetation with at least 70% of the background vegetation density. The density of 70% or greater must be maintained to be considered as stabilized. The operator or their representative will water, fertilize, and reseed disturbed areas as needed to achieve this goal.

Erosion and Sediment Control Inspections

All controls should be inspected at least once every seven (7) calendar days and following any storm event of 0.5 inch or greater. The following is a list of inspection/maintenance practices that will be used for specific controls:

- Geotextiles/Erosion Control Mats: Missing or loose matting must be replaced or re-anchored.
- Inlet Protection: Sediment should be removed when it reaches approximately one-half the height of the fence. If a sump is used, sediment should be removed when the volume of the basin is reduced by 50%.
- Mulching: Inspected for thin or bare spots caused by natural decomposition or weather-related events. Mulch in high traffic area should be replaced on a regular basis to maintain uniform protection.
- Silt Fence: Removal of built-up sediment will occur when the sediment reaches one-half the height of the fence.
- Stabilized Construction Entrance: Periodic regarding and top dressing with additional stones.
- Vegetation: Protect newly seeded areas from excessive runoff and traffic until vegetation is established. Establish a watering and fertilizing schedule.
- Good Housekeeping: Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges through screening of outfalls and daily pickup of litter.

In the event that sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize adverse impacts. An example of this may be the situation where sediment has washed into the street and could be carried into the storm sewers by the next rainfall and/or pose a safety hazard to users of public streets.

Material Handling and Spill Prevention

Discharge of hazardous substances or oil into stormwater is subject to reporting requirements. In the event of a spill of a hazardous substance, the operator is required to notify the

National Response Center (1-800-424-8802)

to properly report the spill. In addition, the operator shall submit a written description of the release (including the type and amount of material released, the date of the release, the circumstances of the release, and the steps to be taken to prevent future spills) to the local MS-4.

Compliance of the site with the General Construction Permit remains the responsibility of all operators that have submitted an NOI until such time as they have submitted a Notice of Termination (NOT). The permittee's authorization to discharge under the General Construction Permit terminates at midnight of the day the NOT is signed.

All permittees must submit an NOI within thirty (30) days after one or more of the following conditions have been met:

- Final stabilization has been achieved on all portions of the site for which the permittee was responsible.
- Any operational/permittee has assumed control over all areas of the site that have not been finally stabilized.
- In residential construction operations, temporary stabilization has been completed and the residence has been transferred to the homeowner.

B15 - EROSION AND SEDIMENT CONTROL SPECIFICATIONS FOR INDIVIDUAL BUILDING LOTS

Construction sequence for the site are shown on this sheet.

C1 - DESCRIPTION OF POLLUTANTS AND THEIR SOURCES ASSOCIATED WITH THE PROPOSED LAND USE

The proposed land use will consist of single family residential houses. The pollutants and sources of each pollutant normally expected from these types of land uses are listed below:

Pollutant Source: Passenger vehicles, delivery vehicles, and trucks
Type of Pollutant: Oil, gasoline, diesel fuel, any hydrocarbon associated with vehicular fuels and lubricants, grease, antifreeze, windshield cleaner solution, brake fluid, brake dust, rubber, glass, metal and plastic fragments, grit, road de-icing materials.

Pollutant Source: Residence
Type of Pollutant: Cleaning solutions or solvents, leaks from HVAC equipment, grit from roof drainage, aggregate or rubber fragments from roofing system.

Pollutant Source: Trash dumpster
Type of Pollutant: Cleaning solutions or solvents, litter (paper, plastic, general refuse associated with distributions operations), uneaten food products, bacteria.

Pollutant Source: Roadway
Type of Pollutant: Any pollutant associated with vehicular sources, grit from asphalt wearing surface, bituminous compounds from periodic maintenance (sealing, resurfacing and patching), pavement de-icing materials, point fragments from parking stall stripes, concrete fragments, wind-blown litter from off-site sources, and elevated water temperatures from contact with impervious surfaces.

Pollutant Source: Lawn and landscape areas
Type of Pollutant: Fertilizers, soil, organic material (leaves, mulch, grass clippings).

The anticipated pollution sources are the vehicles that will use these future facilities, including both truck and passenger vehicle traffic. Possible pollutants include oil, gasoline, anti-freeze and other pollutants associated with vehicular traffic.

C2 & C3 - SEQUENCE DESCRIBING STORMWATER QUALITY MEASURE IMPLEMENTATION: DESCRIPTION OF PROPOSED POST CONSTRUCTION STORMWATER QUALITY MEASURES

- Swales: The proposed grassed swales will collect storm water from sheet flow areas and convey them to the storm sewer. The design of the swales will allow sediment to be partially infiltrated before storm water enters the designed storm sewer system.
- Inlets: The proposed inlets will prevent large debris such as paper, trash and construction material from entering the storm sewer. The inlet castings are also stamped with an environmental protection stamp informing the public not to pollute the environment.
- Inlets: The proposed inlets will prevent large debris such as paper, trash and construction material from entering the storm sewer. The inlet castings are also stamped with an environmental protection stamp informing the public not to pollute the environment.
- Lake: The design of the lake will detain the "first flush" storm water and allow the suspended solids to settle prior to releasing the storm water.

C4 - LOCATION, DIMENSIONS, SPECIFICATIONS AND CONSTRUCTION DETAILS OF EACH STORMWATER QUALITY MEASURE

- Inlets and inlet castings: The details and specifications for the storm inlet castings can be found on Sheets C600 - C604 and Sheets C801A - C801B.

C5 - DESCRIPTION OF MAINTENANCE GUIDELINES FOR POST-CONSTRUCTION STORMWATER QUALITY MEASURES

Maintenance requirements for the post-construction stormwater quality measures are described in the attached O&M Manual.

STORM WATER POLLUTION PREV. PLAN SPECS.

THE BLUFFS AT YOUNGS CREEK
SECTION 4

FRANKLIN, FRANKLIN TOWNSHIP

JOHNSON COUNTY, INDIANA

JOHNSON COUNTY, INDIANA

STOEPPELWERTH

ALWAYS ON

7965 East 10th Street, Indianapolis, IN 46038-2965
phone: 317.840.2053 fax: 317.840.5942

NO. 19358

STATE OF INDIANA

PROFESSIONAL ENGINEER

CERTIFIED: 02/04/21

David J. Stoeppele

DATE

NAME

REVISIONS

DRAWN BY: AEC

CHECKED BY: BKR

SHEET NO.

C310

3 & 4 PM NO.

83540MMA-S4

SITE ACCESS & PREPARATION

Temporary Construction Ingress/Egress Pad (Large Sites—Two Acres or Larger)



A temporary construction ingress/egress pad is a sediment control measure consisting of a stabilized aggregate pad with geotextile underlayment that is used at any point where construction traffic will be traversing between a large construction site and adjoining public right-of-way, street, alley, sidewalk, or parking areas.

Purpose

To provide ingress/egress to a construction site and minimize tracking of mud and sediment onto public roadways.

Specifications

Location

- Avoid locating on steep slopes or at curves in public roads.

Dimensions

- Width – 20 feet minimum or full width of entrance/exist roadway, whichever is greater.
- Length – 150 feet minimum (length can be shorter for small sites).
- Thickness – eight inches minimum.

Washing Facility (optional)

- Level area with three inch, or larger, washed aggregate or install a commercial wash rack.
- Divert waste water to a sediment trap or basin.

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TEMPORARY CONSTRUCTION INGRESS/EGRESS PAD (LARGE SITES—TWO ACRES OR LARGER)

Materials

- One to two and one-half inch diameter washed aggregate (Indiana Department of Transportation Course Aggregate No. 2 (see Appendix D)).
- One-half to one and one-half inch diameter washed aggregate (INDOT CA No. 53 (see Appendix D)).
- Geotextile fabric underlayment (see Appendix C) (used as a separation layer to prevent interlocking of aggregate and the underlying soil material and to provide greater bearing strength when encountering wet conditions or soils with a seasonal high water table foundation).

Installation

1. Remove all vegetation and other objectionable material from the foundation area.
2. Grade foundation and create for positive drainage. If the slope of the construction entrance is toward a public road and exceeds two percent, construct an eight inch high diversion ridge with a ratio of 3-to-1 side slopes across the foundation area about 15 feet from the entrance to divert runoff away from the road face. Temporary Construction Ingress/Egress Pad Cross-Section View Worksheet.
3. Install a culvert pipe under the pad if needed to maintain proper public road drainage.
4. If wet conditions are anticipated, place geotextile fabric on the graded foundation to improve stability.
5. Place aggregate (INDOT CA No. 2) to the dimensions and grade shown in the construction plans, leaving the surface smooth and sloped for drainage.
6. Top-dress the final 50 feet adjacent to the public roadway with two to three inches of washed aggregate (INDOT CA No. 53) (optional, used primarily where the purpose of the pad is to keep soil from collecting in vehicle tires).
7. Where possible, divert all storm water runoff and drainage from the ingress/egress pad to a sediment trap or basin.

Maintenance

- Inspect daily.
- Recharge pad as needed for drainage and runoff control.
- Top dress with clean aggregate as needed.
- Immediately remove mud and sediment tracked or washed onto public roads.
- Flushing should only be used if the water can be conveyed into a sediment trap or basin.

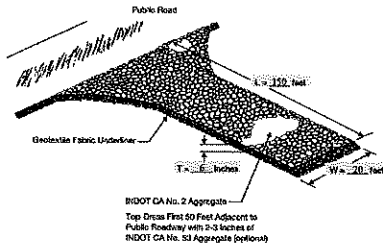
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TEMPORARY CONSTRUCTION INGRESS/EGRESS PAD (LARGE SITES—TWO ACRES OR LARGER)

Temporary Construction Ingress/Egress Pad Plan View Worksheet (large sites—two acres or larger)



L = Ingress/Egress Pad Length
W = Ingress/Egress Pad Width
T = Aggregate Thickness

(Note: For minimum dimensions, see the "Specifications" section of this manual.)

Source: Adapted from Storm Water Erosion and Sediment Control Planning and Design Manual, 1995

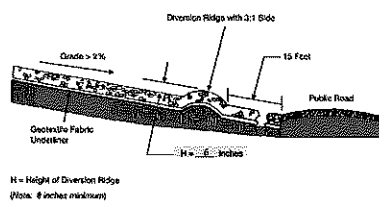
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TEMPORARY CONSTRUCTION INGRESS/EGRESS PAD (LARGE SITES—TWO ACRES OR LARGER)

Temporary Construction Ingress/Egress Pad Cross-Section View Worksheet (large sites two acres or larger)



H = Height of Diversion Ridge
(Note: 8 inches minimum)

Source: Adapted from Storm Water Erosion and Sediment Control Planning and Design Manual, 1995

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SURFACE STABILIZATION

Temporary Seeding



Temporary seeding involves the establishment of rapid growing annual grasses or small grains to stabilize disturbed areas until such time as a permanent, non-erodible cover can be established.

Purpose

- To provide vegetative cover where permanent seeding is not desirable or practical.
- To reduce erosion and sedimentation damage by stabilizing disturbed areas.
- To reduce problems associated with mud or dust from unvegetated soil surfaces during construction.
- To reduce sediment-laden storm water runoff from being transported to downstream areas.
- To improve visual aesthetics of construction areas.

Specifications

Seedbed Preparation

Grade and apply soil amendments.

Seeding Frequency

Seed rough graded areas daily while soil is still loose and moist.

Density of Vegetative Cover

Eighty percent or greater over the soil surface.

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TEMPORARY SEEDING

Materials

- Soil Amendments – Select materials and rates as determined by a soil test (contact your county soil and water conservation district or cooperative extension office for assistance and soil information, including available soil testing services) or 400 to 600 pounds of 12-12-12 analysis fertilizer, or equivalent. Consider the use of reduced phosphorus application where soil tests indicate adequate phosphorus levels in the soil profile.
- Seed – Select appropriate plant species seed or seed mixture on the basis of quick germination, growth, and time of year to be seeded (see Table 1).
- Mulch –
 - Straw, hay, wood fiber, etc. (to protect seedbed, retain moisture, and encourage plant growth).
 - Anchored to prevent removal by wind or water or covered with manufactured erosion control blankets.

Table 1. Temporary Seeding Specifications

Seed Species*	Rate per Acre	Planting Depth	Optimum Dates†
Wheat or Rye	100 lbs.	1 to 1½ inches	Sept. 18 – Oct. 30
Spring Oats	100 lbs.	1 inch	March 1 – April 15
Annual Ryegrass	40 lbs.	½ inch	March 1 – May 1
			Aug. 1 – Sept. 1
Orchardgrass	40 lbs.	1 to 2 inches	May 1 – June 1
Slendergrass	25 lbs.	1 to 2 inches	May 1 – July 30
Budgrass	60 lbs.	1 to 2 inches	Apr. 15 – June 1
Corn (broadcast)	500 lbs.	1 to 2 inches	May 11 – Aug. 10
Borghum	35 lbs.	1 to 2 inches	May 1 – July 10

*Perennial species may be used as a temporary cover, especially if the area to be seeded will remain idle for more than one year (see Permanent Seeding on page 39).

†Seeding dates outside the optimum seeding dates increases the chances of seeding failure. Dates may be extended or shortened based on the location of the project site within the state.

Notes:
Mulch should be an acceptable temporary cover and may be used in lieu of temporary seeding, provided that it is appropriately anchored.

A high potential for fertilizer, seed, and mulch to wash exists on steep banks, roads, and in channels and areas of concentrated flow.

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TEMPORARY SEEDING

Application

Seedbed Preparation

1. Test soil to determine pH and nutrient levels.
2. Apply soil amendments as recommended by the soil test. If testing is not done, apply 400 to 600 pounds per acre of 12-12-12 analysis fertilizer, or equivalent.
3. Work the soil amendments into the upper two to four inches of the soil with a disk or rake operated across the slope.

Seeding

1. Select a seed species or an appropriate seed mixture and application rate from Table 1.
2. Apply seed uniformly with a drill or cultipacker seeder or by broadcasting. Plant or cover seed to the depth shown in Table 1.

Notes:

1. If drilling or broadcasting the seed, ensure good seed-to-soil contact by firming the seedbed with a roller or cultipacker after completing seeding operations.
2. Daily seeding when the soil is moist is usually most effective.
3. If seeding is done with a hydroseeder, fertilizer and mulch can be applied with the seed in a slurry mixture.

4. Apply mulch (see Mulching on page 55 or Compost Mulching on page 59) and anchor it in place.

Maintenance

- Inspect within 24 hours of each rain event and at least once every seven calendar days.
- Check for erosion or movement of mulch and repair immediately.
- Monitor for erosion damage and adequate cover (80 percent density); reseed, fertilize, and apply mulch where necessary.
- If nitrogen deficiency is apparent, top-dress fall seedbeds with urea-seeding with 50 pounds per acre of nitrogen in February or March.

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SURFACE STABILIZATION

Permanent Seeding



Permanent seeding involves the establishment of a permanent vegetative cover to protect soil from erosive forces.

Purpose

- To provide permanent vegetative cover and improve visual aesthetics of a project site.
- To reduce erosion and sedimentation damage by stabilizing disturbed areas.
- To reduce problems associated with mud or dust from unvegetated soil surfaces.
- To reduce sediment-laden storm water runoff from being transported to downstream areas.

Specifications

Seedbed Preparation

Grade and apply soil amendments.

Seeding Frequency

Seed final graded areas daily while soil is still loose and moist.

Density of Vegetative Cover

Ninety percent or greater over the soil surface.

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PERMANENT SEEDING

Materials

- Soil Amendments – Select materials and rates as determined by a soil test (contact your county soil and water conservation district or cooperative extension office for assistance and soil information, including available soil testing services) or 400 to 600 pounds of 12-12-12 analysis fertilizer, or equivalent. Consider the use of reduced phosphorus application where soil tests indicate adequate phosphorus levels in the soil profile.
- Seed – Select an appropriate plant species seed or seed mixture on the basis of soil type, soil pH, region of the state, time of year, and intended land use of the area to be seeded (see Table 1).
- Mulch –
 - Straw, hay, wood fiber, etc. (to protect seedbed, retain moisture, and encourage plant growth).
 - Anchored to prevent removal by wind or water or covered with manufactured erosion control blankets.

Application

Site Preparation

1. Grade the site to achieve positive drainage.
2. Add topsoil (see Topsoil Salvage and Utilization on page 25) or compost mulch (see Compost Mulching on page 59) to achieve needed depth for establishment of vegetation. If compost material may be added to improve soil moisture holding capacity, soil friability, and nutrient availability.
3. Till the soil to obtain a uniform seedbed. Use a disk or rake, operated across the slope, to work the soil amendments into the upper two to four inches of the soil.

Seeding

Optimum seeding dates are March 1 to May 10 and August 10 to September 30. Permanent seeding done between May 10 and August 10 may need to be installed. Seeding outside or beyond optimum seeding dates is still possible with the understanding that reseeding or overseeding may be required if adequate surface

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PERMANENT SEEDING

cover is not achieved. Reseeding or overseeding can be easily accomplished if the soil surface remains well protected with mulch.

1. Select a seed mixture and rate from Table 1. Select seed mixture based on site conditions, soil pH, intended land use, and expected level of maintenance.
2. Apply seed uniformly with a drill or cultipacker seeder (see Figure 1) or by broadcasting (see Figure 2). Plant or cover the seed to a depth of one-fourth to one-half inch. If drilling or broadcasting the seed, ensure good seed-to-soil contact by firming the seedbed with a roller or cultipacker after completing seeding operations. (If seeding is done with a hydroseeder (see Figure 3), fertilizer and mulch can be applied with the seed in a slurry mixture.)
3. Mulch all seeded areas (see Mulching on page 55 and Compost Mulching on page 59) and use appropriate methods to anchor the mulch in place. Consider using erosion control blankets on sloping areas and conveyor-chain-check-Erosion Control Blanket on page 63).

Maintenance

- Inspect within 24 hours of each rain event and at least once every seven calendar days until the vegetation is successfully established.
- Characteristics of a successful stand include vigorous dark green or bluish-green seedlings with a uniform vegetative cover density of 90 percent or more.
- Check for erosion or movement of mulch.
- Repair damaged, bare, gullied, or sparsely vegetated areas and then fertilize, reseed, and apply and anchor mulch.
- If plant cover is sparse or patchy, evaluate the plant materials chosen, soil fertility, moisture condition, and mulch application; repair affected areas either by overseeding or preparing a new seedbed and reseeding. Apply and anchor mulch on the newly seeded areas.
- If vegetation fails to grow, consider soil testing to determine soil pH or nutrient deficiency problems. (Contact your soil and water conservation district or cooperative extension office for assistance.)
- If additional fertilization is needed to get a satisfactory stand, do so according to soil test recommendations.
- Add fertilizer the following growing season. Fertilize according to soil test recommendations.
- Fertilize bare areas annually. Apply fertilizer in a split application. For cool-season grasses, apply one-half of the fertilizer in late spring and one-half in early fall. For warm-season grasses, apply one-third in early spring, one-third in late spring, and the remaining one-third in middle summer.

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PERMANENT SEEDING

Table 1. Permanent Seeding Recommendations

This table provides several seed mixture options. Additional seed mixtures are available commercially. When selecting a mixture, consider intended land use and site conditions, including soil properties (e.g., soil pH and drainage), slope aspect, and the tolerance of each species to shade and drought.

Open Low-Maintenance Areas (remaining idle more than six months)

Seed Mixture	Rate per Acre Pure Live Seed	Optimum Soil pH
1. Perennial ryegrass - white clover ¹	70 lbs. 2 lbs.	5.8 to 7.8
2. Perennial ryegrass - tall fescue ²	70 lbs. 20 lbs.	5.6 to 7.8
3. Tall fescue ³ - white clover ⁴	70 lbs. 2 lbs.	5.5 to 7.5

Deep Banks and Cuts, Low-Maintenance Areas (not mowed)

Seed Mixture	Rate per Acre Pure Live Seed	Optimum Soil pH
1. Smooth bromegrass - red clover ¹	55 lbs. 20 lbs.	5.5 to 7.8
2. Tall fescue ² - white clover ³	50 lbs. 2 lbs.	5.5 to 7.5
3. Tall fescue ⁴ - red clover ⁵	50 lbs. 20 lbs.	5.5 to 7.5
4. Orchardgrass - red clover ⁶ - white clover ⁷	30 lbs. 20 lbs. 2 lbs.	5.6 to 7.8
5. Coarctata ⁸ - tall fescue ⁹	15 lbs. 20 lbs.	5.5 to 7.5

Lawns and High-Maintenance Areas

Seed Mixture	Rate per Acre Pure Live Seed	Optimum Soil pH
1. Bluegrass	140 lbs.	5.5 to 7.8
2. Perennial ryegrass (buff type)	60 lbs.	6.6 to 7.8
3. Tall fescue (buff type) - bluegrass	120 lbs. 30 lbs.	6.6 to 7.5

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PERMANENT SEEDING

Channels and Areas of Concentrated Flow

Seed Mixture	Rate per Acre Pure Live Seed	Optimum Soil pH
1. Perennial ryegrass - white clover ¹	20 lbs. 2 lbs.	5.8 to 7.8
2. Kentucky bluegrass - smooth bromegrass - smooth bromegrass - timothy - perennial ryegrass - white clover ²	20 lbs. 10 lbs. 5 lbs. 10 lbs. 2 lbs.	5.5 to 7.5
3. Tall fescue ³ - white clover ⁴	150 lbs. 2 lbs.	5.5 to 7.5
4. Tall fescue ⁵ - perennial ryegrass - Kentucky bluegrass	150 lbs. 20 lbs. 20 lbs.	5.6 to 7.5

*For best results: (a) legume seed should be inoculated; (b) seeding mixtures containing legumes should preferably be sown in winter, although the grass may be fall-seeded and the legume first seeded (see Dormant Seeding and Frost Seeding on page 41); and (c) if legumes are fall-seeded, do so in early fall.

¹ Tall fescue provides little cover for, and may be toxic to some species of wildlife. The Indiana Department of Natural Resources recognizes the need for additional research on alternatives such as buffalograss, orchardgrass, smooth bromegrass, and endophytes. This research, in consultation with conservation areas, should focus on erosion control characteristics, wildlife toxicity, and drought resistance.

Notes:

1. An oat or wheat companion or nurse crop may be used with any of the above permanent seeding mixtures, at the following rates:
 - (a) spring oats – one-fourth to three-fourths bushel per acre
 - (b) wheat – one acre to one-half bushel per acre
2. A high potential for fertilizer, seed, and mulch to wash exists on steep banks, cuts, and in channels and areas of concentrated flow.

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PERMANENT SEEDING

Figure 1: Cultipacker Seeder

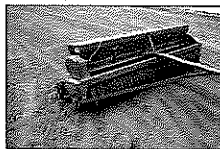


Figure 2: Broadcast Seeding

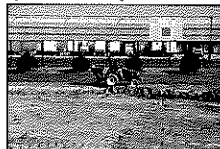


Figure 3: Hydroseeding



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SURFACE STABILIZATION

Dormant Seeding & Frost Seeding



Dormant seeding is a temporary or permanent seeding application at a time when soil temperatures are too low for germination to occur (less than 50°F).

Frost seeding is a temporary or permanent seeding application in late winter when soils are in the freeze-thaw stage. (This measure can be used to repair or enhance areas having thin or declining vegetative cover or to revegetate an area.)

Purpose

- To provide early germination and soil stabilization in the spring.
- To reduce sediment-laden storm water runoff from being transported to downstream areas.
- To improve the visual aesthetics of the construction area.
- To repair or enhance previous seeding.

Specifications

Seedbed Preparation

Grade and apply soil amendments as recommended by a soil test (incooperative soil amendments into soil prior to soil freezing).

Density of Vegetative Cover

Eighty percent or greater over the soil surface.

Materials

- Soil Amendments – Select materials and rates as determined by a soil test (contact your county soil and water conservation district or cooperative extension office for assistance and soil information, including available soil testing services) or 400 to 600 pounds of 12-12-12 analysis fertilizer, or equivalent. Consider the use of reduced phosphorus application where soil tests indicate adequate phosphorus levels in the soil profile.

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DORMANT SEEDING & FROST SEEDING

- Seed – Select an appropriate plant species seed or seed mixture on the basis of soil type, soil pH, region of the state, time of year, and intended land use of the area to be seeded (see Table 1 or Table 2).
 - Mulch –
 - Straw, hay, wood fiber, compost, etc. (to protect seedbed, retain moisture, and encourage plant growth).
 - Anchored to prevent removal by wind or water or covered with manufactured erosion control blankets.
- </

DORMANT SEEDING & FROST SEEDING

- Broadcast soil amendments as recommended by a soil test and work into the upper two to four inches of soil below it frozen. If testing was not done, apply 200 to 300 pounds per acre of 12-12-12 analysis fertilizer, or equivalent.
- Select an appropriate seed species or mixture from Table 1 for temporary seeding or Table 2 for permanent seeding. Broadcast the seed on the seedbed or into the existing ground cover at the rate shown. (Seed areas when the soil is frozen. Do not work the seed into the soil.)

Maintenance

- Inspect at least once every seven calendar days.
- Check for erosion or movement of mulch.
- Check for inadequate cover (less than 80 percent density over the soil surface) and mulch in mid to late April if necessary. For best results, reseed within the recommended dates shown in Temporary Seeding on page 31 and Permanent Seeding on page 35.
- Apply 200 to 300 pounds per acre of 12-12-12 analysis fertilizer, or equivalent, between April 15 and May 10 or during periods of vigorous growth.
- Fertilize turf areas annually. Apply fertilizer in a split application. For cool-season grasses, apply one-third of the fertilizer in late spring and one-third in early fall. For warm-season grasses, apply one-third in early spring, one-third in late spring, and the remaining one-third in middle summer.

Table 1. Temporary Dormant or Frost Seeding Recommendations

Seed Species	Rate per Acre
Wheat or rye	150 lbs.
Spring oats	150 lbs.
Annual ryegrass	60 lbs.

Table 2 provides several seeding options. Additional seed mixtures are available commercially. When selecting a mixture, consider site conditions, including soil properties (e.g., soil pH and drainage), slope aspect, and the tolerance of each species to shade and drought.

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MULCHING

Maintenance

- Inspect within 24 hours of each rain event and at least once every seven calendar days.
- Check for erosion or movement of mulch; repair damaged areas, reseed, apply new mulch and anchor the mulch in place.
- Continue inspections until vegetation is firmly established.
- If erosion is severe or recurring, use erosion control blankets or other more substantial stabilization methods to protect the area.

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ROCK CHECK DAM

Overflow Areas
Stabilized to reduce erosion along sides and below the dam.

Filter Medium

- Placed on up-slope side of dam.
- Height – to base of overflow weir notch.

Materials

- Geotextile fabric (8 ounce or heavier; nonwoven).
- Indiana Department of Transportation Reversment riprap (see Appendix D) for dam.
- INDOT CA No. 5 aggregate (see Appendix D) for use as filter medium (Aggregate must be well-graded).

Note: INDOT CA No. 5 aggregate is acceptable if No. 5 aggregate is not available. The use of No. 8 aggregate may result in more frequent overtopping of the structure and will increase the frequency of structure maintenance.

Installation

- Lay out the location of the check dam.
- Excavate a cutoff trench into the channel bottom and ditch banks, extending it a minimum of 18 inches beyond the top of the ditch bank.
- Install and anchor filter fabric in the channel and cutoff trench.
- Place riprap in the cutoff trench and channel to the lines and dimensions shown in the construction plans. The center of each dam must be at least nine inches lower than the upstream points of contact between the riprap dam and channel banks (see Rock Check Dam Worksheet on page 101).
- Extend the riprap at least 18 inches beyond the top of the channel banks to keep overflow water from eroding areas adjacent to the channel banks before it re-enters the channel.
- Place filter medium (INDOT CA No. 5 aggregate) on the up-slope side of the dam. Place filter medium over the entire face of the dam up to the base of the overflow weir notch.
- Stabilize the channel above the upstream dam.
- Install an erosion-resistant lining in the channel below the downstream dam. The lining should extend a minimum distance of six feet below the dam.

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DORMANT SEEDING & FROST SEEDING

Table 2. Permanent Dormant or Frost Seeding Recommendations

Seed Mixtures	Rate per Acre Pure Live Seed	Optimum Soil pH
1. Perennial ryegrass - white clover ¹	75 lbs. 3 lbs.	5.5 to 7.0
2. Kentucky bluegrass - smooth bromegrass - orchardgrass - timothy - perennial ryegrass - white clover ¹	30 lbs. 10 lbs. 5 lbs. 10 lbs. 3 lbs.	5.5 to 7.5
3. Perennial ryegrass - tall fescue ²	45 lbs. 45 lbs.	5.5 to 7.0
4. Tall fescue ² - white clover ¹	75 lbs. 3 lbs.	5.5 to 7.5

Stony Banks and Cuts, Low-Maintenance Areas (not mowed)

Seed Mixtures	Rate per Acre Pure Live Seed	Optimum Soil pH
1. Smooth bromegrass - red clover ¹	50 lbs. 30 lbs.	5.5 to 7.5
2. Tall fescue ² - white clover ¹	75 lbs. 3 lbs.	5.5 to 7.5
3. Tall fescue ² - red clover ¹	75 lbs. 50 lbs.	5.5 to 7.5
4. Orchardgrass - red clover ¹ - white clover ¹	45 lbs. 30 lbs. 3 lbs.	5.5 to 7.0
5. Clovermunch ³ - tall fescue ²	15 lbs. 45 lbs.	5.5 to 7.5

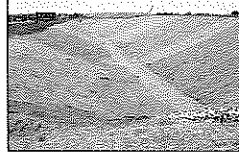
Lawns and High-Maintenance Areas

Seed Mixtures	Rate per Acre Pure Live Seed	Optimum Soil pH
1. Bluegrass	210 lbs.	5.5 to 7.0
2. Perennial ryegrass (turf type) - bluegrass	90 lbs. 120 lbs.	5.5 to 7.0
3. Tall fescue (turf type) - bluegrass	250 lbs. 45 lbs.	5.5 to 7.5

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SURFACE STABILIZATION

Erosion Control Blanket



An erosion control blanket is a biodegradable, organic or synthetic mulch incorporated with a biodegradable, photodegradable, or permanent polypropylene, natural fiber, or similar netting material. It is an alternative to mulch and normally used on slopes and in concentrated flow channels.

Purpose

- To prevent erosion by protecting the soil from rainfall impact, overland water flow, concentrated runoff, or wind.
- To provide temporary surface stabilization.
- To anchor mulch in critical areas, including slopes and concentrated flow conveying systems.
- To reduce soil erosion.
- To conserve soil moisture and increase seed germination and seedling growth.

Specifications

Effective Life

The functional life of an erosion control blanket is dependent on the materials used.

Anchoring

Staples, pins or stakes used to prevent movement or displacement of blanket. (Follow manufacturer's recommendations for specific applications.)

Materials

- Organic (straw, excelsior, woven paper, coconut fiber, etc.) or synthetic mulch incorporated with a polypropylene, natural fiber or similar netting material. (The netting may be biodegradable, photodegradable or permanent.)

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ROCK CHECK DAM

- Additional sediment storage can be provided by excavating a small sediment trap on the upstream side of the check dam.

Maintenance

- Inspect within 24 hours of each rain event and at least once every seven calendar days.
- If significant erosion occurs between dams, install an erosion-resistant liner in that portion of the channel.
- Remove accumulated sediment when it reaches one-half the height of the dam to maintain channel capacity, allow drainage through the dam, and prevent large flow from displacing sediment.
- Add riprap and aggregate as needed to maintain design height and cross section of the dams.
- When dams are no longer needed, remove the riprap and aggregate and stabilize the channel, using an erosion-resistant lining if necessary. (Riprap and aggregate from the dam may be removed or utilized to stabilize the channel.)

Exhibit 1



A = Crest of Dam
B = Toe of Dam

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DORMANT SEEDING & FROST SEEDING

Channels and Areas of Concentrated Flow

Seed Mixtures	Rate per Acre Pure Live Seed	Optimum Soil pH
1. Perennial ryegrass - white clover ¹	225 lbs. 3 lbs.	5.5 to 7.0
2. Perennial ryegrass - smooth bromegrass - orchardgrass - timothy - perennial ryegrass - white clover ¹	30 lbs. 10 lbs. 5 lbs. 10 lbs. 3 lbs.	5.5 to 7.5
3. Tall fescue ² - white clover ¹	275 lbs. 3 lbs.	5.5 to 7.5
4. Tall fescue ² - perennial ryegrass - Kentucky bluegrass	225 lbs. 30 lbs. 30 lbs.	5.5 to 7.5

¹ For best results: (a) legume seed should be inoculated; (b) seeding mixtures containing legume should preferably be spring-sown, although the grass may be fall-seeded and the legume frost-killed and (c) if legumes are fall-seeded, do so in a dry fall.

² Tall fescue provides little cover for, and may be toxic to some species of wildlife. The Indiana Department of Natural Resources recognizes the need for additional research on alternatives such as buffalograss, orchardgrass, smooth bromegrass, and cocksfootgrass. This research, in conjunction with demonstration areas, should focus on erosion control characteristics, wildlife toxicity, turf durability, and drought resistance.

- Using materials other than those listed in this table, increase seed rates by 50 percent over the recommended seeding rates.
- A high potential for fertilizer, seed, and mulch to wash off on steep banks, cuts, and in channels and areas of concentrated flow.

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EROSION CONTROL BLANKET

Note: Some erosion control blanket settings may pose a threat to certain species of wildlife if they become entangled in the netting material.

- Six to 12-inch staples, pins, or stakes.

Installation

- Select the type and weight of erosion control blanket to fit the site conditions (e.g., slope, channel, flow velocity) per the manufacturer's specifications.
- Prepare the seedbed, add soil amendments, and permanently seed (see Permanent Seeding on page 35) the area immediately following seedbed preparation.
- Lay erosion control blankets on the seedbed so that they are in continuous contact with the soil with each up-slope or rip-slope blanket overlapping the down-slope or down-stream blanket by at least eight inches, or follow manufacturer's recommendations.
- Turn the upstream edge of the upper blankets into a check slot (slit trench), backfill with soil and tamp down. In certain applications, the manufacturer may require additional check slots at specific locations down slope from the upstream edge of the upper blankets.
- Anchor the blankets in place by driving staples, pins, or stakes through the blanket and into the underlying soil. Follow an anchoring pattern appropriate for the site conditions and as recommended by the manufacturer.

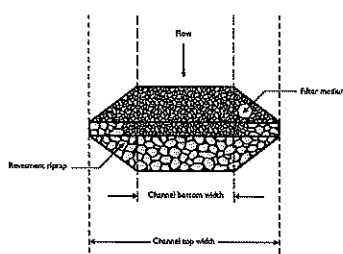
Maintenance

- Inspect within 24 hours of each rain event and at least once every seven calendar days.
- Check for erosion or displacement of the blanket.
- If any area shows erosion, pull back that portion of the blanket covering the eroded area, add soil and tamp, reseed the area, replace and staple the blanket.

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ROCK CHECK DAM

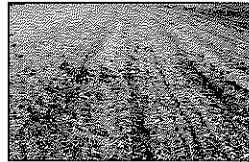
Exhibit 2



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SURFACE STABILIZATION

Mulching



Mulching is the application of plant residues/materials to enhance and protect vegetative establishment and substrate erosion potential.

Purpose

- To prevent erosion by protecting the soil from wind and water impact.
- To provide temporary surface stabilization.
- To prevent soil from crusting.
- To conserve soil moisture, moderate soil temperature, and promote seed germination and seedling growth.

Note: This measure should not be used in stream water runoff channels or areas where concentrated flow is attempted.

Specifications

Materials

Table 1. Mulch Specifications

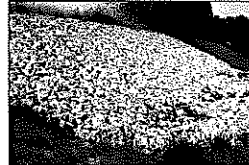
Material	Rate per Acre	Comments
Straw or hay	2 tons	Should be dry, free of undesirable seeds. Spread by hand or machine. Must be crimped or anchored (see Table 2).
Wood fiber or cellulose	1 ton	Apply with a hydraulic mulch machine and use with tackifier agent.

¹ Mulching is not recommended in concentrated flows. Consider erosion control blankets or other stabilization methods.

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SURFACE STABILIZATION

Riprap Slope Protection



Riprap slope protection is an erosion control measure consisting of geotextile fabric and stone riprap that is placed on an irregular shape to protect the soil from erosive forces.

Purpose

To protect slopes or similar areas subject to erosion by water.

Specifications

Slope

A ratio of 2:1 or flatter (designed by a qualified individual/professional engineer; slopes exceeding 2:1 may require additional design considerations).

Minimum Thickness

Two times the designed d_{50} (see Appendix A – Glossary) stone diameter plus the depth of the bedding material.

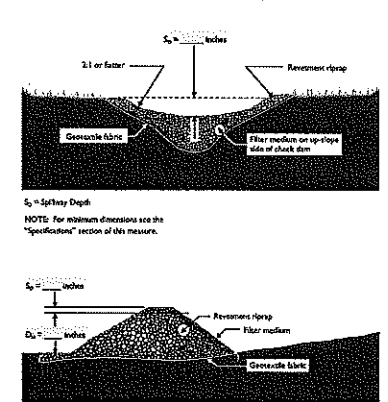
Materials

- Riprap
 - Hard, angular, and weather resistant.
 - Specific gravity of at least 2.5.
 - Size and gradation that will withstand velocities of storm water discharge flow design.
 - Well-graded mixture of stone with 50 percent of the stone pieces, by weight, larger than the designed d_{50} size.
 - Largest pieces should not exceed two times the designed d_{50} and no more than 15 percent of the pieces (by weight) should be less than three inches.

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ROCK CHECK DAM

Rock Check Dam Worksheet



S_p = Spillway Depth
 D_1 = Dam Height
 S_1 = Spillway Depth

Note: For minimum dimensions see the "Specifications" section of this measure.

Source: Adapted from Storm Channeling and Sediment Control Planning and Design Manual, 1985.

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MULCHING

Coverage

The mulch should have a uniform density of at least 75 percent over the soil surface.

Anchoring

Table 2. Mulch Anchoring Methods

Anchoring Method	How to Apply
Mulch anchoring tool or farm disk (disk, serrated, and blades set straight)	Grasp or punch the straw or hay two to four inches into the soil. Operate machinery on the contour of the slope.
Chaining with closer tracks	Operate closer up and down slope to prevent formation of rills by closer chains.
Wood hydramulch floors	Apply according to manufacturer's recommendations.
Synthetic leaf litter, straw, or soil stabilizer	Apply according to manufacturer's recommendations.
Netting (synthetic or biodegradable material)	Install netting immediately after applying mulch. Anchor netting with staples. Edges of netting strips should overlap with each up slope along overlapping four to six inches over the adjacent down-slope strip. Start nailed in slope applications. In most instances, installation details are site specific, so manufacturer's recommendations should be followed.

¹ All forms of mulch must be anchored to prevent displacement by wind and/or water.

Application

- Apply mulch at the recommended rate shown in Table 1.
- Spread the mulch material uniformly by hand, hayfork, mulch blower, or hydraulic mulch machine. After spreading, no more than 25 percent of the ground should be visible.
- Anchor straw or hay mulch immediately after application. The mulch can be anchored using one of the methods listed below:
 - Using with a mulch anchoring tool, a weighted farm disk with dull serrated blades set straight, or rock chain of a bulldozer.
 - Apply hydraulic mulch with short cellulose fibers.
 - Apply a liquid tackifier, or
 - Cover with netting secured by staples.

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RUNOFF CONTROL

Rock Check Dam



A rock check dam is a series of runoff control structures, consisting of geotextile fabric and aggregate, placed across drainage channels to slow storm water runoff. This measure may also provide limited effectiveness as a sediment control measure.

Purpose

- To reduce erosion in a drainage channel by slowing velocity of flow. (Check dams are commonly used (a) in channels that are eroding, but where permanent stabilization is impractical due to their short period of usefulness, and (b) in eroding channels where construction delays or weather conditions prevent timely installation of erosion-resistant linings.)

- To reduce flow velocity in a drainage channel.

Note: Do not use check dams in perennial streams.

Specifications

Contributing Drainage Area

Two acres maximum.

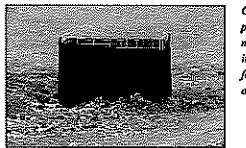
Riprap Check Dam

- Dam height
 - Two feet maximum.
 - Center of the dam at least nine inches lower than the points of contact between the upstream points of the riprap dam and channel banks.
- Slope ratio – ratio of 2:1 or flatter.
- Spacing – one of the upstream dam at same elevation as overflow weir of the downstream dam.

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TEMPORARY DROP INLET PROTECTION

Geotextile Fabric Drop Inlet Protection



Geotextile fabric drop inlet protection is a temporary sediment control measure consisting of a temporary geotextile fabric barrier placed around a storm drain drop inlet.

Purpose

To capture sediment at the entrance to a storm drain inlet, allowing full use of the storm drain system during the construction period.

Note: This measure is not recommended for paved surfaces due to inability to entrench the fabric and lack of an anchoring system.

Specifications

Note: Alternative support systems may be substituted for hardwood posts and cross braces.

Contributing Drainage Area

One acre maximum.

Effective Life

Six months (maximum).

Capacity

Runoff from a two-year frequency, 24-hour storm event entering a storm drain without bypass flow.

Geotextile Structure

- Height – 12 to 18 inches, measured from top of storm drain inlet.
- Post spacing – 36-inch maximum spacing between posts.
- Frame spacing – leaving in staggered integrity of the structure. (Structure must withstand 15-foot head of water and sediment without collapsing or undercutting.)

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STOEPPELWERTH



STORM WATER POLLUTION PREV. PLAN SPECS.
THE BLUFFS AT YOUNGS CREEK
SECTION 4

DRAWN BY: AEC
CHECKED BY: BKR

SHEET NO:

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JOHNSON COUNTY, INDIANA
FRANKLIN, FRANKLIN TOWNSHIP

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CERTIFIED: 02/04/21
David J. Stoeppelewirth
REGISTERED PROFESSIONAL ENGINEER
No. 19358
STATE OF INDIANA

BY: _____
DATE: _____
REVISIONS: _____

GEOTEXTILE FABRIC DROP INLET PROTECTION

Materials

- Support posts
 - 2 x 2 inch or 2 x 4 inch hardwood posts.
 - Three feet length, minimum.
- 1 x 2 inch or 1 x 3 inch hardwood cross bracing lumber.
- Nails.
- Staples or nails.
- Geotextile fabric.

Table 1. Geotextile Fabric Specifications

Physical Property	Woven	Non-Woven
Filtering Efficiency	85%	85%
UV Resistance (additives and stabilizers to ensure six month minimum life at temperatures of 0° to 120° F)	70%	85%
Tensile Strength at 20% Elongation		
Standard Strength	30 lbs./linear inch	50 lbs./linear inch
Extra Strength	60 lbs./linear inch	70 lbs./linear inch
Starry Flow Rate	0.3 gal./min./sq. ft.	4.5 gal./min./sq. ft.
Water Flow Rate	15 gal./min./sq. ft.	220 gal./min./sq. ft.

Installation

(see Exhibits 1 and 2)

- Dig an eight-inch deep, four-inch wide trench around the perimeter of the inlet.
- If using pre-assembled geotextile fabric and posts, drive the posts into the soil, tightly stretching the geotextile fabric between posts as each is driven. (Posts must be placed on the inlet side of the trench with the geotextile fabric on the side of the trench furthest from the inlet.)

Note: If assembling the geotextile fabric and posts on-site, drive the posts into the soil and then secure the geotextile fabric to the posts by placing a piece of fabric over the fabric and fastening it to the post (stretching the fabric between posts as it is fastened).

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GEOTEXTILE FABRIC DROP INLET PROTECTION

- Use the wrap joint method when joining posts (see Silt Fence on page 215).
 - Place the bottom 12 inches of geotextile fabric into the eight-inch deep trench, laying the remaining four inches in the bottom of the trench and extending away from the inlet.
 - Backfill the trench with soil material and compact it in place.
 - Brace the posts by nailing bracing into each corner post or utilize rigid panels to support fabric.
- Note: In situations where storm water may bypass the structure, either:
- Set the top of the geotextile fabric filter at least six inches lower than the ground elevation on the down-slope side of the storm drain inlet.
 - Build a temporary dike, connected to six inches higher than the fabric, on the down-slope side of the storm drain inlet. AND/OR
 - Use in conjunction with excavated drop inlet protection (see Excavated Drop Inlet Protection on page 145).

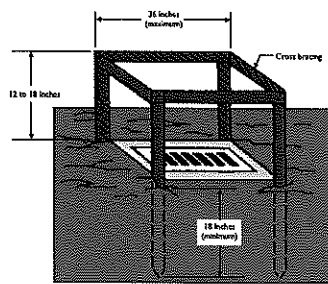
Maintenance

- Inspect daily.
- Inspect geotextile fabric and make needed repairs immediately.
- Remove sediment from pool area to provide storage for the next storm event. Avoid damaging or undercutting fabric during sediment removal.
- When contributing drainage area has been stabilized, remove sediment, properly dispose of all construction material, grade area to the elevation of the storm drain inlet top, then stabilize immediately.

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GEOTEXTILE FABRIC DROP INLET PROTECTION

Exhibit 1

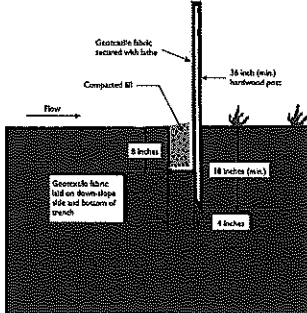


Source: Adapted from South Carolina Erosion and Sediment Control Planning and Design Manual, 1991

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GEOTEXTILE FABRIC DROP INLET PROTECTION

Exhibit 2



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TEMPORARY CURB & PAVED AREA INLET PROTECTION

Insert (Basket) Curb Inlet Protection

Insert (Basket) curb inlet protection is a temporary sediment control measure consisting of a metal frame or basket that is used to support a geotextile fabric. The system is installed under the storm sewer grate.



Purpose

To minimize sediment from entering the storm sewer system while allowing runoff to enter the storm sewer system in the event of excessive storm events. This measure traps sediment associated with small storm events below the grade of the paved area. This measure does not place an obstruction in the street to trap sediment and is especially conducive to stages of construction when the public has access to the project site.

Note: This measure should be used in conjunction with other sediment control measures.

Specifications

Contributing Drainage Area:

One-quarter acre maximum.

Capacity

Runoff from a two-year frequency, 24-hour storm event entering a storm drain without bypass flow.

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INSERT (BASKET) CURB INLET PROTECTION

Location

- At curb inlets on paved roads and parking lots.
- Down grade from construction activities (e.g., individual home sites).

Materials

- Metal frame or basket with a top width and length such that the frame fits into the inlet. (The frame is supported by the structural integrity of the storm sewer.)
- The metal frame or geotextile should be designed with a bypass to allow storm water to flow into the storm sewer system during excessive storm events.
- The system should be designed for ease of maintenance.
- Geotextile fabric.

Table 1. Geotextile Fabric Specifications

Physical Property	Woven	Non-Woven
Filtering Efficiency	85%	85%
UV Resistance (additives and stabilizers to ensure six month minimum life at temperatures of 0° to 120° F)	70%	85%
Tensile Strength at 20% Elongation		
Standard Strength	30 lbs./linear inch	50 lbs./linear inch
Extra Strength	60 lbs./linear inch	70 lbs./linear inch
Starry Flow Rate	0.3 gal./min./sq. ft.	4.5 gal./min./sq. ft.
Water Flow Rate	15 gal./min./sq. ft.	220 gal./min./sq. ft.

Installation

- Remove the storm sewer grate and place the frame into the grate opening.
- Place geotextile fabric into the frame and secure according to the manufacturer's recommendations.
- Replace the storm sewer grate.

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INSERT (BASKET) CURB INLET PROTECTION

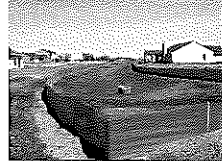
Maintenance

- Inspect daily.
- Remove accumulated sediment and debris after each storm event. Deposit sediment in an area where it will not re-enter the paved area or storm drain.
- Replace or clean geotextile fabric as needed.
- When the contributing drainage area has been stabilized, remove inlet protection.

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SEDIMENT BARRIERS & FILTERS

Silt Fence



A silt fence is a temporary barrier of entrenched geotextile fabric stretched across and attached to supporting posts and installed on the contour or to intercept and treat sediment-laden storm water runoff from small, unvegetated drainage areas.

Purpose

To trap sediment from small, disturbed areas by reducing the velocity of sheet flow. Silt fences capture sediment by ponding water to allow deposition, not by filtration.

Note: Silt fence is not recommended for use as a diversion and should not be used across a stream, channel, ditch, swale, or anywhere that concentrated flow is anticipated.

Specifications

Drainage Area

- Limited to one quarter acre per 100 linear feet of fence.
- Further restricted by slope steepness (see Table 1).

Effective Life

Six months (maximum).

Location

- Installed parallel to the slope contour.
- Minimum of 10 feet beyond the toe of the slope to provide a broad, shallow sediment pool.
- Accessible for maintenance (removal of sediment and silt fence repair).

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SILT FENCE

Spacing

Table 1. Slope Steepness Restrictions

Percent Slope	Maximum Distance
< 2%	< 50:1
2% - 5%	50:1 to 20:1
5% - 10%	20:1 to 10:1
10% - 20%	10:1 to 5:1
> 20%	> 5:1

* Consider other alternatives.
Note: Multiple rows of silt fences are not recommended on the same slope.

Trench

- Depth - eight inches minimum.
 - Width - four inches minimum.
 - After installing fence, backfill with soil material and compact (to bury and anchor the lower portion of the fabric fabric).
- Note: An alternative to trenching is to use mechanical equipment to place in the silt fence.

Materials and Silt Fence Specifications

- Fabric - woven or non-woven geotextile fabric meeting specified minimums outlined in Table 2.

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SILT FENCE

Table 2. Geotextile Fabric Specifications for Silt Fence (minimum)

Physical Property	Woven Geotextile Fabric	Non-Woven Geotextile Fabric
Filtering efficiency	85%	85%
Tensile strength at 20% elongation		
Standard strength	30 lbs. per linear inch	50 lbs. per linear inch
Extra strength	60 lbs. per linear inch	70 lbs. per linear inch
Starry flow rate	0.3 gal./min./sq. ft.	4.5 gal./min./sq. ft.
Water flow rate	15 gal./min./sq. ft.	220 gal./min./sq. ft.
UV resistance	70%	85%
Post spacing	7 feet	6 feet

Note: Silt fences can be purchased contractually.

- Height - a minimum of 18 inches above ground level (30 inches maximum).
- Reinforcement - fabric securely fastened to posts with wood lath.
- Support Posts:
 - 2 x 2 inch hardwood posts. Steel fence posts may be substituted for hardwood posts (steel posts should have projections for fastening fabric).
- Spacing:
 - Eight feet maximum if fence is supported by wire mesh fencing.
 - Six feet maximum for extra-strength fabric without wire backing.

Installation

Prefabricated silt fence (see Exhibits 1, 2, and 3)

- Lay out the location of the fence so that it is parallel to the contour of the slope and at least 10 feet beyond the toe of the slope to provide a sediment storage area. Turn the ends of the fence up slope such that the point of contact between the ground and the bottom of the fence and terminates at a higher elevation than the top of the fence at its lowest point (see Exhibit 1).
- Excavate an eight-inch deep by four-inch wide trench along the entire length of the fence line (see Exhibit 2). Installation by staking is also acceptable.
- Install the silt fence with the filter fabric located on the up-slope side of the excavated trench and the support posts on the down-slope side of the trench.

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SILT FENCE

- Drive the support posts at least 18 inches into the ground, tightly stretching the fabric between the posts as each is driven into the soil. A minimum of 12 inches of the filter fabric should extend into the trench. (If it is necessary to join the ends of two fences, use the wrap joint method shown in Exhibit 3.)
- Lay the lower four inches of filter fabric on the bottom of the trench and extend it toward the up-slope side of the trench.
- Backfill the trench with soil material and compact it in place.

Note: If the silt fence is being constructed on-site, attach the filter fabric to the support posts (refer to Tables 1 and 2 for spacing and geotextile specifications) and attach wooden lath to secure the fabric to the posts. Allow for at least 12 inches of fabric below ground level. Complete the silt fence installation, following steps 1 through 6 above.

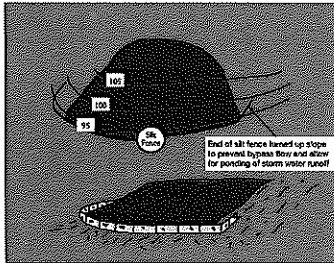
Maintenance

- Inspect within 24 hours of a rain event and at least once every seven calendar days.
- If fence fabric tears, starts to decompose, or in any way becomes ineffective, replace the affected portion immediately. Note: All repairs should meet specifications as outlined within this measure.
- Remove deposited sediment when it is causing the filter fabric to bulge or when it reaches one-half the height of the fence at its lowest point. When contributing drainage area has been stabilized, remove the fence and sediment deposits, grade the site to blend with the surrounding area, and stabilize.

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SILT FENCE

Exhibit 1

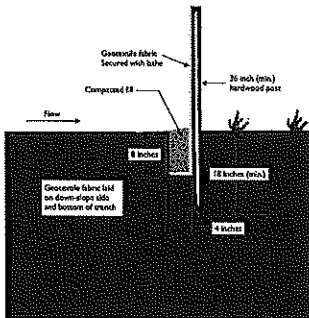


Source: Adapted from Comprehensive Planning and Erosion and Sediment Pollution Control Manual, 1991

October 2007 Chapter 7 211

SILT FENCE

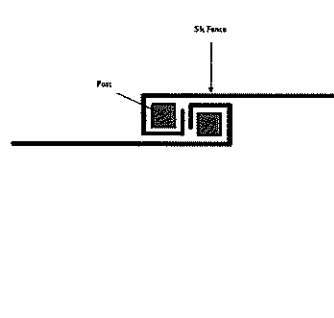
Exhibit 2



212 Chapter 7 October 2007

SILT FENCE

Exhibit 3



October 2007 Chapter 7 211

SITE MANAGEMENT MEASURES

Concrete Washout



Concrete washout areas are designated locations within a construction site that are either a prefabricated unit or a designed measure that is constructed to contain concrete washout. Concrete washout systems are typically used to contain washout water when chutes and hoppers are raised following delivery.

Purpose

Concrete washout systems are implemented to reduce the discharge of pollutants that are associated with concrete washout waste through consolidation of solids and retention of liquids. Unwashed concrete and associated liquids are highly alkaline which may leach into the soil and contaminate ground water or discharge to a waterbody or wetland which can elevate the pH and be harmful to aquatic life. Performing concrete washout in designated areas and into specifically designed systems reduces the impact concrete washout will have on the environment.

Specifications

Site Management

- Complete construction/installation of the system and have washout locations operational prior to concrete delivery.
- Do not wash out concrete trucks or equipment into storm drains, wetlands, streams, rivers, creeks, ditches, or streets.
- Never wash out into a storm sewer drainage system. These systems are typically connected to a natural conveyance system.
- When necessary, provide stable ingress and egress (see Temporary Construction Ingress/Egress Pad on page 17).
- It is recommended that washout systems be restricted to washing concrete from mixer and pump trucks and not used to dispose of excess concrete or

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THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A REFERENCE OR FOR CONSTRUCTION OF A SITE SURVEY OR A BASIS FOR LOCATION REPORT.

CERTIFIED 02/04/21

David J. Stoepelwerth

REGISTERED PROFESSIONAL ENGINEER

No. 19358

STATE OF INDIANA

STOEPPELWERTH

ALWAYS ON

7965 East High Street, Ellettsville, IN 46034-5205

phone: 317.845.5265 fax: 317.845.5242

JOHNSON COUNTY, INDIANA

FRANKLIN TOWNSHIP

STORM WATER POLLUTION PREV. PLAN SPECS.

THE BLUFFS AT YOUNGS CREEK

SECTION 4

DRAWN BY: AEC

CHECKED BY: BKR

SHEET NO: C314

SCALE: AS SHOWN

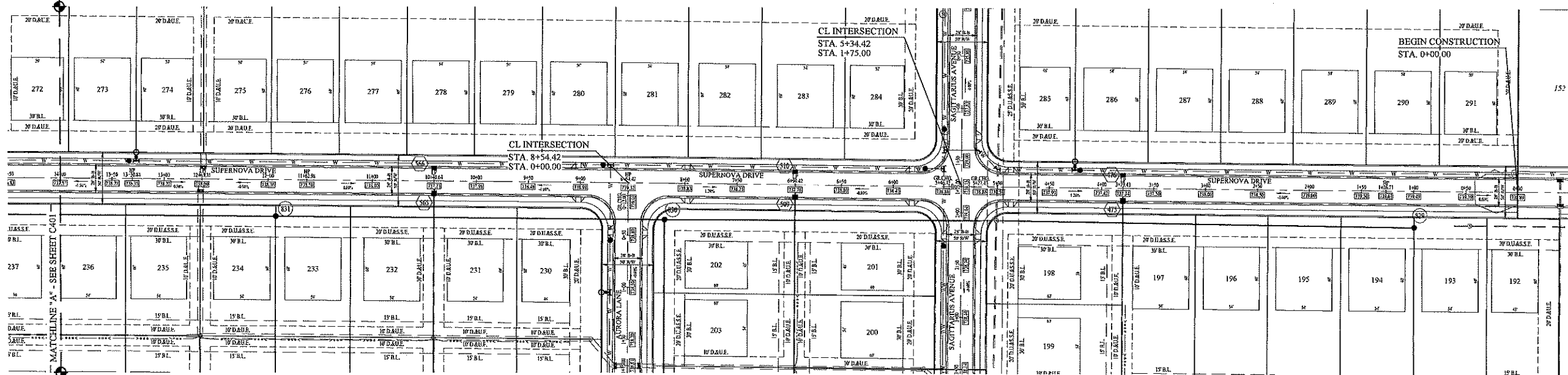
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INDIANA 800

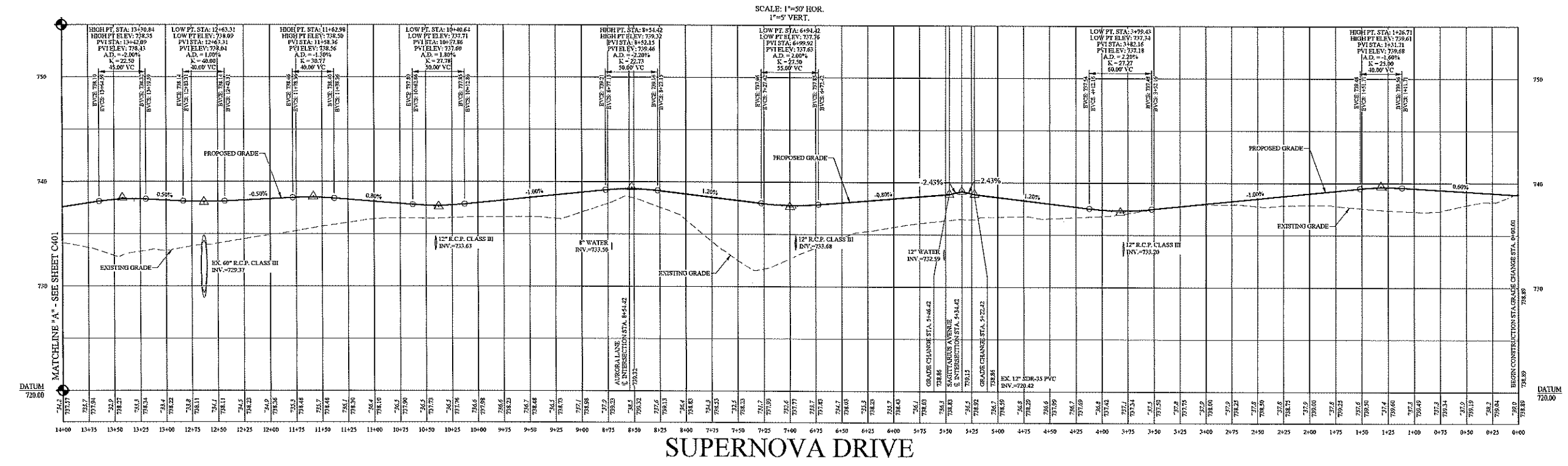
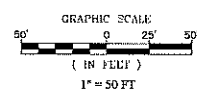
800.451.8000

800.451.8000

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Plotted / By: February 8, 2021 1:27:02 PM / Erik Carson



LEGEND	
BVCS	BEGIN VERTICAL CURVE STATION
BVCE	BEGIN VERTICAL CURVE ELEVATION
EVCS	END VERTICAL CURVE STATION
EVCE	END VERTICAL CURVE ELEVATION
AD	GRADE CHANGE
PVI	POINT OF VERTICAL INTERSECTION
VC	VERTICAL CURVE
K	VERTICAL CURVE K-VALUE
UTILITY CROSSINGS	
CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING ON-SITE UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE IS NO ANY CONFLICTS WITH OTHER UTILITIES, STORM SEWERS OR SILENTS. CONFLICTS AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.	



STREET PLAN & PROFILES
THE BLUFFS AT YOUNGS CREEK
SECTION 4

JOHNSON COUNTY, INDIANA
FRANKLIN, FRANKLIN TOWNSHIP

STOEPPELWERTH
ALWAYS ON

7865 East 10th Street, Fishers, IN 46038-2265
Phone: 317.846.5955 Fax: 317.846.5942

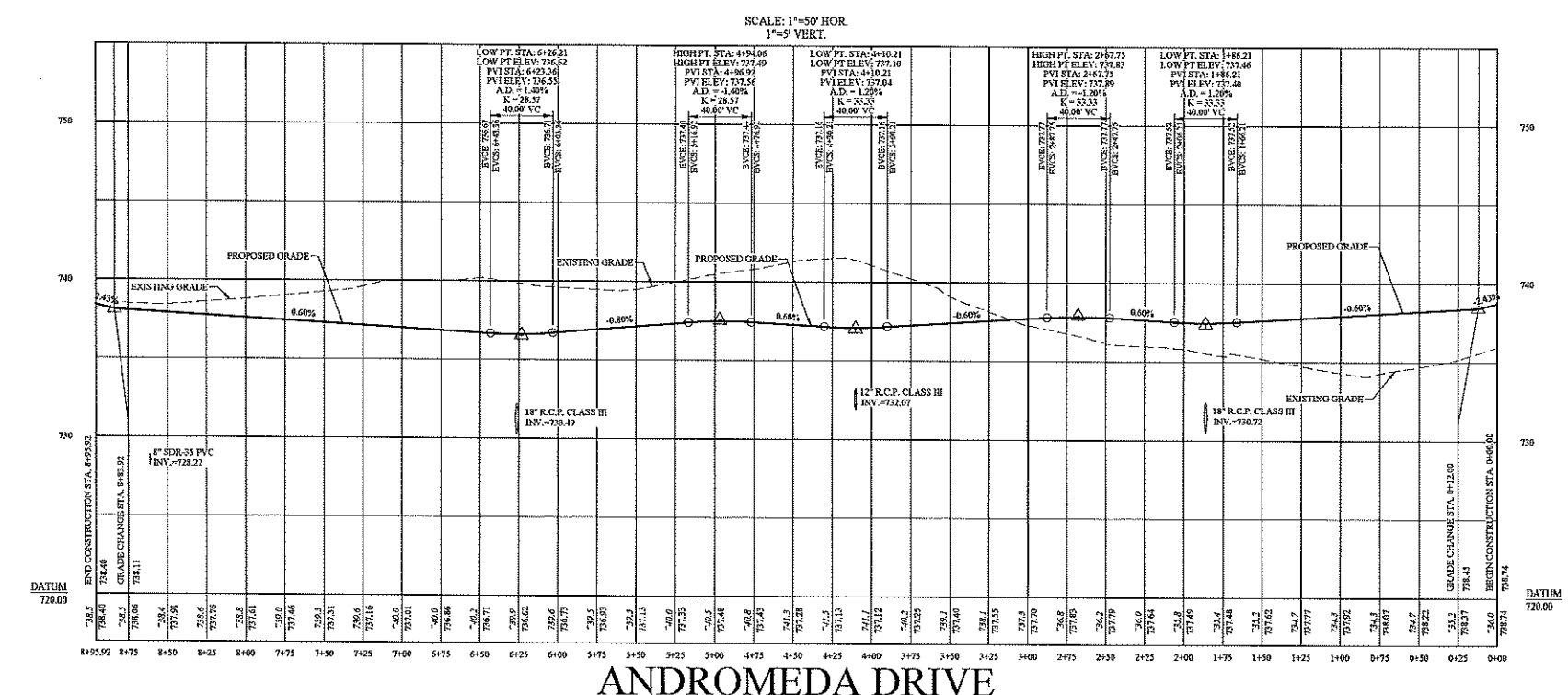
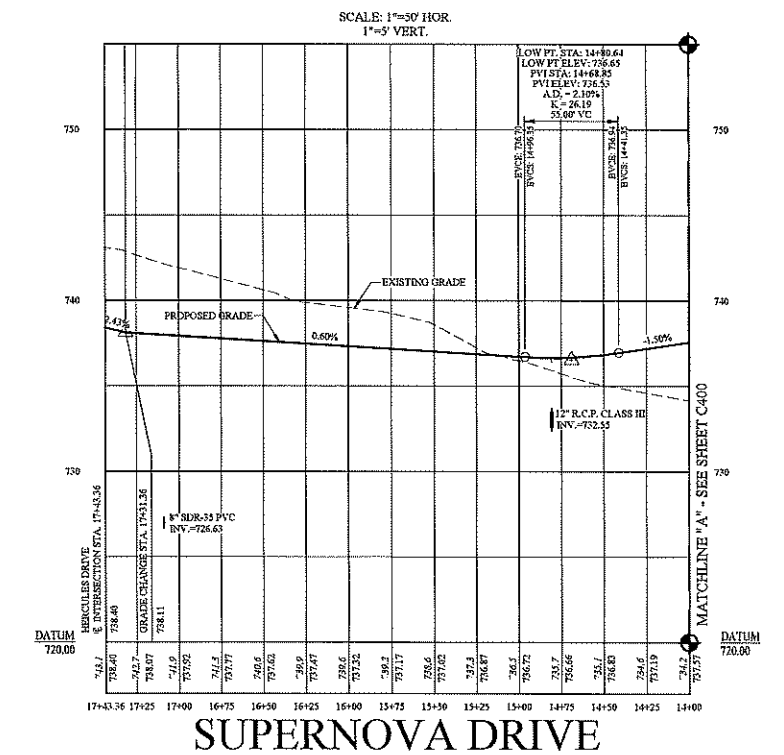
DAVID J. STOEPPELWERTH
REGISTERED PROFESSIONAL ENGINEER
No. 19358
STATE OF INDIANA
CERTIFIED: 02/04/21
David J. Stoepfelwirth

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CHECKED BY: BKR
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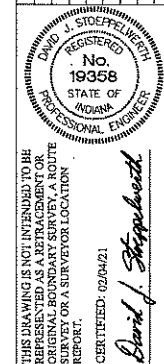
C400

835404MMMA-S4



LEGEND	
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BVCE	BEGIN VERTICAL CURVE ELEVATION
EVCS	END VERTICAL CURVE STATION
EVCE	END VERTICAL CURVE ELEVATION
AD	GRADE CHANGE
PVI	POINT OF VERTICAL INTERSECTION
VC	VERTICAL CURVE
K	VERTICAL CURVE K-VALUE
UTILITY CROSSINGS	
CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING ON-SITE UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE IS NOT ANY CONFLICTS WITH OTHER UTILITIES SHOWN DEPTHS ON STRIPS. CONFLICTS AFTER CONSTRUCTION SHALL BE SOLELY THE CONTRACTOR'S RESPONSIBILITY.	

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10/4/01	10/4/01	400.00	1004	CHASE	ABC
10/5/01	10/5/01	500.00	1005	CHASE	ABC
10/6/01	10/6/01	600.00	1006	CHASE	ABC
10/7/01	10/7/01	700.00	1007	CHASE	ABC
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EPPELWERTH
ALWAYS ON
985 East 16th Street, Fairport, NY 46038-2505
phone: 317/849.5995 fax: 317/849.5942



STREET PLAN & PROFILES

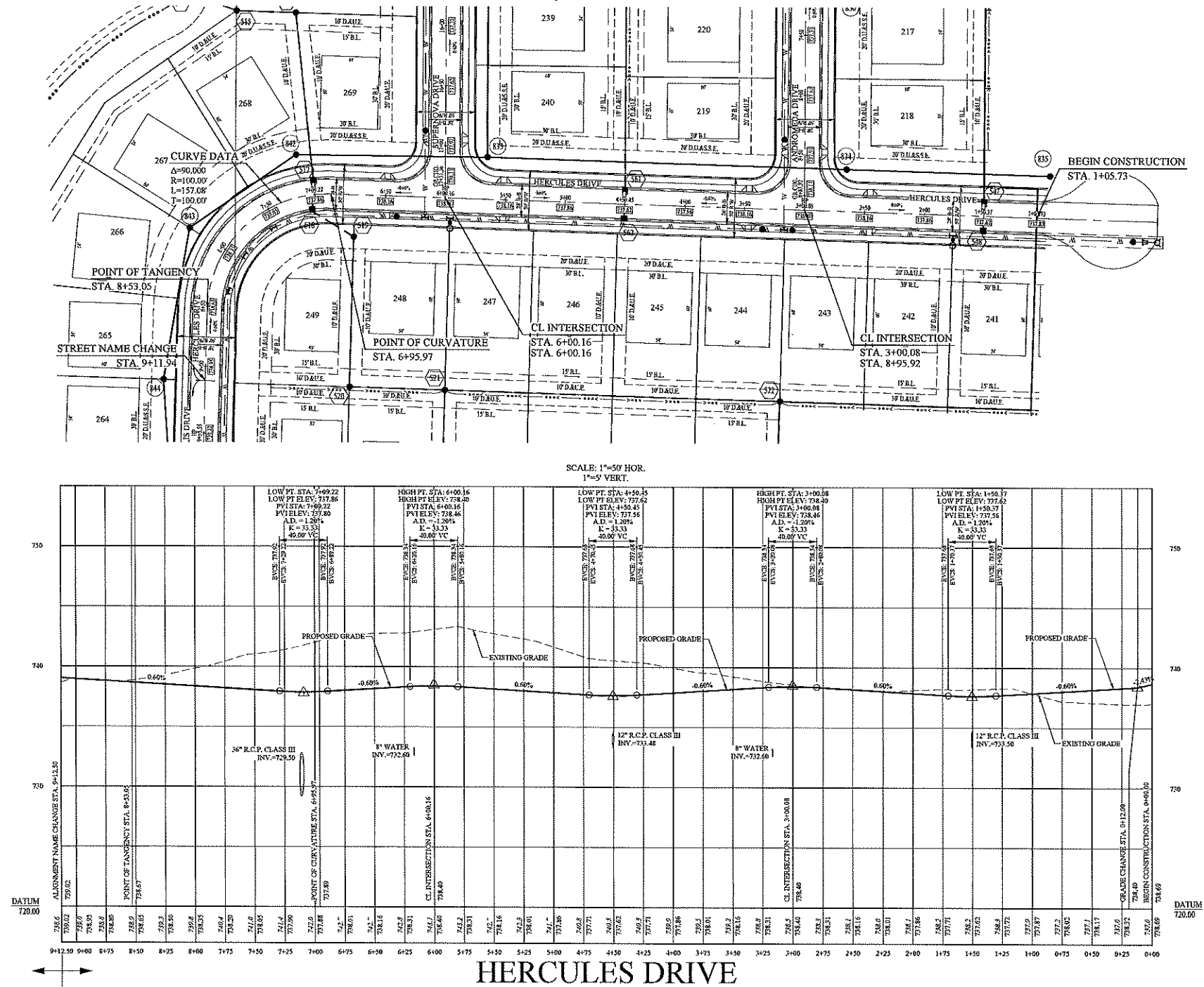
THE BLUFFS AT YOUNGS CREEK
SECTION 4

FRANKLIN, EDWARDS TOWNSHIP
JOHNSON COUNTY, INDIANA

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SHEET NO. C401	
S & A JOB NO.	

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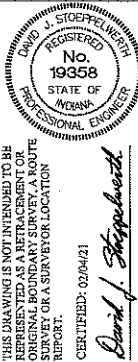
STOEPPELWERTH



STREET PLAN & PROFILES

THE BLUFFS AT YOUNGS CREEK
SECTION 4

JOHNSON COUNTY, INDIANA



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CERTIFIED: 02/04/21

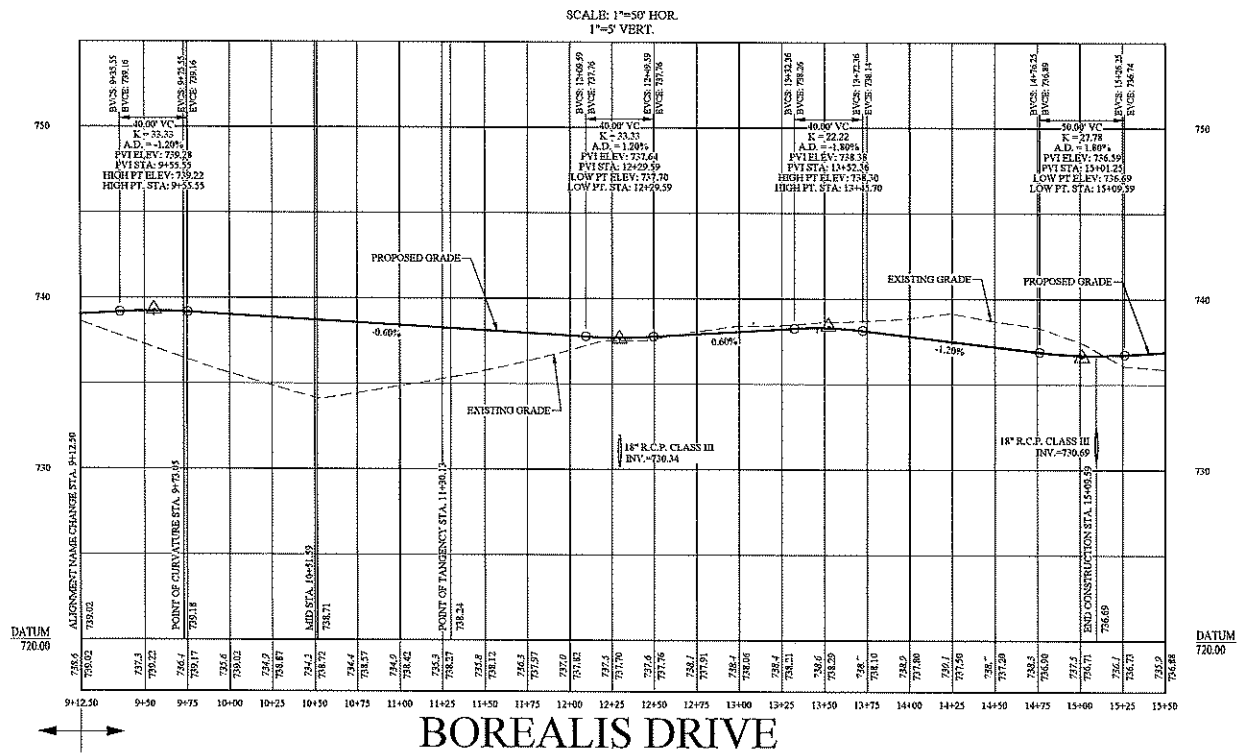
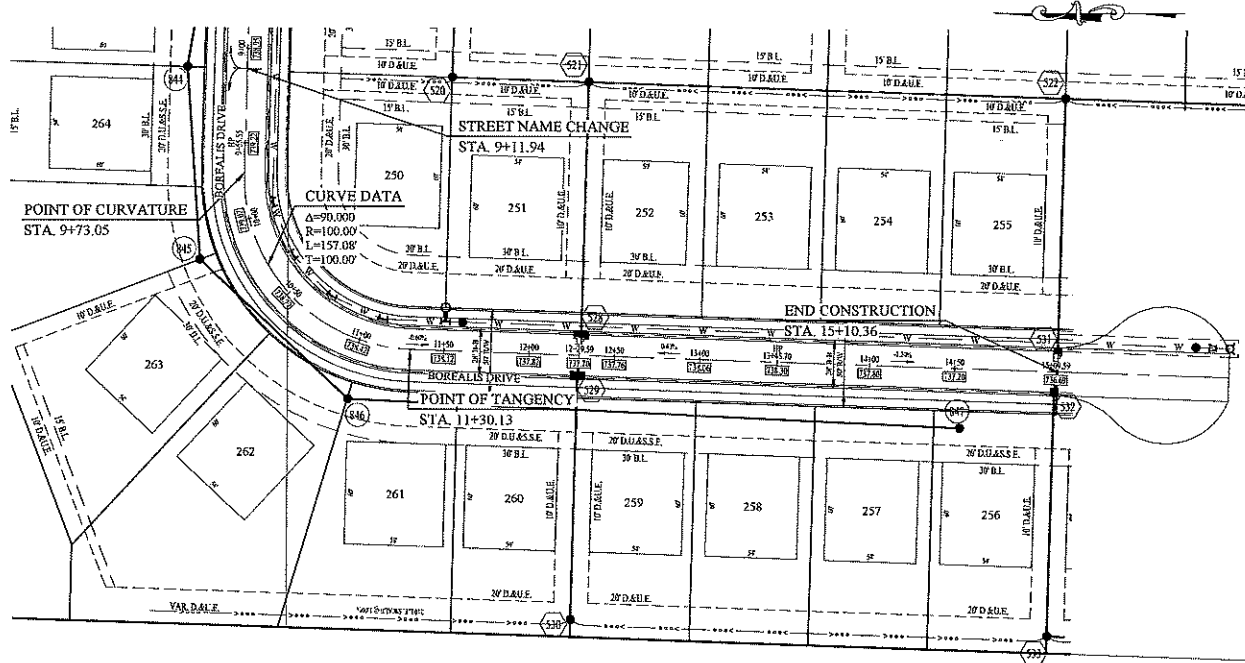
David J. Stoeppelewirth

ALWAYS ON

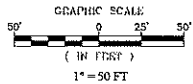
785 East 10th Street, Indianapolis, IN 46202-2885
Phone: 317.446.5955 Fax: 317.446.5942



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CHECKED BY: BKR
SHEET NO: C403
3 & 4 FIGS
83540MMA-S4



LEGEND	
BVCS	BEGIN VERTICAL CURVE STATION
EVCE	BEGIN VERTICAL CURVE ELEVATION
EVCS	END VERTICAL CURVE STATION
EVCE	END VERTICAL CURVE ELEVATION
AD	GRADE CHANGE
PVI	POINT OF VERTICAL INTERSECTION
VC	VERTICAL CURVE
K	VERTICAL CURVE K-VALUE
UTILITY CROSSINGS	
CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING OR DATE UTILITIES PRIOR TO CONSTRUCTION TO CONTRAST THERE IS NOT ANY CONFLICTS WITH OTHER UTILITIES, STORM SEWERS OR STREETS. CONFLICTS AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.	



STREET PLAN & PROFILES

THE BLUFFS AT YOUNGS CREEK

SECTION 4

STOEPPELWERTH

ALWAYS ON

7665 East 16th Street, Elkhart, IN 46035-2505
phone: 317.849.5945 fax: 317.849.5942

FRANKLIN, FRANKLIN TOWNSHIP

JOHNSON COUNTY, INDIANA

DAVID J. STOEPPELWERTH
REGISTERED
No. 19358
STATE OF INDIANA
PROFESSIONAL ENGINEER

THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A REPRESENTATION OF A SURVEY OR A SURVEYOR'S LOCATION REPORT.

CERTIFIED 02/04/21
David J. Stoepfelwerth

DATE NAME REVISIONS

DRAWN BY: AEC

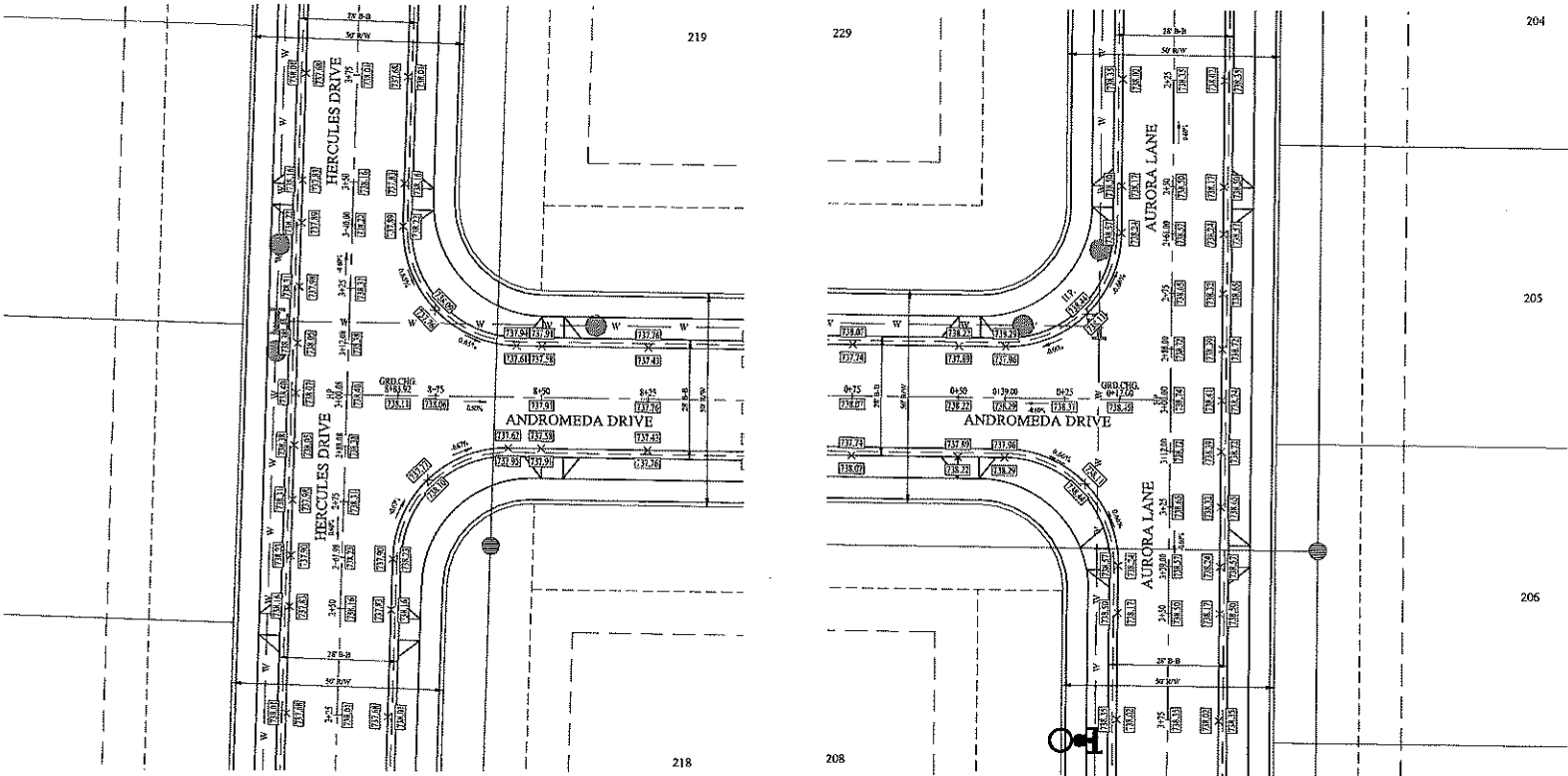
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SHEET NO. C404

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February 5, 2021 9:31:11 PM / ecarson
February 8, 2021 1:32:53 PM / Erik Carlson



INTERSECTION DETAILS

THE BLUFFS AT YOUNGS CREEK
SECTION 4

FRANKLIN, FRANKLIN TOWNSHIP

JOHNSON COUNTY, INDIANA



STOEPPELWERTH

ALWAYS ON

965 East 106th Street, Fishers, IN 46038-2585
phone: 317.849.5935 fax: 317.849.5942

phone: 317.849.5935 fax: 317.849.5942

THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A RETRACEMENT OR ORIGINAL BOUNDARY SURVEY, A ROUTE SURVEY OR A SURVEYOR LOCATION SURVEY.

CERTIFIED: 02/04/21

David J. Stoppelmeier

David J. Stoppelmeier

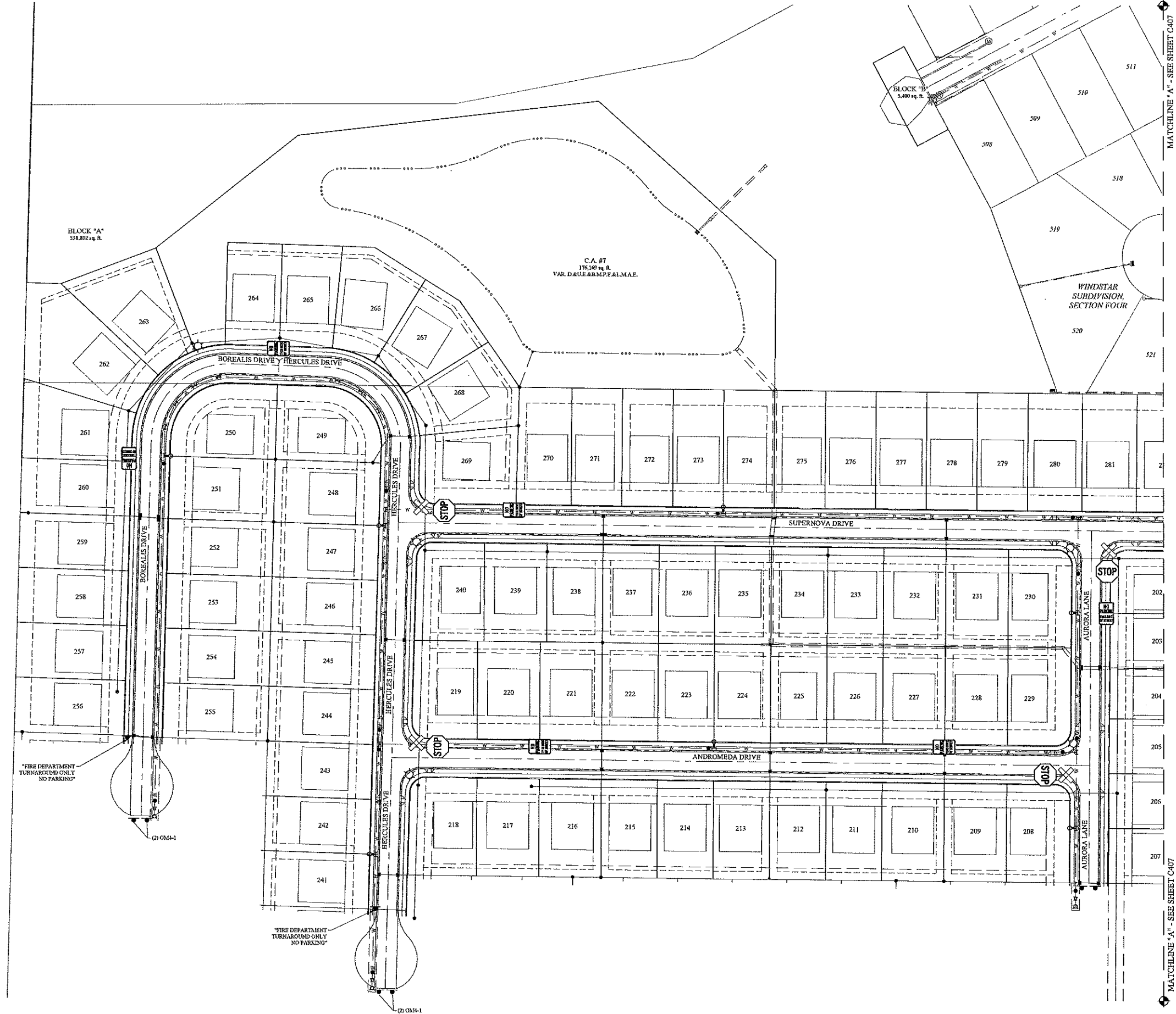
DAVID J. STOEPPELWERTH
REGISTERED
No.
19358
STATE OF
INDIANA
PROFESSIONAL ENGINEER

No
1935

5TH

ENGINEER

21

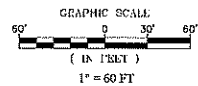


LEGEND	
	STREET NAME SIGN (R1-1)
	STOP SIGN (R1-1)
	"NO PARKING THIS SIDE OF STREET" (R1-1 MOD - SEE DETAIL, THIS SHEET)
	END OF ROAD MARKER (R1-1)
	STREET LIGHT

- NOTES
- ALL TRAFFIC CONTROL SIGNS SHALL CONFORM TO CHAPTER 2 OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), CURRENT EDITION.
 - ALL STREET LIGHTING SHALL CONFORM TO JOHNSON COUNTY REBID GUIDELINES AND STANDARDS.
 - SEE SHEET C408 FOR STANDARD SIGN DETAILS.

CITY OF FRANKLIN SUBDIVISION CONTROL ORDINANCE SECTION 6.15 STREET SIGN STANDARDS

- A. GENERAL STREET SIGN REQUIREMENTS: STREET SIGNS, INCLUDING STREET NAME SIGNS, STOP SIGNS, "NO PARKING" SIGNS, AND ALL OTHER APPROPRIATE REGULATORY SIGNS, SHALL BE INSTALLED BY THE SUBDIVISION AT ALL LOCATIONS SPECIFIED ON THE APPROVED CONSTRUCTION PLANS AND OTHERWISE AS REQUIRED BY THE CITY ENGINEER.
- B. STREET SIGN INSTALLATION: ALL STREET SIGNS SHALL BE INSTALLED PRIOR TO THE ACCEPTANCE OF THE SUBDIVISION'S STREETS BY THE BOARD OF PUBLIC WORKS & SAFETY.
- C. STREET SIGN STANDARDS:
1. SIGNPOSTS: EACH SIGNPOST SHALL CONSIST OF A 1 INCH GALVANIZED STEEL POST, 12 FEET LONG WITH A MINIMUM OF 3 FEET BELOW GRADE.
 - a. STREET NAME SIGNPOST LOCATIONS: STREET NAME SIGN POSTS SHALL BE LOCATED WITHIN THE STREET RIGHT-OF-WAY, AND CLOSER THAN 4 FEET FROM THE EDGE OF THE TRAVELED PORTION OF THE STREET.
 - b. STOP SIGN SIGNPOST LOCATIONS: STOP SIGN SIGNPOSTS SHALL BE LOCATED SO THAT THE EDGE OF THE SIGN IS A MINIMUM OF 1 FEET FROM THE EDGE OF THE TRAVELED PORTION OF THE STREET.
 - c. SPEED LIMIT AND INFORMATIONAL SIGNPOST LOCATIONS: SPEED LIMIT AND INFORMATIONAL SIGNPOSTS SHALL BE LOCATED SO THAT THE EDGE OF THE SIGN IS A MINIMUM OF 1 FEET FROM THE BACK EDGE OF THE CURB OR SHOULDER IF NO CURB IS PRESENT.
 - d. SIDEWALK OBSTRUCTION PROHIBITED: IN NO INSTANCE SHALL ANY SIGNPOST BE LOCATED IN OR OBSTRUCTING A SIDEWALK.
 2. STREET NAME SIGNS: EACH STREET NAME SIGN SHALL BE MADE OF WHITE REFLECTORIZED ALUMINUM OR ALUMINUM WITH CITY SEAL AND SPACER AND 1 INCH OR LARGER BLACK LETTERS MOUNTED AT THE TOP OF THE POST WITH THE STREET NAME LABELED ON BOTH SIDES.
 3. STOP SIGNS: EACH STOP SIGN SHALL BE A MINIMUM OF 20 INCHES IN WIDTH AND HAVE A HIGH-INTENSITY PINKISH TINT. THERE SHALL BE A MINIMUM OF 3 FEET FROM THE TOP OF THE ADJACENT CURB TO THE BOTTOM OF THE SIGN.
 4. SPEED LIMIT AND INFORMATIONAL SIGNS: SPEED LIMIT AND OTHER INFORMATIONAL SIGNS SHALL BE A 24 INCH BY 30 INCH VERTICAL RECTANGLE WITH A HIGH-INTENSITY FINISH.



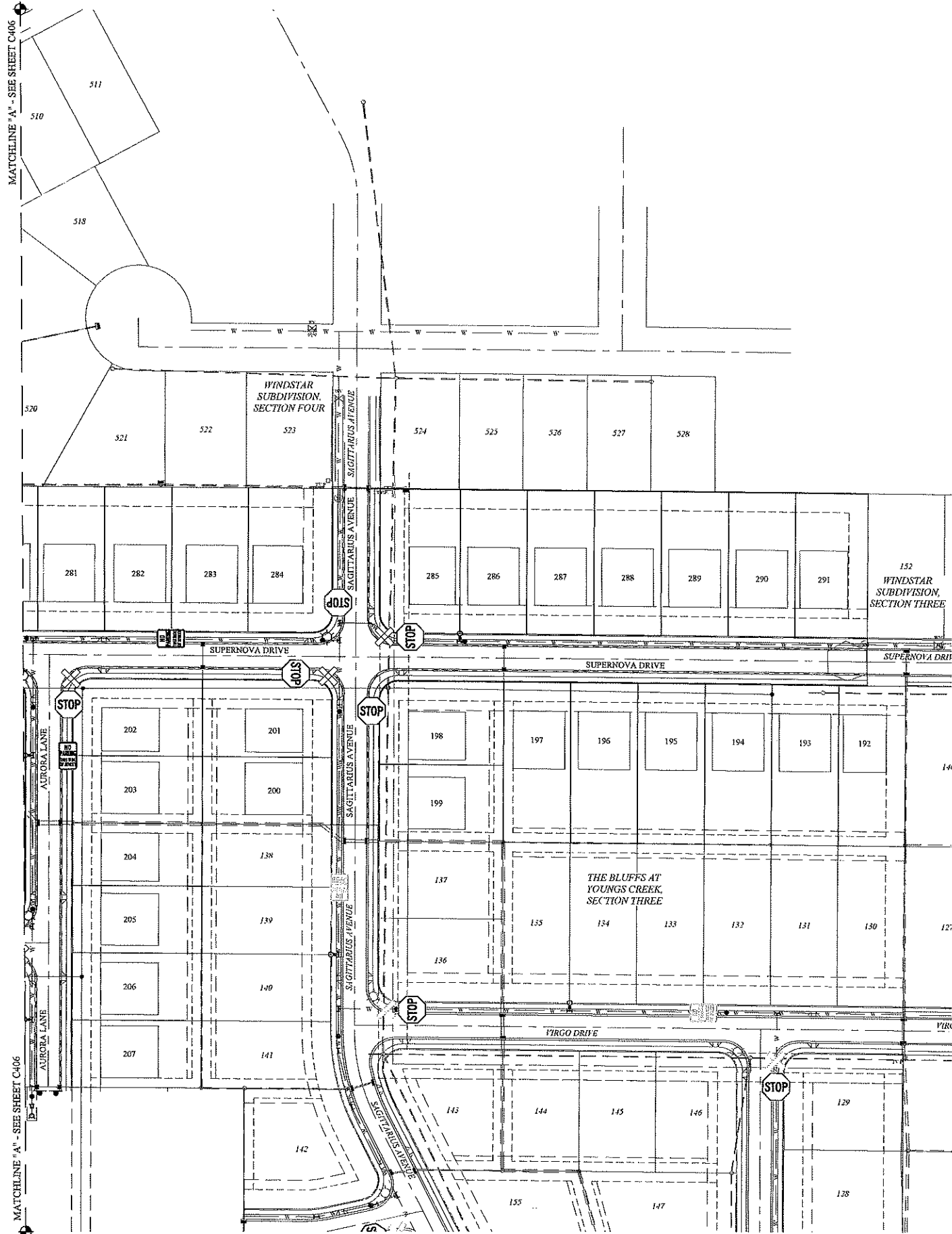
STREET SIGN PLAN	
THE BLUFFS AT YOUNGS CREEK	
SECTION 4	
JOHNSON COUNTY, INDIANA	
FRANKLIN, FRANKLIN TOWNSHIP	
DRAWN BY: AEC	CHECKED BY: BKR
SHEET NO. C406	
83340MMA-S4	

DAVID J. STOEPELWERTH
REGISTERED PROFESSIONAL ENGINEER
No. 19358
STATE OF INDIANA

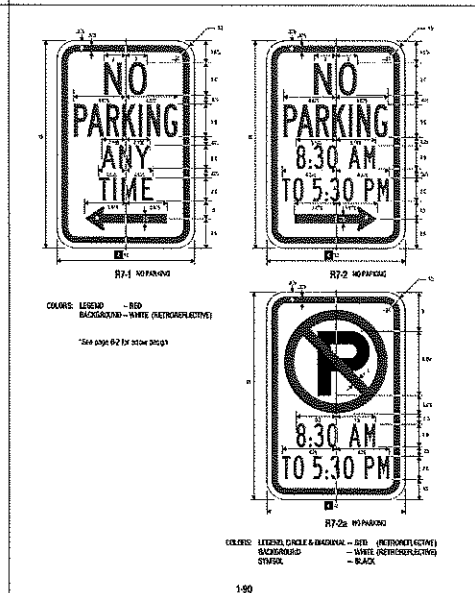
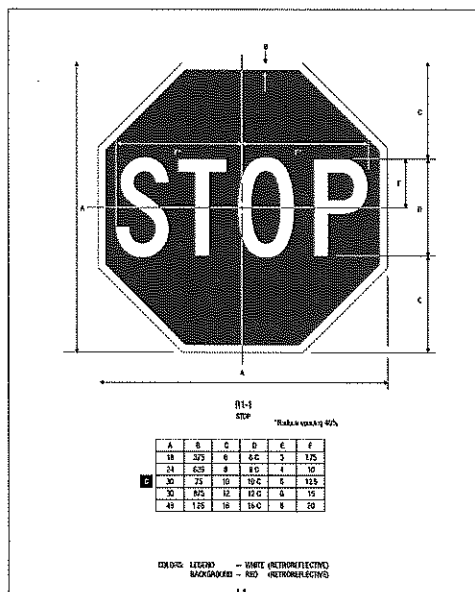
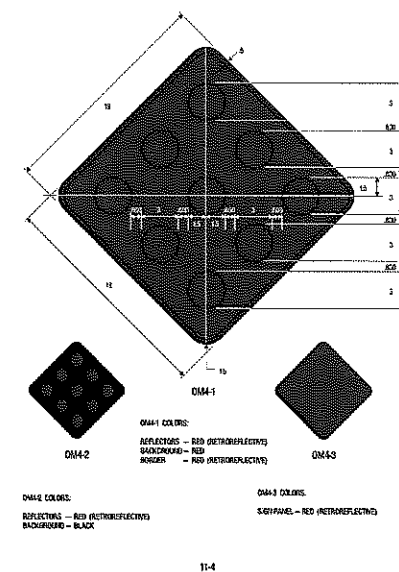
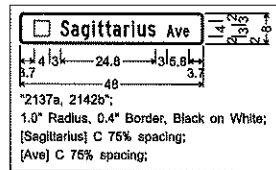
THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A REPLACEMENT OR SURVEY OR A SUBSTITUTION FOR A SURVEYOR'S REPORT.

CERTIFIED: 02/04/21
David J. Stoepelwerth

ALWAYS ON
7965 East High Street, Indianapolis, IN 46238-2595
Phone: 317.441.2595, Fax: 317.241.5742



NOTE:
Street Sign Standards to reflect current standards (white background, black lettering, city seal installed with spacer).



LEGEND

	STREET NAME SIGN (R1-1)	6
	STOP SIGN (R1-1)	6
	"NO PARKING THIS SIDE OF STREET" (R1-1) (MOD - SEE DETAIL, THIS SHEET)	7
	END OF ROAD MARKER (R1-1)	6
	STREET LIGHT	6

NOTES

- ALL TRAFFIC CONTROL SIGNS SHALL CONFORM TO CHAPTER 2 OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), CURRENT REVISION.
- ALL STREET LIGHTING SHALL CONFORM TO JOHNSON COUNTY REAM GUIDELINES AND STANDARDS.

CITY OF FRANKLIN SUBDIVISION
CONTROL ORDINANCE
SECTION 6.13 STREET SIGN STANDARDS

A. GENERAL STREET SIGN REQUIREMENTS:
STREET SIGNS, INCLUDING STREET NAME SIGNS, STOP SIGNS, "NO PARKING" SIGNS, AND ALL OTHER REGULATORY SIGNS, SHALL BE INSTALLED BY THE SUBDIVIDER AT ALL LOCATIONS SPECIFIED ON THE APPROVED CONSTRUCTION PLANS AND OTHERWISE AS REQUIRED BY THE CITY ENGINEER.

B. STREET SIGN INSTALLATION:
ALL STREET SIGNS SHALL BE INSTALLED PRIOR TO THE ACCEPTANCE OF THE SUBDIVISION'S STREETS BY THE BOARD OF PUBLIC WORKS & SAFETY.

1. TEMPORARY SIGNS:
THE SUBDIVIDER SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF TEMPORARY STREET AND TRAFFIC CONTROL SIGNS UNTIL THE PERMANENT SIGNS ARE INSTALLED AND ACCEPTED BY THE BOARD OF PUBLIC WORKS & SAFETY.

2. PERMITS:
AT ANY TIME, THE PLANNING DIRECTOR MAY WITHDRAW THE ISSUANCE OF SUBDIVISION LOCATION PERMITS, INCLUDING THOSE FOR MOSES, HOMES AND SPECULATIVE STRUCTURES, UNTIL APPROPRIATE PERMANENT OR TEMPORARY STREET SIGNS HAVE BEEN INSTALLED.

C. STREET SIGN STANDARDS:
ALL STREET SIGNS AND POST TYPES AND LOCATIONS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, APPLICABLE EDITIONS AND SPECIFICATIONS, THE REQUIREMENTS OF THE CITY ENGINEER, THE SPECIFICATIONS OF THE BOARD OF PUBLIC WORKS & SAFETY, AND THE FOLLOWING:

1. SIGNPOSTS:
EACH SIGNPOST SHALL CONSIST OF A 2 INCH GALVANIZED TYPE A POST, 12 FEET LONG WITH A MINIMUM OF 3 FEET BELOW GRADE.

A. STREET NAME SIGNPOST LOCATIONS:
STREET NAME SIGNPOSTS SHALL BE LOCATED WITHIN THE STREET RIGHT-OF-WAY, NO CLOSER THAN 4 FEET FROM THE EDGE OF THE TRAVELED PORTION OF THE STREET.

B. STOP SIGN SIGNPOST LOCATIONS:
STOP SIGN SIGNPOSTS SHALL BE LOCATED SO THAT THE EDGE OF THE SIGN IS A MINIMUM OF 2 FEET FROM THE EDGE OF THE TRAVELED PORTION OF THE STREET.

C. SPEED LIMIT AND INFORMATIONAL SIGNPOST LOCATIONS:
SPEED LIMIT AND INFORMATIONAL SIGNPOSTS SHALL BE LOCATED SO THAT THE EDGE OF THE SIGN IS A MINIMUM OF 2 FEET FROM THE BACK EDGE OF THE CURB OR SHOULDER, IF NO CURB IS PRESENT.

D. SIDEWALK OBSTRUCTION PROMINENT:
IF NO SIDEWALK OBSTRUCTION IS PRESENT, SIGNPOSTS SHALL BE LOCATED ON OR OBSTRUCTING A SIDEWALK.

2. STREET NAME SIGNS:
EACH STREET NAME SIGN SHALL BE MADE OF WHITE REFLECTORIZED DOUBLE-SHADE METAL WITH CITY SEAL AND SPACER AND 4 INCH OR LARGER BLACK LETTERS MOUNTED AT THE TOP OF THE POST WITH THE STREET NAME LABELED ON BOTH SIDES.

3. STOP SIGNS:
EACH STOP SIGN SHALL BE A MINIMUM OF 20 INCHES IN WIDTH AND HAVE A HIGH-INTENSITY FINISH. SIGNS SHALL BE A MINIMUM OF 7 FEET FROM THE TOP OF THE ADJACENT CURB TO THE BOTTOM OF THE SIGN.

4. SPEED LIMIT AND INFORMATIONAL SIGNS:
SPEED LIMIT AND OTHER INFORMATIONAL SIGNS SHALL BE A 24 INCH BY 36 INCH VERTICAL RECTANGLE WITH A HIGH-INTENSITY FINISH.

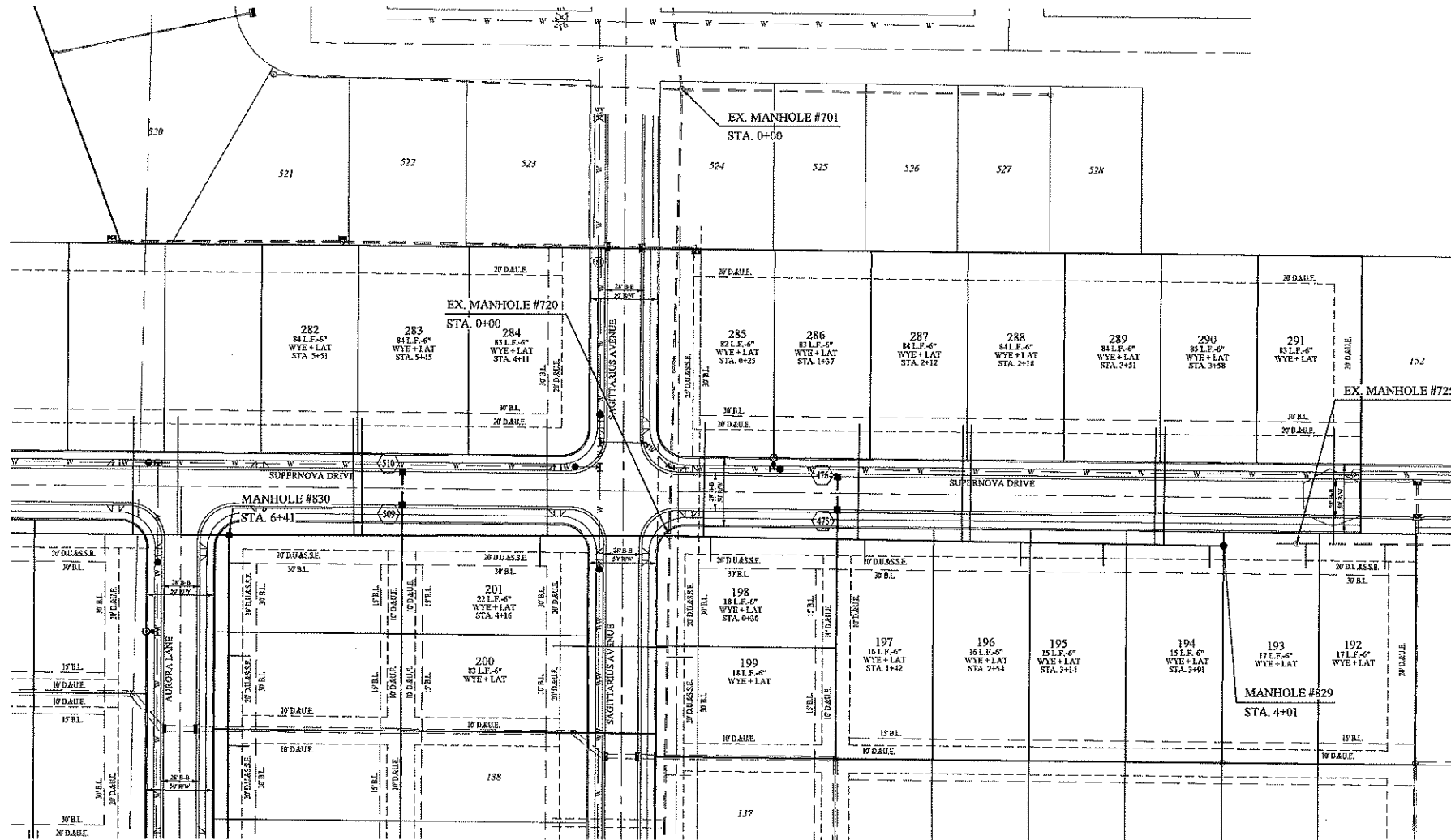
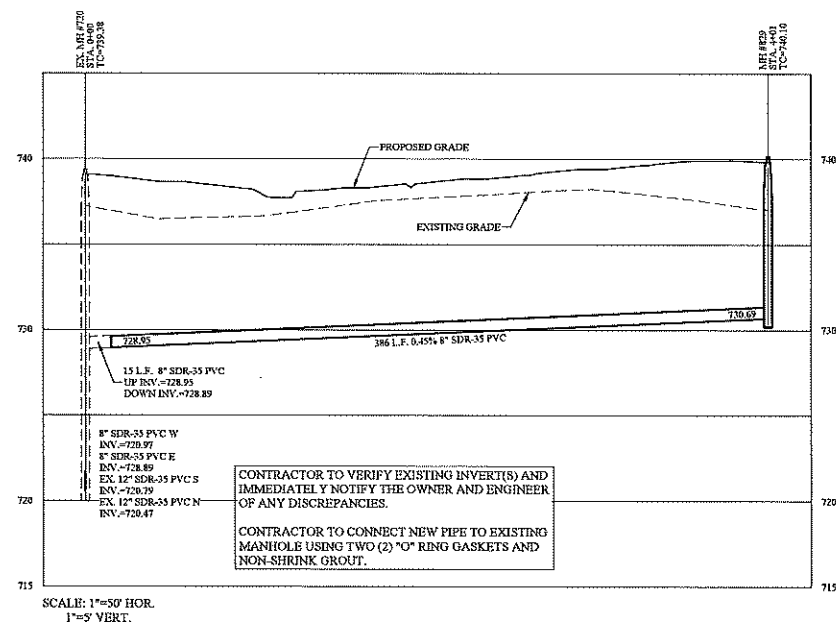
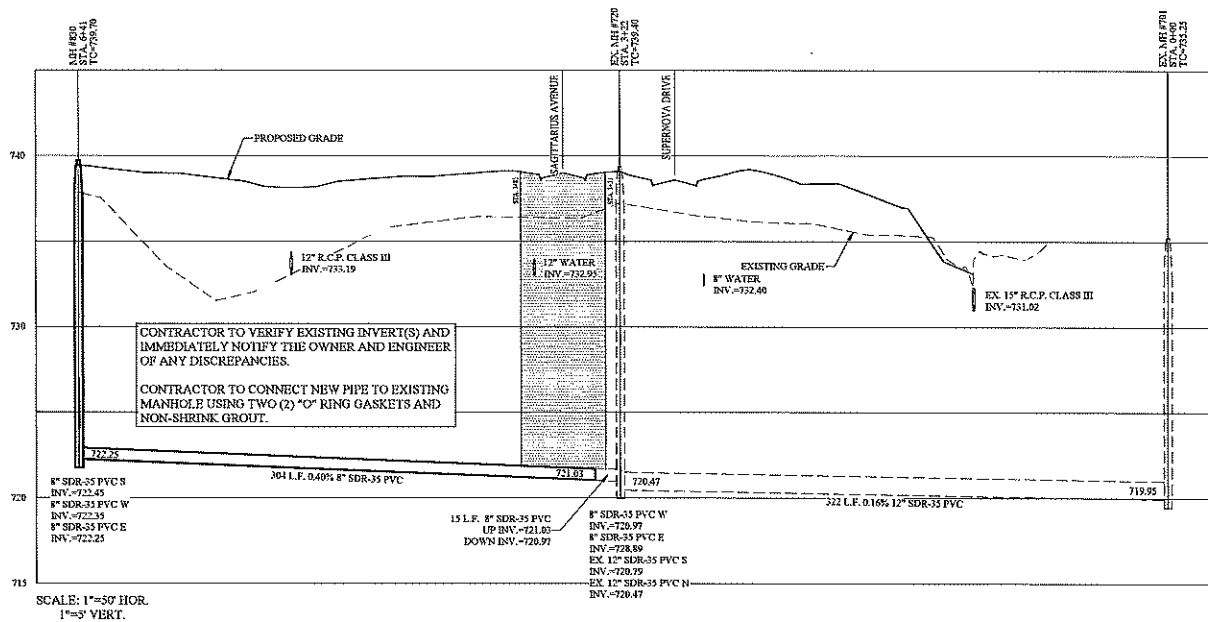
THIS DRAWING IS NOT INTENDED TO BE REPRODUCED AS A SUBSTITUTE FOR THE ORIGINAL SURVEY OR A SURVEYOR LOCATION REPORT.

CERTIFIED: 02/04/21
Daniel J. Stoeppelwerth
REGISTERED PROFESSIONAL ENGINEER
No. 19358
STATE OF INDIANA

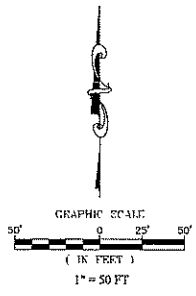
STREET SIGN PLAN
THE BLUFFS AT YOUNGS CREEK
SECTION 4
FRANKLIN, FRANKLIN TOWNSHIP
JOHNSON COUNTY, INDIANA

DRAWN BY: AEC
CHECKED BY: BKR
SHEET NO: C407
P.A. FILE NO: 83540MMA-S4

File Name: S43540MMA-S04CDVSC500 - Sanitary Plan & Profile.dwg - C500
Modified: February 8, 2021 14:50:03 PM / ecarson
Plotted: February 6, 2021 15:04:43 PM / Erik Carson



LEGEND	
	EXISTING SANITARY SEWER
	EXISTING STORM SEWER
	EXISTING WATER LINE
	PROPOSED SANITARY SEWER
	PROPOSED STORM SEWER
	PROPOSED WATER LINE
	DENOTES FULL DEPTH FLOWABLE BACKFILL
UTILITY CROSSINGS	
CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING ON-SITE UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE IS NOT ANY CONFLICTS WITH OTHER UTILITIES. STORM SEWERS OR STREETS. CONFLICTS AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.	
NOTES	
1.	THIS SURVEY REFLECTS ABOVE GROUND INDICATIONS OF UTILITIES AND INFORMATION AVAILABLE FROM UTILITY COMPANIES. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN CORRESPOND TO ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.
2.	MIN. SLOPES PER THE TEN STATE STANDARDS SHALL PREVAIL IN ALL CASES.
3.	ALL WATER MAINS SHALL MAINTAIN 18 INCHES VERTICAL CLEARANCE AND 16 FEET HORIZONTAL CLEARANCE.
4.	CONTRACTOR SHALL INSTALL SERVICE LATERALS TO FUTURE LOTS LOCATIONS NOTED ON PLANS.
5.	SEE SHEET C503 FOR SANITARY STRUCTURE DATA TABLE.



STOEPELWERTH

ALWAYS ON

7865 East 10th Street, Indianapolis, IN 46235-2505

phone: 317.849.5555 fax: 317.849.5942

JOHNSON COUNTY, INDIANA

FRANKLIN TOWNSHIP

SANITARY SEWER PLAN & PROFILES

THE BLUFFS AT YOUNGS CREEK

SECTION 4

DRAWN BY: AEC

CHECKED BY: BKR

SHEET NO. C500

83540MMA-S4

THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A RETRACTION OR SUPPLEMENT TO ANY PREVIOUS SURVEY OR A SURVEYOR LOCATION REPORT.

CERTIFIED: 02/04/21

David J. Stoepelwerth

REGISTERED PROFESSIONAL ENGINEER

No. 19358

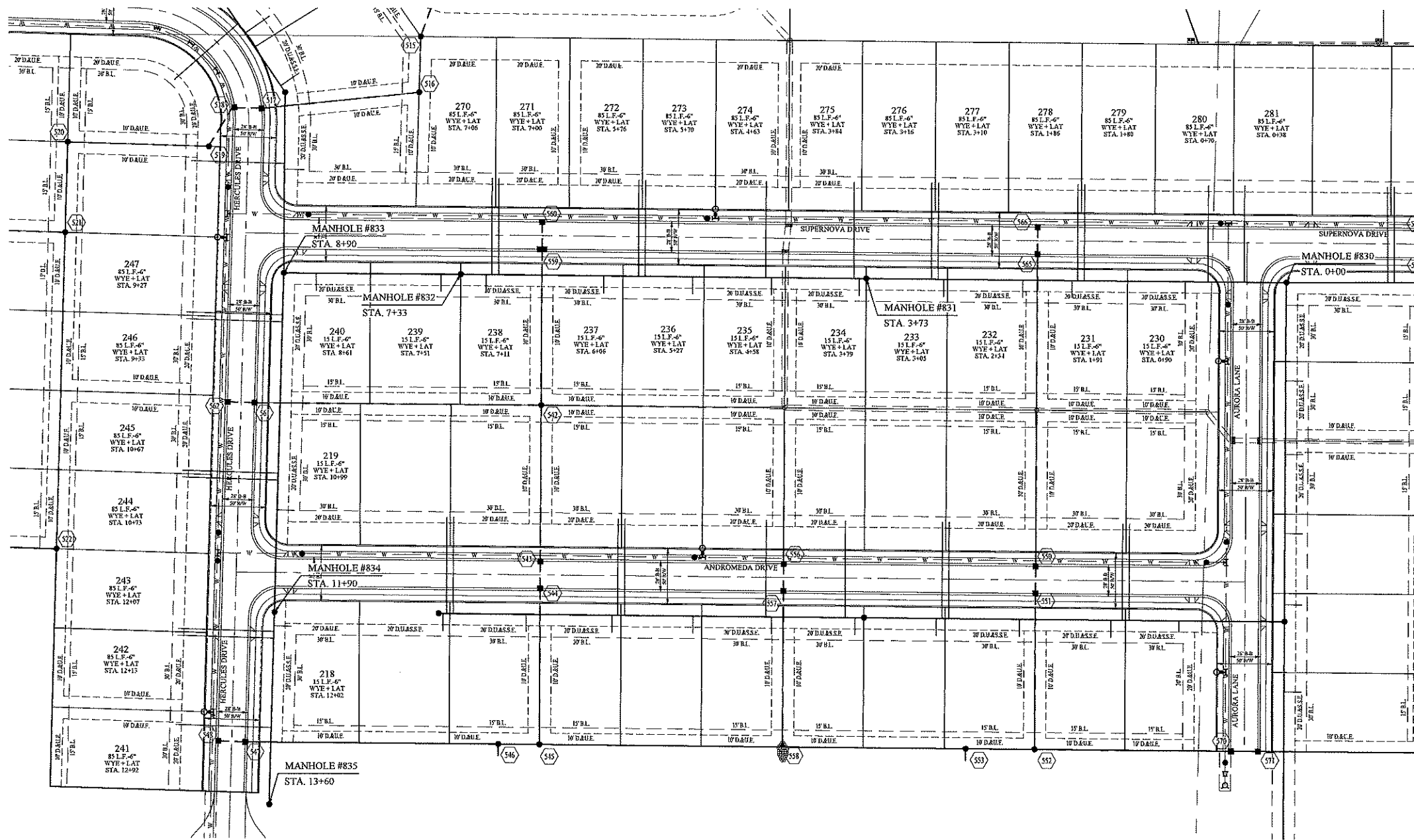
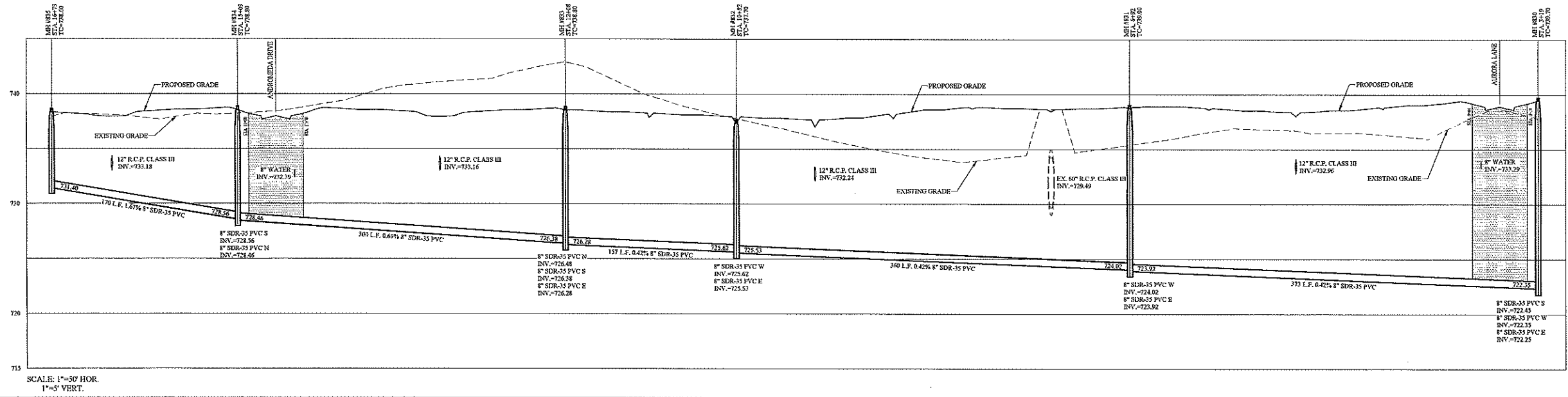
STATE OF INDIANA

DATE: 02/04/21

REVISIONS

BY

File Name: S43540MMA-S04DWG000 - Sanitary Plan & Profile.dwg - C501
Modified / By: February 6, 2021 14:50:11 PM / ecarson
Plotted / By: February 6, 2021 15:11:16 PM / Erik Carson



- LEGEND**
- EXISTING SANITARY SEWER
 - EXISTING STORM SEWER
 - EXISTING WATER LINE
 - PROPOSED SANITARY SEWER
 - PROPOSED STORM SEWER
 - PROPOSED WATER LINE
 - DEMOTES FULL DEPTH FLOWABLE BACKFILL
- UTILITY CROSSINGS**
- CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING ON-SITE UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE IS NOT ANY CONFLICTS WITH OTHER UTILITIES. STORM SEWERS OR STREETS. CONFLICTS AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.
- NOTES**
1. THE SURVEY REFLECTS ABOVE GROUND INDICATIONS OF UTILITIES AND INFORMATION AVAILABLE FROM UTILITY COMPANIES. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.
 2. MIN. SLOPES PER THE TEN STATE STANDARDS SHALL PREVAIL IN ALL CASES.
 3. ALL WATER MAINS SHALL MAINTAIN 18 INCHES VERTICAL CLEARANCE AND 10 FEET HORIZONTAL CLEARANCE.
 4. CONTRACTOR SHALL INSTALL SERVICE LATERALS TO FUTURE LOTS (LOCATIONS NOTED ON PLANS).
 5. SEE SHEET C500 FOR SANITARY STRUCTURE DATA TABLE.

GRAPHIC SCALE
50' 0' 25'
1" = 50 FT



STOEPPELWERTH
ALWAYS ON

C501
S.A.A. PROJ. NO. 83540MMA-S4

Sanitary Sewer Plan & Profiles
THE BLUFFS AT YOUNGS CREEK
SECTION 4

JOHNSON COUNTY, INDIANA
FRANKLIN TOWNSHIP

DATE: _____
MARK: _____
BY: _____

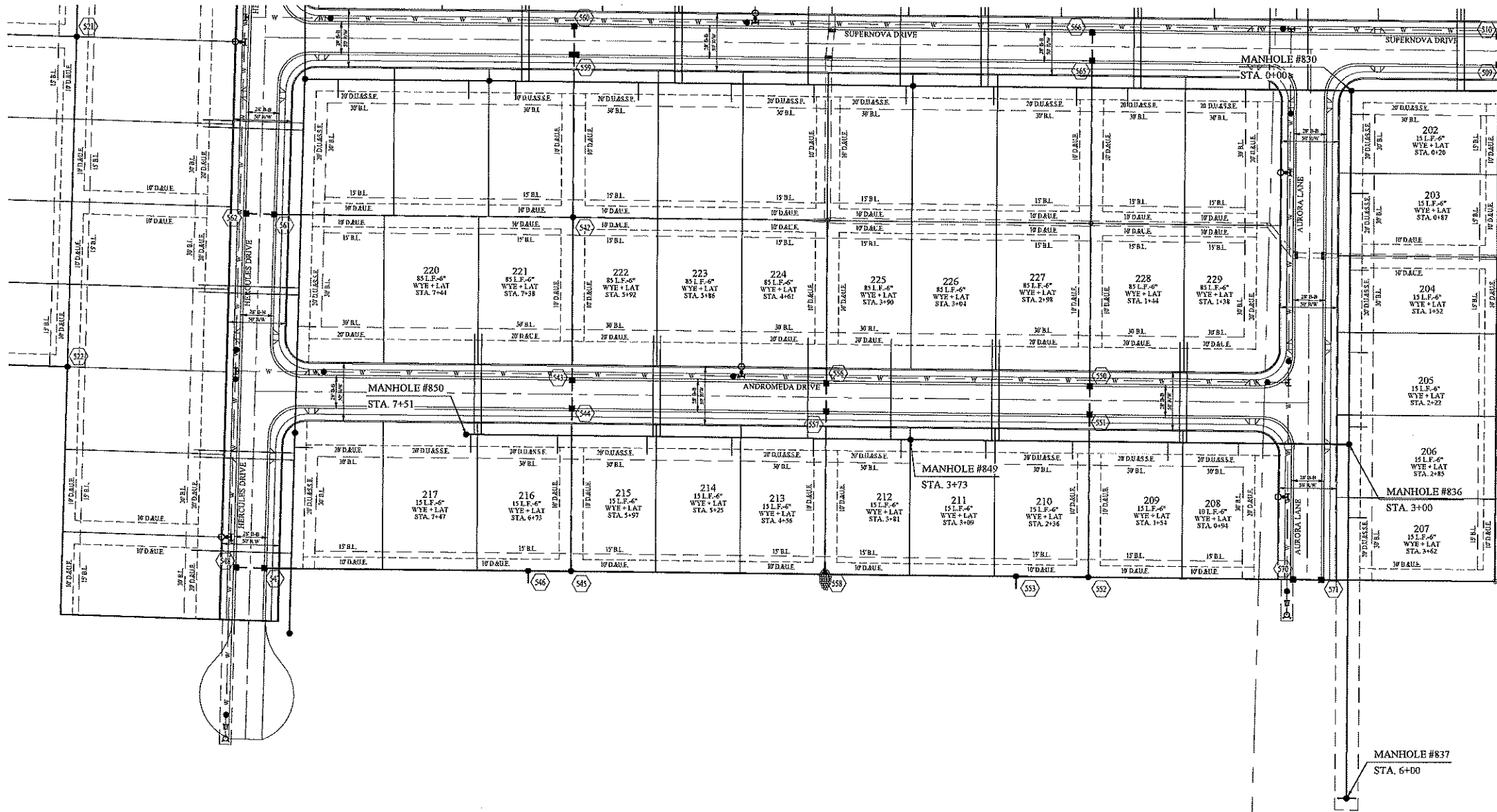
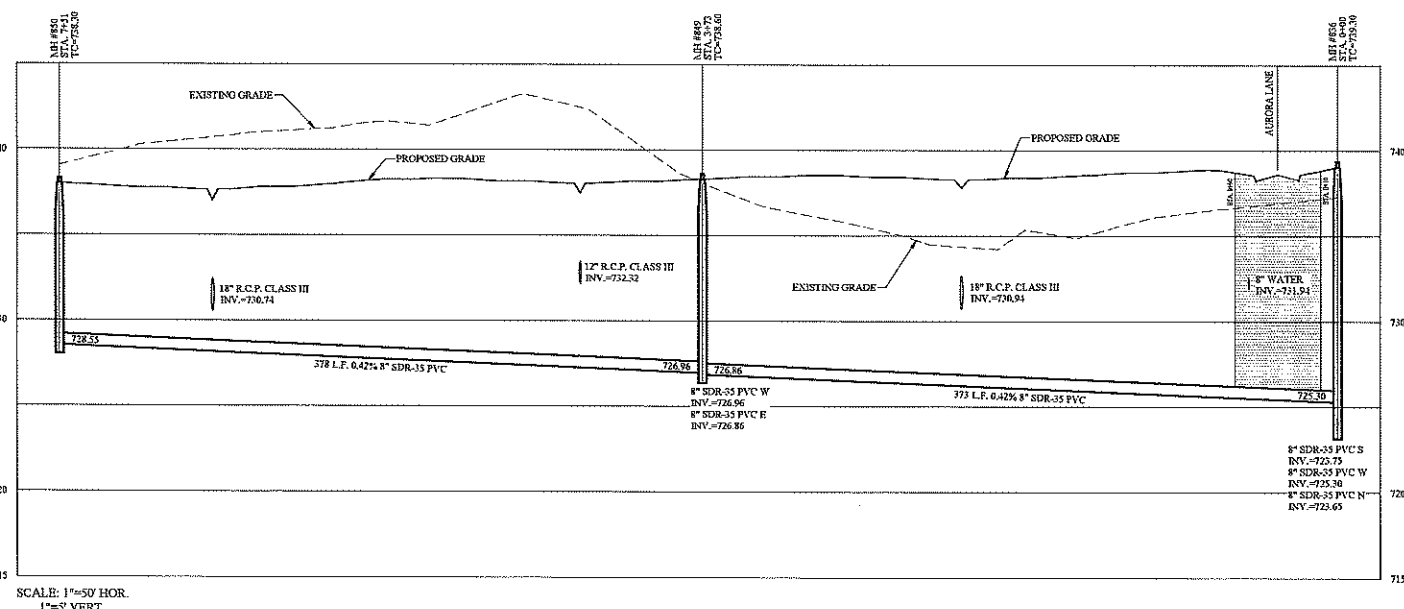
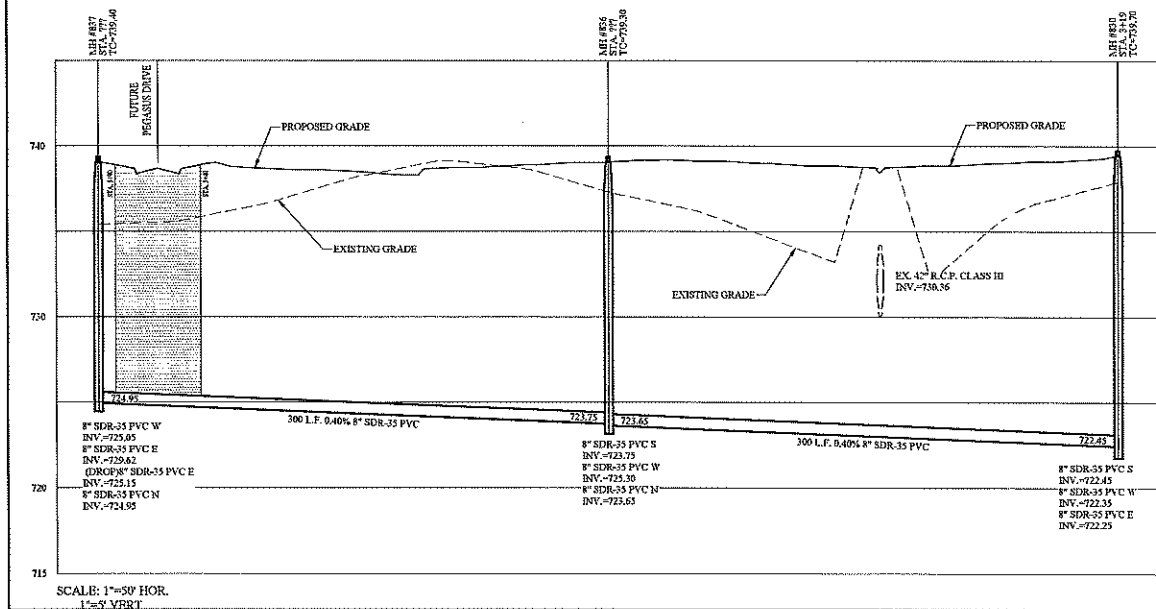
REVISIONS

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REGISTERED PROFESSIONAL ENGINEER
No. 19358
STATE OF INDIANA
David J. Stoepelwerth
CERTIFIED: 02/04/21

7945 East 10th Street, Ellettsville, IN 46035-2905
phone: 317.846.5905 fax: 317.846.5945

File Name: S49340MMA-S040MVC500 - Sanitary Plan & Profile.dwg - C502
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Plotted / By: February 8, 2021 1:51:49 PM / Erik Carson



LEGEND

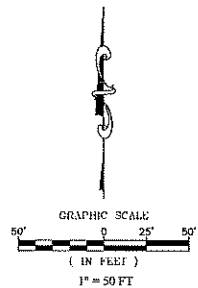
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATER LINE
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED WATER LINE
- DENOTES FULL DEPTH FLOWABLE BACKFILL

UTILITY CROSSINGS

CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE IS NOT ANY CONFLICTS WITH OTHER UTILITIES. STORM SEWERS OR STREETS. CONFLICTS AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.

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- SEE SHEET C503 FOR SANITARY STRUCTURE DATA TABLE.



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DAVID J. STOEPPELWERTH
REGISTERED PROFESSIONAL ENGINEER
No. 19358
STATE OF INDIANA

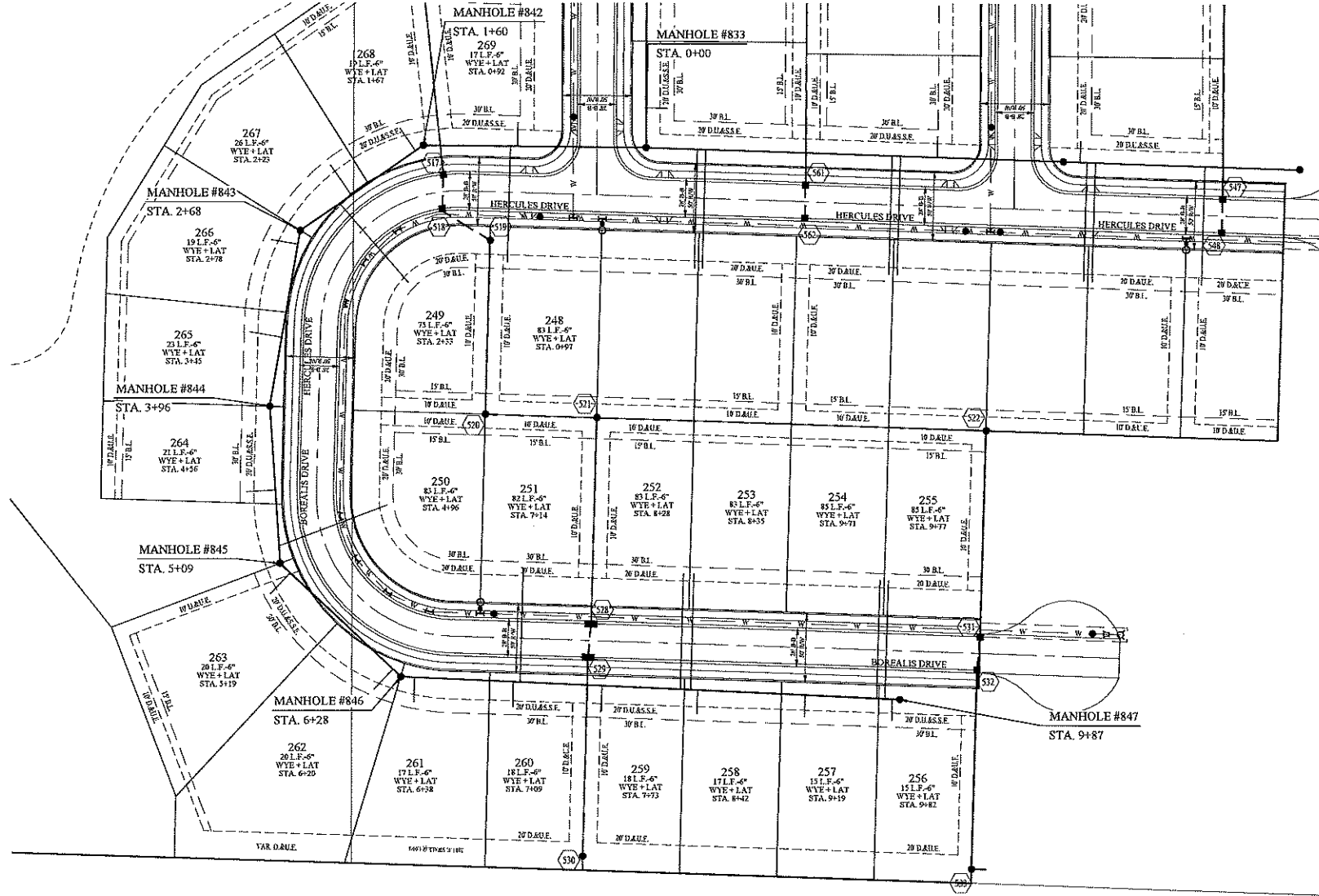
CERTIFIED: 02/04/21
David J. Stoepelwerth

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SANITARY SEWER PLAN & PROFILES
THE BLUFFS AT YOUNGS CREEK
SECTION 4
JOHNSON COUNTY, INDIANA
FRANKLIN, FRANKLIN TOWNSHIP

DRAWN BY: AEC
CHECKED BY: BKR
SHEET NO: C502
P.L.A. R000
83540MMA-S4

83540MMA-84 SANITARY PLAN & PROFILES - C503
February 8, 2021 1:50:01 PM
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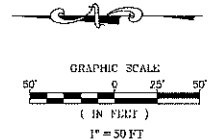


SANITARY STRUCTURE DATA TABLE													
STR. #	TYPE	T.C.	CASTING TYPE	DIA. IN.	DIR. IN.	INV. IN.	DIA. OUT.	DIR. OUT.	INV. OUT.	SLOPE	PIPE	LEN.	MATERIAL
829	4" MH	740.10	R-1772				8"	W	730.69	0.43%	720-829	380'	SDR-35 PVC
830	4" MH	739.76	R-1772	8"	S	722.45	8"	E	722.25	0.40%	830-836 830-837 830-831	300' 300' 373'	SDR-35 PVC SDR-35 PVC SDR-35 PVC
831	4" MH	739.60	R-1772	8"	W	724.02	8"	E	723.92	0.42%	831-832 830-831	300' 373'	SDR-35 PVC SDR-35 PVC
832	4" MH	737.70	R-1772	8"	W	725.62	8"	E	725.53	0.42%	832-833 831-832	137' 360'	SDR-35 PVC SDR-35 PVC
833	4" MH	738.80	R-1772	8"	N	726.48	8"	E	726.28	0.42%	833-842 832-833 833-834	160' 157' 360'	SDR-35 PVC SDR-35 PVC SDR-35 PVC
834	4" MH	738.80	R-1772	8"	S	728.56	8"	N	728.46	0.69%	834-835 833-834	170' 360'	SDR-35 PVC SDR-35 PVC
835	4" MH	738.60	R-1772				8"	N	731.40	1.67%	834-835	170'	SDR-35 PVC
836	4" MH	739.30	R-1772	8"	S	723.75	8"	N	723.65	0.40%	836-837 836-838 836-840	300' 300' 373'	SDR-35 PVC SDR-35 PVC SDR-35 PVC
837	4" DROP MH	739.40	R-1772	8"	W	725.05	8"	N	724.95	0.40%	837-838 STUB 836-837 837-851 STUB 837-851 DROP	8' 300' 8' 2'	SDR-35 PVC SDR-35 PVC SDR-35 PVC SDR-35 PVC
842	4" MH	738.70	R-1772	8"	NW	729.05	8"	S	727.15	0.42%	842-843 833-842	108' 160'	SDR-35 PVC SDR-35 PVC
843	4" MH	739.00	R-1772	8"	W	729.84	8"	SE	729.74	0.54%	843-844 842-843	128' 108'	SDR-35 PVC SDR-35 PVC
844	4" MH	739.70	R-1772	8"	W	730.48	8"	E	730.38	0.42%	844-845 843-844	113' 128'	SDR-35 PVC SDR-35 PVC
845	4" MH	739.60	R-1772	8"	SW	731.05	8"	E	730.95	0.42%	845-846 844-845	119' 113'	SDR-35 PVC SDR-35 PVC
846	4" MH	739.10	R-1772	8"	S	731.63	8"	NE	731.55	0.42%	846-847 845-846	560' 119'	SDR-35 PVC SDR-35 PVC
847	4" MH	738.30	R-1772				8"	N	733.16	0.42%	846-847	360'	SDR-35 PVC
849	4" MH	738.60	R-1772	8"	W	726.96	8"	E	726.86	0.42%	849-850 850-849	378' 373'	SDR-35 PVC SDR-35 PVC
850	4" MH	738.20	R-1772				8"	E	728.55	0.42%	849-850	578'	SDR-35 PVC

LEGEND	
	EXISTING SANITARY SEWER
	EXISTING STORM SEWER
	EXISTING WATER LINE
	PROPOSED SANITARY SEWER
	PROPOSED STORM SEWER
	PROPOSED WATER LINE
	DENOTES FULL DEPTH FLOWABLE BACKFILL

UTILITY CROSSINGS
CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING ON-SITE UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE IS NOT ANY CONFLICTS WITH OTHER UTILITIES, STORM SEWERS OR STREETS. CONFLICTS AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.

- NOTES
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 - CONTRACTOR SHALL INSTALL SERVICE LATERALS TO FUTURE LOTS LOCATIONS NOTED ON PLANS.
 - SEE SHEET C503 FOR SANITARY STRUCTURE DATA TABLE.



DATE	REVISIONS	BY

THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A TESTAMENT OR SURVEY OR A SURVEYOR LOCATION REPORT.

DAVID J. STOEPPELWERTH
REGISTERED
No. 19358
STATE OF INDIANA
PROFESSIONAL ENGINEER

CERTIFIED: 02/04/21
David J. Stoeppelwerth

STOEPPELWERTH

ALWAYS ON
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phone: 317.449.2505 fax: 317.349.5142

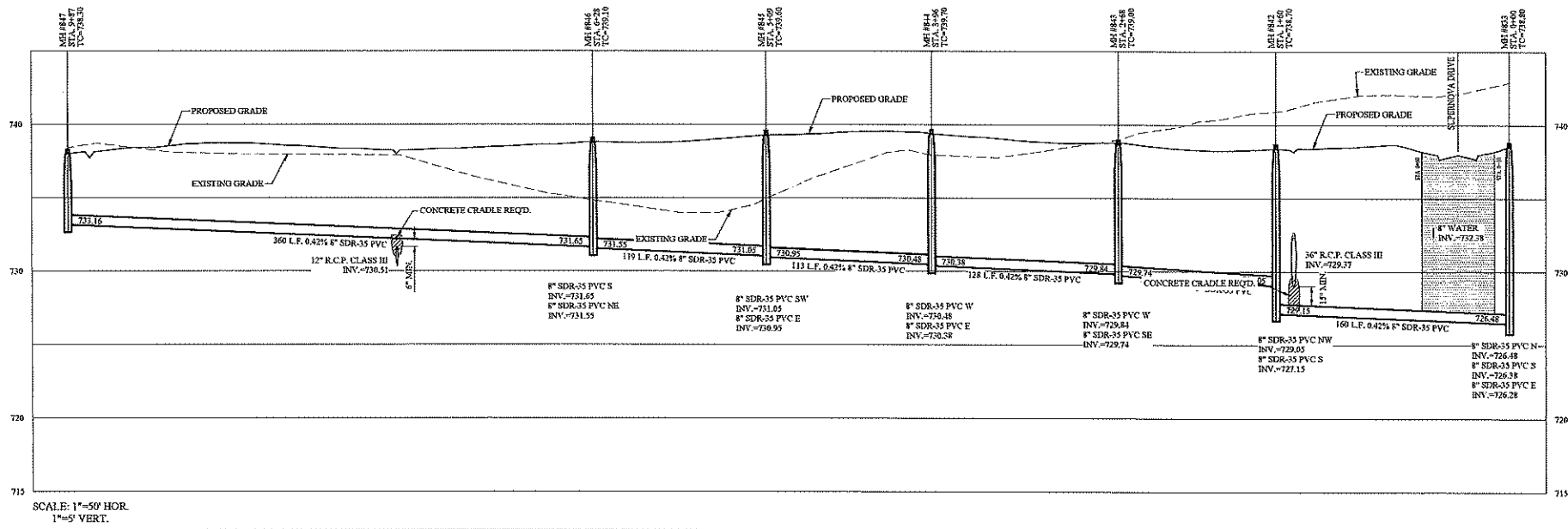
SANITARY SEWER PLAN & PROFILES
THE BLUFFS AT YOUNGS CREEK
SECTION 4

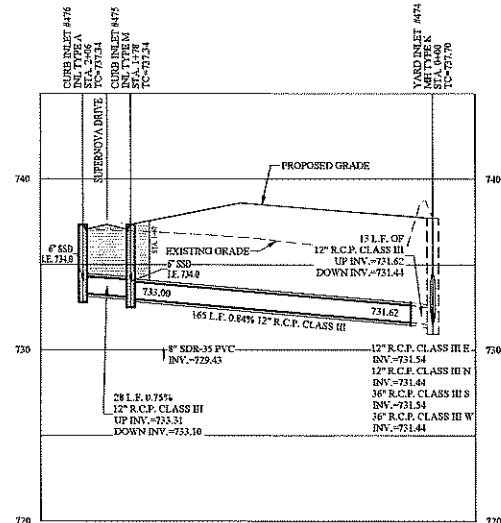
FRANKLIN, FRANKLIN TOWNSHIP
JOHNSON COUNTY, INDIANA

DRAWN BY: AEC
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SHEET NO.
C503

83540MMA-84

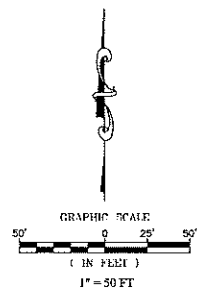




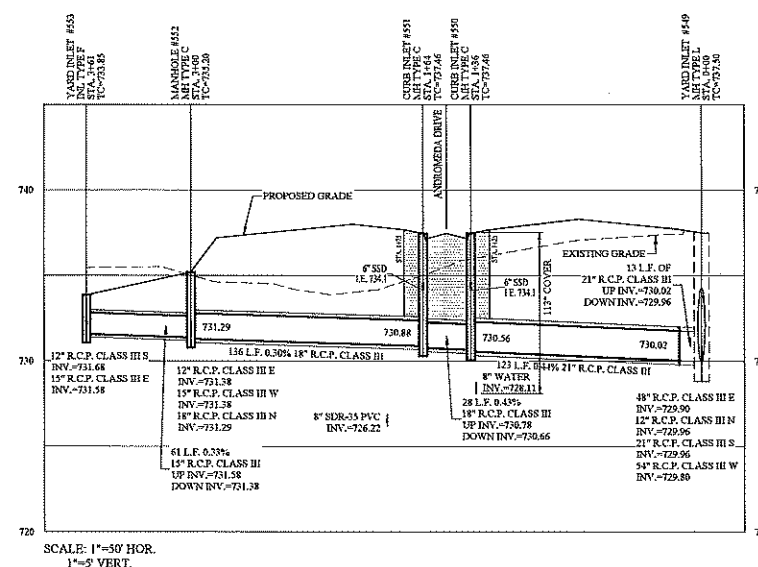
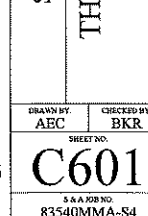
LEGEND	
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	PROPOSED SANITARY SEWER
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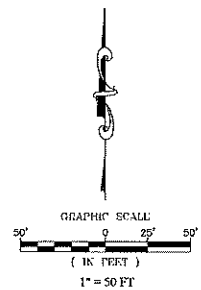
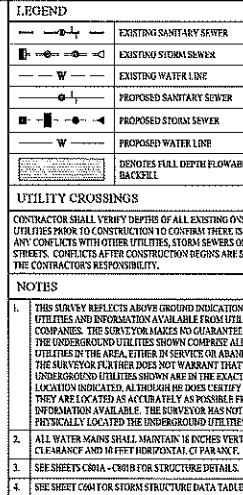
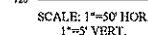
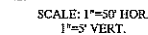
UTILITY CROSSINGS	
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2.	ALL WATER MAINS SHALL MAINTAIN IN INCHES VERTICAL CLEARANCE AND 10 FEET HORIZONTAL CLEARANCE.
3.	SEE SHEETS CHA-1 C-5049 FOR STRUCTURE DETAILS.
4.	SEE SHEET C-604 FOR STORM STRUCTURE DATA TABLE.



STORM SEWER PLAN & PROFILES THE BLUFFS AT YOUNGS CREEK SECTION 4		ALWAYS ON 7945 East 164th Street, Fishers, IN 46038-2295 phone: 317.646.5595 fax: 317.646.5592		THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A REFERENCE FOR CONSTRUCTION OF A PROJECT WITHOUT SURVEY OR A SURVEYOR LOCATION REPORT. CDR CERTIFIED: 02/04/21 <i>David J. Stoppelwerth</i>		DAVID J. STOPPELWERTH REGISTERED No. 19358 STATE OF INDIANA PROFESSIONAL ENGINEER		DATE: 11/14/20 BY:	
DRAWN BY AEC		CHECKED BY BKR		SHEET NO. C600		REVISIONS		BY	





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CERTIFIED: 02/04/21

David J. Stoppelweert

DAVID J. STOPPELWEERT
REGISTERED
No.
19358
STATE OF
INDIANA
PROFESSIONAL ENGINEER

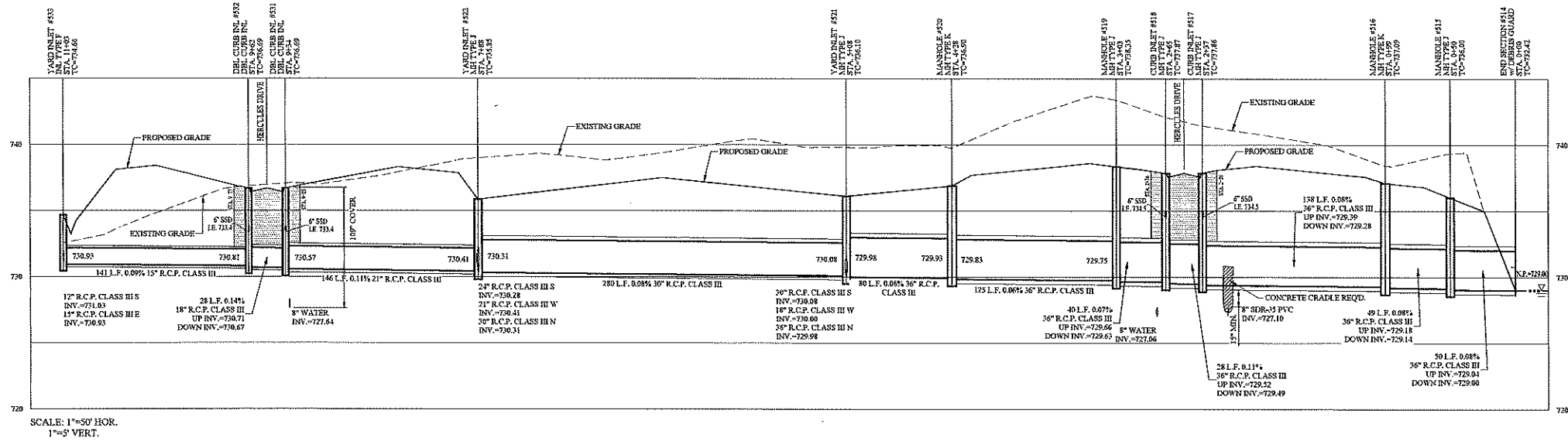
STOEPPELWERTH

ALWAYS ON

7945 East 19th Street, Fishers, IN 46038-2525
phone: 317.469.5953 fax: 317.469.5942

STORM SEWER PLAN & PROFILES		THE BLUFFS AT YOUNGS CREEK SECTION 4		JOHNSON COUNTY, INDIANA
DRAWN BY: AEC		CHECKED BY: BKR		FRANKLIN, FRANKLIN TOWNSHIP
SHEET NO.				
C603				
7 & S. 400 PG. 875540MM & S4				

DRAWN BY: AEC	CHECKED BY: BKR
SHEET NO. C603	
F & A JOB NO. 83540MMA-Sd	



LEGEND

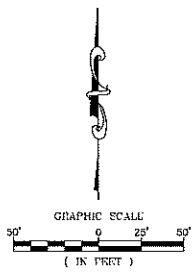
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
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CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING ON-SITE UTILITIES PRIOR TO CONSTRUCTION TO CERTIFY THERE IS NO ANY CONFLICTS WITH OTHER UTILITIES. STORM SEWERS OR STREETS CONFLICTS AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.

NOTES

- THIS SURVEY REFLECTS ABOVE GROUND INDICATIONS OF UTILITIES AND INFORMATION AVAILABLE FROM UTILITY COMPANIES. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR, FURTHER, DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.
- ALL WATER MAINS SHALL MAINTAIN 18 INCHES VERTICAL CLEARANCE AND 10 FEET HORIZONTAL CLEARANCE.
- SEE SHEETS C601A - C601B FOR STRUCTURE DETAILS.



THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A REPLACEMENT OR SUPPLEMENT TO THE PLANS, SPECIFICATIONS, OR SURVEY OR A SURVEYOR LOCATION REPORT.

CERTIFIED: 02/04/21

Daniel J. Stoepelwerth

REGISTERED PROFESSIONAL ENGINEER
No. 19358
STATE OF INDIANA

STOEPPELWERTH

ALWAYS ON

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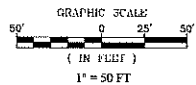
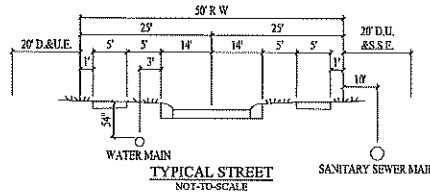
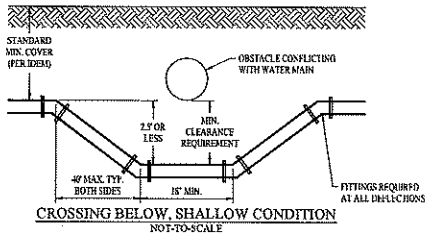
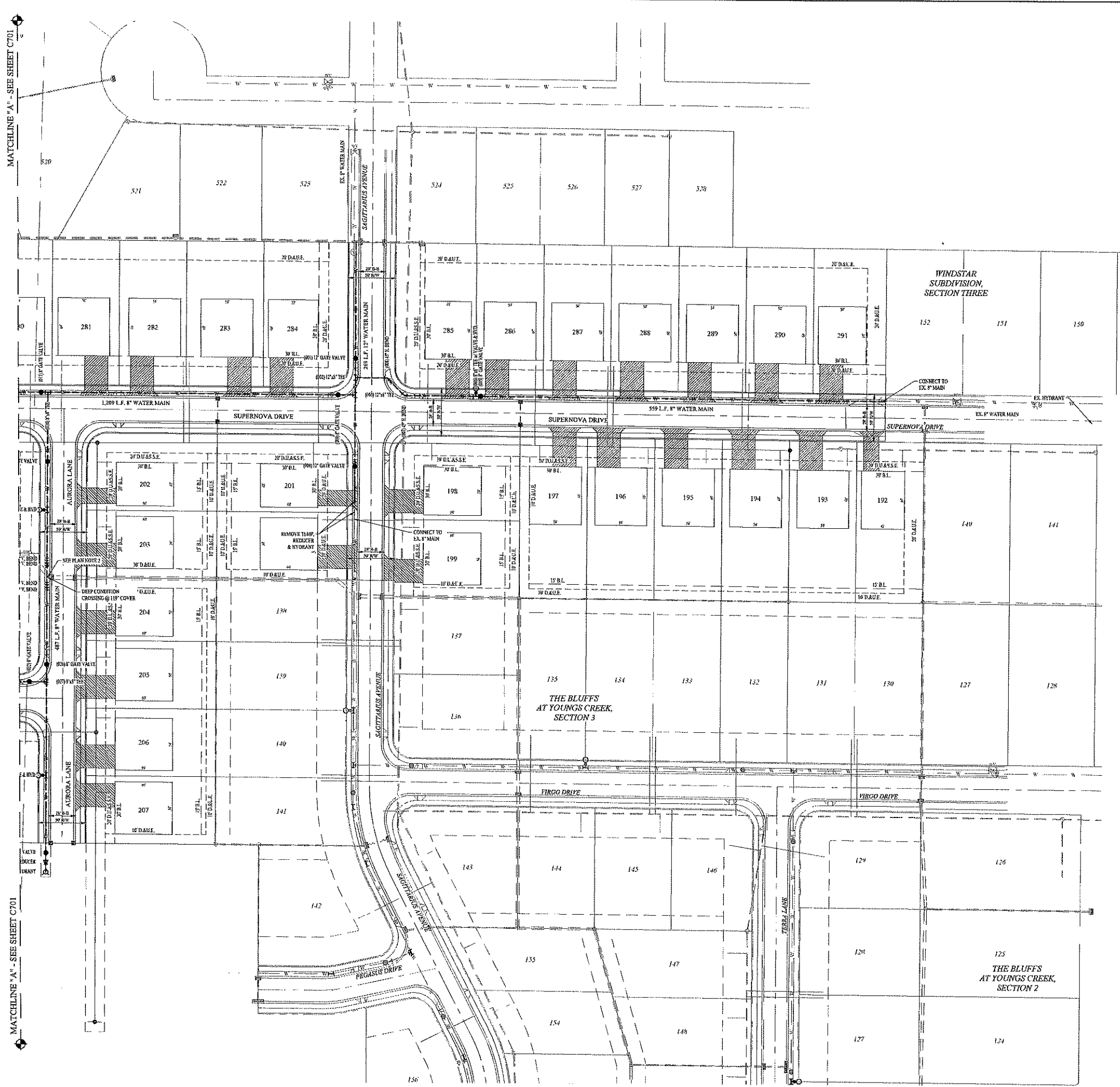
STORM SEWER PLAN & PROFILES

THE BLUFFS AT YOUNGS CREEK

SECTION 4

JOHNSON COUNTY, INDIANA
FRANKLIN, FRANKLIN TOWNSHIP

DRAWN BY: AEC
CHECKED BY: BKR
SHEET NO: C604
S.A.A. 83540MMA-S4



LEGEND	
	EXISTING SANITARY SEWER
	EXISTING STORM SEWER
	EXISTING WATER LINE
	PROPOSED SANITARY SEWER
	PROPOSED STORM SEWER
	PROPOSED WATER LINE
	HYDRANT w/ 6\"/>
	GATE VALVE
	REDUCTOR
	TEE
	BEND, HORIZONTAL
	BEND, VERTICAL

FOR SPECS ON ALL WATER-RELATED MATERIAL, STRUCTURE, ACCESSORY, INSTALLATION, HANDLING, ETC., CONTRACTOR TO REFER TO INDIANA AMERICAN WATER PIPELINE SPECIFICATIONS, LATEST REVISION.

WATER UTILITY INSTALLATION NOTES

1. INSTALLATION OF WATER MAIN, FITTINGS, VALVES, FIRE HYDRANTS, AND APPURTENANCES SHALL BE IN ACCORDANCE WITH INDIANA AMERICAN WATER STANDARDS AND SPECIFICATIONS, LATEST REVISION.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER MAIN PRIOR TO CONSTRUCTION.
3. FOR PVC C900 PIPE INSTALLATION: DRIP PIPE IS REQUIRED. DEFLECTION OF PIPE JOINTS AND BENDING OF PIPES ARE NOT PERMITTED. ALL ANGLES SHALL BE MADE WITH PROPER FITTINGS. WHEN RESTRAINT OF PIPE-TO-PIPE JOINTS ARE REQUIRED, ALL JOINTS SHALL BE RESTRAINED WITH EXTERNAL SPLIT SEPARATED RESTRAINT HARDNESSES. SELECT FILL MATERIAL REQUIRED FOR BEDDING AND EMBANKMENT REGARDLESS OF PIPE'S PROXIMITY TO PAVEMENT.
4. FOR DUCTILE IRON PIPE INSTALLATION: THICKNESS CLASS 52 FOR TYPICAL DISTRIBUTION MAINS 12-INCH NOMINAL SIZE AND SMALLER. WHEN RESTRAINT OF PIPE-TO-PIPE JOINTS ARE REQUIRED, PUSH-ON RESTRAINING GASKETS WITH INTEGRAL STAINLESS STEEL LOCKING SEGMENTS ARE PERMITTED ON PIPE-TO-PIPE CONNECTIONS 12-INCH NOMINAL SIZE AND SMALLER ONLY. PIPE-TO-PIPE CONNECTIONS GREATER THAN 12-INCH NOMINAL SIZE SHALL BE RESTRAINED PER SPECIFICATION SECTION 1205.
5. ENCASE ALL DUCTILE IRON PIPING, DUCTILE IRON FITTINGS, VALVES, HYDRANTS, AND ALL OTHER METALLIC APPURTENANCES IN 12IN. POLYETHYLENE.
6. ALL FIRE HYDRANT LATERALS SHALL BE DUCTILE IRON PIPE CLASS 52.
7. ALL 4\"/>
8. ALL FITTINGS SHALL BE RESTRAINED USING AN RETAINER GI ANDS OR POURED CONCRETE THRUST BLOCKS.
9. COPPER-CLAD STEEL TRACER WIRE REQUIRED ON INSTALLATION OF ALL PIPE. TRACER WIRE SHALL BE TIED TO PIPE OR POLYETHYLENE ENCASMENT AT A MINIMUM SPACING OF 10-FEET. SPLICES SHALL BE ENCASED IN WATERPROOF CONNECTORS. CONTINUITY SHALL BE TESTED AFTER COMPLETION OF BACKFILL.
10. SELECT FILL MATERIAL REQUIRED FOR FINAL BACKFILL WHEN WITHIN 5-FEET OF PAVEMENT PER SPECIFICATION SECTION 0210.
11. MAINTAIN THE REQUIRED 18-FEET OF HORIZONTAL SEPARATION AND 18-INCHES OF VERTICAL SEPARATION FROM SANITARY AND STORM SEWERS. MAINTAIN 5-FEET OF HORIZONTAL SEPARATION FROM SANITARY AND STORM STRUCTURES. SEE 327 IAC 9-2.2-5 OF THE INDIANA ADMINISTRATIVE CODE FOR MORE INFORMATION.
12. MAINTAIN MINIMUM COVER DEPTH OF 54\"/>

PLAN NOTES

1. WATER MAIN PIPE SHALL BE PVC C-900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52. THE PIPE MATERIAL AND PRESSURE CLASS WILL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON COST OF EACH AT THAT TIME.
2. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 2' (24") OF HORIZONTAL SEPARATION FROM THE OUTSIDE OF THE STORM STRUCTURE AND CENTER A FULL LENGTH OF 20' OF PVC OR DUCTILE IRON PIPE OR SAID STORM STRUCTURE.

WATER MAIN PIPE TABLE		
SIZE	MATERIAL	LENGTH
12"	PVC C-900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52	249 L.F.
8"	PVC C-900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52	4,128 L.F.
6"	D.I. THICKNESS CLASS 52 LATERAL FOR TEMP. HYDRANT	39 L.F.
TOTAL LENGTH		4,427 L.F.



STOEPPELWERTH

WATER PLAN

THE BLUFFS AT YOUNGS CREEK

SECTION 4

JOHNSON COUNTY, INDIANA

FRANKLIN, FRANKLIN TOWNSHIP

DAVID J. STOEPPELWERTH
REGISTERED
No. 19358
STATE OF INDIANA
PROFESSIONAL ENGINEER

CERTIFIED: 02/04/21
David J. Stoeppelwerth

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CHECKED BY: BKR
SHEET NO.
C700
S.A. 83540MMA-54040MMA-54

THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A RETACEMENT OR ORIGINAL BOUNDARY SURVEY. A ROUTE REPORT ON A SURVEY OR LOCATION REPORT.

REVISIONS

DATE

MARK

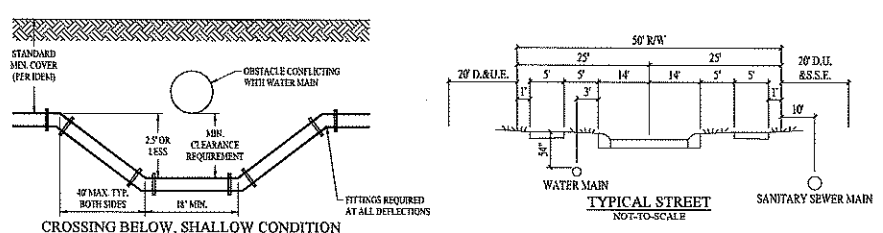
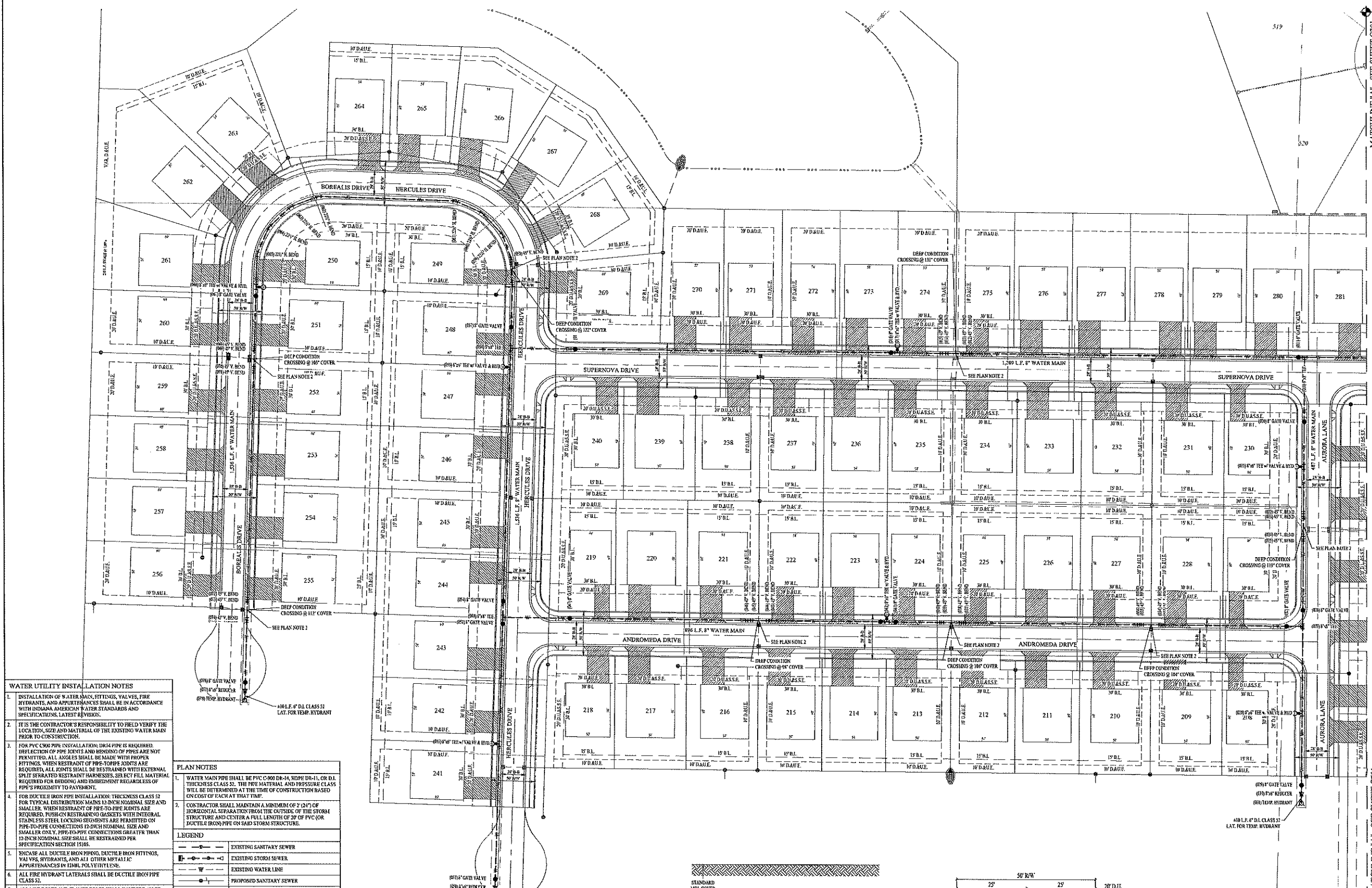
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Modified By: February 8, 2021 1:08:53 PM / eason
Plotted By: February 8, 2021 1:13:09 PM / Erik Carson

- WATER UTILITY INSTALLATION NOTES**
1. INSTALLATION OF WATER MAIN, FITTINGS, VALVES, FIRE HYDRANTS, AND APPURTENANCES SHALL BE IN ACCORDANCE WITH INDIANA AMERICAN WATER STANDARDS AND SPECIFICATIONS, LATEST REVISION.
 2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER MAIN PRIOR TO CONSTRUCTION.
 3. FOR PVC C900 PIPE INSTALLATION: DR14 PIPE IS REQUIRED. DEFLECTION OF PIPE JOINTS AND BENDING OF PIPES ARE NOT PERMITTED. ALL JOINTS SHALL BE MADE WITH PROPER FITTINGS. WHEN RESTRAINT OF TWO-TIME JOINTS ARE REQUIRED, ALL JOINTS SHALL BE RESTRAINED WITH EXTERNAL SPLIT SEPARATED RESTRAINT HARNESSSES. SELECT FILL MATERIAL REQUIRED FOR BEDDING AND EMBEDMENT REGARDLESS OF PIPE'S PROXIMITY TO PAVEMENT.
 4. FOR DUCTILE IRON PIPE INSTALLATION: THICKNESS CLASS 52 FOR TYPICAL DISTRIBUTION MAINS 12-INCH NOMINAL SIZE AND SMALLER. WHEN RESTRAINT OF PIPE-TO-PIPE JOINTS ARE REQUIRED, PUSH ON RESTRAINING GASKETS WITH INTEGRAL STAINLESS STEEL LOCKING SEGMENTS ARE PERMITTED ON PIPE-TO-PIPE CONNECTIONS 12-INCH NOMINAL SIZE AND SMALLER ONLY. PIPE-TO-PIPE CONNECTIONS GREATER THAN 12-INCH NOMINAL SIZE SHALL BE RESTRAINED PER SPECIFICATION SECTION 15165.
 5. EXPOSE ALL DUCTILE IRON PIPE, DUCTILE IRON FITTINGS, VALVES, HYDRANTS, AND ALL OTHER METALLIC APPURTENANCES IN 12MM POLYETHYLENE.
 6. ALL FIRE HYDRANT LATERALS SHALL BE DUCTILE IRON PIPE CLASS 52.
 7. ALL NUT-BOLTS AND FLANGE BOLTS SHALL HAVE NYLON OR FLUOROKOTONE CORROSION RESISTANT COATING.
 8. ALL FITTINGS SHALL BE RESTRAINED USING NO RETAINER GLANDS OR POLISHED CONCRETE THRUST BLOCKS.
 9. COPPER-CLAD STEEL TRACER WIRE REQUIRED ON INSTALLATION OF ALL PIPE. TRACER WIRE SHALL BE TAPED TO PIPE OR POLYETHYLENE ENCASUREMENT AT A MINIMUM SPACING OF 16-FOOT. SPLICES SHALL BE PROTECTED IN WATERPROOF CONNECTORS. CONTINUITY SHALL BE TESTED AFTER COMPLETION OF BACKFILL.
 10. SELECT FILL MATERIAL REQUIRED FOR FINAL BACKFILL WHEN WITHIN 5-FEET OF PAVEMENT PER SPECIFICATION SECTION 02101.
 11. MAINTAIN THE REQUIRED 10-FOOT OF HORIZONTAL SEPARATION AND 18-INCHES OF VERTICAL SEPARATION FROM SANITARY AND STORM SEWERS. MAINTAIN 4-FOOT OF HORIZONTAL SEPARATION FROM SANITARY AND STORM STRUCTURES. SEE 12-14C-8.1.3.9 OF THE INDIANA ADMINISTRATIVE CODE FOR MORE INFORMATION.
 12. MAINTAIN MINIMUM COVER DEPTH OF 5' AND A MAXIMUM OF 54'-24".

- PLAN NOTES**
1. WATER MAIN PIPE SHALL BE PVC C900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52. THE PIPE MATERIAL AND PRESSURE CLASS WILL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON COST OF EACH AT THAT TIME.
 2. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 2' (24") OF HORIZONTAL SEPARATION FROM THE OUTSIDE OF THE STORM STRUCTURE AND CENTER A FULL LENGTH OF 30' OF PVC (OR DUCTILE IRON) PIPE ON EACH STORM STRUCTURE.
- LEGEND**
- | | |
|---|-------------------------|
| — | EXISTING SANITARY SEWER |
| — | EXISTING STORM SEWER |
| — | EXISTING WATER LINE |
| — | PROPOSED SANITARY SEWER |
| — | PROPOSED STORM SEWER |
| — | PROPOSED WATER LINE |
| ○ | HYDRANT w/ 6" VALVE |
| ● | GATE VALVE |
| □ | REDUCER |
| + | TEE |
| ⋈ | BEND, HORIZONTAL |
| ⋈ | BEND, VERTICAL |
- FOR SPECS ON ALL WATER-RELATED MATERIAL, STRUCTURE, ACCESSORY, INSTALLATION, HANDLING, ETC., CONTRACTOR TO REFER TO INDIANA AMERICAN WATER PIPELINE SPECIFICATIONS, LATEST REVISION.

SIZE	MATERIAL	LENGTH
12"	PVC C900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52	269 L.F.
8"	PVC C900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52	4126 L.F.
6"	D.I. THICKNESS CLASS 52 LATERAL FOR TEMP. HYDRANT	30 L.F.
TOTAL LENGTH		4427 L.F.



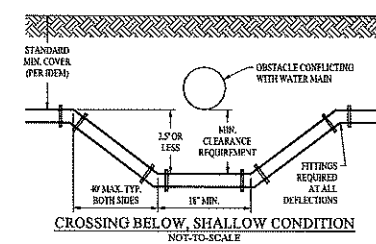
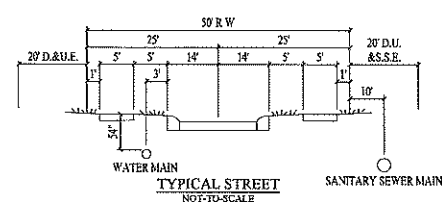
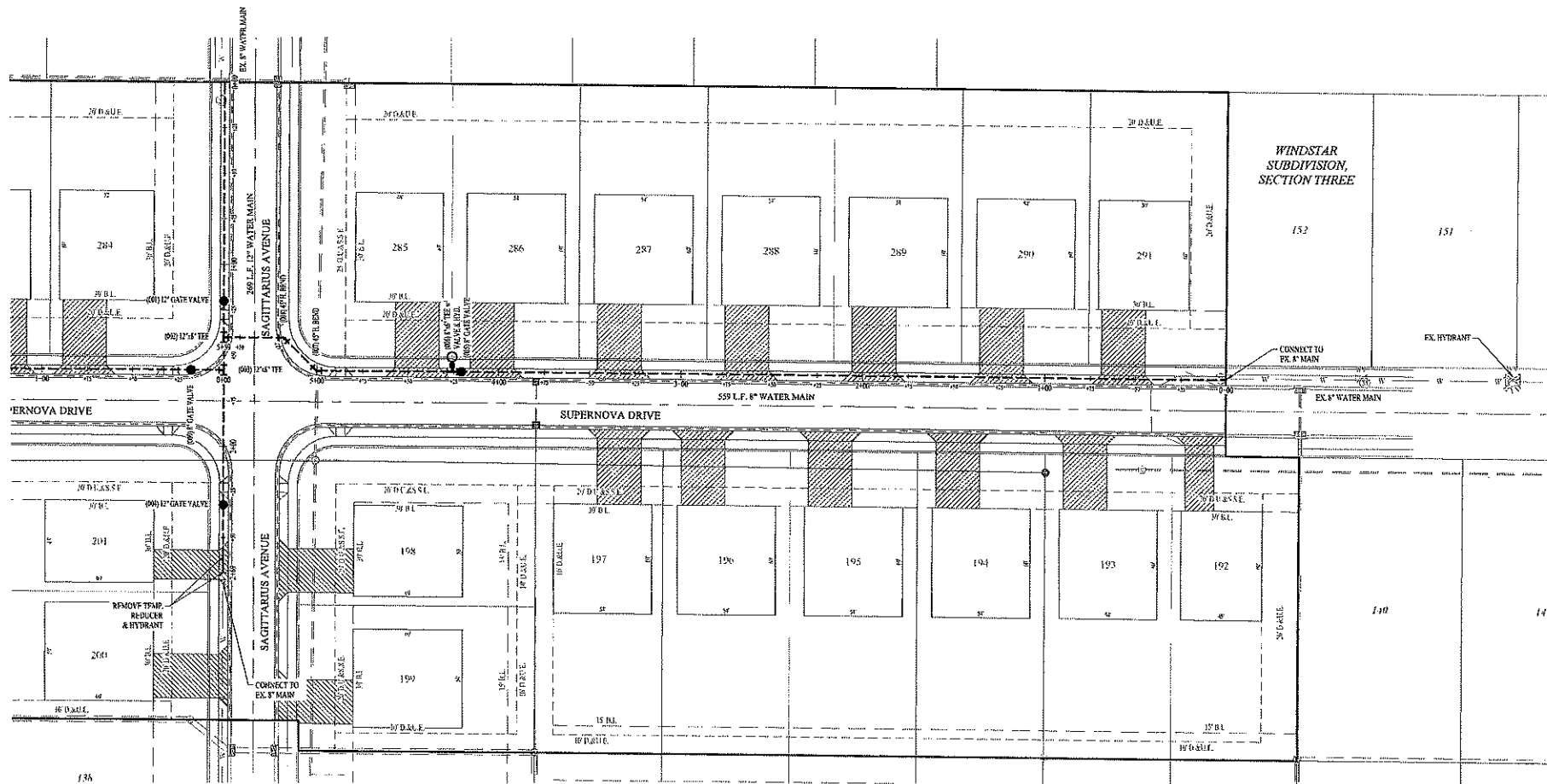
THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A REFERENCE OR SURVEY OR A SURVEY LOCATION REPORT.

CERTIFIED 02/04/21
Daniel J. Stoeppelwerth
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WATER PLAN
THE BLUFFS AT YOUNGS CREEK
SECTION 4
JOHNSON COUNTY, INDIANA
FRANKLIN TOWNSHIP

DRAWN BY: AEC
CHECKED BY: BKR
SHEET NO: C701
8.5 A FINISH
83340MMA-S4



LEGEND	
	EXISTING SANITARY SEWER
	EXISTING STORM SEWER
	EXISTING WATER LINE
	PROPOSED SANITARY SEWER
	PROPOSED STORM SEWER
	PROPOSED WATER LINE
	HYDRANT w/ 4" VALVE
	GATE VALVE
	REDUCER
	TEE
	BEND, HORIZONTAL
	BEND, VERTICAL

FOR SPECS ON ALL WATER-RELATED MATERIAL, STRUCTURE, ACCESSORY, INSTALLATION, HANDLING, ETC., CONTRACTOR TO REFER TO INDIANA AMERICAN WATER PIPELINE SPECIFICATIONS, LATEST REVISION.

WATER UTILITY INSTALLATION NOTES

1. INSTALLATION OF WATER MAIN, FITTINGS, VALVES, FIRE HYDRANTS, AND APPURTENANCES SHALL BE IN ACCORDANCE WITH INDIANA AMERICAN WATER STANDARDS AND SPECIFICATIONS, LATEST REVISION.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION, SIZE, AND MATERIAL OF THE EXISTING WATER MAIN PRIOR TO CONSTRUCTION.
3. FOR PVC C-900 PIPE INSTALLATION: DRAIN PIPE IS REQUIRED. DEFLECTION OF PIPE JOINTS AND BENDING OF PIPES ARE NOT PERMITTED. ALL ANGLES SHALL BE MADE WITH PROPER FITTINGS. WHEN RESTRAINT OF PIPE-TO-PIPE JOINTS ARE REQUIRED, ALL JOINTS SHALL BE RESTRAINED WITH EXTERNAL SPLIT RESTRAINED RESTRAINT HARNESS. SELECT FILL MATERIAL REQUIRED FOR BEDDING AND SUBDRAINAGE REGARDLESS OF PIPE'S PROXIMITY TO PAVEMENT.
4. FOR DUCTILE IRON PIPE INSTALLATION: THICKNESS CLASS 51 FOR TYPICAL DISTRIBUTION MAINS 12-INCH NOMINAL SIZE AND SMALLER. WHEN RESTRAINT OF PIPE-TO-PIPE JOINTS ARE REQUIRED, PUSH-ON RESTRAINED GASKETS WITH INTERNAL STAINLESS STEEL LOCKING SEGMENTS ARE PERMITTED ON PIPE-TO-PIPE CONNECTIONS 12-INCH NOMINAL SIZE AND SMALLER ONLY. PIPE-TO-PIPE CONNECTIONS GREATER THAN 12-INCH NOMINAL SIZE SHALL BE RESTRAINED PER SPECIFICATION SECTION 15106.
5. ENCASE ALL DUCTILE IRON PIPING, DUCTILE IRON FITTINGS, VALVES, HYDRANTS, AND ALL OTHER METALLIC APPURTENANCES IN 12-INCH POLYETHYLENE.
6. ALL FIRE HYDRANT LATERALS SHALL BE DUCTILE IRON PIPE CLASS 52.
7. ALL JOINT BOLTS AND FLANGE BOLTS SHALL HAVE NYLON OR FLUOROKOTE 41 CORROSION RESISTANT COATING.
8. ALL FITTINGS SHALL BE RESTRAINED USING JO RESTRAINT GLANDS OR POURED CONCRETE THRUST BLOCKS.
9. COPPER-CLAD STEEL TRACER WIRE REQUIRED ON INSTALLATION OF ALL PIPE. TRACER WIRE SHALL BE TIED TO PIPE OR POLYETHYLENE ENCASMENT AT A MINIMUM SPACING OF 10-FOOT. SPLICES SHALL BE ENCASED IN WATERPROOF CONNECTIONS. CONTINUITY SHALL BE TESTED AFTER COMPLETION OF BACKFILL.
10. SELECT FILL MATERIAL REQUIRED FOR FINAL BACKFILL WHEN WITHIN 5-FOOT OF PAVEMENT PER SPECIFICATION SECTION 02210.
11. MAINTAIN THE REQUIRED 10-FOOT OF HORIZONTAL SEPARATION AND 18-INCHES OF VERTICAL SEPARATION FROM SANITARY AND STORM SEWERS. MAINTAIN 6-FOOT OF HORIZONTAL SEPARATION FROM SANITARY AND STORM STRUCTURES. SEE 317 IAC 8.2.2-9 OF THE INDIANA ADMINISTRATIVE CODE FOR MORE INFORMATION.
12. MAINTAIN MINIMUM COVER DEPTH OF 5' AND A MAXIMUM OF 5'4"24".

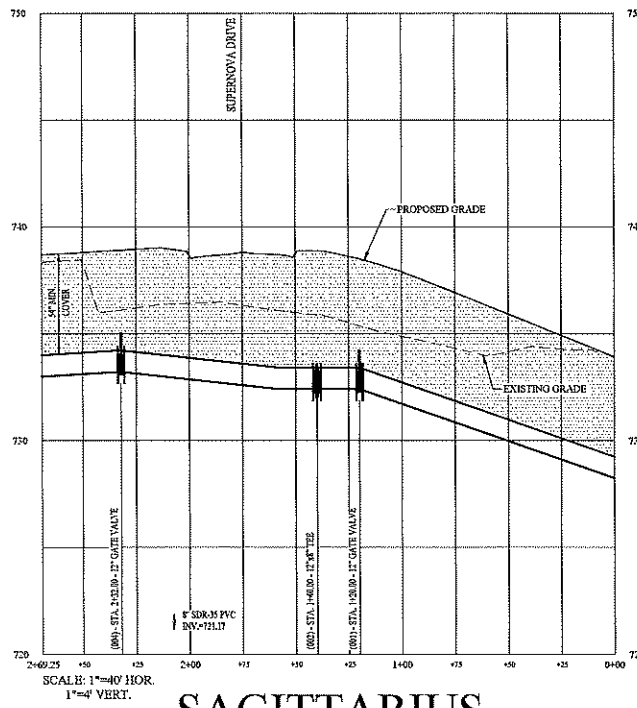
PLAN NOTES

1. WATER MAIN PIPE SHALL BE PVC C-900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52. THE PIPE MATERIAL AND PRESSURE CLASS WILL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON COST OF EACH AT THAT TIME.
2. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 3' (24") OF HORIZONTAL SEPARATION FROM THE OUTSIDE OF THE STORM STRUCTURE AND CENTER A FULL LENGTH OF 20' OF PVC (OR DUCTILE IRON) PIPE ON SAID STORM STRUCTURE.

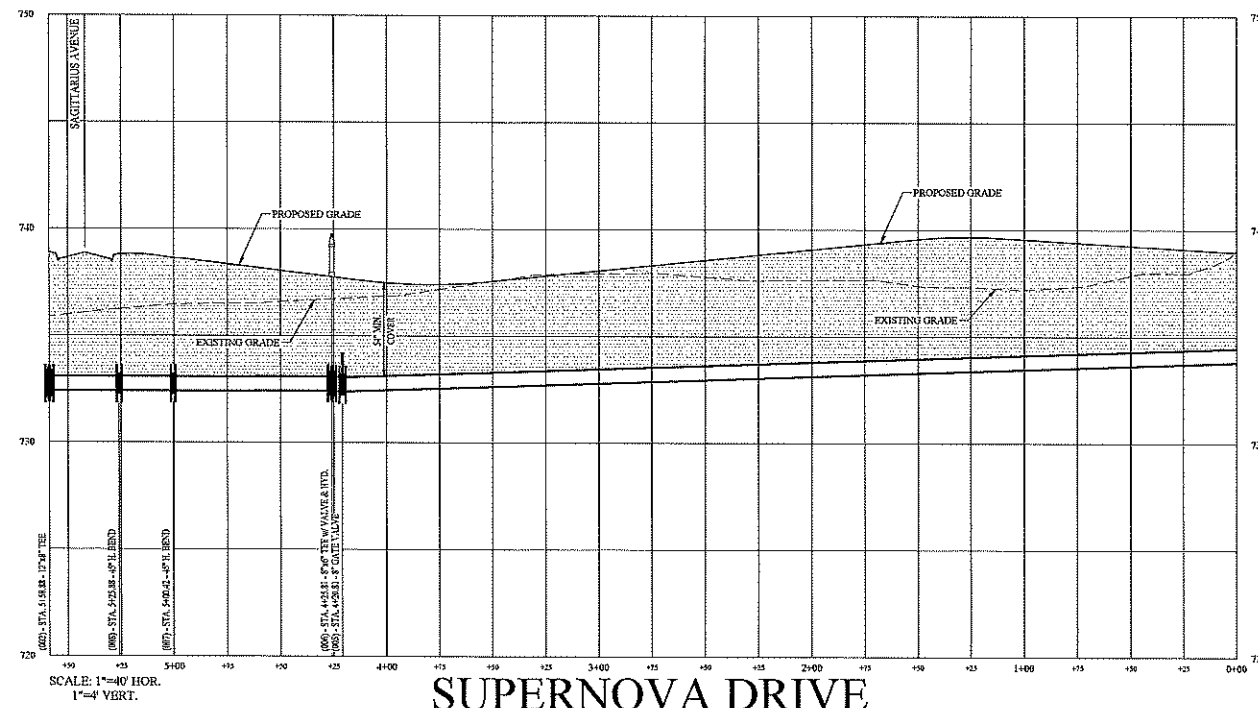
WATER MAIN PIPE TABLE		
SIZE	MATERIAL	LENGTH
12"	PVC C-900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52	269 L.F.
8"	PVC C-900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52	4,128 L.F.
6"	D.I. THICKNESS CLASS 52 LATERAL FOR TEMP. HYDRANT	26 L.F.
TOTAL LENGTH		4,427 L.F.

GRAPHIC SCALE: 1" = 40 FT

1" = 40 FT



SAGITTARIUS AVENUE



SUPERNOVA DRIVE



STOEPPELWERTH

WATER PLAN & PROFILES

THE BLUFFS AT YOUNGS CREEK

SECTION 4

FRANKLIN, FRANKLIN TOWNSHIP

DAVID L. STOEPPELWERTH

REGISTERED PROFESSIONAL ENGINEER

No. 19358

STATE OF INDIANA

CERTIFIED: 02/04/21

David L. Stoeppelwerth

7945 East 10th Street, Indianapolis, IN 46235-2505

Phone: 317.246.2205 Fax: 317.246.5742

DRAWN BY: AEC

CHECKED BY: BKR

SHRINK NO.

C702

S.A.A. PROJECT NO.

83540MMA-S4

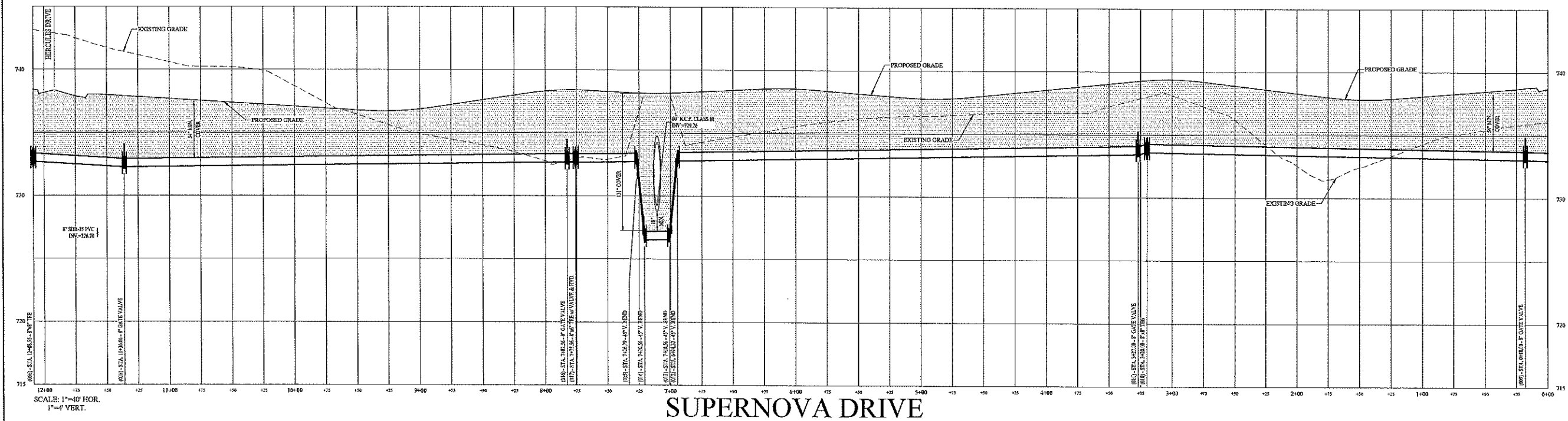
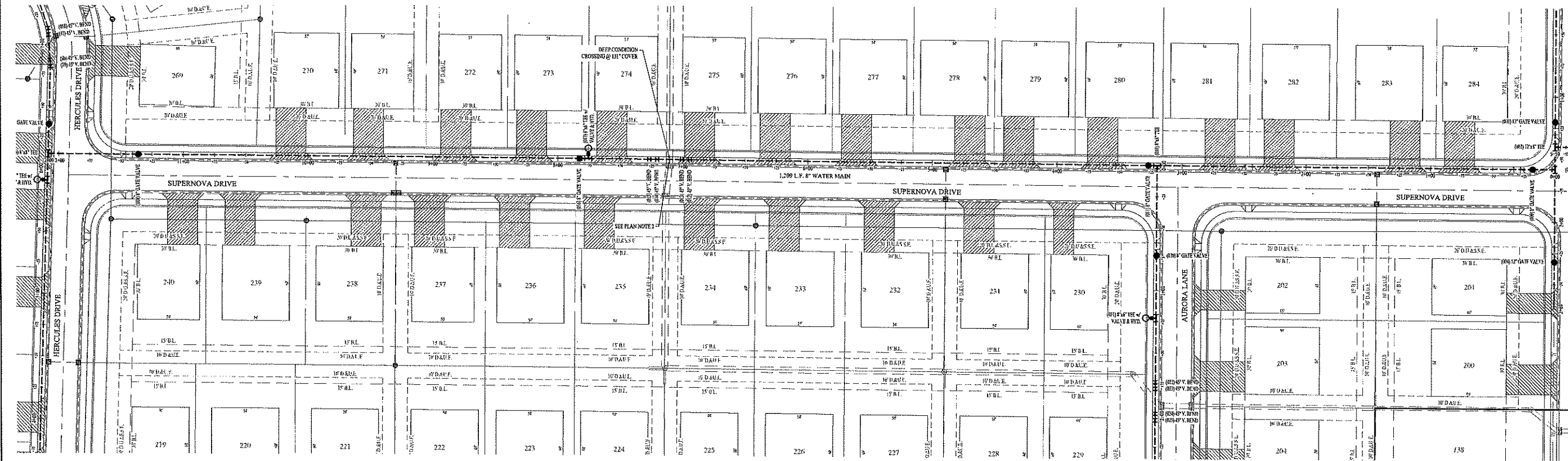
REVISIONS

DATE

NAME

BY

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Modified / By:
Plotted / By:



SUPERNOVA DRIVE



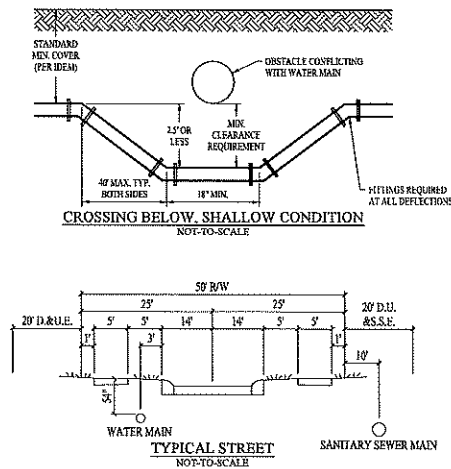
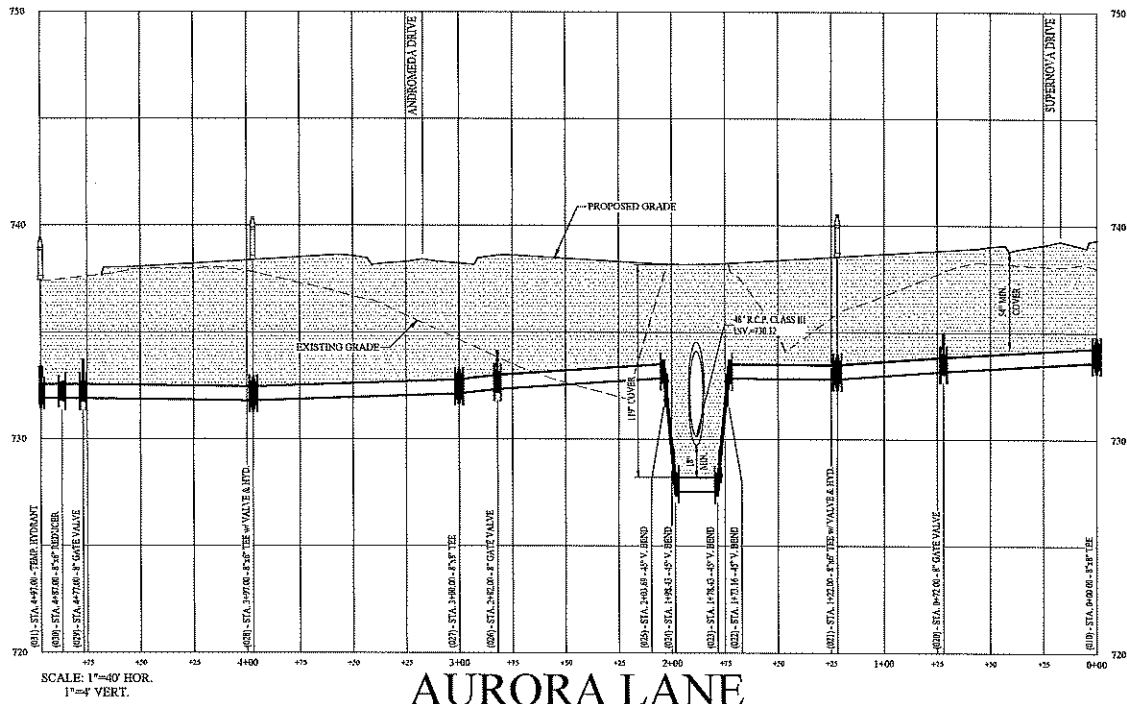
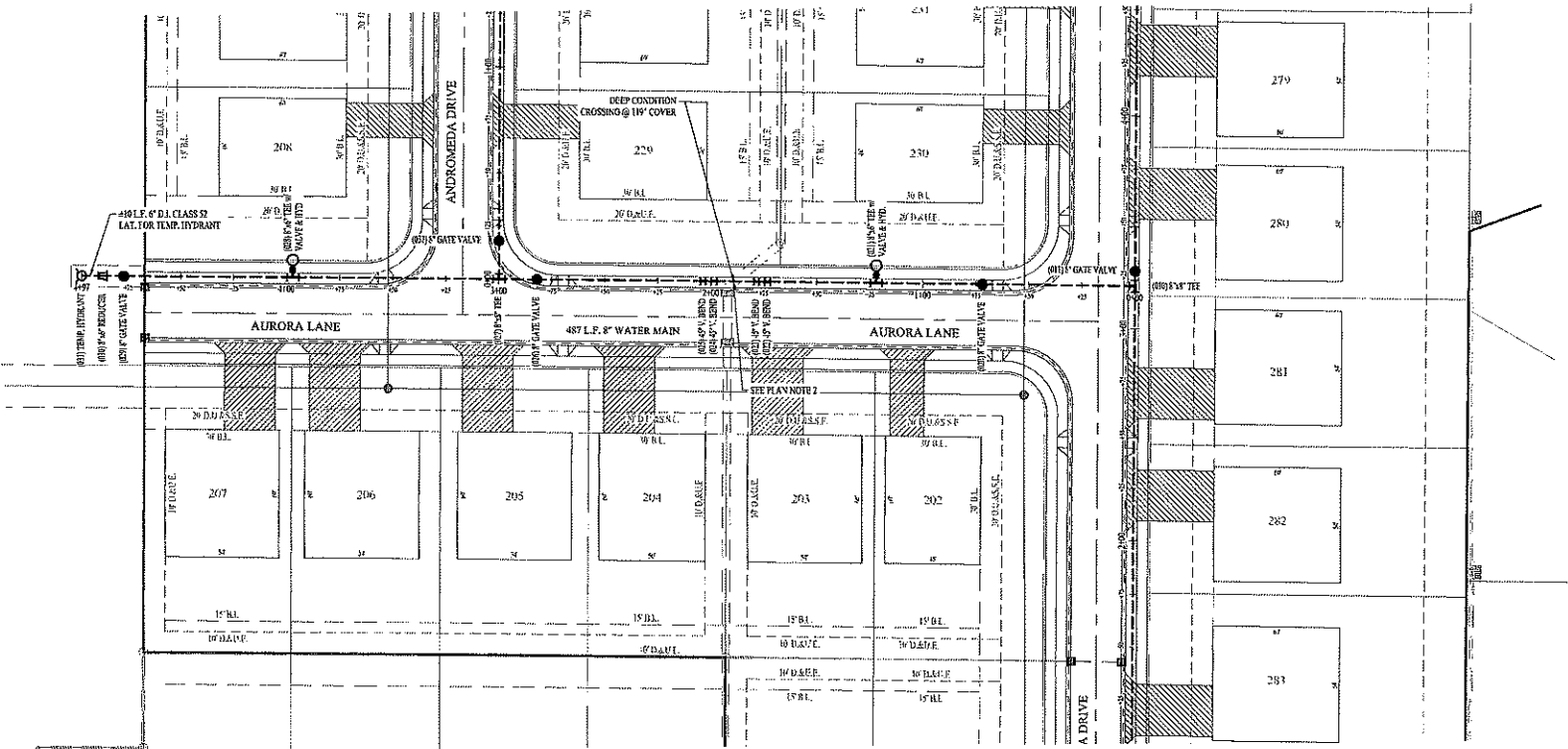
STOEPPELWERTH
WATER PLAN & PROFILES
THE BLUFFS AT YOUNGS CREEK
SECTION 4
FRANKLIN, FRANKLIN TOWNSHIP, JOHNSON COUNTY, INDIANA

DAVID J. STOEPPELWERTH
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PROFESSIONAL ENGINEER
CERTIFIED 02/04/21
Daryl J. Stoeppelwerth

THIS DRAWING IS NOT INTENDED TO BE
AN ORIGINAL SURVEY OR A SURVEY OF A ROUTE
REPORT.

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phone: 317.492.2593 fax: 317.492.5942

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CHECKED BY: BKR
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S.A.A. KEY NO. 83540MMA-S4



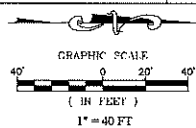
LEGEND	
	EXISTING SANITARY SEWER
	EXISTING STORM SEWER
	EXISTING WATER LINE
	PROPOSED SANITARY SEWER
	PROPOSED STORM SEWER
	PROPOSED WATER LINE
	HYDRANT w/ 6\"/>
	GATE VALVE
	REDUCER
	TEE
	BEND, HORIZONTAL
	BEND, VERTICAL

- WATER UTILITY INSTALLATION NOTES
1. INSTALLATION OF WATER MAIN, FITTINGS, VALVES, FIRE HYDRANTS, AND APPURTENANCES SHALL BE IN ACCORDANCE WITH INDIANA AMERICAN WATER STANDARDS AND SPECIFICATIONS, LATEST REVISION.
 2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER MAIN PRIOR TO CONSTRUCTION.
 3. FOR PVC C-900 PIPE INSTALLATION: DR14 PIPE IS REQUIRED. DEFLECTION OF PIPE JOINTS AND BENDING OF PIPES ARE NOT PERMITTED. ALL ANGLES SHALL BE MADE WITH PROPER FITTINGS. WHEN RESTRAINT OF PIPE-TO-PIPE JOINTS ARE REQUIRED, ALL JOINTS SHALL BE RESTRAINED WITH EXTERNAL SPLIT SEPARATED RESTRAINT THUSSESS. SELECT FILL MATERIAL REQUIRED FOR BEDDING AND EMBEDMENT REGARDLESS OF PIPE'S PROXIMITY TO PAVEMENT.
 4. FOR DUCTILE IRON PIPE INSTALLATION: THICKNESS CLASS 52 FOR TYPICAL DISTRIBUTION MAINS 12-INCH NOMINAL SIZE AND SMALLER. WHEN RESTRAINT OF PIPE-TO-PIPE JOINTS ARE REQUIRED, PUSH-ON RESTRAINED GASKETS WITH INTEGRAL STAINLESS STEEL LOCKING SEGMENTS ARE PERMITTED ON PIPE-TO-PIPE CONNECTIONS 12-INCH NOMINAL SIZE AND SMALLER ONLY. PIPE-TO-PIPE CONNECTIONS GREATER THAN 12-INCH NOMINAL SIZE SHALL BE RESTRAINED PER SPECIFICATION SECTION 15105.
 5. ENCASE ALL DUCTILE IRON PIPING, DUCTILE IRON FITTINGS, VALVES, HYDRANTS, AND ALL OTHER METALLIC APPURTENANCES IN 12MIL POLYETHYLENE.
 6. ALL FIRE HYDRANT LATERALS SHALL BE DUCTILE IRON PIPE CLASS 52.
 7. ALL NUT-BOLTS AND FLANGE BOLTS SHALL HAVE NYLON OR FLUOROKOTE 21 CORROSION RESISTANT COATING.
 8. ALL FITTINGS SHALL BE RESTRAINED USING AN RETAINER OR ANTS OR POURED CONCRETE THRUST BLOCKS.
 9. COPPER CLAD STEEL TRACER WIRE REQUIRED ON INSTALLATION OF ALL PIPE TRACER WIRE SHALL BE TIED TO PIPE OR POLYETHYLENE ENCASUREMENT AT A MINIMUM SPACING OF 10-FEET. SPLICES SHALL BE ENCASED IN WATERPROOF CONNECTORS. CONTINUITY SHALL BE TESTED AFTER COMPLETION OF BACKFILL.
 10. SELECT FILL MATERIAL REQUIRED FOR FINAL BACKFILL WHEN WITHIN 5-FEET OF PAVEMENT PER SPECIFICATION SECTION 0210.
 11. MAINTAIN THE REQUIRED 10-FEET OF HORIZONTAL SEPARATION AND 18-INCHES OF VERTICAL SEPARATION FROM SANITARY AND STORM SEWERS. MAINTAIN 5-FEET OF HORIZONTAL SEPARATION FROM SANITARY AND STORM STRUCTURES. SEE 17 IAC 8.3.2-9 OF THE INDIANA ADMINISTRATIVE CODE FOR MORE INFORMATION.
 12. MAINTAIN MINIMUM COVER DEPTH OF 54\"/>

FOR SPECS ON ALL WATER-RELATED MATERIAL, STRUCTURE, ACCESSORY, INSTALLATION, HANDLING, ETC., CONTRACTOR TO REFER TO INDIANA AMERICAN WATER PIPELINE SPECIFICATIONS, LATEST REVISION.

- PLAN NOTES
1. WATER MAIN PIPE SHALL BE PVC C-900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52. THE PIPE MATERIAL AND PRESSURE CLASS WILL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON COST OF EACH AT THAT TIME.
 2. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 2' (24\") OF HORIZONTAL SEPARATION FROM THE OUTSIDE OF THE STORM STRUCTURE AND CENTER A FULL LENGTH OF 30' OF PVC (OR DUCTILE IRON) PIPE ON SAID STORM STRUCTURE.

WATER MAIN PIPE TABLE		
SIZE	MATERIAL	LENGTH
12"	PVC C-900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52	269 L.F.
8"	PVC C-900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52	4,124 L.F.
6"	D.I. THICKNESS CLASS 52 LATERAL FOR TEMP. HYDRANT	10 L.F.
TOTAL LENGTH		4,403 L.F.



STOEPELWERTH

WATER PLAN & PROFILES

THE BLUFFS AT YOUNGS CREEK

SECTION 4

JOHNSON COUNTY, INDIANA

FRANKLIN, FRANKLIN TOWNSHIP

NO. 19358

STATE OF INDIANA

PROFESSIONAL ENGINEER

CERTIFIED 02/04/21

David J. Stoepelwerth

DRAWN BY: AEC

CHECKED BY: BKR

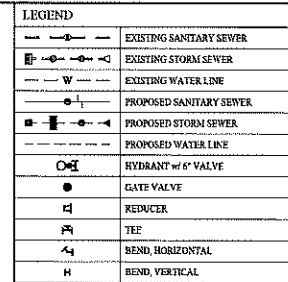
SHEET NO. C704

83540MMA-S4

DATE: 8/2/2021

NAME: Erik Carson

REVISIONS:



FOR SPECS ON ALL WATER-RELATED MATERIAL, STRUCTURE, ACCESSORY, INSTALLATION, HANDLING, ETC., CONTRACTOR TO REFER TO INDIANA AMERICAN WATER PIPELINE SPECIFICATIONS, LATEST REVISION.


WATER UTILITY INSTALLATION NOTES

1. INSTALLATION OF WATER MAIN, FITTINGS, VALVES, FIRE HYDRANTS, AND APPURTENANCES SHALL BE IN ACCORDANCE WITH THE CITY OF CHICAGO STANDARDS AND SPECIFICATIONS, LATEST REVISION.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER MAIN PRIOR TO CONSTRUCTION.
3. FOR PVC C900 PIPE INSTALLATION: DRAIN PIPE IS REQUIRED. DETENTION OF PIPE JOINTS AND BENDING OF PIPES ARE NOT PERMITTED. ALL ANGLES SHALL BE MADE WITH PROPER FITTINGS. WHEN RESTRAINT OF PIPE JOINTS AND BENDING IS NOT PERMITTED, PIPES SHALL BE RESTRAINED WITH EXTERNAL SPLIT SERRATED RESTRAINT HARNESSSES. SELECT FILL MATERIAL REQUIRED FOR BEDDING AND BACKFILL SHALL BE DETERMINED REGARDLESS OF PIPE'S PROXIMITY TO PAVEMENT.
4. FOR DUCTILE IRON PIPE INSTALLATION: THICKNESS CLASS 52 FOR TYPICAL DISTRIBUTION MAINS 12-INCH NOMINAL SIZE AND TYPICAL SERVICE LINES 8-INCH PIPE-TO-JOINT JOINTS ARE REQUIRED, PUSH-ON, RESTRAINING GASKETS WITH INTEGRAL STAINLESS STEEL LONG SERRATED RESTRAINTS ARE PERMITTED ON PIPE-TO PIPE CONNECTIONS 12-INCH NOMINAL SIZE AND SMALLER. ONLY PIPE-TO PIPE CONNECTIONS 12-INCH AND LARGER 150 LB. PIPE SHALL BE USED. RESTRAINED PER SPECIFICATION SECTION 0210.00.00.
5. ENCASE ALL DUCTILE IRON PIPING, DUCTILE IRON FITTINGS, VALVES, HYDRANTS, AND ALL OTHER METALLIC APPURTENANCES IN 12MM POLYETHYLENE GLASS FIBER REINFORCED PLASTIC (FRP).
6. ALL FIRE HYDRANT LATERALS SHALL BE DUCTILE IRON PIPE CLASS 52.
7. ALL W/100-TS AND FLANGE BOLTS SHALL HAVE NYLON GR/FLUOROKOTE #1 CORROSION RESISTANT COATING.
8. ALL FITTINGS SHALL BE RESTRAINED USING MI PIPE REINFORCED GLASS OR FIBRED CONCRETE TIE BLOCKS.
9. COPPER-CLAD STEEL TRACER W/RE REQUIRED ON INSTALLATION OF ALL FIRE TRACER WIRE SHALL BE 1/2" PIPE OR MORE IN DIAMETER AND SHALL BE AT A MINIMUM SPACING OF 18-INCH. SPLICES SHALL BE ENCASED IN WAFERWORK CONNECTORS. CONTINUITY SHALL BE TESTED AND VERIFIED BY THE CONTRACTOR.
10. SELECT FILL MATERIAL REQUIRED FOR BACKFILL, BACKFILL WHEN WITHIN 5'-FEET OF PAVEMENT PER SPECIFICATION SECTION 0210.
11. MAINTAIN THE REQUIRED 14-INCH OF HORIZONTAL SEPARATION AND 18-INCHES OF VERTICAL SEPARATION FROM SANITARY AND STORM STRUCTURES. MAINTAIN 8'-FEET OF HORIZONTAL SEPARATION FROM SANITARY AND STORM STRUCTURES. SEE 317 IAC 8-2.9 OF THE ILLINOIS ADMINISTRATIVE CODE FOR ADDITIONAL INFORMATION.

THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A REPLACEMENT OF ORIGINAL BOUNDARY SURVEY, A ROUTE SURVEY OR A SURVEYOR LOCATION REPORT.

CERTIFIED: 02/04/21

David J. Stoeppelworth



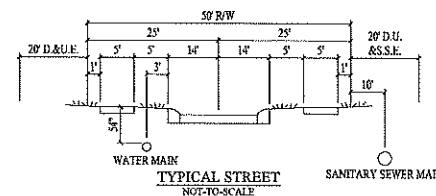
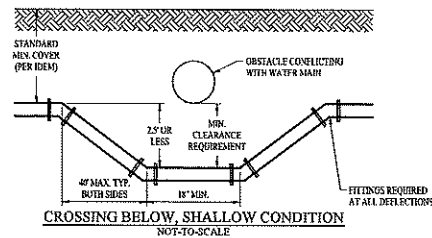
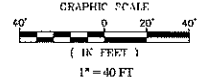
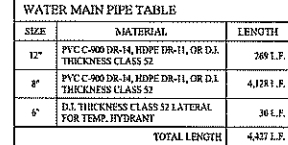
The seal is circular with the text "DAVID J. STOEPPELWORTH" around the top edge, "REGISTERED" at the top, "No. 19358" in the center, "STATE OF INDIANA" below the number, and "PROFESSIONAL ENGINEER" around the bottom edge.

STOEPPELWERTH

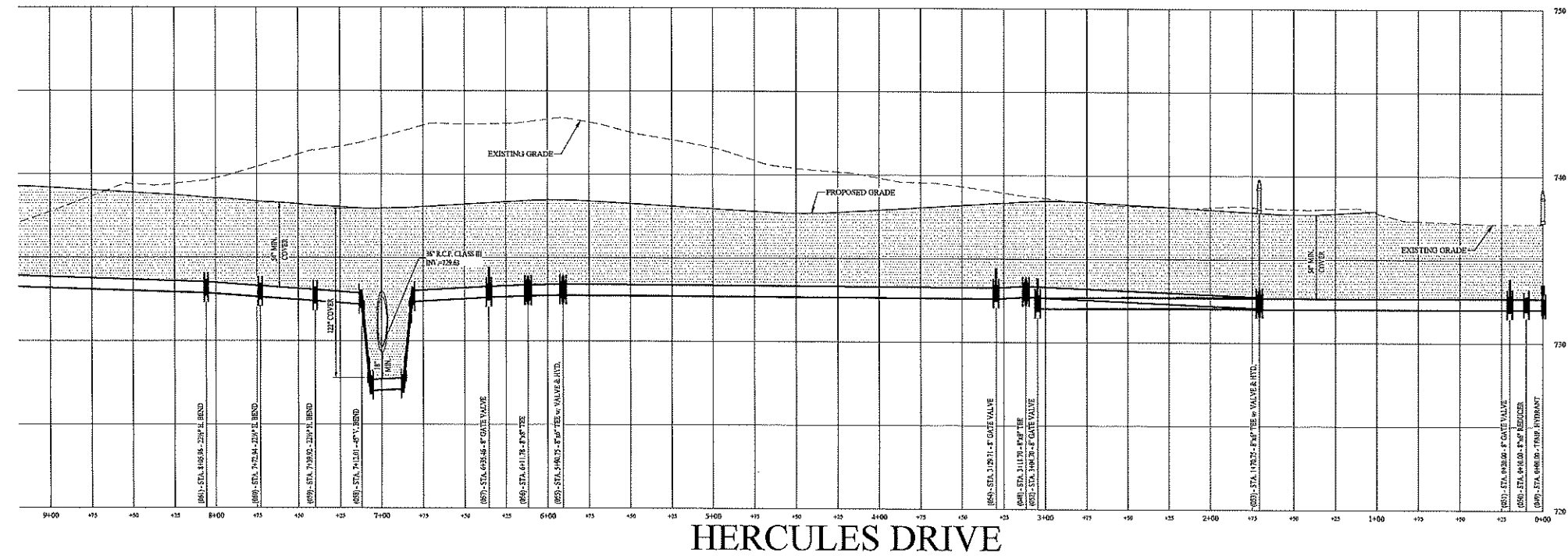


WATER PLAN & PROFILES
 ALLUFS AT YOUNGS CREEK
 SECTION 4
 TOWNSHIP JOHNSON COUNTY, INDIANA

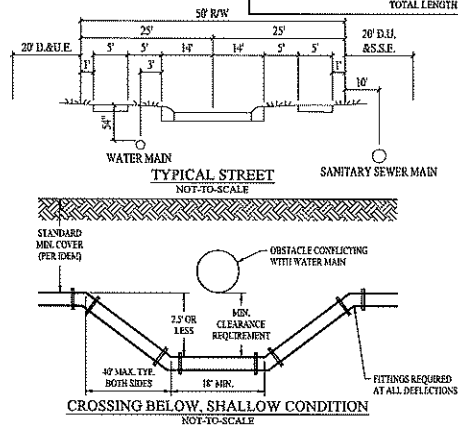
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Modified: 8/2/2021 1:30:09 PM / eason
Plotted By: February 8, 2021 1:36:05 PM / Erik Carson



HERCULES DRIVE



LEGEND	
	EXISTING SANITARY SEWER
	EXISTING STORM SEWER
	EXISTING WATER LINE
	PROPOSED SANITARY SEWER
	PROPOSED STORM SEWER
	PROPOSED WATER LINE
	HYDRANT w/ 6" VALVE
	GATE VALVE
	REDUCER
	TEE
	BEND, HORIZONTAL
	BEND, VERTICAL

FOR SPECS ON ALL WATER-RELATED MATERIAL, STRUCTURE, ACCESSORY, INSTALLATION, HANDLING, ETC., CONTRACTOR TO REFER TO INDIANA AMERICAN WATER PIPELINE SPECIFICATIONS, LATEST REVISION.

WATER UTILITY INSTALLATION NOTES

1. INSTALLATION OF WATER MAIN, FITTINGS, VALVES, FIRE HYDRANTS, AND APPURTENANCES SHALL BE IN ACCORDANCE WITH INDIANA AMERICAN WATER STANDARDS AND SPECIFICATIONS, LATEST REVISION.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION, SET, AND MATERIAL OF THE EXISTING WATER MAIN PRIOR TO CONSTRUCTION.
3. FOR PVC C900 PIPE INSTALLATION, DR14 PIPE IS REQUIRED. DEFLECTION OF PIPE JOINTS AND BENDING OF PIPES ARE NOT PERMITTED. ALL ANGLES SHALL BE MADE WITH PROPER FITTINGS. WHEN RESTRAINT OF PIPE-TO-PIPE JOINTS ARE REQUIRED, ALL JOINTS SHALL BE RESTRAINED WITH EXTERNAL SPLIT SERRATED RESTRAINT BUSHINGS. SELECT FILL MATERIAL REQUIRED FOR BEDDING AND EMBEDEDMENT REGARDLESS OF PIPE'S PROXIMITY TO PAVEMENT.
4. FOR DUCTILE IRON PIPE INSTALLATION, THICKNESS CLASS 52 FOR TYPICAL DISTRIBUTION MAINS 12-INCH NOMINAL SIZE AND SMALLER. WHEN RESTRAINT OF PIPE-TO-PIPE JOINTS ARE REQUIRED, PUSH-ON RESTRAINED GASKETS WITH INTERNAL STAINLESS STEEL LOCKING SEGMENTS ARE PERMITTED ON PIPE-TO-PIPE CONNECTIONS 12-INCH NOMINAL SIZE AND SMALLER ONLY. PIPE-TO-PIPE CONNECTIONS GREATER THAN 12-INCH NOMINAL SIZE SHALL BE RESTRAINED PER SPECIFICATION SECTION 15106.
5. ENCASE ALL DUCTILE IRON FITTING, DUCTILE IRON FITTINGS, VALVES, HYDRANTS, AND ALL OTHER METALLIC APPURTENANCES IN 12-INCH POLYETHYLENE.
6. ALL FIRE HYDRANT LATERALS SHALL BE DUCTILE IRON PIPE CLASS 52.
7. ALL 3/4\"/>
8. ALL FITTINGS SHALL BE RESTRAINED USING 1/4\"/>
9. COPPER-CLAD STEEL TRACER WIRE REQUIRED ON INSTALLATION OF ALL PIPE. TRACER WIRE SHALL BE TAPED TO PIPE OR POLYETHYLENE ENCASMENT AT A MINIMUM SPACING OF 16-FEET. SPLICES SHALL BE ENCASED IN WATERPROOF CONNECTION. CONTINUITY SHALL BE TESTED AFTER COMPLETION OF BACKFILL.
10. SELECT FILL MATERIAL REQUIRED FOR FINAL BACKFILL WHEN WITHIN 5-FEET OF PAVEMENT PER SPECIFICATION SECTION 02110.
11. MAINTAIN THE REQUIRED 18-FEET OF HORIZONTAL SEPARATION AND 18-INCHES OF VERTICAL SEPARATION FROM SANITARY AND STORM SEWERS. MAINTAIN 8-FEET OF HORIZONTAL SEPARATION FROM SANITARY AND STORM STRUCTURES. SEE 317 IAC 8-2.2 OF THE INDIANA ADMINISTRATIVE CODE FOR MORE INFORMATION.
12. MAINTAIN MINIMUM COVER DEPTH OF 5' AND A MAXIMUM OF 5' 6\"/>

PLAN NOTES

1. WATER MAIN PIPE SHALL BE PVC C900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52. THE PIPE MATERIAL AND PRESSURE CLASS WILL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON COST OF EACH AT THAT TIME.
2. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 2' (4\"/>

WATER MAIN PIPE TABLE

SIZE	MATERIAL	LENGTH
12"	PVC C900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52	2691 L.F.
8"	PVC C900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52	4,178 L.F.
6"	D.I. THICKNESS CLASS 52 LATERAL FOR TEMP. HYDRANT	70 L.F.
TOTAL LENGTH		4,471 L.F.

DAVID J. STOEPELWERTH
REGISTERED
No. 19358
STATE OF INDIANA
PROFESSIONAL ENGINEER

THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A RETRACTION OR A REVISION OF A PREVIOUS DRAWING. ANY CHANGES SHALL BE INDICATED BY A REVISION OR A SURVEYOR LOCATION REPORT.

CERTIFIED: 02/04/21
David J. Stoepelwerth

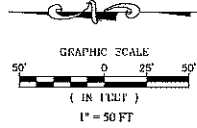
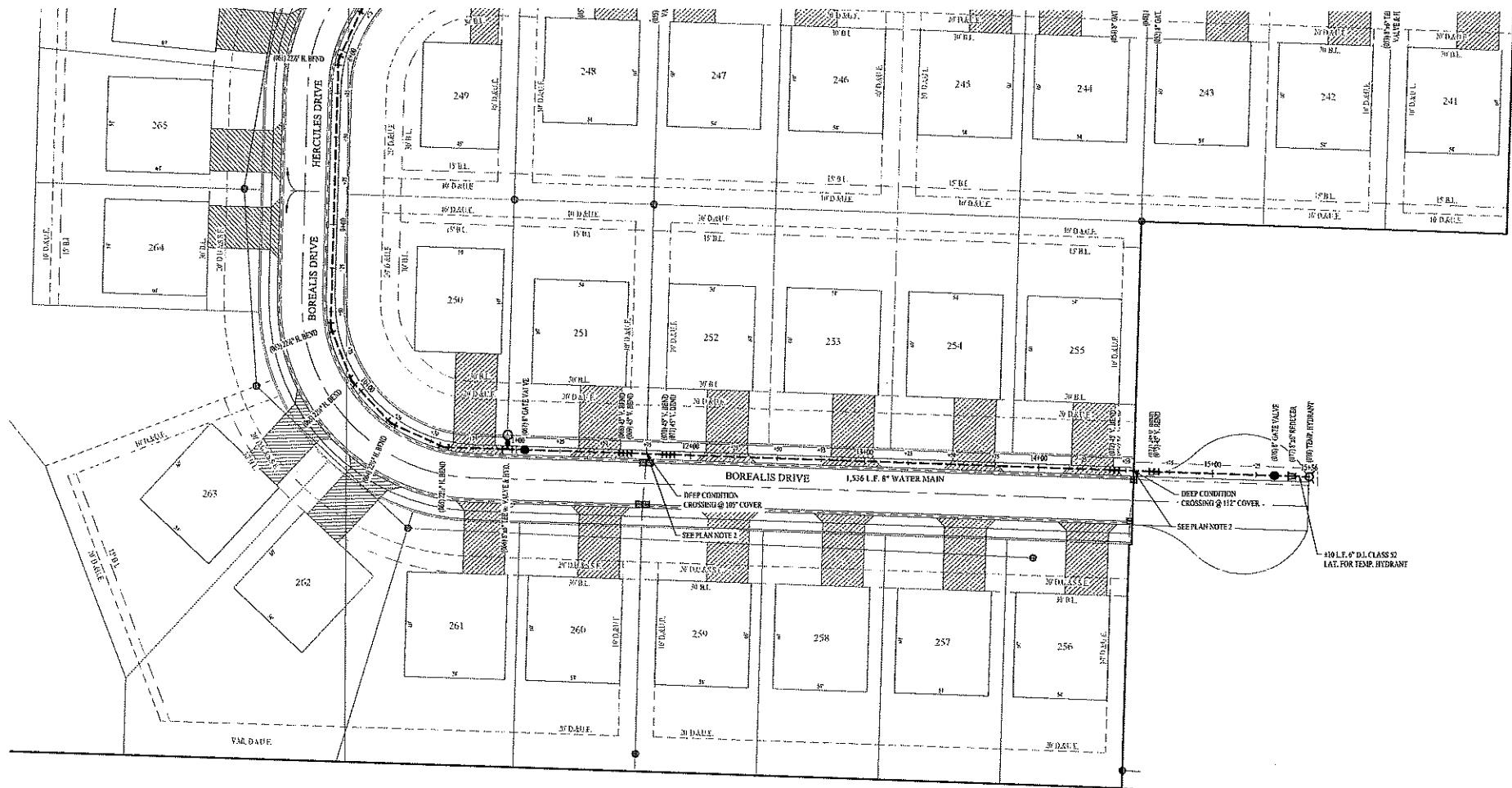
STOEPELWERTH

WATER PLAN & PROFILES
THE BLUFFS AT YOUNGS CREEK
SECTION 4

JOHNSON COUNTY, INDIANA
FRANKLIN, FRANKLIN TOWNSHIP

DRAWN BY: AEC
CHECKED BY: BKR
SHEET NO: C706
S.A.A. KEY NO: 83540MMA-S4

File Name: S:\935\QDMA-S\404\DWG\C702 - Water Profiles.dwg - C707
Modified: February 8, 2021 10:08:08 PM / ecarson
Plotted: February 8, 2021 1:36:41 PM / Erik Carson



LEGEND	
	EXISTING SANITARY SEWER
	EXISTING STORM SEWER
	EXISTING WATER LINE
	PROPOSED SANITARY SEWER
	PROPOSED STORM SEWER
	PROPOSED WATER LINE
	HYDRANT w/ 6" VALVE
	GATE VALVE
	REDUCER
	TEE
	BEND, HORIZONTAL
	BEND, VERTICAL

FOR SPECS ON ALL WATER-RELATED MATERIAL, STRUCTURE, ACCESSORY, INSTALLATION, HANDLING, ETC., CONTRACTOR TO REFER TO INDIANA AMERICAN WATER PIPELINE SPECIFICATIONS, LATEST REVISION.

WATER UTILITY INSTALLATION NOTES

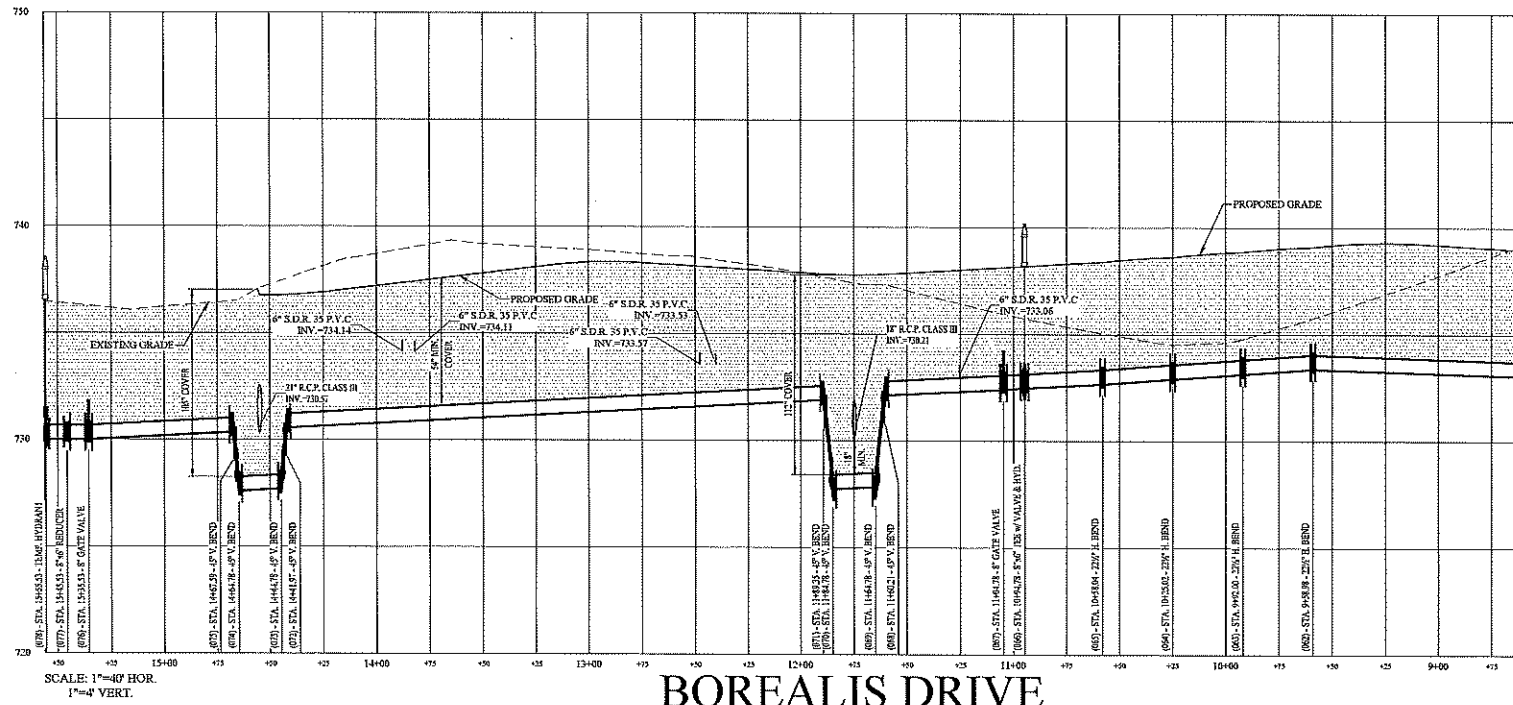
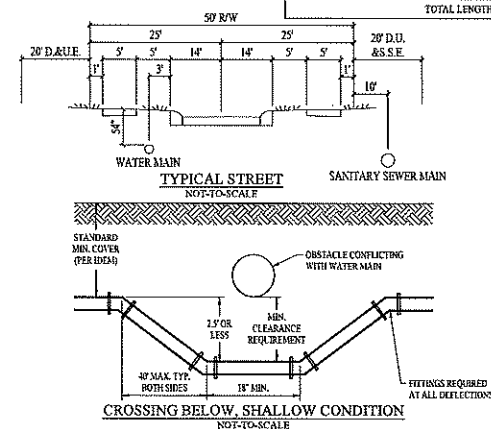
1. INSTALLATION OF WATER MAIN, FITTINGS, VALVES, FIRE HYDRANTS, AND APPURTENANCES SHALL BE IN ACCORDANCE WITH INDIANA AMERICAN WATER STANDARDS AND SPECIFICATIONS, LATEST REVISION.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION, SIZE, AND MATERIAL OF THE EXISTING WATER MAIN PRIOR TO CONSTRUCTION.
3. FOR PVC C-900 PIPE INSTALLATION: 12-14\"/>
4. FOR DUCTILE IRON PIPE INSTALLATION: THICKNESS CLASS 52 FOR TYPICAL DISTRIBUTION MAINS 12-INCH NOMINAL SIZE AND SMALLER. WHEN RESTRAINT OF PIPE-TO-PIPE JOINTS ARE REQUIRED, PUSH-ON RESTRAINT JOINTS WITH INTERNAL STAINLESS STEEL LOCKING SECTIONS ARE PERMITTED ON PIPE-TO-PIPE CONNECTIONS 12-INCH NOMINAL SIZE AND SMALLER ONLY. PIPE-TO-PIPE CONNECTIONS GREATER THAN 12-INCH NOMINAL SIZE SHALL BE RESTRAINED PER SPECIFICATION SECTION 13105.
5. ENCASE ALL DUCTILE IRON PIPING, DUCTILE IRON FITTINGS, VALVES, HYDRANTS, AND ALL OTHER METALLIC APPURTENANCES IN 12-INCH POLYETHYLENE.
6. ALL FIRE HYDRANT LATERALS SHALL BE DUCTILE IRON PIPE CLASS 52.
7. ALL SUT-BOLTS AND FLANGE BOLTS SHALL HAVE NYLON OR FLUOROKOTE 41 CORROSION RESISTANT COATING.
8. ALL FITTINGS SHALL BE RESTRAINED USING W/ RETAINER GLANDS OR POURED CONCRETE THRUST BLOCKS.
9. COPPER-CLAD STEEL TRACKER WIRE REQUIRED ON INSTALLATION OF ALL PIPE. TRACKER WIRE SHALL BE TAPPED TO PIPE OR POLYETHYLENE ENCASEMENT AT A MINIMUM SPACING OF 10-FOOT. SPLICES SHALL BE ENCASED IN WATERPROOF CONNECTORS. CONTINUITY SHALL BE TESTED AFTER COMPLETION OF BACKFILL.
10. SELECT FILL MATERIAL REQUIRED FOR FINAL BACKFILL WHEN WITHIN 5-FOOT OF PAVEMENT PER SPECIFICATION SECTION 6210.
11. MAINTAIN THE REQUIRED 18-FOOT OF HORIZONTAL SEPARATION AND 18-INCHES OF VERTICAL SEPARATION FROM SANITARY AND STORM SEWERS. MAINTAIN 8-FOOT OF HORIZONTAL SEPARATION FROM SANITARY AND STORM STRUCTURES. SEE 1714C 8-3.9 OF THE INDIANA ADMINISTRATIVE CODE FOR MORE INFORMATION.
12. MAINTAIN MINIMUM COVER DEPTH OF 5' AND A MAXIMUM OF 5'4\"/>

PLAN NOTES

1. WATER MAIN PIPE SHALL BE PVC C-900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52. THE PIPE MATERIAL AND PRESSURE CLASS WILL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON COST OF EACH AT THAT TIME.
2. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 2' (24") OF HORIZONTAL SEPARATION FROM THE OUTSIDE OF THE STORM STRUCTURE AND CENTER A FULL LENGTH OF 30' OF PVC (OR DUCTILE IRON) PIPE ON SAID STORM STRUCTURE.

WATER MAIN PIPE TABLE

SIZE	MATERIAL	LENGTH
12"	PVC C-900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52	269 L.F.
8"	PVC C-900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52	4,128 L.F.
6"	D.I. THICKNESS CLASS 52 LATERAL FOR TEMP. HYDRANT	20 L.F.
TOTAL LENGTH		4,427 L.F.



BOREALIS DRIVE

STOEPPELWERTH



WATER PLAN & PROFILES
THE BLUFFS AT YOUNGS CREEK
SECTION 4
FRANKLIN, FRANKLIN TOWNSHIP
JOHNSON COUNTY, INDIANA

DRAWN BY: AEC
CHECKED BY: BKR
SHEET NO: C707
S&A K&NO: 83540MMA-S4

CITY OF FRANKLIN - STANDARD SPECIFICATIONS (CONT.)

SECTION 8

RESTORATION OF SURFACES

8.01 General

Restoration of surfaces within the public right-of-way and easements shall include the removal of the existing surface, the disposal of the surplus material and the construction of new surfaces and adjoining all new and existing structures for proper grade prior to paving as indicated on the plans and/or as specified in these specifications.

8.02 Restoration of Paved Surface

A. Restoration

After all excavations within the limits of paved surfaces have been properly backfilled and compacted, the paved surfaces shall be restored to a condition as good as or better than existed prior to the beginning of the work, in accordance with the following specifications:

Paved Surfaces: Streets, alleys, sidewalks, driveways, curbs and gutters, not constructed or maintained by the State Highway Department, but paved with asphalt, concrete, cinders, crushed stone, wetbedded macadam, airbound macadam, or heterogeneous paving materials, which are wholly or partially removed, damaged, or disturbed by the Contractor's operations, shall be restored with like or better materials, acceptable to the City Engineer and DPW, in a condition as good as or better than existed prior to the beginning of the work, so that movement of traffic, both vehicular and pedestrian, through the restored way shall be as free, safe and unimpeded as before.

B. Temporary Surface

Temporary trench surfaces shall be installed and maintained in accordance with these specifications. This temporary surface shall be maintained by the Contractor until the permanent pavement is placed. Before placing permanent pavement, all or parts of the temporary surface shall be removed, as necessary, and hauled from the site of the work.

C. Temporary Permanent Replacement

Trench surfaces of highly traveled streets and roads may be, at the discretion of DPW, required to receive a temporary permanent replacement of cold mixed bituminous pavement. This temporary permanent shall be surface mixture Class A or B prepared and placed in accordance with Section 806 - Cold Mixed Bituminous Pavement of the latest edition of the Indiana State Highway Department Specifications. Prime and tack coats shall not be required. All temporary pavement shall be maintained by the Contractor to proper grade so as not to impede the safe flow of traffic until the permanent permanent replacement is made.

D. Permanent Pavement

Permanent paved surfaces shall be restored in accordance with the following requirements, unless otherwise set forth by the City Engineer, in all cases, the methods and materials of restoration shall meet the requirements of the Indiana State Highway Department, as applicable.

1. Class "B" Concrete Pavement

Existing local streets, roads, alleys, driveways and parking areas consisting of concrete pavement shall be removed according to the following requirements.

Areas subjected to excavation or damage by the Contractor are to be replaced as a whole. Sidewalks to be replaced in complete sections, streets and driveways as complete sections or replaced with sections that coincide with the original pattern, and to the DPW's and/or City Engineer's satisfaction.

Prior to placing concrete, the existing edges are to be saw-cut in a neat straight manner, sub-base compacted, screed down and edge strips The use of flexible joint material is required as needed. All chunks of existing material larger than three (3) x 3 x 3 inches are to be removed.

Class "B" concrete pavement shall consist of a cast in place, layer of Class A concrete with one (1) layer of woven wire fabric (6 x 6 - W1.4 x W1.4) meeting ASTM Designation #67. The concrete layer shall be six inches thick. All rigid concrete pavement work and materials shall meet the latest specifications of the Indiana State Highway Department.

2. Class "C" Asphalt Pavement

Existing local streets and roads consisting of asphalt paving shall be removed with hader and surface of the thickness specified and as follows:

Areas subject to Class "C" asphalt gas tunnel replacement shall have the existing edges (three created by cutting prior to excavation) re-cut in a neat straight manner as to remove irregularities and damaged areas. Manholes, service line trenches and existing valve areas are to be boxed out in a neat manner. All cuts shall be parallel or perpendicular to the curved or diagonal cuts shall not be allowed. All chunks of existing material larger than three (3) x 3 x 3 inches are to be removed.

The aggregate base course, including the previously placed temporary surface or pavement, shall have the upper portions removed to allow placement of the binder and surface. After the base is rebuilt, it shall be re-compact with a ten (10) ton roller or other suitable equipment if approved by the City Engineer. Cuts shall be taken to ensure that not less than six (6) inches of compact aggregate base remains below the permanent pavement.

The binder course(s) shall consist of compacted Hot Asphaltic Concrete, Type A, Size No. 9 as defined by the latest edition of the Indiana State Highway Department Specifications. Compaction shall be accomplished with suitable smooth wheel rollers. Generally, conventional self-propelled rollers of not less than 10 tons gross weight shall be used. The City Engineer may allow other specialized rollers for narrow benches or lighter rollers with vibratory action. The City Engineer shall consider alternate equipment only if Contractor requests same in writing and includes technical data on the specific equipment to be considered.

The quantity and thickness of binder courses required shall match the existing pavement, but not less than one (1) course, two (2) inches in thickness.

The surface course shall consist of compacted Hot Asphaltic Concrete Surface Type A, (Size No. 11 or 12) as defined by the latest edition of the Indiana State Highway Specifications and placed in the same manner as described above for binder. The surface thickness shall match the existing pavement, but not less than two (2) inch.

3. Adjustments of Shoulders Necessitated by Restoring

The shoulders of the road shall be adjusted to the elevation of the resurfacing with all materials (i.e., earth, sand, gravel, crushed stone, asphalt, etc.) necessary. The transition may be made within a distance of one (1) foot to one and one-half (1 & 1/2) feet from the edge of paving except in unusual cases where a greater distance is required. Existing driveways shall be primed and wedged from a featheredge to the final height of the resurfaced street paving.

8.03 Restoration of Ground Surfaces

All ground surfaces in public Rights of Way and easements that have been damaged or destroyed by the Contractor's operations shall be restored in accordance with the following specifications. All surplus material, rock, trees, shrubs, concrete pipe, asphalt, crushed stone, etc., not to be used in the Contractor's restoration operations shall be removed from the site and disposed of in an acceptable manner.

1. Restoration of Grassed Areas with Sod

Where shown on the plans or required by the DPW or City Engineer, established grassed areas shall be restored with sod containing grasses of comparable quality. Sod shall be placed and rolled so that the final elevations of the area being restored are the same as existed prior to the beginning of construction. Sod shall be pegged where necessary, and shall be watered and cared for to assure its survival.

2. Restoration of Grassed Areas with Seed and Mulch

The Contractor shall seed and mulch in one of the following situations:

- A. The ground shall be loosened approximately three (3) inches deep with a disc or a harrow and fertilized with twenty-five (25) pounds of 10-10-10, or equivalent, and one hundred (100) pounds of agricultural lime per one thousand (1,000) square feet.

The mixture of seed applied shall be as follows:

55% Kentucky Bluegrass
30% Perennial Ryegrass (Lolium Perenne)
10% Kentucky 31 Fescue
5% Barn Harder

The seed shall be applied at a rate of four (4) pounds per one thousand (1,000) square feet and shall be well raked or hoed into the soil and mulched with straw of sufficient thickness to hold the seed until it has germinated.

- B. Mulching Material: Materials for mulching shall be wheat, oats, barley or rye straw only. All materials shall be reasonably bright in color and shall not be moldy, muddy, calat, or of otherwise low quality. The straw shall be dry on delivery and spread evenly.

Mulch may be required on special areas designated by the DPW to hold mulch in place until turf is established. The turf shall be made of a tightly twisted crab paper yarn, into woven with a wrap count of one (1) pair of turns per two (2) inches and a filling count of two (2) per inch. Salvage edges and center shall be mulched with polyethylene film. The material shall have a minimum width of four-five (5) inches.

SECTION 9

INSPECTION, TESTING AND ACCEPTANCE

9.01 General

This section describes the minimum requirements and general procedures for the inspection, testing and acceptance of systems dedicated to the DPW.

Connection Permits for sanitary service will not be issued until all the requirements of this section are fulfilled.

9.02 Inspection

Inspection of the construction shall occur for the duration of the project, including the installation of service laterals. The Owner shall execute the Agreement with DPW for such service if the DPW does not have staff available to perform such inspections.

A. Estimated Cost

The DPW shall send a letter to the Owner stating the estimated manhours and amount of the inspection fee to be paid to the City for services performed by representatives of the DPW. The amount provided in the letter shall be 75% of the total estimated cost of the inspection services based upon the estimated payment manhours multiplied by the base hourly rate.

The estimated manhours shall be based upon the following assumptions:

Average daily production = 250 D/day
Final Inspection - Verification of As-Built = 8 hours
Inspection Time = 20 - 30 hrs/week

Where a lift station is required, additional time for the inspection during construction and final start-up shall be added.

The fee provided is a pre-construction estimate only. The actual inspection time may vary for project to project and may exceed or be less than the estimate based upon the actual project duration. Inspection time at the site shall be verified by the Owner or a representative of the Owner.

The remaining cost, 25% shall be paid prior to final acceptance by the DPW.

B. General Requirements

1. Contractor and/or Owner shall provide notice to the DPW and his representative of the planned commencement of construction forty-eight (48) hours prior to such commencement.
2. Once the construction starts, the Contractor shall be responsible for informing and/or notifying the inspection representative assigned of the following:
- a. Daily work schedule, including any changes in schedule,
 - b. Prior notification if work is to be performed on weekends and/or holidays;
 - c. Date tests are to be performed, and;
 - d. Date as-built verification is to be performed.
3. The DPW, upon request of the Contractor and/or Owner, will schedule the Final Inspection.

All testing required shall be performed under the observation of the DPW or DPW's representative. It shall be the Contractor's responsibility to schedule the testing with the DPW representative and/or DPW. Test results obtained in the absence of the presence of the DPW will not be accepted.

9.03 Testing

A. Leakage Testing

1. General

All sanitary sewers shall be tested for infiltration and exfiltration.

Contractor shall furnish all labor, materials and equipment required for making tests. Tests shall be made at times arranged with the DPW and his representative. Sections of sewers shall be isolated and measurements of infiltration and exfiltration shall be made by approved means. The DPW or his representative must be present during all final tests.

Sewers whose crowns are below ground water level at time of testing shall be tested for infiltration. Where crown of pipe is above ground water level, sewer shall be tested for exfiltration. If ground water level varies during period of construction, sewers may be tested for both. Signs are not to be tested for final acceptance until complete.

Immediately preceding all leakage tests (exfiltration, infiltration and air) the sewer to be tested shall be cleaned by flushing a ball through the Contractor shall furnish an inflatable rubber ball of a size that will inflate to fit snugly into the pipe to be tested. The ball must, at the option of the Contractor, be used without a tag line, or a rope or cord may be fastened to the ball to enable the Contractor to know and control its position at all times. The ball shall be placed in the last cleanout or manhole on the pipe to be cleaned, and water shall be introduced behind the ball shall pass through the pipe with only the pressure of the water impelling it. All debris flushed out ahead of the ball shall be removed at the first manhole where its presence is noted. In the event cemented or wedged debris, or a damaged pipe shall stop the ball, the Contractor shall remove the obstruction.

2. Infiltration Tests

Sanitary sewers which are constructed with ground water level above crown of pipe shall be tested for infiltration after sewers have been installed and backfilling has been substantially completed. A cross section section of sewer shall be selected between manholes. The upper section of sewer shall be plugged airtight with temporary bulkhead. A suitable measuring device shall be installed at the lower end.

The amount of water flowing through the outlet shall be measured periodically through the next ten (10) days (24) hours. The flow thus measured shall then be converted by gallons per day per inch diameter per mile and compared with the maximum allowable limit of two hundred gpd/in./mile.

3. Exfiltration Tests

A section or sections of sanitary sewer between manholes shall be isolated by water tight bulkheading. Isolated sections shall then be filled with water to a level three (3) feet above the crown of the pipe at the upstream end of the section; water level at the downstream end of the section shall not be more than six (6) feet above the crown of the pipe. After allowing the system to stabilize overnight, the section shall be refilled with water to the original level. After one (1) hour more, the volume of water lost in the section shall be determined by measuring the drop in the water level.

4. Allowable Leakage

Infiltration or exfiltration of any given segment of sewer pipe shall not be permitted to exceed a rate of two hundred (200) gallons per twenty-four hours per mile of sewer per inch of pipe diameter (0.134 gpd/in./100 ft.).

5. Low Pressure Air Testing

For gravity sanitary sewers installed with this pipe crown above the ground water level, air pressure testing may be used in lieu of the exfiltration test. Low pressure air testing is used to determine the existence of pipe leaks; however, it does not indicate water leakage losses.

Prior to the low pressure air testing, all wyes, tees, or end of side sewer stubs shall be plugged with flexible-joint caps, or acceptable alternate, securely fastened to withstand the internal test pressure. Such plugs or caps shall be readily removable, and their removal shall provide a socket suitable for making a flexible-jointed lateral connection or extension.

All plugs shall be securely forced to prevent possible blowout due to internal air pressure. Once plug shall have an inlet tap, or other provision for connecting a line to a portable air supply source. Air hose shall be connected to the inlet tap and a portable air supply source.

Air equipment shall consist of all necessary valves and pressure gauges to control rate of air flow into the test section and to enable monitoring of air pressure within the test section. Testing apparatus shall also be equipped with low pressure relief device to prevent the possibility of losing test section with full capacity of compressor.

Air shall be slowly added to test section until pressure inside pipe is raised to 4.0 psig. After a pressure of 4.0 psig is obtained, air supply shall be regulated such that pressure is maintained between 3.5 and 4.0 psig for a period of two (2) minutes, to allow air temperature to stabilize in equilibrium with temperature of pipe walls. Pressure will normally drop slightly until equilibrium is obtained. During this period, all plugs shall be checked with soap solution to detect any plug leak.

After this two (2) minute air stabilization period, air supply shall be disconnected and test pressure allowed to decrease. Time required for test pressure to drop from 3.5 psig to 2.5 psig is determined by means of stop watch, and this time interval is then compared with required time to determine if rate of air loss is within the allowable limit. Required time to arrive at the allowable air loss is calculated by means of following formula:

$$T = 0.6850 \frac{D^3}{Q}$$

Where: T = time in seconds
K = 0.00419 DIL but not less than 1.0
Q = Rate of flow (GPM) during T of internal pressure
D = Diameter of pipe in inches
L = Length of pipe tested in feet

Upon completion of test, the bladder valve shall be opened and all air allowed to escape. Plugs shall not be removed until all air pressure in test section has been released. Also, no one shall be allowed in trench or manhole while test is being conducted.

All pipe lines thirty (30) inch diameter and over shall be tested one joint at a time with joint testing apparatus. Joint shall be isolated with an expanding shield equipped with gaskets which fit tightly against pipe walls and on each side of joint to be tested. Allowable leakage for such a test is equal to that which would occur on the basis of allowable leakage for one length of pipe.

If pressure-time interval for the pressure to drop from 3.5 psig to 2.5 psig is less than the required time as calculated, sewer section shall be deemed to have failed test. Contractor shall then proceed to repair pipe at his cost as necessary until the sewer section passes the test. All testing shall be conducted in presence of DPW or his representative (Inspector).

6. Excessive Leaks

If infiltration or exfiltration rate of any sewer exceeds maximum rate specified, contractor shall make all necessary repairs to reduce leakage below the allowable. Such repairs shall be made at Contractor's expense with or without the assistance of an acceptable means of repair. When repairs have been completed, but not more than thirty (30) days after first test, sewer sections shall be subjected to a second leakage test as specified above.

If the second test should again indicate leakage in excess of the allowable amount, the Contractor shall, at his own expense, provide complete internal inspection of entire section in question, by means of videotape recording or television inspection or by color photography with exposures every two (2) to four (4) feet along the sewer. Contractor shall employ an independent sewer testing service to inspect pipe. Inspection service shall prepare a written report and shall receive videotape or film with DPW, Contractor, and DPW's representative. Contractor shall then submit a written plan for correction of leakage. Contractor, DPW, and DPW's representative shall meet in necessary to develop actual program for inspection and repair. Contractor shall not proceed to repair line until he receives written authorization to proceed from City Engineer, DPW or DPW's representative. All inspection, reports, repairs, replacement, and compensation for additional professional expense shall be paid by the Owner/Contractor.

B. Deflection Testing of Installed Flexible Plastic Pipe

1. Final Acceptance Test

Prior to the final deflection test, the DPW or his representative may, at his option, order the lamping of certain or all sections. Lamping must show a "full moon" and no excessive building effects in the pipe.

The main line shall be flushed prior to the vertical ring deflection tests. The vertical ring deflection tests shall not be performed prior to successful completion of leakage testing requirements.

All main line plastic pipe and PVC/CABS Trans sewers eight (8) inch in diameter and greater shall be measured for vertical ring deflection at least thirty (30) days after installation, but not later than thirty (30) days prior to final acceptance of the project. Maximum ring deflection of the pipeline under load shall be limited to five percent (5%) of the vertical internal pipe diameter. All pipe exceeding this deflection shall be considered to have reached the limit of its serviceability and shall be relaid or replaced by the Owner/Contractor.

The cost of all deflection testing shall be borne by the Contractor and shall be accomplished by using a deflectionometer, which will produce a continuous record of pipe deflection, or by pulling a mandrel, rubber, or pin-type go/no-go device through the pipeline. The diameter of the go/no-go device shall be ninety-five percent (95%) of the undisturbed inside diameter of the flexible pipe. The mandrel shall be pulled through the sewers by one man, by hand and specifically without the aid of mechanical devices.

C. Signature Manhole Testing

All manhole vacuum tests shall be conducted in the presence of a representative of the DPW.

The vacuum test equipment shall consist of: inflatable plugs for all incoming and outgoing sewer lines, an inflatable test collar to seal the manhole at the manhole frame, and a vacuum pump. A vacuum gauge shall be located in line between the test collar and the pump to accurately indicate the vacuum in inches of mercury within the manhole. The vacuum gauge shall have a range to no more than thirty (30) inches of mercury, with scale markings of no greater than one-half (1/2) inch of mercury vacuum and an accuracy to within a two percent (2%) of true vacuum.

The vacuum test shall be conducted by plugging all incoming and outgoing sewer lines in the manhole at a location beyond the connection of the sewer pipe with the manhole. All plugs shall be blocked in place so as not to move during the Test. The vacuum testing collar shall be inflated in the frame in accordance with the equipment manufacturer's recommendations. A vacuum of ten (10) inches of mercury shall be drawn, and the vacuum pump turned off and the valve between the vacuum pump and the vacuum gauge shall be turned off.

The time period which is taken for the vacuum to fall from ten inches (10") of mercury to nine inches (9") of mercury shall be determined. If the time taken for the vacuum to reduce the ten inches (10") of mercury to nine inches (9") of mercury is less than the time indicated in the following Table, then the manhole work shall be considered not acceptable and shall be rejected. If the time is equal to or exceeds the time indicated below, the manhole work shall be accepted.

Manhole Depth (ft.)	Time (sec)	Diameter = 36" 48" 60" 72"
8	20	26 33
10	25	33 41
12	30	39 49
14	35	46 57
16	40	52 65
18	45	59 73
20	50	65 81
22	55	72 89
24	59	78 97
26	64	85 105
28	69	91 113
30	74	98 121
For each additional 2' add:		
	5	7 8

Contractor shall submit to the DPW the results of each manhole vacuum test. Such reports shall include a description of the location of the manhole, the time, date and weather of the test, a list of all persons present, the diameter and depth of the manhole and the allowable test results, and the actual test results.

All manholes shall be required by Contractor and retented as described above until a successful test is made. After each test, the temporary plugs shall be removed.

Once all manholes have been tested, the manholes will be given a field visual inspection. The inspection shall be performed at the discretion of the DPW during the warranty period following a rainfall sufficient enough to raise the groundwater table above the problem areas. All leakage problems determined by this inspection shall be corrected by the Contractor within an agreed upon time to the satisfaction of the DPW. Where necessary to complete the work, the Contractor shall be responsible for the bypassing and/or blocking of the flow in the manholes and must have prior approval by the City Engineer or DPW. It will be the Contractor's responsibility to supply his own traffic control as required by the particular location and/or jurisdiction.

D. Storm Sewer Testing

All rigid pipe shall be lapped, any misalignment shall be repaired.

All flexible pipe shall receive a deflection test as required by paragraph B. Deflection test shall be limited to 7% of the vertical internal pipe diameter.

9.04 Lateral Location Forms

The Owner/Contractor shall submit a lateral location form for each lot. The form shall be completed and signed by the Contractor, the DPW or his representative during lateral inspection. This form shall include one (1) Polaroid type photo taken from the point of connection to the public sewer, looking back along the lateral to the building.

SECTION 10

EROSION CONTROL

10.01 General

This section provides the general guidelines for the control of erosion and sediment for construction sites. Control of sedimentation for construction site may be accomplished through utilization of a variety of control practices. The complexity of the erosion and sediment control plan will vary depending upon individual site conditions. The goal of such a plan is to limit the quantity of sediment leaving the construction site. The Contractor's plan must be approved by the DPW and City Engineer.

In addition, the Contractor must also comply with Rule 5.337 IAC 15-5 for land alteration which disturbs 1 acre or more.

10.2 Permitting Requirements

If the Owner/Contractor is required to submit a soil erosion control plan to the State under Rule 5.337 IAC 15-5, such plan shall be deemed in compliance with DPW requirements. In this case all applicable State and Federal permits or notices for land disturbing activities shall be obtained or filed prior to beginning land disturbing activities. Copies of all applications, letter of intent, submittals, plans and other erosion and sediment control related information shall be submitted to the DPW and City Engineer.

10.3 Design Guidelines

In order to fully achieve an acceptable level of erosion and sediment control on the construction site, the following design principles shall be fully adhered to during the analysis and development of the erosion and sediment control plan:

- A. Existing site contours should be followed as close as reasonably possible in order to minimize cut and fill.
- B. Existing natural vegetation should remain undisturbed for as long as possible during the construction activities. Naturally vegetated areas along property lines, jurisdictional wetlands, lakes, and watercourses, both natural and man-made, should be left undisturbed during all phases of the site construction. These vegetative filter strips will be required at the discretion of the DPW.
- C. A logical sequencing of site construction activities must be provided in order to minimize the size of exposed land areas, and the length of time land areas are left without some form of temporary or permanent soil protection.
- D. Soil stabilization shall be established utilizing either vegetative establishment, sediment trapping barriers, or erosion control measures such as tamping or mulching, singly or in combination.
- E. Storm sewer inlets which are made operable either before or during the construction phase of development shall be provided with protection from siltation.
- F. Stable, properly maintained construction traffic access routes and stream crossings shall be identified on the site reviews and sediment control plan as needed. These construction access routes shall be installed as part of the site perimeter sediment control barriers, prior to the initiation of on-site land alteration activities. Where sediment is transported onto public street or road surfaces, these streets or roads shall be cleaned thoroughly at the end of each day. Sediment shall be removed by either sweeping, blowing or sweeping and be transported to a controlled fill area. Street washing will be allowed only if wash water flows to a controlled sediment trapping area.
- G. Runoff velocities shall be kept as low as possible.
- H. A thorough maintenance and follow-up program, and identification of the person(s) responsible for its implementation will be required.

The latest edition of the Indiana Handbook for Erosion Control in Developing Areas shall be used for detailed technical guidance for all erosion and sediment control practices. The following general practice guidance applies to the development of all control plans:

- A. Perimeter Control - Perimeter control measures shall be installed as specified on the approved plan, including: construction access drives, straw bale dams and fabric fencing, temporary sediment traps, sediment basins, and diversions.
- B. Vegetative Control - Any disturbed land which will be left undisturbed for thirty (30) days or more shall receive temporary mulch seeding. It is the Contractor's responsibility to ensure adequate vegetative growth occurs to stabilize these areas. If the vegetation does not exhibit sufficient growth to provide stabilization, the work must either be repeated or other means undertaken to achieve requirement.
- C. Slope Protection - Slope protection shall be provided by use of temporary and permanent diversion levees, vegetative cover, and slope drains. Concentrated stormwater flows shall not be allowed to flow down cut or fill slopes without proper slope stabilization.
- D. Sediment Trapping - To achieve the goal of preventing sediment from leaving the construction site, the DPW will require the use of sediment barriers such as fabric fencing, straw bale dams, and sediment basins.
- E. Protection of Outlet Channel - Concentrated stormwater runoff having a development rate shall be confined to an open channel, stream sewer pipe or culvert which is capable of receiving this discharge. Runoff velocities shall be controlled during all storms except so that the peak runoff velocity during and after the completion of the land alteration approximates existing conditions.

The principles and practices provided by the State in Rule 5.3 are to be followed in the development of all control plans. Rule 5 does not give specific requirements for use of various practices provided by the State to the localities. Individual practices can be modified or waived upon request to the DPW based on special site characteristics and conditions.

The designer should rely on the Indiana Handbook for Erosion Control in Developing Areas (HEDCA) for detailed design, construction and maintenance criteria for all erosion control practices. Such criteria shall be required by the DPW unless waived in writing. The manual can be obtained from:

Urban Conservation Program
Indiana Department of Natural Resources
422 West Washington Street, Etn. 1W-265
Indianapolis, Indiana 46204-2748

THIS DRAWING IS NOT INTENDED TO BE USED AS A BASIS FOR ANY DESIGN OR CONSTRUCTION WORK WITHOUT THE SURVEY OR A SURVEYOR'S LOCATION REPORT.

DAVID J. STOEPELWERTH
REGISTERED
No. 19358
STATE OF INDIANA
PROFESSIONAL ENGINEER

CERTIFIED: 03/04/21
David J. Stoepelwerth

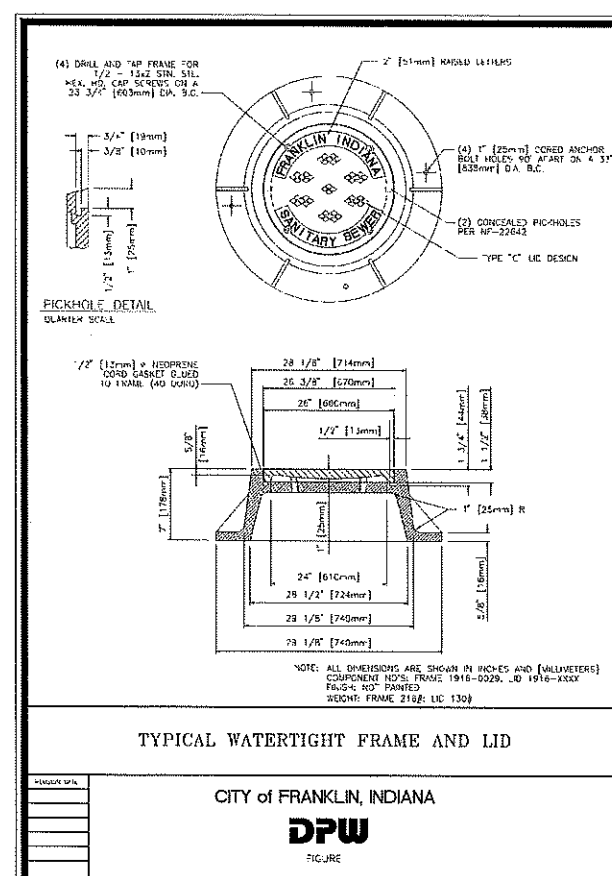
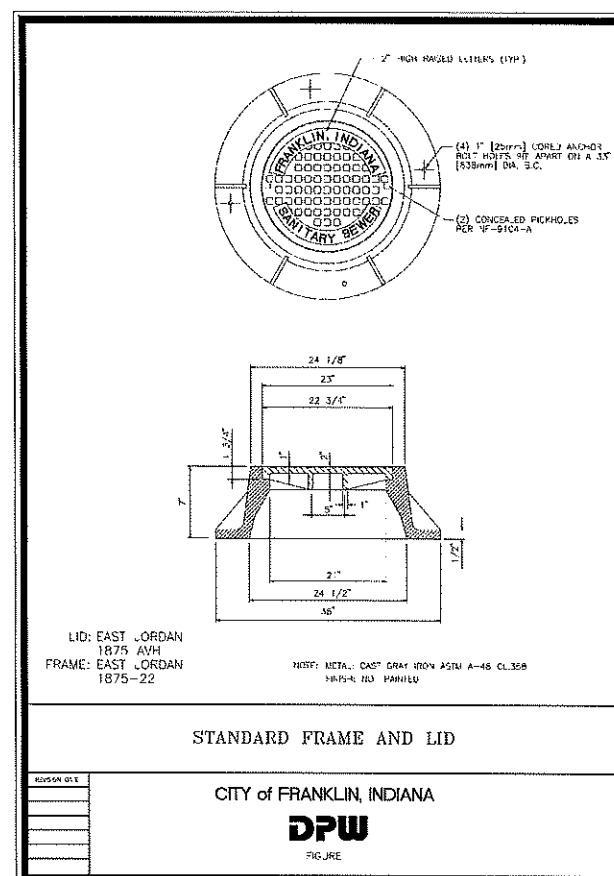
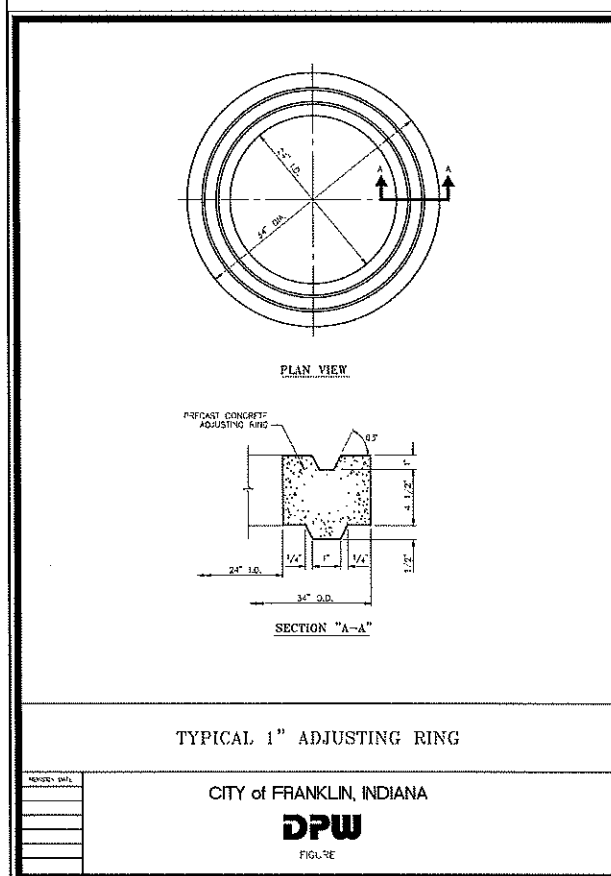
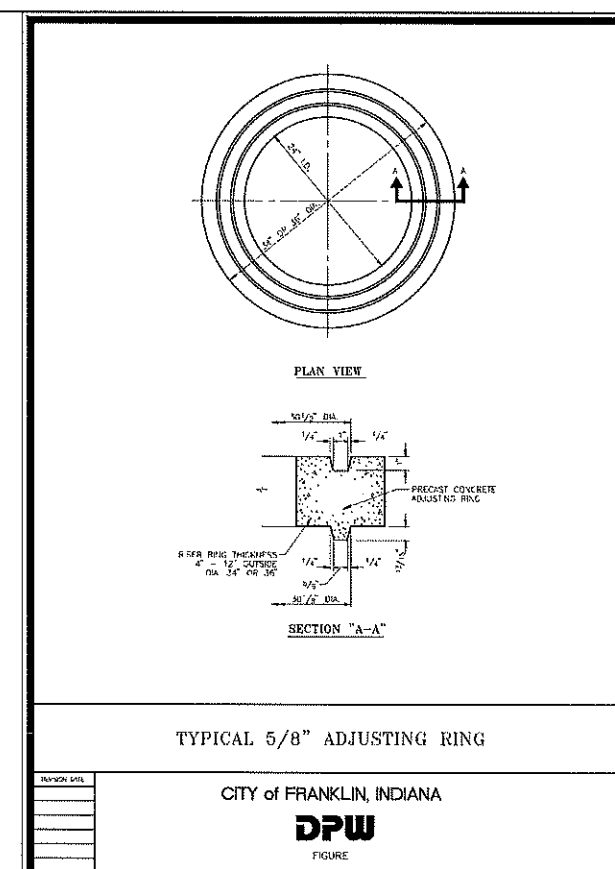
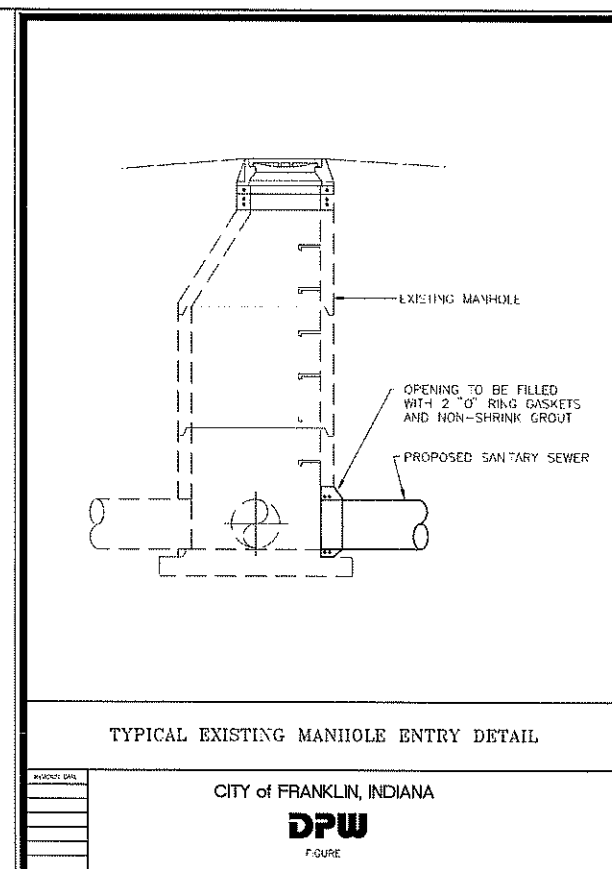
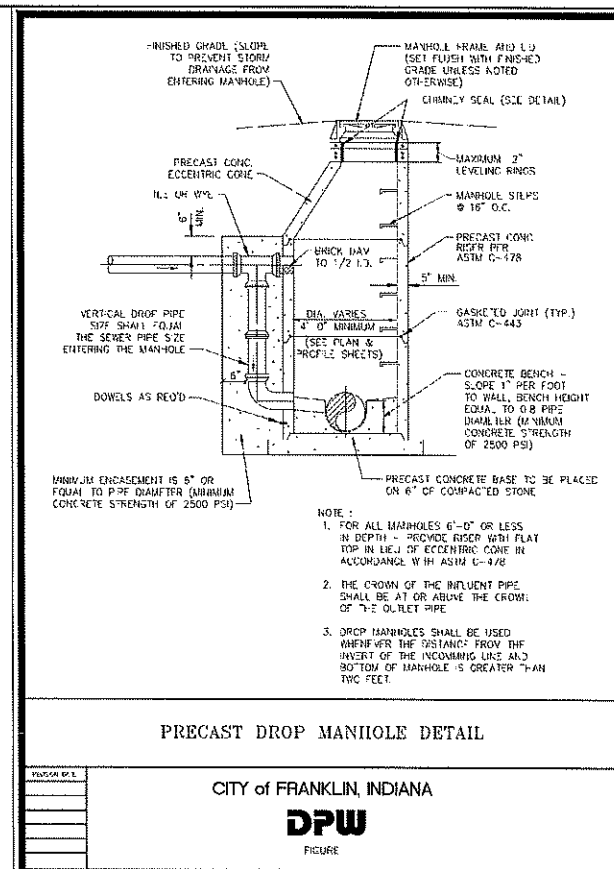
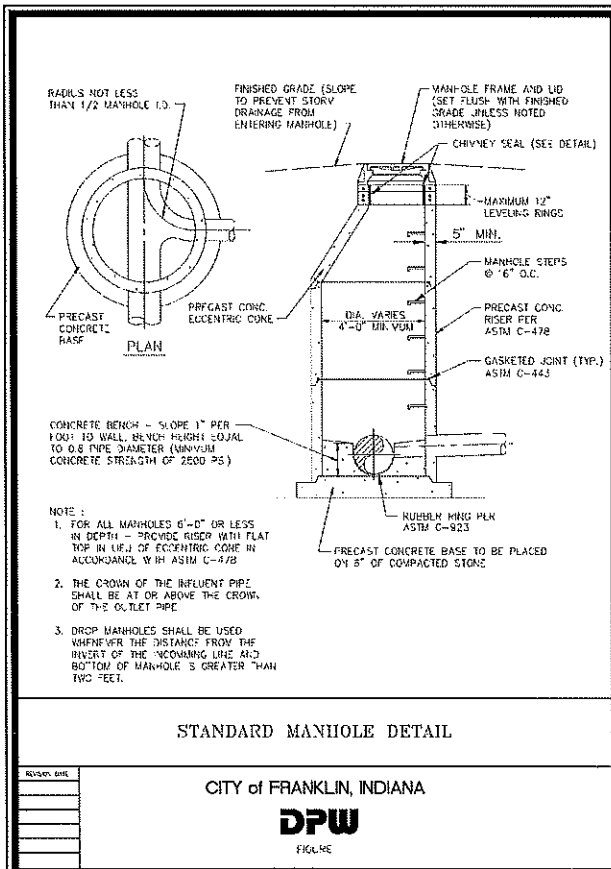
7965 East 16th Street, Indiana, IN 46038-6285
Phone: 317.249.0255 Fax: 317.246.5742

STOEPELWERTH
ALWAYS ON

CONSTRUCTION DETAILS
THE BLUFFS AT YOUNGS CREEK
SECTION 4

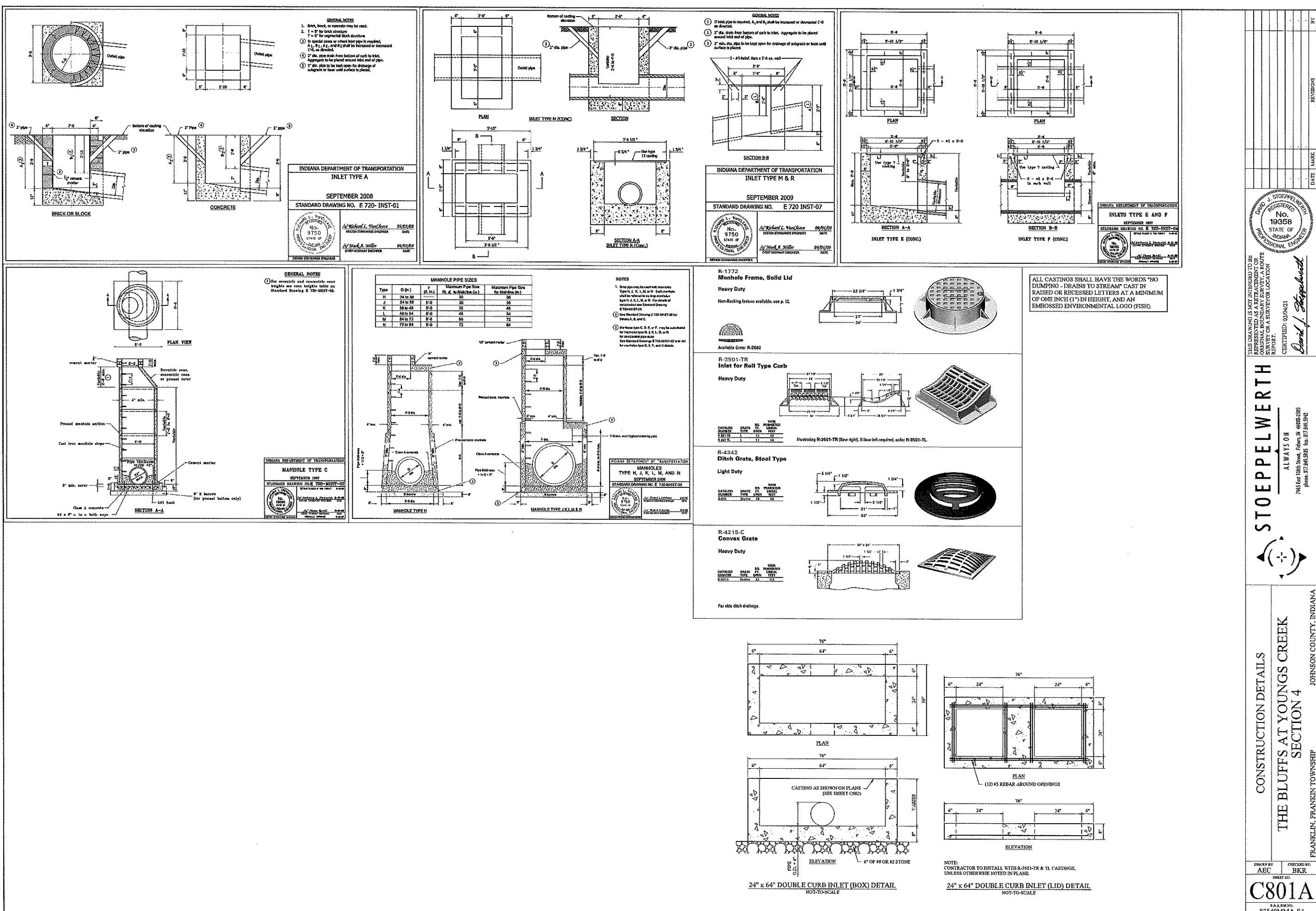
FRANKLIN, FRANKLIN TOWNSHIP
JOHNSON COUNTY, INDIANA

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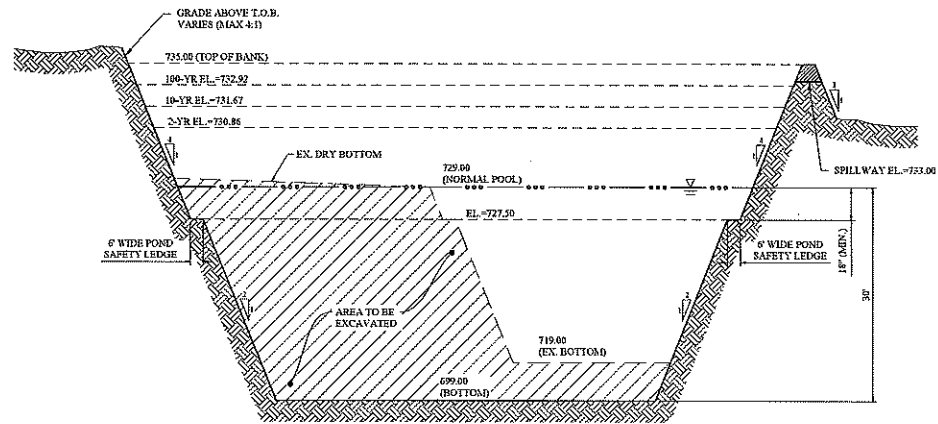


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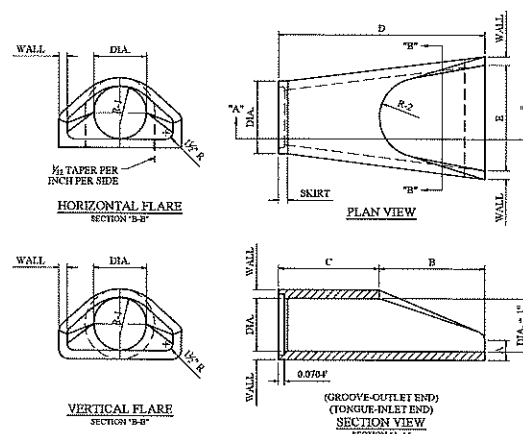
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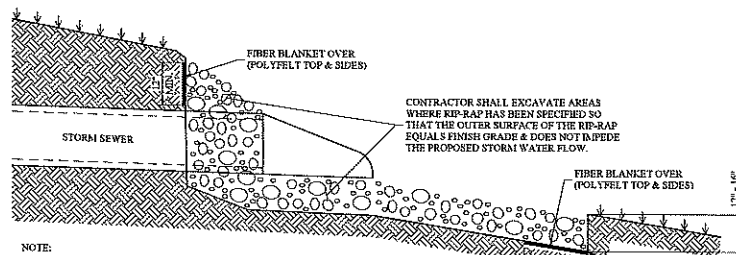
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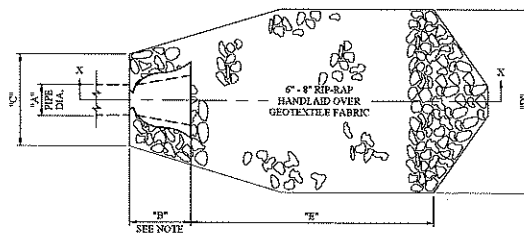
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15"	2 1/2"	2"	7400	6"	23"	46"	73"	30"	16"	12 1/2"	11"	3 1/2"
18"	2 1/2"	2 1/2"	9900	9"	27"	46"	75"	36"	19"	15 1/2"	12"	4"
21"	2 1/2"	2 1/2"	1,2800	9"	35"	38"	75"	42"	22"	16 1/2"	13"	4"
24"	3"	2 1/2"	1,5200	9 1/2"	43 1/2"	39"	75 1/2"	48"	25"	16 1/2"	14"	4 1/2"
27"	3 1/2"	2 1/2"	1,9300	10 1/2"	48"	25 1/2"	75 1/2"	54"	28"	17 1/2"	14 1/2"	4 1/2"
30"	3 1/2"	3"	2,1900	12"	54"	19 1/2"	75 1/2"	60"	31"	18 1/2"	15"	5"
36"	4"	3 1/2"	4,1000	15"	63"	54 1/2"	97 1/2"	72"	37"	24 1/2"	20"	5 1/2"
42"	4 1/2"	3 1/2"	5,3800	21"	63"	55"	98"	78"	45"	27 1/2"	22"	5 1/2"
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84"	8"	7"	16,3500	24"	78"	21"	99"	120"	85"	41 1/2"	24"	9"

NOTES:
MANUFACTURE OF END SECTION IS IN ACCORDANCE WITH APPLICABLE PORTIONS OF A.S.T.M SPECIFICATION C76

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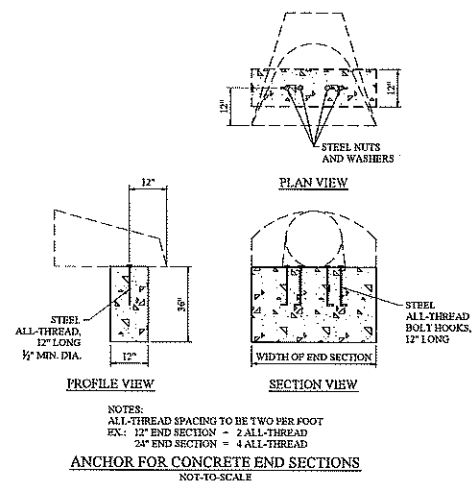


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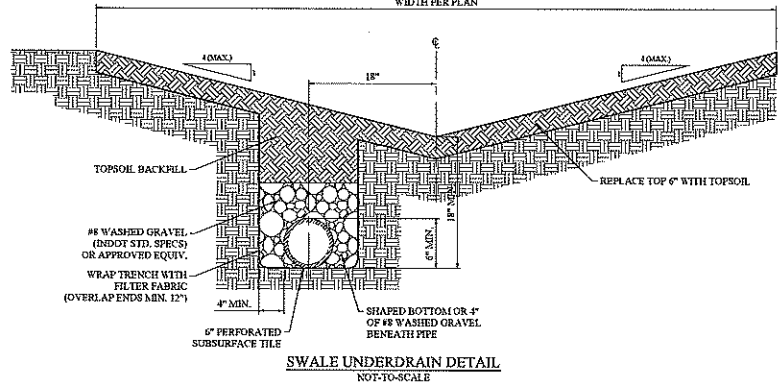


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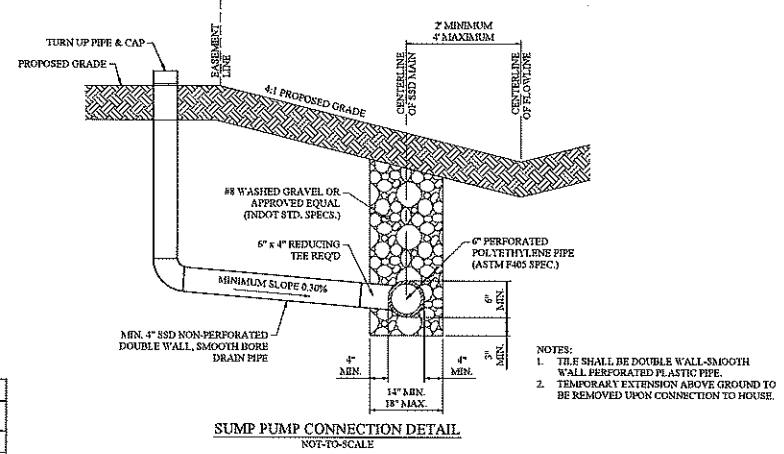
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537	60"	99"	180"	300"	556"
572	24"	73"	72"	120"	217"
579	48"	98"	144"	240"	446"
609	36"	97 1/2"	108"	180"	369"
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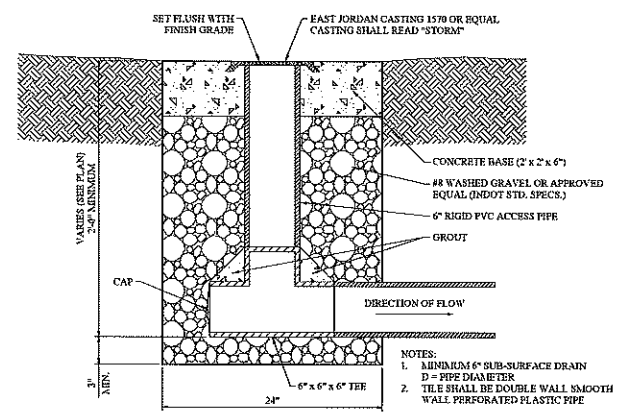
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NOT-TO-SCALE



SUMP PUMP CONNECTION DETAIL
NOT-TO-SCALE



SUB-SURFACE DRAIN RISER DETAIL
NOT-TO-SCALE

STOEPPELWERTH
ALWAYS ON
7965 East 10th Street, Indianapolis, IN 46228-2905
phone: 317.640.5752 fax: 317.640.5742

CONSTRUCTION DETAILS
THE BLUFFS AT YOUNGS CREEK
SECTION 4
FRANKLIN, FRANKLIN TOWNSHIP
JOHNSON COUNTY, INDIANA

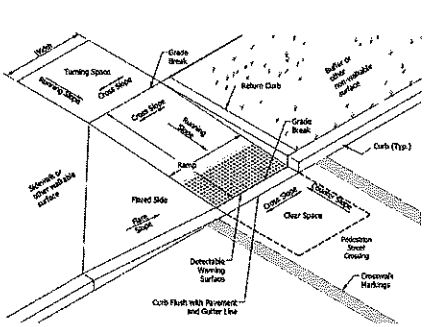
REGISTERED PROFESSIONAL ENGINEER
DAVID J. STOEPPELWERTH
No. 19358
STATE OF INDIANA
CERTIFIED 02/04/21
Drew J. Stoeppelwerth

REVISIONS
DATE
MARK
BY

DRAWN BY: AEC
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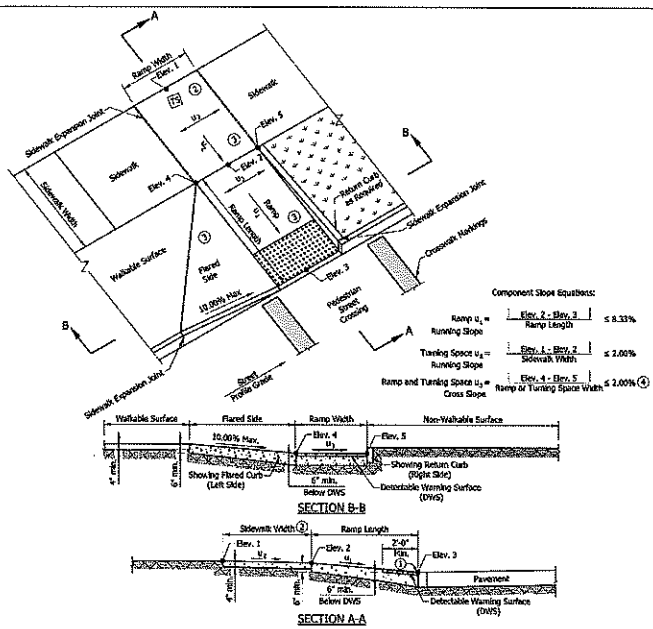
INDEX	
SHEET NO.	SUBJECT
1	Curb Ramp (Sloped Side) and General Notes
2-3	Perpendicular Curb Ramp Typical Placement
4	One-Way Directional Perpendicular Curb Ramp Typical Placement
5	Blended Transition Perpendicular Curb Ramp Typical Placement
6	Parallel Curb Ramp Typical Placement
7	Depressed Corner Curb Ramp Typical Placement
8	Perpendicular Curb Ramp Component Details
9	Blended Transition Curb Ramp Component Details
10	Parallel Curb Ramp Component Details
11	Depressed Corner Curb Ramp Component Details
12-13	Detectable Warning Surface Placement and Configuration
14	Detachable Warning Surface Details

- GENERAL NOTES:**
- All slopes are steeper (either side) relative to the sidewalk or roadway grade. Slopes at least 0.50% but not more than 2.00% are preferred.
 - Ramp or Blended Transition: A ramp or blended transition shall be used to lower or raise the sidewalk to connect with the street or highway.
 - Turning Space: A turning space shall be provided at the top of a perpendicular ramp, bottom of a parallel ramp, or where the pedestrian travel requires a change in direction. A common turning space may be shared by adjacent ramps. The turning space shall have a minimum clear dimension of 4 ft x 4 ft. Where the turning space is constrained at the back of the sidewalk or a curb, existing wall, building, or feature over 2 inches in height, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope.
 - Flared Side: A flared side shall be used adjacent to a walkable surface. A flared side may be used adjacent to a non-walkable surface. A flared side shall have a maximum slope of 15.00% measured parallel to the back of the curb.
 - Return Curb: A return curb is placed perpendicular to the roadway curb. A return curb may be used adjacent to a non-walkable surface. A return curb shall not be used adjacent to a walkable surface. The return curb may be omitted where the non-walkable surface is flared and the curb adjacent the roadway is tapered to meet the back of the curb.
 - Clear Space: A clear space shall be provided by the bottom grade break of a curb ramp which is contained within the crosswalk and wholly outside the parallel vehicle travel path. The clear space shall have a minimum clear dimension of 4 ft x 4 ft.
 - Detachable Warning Surface: A detachable warning surface shall consist of impounded dome and be placed at each street, highway, or railroad crossing. The detachable warning surface shall extend a minimum of 2 ft in the direction of pedestrian travel and be placed the entire width of a ramp, blended transition, or turning space.
 - Running Slope: The running slope of a ramp, blended transition, or turning space shall be measured parallel to the direction of pedestrian travel.
 - A running slope of 2.00% or less is considered level.
 - A ramp shall have a maximum running slope of 8.33% that shall not require a ramp length to exceed 15 ft.
 - A blended transition shall have a maximum running slope of 5.00%.
 - A turning space shall have a maximum running slope of 2.00%.
 - Width: Unless otherwise noted, minimum width of a ramp, blended transition, or turning space, excluding flared sides or return curbs, shall be 4 ft.
 - Grade Break: A grade break at the top and bottom of a ramp, blended transition, or turning space shall be perpendicular to the running slope. Grade breaks shall not be within the ramp, blended transition, turning space, or detachable warning surface. Grade breaks shall be flush. Vertical discontinuities shall not be greater than 1/8 in. Where a discontinuity is greater than 1/8 in, the surface shall be tapered with a slope not steeper than 1:12.
 - Cross Slope Lengths: The cross slope of a ramp, blended transition, or turning space shall be measured perpendicular to the direction of pedestrian travel.
 - The maximum cross slope at a pedestrian street crossing without a curb or stop control shall be 5.00%.
 - The maximum cross slope at a pedestrian street crossing with a curb or stop control shall be 2.00%.
 - The maximum cross slope at a railroad crossing shall be the established grade of the adjacent roadway.
 - Counter Slope: A counter slope is the cross slope of the gutter or street adjacent to the running slope of the ramp, blended transition, or turning space. See Standard Drawing E 604-SWCR-14 for counter slope details.
 - Obstacle: Obstacles such as a utility cover, vent frame, and grating shall be placed outside the curb ramp.
 - Curb ramps shall be placed within the marked crosswalk area.
 - Drainage inlets shall be located uphill from a curb ramp to prevent ponding in the path of pedestrian travel.



TYPICAL CURB RAMP COMPONENTS

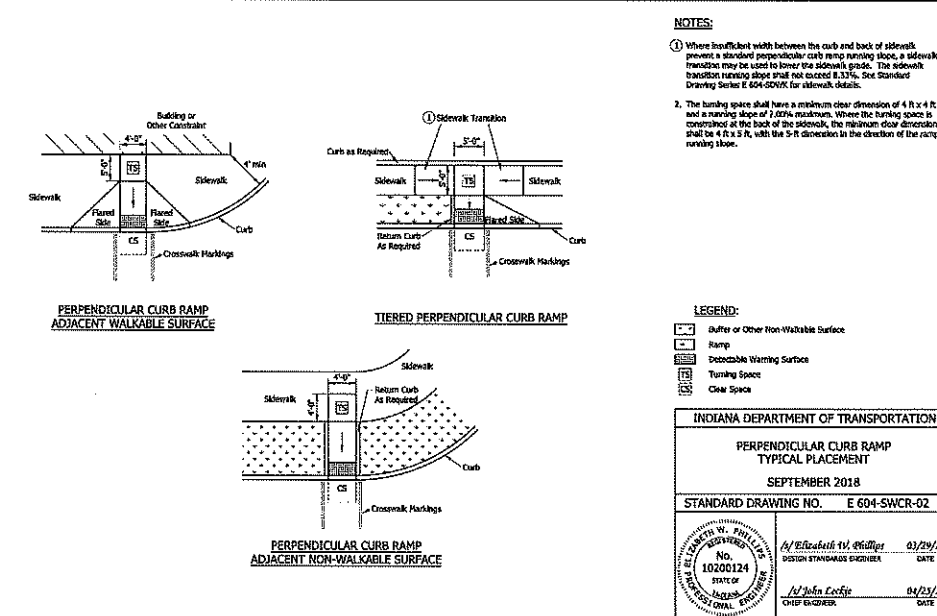
INDIANA DEPARTMENT OF TRANSPORTATION	
CURB RAMP DRAWING INDEX AND GENERAL NOTES	
SEPTEMBER 2018	
STANDARD DRAWING NO. E 604-SWCR-01	
DESIGNED BY No. 10200124 STATE OF INDIANA DATE 03/29/18	CHECKED BY No. 10200124 STATE OF INDIANA DATE 04/25/18



- NOTES:**
- The bottom edge of the ramp and top of curb shall be flush with the edge of adjacent pavement and gutter line.
 - The turning space shall have a minimum clear dimension of 4 ft x 4 ft. Where the turning space is constrained at the back of the sidewalk, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope. Where a flared perpendicular curb ramp is used, a centralized turning space shall have a minimum clear dimension of 5 ft x 5 ft.
 - Curb ramp surface shall be coarse textured transverse to the running slope.
 - See Standard Drawing E 604-SWCR-01 for cross slope exceptions.
 - See Standard Drawing E 604-SWCR-12, -13, and -14 for Detectable Warning Surface placement, configuration, and details.
 - See Standard Drawing E 604-SWCR-01 for sidewalk expansion joint details.

- LEGEND:**
- Buffer or Other Non-Walkable Surface
 - Ramp
 - Detachable Warning Surface
 - Turning Space

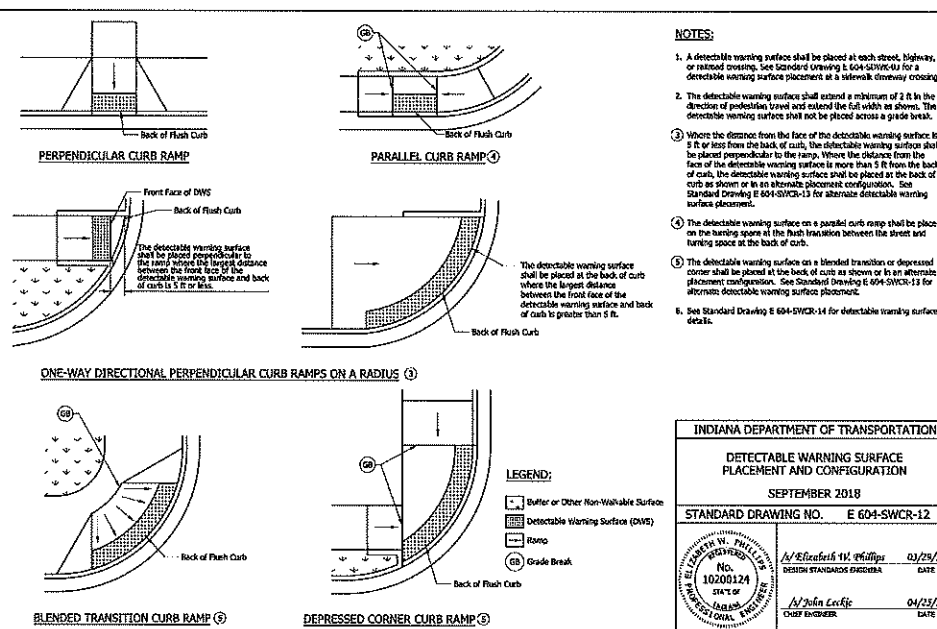
INDIANA DEPARTMENT OF TRANSPORTATION	
PERPENDICULAR CURB RAMP COMPONENT DETAILS	
SEPTEMBER 2018	
STANDARD DRAWING NO. E 604-SWCR-04	
DESIGNED BY No. 10200124 STATE OF INDIANA DATE 03/29/18	CHECKED BY No. 10200124 STATE OF INDIANA DATE 04/25/18



- NOTES:**
- Where insufficient width between the curb and back of sidewalk prevent a standard perpendicular curb ramp running slope, a sidewalk transition may be used to lower the sidewalk grade. The sidewalk transition running slope shall not exceed 8.33%. See Standard Drawing Series E 604-SWCR for sidewalk details.
 - The turning space shall have a minimum clear dimension of 4 ft x 4 ft and a running slope of 2.00% maximum. Where the turning space is constrained at the back of the sidewalk, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope.

- LEGEND:**
- Buffer or Other Non-Walkable Surface
 - Ramp
 - Detachable Warning Surface
 - Turning Space
 - Clear Space

INDIANA DEPARTMENT OF TRANSPORTATION	
PERPENDICULAR CURB RAMP TYPICAL PLACEMENT	
SEPTEMBER 2018	
STANDARD DRAWING NO. E 604-SWCR-02	
DESIGNED BY No. 10200124 STATE OF INDIANA DATE 03/29/18	CHECKED BY No. 10200124 STATE OF INDIANA DATE 04/25/18



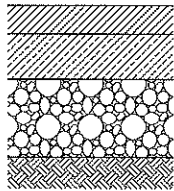
- NOTES:**
- A detachable warning surface shall be placed at each street, highway, or railroad crossing. See Standard Drawing E 604-SWCR-04 for a detachable warning surface placement at a sidewalk driveway crossing.
 - The detachable warning surface shall extend a minimum of 2 ft in the direction of pedestrian travel and extend the full width as shown. The detachable warning surface shall not be placed across a grade break.
 - Where the distance from the face of the detachable warning surface is 5 ft or less from the back of curb, the detachable warning surface shall be placed at the back of curb. Where the distance from the face of the detachable warning surface is more than 5 ft from the back of curb, the detachable warning surface shall be placed at the back of curb as shown or in an alternate placement configuration. See Standard Drawing E 604-SWCR-13 for alternate detachable warning surface placement.
 - The detachable warning surface on a parallel curb ramp shall be placed on the turning space at the flush transition between the street and turning space at the back of curb.
 - The detachable warning surface on a blended transition or depressed corner shall be placed at the back of curb as shown or in an alternate placement configuration. See Standard Drawing E 604-SWCR-13 for alternate detachable warning surface placement.
 - See Standard Drawing E 604-SWCR-14 for detachable warning surface details.

INDIANA DEPARTMENT OF TRANSPORTATION	
DETECTABLE WARNING SURFACE PLACEMENT AND CONFIGURATION	
SEPTEMBER 2018	
STANDARD DRAWING NO. E 604-SWCR-12	
DESIGNED BY No. 10200124 STATE OF INDIANA DATE 03/29/18	CHECKED BY No. 10200124 STATE OF INDIANA DATE 04/25/18

NOTE
CONTRACTOR SHALL INSTALL 2' x 2' IRON DETECTABLE WARNING PLATES (UNPAINTED) AT ALL CURB RAMPS.

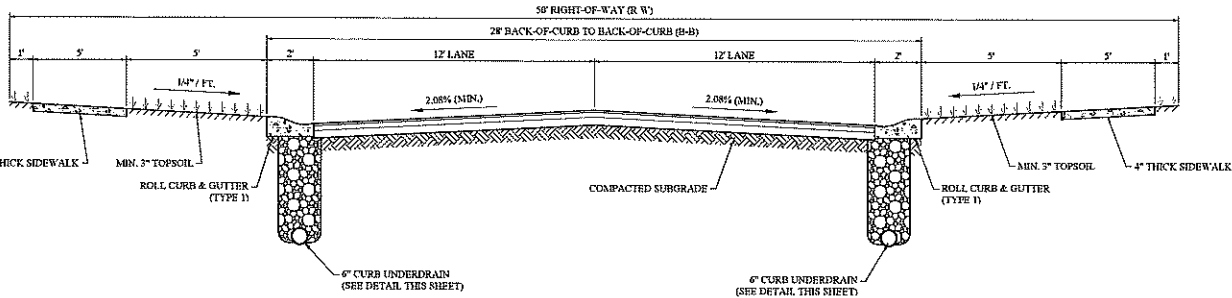
STOEPPELWERTH		A.L.WAYSON		795 East 16th Street, Indianapolis, IN 46203-2585 Phone: 317.449.5953 Fax: 317.449.5942	
CONSTRUCTION DETAILS		THE BLUFFS AT YOUNGS CREEK		SECTION 4	
FRANKLIN, FRANKLIN TOWNSHIP		JOHNSON COUNTY, INDIANA			
DRAWN BY: ABC		CHECKED BY: BKR		SHEET NO.	
C802A		S & A K&N NO.		83540MMMA-S4	

SPECIAL PROVISION FOR LIME MODIFICATION	
STREET CONSTRUCTION	
DESCRIPTION: THIS WORK SHALL CONSIST OF UPGRADING OF MOSTLY FINE GRAINED SOILS BY UNIFORMLY MIXING SMALL AMOUNTS OF LIME (3 TO 6%) BY WEIGHT TO AID COMPACTION BY DRYING OUT WET AREAS, AND TO PROVIDE A WORKING PLATFORM FOR SUBSEQUENT CONSTRUCTION.	
MATERIALS: MATERIAL SHALL MEET THE REQUIREMENTS OF THE SECTION 913 OF THE INDOT STANDARD SPECIFICATIONS.	
LIME:	
A.	HIGH CALCIUM OR DOLOMITE HYDRATED LIME (CA(OH) ₂ + MG(OH) ₂) SHALL HAVE A MINIMUM OF 90% TOTAL AVAILABLE CALCIUM HYDROXIDE CONTENT AND THE HYDRATES MUST CONTAIN NO MORE THAN 5% CARBON DIOXIDE CONTENT IF SAMPLED AT THE LIME PLANT, OR NO MORE THAN 7% IF SAMPLED AT THE JOB SITE.
B.	HIGH CALCIUM HYDRATED LIME SHALL HAVE A MINIMUM AVAILABLE CALCIUM HYDROXIDE CA(OH) ₂ CONTENT OF 90%. THE METHOD USED FOR DETERMINATION OF AVAILABLE LIME SHALL CONFORM TO AASHTO T219-72 OR ASTM C110.
C.	MAXIMUM MECHANICAL MOISTURE CONTENT SHALL BE 4%.
D.	GRADATION: ALL HYDRATED LIME SHALL CONFORM TO THE FOLLOWING GRADATION REQUIREMENT. AT LEAST 85% PASSING A #200 SIEVE (0.075 MM). DETERMINATION OF PARTICLE SIZE SHALL CONFORM TO THE PROVISION FOR WET SIEVING ON ASTM C110.
E.	OTHER LIME PRODUCTS SUCH AS QUICKLIME - HIGH CALCIUM (CAO) OR DOLOMITE (CAO-MGO) MAY BE SUBSTITUTED WITH WRITTEN APPROVAL BY THE INSPECTING ENGINEER. BY-PRODUCT LIME (KILN DUST) SHALL NOT BE USED.
WATER: WATER USED FOR LIME MODIFICATION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS OF 913 AND 913.01 OF THE INDOT SPECIFICATIONS, EXCEPT THAT THE MINIMUM ACCEPTABLE PH IS 6.5.	
EQUIPMENT: THE MACHINERY, TOOLS AND EQUIPMENT NECESSARY FOR PROPER EXECUTION OF THE WORK SHALL BE AVAILABLE ON THE PROJECT SITE AND APPROVED BY THE INSPECTING ENGINEER PRIOR TO THE COMMENCING OF CONSTRUCTION OPERATIONS.	
STORAGE AND HANDLING:	
A.	HYDRATED LIME SHALL BE STORED AND HANDLED IN CLOSED WEATHERPROOF CONTAINERS UNTIL IMMEDIATELY BEFORE DISTRIBUTION ON THE SUBGRADE. HYDRATED LIME IN BAGS SHALL BE STORED IN WEATHER PROTECTED CONDITIONS WITH ADEQUATE PROTECTION FROM GROUND DAMPNASS, AND THE FACILITY SHALL BE APPROVED BY THE INSPECTING ENGINEER PRIOR TO COMMENCEMENT OF ANY LIME WORK.
B.	EACH SHIPMENT SHALL BE ACCOMPANIED BY A BILL OF LADING AND BY A CERTIFICATE OF COMPLIANCE STATING CONFORMANCE TO THE APPLICABLE SPECIFICATION REQUIREMENTS.
C.	THE CONTRACTOR SHALL TAKE APPROPRIATE PREVENTIVE AND PROTECTIVE (SAFETY) MEASURE THAT SHALL BE EXERCISED BY THOSE WORKING WITH THIS MATERIAL. ALL SAFETY MEASURES SHALL COMPLY WITH APPLICABLE OSHA REQUIREMENTS.
MIXTURE COMPOSITION:	
A.	SAMPLE: AT HIS OWN EXPENSE, THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 10 POUNDS (5 KG) OF LIME AND 100 POUNDS (30 KG) OF SOIL TO BE USED AT LEAST 30 DAYS PRIOR TO THE CONSTRUCTION OF THE LIME MODIFIED SOILS IF REQUESTED BY THE INSPECTING ENGINEER.
B.	MIX DESIGN: LIME WILL BE PROPORTIONED WITHIN A RANGE OF 3 TO 6 PERCENT OF SOIL (OVEN - DRY BASIS). THE REQUIRED PROPORTION OF LIME WILL BE RECOMMENDED BY THE CONTRACTOR AND APPROVED BY THE INSPECTING ENGINEER PRIOR TO CONSTRUCTION USING SAMPLES OF SOIL AND LIME. THE INSPECTING ENGINEER RESERVES THE RIGHT TO MAKE SUCH ADJUSTMENTS OF LIME PROPORTIONING AS ARE CONSIDERED NECESSARY DURING THE PROGRESS OF THE WORK WITHIN THE RANGE SPECIFIED. SOURCE OR TYPE OF LIME SHALL NOT BE CHANGED DURING THE PROGRESS OF THE WORK WITHOUT PERMISSION OF THE INSPECTING ENGINEER. HOWEVER, THE INSPECTING ENGINEER MAY CHOOSE TO USE DIFFERENT TYPES OF LIME ON DIFFERENT PORTIONS OF THE PROJECT, BUT SHALL NOT BE MIXED.
CONSTRUCTION REQUIREMENTS:	
A.	TEMPERATURE AND WEATHER LIMITATIONS: NO LIME MODIFICATION SHALL BE PERFORMED AT A SOIL TEMPERATURE LESS THAN 450 F (70 C) AND THE AIR TEMPERATURE RISING, OF SUBGRADE SOIL WHEN IT IS MEASURED 4" (100 MM) BELOW THE SURFACE. LIME SHALL NOT BE MIXED WITH FROZEN SOILS OR WITH SOIL CONTAINING FROST.
B.	PREPARATION OF EXISTING ROADWAY: ALL DELETERIOUS MATERIAL, SUCH AS STUMPS, ROOTS, TURF, ETC. AND AGGREGATE LARGER THAN 3" (75 MM) SHALL BE REMOVED. ANY SOFT ORGANIC SOILS SHALL BE REMOVED AS DIRECTED BY THE INSPECTING ENGINEER.
C.	SPREADING OF LIME: THE ROADBED SHALL BE SCARIFIED OR DISKED PRIOR TO DISTRIBUTION OF THE LIME. THE MACHINE SHALL BE OF SUCH DESIGN THAT A VISIBLE INDICATION IS GIVEN AT ALL TIMES THAT THE MACHINE IS CUTTING TO THE REQUIRED DEPTH. THE LIME SHALL THAN BE DISTRIBUTED UNIFORMLY OVER THE SURFACE BY MEANS OF CYCLONE, SCREW-TYPE, OR PRESSURE MANIFOLD TYPE DISTRIBUTOR. THE INSPECTING ENGINEER MAY REJECT ANY PROCEDURE WHICH DOES NOT PROVIDE EVEN DISTRIBUTION OF LIME. LIME SHALL NOT BE APPLIED WHEN WIND CONDITIONS ARE SUCH THAT BLOWING LIME BECOMES OBSTACONABLE TO ADJACENT PROPERTY OWNERS OR CREATES A HAZARD TO TRAFFIC ON ADJACENT ROADWAYS. THE SPREADING OF LIME SHALL BE LIMITED TO THE AMOUNT WHICH CAN BE INCORPORATED INTO THE SOIL WITHIN THE SAM WORKING DAY. IN THE EVENT THAT RAIN INTERVENES CAUSING CESSATION OF WORK AND EXPOSURE OF THE LIME TO WASHING OR BLOWING, THE INSPECTING ENGINEER MAY REQUIRE ADDITIONAL LIME TO BE SPREAD.
D.	MIXING: THE LIME, SOIL AND WATER (IF NECESSARY) SHALL BE THOROUGHLY BLENDED BY ROTARY SPEED MIXERS OR A DISC HARROW. THE MIXING SHALL CONTINUE UNTIL A HOMOGENEOUS LAYER OF THE REQUIRED THICKNESSES HAS BEEN OBTAINED AND CLOUDS ARE BROKEN DOWN SO THAT 100% EXCLUSIVE OF ROCK PARTICLE, WILL PASS A ONE-INCH (25 MM) SIEVE AND AT LEAST 60% WILL PASS A NO. 4 SIEVE (4.75 MM). THE LOOSE THICKNESS OF A SINGLE LIME MODIFIED LAYER SHALL NOT EXCEED EIGHT (8) INCHES (200 MM) IF A DISC HARROW IS USED AND FOURTEEN (14) INCHES (355 MM) IF A ROTARY SPEED MIXER IS USED.
E.	COMPACTION: COMPACTION OF THE MIXTURE SHALL BEGIN AS SOON AS IS PRACTICABLE AFTER MIXING. IN NO CASE SHALL COMPACTION BE STARTED LATER THAN THREE (3) DAYS AFTER MIXING UNLESS APPROVED BY THE INSPECTING ENGINEER. IF COMPACTION IS TO BE DELAYED, THE SURFACE OF THE LIME MODIFIED SOIL SHALL BE CROWN-GRADED AND SEALED BY EITHER BLADE DRAGGING OR LIGHT ROLLING IMMEDIATELY AFTER MIXING. COMPACTION SHALL BE CONTINUED UNTIL THE CONTRACTOR HAS SHOWN THAT THE LIME MODIFIED LAYER HAS A DENSITY NOT LESS THAN 100 PERCENT WITHIN THE SPECIAL SUBGRADE TREATMENT ZONE AND/OR 95 PERCENT, BELOW SPECIAL SUBGRADE TREATMENT ZONE, OF THE MAXIMUM DRY DENSITY. THE STANDARD DRY DENSITY OF THE LIME TREATED SOIL SHALL BE OBTAINED BY AASHTO T 99. THE FIELD IN-PLACE DRY DENSITY WILL BE OBTAINED BY THE CONTRACTOR IN ACCORDANCE WITH AASHTO T 191. AERATION BY MEANS OF FURTHER MIXING, OR THE ADDITION OF WATER AND FURTHER MIXING, MAY BE REQUIRED BY THE INSPECTING ENGINEER TO ACHIEVE THE REQUIRED COMPACTION.
F.	FINISHING: WHEN COMPACTION OF THE LIME MODIFIED SOIL IS NEARING COMPLETION, THE SURFACE SHALL BE SHAPED TO THE REQUIRED LINE, GRADES AND CROSS SECTION, AND COMPACTION CONTINUED UNTIL UNIFORM AND ADEQUATE COMPACTION IF OBTAINED. THE INSPECTING ENGINEER RESERVES THE RIGHT TO DETERMINE THE ACTUAL THICKNESS OF THE COMPLETED AND CURED LAYER BY CORING OR OTHER MEANS, AND ANY DEFICIENT AREAS SHALL BE ACCEPTABLY CORRECTED.
METHOD OF MEASUREMENT: PROCESSING LIME MODIFIED SOILS WILL BE MEASURED IN SQUARE YARDS OF THE THICKNESS SPECIFIED.	
A.	CONTRACT QUANTITIES: WHEN THE PROJECT IS CONSTRUCTED ESSENTIALLY TO THE LINES, GRADES OR DIMENSIONS SHOWN ON THE PLANS AND THE CONTRACTOR AND THE INSPECTING ENGINEER HAVE AGREED IN WRITING THAT THE PLAN QUANTITIES ARE ACCURATE, NO FURTHER MEASUREMENT WILL BE REQUIRED.
B.	MEASURED QUANTITIES: PROCESSING LIME MODIFIED SOILS WILL BE MEASURED IN PLACE AND THE AREA COMPUTED IN SQUARE YARDS (SQUARE METERS). THE WIDTHS FOR MEASUREMENT WILL BE AS SHOWN ON THE PLANS. ALL WATER USED WILL BE CONSIDERED INCIDENTAL TO THIS WORK. THE MODIFIED ROADBED WILL BE MEASURED IN SQUARE YARDS. LIME WILL BE MEASURED IN TONS (METRIC TON). THE INSPECTING ENGINEER MAY ACCEPT ORIGINAL SIGNED BILLS IN LIEU OF WEIGHING.

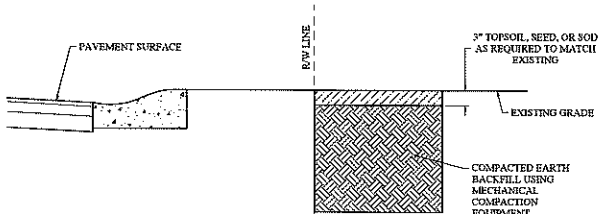


PAVEMENT DETAIL
NOT-TO-SCALE

CROSS SLOPE DESIGN DATA (6\"/>		
STREET WIDTH (B-B)	LANE WIDTH	DESIGN SLOPE
20'	8'	4.15%
22'	9'	3.67%
24'	10'	3.30%
26'	11'	3.00%
28'	12'	2.75%
30'	13'	2.54%
32'	14'	2.36%
34'	15'	2.20%
36' +	16'	2.08%



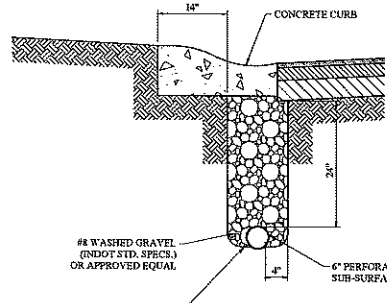
TYPICAL ROADWAY & PAVEMENT
COMPOSITION SECTION
NOT-TO-SCALE



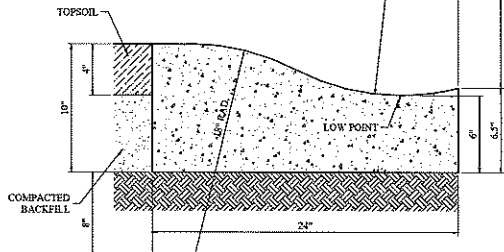
STANDARD FULL DEPTH
GRANULAR BACKFILL DETAIL
(PER STANDARD PLAN 92-02)
NOT-TO-SCALE

NOTES:

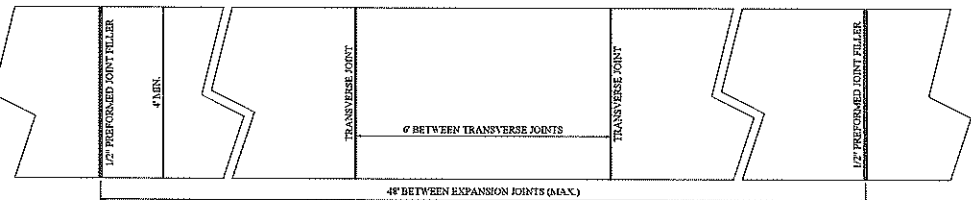
- GRANULAR BACKFILL WILL NOT BE REQUIRED WHEN ENTIRE TRENCH AREA IS 5'-0" OR MORE BEYOND THE BACK EDGE OF THE EXISTING CURB.
- ALL EXCAVATED AREAS UNDER PAVED ROADWAYS, OR WITHIN 5'-0" OF THE PAVEMENT EDGE, OR BACK EDGE OF CURB SHALL BE BACKFILLED WITH GRANULAR MATERIAL TO WITHIN 3" OF THE TOP OF THE TRENCH (OR TO FINAL GRADE UNDER PAVEMENT). THIS GRANULAR BACKFILL SHALL BE PLACED IN 12" LIFTS AND EACH LAYER SHALL BE COMPACTED BY MECHANICAL MEANS TO AT LEAST 95% OF ITS MAXIMUM DRY DENSITY.
- IF ANY PORTION OF TRENCH AREA IS NEARER THAN 5'-0" FROM THE EDGE OF THE ROADWAY SURFACE, THE ENTIRE TRENCH MUST BE BACKFILLED WITH GRANULAR MATERIAL.



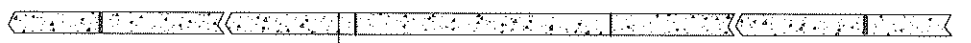
CURB UNDERDRAIN DETAIL
NOT-TO-SCALE



CONCRETE ROLL
CURB & GUTTER DETAIL
(TYPE I)
NOT-TO-SCALE



PLAN

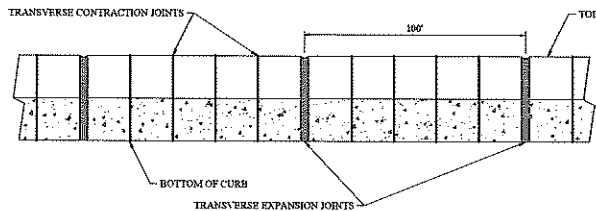


ELEVATION

NOTES:

- THE SPACE BEHIND THE CURB SHALL BE FILLED WITH SUITABLE MATERIAL TO THE REQUIRED ELEVATION AND COMPACTED IN LAYERS NOT TO EXCEED 6" IN DEPTH.
- SUBGRADE UNDER ALL CURB, SIDEWALK, AND DRIVES SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 207.02 OF THE STANDARD SPECIFICATIONS.

CONCRETE SIDEWALK JOINT DETAIL
NOT-TO-SCALE



CURB JOINT DETAIL
NOT-TO-SCALE

NOTE:

WHEN BUILT IN CONSTRUCTION WITH CONCRETE PAVEMENT, EXPANSION AND CONTRACTION JOINTS SHOULD BE PLACED AT THE SAME LOCATIONS AS IN THE PAVEMENT SLABS. THE CURB AND GUTTER SHOULD BE TIED TO THE PAVEMENT BY 1/2" ROUND DEFORMED BARS AT ABOUT 3 FOOT INTERVALS. IF NO CONCRETE PAVEMENT IS BEING BUILT AT THE TIME THE CURB IS CONSTRUCTED, EXPANSION JOINTS SHOULD BE PLACED AT THE ENDS OF ALL RETURNS AND AT INTERVALS NOT TO EXCEED 100 FEET. CONTRACTION JOINTS SHOULD BE INSTALLED AT 20 FOOT SPACING.



THIS DRAWING IS NOT INTENDED TO BE
REPRESENTED AS A REFERENCE OR
SURVEY OR A SURVEYOR LOCATION
REPORT.
CERTIFIED: 02/04/21
David J. Stoeppelwerth

STOEPPELWERTH
ALWAYS ON



CONSTRUCTION DETAILS

THE BLUFFS AT YOUNGS CREEK
SECTION 4

JOHNSON COUNTY, INDIANA
FRANKLIN, FRANKLIN TOWNSHIP

DRAWN BY: AEC
CHECKED BY: BKR
SHEET NO.
C802B
S & A JOB NO.
83540MMA-S4

<div>Table of Contents</div> <div>SECTION 15105 DUCTILE IRON PIPE AND FITTINGS</div> <div>PART 1. GENERAL</div> <div>1.01 SCOPE OF WORK</div> <div>The work under this section consists of providing all labor, materials, tools, equipment, and services required to install and test ductile iron (DI) pipe and fittings (4 inch through 48 inch nominal diameter) for water distribution and transmission as indicated on the Drawings and as specified within this section and related sections of the Specifications. Contractor shall furnish and install all required pipe restraint components and other related components that are not furnished by the Owner. Refer to Sections 01000, 01011, and 01075 for materials to be furnished by the Owner.</div> <div>1.02 SUBMITTALS</div> <div>A. Contractor shall submit Shop Drawings, manufacturer's literature and product data, installation instructions, and certifications for all products furnished under this section in accordance with Section 01300.</div> <div>B. Required certifications include those specified under Quality Assurance below.</div> <div>1.03 QUALITY ASSURANCE</div> <div>A. Ductile iron pipe and fittings shall meet the minimum quality requirements by conforming to the below-referenced AWWA/ANSI standards as modified herein. Ductile iron pipe and fittings will be accepted on the basis of the Manufacturer's certification that the materials conform to this section.</div> <div>B. The certification for ductile iron fittings shall fail a filling description, quantity, bare fitting weight, source, and applicable AWWA standard (C110 or C150). The certification shall accompany each delivery of the material to the project site.</div> <div>C. Owner reserves the right to sample and test these materials subsequent to delivery at the project site.</div> <div>D. Best manufacturer's certification of compliance must accompany each shipment.</div> <div>E. If foreign-manufactured fittings are furnished, Contractor shall notify the Engineer in the Shop Drawing submittal and provide the necessary documentation to satisfy the Engineer and the Owner that the materials furnished meet the specified AWWA standards and, among other documentation that may be required, provide certificates of compliance on the components supplied.</div> <div>12/2019 - Pipeline 15105 - 1</div>	<div>1.04 RELATED WORK</div> <div>A. Section 01000 Summary of Work</div> <div>B. Section 01011 Special Provisions</div> <div>C. Section 01075 Basis of Payment</div> <div>D. Section 01300 Submittals</div> <div>E. Section 01600 Products</div> <div>F. Section 02210 Trenching, Backfilling and Compacting</div> <div>G. Section 02358 Identification/Location Guide</div> <div>H. Section 01000 Piping - General Provisions</div> <div>I. Section 15020 Disinfecting Pipelines</div> <div>J. Section 15025 Flushing and Cleaning Pipelines</div> <div>K. Section 15030 Pressure and Leakage Tests</div> <div>L. Section 15100 Piping Specialties</div> <div>M. Section 15105 Gate Valves</div> <div>N. Section 15155 Butterfly Valves</div> <div>O. Section 15170 Tapping Sleeves, Saddles, and Valves</div> <div>P. Section 15180 Fire Hydrants</div> <div>Q. Section 15185 Abandonment of Mains and Hydrants</div> <div>R. Section 15190 Air Valves, Blow-off Assemblies and Sampling Taps</div> <div>S. Section 15200 Service Lines</div> <div>1.05 REFERENCE</div> <div>Unless otherwise indicated, all references herein to other standards (e.g. AWWA, ASTM, ASME, ANSI etc.) shall mean the most current available revision. The following referenced documents are a part of this section. Comply with all applicable provisions and recommendations of the following documents, except as otherwise specified herein. Where a referenced document contains references to other standards, those other standards are indicated as references under this section as if referenced directly. In the event of a conflict between the requirements of this section and those of the referenced documents, the requirements of this section shall prevail.</div> <div>A. ASME / ANSI B1.1 - Unified Inch Screw Threads</div> <div>12/2019 - Pipeline 15105 - 2</div>	<div>B. ASME / ANSI B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings, Classes 150 and 300</div> <div>C. ASME / ANSI B18.2 - Square and Hex Bolts and Nuts (Hex Series)</div> <div>D. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 50000 PSI Tensile Strength</div> <div>E. ASTM A536 - Standard Specification for Ductile Iron Castings</div> <div>F. AWWA C104 / ANSI A21.4 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings</div> <div>G. AWWA C105 / ANSI A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems</div> <div>H. AWWA C110 / ANSI A21.30 - Ductile-Iron Bell and Gray-Iron Fittings</div> <div>I. AWWA C111 / ANSI A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings</div> <div>J. AWWA C115 / ANSI A21.15 - Flanged Ductile-Iron Pipes with Threaded Flanges</div> <div>K. AWWA C116 / ANSI A21.16 - Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile-Iron and Gray-Iron Fittings for Water Supply Service</div> <div>L. AWWA C150 / ANSI A21.50 - Thickness Design of Ductile-Iron Pipe</div> <div>M. AWWA C151 / ANSI A21.51 - Ductile-Iron Pipe, Cast-iron Cast</div> <div>N. AWWA C153 / ANSI A21.53 - Ductile-Iron Compact Fittings</div> <div>O. AWWA C500 - Installation of Ductile-Iron Mains and their Appurtenances</div> <div>P. NSF/ANSI 61 Drinking Water System Components - Health Effects</div> <div>PART 2. PRODUCTS</div> <div>2.01 GENERAL</div> <div>A. No foreign-manufactured pipe or appurtenances, except for ductile iron fittings, shall be allowed. All pipe and restraints shall be produced solely in the United States.</div> <div>B. All materials that come in contact with potable water, including lubricants, shall be evaluated, tested, and certified for conformance with ANSI/NSF Standard 61.</div> <div>12/2019 - Pipeline 15105 - 3</div>	<div>2.02 DUCTILE IRON PIPE</div> <div>A. Ductile iron pipe shall conform to the latest specifications as adopted by the American National Standards Institute, Inc. (ANSI) and the American Water Works Association (AWWA). Specifically, ductile iron pipe shall conform to AWWA C151 in standard specified sizes, except as modified herein. Pipe shall be supplied in 18 or 20 foot nominal lengths or as required to meet the requirements of the Drawings.</div> <div>B. The pipe exterior shall be coated with an asphaltic coating in accordance with AWWA C151. The pipe interior shall be cement mortar lined and asphaltic seal coated in compliance with the latest revision of AWWA C104.</div> <div>C. Pipe Class: Pipe wall thickness shall be the required thickness class based on the design conditions in accordance with AWWA C151. The thickness class of pipe to be furnished shall be as required on the Drawings and/or as specified in Section 01011 but shall not be less than recommended by the pipe manufacturer or less than the minimum requirements indicated in Table 1.</div> <div>Table 1 MINIMUM RATED WORKING PRESSURE FOR DUCTILE IRON PIPE MANUFACTURED IN ACCORDANCE WITH AWWA STANDARD C151</div> <div><table><tr><th>Pipe Nominal Size (inches)</th><th>Thickness Class</th></tr><tr><td>12 and smaller</td><td>62 (See Note 2)</td></tr><tr><td>16 - 20</td><td>54</td></tr><tr><td>24 and larger</td><td>54</td></tr></table></div> <div>Note:</div> <div>1. The noted thickness class is adequate to support 3/4 and 1-inch compaction stops by direct bapping. Provide a full tapping sleeve or saddle in accordance with Section 15170 and/or 15200 (as applicable) for tees larger than 1-inch due to limited wall thickness.</div> <div>2. 12-inch and smaller pipe: Engineer to determine Thickness Class increase to Thickness Class 54 to meet critical parameters due to operating pressures greater than 100 psi, high system efficiency, high consequence of failure and accessibility for repair of the pipe.</div> <div>D. Plain ends shall be delivery beveled to permit easy entry into the bell and shall have home marks to indicate when the spigot is fully seated in the bell.</div> <div>E. All non-restrained joints for pipe to pipe connections shall be standard push-on joints requiring no tools for the pipe manufacturer's and conforming to AWWA C151 and C111. Mechanical joints are not allowed for pipe to pipe connections. Push-on joints shall be of a type which employs a single elongated groove gasket to effect the joint seal.</div> <div>F. Restrainted Joint Pipe (12-inch and smaller): Unless otherwise indicated on the Drawings or in Section 01011 or furnished by the Owner, restrained joints for</div> <div>12/2019 - Pipeline 15105 - 4</div>	Pipe Nominal Size (inches)	Thickness Class	12 and smaller	62 (See Note 2)	16 - 20	54	24 and larger	54	<div>pipe to pipe connections 12-inch nominal size and smaller shall use push-on restraining gaskets with integral stainless steel locking segments recommended by the pipe manufacturer and conforming to AWWA C111. Restrainted system shall be UL-listed and rated for a working pressure of 350 psi. Restrainted gaskets shall not be used on connections to valves or fittings or for connections to pipe materials other than ductile iron (e.g., gray cast iron). If required by the Drawings or Section 01011 and/or if furnished by the Owner, restrained joint pipe shall be specified below for 18-inch and larger pipe shall be used for 12-inch and smaller piping.</div> <div>G. Restrainted Joint Pipe (18-inch and larger): Restrainted joints for pipe to pipe connections (18-inch and larger) shall consist of factory-vented restraint bead or ring on the pipe spigot, and other factory manufactured restraint rings, ductile iron locking segments held in place by rubber retainers, or ductile iron retaining rings that lock over the bell of the joint and are secured to prevent rotation by the component parts. Restrainted joints shall be constructed of corrosion-resistant, high-strength, low-alloy steel and shall conform to AWWA C111 as applicable. Restrainted joint pipe shall be U.S. Pipe, Ball-Loc, or Ball-Loc, Clay TIE Pipe or Super-Loc, American Flex-Ring or Lock-Ring. Restrainted system shall be suitable for the following minimum working pressures:</div> <div><table><tr><th>Size (inches)</th><th>Pressure (psi)</th></tr><tr><td>12 and smaller</td><td>See Note 2, Table 1</td></tr><tr><td>20</td><td>54</td></tr><tr><td>24</td><td>54</td></tr><tr><td>30-48</td><td>64</td></tr></table></div> <div>Gaskets utilizing integral locking segments such as Field Lok gaskets are not permitted for restraint of pipe 18-inch or larger. Restrainted joint pipe per this notice shall not be acceptable where ball and socket pipe is required by the Drawings, Section 01000, and/or Section 01011. Restrainted joint ductile iron pipe installed by horizontal directional drill method shall also comply with Section 02405.</div> <div>H. Bell and Socket Joints: Ball and socket pipe shall comply with AWWA C150 and C151 and shall be U.S. Pipe, USFLEX, Ball-Loc, or Super-Loc, American Flex-Lok, Ball-Loc, Ball-Loc, Clay TIE Pipe or Super-Loc, American Flex-Ring or Lock-Ring. Restrainted system shall be suitable for the following minimum working pressures:</div> <div>1. United States Pipe & Foundry Co. (including Griffin Pipe)</div> <div>2. McWane Family of Companies (Clow, Atlantic States, etc.)</div> <div>3. American Cast Iron Pipe Company.</div> <div>12/2019 - Pipeline 15105 - 5</div>	Size (inches)	Pressure (psi)	12 and smaller	See Note 2, Table 1	20	54	24	54	30-48	64																		
Pipe Nominal Size (inches)	Thickness Class																																							
12 and smaller	62 (See Note 2)																																							
16 - 20	54																																							
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12 and smaller	See Note 2, Table 1																																							
20	54																																							
24	54																																							
30-48	64																																							
<div>2.03 FITTINGS</div> <div>A. Ductile Iron Fittings: Standard fittings shall be ductile iron conforming to AWWA C110. Compact ductile iron fittings shall meet the requirements of AWWA C110. Fittings shall be suitable for the following working pressures unless otherwise noted in AWWA C110 or C115. No any cast iron fittings are permitted.</div> <div>Working Pressure Rating (psi)</div> <div><table><tr><th>Size (inches)</th><th>AWWA C110</th><th>AWWA C115</th></tr><tr><td>3 - 24</td><td>250</td><td>250</td></tr><tr><td>36 - 48</td><td>250</td><td>250</td></tr></table></div> <div>B. Coating and Lining: The fittings shall be coated on the outside with either asphaltic coating in accordance with AWWA C110 or fusion-bonded epoxy in accordance with AWWA C116, and the fittings shall be lined inside with either cement-mortar and asphaltic coating in accordance with AWWA C104 or fusion-bonded epoxy in accordance with AWWA C116.</div> <div>C. All fittings shall have mechanical joint bell ends conforming to AWWA C111 unless otherwise shown on the Drawings. However, for pipe 18-inch and larger, fittings with restrained bell joints compatible with the restrained joint pipe used will be permitted when authorized by the Engineer or Owner.</div> <div>D. Restrainted MJ Joints (all sizes): Restrainted joints shall be used for all connections to valves and fittings, and all such connections shall be restrained mechanical joint type using restraint glands as specified in Section 15130. However, when restrained joint pipe (with factory-vented restraint bead or ring on the pipe spigot) is used, fittings manufactured with restrained joints compatible with the restrained joint pipe may be used in lieu of fittings with restrained mechanical joints. Restrainted gaskets with integral stainless steel locking segments (including Field Lok gaskets) are not permitted on valves or fittings.</div> <div>E. Non-restrained mechanical and push-on joints are not allowed for connections to valves, hydrants, or fittings.</div> <div>F. Acceptable ductile iron fittings manufacturers are:</div> <div>1. Sigma through United States Pipe & Foundry Co. (domestic or foreign)</div> <div>2. McWane Cast Iron Pipe Co. (Tyler Union domestic only)</div> <div>3. Star Pipe Products (domestic or foreign)</div> <div>4. Mettall, through United States Pipe & Foundry Co. or American Cast Iron Pipe Company.</div> <div>12/2019 - Pipeline 15105 - 6</div>	Size (inches)	AWWA C110	AWWA C115	3 - 24	250	250	36 - 48	250	250	<div>2.04 JOINTS - ADDITIONAL REQUIREMENTS</div> <div>A. All gaskets for buried pipe and fittings shall be of synthetic butadiene rubber (SBR), unless otherwise required by the Drawings, Section 01011, or as directed by the Engineer.</div> <div>B. Anti-rotation Tools shall be used on mechanical joints, except where special bolts are supplied with the approved restraint device, and shall be of domestic origin meeting the current provisions of AWWA C111. T-bolts and nuts shall be high-strength, corrosion-resistant low alloy steel with the characteristics listed in Table 1 of AWWA C111. T-bolts shall be Xylan or Fluorocote 41 (corrosion resistant).</div> <div>C. Restraint glands of any style are not acceptable for pipe to pipe joints.</div> <div>D. Anchor Couplings: Anchor couplings for anchoring the hydrant valve to pipeline line's trench and for anchoring the hydrant to the valve shall consist of a plain end mechanical joint pipe with a rotating follower gland, restrained by a welded ring, on one or both ends. Anchor couplings shall be installed for each hydrant branch and other locations where shown on the Drawings. Anchor couplings shall be manufactured from Thickness Class 53 ductile iron and shall meet the applicable requirements for both ductile iron pipe and fittings as specified in this section. Standard MJ gaskets as specified herein shall be used with anchor couplings.</div> <div>E. Flanged: Flanged joints shall conform to AWWA C110 (for fittings) or AWWA C116 (for pipe) and also to ANSI B16.42 Class 150. Unless otherwise noted on the Drawings (including bridge couplings), all exposed ductile iron pipe and fittings shall have flanged joints. Flanged joints are not permitted in underground installations except where exposed with structures or if allowed for tapping elbows, tees, and valves as specified in Sections 15150 and 15170.</div> <div>1. Gaskets for all flanged joints shall be 1/8-inch thick, styrene butadiene rubber (SBR) or EPDM gaskets. Paper flange gaskets are not permitted.</div> <div>2. The bolts shall have American Standard heavy unfinished hexagonal head and nut dimensions as specified in ANSI B18.2. Bolts and nuts shall be threaded in accordance with ASME/ANSI B1.1, Unified Inch Screw Threads (UN and UNF Thread Form) class 2A external and class 2B internal. Material for bolts and nuts shall conform to ASTM A307, 60,000 psi tensile strength, Grade B, unless otherwise specified in Section 01011. Xylan or Fluorocote 41 hex bolts (corrosion resistant) shall be used on any buried flange bolts used with ductile iron or gray cast iron flanges.</div> <div>3. Each flange shall be fully compatible with its mating flange.</div> <div>F. Connections to existing piping shall comply with Section 15000. When connecting to existing ductile iron pipe, connection shall be made either as detailed in this section or using couplings in accordance with Section 15130. A restrained mechanical joint solid sleeve as specified above for ductile iron fittings may be used to connect an existing plain spigot end to a new pipe plain spigot end. When connection is to be made to an existing pipe with a joint type not</div> <div>12/2019 - Pipeline 15105 - 7</div>	<div>allowed within this section, the existing pipe shall be cut to a plain spigot end unless otherwise approved by the Engineer.</div> <div>PART 3. EXECUTION</div> <div>3.01 INSTALLATION</div> <div>Installation of ductile iron pipe and appurtenances shall be in full accordance with AWWA C500 except as modified herein. Contractor shall follow the provisions of Sections 02210 and 15000, other sections as applicable (including related sections listed in Part 1 above), and all manufacturer's recommendations, in addition to the following requirements:</div> <div>A. All Joint Types: Immediately prior to assembly, thoroughly clean the surfaces that the gasket will contact using a bacteria-free solution (bleach, potable water or NSF-61 compliant material).</div> <div>B. Non-restrained Push-On Joints: Insert the gasket into the groove in the bell. Apply a sufficient coating of manufacturer approved NSF-61 certified lubricant to the gasket and the spigot end of the pipe before assembling the joint in accordance with the manufacturer's requirements, AWWA C500, and other requirements of this section. The use of lubricant can damage gaskets, so ensure that only lubricants approved by the gasket manufacturer are used. Center the spigot end in the bell, and push home the spigot end. The maximum allowable deflection at the joint for push-on joint pipe shall be the lesser of manufacturer's recommendations or as described in the DIPRA Guidelines, Installation Guide for Ductile Iron Pipe, as follows:</div> <div><table><tr><th>Size of Pipe (inches)</th><th>Deflection Allowed (inches)</th><th>Maximum Deflection (inches)</th></tr><tr><td>4" - 12"</td><td>5 degrees</td><td>19"</td></tr><tr><td>14" - 42"</td><td>3 degrees</td><td>12"</td></tr><tr><td>48" - 64"</td><td>3 degrees</td><td>N/A</td></tr></table></div> <div>C. Restrainted Push-On: Assemble and install the restraint push-on joint with the pipes aligned in the same axis according to the manufacturer's recommendations. Use feeler gauge to check all joints installed with push-on restraining gaskets with integral stainless steel locking segments. Contractor shall not reuse restraining gaskets once a joint is disassembled. Check the restraint ring fastener when present. Unless otherwise directed by the manufacturer, joints shall not be deflected until the joint has been fully assembled and checked for proper assembly; deflection shall not exceed manufacturer's recommended dimensions.</div> <div>12/2019 - Pipeline 15105 - 8</div>	Size of Pipe (inches)	Deflection Allowed (inches)	Maximum Deflection (inches)	4" - 12"	5 degrees	19"	14" - 42"	3 degrees	12"	48" - 64"	3 degrees	N/A	<div>D. Restrainted Mechanical Joints: 1. Use approved restraint joint device according to Section 15130. Slip the follower gland and gasket over the pipe plain and making sure that the small end of the gland and lip of the gland face the bell socket. Insert the plain end into the bell socket. Push the gasket into position with fingers only, and seat gasket evenly. Slide gland into position, insert bolts, and tighten nuts by hand. Tighten MJ flange bolts alternately per manufacturer's recommendations to the manufacturer's recommended torque rating or, if not provided, to the following normal torques as specified in AWWA C111 Table A.1:</div> <div><table><tr><th>Spig. Size (inches)</th><th>Pipe Nominal Size (inches)</th><th>Range of Torque in Foot-Pounds</th></tr><tr><td>3</td><td>3</td><td>45-60</td></tr><tr><td>3</td><td>4 - 24</td><td>75-90</td></tr><tr><td>1</td><td>16 - 36</td><td>100 - 120</td></tr><tr><td>1-1/4</td><td>42 - 48</td><td>120 - 150</td></tr></table></div> <div>2. Secure restraint joint device to pipe barrel in accordance with Section 15130 and the restraint device manufacturer's recommendations.</div> <div>E. Bell and Socket Joints: Assemble and install the bell and socket joint according to the manufacturer's recommendations. Thoroughly clean and lubricate the joint. Check the restraint ring fastener.</div> <div>F. Pipe Protection: 1. Comply with requirements of Section 15000. Lift pipe in accordance with AWWA Standards C500 and manufacturer's recommendations, subject to the restrictions herein and in Section 15000.</div> <div>2. Protect cement-mortar lining from damage during transportation (off- and on-site), preparation and installation. Transporting or lifting pipe using forks or lifting forks, chains, hoists, or any other device inside the pipe shall not be permitted. No exception shall be made except application of polystyrene encasement or any other type.</div> <div>3. Protect asphaltic coating from damage during off- and on-site transportation, preparation and installation. Contractor shall not utilize metal chains, steel cable, etc. to lift or transport pipe. Transporting or lifting pipe using forks or convection equipment shall not be permitted unless the pipe is supported on pallets or lumber and lifted indirectly with the forks.</div> <div>4. Protect pipe from damage from the jacking device (backhoe bucket, pipe jack, etc.) when assembling each pipe joint (i.e., "pulling home" every pipe). Wood or other suitable (non-metallic) material constructed with the pipe manufacturer's recommendations shall be used to push home the pipe.</div> <div>12/2019 - Pipeline 15105 - 9</div>	Spig. Size (inches)	Pipe Nominal Size (inches)	Range of Torque in Foot-Pounds	3	3	45-60	3	4 - 24	75-90	1	16 - 36	100 - 120	1-1/4	42 - 48	120 - 150	<div>SECTION 15106 POLYETHYLENE GLYCOL (PEG) PIPE</div> <div>PART 1. GENERAL</div> <div>1.01 SCOPE OF WORK</div> <div>The work under this section consists of providing all labor, materials, tools, equipment, and services required to install and test polyethylene glycol (PEG) pipe and fittings (4 inch through 12 inch nominal diameter) for water distribution and transmission as indicated on the Drawings and as specified within this section and related sections of the Specifications. Contractor shall furnish and install all required pipe restraint components and other related components that are not furnished by the Owner. Refer to Sections 01000, 01011 and 01075 for materials to be furnished by the Owner.</div> <div>1.02 SUBMITTALS</div> <div>A. Contractor shall submit Shop Drawings, manufacturer's literature and product data, installation instructions, and certifications for all products furnished under this section in accordance with Section 01300.</div> <div>B. Required certifications include those specified under Quality Assurance below.</div> <div>1.03 QUALITY ASSURANCE</div> <div>A. PEG pipe shall meet the minimum quality requirements by conforming to the below-referenced AWWA/ANSI standards as modified herein. PEG pipe will be accepted on the basis of the Manufacturer's certification that the materials conform to this section.</div> <div>B. The Owner reserves the right to sample and test these materials subsequent to delivery at the project site.</div> <div>1.04 RELATED WORK</div> <div>A. Section 01000 Summary of Work</div> <div>B. Section 01011 Special Provisions</div> <div>C. Section 01075 Basis of Payment</div> <div>D. Section 01300 Submittals</div> <div>E. Section 01600 Products</div> <div>F. Section 02210 Trenching, Backfilling and Compacting</div> <div>12/2019 - Pipeline 15106 - 1</div>
Size (inches)	AWWA C110	AWWA C115																																						
3 - 24	250	250																																						
36 - 48	250	250																																						
Size of Pipe (inches)	Deflection Allowed (inches)	Maximum Deflection (inches)																																						
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14" - 42"	3 degrees	12"																																						
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Spig. Size (inches)	Pipe Nominal Size (inches)	Range of Torque in Foot-Pounds																																						
3	3	45-60																																						
3	4 - 24	75-90																																						
1	16 - 36	100 - 120																																						
1-1/4	42 - 48	120 - 150																																						
<div>G. Section 02358 Identification/Location Guide</div> <div>H. Section 15000 Piping - General Provisions</div> <div>I. Section 15020 Disinfecting Pipelines</div> <div>J. Section 15025 Flushing and Cleaning Pipelines</div> <div>K. Section 15030 Pressure and Leakage Tests</div> <div>L. Section 15105 Ductile Iron Pipe and Fittings</div> <div>M. Section 15130 Piping Specialties</div> <div>N. 15150 Gate Valves</div> <div>O. Section 15170 Tapping Sleeves, Saddles, and Valves</div> <div>P. Section 15180 Fire Hydrants</div> <div>Q. Section 15185 Abandonment of Mains and Hydrants</div> <div>R. Section 15190 Air Valves, Blow-off Assemblies and Sampling Taps</div> <div>S. Section 15200 Service Lines</div> <div>1.05 REFERENCE</div> <div>Unless otherwise indicated, all references herein to other standards (e.g. AWWA, ASTM, ASME, ANSI etc.) shall mean the most current available revision. The following referenced documents are a part of this section. Comply with all applicable provisions and recommendations of the following documents, except as otherwise specified herein. Where a referenced document contains references to other standards, those other standards are indicated as references under this section as if referenced directly. In the event of a conflict between the requirements of this section and those of the referenced documents, the requirements of this section shall prevail.</div> <div>A. ASTM D1784 - Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds</div> <div>B. ASTM D122 - Determining Dimensions of Thermoplastic Pipe and Fittings</div> <div>C. ASTM D1262 Poly(Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion</div> <div>D. ASTM D2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)</div> <div>E. ASTM D2412 - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading</div> <div>11/2019 - Pipeline 15102 - 2</div>	<div>F. ASTM D2855 - Standard Practice for Making Solvent Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings</div> <div>G. ASTM F412 - Standard Terminology Relating to Plastic Piping Systems</div> <div>H. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe</div> <div>I. ASTM F1568 - Standard Guide for Construction Procedures for Buried Plastic Pipe</div> <div>J. AWWA C500 - Underground Installation of Poly(Vinyl Chloride) (PVC) and Chlorinated Poly(Vinyl Chloride) (CPVC) Pressure Pipe and Fittings</div> <div>K. AWWA C500 - Poly(Vinyl Chloride) (PVC) Pressure Pipes, and Fabricated Fittings, 4 in. Through 12 in. for Water Transmission and Distribution</div> <div>L. AWWA Manual M23 - PVC Pipe - Design and Installation</div> <div>M. NSF/ANSI 14 Plastic Piping System Components and Related Materials</div> <div>N. NSF/ANSI 61 Drinking Water System Components - Health Effects</div> <div>O. Plastic Pipe Institute TR-2, PVC Range Composition Listing of Qualified Ingredients</div> <div>PART 2. PRODUCTS</div> <div>2.01 GENERAL</div> <div>A. No foreign-manufactured pipe shall be allowed. All pipe and restraints shall be produced solely in the United States.</div> <div>B. PVC pipe shall be used where shown on the Drawings, specified in Section 01075, listed in the Bid "Schedule of Prices" and Bid Tab, or where otherwise approved by the Engineer and Owner.</div> <div>C. All materials that come in contact with potable water, including lubricants, shall be evaluated, tested, and certified for conformance with ANSI/NSF Standard 61.</div> <div>2.02 PIPE MATERIALS</div> <div>A. All PVC pipe shall be PVC 120 pressure pipe made from clean, virgin class 12451 PVC compound conforming to ASTM D1784 with outside diameter dimensional tolerances and shall conform to all and applicable provisions of ASTM D1784 and D2241. The PVC compounds shall be tested or certified suitable for potable water use by the National Sanitation Foundation (NSF) Testing Laboratory (NSF Standard No. 61). All PVC pipe shall be blue in color.</div> <div>11/2019 - Pipeline 15102 - 3</div>	<div>B. PVC pipe 4 inch through 12 inch nominal size shall meet the requirements of AWWA C500. When AWWA C500 conflicts with the listed ASTM standards, the requirements of AWWA C500 shall prevail.</div> <div>C. Pipe Class: All PVC pipe installed shall be DR 14 (305 psi Pressure Class per AWWA C500) unless otherwise indicated in this section, on the Drawings and/or in Section 01011. In no case shall PVC pipe with a wall thickness less than DR 14 be permitted. The pipe shall be capable of withstanding the overpressure pressure determined by the depth of burial in field. When Cera-Lok® restrained joint C500 PVC pipe is installed by horizontal directional drilling method, it shall be DR 14 (305 psi Pressure Class per AWWA C500) unless otherwise indicated on the Drawings or specified in Section 01011. PVC pipe pressure classes were increased in the latest revision of AWWA C500; however, American Water does not allow pipe in its system to be used in excess of the National Sanitation Foundation (NSF) Testing Laboratory (NSF Standard No. 61). All PVC pipe shall be working pressures exceeding 200 psi.</div> <div>D. Minimum pipe stiffness (Pstiff) at 5% deflection shall be as follows when tested in accordance with D2241:</div> <div>1. DR 14 pipe: 914 pdl for all sizes</div> <div>E. The pipe shall be designed to pass a quick burst test in accordance with DR 14 (305 psi) applied in 60 to 70 seconds when tested in pressure with ASTM D1599, as referenced in ASTM D2241.</div> <div>F. Standard laying lengths shall be 22-foot (6.71 m). Random lengths of not more than 16' of the total footage of each size may be shipped in lieu of the standard lengths. Removal of restrained material shall not be accepted.</div> <div>G. The pipe shall have bell and spigot ends with push-on, O-ring rubber gasket, compression type joints conforming to the requirements of ASTM 2672. Elastomeric gaskets shall conform to the requirements of ASTM F477 for "rigid" (SDR 14) applications in all respects.</div> <div>H. Restrainted Joint Pipe: Appropriate restraint shall be provided at all fittings and valves and at other locations as shown on the Drawings or required in Section 01011. PVC pipe-to-pipe joints shall be restrained using an external restraint harness as specified in Section 15130. Gaskets utilizing integral locking segments such as Field-Lok gaskets are not permitted for use with PVC pipe. Cera-Lok® restrained joint C500 pipe may be used where restrained joint pipe is required, including horizontal directional drilling applications when allowed by Section 02415 and approved by the Engineer. Restrainted joint PVC pipe shall utilize couplings with high-strength, flexible thermoplastic segments, which shall be installed in mating, precision-machined full-diameter grooves in the pipe end coupling to provide full 360-degree restraint with evenly distributed loading. Couplings shall be designed for use at or above the pressure class of the pipe and shall incorporate full elastomeric sealing gaskets meeting the requirements of ASTM F477. Joints shall meet the zero leakage test requirements of ASTM D3129. The pipe, couplings, and locking systems shall be completely non-metallic</div> <div>11/2019 - Pipeline 15102 - 4</div>	<div>and incompressible and the complete restrained joint pipe system shall meet all requirements of AWWA C500. Restrainted joint "swaps" shall not be used.</div> <div>I. Fittings: No PVC fittings (including "swaps") shall be permitted. All fittings for PVC pipe 4" diameter and larger shall be mechanical joint ductile iron fittings connected to PVC pipe with mechanical joint restraint devices as specified in Section 15130, unless otherwise indicated on the Drawings. Concrete thrust blocks shall be installed where shown on the Drawings.</div> <div>2.03 MANUFACTURERS</div> <div>Acceptable PVC pipe manufacturers are:</div> <div>A. JM Eagle, Inc. 6200 West Century Boulevard Los Angeles, CA 90045 (800) 621-4404 www.jmeagle.com</div> <div>B. North American Pipe Corporation 2001 Port Oak Blvd., Suite 500 Houston, TX 77066 (713) 845-7472 www.napcoinc.com</div> <div>C. Diamond Plastic Corporation 1212 Johnston Road Grand Island, NE 68803 (800) PVC-PIPE www.dpcpipe.com</div> <div>D. Northern Pipe Products 1302 38th Street NW Fargo, ND 58102 (701) 747-7555 www.northernpipe.com</div> <div>E. Sanderson Pipe 875 International Boulevard Caryville, TN 37040 (606) 469-3353 www.sandersonpipe.com</div> <div>F. Valon PipeCo, a division of Consolidated Pipe & Supply Company Inc. 1225 Highway Parkway Birmingham, AL 35204 (205) 467-7281 www.consolidatedpipe.com</div> <div>11/2019 - Pipeline 15102 - 5</div>	<div>PART 3. EXECUTION</div> <div>3.01 PACKAGING, HANDLING AND STORAGE</div> <div>A. The manufacturer shall ensure that the interior of all pipe is clean and install plastic cleanliness plugs in all pipes to keep the pipe interiors clean or cover adequately to prevent dirt or truck exhaust from entering pipes.</div> <div>B. Sections of pipe having been discovered with cuts or gouges in excess of 10% of the pipe wall thickness shall not be used.</div> <div>C. Any section of pipe showing a crack or which has reached a blow that may have caused an incident fracture, even though no such fracture is visible, shall be marked as rejected and removed at once from the work.</div> <div>3.02 INSTALLATION</div> <div>Except as modified herein, installation of PVC pipe shall be in full accordance with AWWA C500, AWWA Manual M23, and the US-84 "Handbook of PVC Pipe Design and Construction." In the event of conflicting requirements or guidelines within these referenced publications, the requirements of AWWA C500 shall prevail. Contractor shall also follow the provisions of Sections 02210 and 15000, other sections as applicable, and all manufacturer's recommendations, in addition to the following requirements:</div> <div>A. Assemble pipe using the following types of joints:</div> <div>1. Gasketed bell joint - Integral with the pipe.</div> <div>2. Gasketed coupling - A double gasketed coupling as specified in Section 01011 or</div> <div>3. Restrainted mechanical joint (for pipe to fitting and pipe to valve joints only) - As specified in Section 15105.</div> <div>4. Restrainted Joint Coupling - Joints for restrained joint PVC pipe (Cera-Lok®) shall be as specified in Section 2.02 above.</div> <div>B. Assemble push-on joints in accordance with the pipe manufacturer's recommendations. Assemble mechanical joints in accordance with the fitting and restraint manufacturer's recommendations.</div> <div>C. Do not remove factory installed gaskets. Keep the joint free from sand, dirt, grease or any foreign material. Apply NSF certified lubricant when assembling restrained joints in accordance with the pipe manufacturer's requirements. The use of improper lubricants can damage gaskets.</div> <div>D. Good pipe alignment is essential for proper joint assembly. Align the spigot to the bell and insert the spigot into the bell until it contacts the gasket uniformly. Do not swing or "stab" the joint; this will not disengage the pipe and swing to the bell. The spigot end of the pipe is marked by the manufacturer to indicate the</div> <div>11/2019 - Pipeline 15102 - 6</div>																																				

THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A RETRADEMENT OR ORIGINAL BOUNDARY SURVEY. A ROUTE REPORT OR A SURVEY OR LOCATION REPORT.

REGISTERED PROFESSIONAL ENGINEER
No. 19358
STATE OF INDIANA
David J. Stoepelwerth
CERTIFIED: 02/04/21

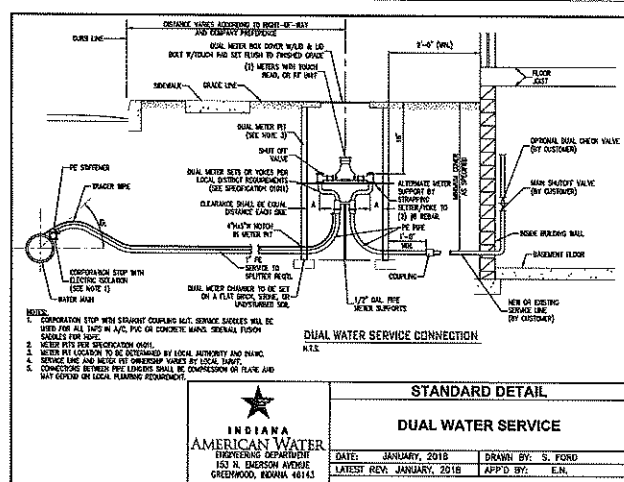
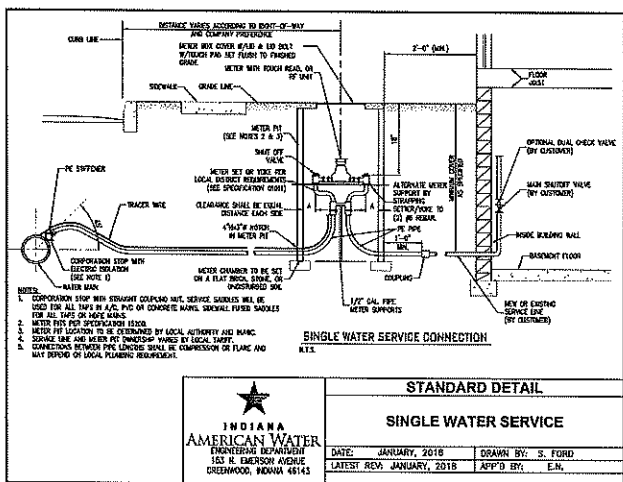
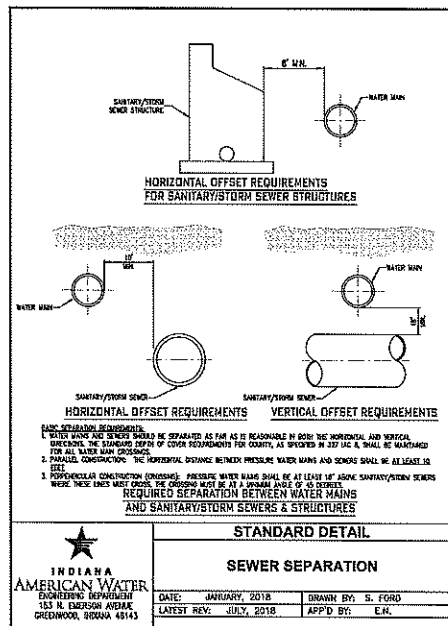
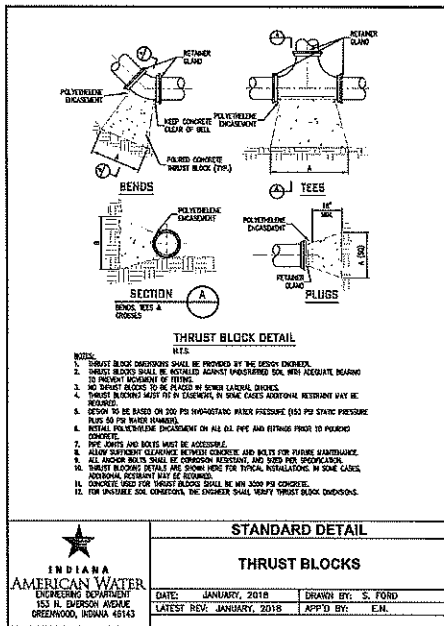
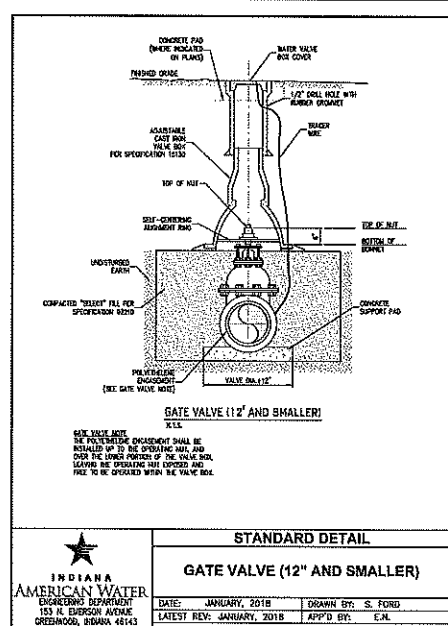
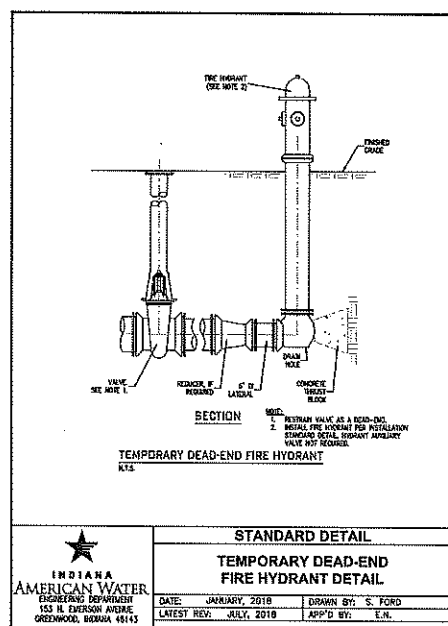
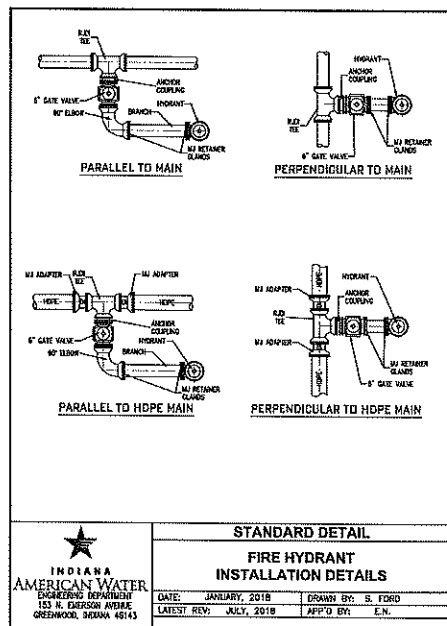
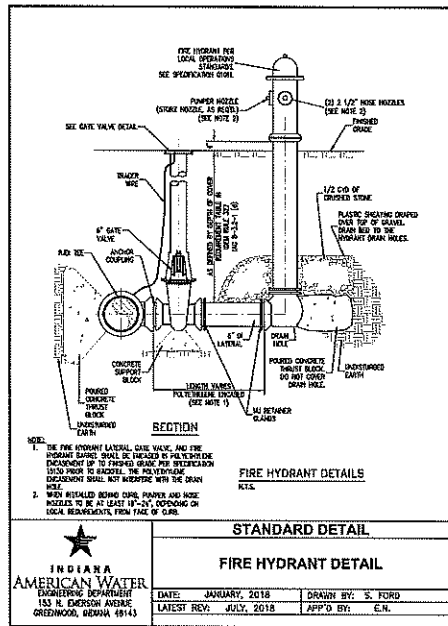
STOEPPELWERTH
CONSTRUCTION DETAILS
THE BLUFFS AT YOUNGS CREEK
SECTION 4
DRAWN BY: AEC
CHECKED BY: BKR
SHEET NO. C803A
S.A. & B.S. NO. 827-03-01-M.I.

JOHNSON COUNTY, INDIANA
FRANKLIN TOWNSHIP

SECTION 4

- C. A 1/2-inch NPT test nipple and plug shall be provided on each tapping saddle to allow pre-testing of the saddle assembly before making the tap.
- D. Any third party inspections will be paid for by the Owner.

END OF SECTION



CONSTRUCTION DETAILS

THE BLUFFS AT YOUNGS CREEK

SECTION 4

FRANKLIN, FRANKLIN TOWNSHIP

JOHNSON COUNTY, INDIANA

STOEPPELWERTH

ALWAYS ON

7965 East 104th Street, Fishers, IN 46038-2505
Phone: 317.840.5555 Fax: 317.840.5540

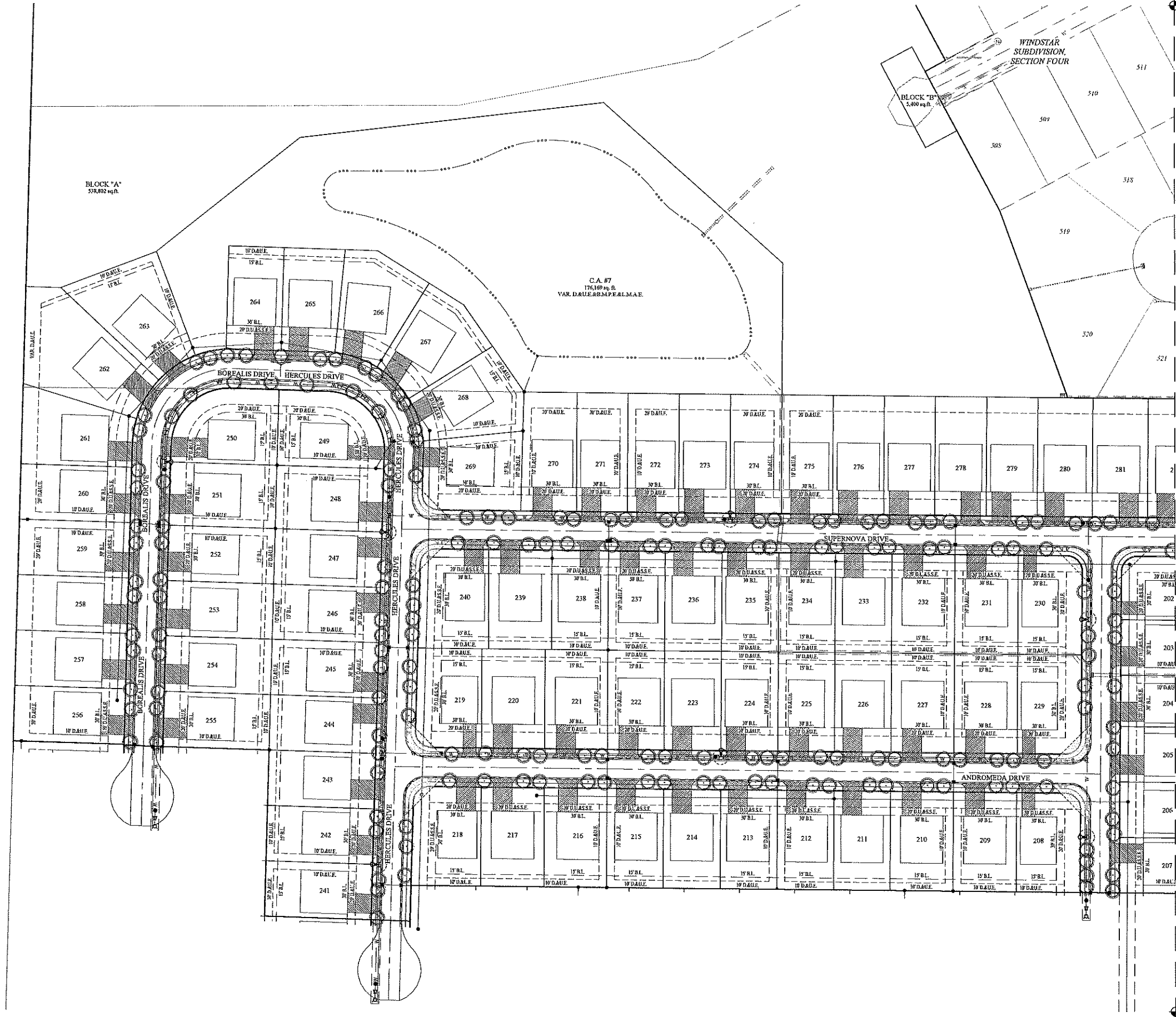
DAVID J. STOEPPELWERTH
REGISTERED PROFESSIONAL ENGINEER
No. 19358
STATE OF INDIANA

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CERTIFIED: 03/04/21
David J. Stoepelwerth

DRAWN BY: AEC
CHECKED BY: BKR
SHEET NO: C803C
S & A JOB NO: 83540MMA-S4

File Name: S:\83540MMA-SO\DIVISIONS\00 - Street Tree Plan.dwg - C900
Modified / By: February 6, 2021 12:42:53 AM / eason
Plotted / By: February 6, 2021 12:30:09 AM / Erik Carson

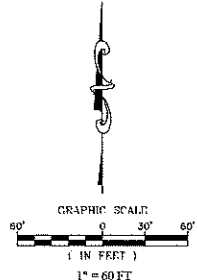


LEGEND

- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED WATER LINE
- PROPOSED HYDRANT w/ 6" VALVE
- PROPOSED GATE VALVE
- PROPOSED STREET TREE
- PLANT RESTRICTION ZONE:
NO TREES INSIDE VISION CLEARANCE
TRIANGLES OR PERMETER STREET
RIGHTS-OF-WAY.
NO TREES WITHIN TEN (10) FEET OF FIRE
HYDRANTS.
NO TREES WITHIN TWO (2) FEET OF ANY
UNDERGROUND UTILITY SERVICE.

NOTES

- STREET TREES ARE REQUIRED FOR EVERY LOT AT A RATIO OF 1 PER 35 FEET OR PORTION THEREOF OF STREET FRONTAGE AND MEET THE REQUIREMENTS OUTLINED IN ARTICLE 6.15 OF THE CITY OF FRANKLIN SUBDIVISION CONTROL ORDINANCE.
- ALL STREET TREES WILL COMPLY WITH THE APPROVED CITY OF FRANKLIN PERMITTED STREET TREE LIST.



STREET TREE PLAN

THE BLUFFS AT YOUNGS CREEK
SECTION 4

FRANKLIN, FRANKLIN TOWNSHIP
JOHNSON COUNTY, INDIANA

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PROFESSIONAL ENGINEER

THIS DRAWING IS NOT INTENDED TO BE A SUBSTITUTE FOR THE ORIGINAL RECORD DRAWING OR SURVEY OR A SURVEYOR'S LOCATION REPORT.

CERTIFIED 02/04/21
David J. Stoeppelwerth

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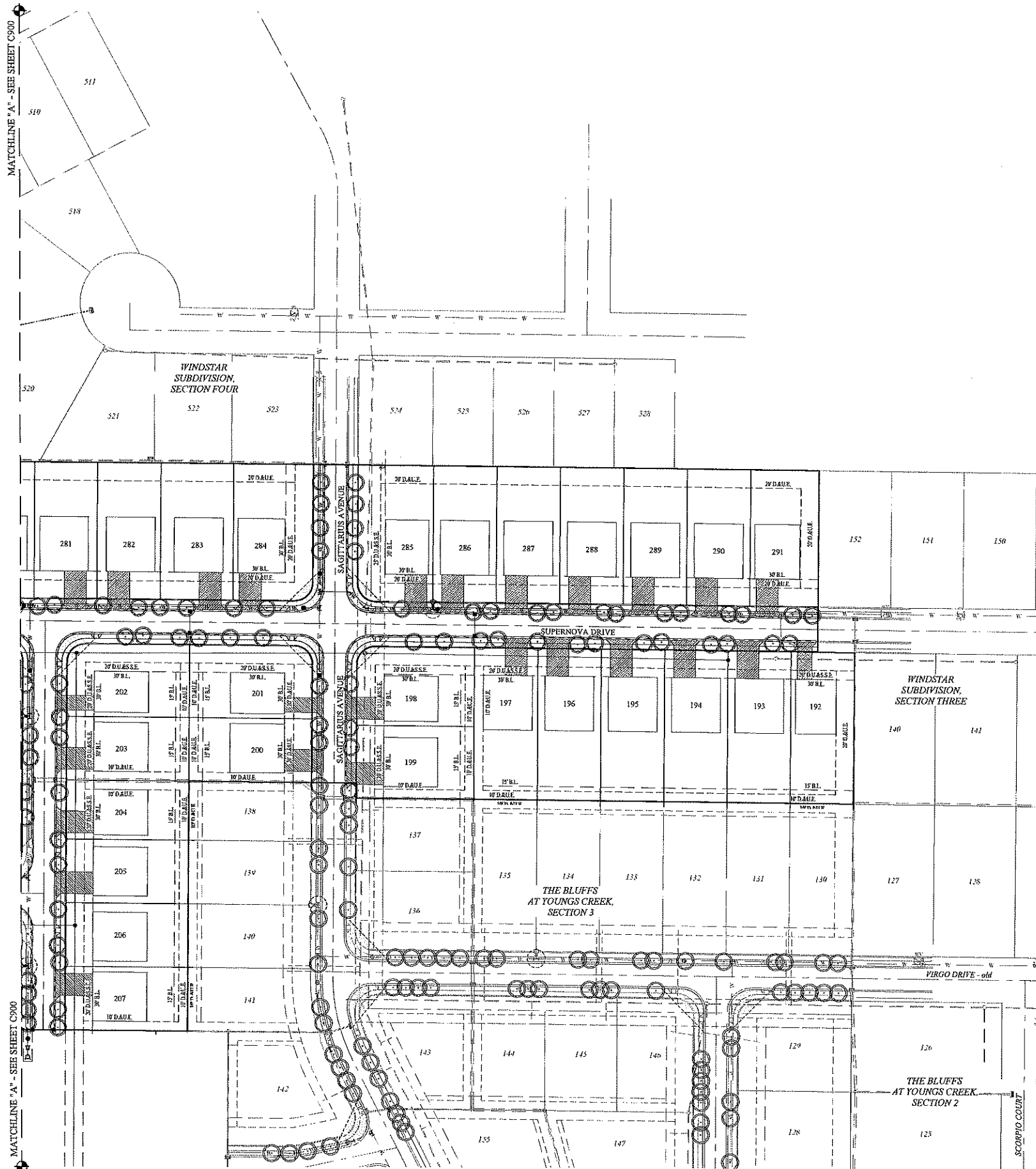
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C900

83540MMA-S4

REVISIONS

NO.	DATE	BY	REVISIONS
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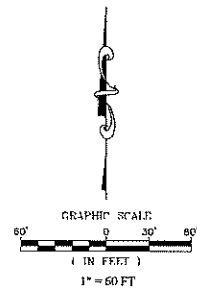
6.15 Street Tree Standards (cont.)

Common Name	Scientific Name
American Hornbeam	<i>Carpinus Caroliniana</i>
Upright European Hornbeam	<i>Carpinus Betulus "Fastigiata"</i>
Elm	
Accolade Elm	<i>Ulmus Japonica x Wilsoniana "Acolade"</i>
Frontier Elm	<i>Ulmus Carpinifolia x Parvifolia "Frontier"</i>
Homestead Elm	<i>Ulmus "Homestead" (complex hybrid)</i>
Ash	
Green Ash	<i>Fraxinus Pennsylvanica</i>
White Ash	<i>Fraxinus Americana</i>
Ginkgo (Male)	
Fairmount Ginkgo	<i>Ginkgo Biloba "Fairmount"</i>
Sentry Ginkgo	<i>Ginkgo Biloba "Sentry"</i>
Upright Ginkgo	<i>Ginkgo Biloba "Upright"</i>
Honeylocust	
Majestic Honeylocust	<i>Gleditsia Triacanthos Inermis "Majestic"</i>
Moraine Honeylocust	<i>Gleditsia Triacanthos Inermis "Moraine"</i>
Shademaster Honeylocust	<i>Gleditsia Triacanthos Inermis "Shademaster"</i>
Skyline Honeylocust	<i>Gleditsia Triacanthos Inermis "Skyline"</i>
Sunburst Honeylocust	<i>Gleditsia Triacanthos Inermis "Sunburst"</i>
Linden	
Basswood	<i>Tilia Americana</i>
Chancellor Linden	<i>Tilia Cordata "Chancellor"</i>
Greenspire Linden	<i>Tilia Cordata "Greenspire"</i>
Silver Linden	<i>Tilia Cordata "Silver"</i>
Swedish Upright Linden	<i>Tilia Cordata "Swedish Upright"</i>
Maple	
Armstrong Red Maple	<i>Acer Rubrum "Autumn Flame"</i>
Paperbark Maple	<i>Acer Grixaum</i>
Red Sunset Red Maple	<i>Acer Rubrum "Red Sunset"</i>
Striped Maple	<i>Acer Pennsylvanicum</i>
Sugar Maple	<i>Acer Saccharum</i>
Tilford Red Maple	<i>Acer Rubrum "Tilford"</i>
Trident Maple	<i>Acer Buergerianum</i>
Oak	
Bar Oak	<i>Quercus Macrocarpa</i>
Chestnut Oak	<i>Quercus Prinus</i>
Chinkapin Oak	<i>Quercus Muhlenbergii</i>
English Oak	<i>Quercus Rubra</i>
Laurel Oak	<i>Quercus Hemisphaerica</i>
Pin Oak	<i>Quercus Palustris</i>
Post Oak	<i>Quercus Strobilata</i>
Red Oak	<i>Quercus Borealis</i>
Scarlet Oak	<i>Quercus Coccinea</i>
Shingle Oak	<i>Quercus Inimicaria</i>
Shumard Oak	<i>Quercus Shumardii</i>
White Oak	<i>Quercus Alba</i>
Common Alder	<i>Alnus Glutinosa</i>
Golden Rain Tree	<i>Koeleria paniculata</i>
Linden Plant Tree	<i>Platanus x Acerifolia</i>

CITY OF FRANKLIN SUBDIVISION CONTROL ORDINANCE: EFFECTIVE DATE - APRIL 11, 2005
REVISED PER ORDINANCE 22712 OF

LEGEND	
	PROPOSED SANITARY SEWER
	PROPOSED STORM SEWER
	PROPOSED WATER LINE
	PROPOSED HYDRANT w/ 8" VALVE
	PROPOSED GATE VALVE
	PROPOSED STREET TREE
PLANT RESTRICTION ZONE: NO TREES INSIDE VISION CLEARANCE TRIANGLES OR PERIMETER STREET RIGHTS-OF-WAY. NO TREES WITHIN (30) FEET OF FIRE HYDRANTS. NO TREES WITHIN TWO (2) FEET OF ANY UNDERGROUND UTILITY SERVICE.	

- NOTES
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 - ALL STREET TREES WILL COMPLY WITH THE APPROVED CITY OF FRANKLIN PERMITTED STREET TREE LIST.



STREET TREE PLAN

THE BLUFFS AT YOUNGS CREEK
SECTION 4

FRANKLIN, FRANKLIN TOWNSHIP
JOHNSON COUNTY, INDIANA

DAVID J. STOEPPELWERTH
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DRAWN BY
AEC

CHECKED BY
BKR

SHEET NO.
C901

DATE
8/11/2021

BY

REVISIONS