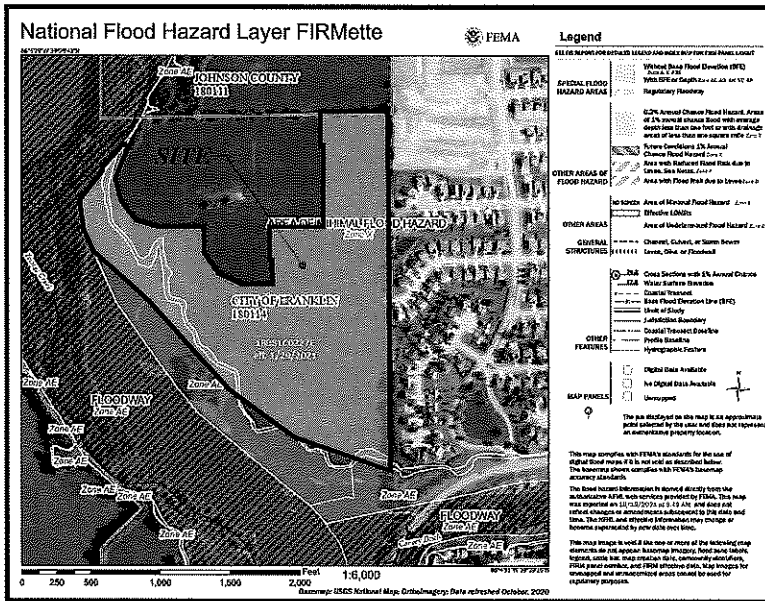
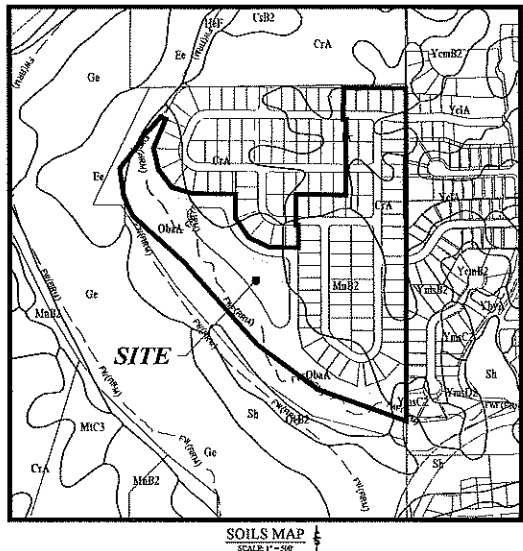
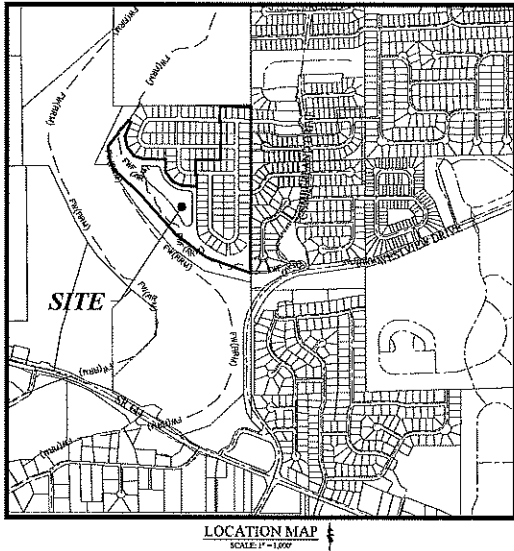


WESTWIND at CUMBERLAND SECTION 1

Developed by:
Arbor Homes
9225 Harrison Park Court
Indianapolis, Indiana 46216
Contact: Lantz McElroy
Phone: (317) 842-1875



SOILS LEGEND	
MAP UNIT	BRIEF DESCRIPTION
Br	Brookston silt clay loam, 0 to 2 percent slopes
CsA	Cresby silt loam, fine-loamy subsoil, 0 to 2 percent slopes
Ea	Eel silt loam, 0 to 2 percent slopes, frequently flooded
McB2	Miamid silt loam, 2 to 6 percent slopes, eroded
ObsA	Ockley loam, 0 to 2 percent slopes
Yc1A	Crosby silt loam, fine-loamy subsoil-Urbau land complex, 0 to 2 percent slopes

UTILITY CONTACTS

City of Franklin - Water/sewer
796 South State Street
Franklin, Indiana 46131
Contact: Sally Brown
City: (812) 726-5430

City of Franklin - Stormwater
796 South State Street
Franklin, Indiana 46131
Contact: Tyne White
City: (888) 726-5430 x1213

Indiana American Water
1701 Emerson Avenue
Nevinsport, Indiana 46143
Contact: Tracy White
City: (317) 885-4216

Duke Energy
2515 North Morton Street
Franklin, Indiana 46131
Contact: Jessica Turner
City: (812) 741-0942

Vectren Energy
600 Industrial Avenue
Franklin, Indiana 46131
Contact: Dave Sherry
City: (317) 726-5430

Comcast Cable
5330 East 56th Street
Indianapolis, Indiana 46220
Contact: Mike Hargrett
City: (317) 275-9392

Century Link
50 North Jackson Street
Franklin, Indiana 46131
Contact: Lisa Hargrett
City: (317) 726-6485

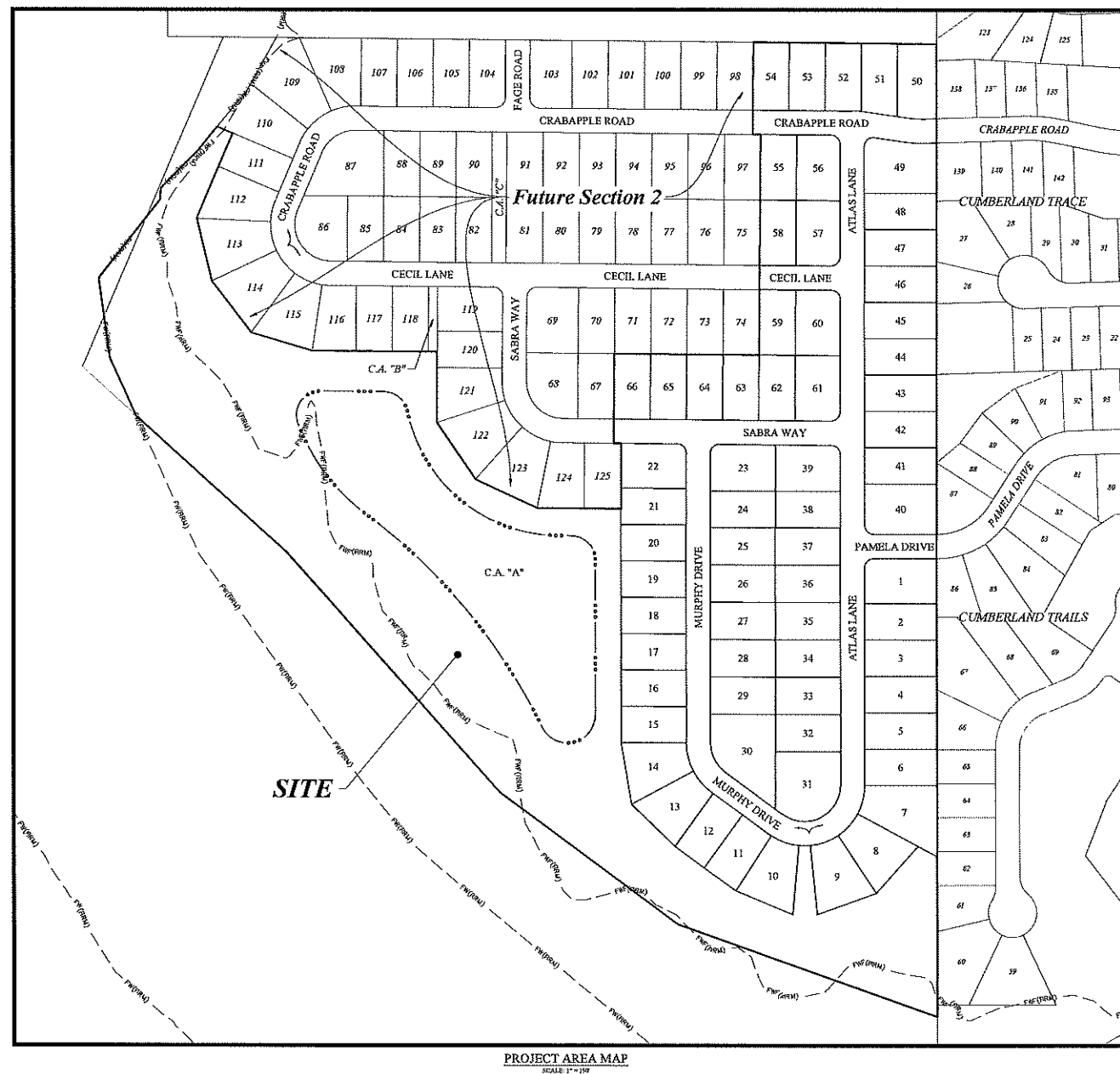
DESIGN DATA	
DESIGN SPEED LIMIT	25 MPH
NO. OF LOTS	66
ACREAGE	38.078 ac. ±
DENSITY	1.73 lots/ac.
CRADAPPLE ROAD	382.34 L.F.
ATLAS LANE	1,512.92 L.F.
MURPHY DRIVE	956.77 L.F.
CECIL LANE	192.10 L.F.
SABRA WAY	494.54 L.F.
PAMELA DRIVE	175.13 L.F.
TOTAL	3,713.75 L.F.

FLOOD STATEMENT

THIS IS TO CERTIFY THAT A PORTION OF THE SUBJECT PROPERTY IS LOCATED IN A SPECIAL FLOOD HAZARD ZONE "AF" AS SAID TRACT PLOTS BY SCALE ON COMMUNITY PANEL 18001C0227E OF THE FLOOD INSURANCE RATE MAPS DATED JANUARY 29, 2021

INDEX	
SHEET No.	SHEET TITLE
C001	Cover Sheet
C100 - C140	TOPOGRAPHICAL SURVEY / DEMO PLAN
C200 - C260	SITE DEVELOPMENT PLAN
C261 - C297	EMERGENCY FLOOD ROUTE PLAN
C300 - C303	INITIAL STORM WATER POLLUTION & PREVENTION PLAN
C304 - C307	TEMPORARY STORM WATER POLLUTION & PREVENTION PLAN
C308 - C311	PERMANENT STORM WATER POLLUTION & PREVENTION PLAN
C312	STORM WATER POLLUTION & PREVENTION PLAN SPECIFICATIONS
C313	STORM WATER POLLUTION & PREVENTION PLAN DETAILS
C400 - C402	STREET PLAN & PROFILES
C403	INTERSECTION DETAILS
C404 - C405	STREET SIGN PLAN
C500 - C503	SANITARY SEWER PLAN & PROFILES
C600 - C603	STORM SEWER PLAN & PROFILES
C604 - C605	SUB-SURFACE DRAIN / BUMP CONNECTION PLAN
C700 - C705	WATER PLAN & PROFILES
C800A - C800C	CONSTRUCTION SPECIFICATIONS & DETAILS
C901A - C901B	SANITARY
C902A - C902B	STORM
C903A - C903D	WATER
C900 - C901	STREET TREE PLAN

REVISIONS			
SHT. No.	DESCRIPTION	DATE	BY



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.

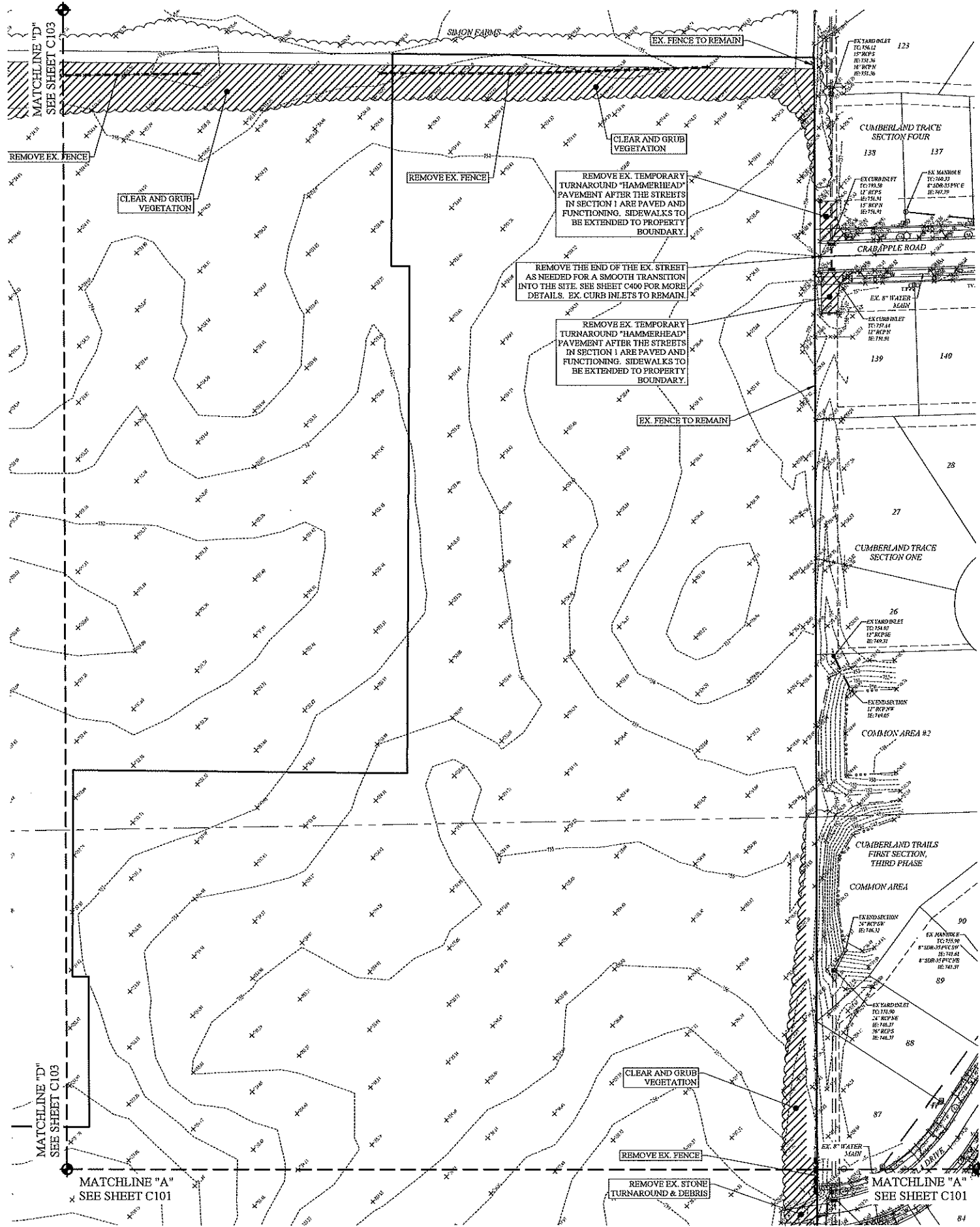
INDIANA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS LATEST EDITION TO BE USED WITH THESE PLANS UNLESS ALTERNATE SPECIFICATIONS ARE SHOWN WITHIN.

CITY OF INDIANAPOLIS
DEPARTMENT OF BUSINESS AND NEIGHBORHOOD SERVICES (DNS)
1200 MADISON AVE., SUITE 100
INDIANAPOLIS, INDIANA 46225
TELEPHONE No.: (317) 327-8700

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

David J. Stoeppelwerth
DAVID J. STOEPPELWERTH
PROFESSIONAL ENGINEER





LEGEND	
EXISTING FEATURES	
— W —	WATER MAIN
— OHE —	ELECTRIC LINE, OVERHEAD
— U —	GAS MAIN
— S —	SANITARY SEWER
— SS —	STORM SEWER
— STD —	STUR
— 000 —	NORMAL WATER ELEVATION
— >>>> —	WATER FLOWLINE
— X—X—X—X—	FENCE LINE
~~~~~	TREE LINE
	WATER, FIRE HYDRANT
	WATER, VALVE
	WATER, METER
	GAS, VALVE
	POWER POLE
— A —	GLT ANCHOR
	ELECTRIC, TRANSFORMER
	TELEPHONE, PEDESTAL
	CABLE, PEDESTAL
	MAIL BOX
--- FWD(PSD) ---	FLOODWAY (FWD)
--- FWT(PSD) ---	FLOODWAY FRINGE (FWD)
	CROSS SECTION (FWD)
BASE FLOOD EL.=100.00	BASE FLOOD ELEVATION (FWD)
REMO FEATURES	
— X — X — X — X — X —	TO BE REMOVED, LINEAR
	TO BE REMOVED, AREA

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 CONFORM ALL SUCH INFORMATION IN THE AREA. THE SURVEYOR DOES NOT WARRANT. 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.   CONTRACTOR SHALL VERIFY DEPTH OF ALL EXISTING CONDUITS AND CABLES PRIOR TO CONSTRUCTION. CONTRACTOR IS NOT RESPONSIBLE FOR ANY DAMAGE TO UTILITIES, STORM SEWERS OR STREETS. CONFLICTS AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.
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**BENCHMARK DATA**

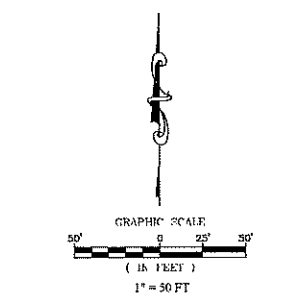
**COORDINATING BENCHMARK:**  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING  
THE NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER  
SERVICE (OPUS) AND ARE REFERENCED TO THE NAD83 DATUM.

**SITE INFO:**

TRM #1-A: 1/4 AC SQUARE AT THE NORTHWEST CORNER OF THE  
COURT YARD WHEN ADJACENT TO THE NORTH SIDE OF CRANFLEAF ROAD.  
ELEV = 95.4 (NAD74) (±)

TRM #2-A: 1/4 AC SQUARE AT THE SOUTHWEST CORNER OF THE  
COURT YARD WHEN ADJACENT TO THE NORTH SIDE OF PAMLA DRIVE AT THE  
WEST END OF THE ROAD.  
ELEV = 151.02 (NAD74) (±)

TRM #3-A: 1/4 AC SQUARE BY THE CONCRETE TOP OF AN UNFINISHED  
LIFT SLAB (APPROXIMATELY 200 FEET WEST OF THE POND AT THE  
SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO.  
ELEV = 74.17 (NAD74) (±)



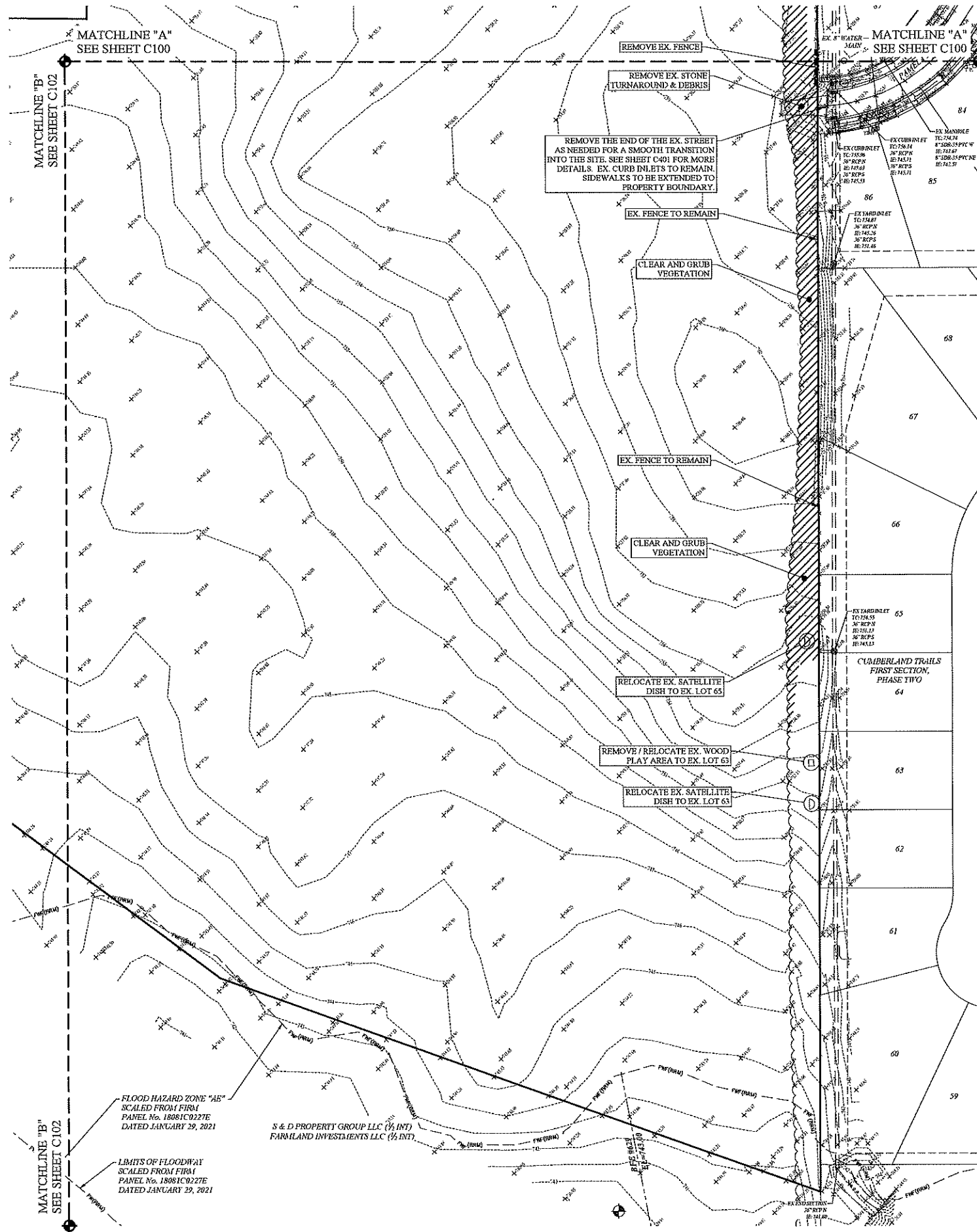
THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A RETRACEMENT OR ORIGINAL BOUNDARY SURVEY. A ROUTE SURVEY OR A SURVEY OR LOCATION REPORT.

STOEPPELWERTH

TOPOGRAPHICAL SURVEY / DEMO PLAN

DRAWN BY:  
PDR  
SE  
C  
S &  
9159

FRANKLIN, FRANKLIN TOWNSHIP      JOHNSON COUNTY, INDIANA



LEGEND	
EXISTING FEATURES	
— W —	WATER MAIN
— OHE —	ELECTRICAL LINE, OVERHEAD
— G —	GAS MAIN
—  —	SANITARY SEWER
 —	STORM SEWER
—  —	CONTOUR
—  —	NORMAL WATER ELEVATION
—  —	WATER FLOWLINE
— X — X — X —	PENET LINE
	TREE LINE
	WATER, FIRE HYDRANT
	WATER, VALVE
	WATER, METER
	GAS, VALVE
	POWER POLE
—  —	GUY ANCHOR
	ELECTRIC TRANSFORMER
T.P.	TELEPHONE, PEDESTAL
T.V.	CABLE, PEDESTAL
M.D.	MAIL BOX
— F.W. (road) —	FLOODWAY FENCE (ROAD)
— F.W. (stream) —	FLOODWAY FENCE (STREAM)
	CROSS SECTION (P&M)
BASE FLOOD EL. - 500.00	BASE FLOOD ELEVATION (P&M)
DEMO FEATURES	
—  —	TO BE REMOVED, LINEAR
	TO BE REMOVED, AREA

## NOTES

1. THIS SURVEY REFLECTS AVERAGE 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 SERVICE OR ABANDONED UTILITIES MAY FURTHER EXIST WITHOUT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. ALTHOUGH WE DO CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE DATA AVAILABLE, THE SURVEYOR DOES NOT GUARANTEE THE PHYSICAL LOCATION OF THE UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING KNOWN UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE IS NO UTILITY IN CONFLICT WITH THE PROPOSED CONSTRUCTION. STREETS, CONFLICTS AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.

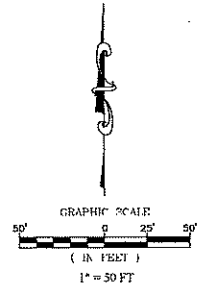
**BENCHMARK DATA**

**ORIGINATING BENCHMARK:**  
BENCHMARKS BY DATUMS FOR THIS PROJECT WERE DERIVED USING  
THE NATIONAL GEODETIC SURVEY (NO. 1) POSITIONING SURVEY  
SERVICE (U.S. AND NEAR ADJACENT TO THE NAVD'83 DATUM).

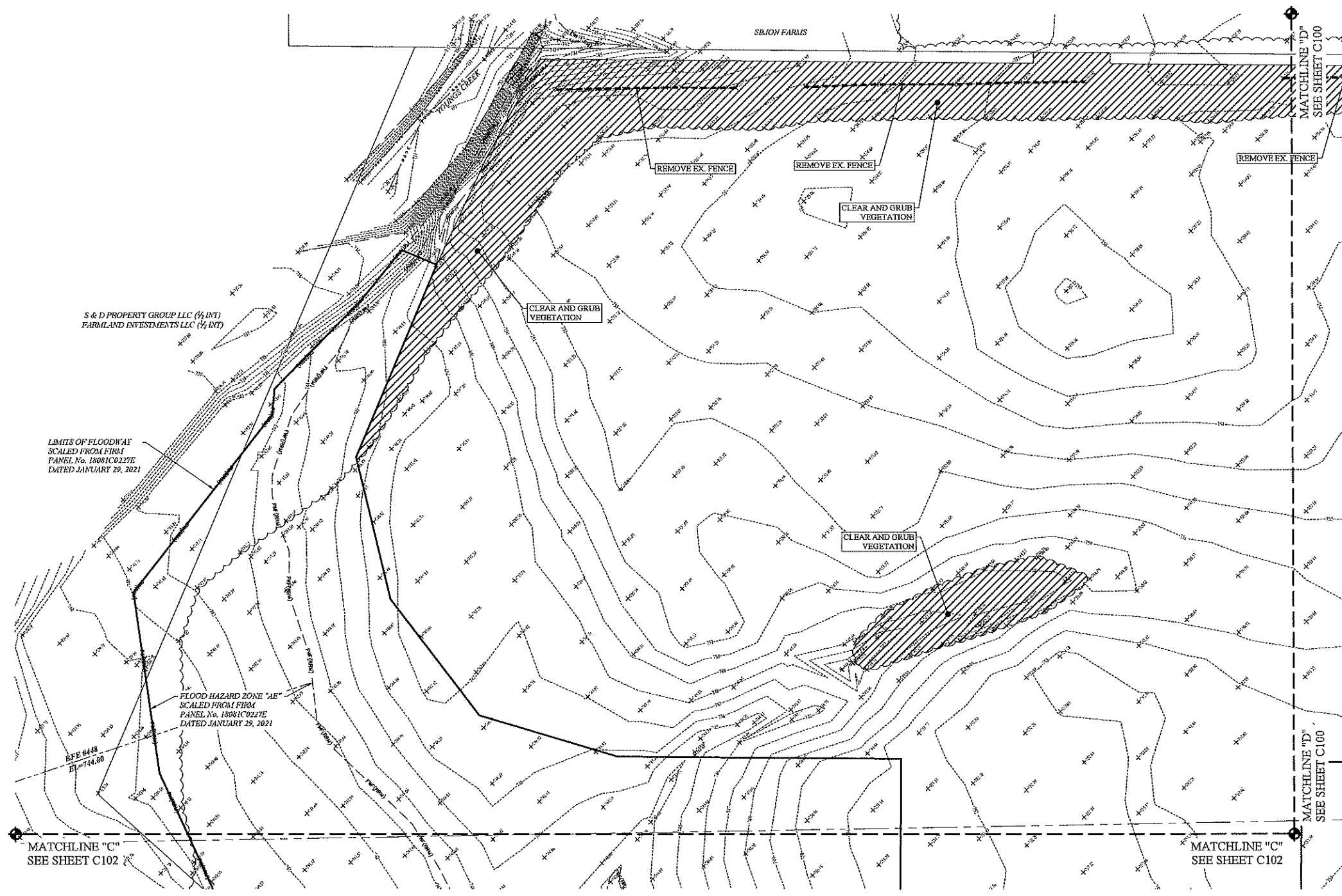
**SITE TBM:**  
TBM #1: A CUT SURVEY AT THE NORTHWEST CORNER OF THE  
CONCRETE TUNNEL AROUNDING ON THE NORTH SIDE OF CRABAPPLE ROAD.  
ELEV=756.54 (NAVD'83)

**TBM #2:** A CUT SURVEY AT THE SOUTHWEST CORNER OF THE  
CONCRETE SIDEWALK ON THE NORTH SIDE OF PANAMA DRIVE AT THE  
CROSSING OF THE ROAD.  
ELEV=754.62 (NAVD'83)

**TBM #3:** A CUT SURVEY OF THE CONCRETE TOP OF AN UNFINISHED  
FOUNDATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE  
SOUTH END OF TUNNEL AND LATER SECTION ONE, PHASE TWO.  
ELEV=741.71 (NAVD'83)

[illegible]





**LEGEND**

**EXISTING FEATURES**

- W - WATER MAIN
- OH - ELECTRICAL LINE, OVERHEAD
- G - GAS MAIN
- SS - SANITARY SEWER
- ST - STORM SEWER
- 870 - CONTOUR
- N - NORMAL WATER ELEVATION
- W - WATER FLOWLINE
- F - FENCE LINE
- T - TREE LINE
- W - WATER, FIRE HYDRANT
- W - WATER, VALVE
- W - WATER, METER
- G - GAS, VALVE
- P - POWER POLE
- A - GUY ANCHOR
- E - ELECTRIC, TRANSFORMER
- T - TELEPHONE, PEDestal
- C - CABLE, PEDestal
- M - MAILBOX
- F - FLOODWAY (FIRM)
- F - FLOODWAY FRINGE (FIRM)
- C - CROSS SECTION (FIRM)
- B - BASE FLOOD ELEVATION (FIRM)

**DEMO FEATURES**

- TO BE REMOVED, LINEAR
- TO BE REMOVED, AREA

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

**BENCHMARK DATA**

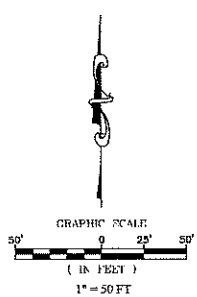
ORIGINATING BENCHMARK:  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (NAD 83) AND ARE REFERENCED TO THE NAVD 83 DATUM.

**SITE TIES**

TRM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=756.54 (NAVD 83)

TRM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.02 (NAVD 83)

TRM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LEFT STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO. ELEV=741.77 (NAVD 83)



TOPOGRAPHICAL SURVEY / DEMO PLAN

WESTWIND at CUMBERLAND

SECTION 1

FRANKLIN, FRANKLIN TOWNSHIP

JOHNSON COUNTY, INDIANA

**STOEPPELWERTH**

REGISTERED PROFESSIONAL ENGINEER

No. 19358

STATE OF INDIANA

David J. Stoepelwerth

CERTIFIED: 12/02/21

7905 East 18th Street, Ellettsville, IN 46034-2905

phone: 317.440.5925 fax: 317.448.2942

ALWAYS ON

DATE: _____

BY: _____

REVISIONS: _____

DRAWN BY: PDR

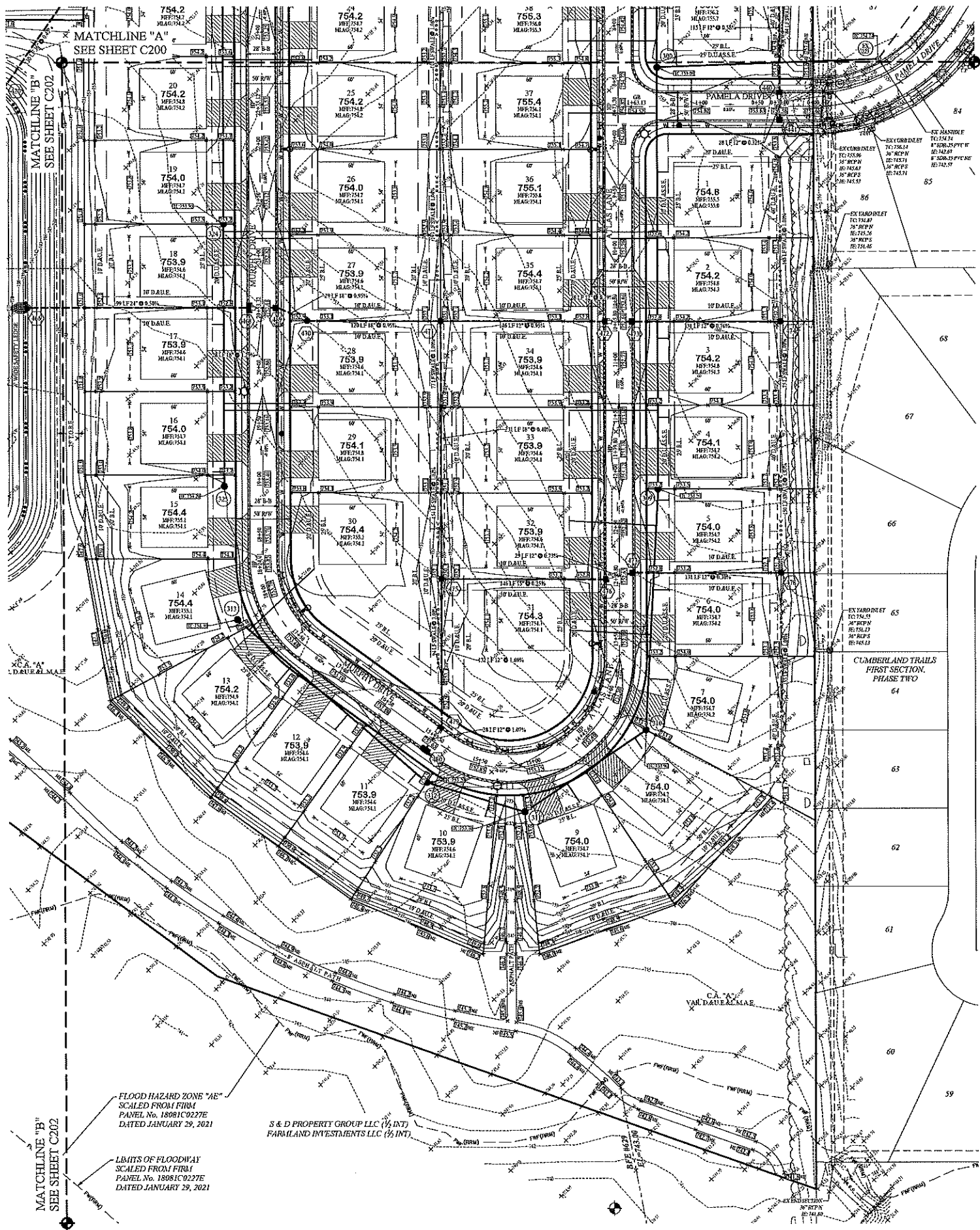
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SHEET NO: C103

S & A JOB NO: 91595ARB-S1

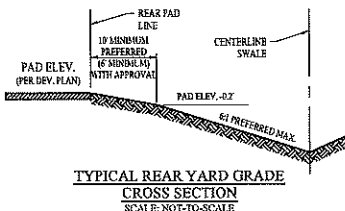






#### EARTHWORK NOTES

- EXCAVATION  
A. EXCAVATED MATERIAL THAT IS SUITABLE MAY BE USED FOR FILL. ALL UNSUITABLE MATERIAL AND ALL SURPLUS EXCAVATED MATERIAL NOT REQUIRED SHALL BE REMOVED FROM THE SITE.  
B. PROVIDE AND PLACE ANY ADDITIONAL FILL MATERIAL FROM OFFSITE AS MAY BE NECESSARY TO PRODUCE THE GRADES REQUIRED ON PLANS. FILL OBTAINED FROM OFFSITE SHALL BE OF QUALITY AS SPECIFIED FOR FILL HEREIN AND THE SOURCE APPROVED BY THE DEVELOPER. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR FOR ANY COSTS FOR FILL NEEDED.
- REMOVAL OF TREES  
A. ALL TREES AND STUMPS SHALL BE REMOVED FROM AREAS TO BE OCCUPIED BY A ROAD SURFACE OR STRUCTURE AREA. TREES AND STUMPS SHALL NOT BE TURNED ON SITE.  
B. PROTECTION OF TREES  
1. THE CONTRACTOR SHALL, AT THE DIRECTION OF THE DEVELOPER, ENDEAVOR TO SAVE AND PROTECT TREES OF VALUE AND WORTH WHICH DO NOT IMPAIR CONSTRUCTION OF IMPROVEMENTS AS DESIGNED.  
2. IN THE EVENT A CUT OR FILL EXCEEDS 5 FEET OVER THE ROOT AREA, THE DEVELOPER SHALL BE CONSULTED WITH RESPECT TO PROTECTIVE MEASURES TO BE TAKEN, IF ANY, TO PRESERVE SUCH TREES.
- REMOVAL OF TOPSOIL  
A. ALL TOPSOIL SHALL BE REMOVED FROM ALL AREAS BENEATH FUTURE PAVEMENTS OR BUILDINGS. TOPSOIL REMOVAL SHALL BE TO A MINIMUM DEPTH OF 6 INCHES OR TO THE DEPTH INDICATED BY THE GEOTECHNICAL REPORT PROVIDED BY THE DEVELOPER TO BE EXCAVATED OR FILLED. TOPSOIL SHOULD BE STORED AT A LOCATION WHERE IT WILL NOT INTERFERE WITH CONSTRUCTION OPERATIONS. THE TOPSOIL SHALL BE FREE OF DEBRIS AND STONES.
- UTILITIES  
A. RULES AND REGULATIONS GOVERNING THE RESPECTIVE UTILITY SHALL BE OBSERVED BY EXECUTING ALL WORK UNDER THIS SECTION.  
B. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE LOCATION OF EXISTING UNDERGROUND UTILITIES 2 WORKING DAYS PRIOR TO COMMENCING WORK. FOR UTILITY LOCATIONS TO BE MARKED CALL 1011 FREE 811.
- SITE GRADING  
A. THE CONTRACTOR SHALL DO ALL CUTTING, FILLING, COMPUTING OF FILL AND MOISTURE GRADING REQUIRED TO BRING ENTIRE PROJECT AREA TO SUBGRADE AS SHOWN ON THE DRAWING.  
B. THE TOLERANCE FOR PAVED AREAS SHALL NOT EXCEED 0.01 FEET ABOVE ESTABLISHED SUBGRADE. ALL OTHER AREAS SHALL NOT EXCEED 0.05 FEET PLUS OR MINUS THE ESTABLISHED GRADE. PROVIDE ROUNDOFFS AT TOP AND BOTTOM OF BANKS AND OTHER BREAKS IN GRADE.  
C. THE ENGINEER SHALL BE NOTIFIED WHEN THE CONTRACTOR HAS REACHED THE TOP GRADE AS STATED ABOVE, SO THAT FIELD MEASUREMENTS AND SPOT ELEVATIONS CAN BE VERIFIED BY THE ENGINEER. THE CONTRACTOR SHALL NOT REMOVE EQUIPMENT FROM THE SITE UNTIL THE ENGINEER HAS VERIFIED THAT THE JOB MEETS THE ABOVE TOLERANCE.



LEGEND	
EXISTING FEATURES	
W	WATER MAIN
OME	ELECTRICAL LINE, OVERHEAD
G	GAS MAIN
SS	SANITARY SEWER
SSS	STORM SEWER
STO	CONTIGUOUS
NO	NORMAL WATER ELEVATION
WFL	WATER FLOWLINE
FL	FENCE LINE
TL	TREE LINE
WV	WATER, FIRE HYDRANT
WV	WATER, VALVE
WM	WATER, METER
GV	GAS, VALVE
PP	POWER POLE
GA	GUY ANCHOR
ET	ELECTRIC, TRANSFORMER
TP	TELEPHONE, PEDestal
CP	CABLE, PEDestal
MB	MAILBOX
FB	FLOODWAY (FIRM)
FB	FLOODWAY (FIRM)
CS	CROSS SECTION (FIRM)
BE	BASE FLOOD ELEVATION (FIRM)
PROPOSED FEATURES	
W	WATER MAIN
SS	SANITARY SEWER
SSS	STORM SEWER
STO	CONTIGUOUS
NO	NORMAL WATER ELEVATION
WFL	WATER FLOWLINE
FL	FENCE LINE
TL	TREE LINE
WV	WATER, FIRE HYDRANT
WV	WATER, VALVE
WM	WATER, METER
GV	GAS, VALVE
PP	POWER POLE
GA	GUY ANCHOR
ET	ELECTRIC, TRANSFORMER
TP	TELEPHONE, PEDestal
CP	CABLE, PEDestal
MB	MAILBOX
FB	FLOODWAY (FIRM)
FB	FLOODWAY (FIRM)
CS	CROSS SECTION (FIRM)
BE	BASE FLOOD ELEVATION (FIRM)

ABBREVIATIONS	
B.L.	BUILDING SETBACK LINE
ME	MATCH EXISTING
HP	HIGH POINT
LP	LOW POINT
GB	GRADE BREAK

NOTES	
1.	CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING ON-SITE UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE IS NO CONFLICT WITH OTHER UTILITIES, STORM SEWERS OR STREETS. CONFLICTS AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.
2.	SEE L&E #1 SWELL WAY CROSS SECTION "C" ON SHEET C01B.

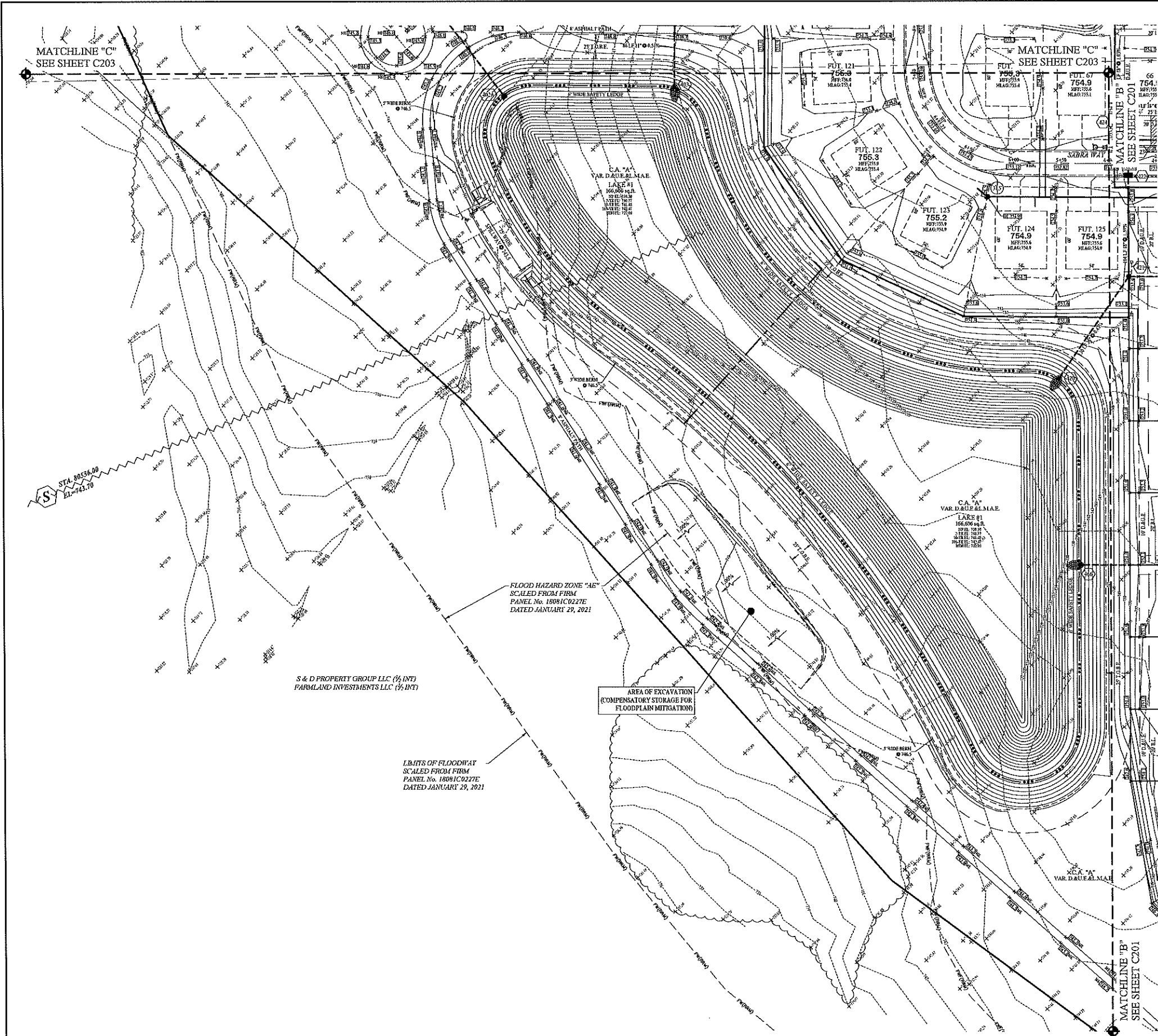
BENCHMARK DATA	
ORIGINATING BENCHMARK: BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONE LINE POSITIONING USER SERVICE (NAD 83) AND ARE REFERENCED TO THE NAD 83 DATUM.	
SITE TBM: TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN ARROUND ON THE NORTH SIDE OF CUMBERLAND ROAD. ELEV: 754.0 (NAD 83)	
TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE TURN ARROUND ON THE NORTH SIDE OF CUMBERLAND ROAD. ELEV: 754.0 (NAD 83)	
TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LOT 1 STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO. ELEV: 754.0 (NAD 83)	

STOEPPELWERTH	
REGISTERED PROFESSIONAL ENGINEER	
No. 19358	
STATE OF INDIANA	
David J. Stoepelwerth	
CERTIFIED: 12/02/21	
THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A REFERENCE OR SURVEY OR A SURVEYOR LOCATION REPORT.	

**Indianan 811**  
Know what's below.  
811 before you dig.

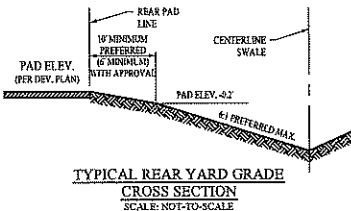
**SITE DEVELOPMENT PLAN**  
**WESTWIND at CUMBERLAND**  
**SECTION 1**  
**FRANKLIN, FRANKLIN TOWNSHIP**  
**JOHNSON COUNTY, INDIANA**

Drawn by: PDR  
Checked by: BKR  
Sheet No: **C201**  
S & A JOB NO: 91595ARB-S1



#### EARTHWORK NOTES

1. EXCAVATION  
A. EXCAVATED MATERIAL THAT IS SUITABLE MAY BE USED FOR FILL. ALL UNSUITABLE MATERIAL AND ALL SUBFILES EXCAVATED MATERIAL NOT REQUIRED SHALL BE REMOVED FROM THE SITE.  
B. PROVIDER AND PLACE ANY ADDITIONAL FILL MATERIAL FROM OFFSITE AS MAY BE NECESSARY TO PRODUCE THE GRADES REQUIRED ON PLANS. FILL OBTAINED FROM OFFSITE SHALL BE OF QUALITY AS SPECIFIED FOR FILL HEREIN AND THE SOURCE APPROVED BY THE DEVELOPER. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR FOR ANY COSTS FOR FILL NEEDED.
2. REMOVAL OF TREES  
A. ALL TREES AND STUMPS SHALL BE REMOVED FROM AREAS TO BE OCCUPIED BY A ROAD SURFACE OR STRUCTURE AREA. TREES AND STUMPS SHALL NOT BE BURNED ON SITE.  
B. PROTECTION OF TREES  
A. THE CONTRACTOR SHALL, AT THE DISCRETION OF THE DEVELOPER, ENDEAVOR TO SAVE AND PROTECT TREES OF VALUE AND WORTH WHICH DO NOT IMPAIR CONSTRUCTION OF IMPROVEMENTS AS DESIGNED.  
B. IN THE EVENT CUT OR FILL EXCEEDS 15 FEET OVER THE ROOT AREA, THE DEVELOPER SHALL BE CONSULTED WITH RESPECT TO PROTECTIVE MEASURES TO BE TAKEN, IF ANY, TO PRESERVE THE TREES.
3. REMOVAL OF TOPSOIL  
A. ALL TOPSOIL SHALL BE REMOVED FROM ALL AREAS BENEATH FUTURE PAVEMENT OR BUILDING. TOPSOIL REMOVAL SHALL BE TO A MINIMUM DEPTH OF 6 INCHES OR TO THE DEPTH INDICATED IN THE GEOCHEMICAL REPORT PROVIDED BY THE DEVELOPER TO BE EXCAVATED OR FILLER. TOPSOIL SHOULD BE STORED AT A LOCATION WHERE IT WILL NOT INTERFERE WITH CONSTRUCTION OPERATIONS. THE TOPSOIL SHALL BE FREE OF DEBRIS AND STONES.
4. UTILITIES  
A. RULES AND REGULATION GOVERNING THE RESPECTIVE UTILITIES SHALL BE OBSERVED IN EXECUTING ALL WORK UNDER THIS SECTION.  
B. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE LOCATION OF EXISTING UNDERGROUND UTILITIES 2 WORKING DAYS PRIOR TO COMMENCING WORK. FOR UTILITY LOCATIONS TO BE MARKED CALL TOLL FREE 811.
5. SITE GRADING  
A. THE CONTRACTOR SHALL DO ALL CUTTING, FILLING, CONSTRUCTION OF FILL AND ROUGH GRADING REQUIRED TO BRING ENTIRE PROJECT AREA TO SUBGRADE AS SHOWN ON THE DRAWING.  
B. THE TOLERANCE FOR PAVED AREAS SHALL NOT EXCEED 0.03 FEET ABOVE ESTABLISHED SUBGRADE. ALL OTHER AREAS SHALL NOT EXCEED 0.05 FEET PLUS OR MINUS THE ESTABLISHED GRADE. PROVIDE ROUNDOFFS AT TOP AND BOTTOM OF BANKS AND OTHER BREAKS IN GRADE.  
C. THE ENGINEER SHALL BE NOTIFIED WHEN THE CONTRACTOR HAS REACHED THE TOLERANCE AS STATED ABOVE, SO THAT FIELD MEASUREMENTS AND SPOT ELEVATIONS CAN BE VERIFIED BY THE ENGINEER. THE CONTRACTOR SHALL NOT REMOVE EQUIPMENT FROM THE SITE UNTIL THE ENGINEER HAS VERIFIED THAT THE JOB MEETS THE ABOVE TOLERANCE.



LEGEND	
EXISTING FEATURES	
W	WATER MAIN
OH	ELECTRICAL LINE, OVERHEAD
G	GAS MAIN
SS	SANITARY SEWER
SS	STORM SEWER
870	CONTOUR
---	NORMAL WATER ELEVATION
---	WATER FLOWLINE
---	FENCE LINE
---	TRAIL LINE
---	WATER FIRE HYDRANT
---	WATER VALVE
---	WATER METER
---	GAS VALVE
---	POWER POLE
---	GUY ANCHOR
---	ELECTRIC TRANSFORMER
---	TELEPHONE, FIBER OPTIC
---	CABLE, FIBER OPTIC
---	MAIL BOX
---	FLOODWAY (FRM)
---	FLOODWAY FRIDGE (FRM)
---	CROSS SECTION (FRM)
---	BASE FLOOD ELEVATION (FRM)
PROPOSED FEATURES	
W	WATER MAIN
SS	SANITARY SEWER
SS	STORM SEWER
870	CONTOUR
---	NORMAL WATER ELEVATION
---	SWALE FLOWLINE
---	GRADE ELEVATION
---	5" WIDE SIDEWALK (BY HOAR BUILDER) (DEVELOPER SHALL CUT ALL SIDEWALKS ALONG ALL CORNER AREAS)
---	CURB & GUTTER w/ 6" UNDERDRAIN
---	5" SUB-SURFACE DRAIN (SWALE)
---	LOT NUMBER
---	PAID ELEVATION
---	MIN. FINISH FLOOR ELEVATION
---	MIN. FLOOD PROTECTION GRADE
---	MIN. FINISH FLOOR ELEVATION IS BASED OFF OF THE FOLLOWING CRITERIA:
---	1. 12" (1.0') ABOVE THE NEAREST UPSTREAM OF DOWNSIDE
---	2. 15" (1.25') ABOVE THE NEAREST SANITARY MANHOLE (WHICHEVER IS LOWEST)
---	3. 8" (0.5') ABOVE THE MFG
ABBREVIATIONS	
R.L.	BUILDING SETBACK LINE
ME	MATCH EXISTING
HP	HIGH POINT
LP	LOW POINT
GB	GRADE BREAK

- #### NOTES
1. CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING ON-SITE UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE IS NOT ANY CONFLICT WITH OTHER UTILITIES, STORM SEWERS OR STREETS. CONFLICTS AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.
  2. SEE LANE #1 CROSS SECTION ("A-A") ON SHEET C201. SEE LANE #1 SPILLWAY CROSS SECTION ("B-B") ON SHEET C201.

BENCHMARK DATA	
ORIGINATING BENCHMARK	
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ON THE POSITIONING USER SERVICE (NAD 83) AND ARE REFERENCED TO THE NAD 83 DATUM.	
SITE TIE	
TRM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF CRAMPTON ROAD. ELEV=756.54 (NAD 83)	
TRM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMLA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.82 (NAD 83)	
TRM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LIFT STATION APPROXIMATELY 120 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAIL S, SECTION COS, PLAT TWO. ELEV=741.77 (NAD 83)	



THIS DRAWING IS NOT INTENDED TO BE REPRODUCED AS A REPRESENTATIVE OF THE SURVEYOR OR A SURVEYOR LOCATION REPORT.

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

CERTIFIED: 12/02/21  
David J. Stoepelwerth

STOEPPELWERTH

ALWAYS ON

7945 East 106th Street, Fishers, IN 46038-3035  
phone: 317.868.3505 fax: 317.868.3942

SITE DEVELOPMENT PLAN

WESTWIND at CUMBERLAND

SECTION 1

FRANKLIN, FRANKLIN TOWNSHIP

JOHNSON COUNTY, INDIANA

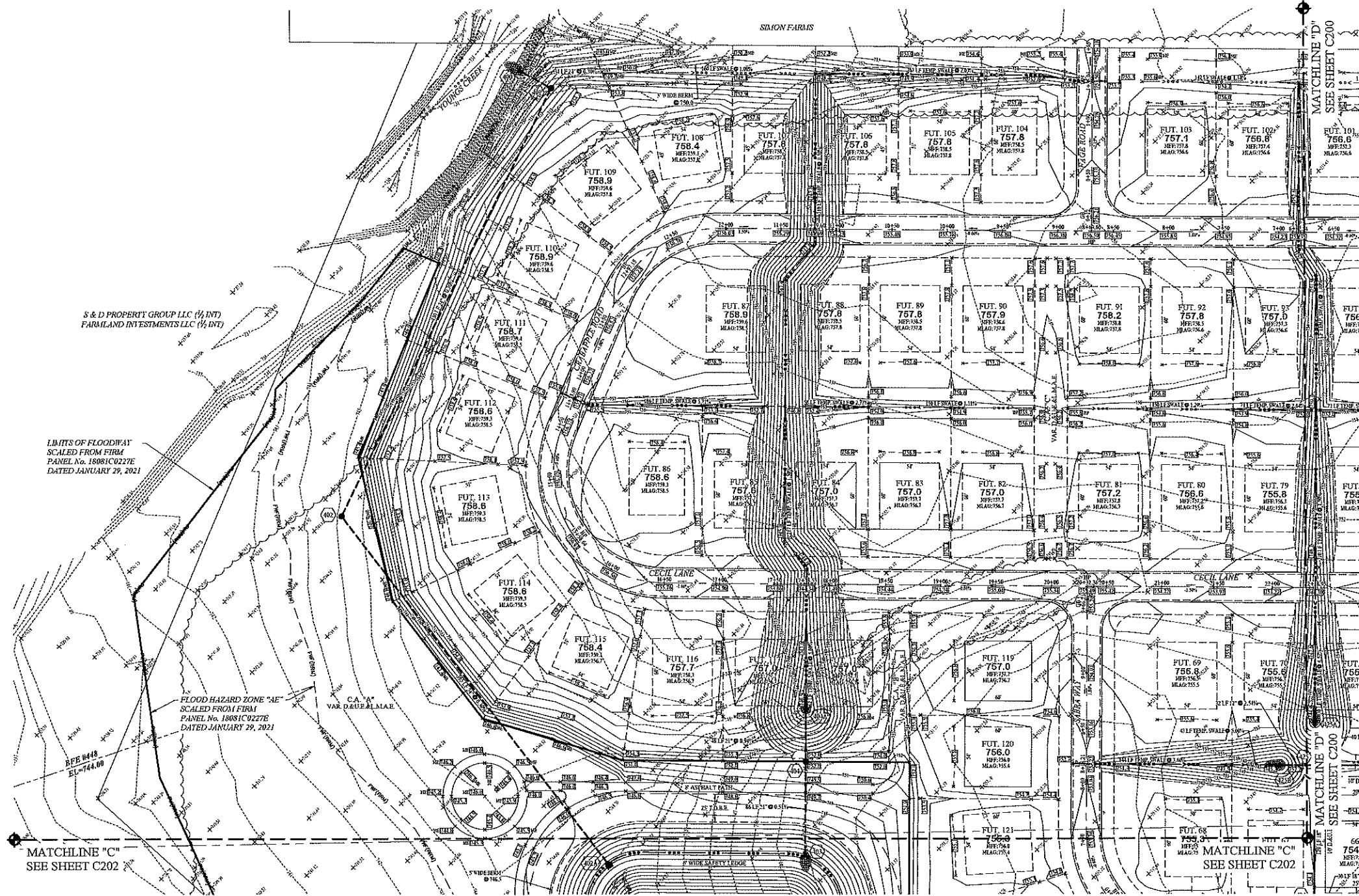
DRAWN BY: PDR

CHECKED BY: BKR

SHEET NO:

C202

S.A.A. JOB NO: 91595ARB-S1



S & D PROPERTY GROUP LLC (1/2 INT)  
FARMLAND INVESTMENTS LLC (1/2 INT)

LIMITS OF FLOODWAY  
SCALED FROM FIRM  
PANEL No. 18081C0227E  
DATED JANUARY 29, 2021

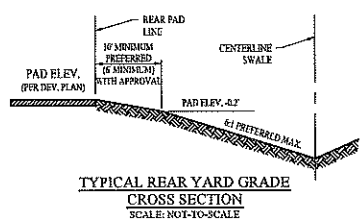
FLOOD HAZARD ZONE "AE"  
SCALED FROM FIRM  
PANEL No. 18081C0227E  
DATED JANUARY 29, 2021

MATCHLINE "C"  
SEE SHEET C202

MATCHLINE "C"  
SEE SHEET C202

#### EARTHWORK NOTES

1. EXCAVATION  
A. EXCAVATED MATERIAL THAT IS SUITABLE MAY BE USED FOR FILLS. ALL UNSUITABLE MATERIAL AND ALL SURPLUS EXCAVATED MATERIAL NOT REQUIRED SHALL BE REMOVED FROM THE SITE.  
B. PROVIDE AND PLACE ANY ADDITIONAL FILL MATERIAL FROM OFFSITE AS MAY BE NECESSARY TO PRODUCE THE GRADES REQUIRED ON PLANS. FILL OBTAINED FROM OFFSITE SHALL BE OF QUALITY AS SPECIFIED FOR FILLS HEREIN AND THE SOURCE APPROVED BY THE DEVELOPER. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR FOR ANY COSTS FOR FILL NEEDED.
2. REMOVAL OF TREES  
A. ALL TREES AND STUMPS SHALL BE REMOVED FROM AREAS TO BE OCCUPIED BY A ROAD SURFACE OR STRUCTURE AREA. TREES AND STUMPS SHALL NOT BE BURIED ON SITE.
3. PROTECTION OF TREES  
A. THE CONTRACTOR SHALL AT THE DIRECTION OF THE DEVELOPER, INDICATOR TO SAVE AND PROTECT TREES OF VALUE AND WORTH WHICH DO NOT IMPAIR CONSTRUCTION OF IMPROVEMENTS AS DESIGNED.  
B. IN THE EVENT CUT OR FILL EXCEEDS 6.5 FEET OVER THE ROOT AREA, THE DEVELOPER SHALL BE CONSULTED WITH RESPECT TO PROTECTIVE MEASURE TO BE TAKEN, IF ANY, TO PRESERVE SUCH TREES.
4. REMOVAL OF TOPSOIL  
A. ALL TOPSOIL SHALL BE REMOVED FROM ALL AREAS BENEATH FUTURE PAVEMENTS OR BUILDINGS. TOPSOIL REMOVAL SHALL BE TO A MINIMUM DEPTH OF 6 INCHES OR TO THE DEPTH INDICATED IN THE GEOTECHNICAL REPORT PROVIDED BY THE DEVELOPER TO BE EXCAVATED OR FILLED. TOPSOIL SHALL BE STORED AT A LOCATION WHERE IT WILL NOT INTERFERE WITH CONSTRUCTION OPERATIONS. THE TOPSOIL SHALL BE FREE OF DEBRIS AND STONES.
5. UTILITIES  
A. RULES AND REGULATIONS GOVERNING THE RESPECTIVE UTILITY SHALL BE OBSERVED IN EXECUTING ALL WORK UNDER THIS SECTION.  
B. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE LOCATION OF EXISTING UNDERGROUND UTILITIES 2 WORKING DAYS PRIOR TO COMMENCING WORK. FOR UTILITY LOCATIONS TO BE MARKED CALL TOLL FREE 811.
6. SITE GRADING  
A. THE CONTRACTOR SHALL DO ALL CUTTING, FILLING, COMPACTING OF FILLS AND ROUGH GRADING REQUIRED TO BRING ENTIRE PROJECT AREA TO SUBGRADE AS SHOWN ON THE DRAWING.  
B. THE TOLERANCE FOR PAVED AREAS SHALL NOT EXCEED 0.05 FEET ABOVE ESTABLISHED SUBGRADE. ALL OTHER AREAS SHALL NOT EXCEED 0.05 FEET PLUS OR MINUS THE ESTABLISHED GRADE. PROVIDE ROUNDOFFS AT TOP AND BOTTOM OF BANKS AND OTHER BREAKS IN GRADE.  
C. THE ENGINEER SHALL BE NOTIFIED WHEN THE CONTRACTOR HAS REACHED THE TOLERANCE AS STATED ABOVE, SO THAT FIELD MEASUREMENTS AND SPOT ELEVATIONS CAN BE VERIFIED BY THE ENGINEER. THE CONTRACTOR SHALL NOT REMOVE EQUIPMENT FROM THE SITE UNTIL THE ENGINEER HAS VERIFIED THAT THE JOB MEETS THE ABOVE TOLERANCE.



LEGEND	
EXISTING FEATURES	
W	WATER MAIN
OH	ELECTRICAL LINE, OVERHEAD
G	GAS MAIN
SS	SANITARY SEWER
SS	STORM SEWER
CON	CONTOUR
870	NORMAL WATER ELEVATION
---	WATER FLOWLINE
---	FENCE LINE
---	TREE LINE
---	WATER FIRE HYDRANT
---	WATER VALVE
---	WATER METER
---	GAS VALVE
---	POWER POLE
---	GUY ANCHOR
---	ELECTRIC TRANSFORMER
---	TELEPHONE, PEDestal
---	CABLE, PEDestal
---	MAIL BOX
---	FLOODWAY (FRM)
---	FLOODWAY FENCE (FRM)
---	CROSS SECTION (FRM)
---	BASE FLOOD ELEVATION (FRM)
PROPOSED FEATURES	
W	WATER MAIN
SS	SANITARY SEWER
SS	STORM SEWER
CON	CONTOUR
870	NORMAL WATER ELEVATION
---	WATER FLOWLINE
---	GRADES ELEVATION
---	5' WIDE SIDEWALK (BY HOME BUILDER)
---	6" SUB-SURFACE DRAIN (GWALED)
---	6" SUB-SURFACE DRAIN (GWALED)
---	10' MIN. FINISH FLOOR ELEVATION
---	MIN. FLOOD PROTECTION GRADE
---	MIN. FINISH FLOOR ELEVATION IS BASED ON THE FOLLOWING CRITERIA:
---	1. 12" (1.0') ABOVE THE NEAREST
---	UPSTREAM OF DOWNSTREAM
---	SANITARY MANHOLE (WHICHEVER
---	IS LOWEST),
---	2. 15" (1.25') ABOVE THE ROAD ELEVATION,
---	3. 6" (0.5') ABOVE THE MFW
ABBREVIATIONS	
B.L.	BUILDING SETBACK LINE
ME	MATCH EXISTING
HP	HIGH POINT
LP	LOW POINT
OB	GRADE BREAK

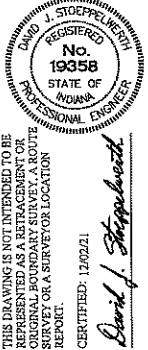
- NOTES
1. CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING ON-SITE UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE IS NOT ANY CONFLICT WITH OTHER UTILITIES, STORM SEWERS OR STREETS. CONFLICTS AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.
  2. SEE LAKE #1 CROSS SECTION (C-A) ON SHEET C201. SEE LAKE #1 SPILLWAY CROSS SECTION (C-B) ON SHEET C201.

BENCHMARK DATA	
ORIGINATING BENCHMARK: BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ON ONE POSITIONING LINE SERVICE (GNSS) AND ARE REFERENCED TO THE NAVD83 DATUM.	
SITE INFO: TRM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE CURB ADJACENT TO THE NORTH SIDE OF CRANAPPLE ROAD. ELEV=756.54 (NAVD 83)	
TRM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.02 (NAVD 83)	
TRM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LEFT STATION APPROXIMATELY 1.20 FEET WEST OF THE POOL AT THE SOUTH END OF CUMBERLAND AND TRAIL, SECTION ONE, PHASE TWO. ELEV=741.77 (NAVD 83)	

STOEPPELWERTH

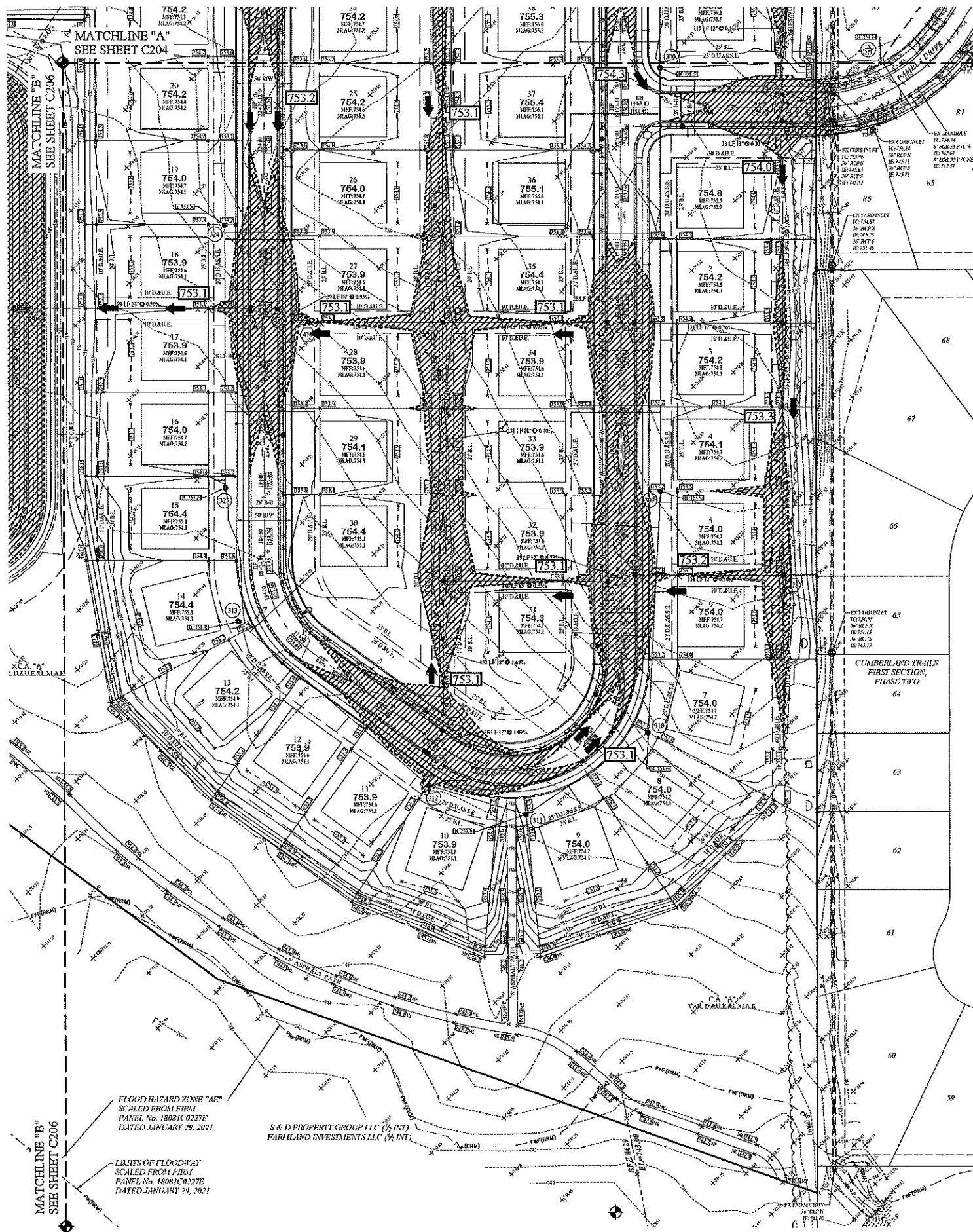
SITE DEVELOPMENT PLAN  
WESTWIND at CUMBERLAND  
SECTION 1

DRWING BY: PDR  
CHECKED BY: BKR  
SHEET NO.  
C203  
S&A 00000  
91595ARB-51



REVISIONS	DATE	MARK	BY



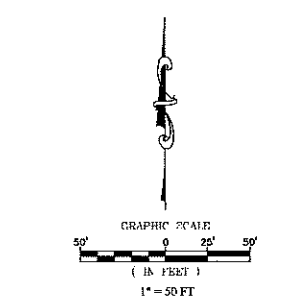


LEGEND	
EXISTING FEATURES	
	SANITARY SEWER
	STORM SEWER
	870
	FLOODWAY (FRM)
	FLOODWAY FRINGE (FRM)
	CROSS SECTION (FRM)
	BASE FLOOD ELEVATION (FRM)
PROPOSED FEATURES	
	SANITARY SEWER
	STORM SEWER
	870
	NORMAL WATER ELEVATION
	SWALE FLOWLINE
	GRADE ELEVATION
	LOT NUMBER
	PAD ELEVATION
	MIN. FINISH FLOOR ELEVATION
	MIN. FLOOD PROTECTION GRADE
	MIN. FINISH FLOOR ELEVATION BASED OFF OF THE FOLLOWING CRITERIA:
	EMERGENCY OVERFLOW OF PONDING
	EMERGENCY FLOOD ROUTING

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

FUTURE SECTIONS SHOWN AT FUTURE DEVELOPED CONDITIONS.

**BENCHMARK DATA**  
ORIGINATING BENCHMARK:  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (NAD 83) AND ARE REFERENCED TO THE NAVD 83 DATUM.  
SITE TBM:  
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TIERY BUILDING ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=756.54 (NAVD 83)  
TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.02 (NAVD 83)  
TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LOT STATION APPROXIMATELY 200 FEET WEST OF THE POOL AT THE SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO. ELEV=741.77 (NAVD 83)



**Indiana 811**  
Know what's below.  
811 before you dig.

**STOEPELWERTH**  
ALWAYS ON  
7965 East 10th Street, Indianapolis, IN 46240-2505  
Phone: 317.249.2905 Fax: 317.845.5942

**EMERGENCY FLOOD ROUTE PLAN**  
**WESTWIND at CUMBERLAND**  
**SECTION 1**

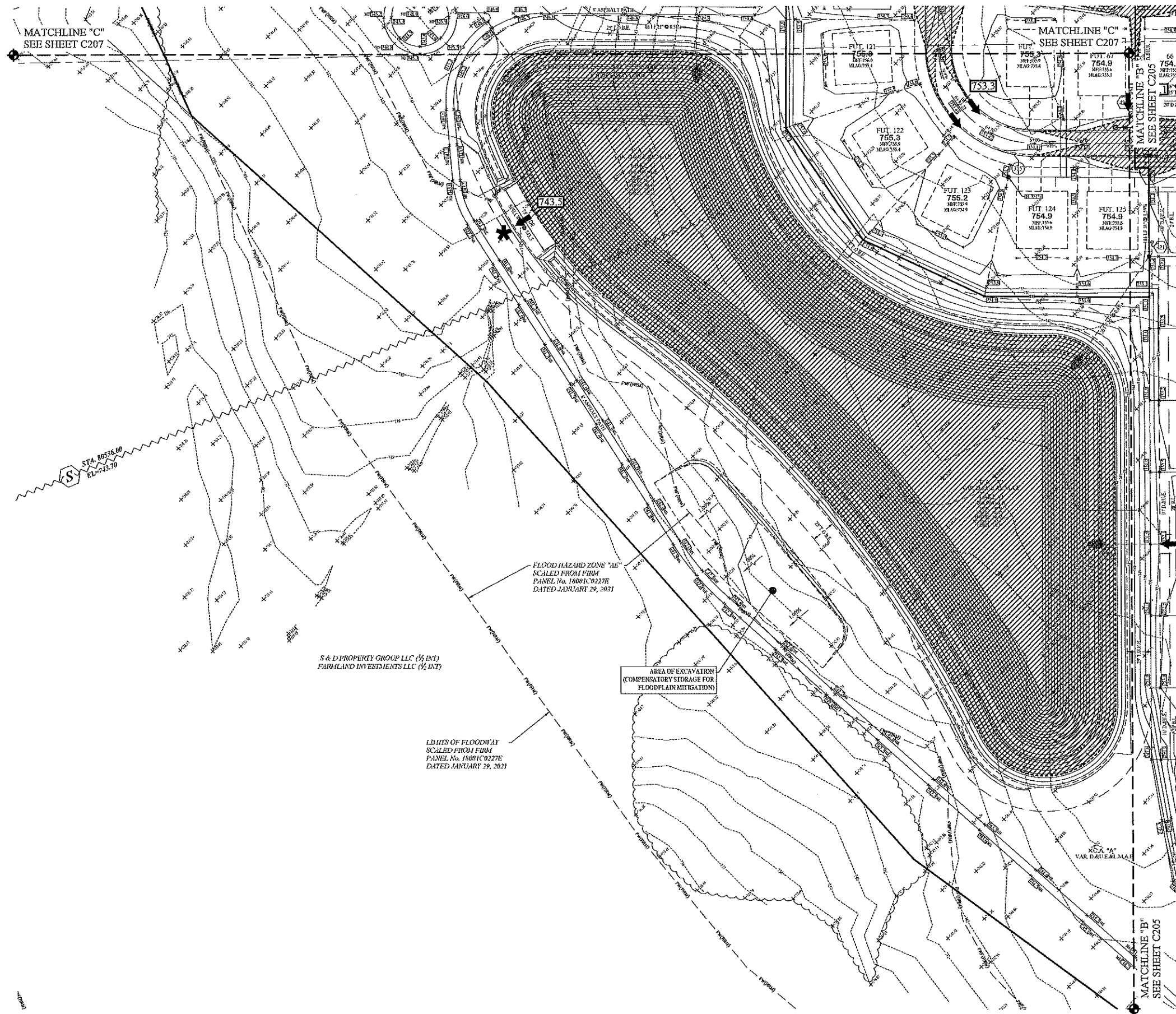
FRANKLIN, FRANKLIN TOWNSHIP  
JOHNSON COUNTY, INDIANA

DRAWN BY: PDR  
CHECKED BY: BKR  
SHEET NO: C205  
S&D NO: 91595ARB-S1

DATE: 12/02/21  
BY: [Signature]

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

DAVID L. STOEPELWERTH  
REGISTERED PROFESSIONAL ENGINEER  
No. 19355  
STATE OF INDIANA



LEGEND	
EXISTING FEATURES	
	SANITARY SEWER
	STORM SEWER
	570
	FLOODWAY (F700)
	FLOODWAY FENCE (F833)
	CROSS SECTION (F840)
	BASE FLOOD ELEVATION (F850)
PROPOSED FEATURES	
	SANITARY SEWER
	STORM SEWER
	570
	CONTOUR
	NORMAL WATER ELEVATION
	SWALE FLOWLINE
	GRADE ELEVATION
	LOT NUMBER
	PAD ELEVATION
	MIN. FINISH FLOOR ELEVATION
	MIN. GROUND PROFILE ELEVATION
	MIN. FINISH FLOOR ELEVATION IS BASED OFF OF THE FOLLOWING CRITERIA: 1. 1' (1.0') ABOVE THE NEAREST UPSTREAM OF DOWNSLOPE SANITARY MANHOLE (W/STREET FLOWLINE). 2. 15' (1.25') ABOVE THE ROAD ELEVATION. 3. 6' (0.5') ABOVE THE MFFG
	EMERGENCY OVERFLOW PONDING FOR 100-YEAR STORM, ASSUMING ALL IN ITS 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.**

**FUTURE SECTIONS  
SHOWN AT FUTURE  
DEVELOPED  
CONDITIONS.**

**BENCHMARK DATA**

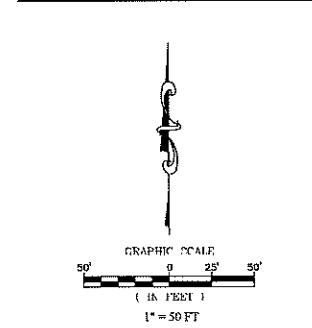
ORIGINATING BENCHMARK  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (NAD 83) AND ARE REFERENCED TO THE NAVD 83 DATUM.

**SITE DATA**

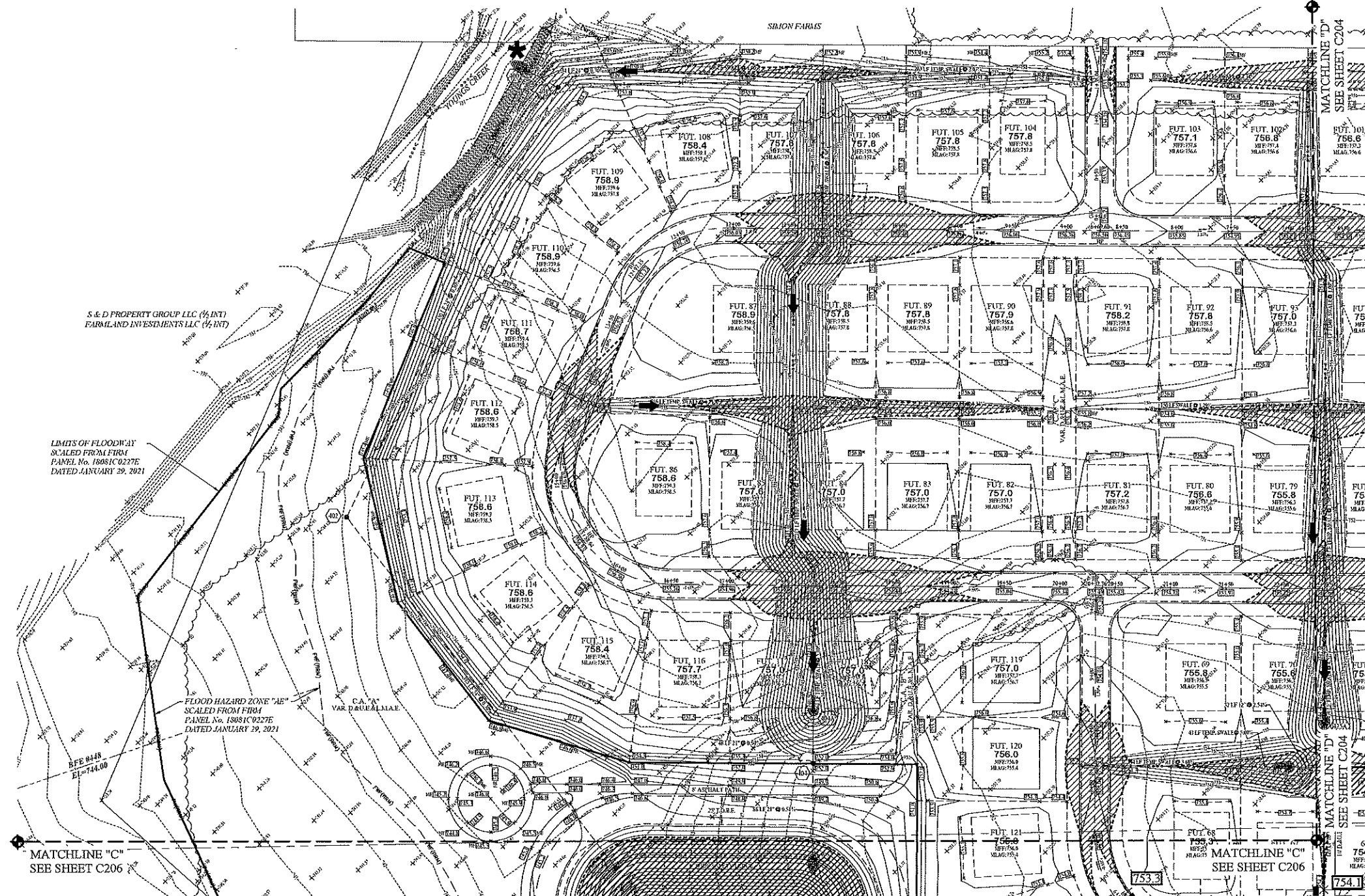
**TM14#1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN ARROUND ON THE NORTH SIDE OF CRADAPLE ROAD. ELEV=756.54 (NAVD 83)**

**TM14#2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE TURN ARROUND ON THE NORTH SIDE OF PABELLA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.02 (NAVD 83)**

**TM14#3: A CUT SQUARE IN THE CONCRETE TIE OF AN UNPAVED LEFT TURN APPROACH APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CURBROAD AND PABELLA, SECTION ONE, PHASE TWO. ELEV=747.14 (NAVD 83)**



DRAWN BY: <b>FDR</b>	CHECKED BY: <b>BKR</b>	SHEET NO. <b>C206</b>	S & A K0130. 91595ARB-51	FRANKLIN TOWNSHIP JOHNSON COUNTY, INDIANA		EMERGENCY FLOOD ROUTE PLAN WESTWIND at CUMBERLAND SECTION 1	<b>STOEPPELWERTH</b> ALWAYS ON 7965 East 106th Street, Fishers, IN 46038-5505 phone: 317.846.5985 fax: 317.846.5942	THIS DRAWING IS NOT INTENDED TO BE USED FOR ANY PURPOSE OTHER THAN THE ORIGINAL BOUNDARY SURVEY A ROUTE SURVEY OR A SURVEY OR LOCATION REPORT. CERTIFIED: 12/02/21  <i>David J. Stoeppelwerth</i>	DATE	MARK	REVISIONS	BY



LEGEND	
EXISTING FEATURES	
	SANITARY SEWER
	STORM SEWER
	CONTOUR
	FLOODWAY (F100)
	FLOODWAY FRINGE (F100)
	CROSS SECTION (F100)
	BASE FLOOD ELEVATION (F100)
PROPOSED FEATURES	
	SANITARY SEWER
	STORM SEWER
	CONTOUR
	NORMAL WATER ELEVATION
	SWALE FLOWLINE
	GRADE ELEVATION
	LOT NUMBER
	FAD ELEVATION
	MIN. FINISH FLOOR ELEVATION
	MIN. FLOOD PROTECTION ELEVATION
MIN. FINISH FLOOR ELEVATION IS BASED ON THE FOLLOWING CRITERIA:	
1. 12" (1.0') ABOVE THE NEAREST UPSTREAM OF DOWNSTREAM SANITARY MANHOLE (WHICHEVER IS LOWEST).	
2. 12" (1.0') ABOVE THE ROAD ELEVATION, 3. 0' (0.5') ABOVE THE AVERAGE EMERGENCY OVERFLOW PONDING (FOR 100-YEAR STORM, ASSUMING ALL INLETS ARE COMPLETELY CLOGGED).	
	EMERGENCY FLOOD ROUTING
	LOCATION(S) OF STORMWATER DISCHARGE FROM SITE

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

**FUTURE SECTIONS  
SHOWN AT FUTURE  
DEVELOPED  
CONDITIONS.**

**BENCHMARK DATA**

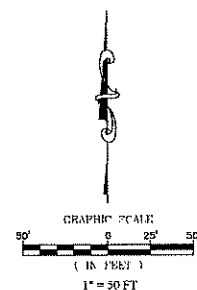
ORIGINATOR: DENTIMATE  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEOGRAPHIC SURVEY ONLINE POSITIONING USER SERVICE (NAD 83) AND ARE REFERENCED TO THE NAD 83 DATUM.

**RITE SITE**

TEMP #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN ARROUND ON THE NORTH SIDE OF CRABAPPLE ROAD.  
ELEV = 754.54 (NAD 83)

TEMP #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE POND DECK SEPARAL ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD.  
ELEV = 754.02 (NAD 83)

TEMP #3: A CUT SQUARE ON THE CONCRETE TOP OF AN UNFINISHED LIFT STAIR APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND DRAB, SECTION ONE, PHASE TWO.  
ELEV = 754.02 (NAD 83)



STOEPPELWERTH

EMERGENCY FLOOD ROUTE PLAN  
WESTWIND at CUMBERLAND  
SECTION 1

DRAWN BY: PDR	CHECKED BY: BKR
SHEET NO. <b>C207</b>	
S & A KBD. 01505 APR. 81	

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

CERTIFIED: 12/02/21

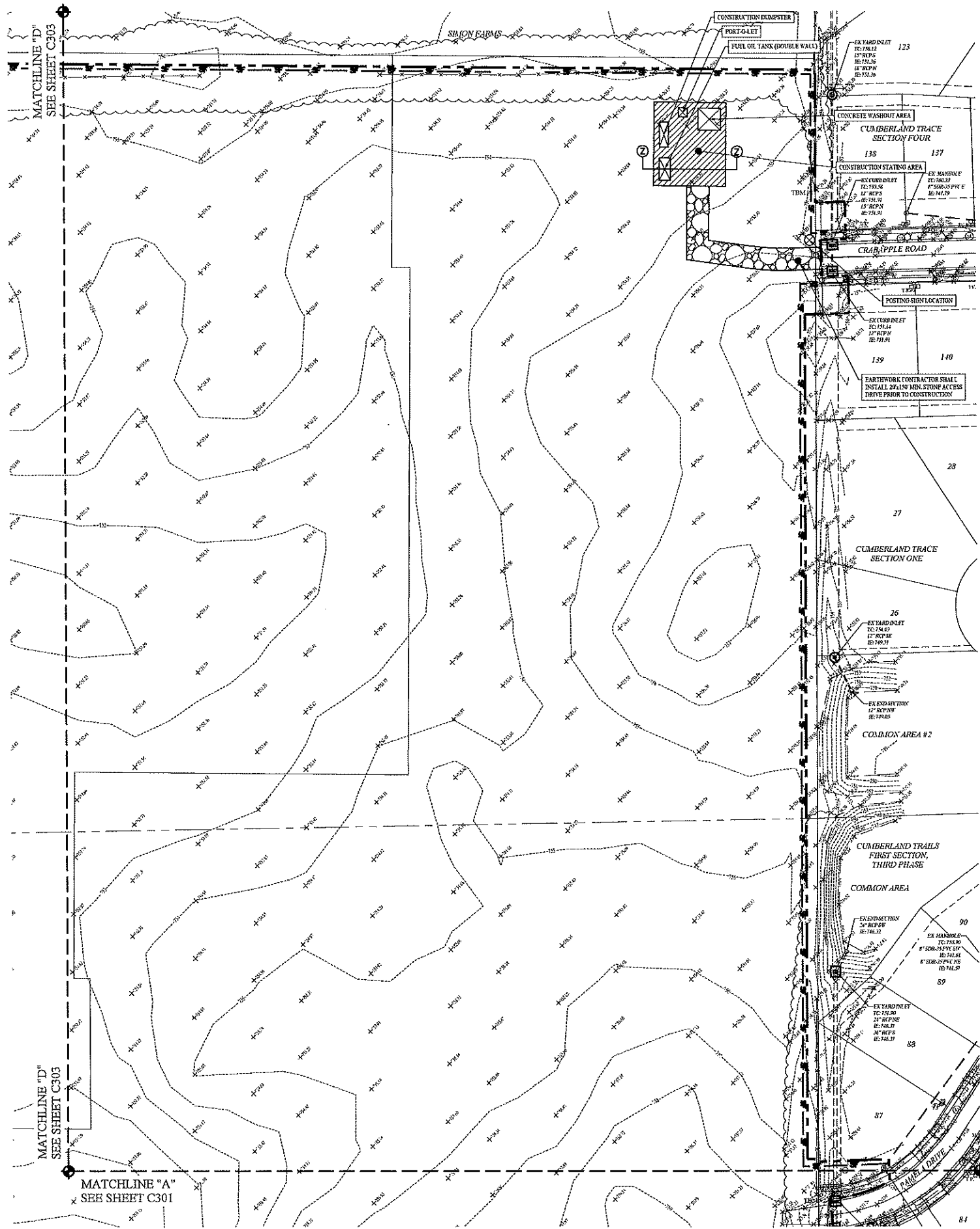
*David J. Stoppelweh*

EMERGENCY FLOOD ROUTE PLAN  
WESTWIND at CUMBERLAND  
SECTION 1

[illegible]

File Name: S:\1595ARB-S1\DWG\IC204 - Emergency Flood Route.dwg - C207  
 Modified / By: November 30, 2021 6:31:06 AM / prichards  
 Plotted / By: November 30, 2021 7:16:05 AM / Paul Richards





LEGEND	
---	DENOTES CONSTRUCTION LIMITS
---	DENOTES SILT FENCE
□	TEMPORARY BELOW GRADE "DROP INLET" PROTECTION BASKET
○	TEMPORARY "DROP INLET" PROTECTION BASKET, "SEDIMENT CONTROL DEVICES"
*	LOCATION OF STORMWATER DISCHARGE FROM SITE (SEE SECTION A ON SHEET C01)
---	FLOODWAY (FWD)
---	FLOODWAY FRINGE (FRD)
---	CROSS SECTION (FWD)
---	BASE FLOOD ELEVATION (FWD)

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

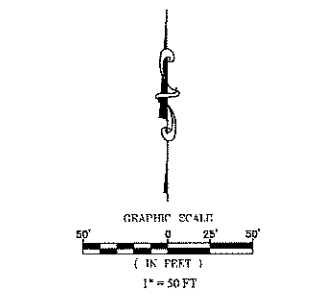
PERSON ON SITE RESPONSIBLE FOR EROSION CONTROL:  
LANTZ McELROY - ARBOR HOMES  
9225 HARRISON PARK COURT  
INDIANAPOLIS, INDIANA 46216  
PHONE: (317) 842-1875

- NOTES**
- CONSTRUCTION TRAFFIC TO SITE SHALL USE CRABAPPLE ROAD ONLY. CONSTRUCTION ACCESS USING PAMELA DRIVE IS NOT ALLOWED.
  - ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY 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 UNDER TAKEN TO ACHIEVE REQUIREMENT.

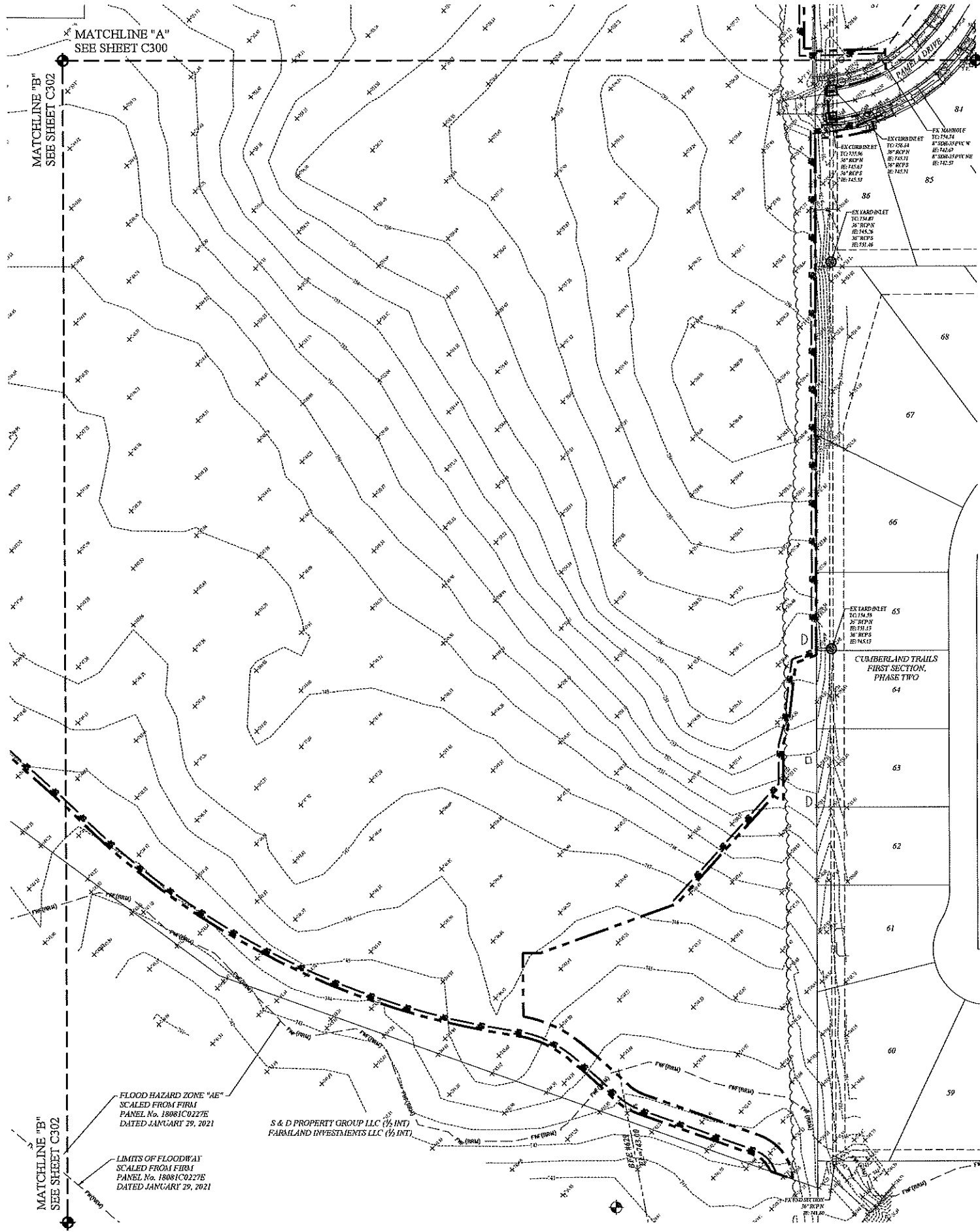
**BENCHMARK DATA**

ORIGINATING BENCHMARK:  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (NAD 83) AND ARE REFERENCED TO THE NAVD 83 DATUM.

**SITE TBM:**  
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=756.44 (NAVD 83)  
TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.02 (NAVD 83)  
TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNDISTURBED LEFT STATION APPROXIMATELY 100 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO. ELEV=743.77 (NAVD 83)



STOEPELWERTH		ALWAYS ON	
7945 East 106th Street, Fishers, IN 46038-2505		Phone: 317.848.5505 Fax: 317.849.2942	
INITIAL STORM WATER POLLUTION PREV. PLAN		FRANKLIN TOWNSHIP	
WESTWIND at CUMBERLAND		JOHNSON COUNTY, INDIANA	
SECTION 1			
DRAWN BY: PDR	CHECKED BY: BKR	SHEET NO: C300	
S.A.A. JOB NO: 9155ARB-S1			



LEGEND	
	DENOTES CONSTRUCTION LIMITS
	DENOTES EROSION CONTROL
	TEMPORARY EROSION CONTROL
	TEMPORARY DROP INLET PROTECTION
	TEMPORARY SEDIMENT CONTROL DEVICE
	LOCATION OF STORMWATER DISCHARGE
	FLOODWAY (FROM)
	FLOODWAY (TO)
	CROSS SECTION (FROM)
	CROSS SECTION (TO)
	BASE FLOOD ELEVATION (FEMA)

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

PERSON ON SITE RESPONSIBLE FOR EROSION CONTROL:  
LANTZ McELROY - ARBOR HOMES  
9225 HARRISON PARK COURT  
INDIANAPOLIS, INDIANA 46216  
PHONE: (317) 842-1875

- NOTES**
- CONSTRUCTION TRAFFIC TO SITE SHALL USE CRABAPPLE ROAD ONLY. CONSTRUCTION ACCESS USING PAMELA DRIVE IS NOT ALLOWED.
  - 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 MEET THE REQUIREMENT.

**BENCHMARK DATA**

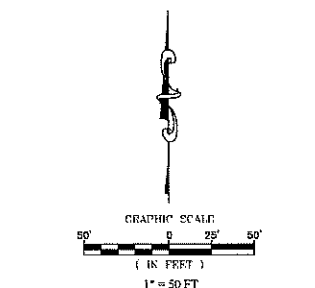
ORIGINATING BENCHMARK:  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ON THE NAD83 DATUM.  
SERVICE (G.P.A.S.) AND ARE REFERENCED TO THE NAD83 DATUM.

**SITE TIES:**

TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTHEAST SIDE OF CRABAPPLE ROAD.  
ELEV=756.4 (NAVD 83)

TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD.  
ELEV=754.02 (NAVD 83)

TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LIFT STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAILS. SECTION ONE, PHASE TWO.  
ELEV=741.97 (NAVD 83)



STOEPPELWERTH

ALWAYS ON

7945 East 18th Street, Fishers, IN 46038-2505

Phone: 317.845.5935 Fax: 317.845.2542

INITIAL STORM WATER POLLUTION PREV. PLAN

WESTWIND at CUMBERLAND

SECTION 1

JOHNSON COUNTY, INDIANA

DESIGNED BY: PDR

CHECKED BY: BKR

SHEET NO: C301

S.A.A. JOB NO: 91595ARB-S1

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

CERTIFIED: 12/02/21

David J. Stoepfelwirth

REGISTERED PROFESSIONAL ENGINEER

No. 19358

STATE OF INDIANA

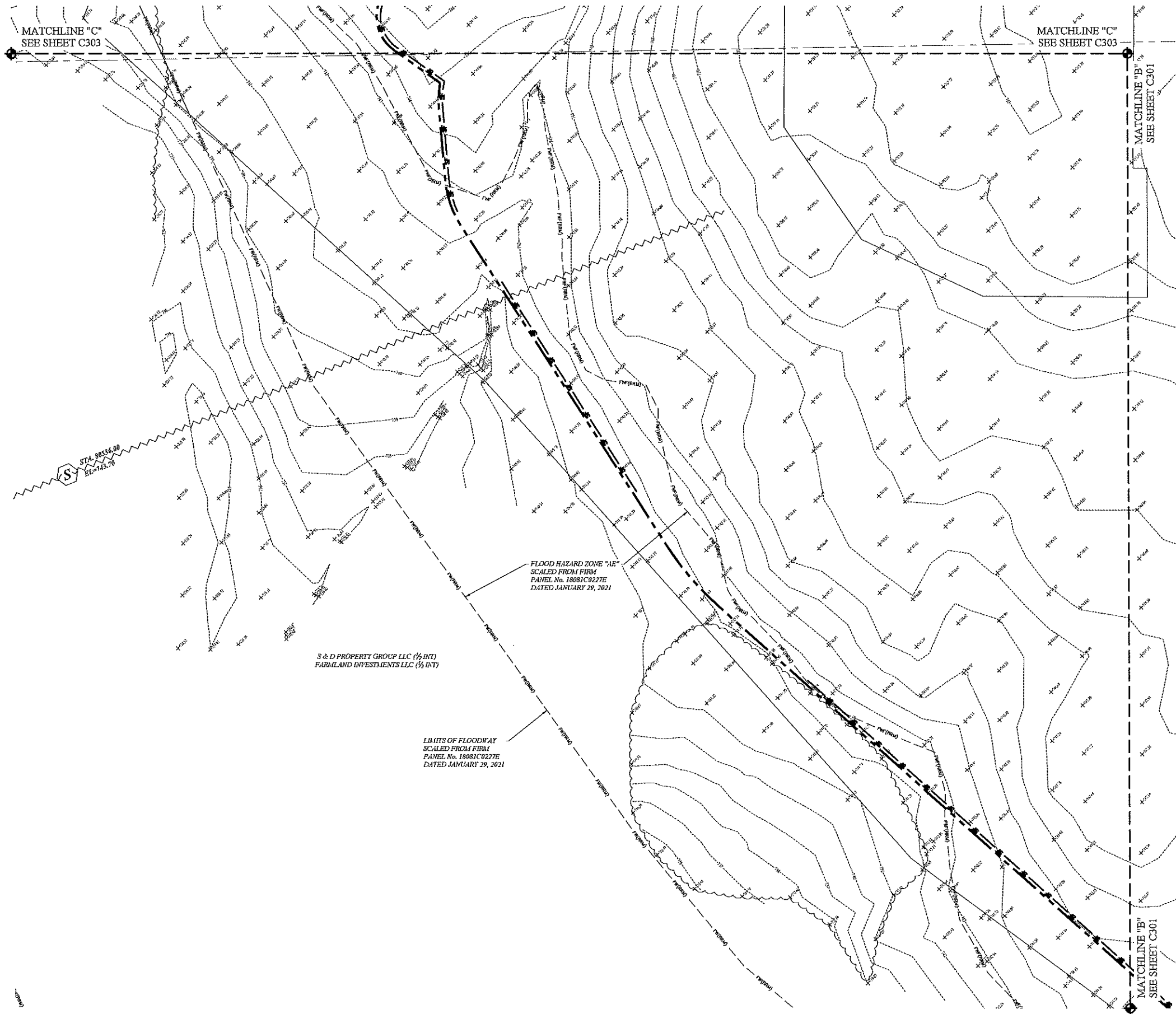
REVISIONS

DATE

MARK

BY

File Name: S:\1656499\SUP\INGC302 - Erosion Control - Initial.dwg - C302  
November 30, 2021 8:25:01 AM / patches  
November 30, 2021 7:17:00 AM / Paul Richards  
Plotted By:



LEGEND	
---	DENOTES CONSTRUCTION LIMITS
---	DENOTES 30' FENCE
□	TEMPORARY 18" OF GRADE "DROP INLET PROTECTION BASKET"
○	TEMPORARY "DROP INLET PROTECTION BASKET", "SEDIMENT CONTROL DEVICES"
*	LOCATION OF STORMWATER DISCHARGE FROM SITE (SEE SECTION A ON SHEET C301)
---	FLOODWAY (FIRM)
---	FLOODWAY FENCE (FIRM)
---	CROSS SECTION (FIRM)
---	BASE FLOOD ELEVATION (FIRM)

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

PERSON ON SITE RESPONSIBLE FOR EROSION CONTROL:  
LANTZ McELROY - ARBOR HOMES  
9225 HARRISON PARK COURT  
INDIANAPOLIS, INDIANA 46216  
PHONE: (317) 842-1875

#### NOTES

- CONSTRUCTION TRAFFIC TO SITE SHALL USE CRABAPPLE ROAD ONLY. CONSTRUCTION ACCESS USING PAMELA DRIVE IS NOT ALLOWED.
- ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED IN THE FIELD BY THE INSPECTOR.
- NO EARTH DISTURBING ACTIVITIES MAY TAKE PLACE WITHOUT AN APPROVED EROSION WATER MANAGEMENT PLAN.
- 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 VEGETATION GROWTH CUES 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.

#### BENCHMARK DATA

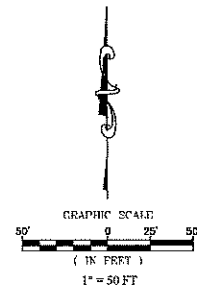
ORIGINATING BENCHMARK:  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (NGLS) AND ARE REFERENCED TO THE NAVD'83 DATUM.

#### SITE TIES

TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF CRABAPPLE ROAD.  
ELEV=756.54 (NAVD 83)

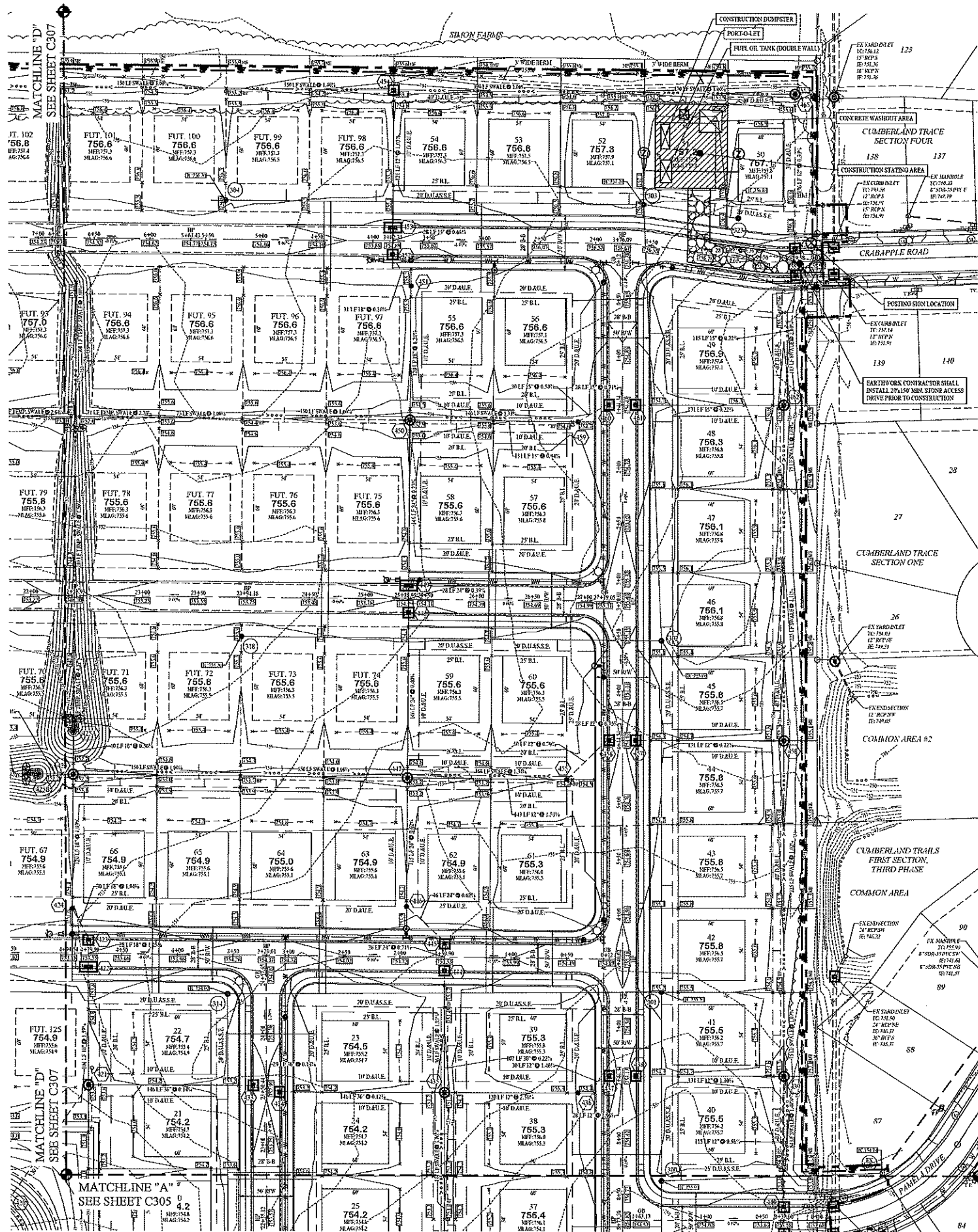
TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD.  
ELEV=754.02 (NAVD 83)

TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED 18" STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAIL S, SECTION ONE, PHASE TWO.  
ELEV=741.77 (NAVD 83)



STOEPPELWERTH		ALWAYS ON	
7955 East 10th Street, Fishers, IN 46038-2025		phone: 317.445.5945 fax: 317.445.5942	
INITIAL STORM WATER POLLUTION PREV. PLAN		FRANKLIN, FRANKLIN TOWNSHIP	
WESTWIND at CUMBERLAND		JOHNSON COUNTY, INDIANA	
SECTION 1			
DESIGNED BY: PDR	CHECKED BY: BKR	SHEET NO. C302	
S.A.A. NO. 91595ARB-S1			





LEGEND	
	DENOTES CONSTRUCTION LIMITS
	DENOTES SILT FENCE
	TEMPORARY BELOW GRADE "DROP INLET" PROTECTION "DROP INLET"
	TEMPORARY "DROP INLET" PROTECTION "DROP INLET"
	TEMPORARY "DROP INLET" PROTECTION "DROP INLET"
	R.P. - R.P.
	ROCK HORSE SHOE DAM
	ROCK CHECK DAM
	LOCATION OF STORMWATER DISCHARGE FROM SITE (SEE SECTION 4 ON SHEET C302)
	FLOODWAY (FIRM)
	FLOODWAY FRINGE (FIRM)
	CROSS SECTION (FIRM)
	BASE FLOOD ELEVATION (FIRM)

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

PERSON ON SITE RESPONSIBLE FOR EROSION CONTROL:  
LANTZ MCELROY - ARBOR HOMES  
9225 HARRISON PARK COURT  
INDIANAPOLIS, INDIANA 46216  
PHONE: (317) 842-1875

#### NOTES

- CONSTRUCTION TRAFFIC TO SITE SHALL USE CRABAPPLE ROAD ONLY. CONSTRUCTION ACCESS USING PAMELA DRIVE IS NOT ALLOWED.
- ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED IN THE FIELD BY THE INSPECTOR.
- NO EXCAVATION OR OTHER 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 PROMOTE STABILIZATION, THE WORK MUST EITHER BE REPEATED OR OTHER MEANS UNDERTAKEN TO ACHIEVE REQUIREMENT.

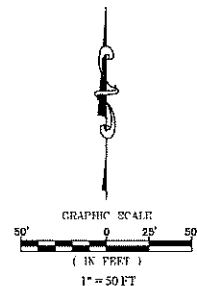
#### BENCHMARK DATA

ORIGINATING BENCHMARK  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ON ONE HORIZONTAL USER SERVICE (O.F.U.S.) AND ARE REFERENCED TO THE NAVD 83 DATUM.

SITE TBM  
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN ARROUND ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=756.54 (NAVD 83)

TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE TURN ARROUND ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.02 (NAVD 83)

TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LOT STATION APPROXIMATELY 200 FEET WEST OF THE POOL AT THE SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO. ELEV=741.77 (NAVD 83)



STOEPPELWERTH

ALWAYS ON

7065 East 164th Street, Fishers, IN 46038-2935  
phone: 317.846.5935 fax: 317.845.5942

TEMPORARY STORM WATER POLLUTION PREV. PLAN

WESTWIND at CUMBERLAND

SECTION 1

FRANKLIN, FRANKLIN TOWNSHIP

JOHNSON COUNTY, INDIANA

DRAWN BY: PDR

CHECKED BY: BKR

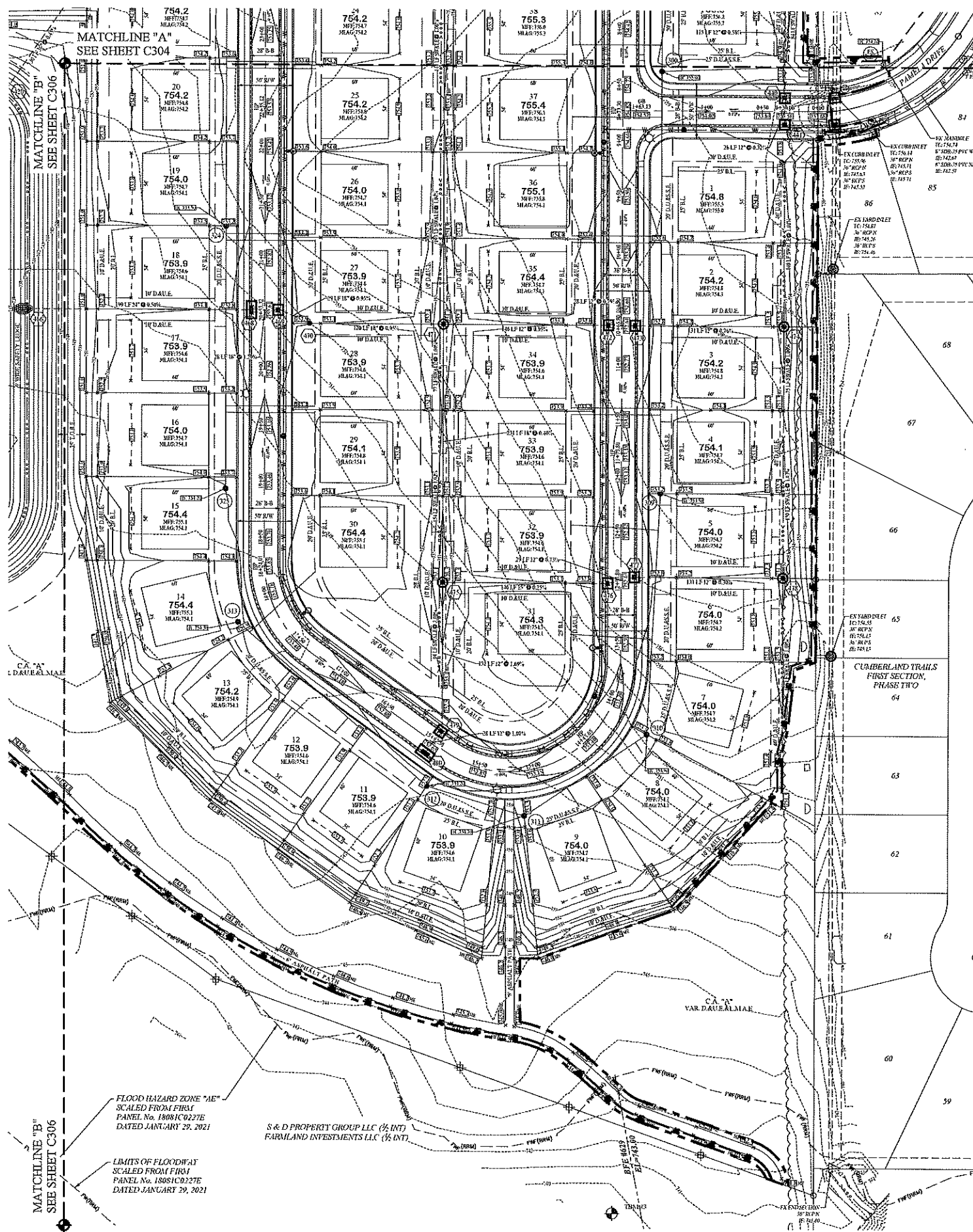
SHEET NO: C304

S & A JOB NO: 91595ARB-S1

THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A RETAINMENT OR FOUNDATION SURVEY. A SEPARATE SURVEY CONTRACT FOR FOUNDATION REPORT.

DAVID L. STOEPPELWERTH  
REGISTERED  
No. 19358  
STATE OF INDIANA  
PROFESSIONAL ENGINEER  
CERTIFIED: 12/02/21  
David L. Stoeppelwerth

REV. NO. DATE MARK



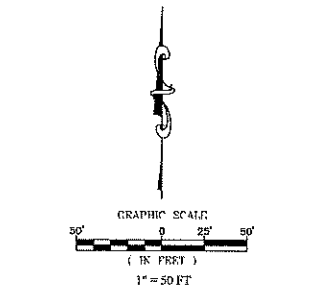
LEGEND	
	DENOTES CONSTRUCTION LIMITS
	DENOTES EROSION CONTROL
	TEMPORARY BELOW GRADE "DROP INLET" PROTECTION BASKET
	TEMPORARY "DROP INLET" PROTECTION BASKET - "SEDIMENT CONTROL DEVICES"
	RIP-RAP
	ROCK CHECK DAM
	LOCATION OF STORMWATER DISCHARGE FROM SITE (SEE SECTION AS ON SHEET C312)
	FLOODWAY (FIRM)
	FLOODWAY FENCE (FIRM)
	CROSS SECTION (FIRM)
	BASE FLOOD ELEVATION (FIRM)

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

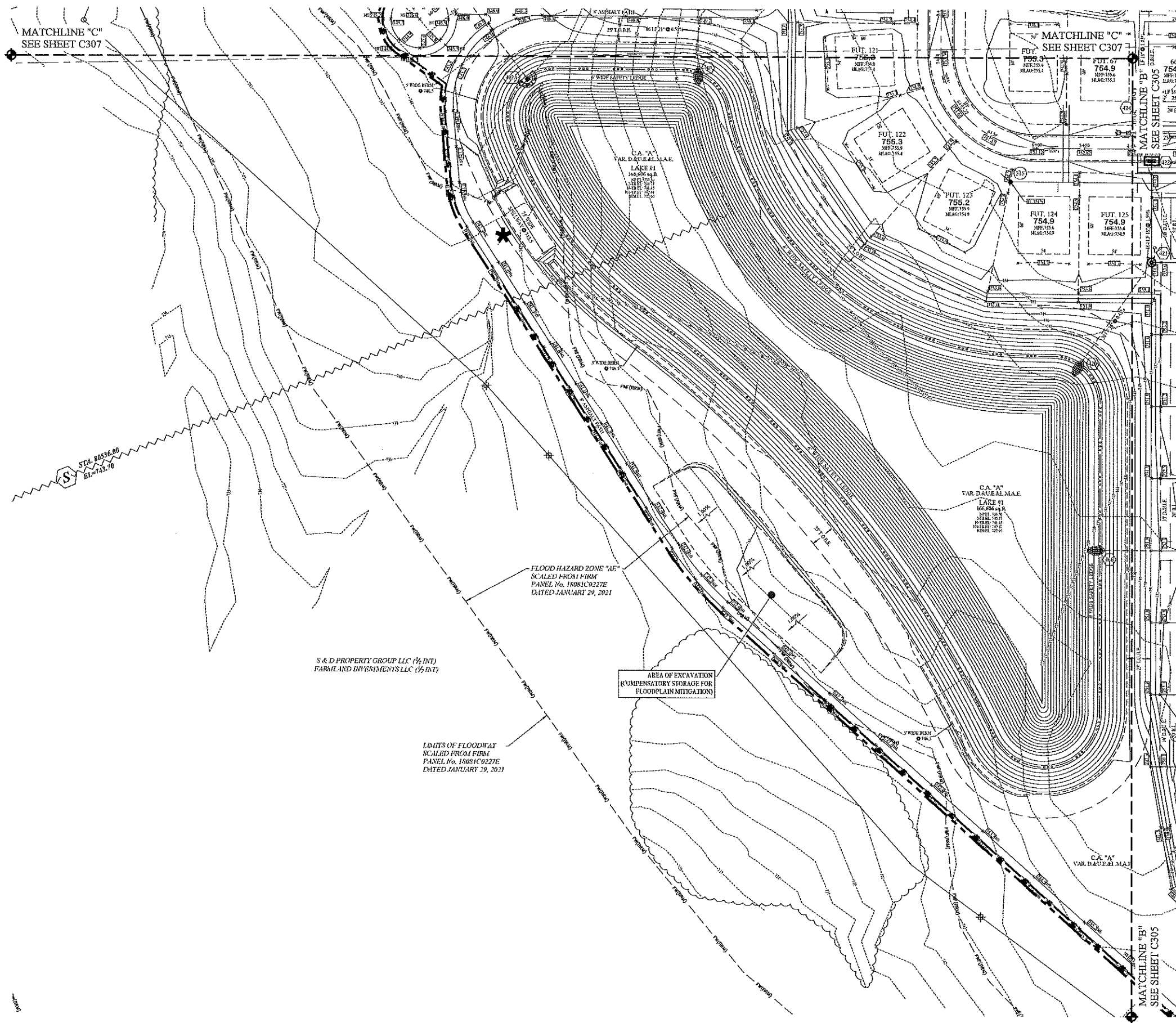
PERSON ON SITE RESPONSIBLE FOR EROSION CONTROL:  
LANTZ McELROY - ARBOR HOMES  
9225 HARRISON PARK COURT  
INDIANAPOLIS, INDIANA 46216  
PHONE: (317) 842-1875

- NOTES**
- CONSTRUCTION TRAFFIC TO SITE SHALL USE CRABAPPLE ROAD ONLY. CONSTRUCTION ACCESS USING PAMELA DRIVE IS NOT ALLOWED.
  - ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED IN THE FIELD BY THE INSPECTOR.
  - NO FARM DISTURBING ACTIVITIES MAY TAKE PLACE WITHOUT AN APPROVED STORM WATER MANAGEMENT PLAN.
  - 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.

**BENCHMARK DATA**  
ORIGINATING BENCHMARK:  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODESY SURVEY ONLINE POSITIONING USER SERVICE (NAD 83) AND ARE REFERENCED TO THE NAD 83 DATUM.  
SITE TBM:  
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN ARROUND ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=754.54 (NAD 83)  
TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE TURN ARROUND ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.02 (NAD 83)  
TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED DIRT STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO. ELEV=754.77 (NAD 83)



STOEPPELWERTH ALWAYS ON 7965 East 10th Street, Fishers, IN 46038-2505 phone: 317.849.2955 fax: 317.849.5942		TEMPORARY STORM WATER POLLUTION PREV. PLAN WESTWIND at CUMBERLAND SECTION 1 FRANKLIN, FRANKLIN TOWNSHIP JOHNSON COUNTY, INDIANA		DRAWN BY: PDR CHECKED BY: BKR SHEET NO: C305 S&P NO: 91595ARB-S1	
THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A REPLACEMENT OR SUPPLEMENT TO THE SURVEY OR A SURVEYOR LOCATION REPORT.		DAVID L. STOEPPELWERTH REGISTERED No. 19358 STATE OF INDIANA PROFESSIONAL ENGINEER CERTIFIED: 12/01/21 David L. Stoepfelwerth		DATE: _____ BY: _____ REVISIONS: _____	



LEGEND	
--- DENOTES CONSTRUCTION LIMITS	
--- DENOTES SILT FENCE	
--- TEMPORARY BELOW GRADE "DROP INLET" PROTECTION BASKET	
--- TEMPORARY "DROP INLET PROTECTION BASKET", "SEDIMENT CONTROL DEVICES"	
--- RIP-RAP	
--- ROCK HORSE SHOE DAM	
--- ROCK CHECK DAM	
--- LOCATION OF STORMWATER DISCHARGE FROM SITE (SEE SECTION AS ON SHEET C32)	
--- FLOODWAY (FIRM)	
--- FLOODWAY FRINGE (FIRM)	
--- CROSS SECTION (FIRM)	
--- BASE FLOOD ELEVATION (FIRM)	

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

PERSON ONSITE RESPONSIBLE FOR EROSION CONTROL:  
LANTZ McELROY - ARBOR HOMES  
9225 HARRISON PARK COURT  
INDIANAPOLIS, INDIANA 46216  
PHONE: (317) 842-1875

- NOTES**
1. CONSTRUCTION TRAFFIC TO SITE SHALL USE CRABAPPLE ROAD ONLY. CONSTRUCTION ACCESS USING PAMELA DRIVE IS NOT ALLOWED.
  2. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED IN THE FIELD BY THE INSPECTOR.
  3. NO FURTHER DISTURBANCE ACTIVITIES MAY TAKE PLACE WITHOUT AN APPROVED STORM WATER MANAGEMENT PERMIT.
  4. 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.

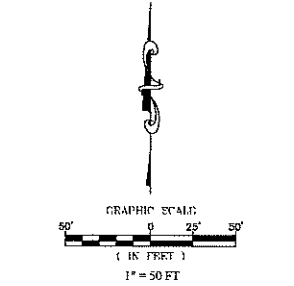
**BENCHMARK DATA**

ORIGINATING BENCHMARK:  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONLINE POSTING USING SERVICE (N.G.S.) AND ARE REFERENCED TO THE NAVD 83 DATUM.

**SITE TBM:**  
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TUB ARROUND ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=756.51 (NAVD 83)

TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.00 (NAVD 83)

TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LEFT STATION APPROXIMATELY 300 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO. ELEV=741.77 (NAVD 83)



THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A RETAINMENT OR EROSION CONTROL MEASURE. IT IS THE SURVEYOR'S LOCATION REPORT.

DAVID J. STOEPPELWERTH  
REGISTERED  
No. 19358  
STATE OF INDIANA  
PROFESSIONAL ENGINEER  
CERTIFIED: 12/02/21  
David J. Stoepfelwerth

STOEPPELWERTH  
ALWAYS ON

7945 East 106th Street, Fishers, IN 46038-2835  
phone: 317.848.5505 fax: 317.848.2645

TEMPORARY STORM WATER POLLUTION PREV. PLAN

WESTWIND at CUMBERLAND  
SECTION 1

FRANKLIN, FRANKLIN TOWNSHIP JOHNSON COUNTY, INDIANA

DRAWN BY: PDR

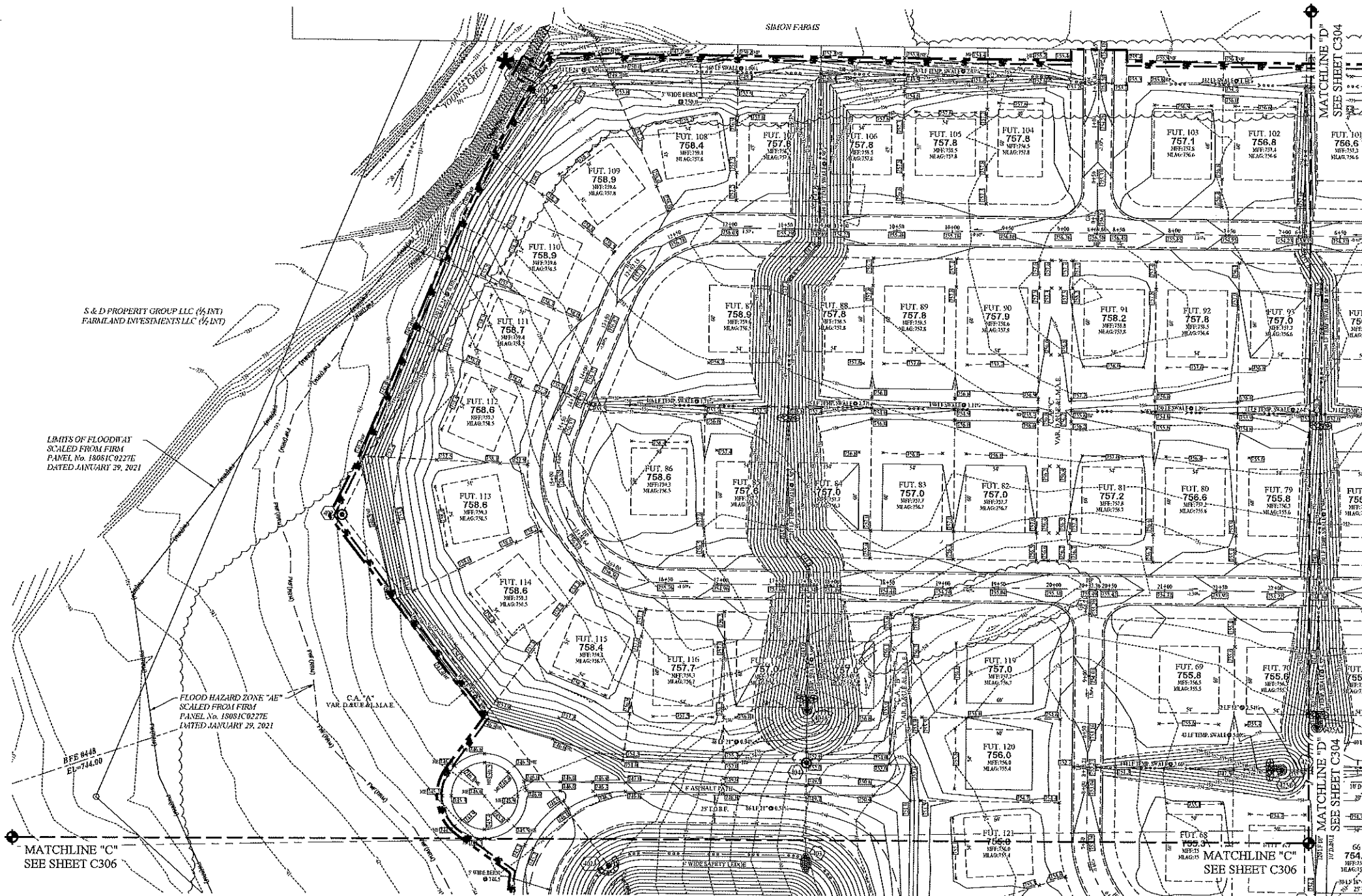
CHECKED BY: BKR

SHEET NO.

C306

SCALE: AS SHOWN

91595ARB-S1



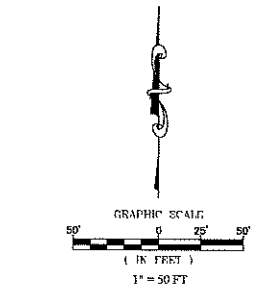
LEGEND	
	DEMOLITION CONSTRUCTION LIMITS
	DEMOLITION FENCE
	TEMPORARY BELOW GRADE "DROP INLET" PROTECTION BASKET
	TEMPORARY "DROP INLET" PROTECTION BASKET, "SEDIMENT CONTROL DEVICES"
	IMP RAP
	ROCK HORSE SHOE DAM
	ROCK CHECK DAM
	LOCATION OF STORMWATER DISCHARGE FROM SITE (SEE SECTION A ON SHEET C302)
	FLOODWAY (FIRM)
	FLOODWAY FENCE (FIRM)
	CROSS SECTION (FIRM)
	BASE FLOOD ELEVATION (FIRM)

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

PERSON ON SITE RESPONSIBLE FOR EROSION CONTROL:  
LANTZ MCELROY - ARBOR HOMES  
9225 HARRISON PARK COURT  
INDIANAPOLIS, INDIANA 46216  
PHONE: (317) 842-1875

- NOTES
- CONSTRUCTION TRAFFIC TO SITE SHALL USE CRABAPPLE ROAD ONLY. CONSTRUCTION ACCESS USING PANELE DRIVE IS NOT ALLOWED.
  - ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED IN THE FIELD BY THE INSPECTOR.
  - NO EARTH EXCAVATING 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 OR CURBS 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.

BENCHMARK DATA  
ORIGINATING BENCHMARK:  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ON THE POSITIONING USER SERVICE (NAD83) AND ARE REFERENCED TO THE NAD83 DATUM.  
SITE TIES:  
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE JUNK ARROUND ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=756.4 (NAD83)  
TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE JUNK ARROUND ON THE NORTH SIDE OF PANELE DRIVE AT THE WEST END OF THE ROAD. ELEV=754.0 (NAD83)  
TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LIFT STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAIL, SECTION ONE, PHASE TWO. ELEV=741.7 (NAD83)



DAVID STOEPPELWERTH  
REGISTERED  
No. 19358  
STATE OF INDIANA  
PROFESSIONAL ENGINEER

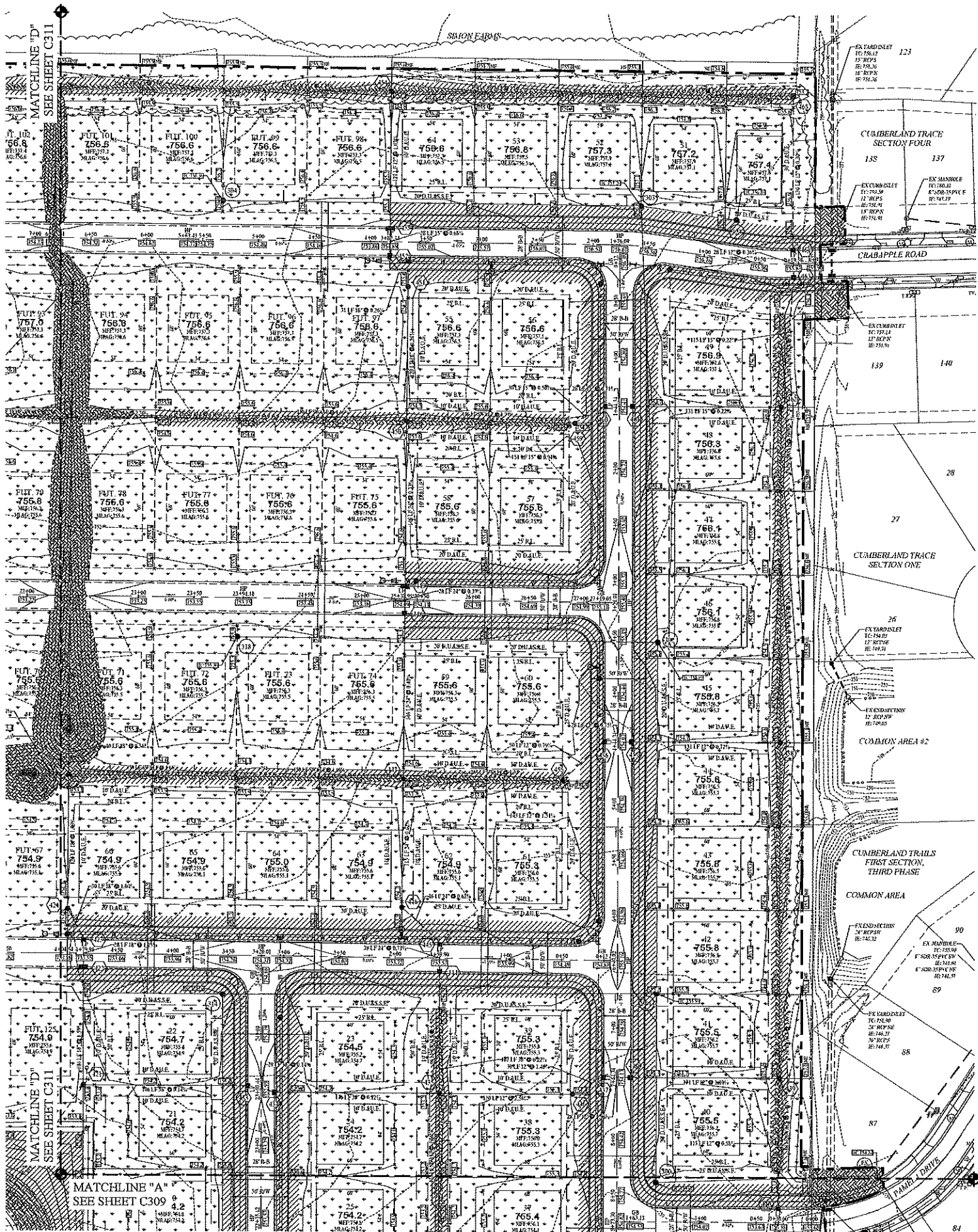
THIS DRAWING IS NOT INTENDED TO BE USED FOR ANY PURPOSE OTHER THAN THE ORIGINAL BOUNDARY SURVEY FOR THE PROJECT. ANY REUSE OR MODIFICATION OF THIS DRAWING WITHOUT THE WRITTEN CONSENT OF STOEPPELWERTH & ASSOCIATES, INC. IS PROHIBITED.

DATE: 12/02/21  
BY: David J. Stoeppelwerth

STOEPPELWERTH & ASSOCIATES, INC.  
ALWAYS ON  
7965 East 10th Street, Indianapolis, IN 46240-2505  
Phone: 317.849.2353 Fax: 317.846.5142

TEMPORARY STORM WATER POLLUTION PREV. PLAN  
WESTWIND at CUMBERLAND  
SECTION 1  
FRANKLIN, FRANKLIN TOWNSHIP  
JOHNSON COUNTY, INDIANA

DRAWN BY: PDR  
CHECKED BY: BKR  
SHEET NO. C307  
S.A.A. JOB NO. 91595ARB-S1



LEGEND	
	DENOTES CONSTRUCTION LIMITS
	FLOODWAY (FRM)
	FLOODWAY FRINGE (FRM)
	CROSS SECTION (FRM)
	BASE FLOOD ELEVATION (FRM)
	DENOTES PERMANENT SEEDING & MULCH AREAS
	DENOTES SEEDING w/ FIBER BLANKET #575 BY NORTH AMERICAN GREEN
	DENOTES TEMPORARY SEEDING & MULCH AREAS
REFER TO SHEETS C316 - C317 FOR SEEDING/MULCHING SPECIFICATIONS	

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

PERSON ON SITE RESPONSIBLE FOR EROSION CONTROL:  
LANTZ McELROY - ARBOR HOMES  
9225 HARRISON PARK COURT  
INDIANAPOLIS, INDIANA 46216  
PHONE: (317) 842-1875

- NOTES
- CONSTRUCTION TRAFFIC TO SITE SHALL USE CRABAPPLE ROAD ONLY. CONSTRUCTION ACCESS USING PAMELA DRIVE IS NOT ALLOWED.
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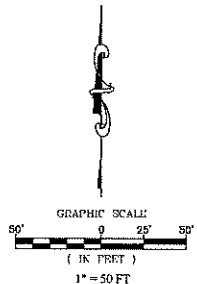
BENCHMARK DATA

ORIGINATING BENCHMARK:  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONE LINE POSITIONING USER SERVICE (G.P.U.S.) AND ARE REFERENCED TO THE NAVD 83 DATUM.

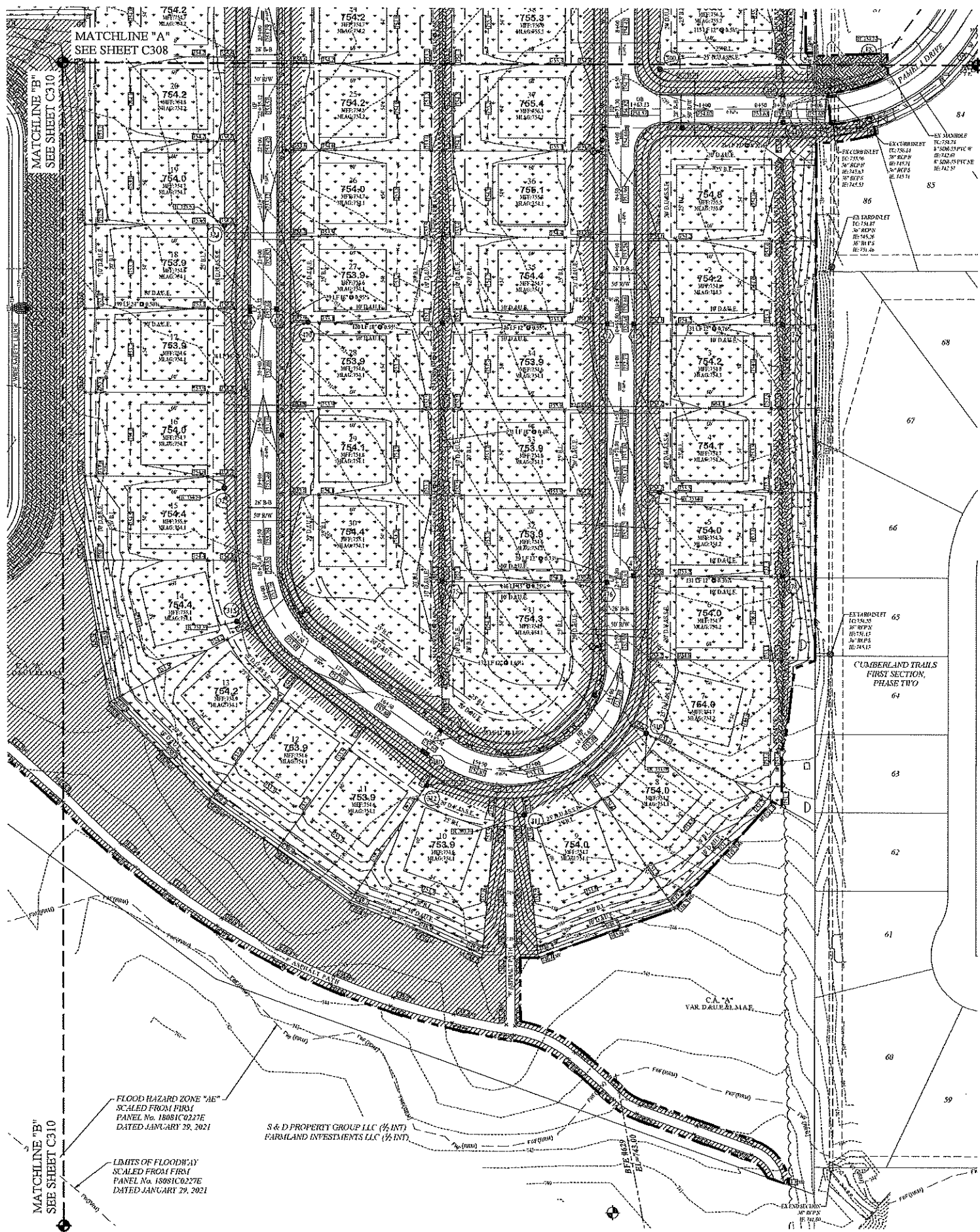
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TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.02 (NAVD 83)

TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LIFT STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAIL, SECTION ONE, PHASE TWO. ELEV=741.77 (NAVD 83)



STOEPELWERTH		PERMANENT STORM WATER POLLUTION PREV. PLAN	
ALWAYS ON		WESTWIND at CUMBERLAND	
7965 East 18th Street, Fishers, IN 46038-2505 phone: 317.449.0995 fax: 317.446.5942		SECTION 1	
JOHNSON COUNTY, INDIANA		FRANKLIN, FRANKLIN TOWNSHIP	
DATE	MARK	DRAWN BY:	CHECKED BY:
		PDR	BKR
		SHEET NO:	
		<b>C308</b>	
		S.A.A. 90830	
		91595ARB-S1	



LEGEND	
	DENOTES CONSTRUCTION LIMITS
	FLOODWAY (FIRM)
	FLOODWAY FRINGE (FIRM)
	CROSS SECTION (FIRM)
	BASE FLOOD ELEVATION (FIRM)
	DENOTES SEEDING OF FIBER BLANKET #515 BY NORTH AMERICAN GREEN
	DENOTES TEMPORARY SEEDING & MULCH AREAS
REFER TO SHEETS C316 - C317 FOR SEEDING/MULCHING SPECIFICATIONS.	

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LANTZ MOELROY - ARBOR HOMES  
3225 HARRISON PARK COURT  
INDIANAPOLIS, INDIANA 46216  
PHONE: (317) 842-1875

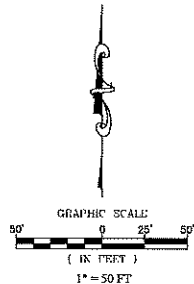
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SITE TBM:  
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN ARROUND ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=756.54 (NAVD 83)

TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.80 (NAVD 83)

TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LEFT STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO. ELEV=741.77 (NAVD 83)



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

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CONSIDERED AS A REPLACEMENT OF  
THE SURVEY OR A SURVEYOR LOCATION  
REPORT.

CERTIFIED: 12/02/21  
David J. Stoepfelwerth

STOEPPELWERTH  
ALWAYS ON

7795 East 106th Street, Fishers, IN 46038-2505  
phone: 317.849.5955 fax: 317.849.5942

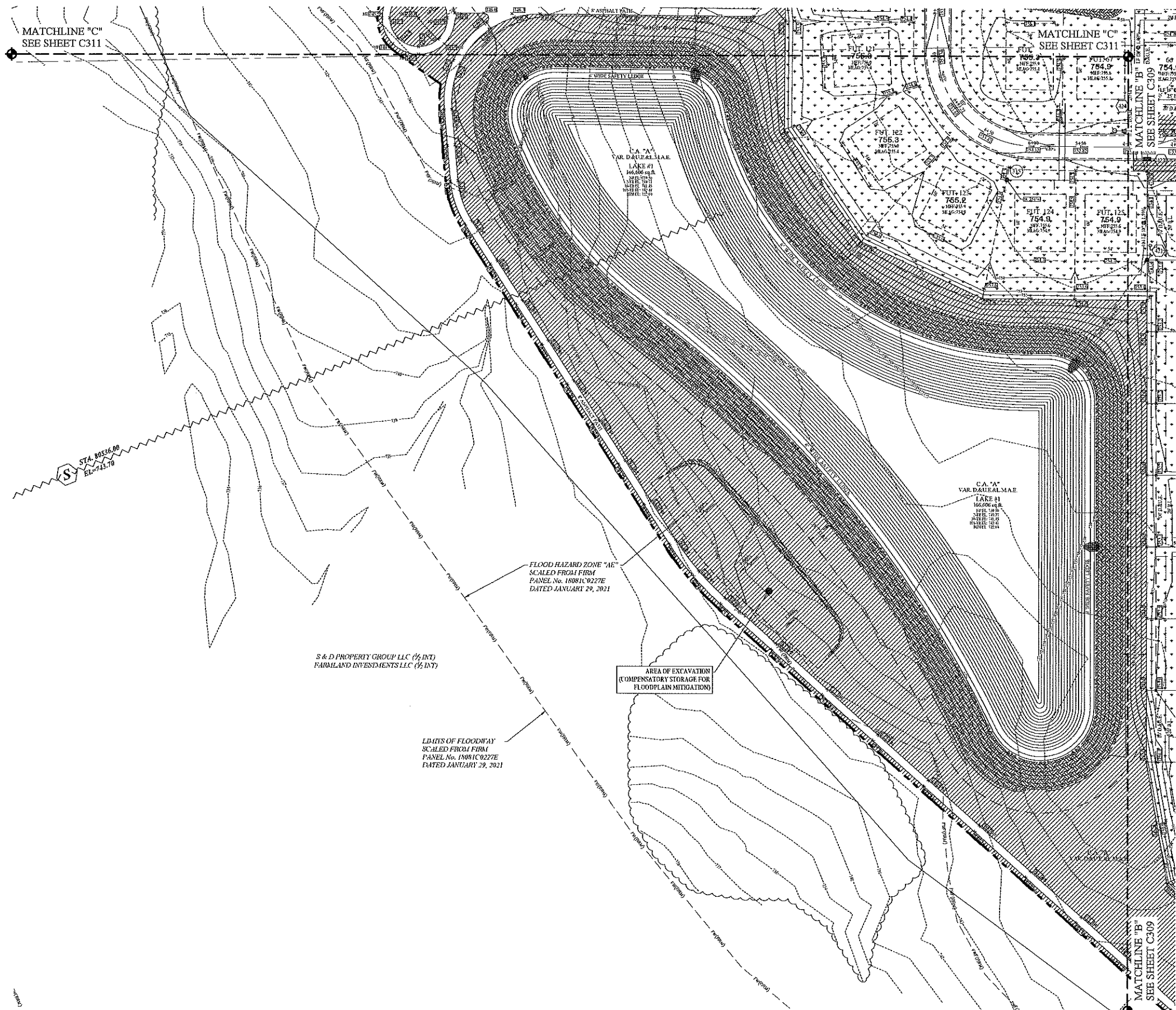
PERMANENT STORM WATER POLLUTION PREV. PLAN  
WESTWIND at CUMBERLAND  
SECTION 1

FRANKLIN, FRANKLIN TOWNSHIP  
JOHNSON COUNTY, INDIANA

DRAWN BY: PDR  
CHECKED BY: BKR

SHEET NO.  
C309

91595ARB-S1



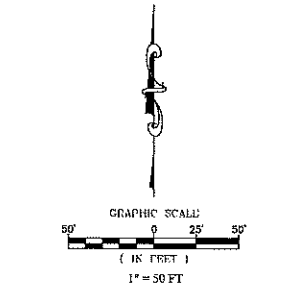
LEGEND	
	DEFINES CONSTRUCTION LIMITS
	FLOODWAY (FIRM)
	FLOODWAY FRINGE (FIRM)
	CROSS SECTION (FIRM)
	BASE FLOOD ELEVATION (FIRM)
	DEFINES PERMANENT SEEDING & MULCH AREAS
	DEFINES SEEDING w/ FIBER BLANKET & STEM BY NORTH AMERICAN GREEN
	DEFINES TEMPORARY SEEDING & MULCH AREAS
REFER TO SHEETS C316 - C317 FOR SEEDING/MULCHING SPECIFICATIONS.	

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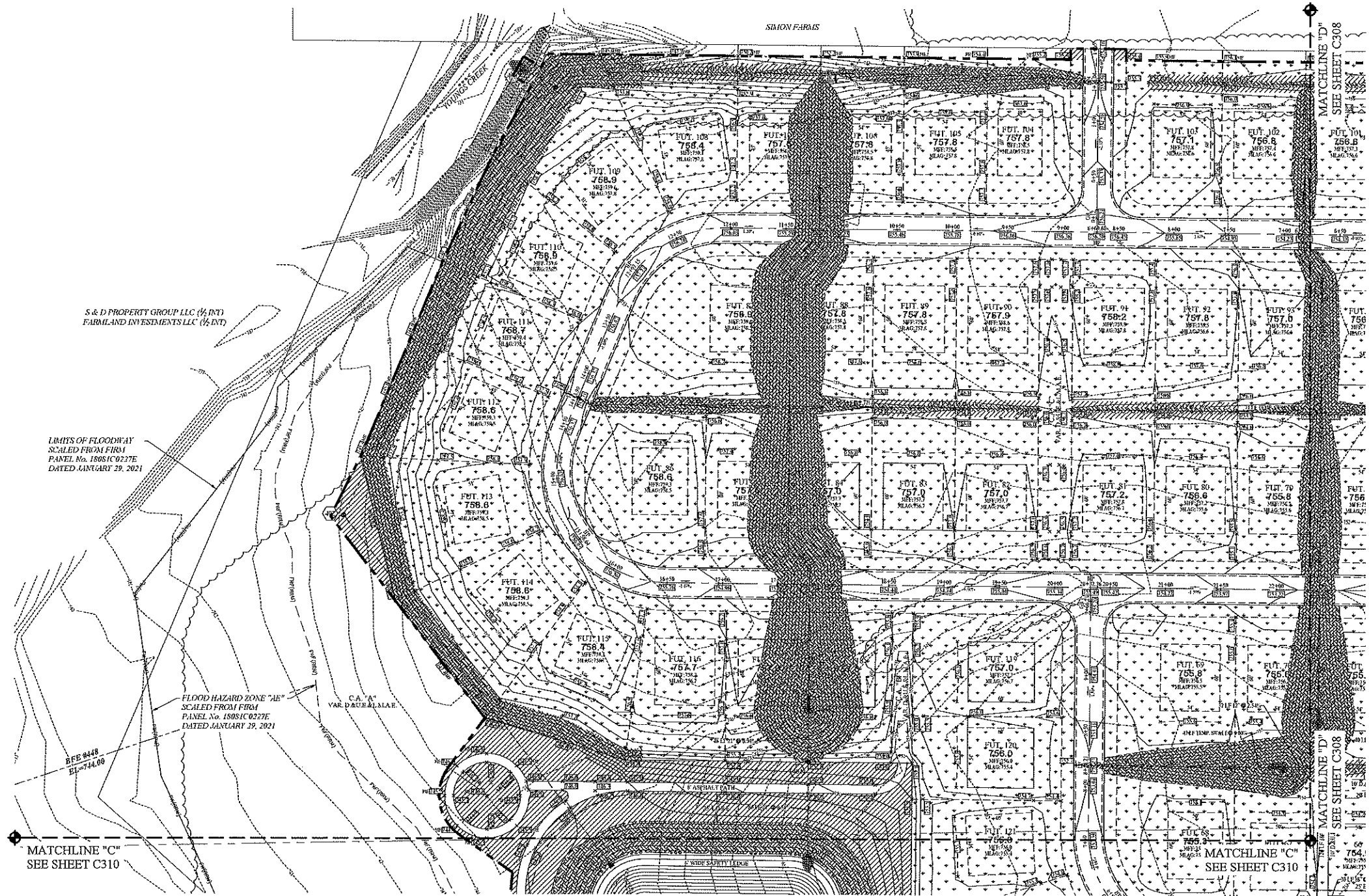
PERSON ONSITE RESPONSIBLE FOR EROSION CONTROL:  
LANTZ McELROY - ARBOR HOMES  
9225 HARRISON PARK COURT  
INDIANAPOLIS, INDIANA 46216  
PHONE: (317) 842-1875

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TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNDISTURBED LOT STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO. ELEV=741.77 (NAVD 83)



DAVID J. STOEPPELWERTH REGISTERED No. 19358 STATE OF INDIANA PROFESSIONAL ENGINEER		CERTIFIED: 12/02/21 <i>David J. Stoepfelwerth</i>
STOEPPELWERTH ALWAYS ON 7905 East 106th Street, Fishers, IN 46038-2505 phone: 317.849.2595 fax: 317.849.2542		
PERMANENT STORM WATER POLLUTION PREV. PLAN WESTWIND at CUMBERLAND SECTION 1 FRANKLIN, FRANKLIN TOWNSHIP JOHNSON COUNTY, INDIANA		
DESIGNED BY: PDR	CHECKED BY: BKR	SHEET NO. <b>C310</b> S.A.A. 91525ARB-S1



LEGEND	
	DENOTES CONSTRUCTION LIMITS
	FLOODWAY FRINGE (FIRM)
	FLOODWAY FRINGE (FIRM)
	CROSS SECTION (FIRM)
	BASE FLOOD ELEVATION (FIRM)
	DENOTES PERMANENT SEEDING A MULCH AREAS
	DENOTES TEMPORARY SEEDING A MULCH AREAS
REFER TO SHEETS C316 - C317 FOR SEEDING/MULCHING SPECIFICATIONS	

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9225 HARRISON PARK COURT  
INDIANAPOLIS, INDIANA 46216  
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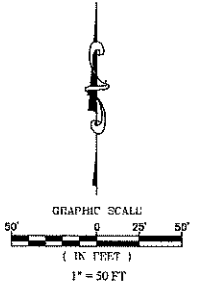
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SITE TBM:  
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN ARROUND ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=74.54 (NAD 83)

TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=75.46 (NAD 83)

TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNDISTURBED LIFT STATION APPROXIMATELY 100 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAIL S, SECTION ONE, PHASE TWO. ELEV=74.17 (NAD 83)



DATE	NAME	REVISIONS	BY

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

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

David J. Stoepfelwerth  
CERTIFIED: 12/02/21

**STOEPPELWERTH**  
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PERMANENT STORM WATER POLLUTION PREV. PLAN  
WESTWIND at CUMBERLAND  
SECTION 1

FRANKLIN, FRANKLIN TOWNSHIP  
JOHNSON COUNTY, INDIANA

DRAWN BY: PDR  
CHECKED BY: BKR  
SHEET NO: C311  
2 & A KID NO 91595ARB-81



File Name: S:\1595ARE-S\DWG\C312 - Erosion Control - Details.dwg - C312  
Modified / By: November 23, 2021 11:36:24 AM / pfrichards  
Printed / By: November 30, 2021 7:22:00 AM / Paul Richards

# THIS SHEET TO BE USED FOR EROSION CONTROL ONLY.

PERSON ON-SITE RESPONSIBLE FOR EROSION CONTROL:  
LANTZ McELROY  
9225 HARRISON PARK COURT  
INDIANAPOLIS, INDIANA 46216  
PHONE: (317) 842-1875

WESTWIND at CUMBERLAND, SECTION 1

## SITE NAME

The area scheduled for construction is known as "Westwind at Cumberland, Section 1" (hereinafter referred to as the "Project").

## PROJECT LOCATION

The property is located west of Cumberland Trace and Cumberland Trails Subdivisions west of Cumberland Drive along Crabapple Road and Pamela Drive.  
Latitude is - 39° 29' 58" N  
Longitude is 86° 05' 02" W

## OWNER'S INFORMATION

Arbor Homes  
9225 Harrison Park Court  
Indianapolis, Indiana 46216  
Phone: (317) 842-1875  
Contact Person: Lantz McElroy

## OPERATOR'S INFORMATION

Arbor Homes  
9225 Harrison Park Court  
Indianapolis, Indiana 46216  
Phone: (317) 842-1875  
Contact Person: Lantz McElroy

## 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 NOI's 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 66 lots, which consists of approximately 38,078 acres. Construction will include pad grades for homes, associated roadways, landscaping, and 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 - C203 for detail.

## A7 - HYDROLOGIC UNIT CODE (HUC4)

Outlet (South) 05120204690030, Youngs Creek - Brewers/Canary Ditches

## 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 lake to the west and ultimately Youngs Creek - Brewers/Canary Ditches.

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

Youngs Creek to the west and southwest and Canary Ditch to the southeast.

## A11 - IDENTIFICATION OF ALL RECEIVING WATERS

The overall site outlets to proposed lake and ultimately Youngs Creek - Brewers/Canary Ditches.

## A12 - IDENTIFICATION OF ALL POTENTIAL DISCHARGES TO GROUND WATER

None

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

A portion of this site is located within a Special Flood Hazard Area "AE". This information was obtained from Flood Insurance Rate Map (FIRM) Panel 18081C0227E for Johnson County, Indiana dated January 29, 2021.

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

Outlet 1 (East)

Allowable 10-year discharge:	72.05 cfs	Post-construction 2-year discharge:	5.20 cfs
Allowable 100-year discharge:	138.16 cfs	Post-construction 10-year discharge:	9.47 cfs
		Post-construction 100-year discharge:	19.06 cfs

## A15 - ADJACENT LAND USE

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

## A16 - LOCATIONS AND APPROXIMATE BOUNDARIES OF ALL DISTURBED AREAS

See Sheets C200 - C203 and C300 - C311.

## A17 - IDENTIFICATION OF EXISTING VEGETATIVE COVER

Existing site consists of vegetation and debris.

## A18 - SOILS MAP INCLUDING SOIL DESCRIPTIONS AND LIMITATIONS

Soil information from the Johnson County Soil Survey is shown on the Cover Sheet and Sheet C313.

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

Locations of stormwater systems: See Sheets C200 - C204 and C600 - C603.  
Size of storm sewers: See Sheets C200 - C204 and C600 - C603.  
Details of storm inlets and manholes: See Sheets C600 - C603 and details on Sheets C801A - C801B.

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

Mass grading of future Section 2 area immediately west of Section 1.

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

None planned, if stockpiling is necessary.

- Stockpile to be no greater than 20' above the final grade of the adjacent roadway.
- Slope grade are to be a maximum of 3:1.
- Silt fence shall be installed 5'-0" from the toe of slope.
- Stockpile shall be stabilized immediately.

## A22 - EXISTING SITE TOPOGRAPHY

Refer to Sheets C100 - C103 for the existing site topography plan.

## A23 - PROPOSED FINAL SITE TOPOGRAPHY

Refer to Sheets C200 - C203 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
- Liter
- Wind-blown 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 & C304. The posting information center is the location where a copy of the approved IDEM Rule 5 Permit, Approved SWPP Plan, signed O&M Manual and Maintenance Logs are to be located. The Contractor shall proceed to construct the construction entrances after all posting requirements have been met.
- Immediately following the installation of the construction entrances, the Contractor shall construct the maintenance and refueling area and concrete washout area. Refer to the maintenance and refueling area details and specifications on Sheets C313 - C314.
- Prior to any earth moving, the Contractor shall install all silt fence as shown on Sheets C300 - C307. The details and specifications for silt fence installation are located on Sheet C315.
- The Contractor shall protect existing curb-inlets with drop inlet protection baskets as shown on Sheets C300 - C301. Refer to drop inlet protection basket details and specifications on Sheets C314 - C315.
- 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 outlet pipes from structures 400 - 402A and install associated erosion control methods as shown on C307. Immediately following lake construction, the Contractor shall stabilize the lake banks with erosion control blanket as shown on Sheet C310.
- Refer to erosion control blanket details and specifications on Sheets C313 - C314.
- The Contractor shall install the proposed storm sewer and cut the proposed swales as shown on Sheets C200 - C203. 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 C314 - C315.
- The Contractor shall continue to grade the remainder of the site as shown on Sheets C200 - C203.
- The Contractor shall excavate around the existing sanitary manhole and expose the proposed connection point for the gravity sanitary 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 C308 - C311.
- 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 C308 - C311.
- Refer to the seed mixture details and specifications on Sheets C316 - C317.
- 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 condition, 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 entrances will be in place prior to this phase of construction. Entrance is shown for reference on Sheets C306 & C304.

Refer to Sheets C313 - C314 for details and specifications.

## B4 - SEDIMENT CONTROL MEASURES FOR SHEET FLOW AREAS

Sheet flow areas will be protected by seed and mulch or hydrosseeding. 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 C300 - C307.

Refer to Sheets C314 - C315 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 C308 - C311. Sheet flow areas will be protected by seed and mulch or hydrosseeding. 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 C300 - C307.

Refer to erosion control blanket details and specifications on Sheets C313 - C314.

Rock check dams will also be used in mass grading swales as shown on Sheets C304 & C307.

Refer to rock check dam details and specifications on Sheet C318.

A rock horse shoe dam will also be used at the Lake #1 outfall as shown on Sheet C306.

Refer to rock horse shoe dam details and specifications on Sheet C313.

## 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. Stray bales will not be allowed as inlet protection measures. Coconut fiber mats are recommended.

Refer to Sheets C300 - C307 for locations and refer to Sheets C314 - C315 for details and specifications.

## B7 - RUNOFF CONTROL MEASURES

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

Refer to Sheets C300 - C307 for additional information.

## B8 - STORMWATER OUTLET PROTECTION SPECIFICATIONS

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

Refer to Sheets C308 - C311 for additional information.

Refer to Sheets C314 & C801B for details.

## B9 - GRADE STABILIZATION STRUCTURE LOCATIONS AND SPECIFICATIONS

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

Refer to Sheets C313 - C314 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 C300 - C311.

Refer to details and specifications on Sheets C313 - C315.

## B11 - TEMPORARY SURFACE STABILIZATION METHODS APPROPRIATE FOR EACH SEASON

Refer to Sheets C316 - C317 for specifications.

## B12 - PERMANENT SURFACE STABILIZATION SPECIFICATIONS

Refer to Sheets C316 - C317 for specifications.

## 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 offsite 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 should 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 resealable, 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
Arbor Homes	(317) 842-1875
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 event. 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 areas 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 Entrances: Periodic reparding 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.
- Another operator/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. See Sheet C313 for individual building lots.

## 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, grill, 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, paint 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/Sump 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 MEASURES

- Inlets and inlet castings: The details and specifications for the storm inlet castings can be found on Sheets C600 - C603 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.

THIS DRAWING IS NOT INTENDED TO BE A SUBSTITUTE FOR A PROFESSIONAL ENGINEER'S SURVEY OR A SURVEYOR'S LOCATION REPORT.

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

CERTIFIED: 1/20/21  
David J. Stoepelwerth

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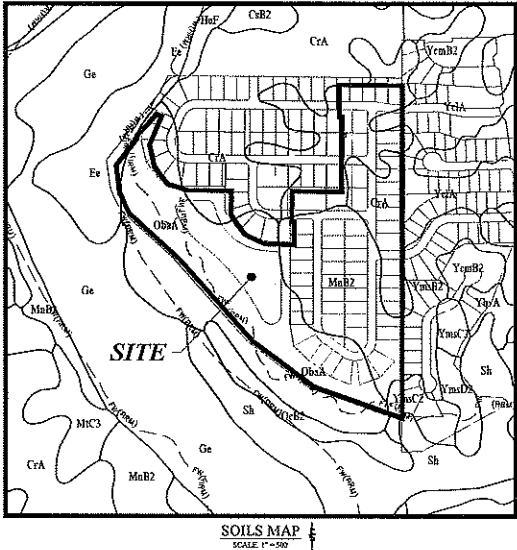
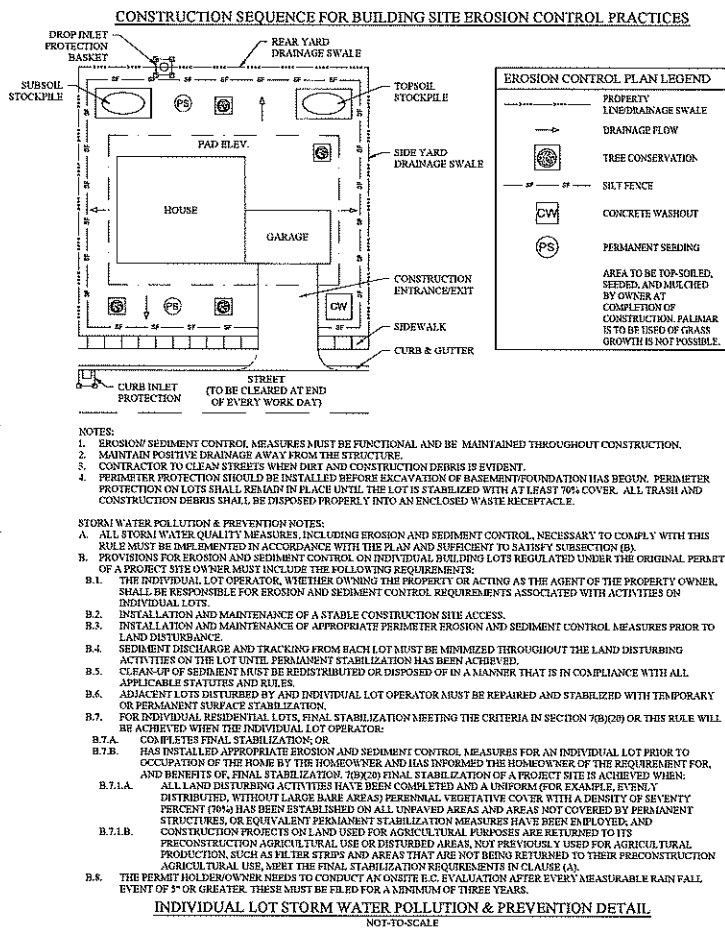
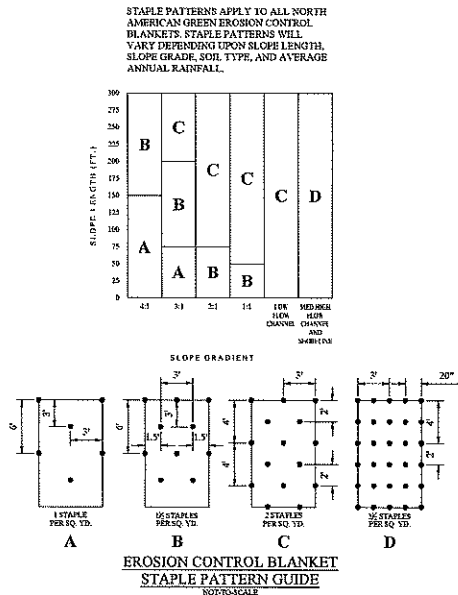
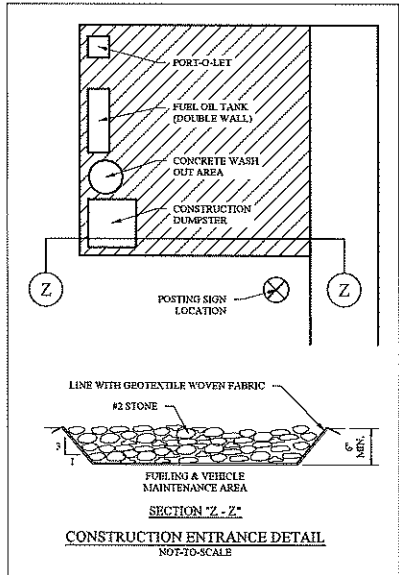
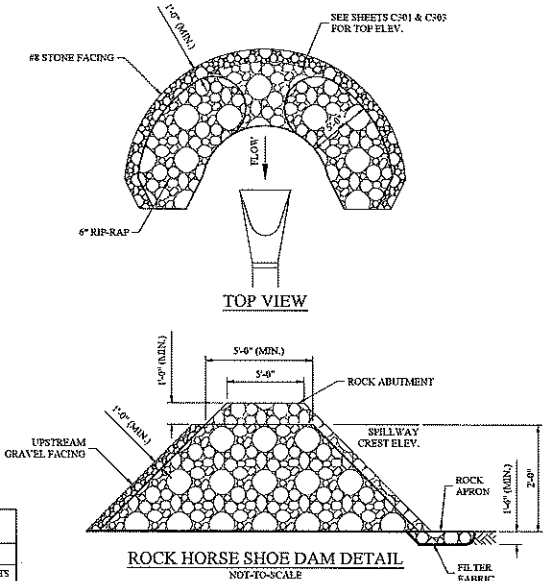
ALWAYS ON

STORM WATER POLLUTION PREV. PLAN SPECS.  
WESTWIND at CUMBERLAND  
SECTION 1  
FRANKLIN

THIS SHEET TO BE  
USED FOR EROSION  
CONTROL ONLY.

PERSON ON SITE RESPONSIBLE FOR EROSION CONTROL:  
LANTZ McILROY  
9225 HARRISON PARK COURT  
INDIANAPOLIS, INDIANA 46216  
PHONE: (317) 842-1875

EROSION CONTROL NOTES		
EROSION CONTROL MEASURE	INSTALLATION SEQUENCE	MAINTENANCE
STONE ENTRANCE	PRIOR TO CLEANING AND GRADING	- INSPECT ENTRANCE PAD AND SEDIMENT DISPOSAL AREA WEEKLY AND AFTER STORM EVENTS OR HEAVY USE.   - RESHAPE PAD AS NEEDED FOR DRAINAGE AND RUNOFF CONTROL.   - TOPDRESS WITH CLEAN STONE AS NEEDED.   - IMMEDIATELY REMOVE MUD AND SEDIMENT TRACKED OR WASHED ONTO PUBLIC ROADS BY RUSHING OR SWEEPING. FLUSHING SHOULD ONLY BE USED IF THE WATER IS CONVEYED INTO A SEDIMENT TRAP OR BASIN.   - REPAIR ANY BROKEN ROAD PAVEMENT IMMEDIATELY.
SILT FENCE	PRIOR TO CLEANING AND GRADING	- INSPECT THE SILT FENCE PERIODICALLY AND AFTER EACH STORM EVENT.   - IF FENCE FABRIC TEARS, STARTS TO DECOMPOSE, OR IN ANY WAY BECOMES INEFFECTIVE, REPLACE THE AFFECTED PORTION IMMEDIATELY.   - REMOVE DEPOSITED SEDIMENT WHEN IT REACHES HALF THE HEIGHT OF THE FENCE AT ITS LOWEST POINT OR IS CAUSING THE FABRIC TO BULGE.   - TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.
TOPSOIL STOCKPILE	PRIOR TO CLEANING AND GRADING	- DETERMINE DEPTH AND SUITABILITY OF TOPSOIL AT THE SITE. (FOR HELP, CONTACT YOUR LOCAL SWCD OFFICE TO OBTAIN A COUNTY SOIL SURVEY REPORT OR CONSULT WITH A SOIL SCIENTIST.)   - PRIOR TO STRIPPING TOPSOIL, INSTALL ANY SITE-SPECIFIC DOWNSLOPE PRACTICES NEEDED TO CONTROL RUNOFF AND SEDIMENTATION.   - REMOVE THE SOIL MATERIAL NO DEEPER THAN WHAT THE COUNTY SOIL SURVEY DESCRIBES AS "SURFACE SOIL" (I.E., A OR AP HORIZON).   - IF STOCKPILE THE MATERIAL IN ACCESSIBLE LOCATIONS THAT NEITHER INTERFERE WITH OTHER CONSTRUCTION ACTIVITIES NOR BLOCK NATURAL DRAINAGE, AND INSTALL SILT FENCES OR OTHER BARRIERS TO TRAP SEDIMENT (SEE EXHIBIT 3.2a-B). (SEVERAL SMALL PILES AROUND THE CONSTRUCTION SITE ARE USUALLY MORE EFFICIENT AND EASIER TO MAINTAIN THAN ONE LARGE PILE.)   - IF SOIL IS STOCKPILED FOR MORE THAN 6 MO., IT SHOULD BE TEMPORARILY SEEDED OR COVERED WITH A TARP OR SURROUNDED BY A SEDIMENT BARRIER.
TEMPORARY DIVERSIONS	AFTER ROUGH GRADING	- INSPECT WEEKLY AND FOLLOWING EACH STORM EVENT.   - REMOVE SEDIMENT FROM THE CHANNEL AND REINFORCE THE RIDGE AS NEEDED.   - CHECK THE OUTLETS AND MAKE NECESSARY REPAIRS IMMEDIATELY.   - REMOVE SEDIMENT FROM TRAPS WHEN THEY ARE 50% FULL.   - WHEN THE WORK AREA HAS BEEN STABILIZED, REMOVE THE RIDGE, FILL THE CHANNEL TO BLEND WITH THE NATURAL GROUND, REMOVE TEMPORARY SLOPE DRAINS, AND STABILIZE ALL DISTURBED AREAS.
ROCK DAM	AFTER ROUGH GRADING	- INSPECT THE ROCK DAM AND BASIN FOLLOWING EACH STORM EVENT.   - REMOVE SEDIMENT WHEN IT ACCUMULATES TO HALF THE DESIGN VOLUME (MARKED BY STAKES).   - CHECK THE DAM AND ABUTMENTS FOR EROSION, PILING, AND ROCK DISPLACEMENT, AND REPAIR IMMEDIATELY IF THE BASIN DOES NOT DRAIN BETWEEN STORMS. REPLACE THE STONE ON THE UPSTREAM FACE OF DAM IF THE BASIN DRAINS TO RAPIDLY FOLLOWING A STORM (LESS THAN 6 HRS.), ADD INDOT CA NO. 5 GRAVEL ON THE UPSTREAM FACE OF THE DAM.   - ONCE THE CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED, REMOVE WATER AND SEDIMENT FROM THE BASIN.    A. REMOVE THE DAM, DEPENDING ON THE ROCK IN DESIGNATED DISPOSAL AREAS.    B. SMOOTH THE SITE TO BLEND THE SURROUNDING AREA.    C. STABILIZE.
TEMPORARY SEEDING	AFTER ROUGH GRADING	- INSPECT PERIODICALLY AFTER PLANTING TO SEE THAT VEGETATIVE STANDS ARE ADEQUATELY ESTABLISHED; RE-SEED IF NECESSARY.   - CHECK FOR EROSION DAMAGE AFTER STORM EVENTS AND REPAIR, RESEED AND MULCH IF NECESSARY.   - TOPDRESS FALL SEEDING WHEAT OR RYE SEEDINGS WITH 50 LBS/ACRE OF NITROGEN IN FEBRUARY OR MARCH IF NITROGEN DEFICIENCY IS APPARENT. (EXHIBIT 3.11-B SHOWS ONLY WHEAT/RYE FALL SEEDING.)
PERMANENT SEEDING	AFTER FINISH GRADING	- INSPECT PERIODICALLY, ESPECIALLY AFTER STORM EVENTS, UNTIL THE STAND IS SUCCESSFULLY ESTABLISHED.   - CHARACTERISTICS OF A SUCCESSFUL STAND INCLUDE: VIGOROUS DARK GREEN OR BLuish-GREEN SEEDLINGS, UNIFORM DENSITY WITH NITROGEN PLANTS, LEGUMES, AND GRASSES WELL INTERMIXED GREEN LEAVES, AND THE PERENNIALS REMAINING GREEN THROUGHOUT THE SEASON, AT LEAST AT THE PLANT NUCLEI.   - PLAN TO ADD FERTILIZER THE FOLLOWING SEASON ACCORDING TO SOIL TEST RECOMMENDATIONS.   - REPAIR DAMAGED, BARE, OR SPARSE OR PATCHY, BY FILLING ANY GULLIES, RE-FERTILIZING, OVER-OR RE-SEEDING AND MULCHING AFTER RE-PREPARING THE SEEDBED.   - IF VEGETATION FAILS TO GROW, CONSIDER SOIL TESTING TO DETERMINE ACIDITY OR NUTRIENT DEFICIENCY PROBLEMS. (CONTACT YOUR SWCD OR COOPERATIVE EXTENSION OFFICE FOR ASSISTANCE.)   - IF ADDITIONAL FERTILIZATION IS NEEDED TO GET A SATISFACTORY STAND, DO SO ACCORDING TO SOIL TEST RECOMMENDATIONS.
EROSION CONTROL MATTING	AFTER FINISH GRADING	- DURING VEGETATIVE ESTABLISHMENT, INSPECT AFTER STORM EVENTS FOR ANY EROSION BELOW THE BLANKET.   - IF ANY AREA SHOWS EROSION, PULL BACK THAT PORTION OF THE BLANKET COVERING IT, ADD SOIL, RE-SEED THE AREA, AND RE-LAY AND STAPLE THE BLANKET.   - AFTER VEGETATIVE ESTABLISHMENT, CHECK THE TREATED AREA PERIODICALLY.
INLET PROTECTION	AFTER EACH INLET IS PLACED	- INSPECT FREQUENTLY FOR DAMAGE BY VEHICULAR TRAFFIC, AND REPAIR IF NEEDED.   - INSPECT AFTER EACH STORM EVENT.   - REMOVE SEDIMENT (BUT NOT BY FLUSHING) WHEN IT REACHES HALF THE HEIGHT OF THE BARRIER.   - DEPOSIT REMOVED SEDIMENT WHERE IT WILL NOT ENTER STORM DRAINS.
REMOVAL OF INLET PROTECTION	AFTER ALL AREAS DRAINING TO THESE AREAS ARE STABILIZED	NA
REMOVAL OF SILT FENCE	AFTER ALL AREAS DRAINING TO THESE AREAS ARE STABILIZED	NA



**SOILS LEGEND**

Map Unit: Br - Brookston silty clay loam, 0 to 2 percent slopes

The Brookston component makes up 95 percent of the map unit. Slopes are 0 to 2 percent. This component is on till plains on till plains. The parent material consists of loess over loamy till. Depth to a root restrictive layer is greater than 40 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May, December. Organic matter content in the surface horizon is about 4 percent. This component is in the F111A1000N Wet Till Ridge ecological site. Nonirrigated land capability classification is 2w. This soil meets hydro criteria.

Map Unit: CrA - Crawley silt loam, fine-loamy subsoil, 0 to 2 percent slopes

The Crawley component makes up 91 percent of the map unit. Slopes are 0 to 2 percent. This component is on Wisconsin water-lain moraines on till plains. The parent material consists of silty material or loess over loamy till. Depth to a root restrictive layer is greater than 40 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May, December. Organic matter content in the surface horizon is about 3 percent. This component is in the F111A1000N Wet Till Ridge ecological site. Nonirrigated land capability classification is 2w. This soil does not meet hydro criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 30 percent.

Map Unit: Ea - Ed soil loam, 0 to 2 percent slopes, frequently flooded

The Ea component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on till plains. The parent material consists of silty material or loess over loamy till. Depth to a root restrictive layer is greater than 40 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 19 inches during January, February, March, April, May, December. Organic matter content in the surface horizon is about 5 percent. This component is in the F111A1000N Dry Alluvium ecological site. Nonirrigated land capability classification is 2w. This soil does not meet hydro criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 5 percent.

Map Unit: MaB2 - Miami silt loam, 0 to 6 percent slopes, flooded

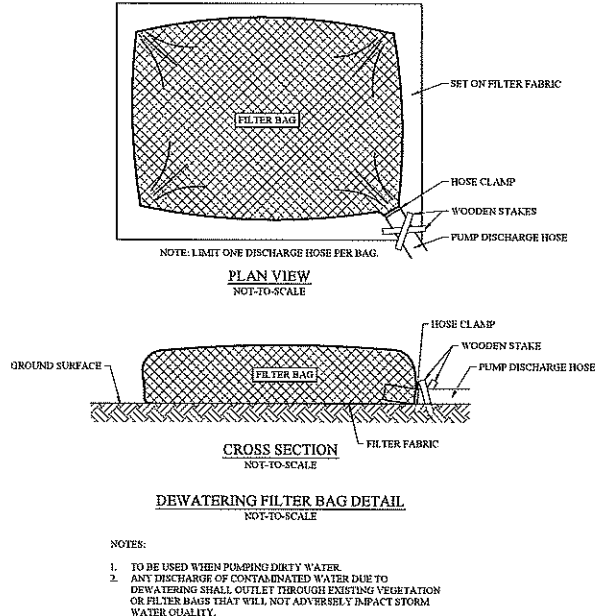
The Miami, eroded component makes up 85 percent of the map unit. Slopes are 0 to 6 percent. This component is on all plains, till plains. The parent material consists of silty material or loess over loamy till. Depth to a root restrictive layer is greater than 40 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during January, February, March, April, May, December. Organic matter content in the surface horizon is about 2 percent. This component is in the F111A1000N Wet Till Ridge ecological site. Nonirrigated land capability classification is 2w. This soil does not meet hydro criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 35 percent.

Map Unit: ObaA - Oakley silt loam, 0 to 2 percent slopes

The Oakley component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on stream terraces, outwash plains. The parent material consists of loamy outwash over sandy and gravelly outwash. Depth to a root restrictive layer is strongly controlling textural stratification, is 40 to 72 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the F111A1000N Wet Till Ridge ecological site. Nonirrigated land capability classification is 2w. This soil does not meet hydro criteria.

Map Unit: Yda - Crawley silt loam, fine-loamy subsoil-Urbium land complex, 0 to 2 percent slopes

The Yda component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on Wisconsin water-lain moraines on till plains. The parent material consists of silty material or loess over loamy till. Depth to a root restrictive layer is greater than 40 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May, December. Organic matter content in the surface horizon is about 3 percent. This component is in the F111A1000N Wet Till Ridge ecological site. Nonirrigated land capability classification is 2w. This soil does not meet hydro criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 30 percent.



#### 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 traveling 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/exit 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.

October 2007

Chapter 7

17

#### 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. 5) (see Appendix D)).
- Geotextile fabric underlayment (see Appendix C) (used as a separation layer to prevent leaching 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 limitation).

##### Installation

1. Remove all vegetation and other objectionable material from the foundation area.
2. Grade foundation and crown 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 (see 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 first 36 feet adjacent to the public roadway with two to three inches of washed aggregate (INDOT CA No. 5) (optional, used primarily where the purpose of the pad is to keep soil from adhering to 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.
- Reshape 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.

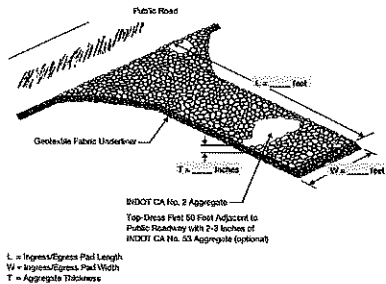
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#### TEMPORARY CONSTRUCTION INGRESS/EGRESS PAD (LARGE SITES—TWO ACRES OR LARGER)

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



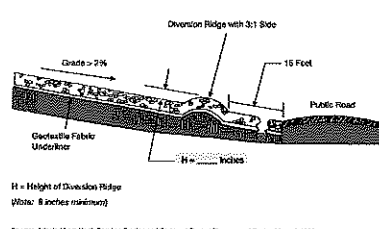
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#### TEMPORARY CONSTRUCTION INGRESS/EGRESS PAD (LARGE SITES—TWO ACRES OR LARGER)

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



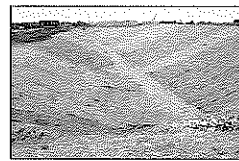
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#### SURFACE STABILIZATION

##### 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, overhead 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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#### EROSION CONTROL BLANKET

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

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

##### Installation

1. 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.
2. Prepare the seedbed, add soil amendments, and permanently seed (see Permanent Seeding on page 35) the area immediately following seedbed preparation.
3. Lay erosion control blankets on the seedbed area so that they are in continuous contact with the soil with each up-slope or up-stream blanket overlapping the down-slope or down-stream blanket by at least eight inches, or follow manufacturer's recommendations.
4. Tuck the up-slope edge of the upper blanket into a check (a 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 up-slope edge of the upper blanket.
5. 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, reset the area, replace and staple the blanket.

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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 unvegetated slope to protect the soil from erosive forces.

#### Purpose

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

#### Specifications

##### Stitch

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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#### RIPRAP SLOPE PROTECTION

- Bedding Material—Geotextile fabric, sand, or crushed aggregate (Indiana Department of Transportation CA No. 9, 11, or 12 (see Appendix D)).

##### Installation

##### Subgrade Preparation

1. Remove brush, logs, stumps, and other debris and dispose of in designated areas.
2. Excavate foundation subgrade below design elevation to allow for thickness of the bedding material and riprap.
3. Compact any fill material to the density of the surrounding undisturbed soil.
4. Cut a keyway in stable material at the slope base to reinforce the toe. Keyway depth should be one and one-half times the design thickness of the stone and should extend a horizontal distance equal to the design thickness (see Riprap Slope Protection Worksheet).
5. Smooth the graded foundation.

##### Placement of Bedding Material

1. If using geotextile fabric, place on the smoothed foundation, overlap the edges at least 12 inches and secure with anchor pins spaced every three feet along the overlap. (For large riprap, consider a four inch layer of sand to protect the fabric.)
2. If using sand or aggregate bedding material, spread the well-graded bedding material in a uniform layer to the required thickness (six inches minimum). If two or more layers are specified, place the layer of the smaller gradation first and avoid mixing the layers.

Note: Omission of the bedding material or damage to it may result in erosion and/or sliding beneath the riprap or non-entirement of the underlying soil through the voids in the riprap.

##### Riprap Placement

1. Immediately after installing the bedding material, add riprap to the lines and elevations shown in the construction plans. Place the riprap in one operation, taking care not to damage the bedding material. (Do not dump through chutes or use any method that causes segregation of stone sizes or that will dilute or damage the underlying bedding material.)
2. If geotextile fabric tears when placing riprap, repair immediately by laying and stapling a piece of fabric over the damaged area, overlapping the undamaged area by at least 12 inches.

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#### RIPRAP SLOPE PROTECTION

3. Place smaller stone in voids to form a dense, uniform, well-graded riprap mass. (Selective loading at the quarry and some hand placement may be needed to ensure an even distribution of stone materials.)
4. Blend the riprap surface smoothly with the surrounding area to eliminate protrusions or overfalls.

##### Maintenance

- Inspect within 24 hours of each rain event and at least once every seven calendar days.
- Check for displacement of riprap material, slumping, and erosion along the edges, especially on the down-slope side. (Properly designed and installed riprap usually requires very little maintenance.)

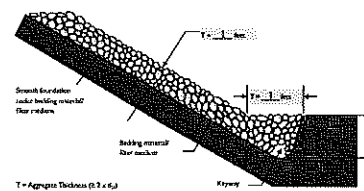
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#### RIPRAP SLOPE PROTECTION

##### Riprap Slope Protection Worksheet



Source: Adapted from North Carolina Erosion and Sediment Control Planning and Design Manual, 1993

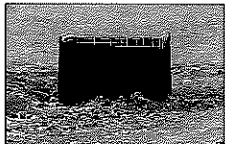
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#### TEMPORARY DROP INLET PROTECTION

##### 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 restretch 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 support—beading to strengthen integrity of the structure. (Structure must withstand 1½-foot head of water and sediment without collapsing or understeering.)

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#### 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.
- Lath.
- Staples or nails.
- Geotextile fabric.

##### Table 1. Geotextile Fabric Specifications

Physical Property	Woven	Non-Woven
Filtration Efficiency	85%	85%
UV Resistance	70%	85%
Resistance and adaptability to ensure six month minimum life at temperatures of 0° to 100° F		
Tensile Strength at 20% Elongation	30 lbs./linear inch	50 lbs./linear inch
Standard Strength	50 lbs./linear inch	70 lbs./linear inch
Extra Strength	70 lbs./linear inch	100 lbs./linear inch
Sturdy Flow Rate	0.3 gal./min./sq. ft.	4.5 gal./min./sq. ft.
Water Flow Rate	16 gal./min./sq. ft.	220 gal./min./sq. ft.

##### Installation

(see Exhibits 1 and 2)

1. Dig an eight-inch deep, four-inch wide trench around the perimeter of the inlet.
2. 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 anchor 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 lath 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

##### Exhibit 1

3. Use the wrap joint method when joining posts (see Silt Fence on page 215).
  4. 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.
  5. Backfill the trench with soil material and compact it in place.
  6. Secure the posts by nailing braces into each corner post or utilize rigid posts 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, compacted 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 undermining 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.

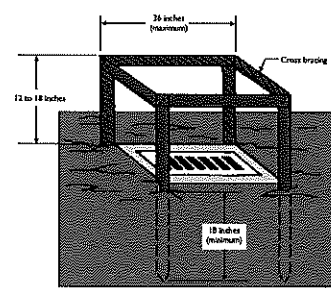
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#### GEOTEXTILE FABRIC DROP INLET PROTECTION

##### Exhibit 2



Source: Adapted from North Carolina Erosion and Sediment Control Planning and Design Manual, 1993

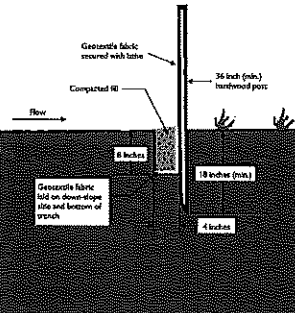
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#### GEOTEXTILE FABRIC DROP INLET PROTECTION

##### Exhibit 2



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STOEPPELWERTH  
ALWAYS ON  
REGISTERED PROFESSIONAL ENGINEER  
No. 19358  
STATE OF INDIANA  
CERTIFIED: 12/02/21  
David J. Stoepelwerth

STORM WATER POLLUTION PREV. PLAN DETAILS  
WESTWIND at CUMBERLAND  
SECTION 1

DRAWN BY: PDR

CHECKED BY: BKR

C314

544-RB-ND  
9159ARB-S1

JOHNSON COUNTY, INDIANA  
FRANKLIN TOWNSHIP

THIS DRAWING IS NOT INTENDED TO BE A SUBSTITUTE FOR A PROFESSIONAL SURVEY OR A SURVEYOR LOCATION REPORT.

REVISIONS

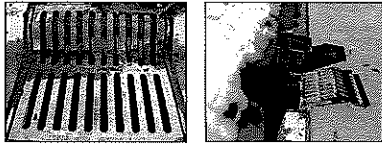
DATE

BY

## 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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## 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	30 lbs. per linear inch (60 lbs. per linear inch)	50 lbs. per linear inch (70 lbs. per linear inch)
Standard strength Extra strength	0.3 gal./min./square foot	4.5 gal./min./square foot
Slurry flow rate	15 gal./min./sq. ft.	220 gal./min./sq. ft.
UV resistance	70%	85%
Post spacing	7 feet	5 feet

Note: Silt fences can be purchased commercially.

- 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 end 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 plowing is also acceptable.
- Insert 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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## 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 rinsed 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. Unseparated 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.
- Where 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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## 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%	80%
UV Resistance	70%	85%
Problems and Solutions to ensure six month minimum life at temperatures of 97° to 120° F.		
Tensile Strength at 20% Elongation:		
Standard Strength	30 lbs./linear inch	50 lbs./linear inch
Extra Strength	50 lbs./linear inch	70 lbs./linear inch
Slurry 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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## SILT FENCE

- Drive the support posts at least 18 inches into the ground, tightly stretching the fabric between the posts so 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.

#### Maintenance

- Inspect within 24 hours of a rain event and at least once every seven calendar days.
- If fence fabric tears, starts to disintegrate, or in any way becomes ineffective, replace the affected portion immediately. Note: All repairs should meet specifications as outlined within this manual.
- 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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## CONCRETE WASHOUT

- residual loads due to potential to exceed the design capacity of the washout system. Small amounts of excess or residual concrete (not washout water) may be disposed of in areas that will not result in flow to an area that is to be protected.
- Install systems at strategic locations that are convenient and in close proximity to work areas and is sufficient number to accommodate the demand for disposal.
- Install signage identifying the location of concrete washout systems.

#### Location

- Locate concrete washout systems in least 50 feet from any creeks, wetlands, ditches, bare features, or storm drains/roadside conveyance systems.
- To the extent practical, locate concrete washout systems in relatively flat areas that have established vegetation cover and do not receive runoff from adjacent land areas.
- Locate in areas that provide easy access for concrete trucks and other construction equipment.
- Locate away from urban construction traffic to reduce the potential for discharge to the system.

#### General Design Considerations

- The structure or system shall be designed to contain the anticipated washout water associated with construction activities.
- The system shall be designed, to the extent practical, to eliminate runoff from entering the washout system.
- Runoff from a rainstorm or snowmelt should not carry wastes away from the washout location.
- Washout will not import future land uses (i.e., open spaces, landscaped areas, home sites, parks).
- Washout systems/containment measures may also be utilized on smaller individual building sites. The design and size of the system can be adjusted to accommodate the expected capacity.

#### Prefabricated Washout Systems/Containers

- Self-contained sturdy containment systems that are delivered to a site and located at strategic locations for concrete disposal.

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## INSERT (BASKET) CURB INLET PROTECTION

#### Maintenance

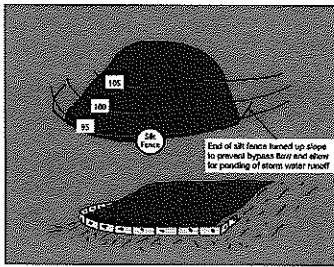
- Inspect daily.
- Remove accumulated sediment and debris after each storm event. Deposit sediment in an area where it will not re-enter the paved area or storm drains.
- Replace or clean geotextile fabric as needed.
- When the contributing drainage area has been stabilized, remove inlet protection.

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## SILT FENCE

Exhibit 1



Source: Adapted from Commonwealth of Pennsylvania's Erosion & Sediment Control Manual, 1990

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## CONCRETE WASHOUT

- These systems are manufactured to resist damage from construction equipment and protect against leaks or spills.
- Manufacturer or supplier provides the container. The project site manager maintains the system or the supplier provides complete service that includes maintenance and disposal.
- Units are often available with or without ramps. Units with ramps lend themselves to accommodate pump trucks.
- Maintain according to the manufacturer's recommendations.

#### Designed and Installed Units

These units are designed and installed on site. They tend to be less reliable than prefabricated systems and are often prone to failure. Concrete washout systems can be constructed above or below grade. It is not uncommon to have a system that is partly below grade with an additional containment structure above grade.

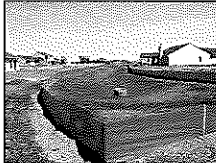
- Washout systems shall utilize a pit or bermed area designed and maintained at a capacity to contain all liquid and concrete waste generated by washout operations.
- The volume of the system must also be designed to contain runoff that drains to the system and rainfall that enters the system for a two-year frequency, 24-hour storm event.
- Below Grade System
  - A washout system installed below grade should be a minimum of ten feet wide by ten feet long, but sized to contain all liquid and waste that is expected to be generated between scheduled cleanout periods. The size of the pit may be limited by the size of polyethylene available. The polyethylene lining should be of adequate size to extend over the entire excavation.
  - Include a minimum 12-inch freeboard to reasonably ensure that the structure will not overflow during a rain event.
  - Line the pit with ten millimeter polyethylene lining to control seepage.
  - The bottom of excavated pit should be above the seasonal high water table.
- Above Grade System
  - A system designed and built above grade should be a minimum of ten feet wide by ten feet long, but sized to contain all liquid and waste that is expected to be generated between scheduled cleanout periods. The size of the containment system may be limited by the size of

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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 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 diversions 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

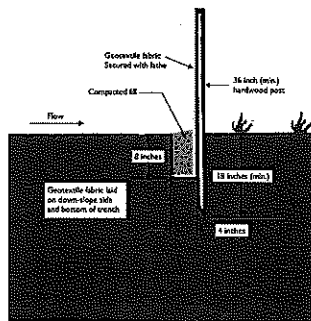
- Installed parallel to the slope contour.
- Minimum of 10 feet beyond the toe of the slope to provide a broad, shallow sediment pool.
- Accessible for maintenance (removal of sediment and silt fence required).

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## SILT FENCE

Exhibit 2



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## CONCRETE WASHOUT

- polyethylene available. The polyethylene lining should be of adequate size to extend over the entire excavation.
- The system design may utilize an earthen berm, stone walls, sandbags, or other acceptable barriers that will maintain its shape and integrity and support the polyethylene lining.
- Include a minimum four-inch freeboard as part of the design.

#### Washout Procedures

- Do not leave excess mud in the chute or hopper after the pour. Every effort should be made to empty the chute and hopper at the pour. The less material left in the chute and hopper, the quicker and easier the cleanout. Small amounts of excess concrete (not washout water) may be disposed of in areas that will not result in flow to an area that is to be protected.
- At the washout location, scrape as much material from the chute as possible before washing them. Use non-water cleaning methods to minimize the chance for waste to flow off site.
- Remove as much mud as possible when washing out.
- Scrap washing out in an area if you observe water running off the designated area or if the containment system is leaking or overflowing and ineffective.
- Do not back flush equipment at the project site. Back flushing should be restricted to the plant as it generates large volumes of waste that more than likely will exceed the capacity of most washout systems. If an emergency arises, back flush should only be performed with the permission of a on-site manager for the project.
- Do not use additives with wash water. Do not use solvents or acids that may be used at the target plant.

#### Materials

- Minimum of ten millimeter polyethylene sheeting that is free of holes, tears, and other defects. The sheeting selected should be of an appropriate size to fit the washout system without seams or overlap of the lining (designed and installed system).
- Signage.
- Orange safety fencing or equivalent.
- Stony holes, sandbags (bags should be ultraviolet-stabilized geotextile fabric), soil material, or other appropriate materials that can be used to construct a containment system (above grade systems).

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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 fence 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 (in bury and anchor the lower portion of the fence fabric).

Note: An alternative to trenching is to use mechanical equipment to plow in the silt fence.

#### Materials and Silt Fence Specifications

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

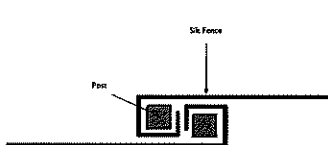
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## SILT FENCE

Exhibit 3



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## CONCRETE WASHOUT

- Metal pins or staples at a minimum of six inches in length, sandbags, or alternative fastener to secure polyethylene lining to the containment system.
- Non-collapsing and non-water holding cover for use during rain events (optional).

#### Installation

##### Prefabricated Washout Systems/Containers

- Install and locate according to the manufacturer's recommendations.

##### Designed and Installed Systems

- Utilize and follow the design in the storm water pollution prevention plan to install the system.
- Depend on the type of system, either excavate the pit or install the containment system.
- A base shall be constructed and prepared that is free of rocks and other debris that may cause tears or punctures in the polyethylene lining.
- Install the polyethylene lining. For excavated systems, the lining should extend over the entire excavation. The lining for bermed systems should be installed over the pooling area with enough material to extend the lining over the berm or containment system. The lining should be secured with pins, staples, or other fasteners.
- Place flags, safety fencing, or equivalent to provide a barrier to construction equipment and other traffic.
- Place a non-collapsing, non-water holding cover over the washout facility prior to a predicted rainfall event to prevent accumulation of water and possible overflow of the system (optional).
- Install signage that identifies concrete washout areas.
- Post signs directing contractors and suppliers to designated locations.
- Where necessary, provide stable ingress and egress (see Temporary Construction Ingress/Egress Pad on page 17) or alternative approach pad for concrete washout systems.

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STOEPPELWERTH



STORM WATER POLLUTION PREV. PLAN DETAILS  
WESTWIND at CUMBERLAND  
SECTION 1

JOHNSON COUNTY, INDIANA  
FRANKLIN, FRANKLIN TOWNSHIP

DRAWN BY: PDR  
CHECKED BY: BKR  
SHEET NO: C315  
S.E.A.R.B.R.G.  
91595ARB-S1

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CERTIFIED: 12/02/21  
David J. Stoepfelwerth  
REGISTERED PROFESSIONAL ENGINEER  
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REVISIONS  
DATE  
BY

- Chapter 7 October 2007

## October 2007 Chapter 7 31

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40 Chapter 7
October 2007

## October 2007 Chapter 7 253

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October 2000

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44 *Journal of Management Inquiry* 20(1) <http://jmi.sagepub.com>

## DORMANT SEEDING & FROST SEEDING

Characteristics and Areas of Concentrated Flow

Seed Mixture	Rate per Area Pure Live Seed	Optimum Soil pH
1. Perennial ryegrass - white clover	225 lbs. 5 lbs.	5.8 to 7.0
2. Kentucky bluegrass - smooth bromegrass - timothy - perennial ryegrass - white clover	35 lbs. 15 lbs. 5 lbs. 15 lbs. 2 lbs.	6.5 to 7.5
3. Tall fescue ¹ - white clover ²	225 lbs. 5 lbs.	6.5 to 7.5
4. Tall fescue ³ - perennial ryegrass - Kentucky bluegrass	225 lbs. 5 lbs. 5 lbs.	6.5 to 7.5

¹ For best results: (a) legume seed should be inoculated; (b) seeding rate should be increased to 400 lbs. per acre for spring seeding; (c) although no grass may be fall seeded and the legume frost-killed; and (d) if legumes are fall-seeded, do so in early 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, excludgrass, smooth bromegrass, and switchgrass. This research, in conjunction with demonstration areas, should focus on erosion control characteristics, wildlife toxicity, turf durability, and drought resistance.

Notes:

- If using mixtures other than those listed in this table, increase seeding rate by 50 percent over the conventional seeding rates.
- A high potential for fertilizer, seed, and mulch to wash exists on steep banks, cuts, and in channels and areas of concentrated flow.

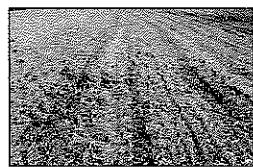
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## SURFACE STABILIZATION

### Mulching



Mulching is the application of plant residues/ materials to enhance and protect vegetative establishment and minimize 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 Area	Comments
Straw or hay	2 tons	Should be dry, free of undesirable seeds. Spread by hand or machine. Must be compacted or anchored (see Table 2).
Wood fiber	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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## 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 firm disk (A.U. method) and blades set straight	Compact or punch the above or lay two to four inches into the soil. Operate machinery on the contour of the slope.
Cleaning with roller tracks	Operate roller up and down slope to prevent formation of rills by roller tracks.
Wood hydro-mulch frame	Apply according to manufacturer's recommendations.
Synthetic burlap, biodegradable, or soil stabilizers	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 two-foot strip overlapping low to six inches over the adjacent down slope strip. Netting should be 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:
  - Crimp with a mulch anchoring tool, a weighted firm disk with dull serrated blades set straight, or metal cleats of a harrower.
  - Apply hydraulic mulch with short cellulose fibers.
  - Apply a liquid tackifier, or
  - Cover with netting secured by staples.

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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 seen or recurring, use erosion control blankets or other more substantial stabilization methods to prevent the area.

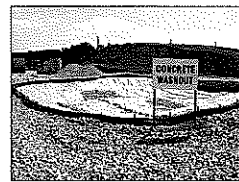
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## SITE MANAGEMENT MEASURES

### Concrete Washout



Concrete washout areas are designated locations within a construction site that are either a pre-fabricated 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 water through consolidation of solids and retention of liquids. Unbound 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 streams.
- Never wash out into a storm sewer discharge system. These systems are typically connected to a natural conveyance system.
- Where 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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## CONCRETE WASHOUT

residual leads due to potential to exceed the design capacity of the washout system. Small amounts of excess or residual concrete (not washout water) may be disposed of in areas that will not result in flow to an area that is to be protected.

- Install systems at strategic locations that are convenient and in close proximity to work areas and in sufficient number to accommodate the demand for disposal.
- Install signage identifying the location of concrete washout systems.

### Location

- Locate concrete washout systems at least 50 feet from any creeks, wetlands, ditches, karst features, or storm drain/intermediate conveyance systems.
- To the extent practical, locate concrete washout systems in relatively flat areas that have established vegetative cover and do not receive runoff from adjacent land areas.
- Locate in areas that provide easy access for concrete trucks and other construction equipment.
- Locate away from other construction traffic to reduce the potential for damage to the system.

### General Design Considerations

- The structure or system shall be designed to contain the anticipated washout water associated with construction activities.
- The system shall be designed, to the extent practical, to eliminate runoff from entering the washout system.
- Runoff from a minimum or snowmelt should not carry wastes away from the washout location.
- Washout will not impact future land uses (i.e., open spaces, landscaped areas, home sites, parks).
- Washout systems/containment measures may also be utilized on smaller individual building sites. The design and size of the system can be adjusted to accommodate the expected capacity.

### Prefabricated Washout Systems/Containers

- Self-contained sturdy containment systems that are delivered to a site and located at strategic locations for concrete disposal.

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## CONCRETE WASHOUT

- These systems are manufactured to resist damage from construction equipment and prevent spillage leaks or spills.
- Manufacturer or supplier provides the container. The project site manager maintains the system or the supplier provides complete service that includes maintenance and disposal.
- Units are often available with or without ramps. Units with ramps lend themselves to accommodate pump trucks.
- Maintain according to the manufacturer's recommendations.

### Designed and Installed Units

These units are designed and installed on site. They tend to be less reliable than prefabricated systems and are often prone to failure. Concrete washout systems can be constructed above or below grade. It is not uncommon to have a system that is partly below grade with an additional containment structure above grade.

- Washout systems shall utilize a pit or bermed area designed and maintained at a capacity to contain all liquid and concrete waste generated by washout operations.
- The volume of the system must also be designed to contain runoff that drains to the system and rainfall that enters the system for a two-year frequency, 24-hour storm event.

#### Below Grade System

- A washout system installed below grade should be a minimum of ten feet wide by ten feet long, but sized to contain all liquid and waste that is expected to be generated between scheduled cleanup periods. The size of the pit may be limited by the size of polyethylene available. The polyethylene lining should be of adequate size to extend over the entire excavation.
- Include a minimum 12-inch freeboard to reasonably ensure that the structure will not overflow during a rain event.
- Line the pit with ten millimeter polyethylene lining to control seepage.
- The bottom of excavated pit should be above the seasonal high water table.

#### Above Grade System

- A system designed and built above grade should be a minimum of ten feet wide by ten feet long, but sized to contain all liquid and waste that is expected to be generated between scheduled cleanup periods. The size of the containment system may be limited by the size of

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## CONCRETE WASHOUT

polyethylene available. The polyethylene lining should be of adequate size to extend over the berm or containment system.

- The system design may utilize an earthen berm, cover holes, sandbags, or other acceptable barriers that will maintain its shape and integrity and support the polyethylene lining.
- Include a minimum four-inch freeboard as part of the design.

### Washout Procedures

- Do not leave excess mud in the chute or hopper after the pour. Every effort should be made to empty the chutes and hopper at the pour. The less material left in the chutes and hoppers, the quicker and easier the cleanup. Small amounts of excess concrete (not washout water) may be disposed of in areas that will not result in flow to an area that is to be protected.
- At the washout location, scrape as much material from the chutes as possible before washing them. The non-water cleaning methods to minimize the chance for waste to flow off site.
- Remove as much mud as possible when washing out.
- Stop washing out in an area if you observe water running off the designated area or if the containment system is leaking or overflowing and ineffective.
- Do not back flush equipment at the project site. Back flushing should be restricted to the plant as it generates large volumes of waste that more than likely will exceed the capacity of most washout systems. If an emergency arises, back flush should only be performed with the permission of an on-site manager for the project.
- Do not use additives with wash water. Do not use salt or acids that may be used at the target plant.

### Materials

- Minimum of ten millimeter polyethylene sheeting that is free of holes, tears, and other defects. The sheeting selected should be of an appropriate size to fit the washout system without seams or overlap of the lining (designed and installed systems).
- Signage.
- Orange safety fencing or equivalent.
- Storm holes, sandbags (bags should be ultraviolet-stabilized geotextiles fabric), soil material, or other appropriate materials that can be used to construct a containment system (above grade systems).

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## CONCRETE WASHOUT

- Metal pins or staples at a minimum of six inches in length, sandbags, or alternative fasteners to secure polyethylene lining to the containment system.
- Non-collapsing and non-water holding cover for use during rain events (optional).

### Installation

#### Prefabricated Washout Systems/Containers

- Install and locate according to the manufacturer's recommendations.

#### Designed and Installed Systems

- Utilize and follow the design in the storm water pollution prevention plan to install the system.
- Dependent upon the type of system, either excavate the pit or install the containment system.
- A base shall be constructed and prepared that is free of rocks and other debris that may cause tears or punctures in the polyethylene lining.
- Install the polyethylene lining. For excavated systems, the lining should extend over the entire excavation. The lining for bermed systems should be installed over the pooling area with enough material to extend the lining over the berm or containment system. The lining should be secured with pins, staples, or other fasteners.
- Place flags, safety fencing, or equivalent to provide a barrier to construction equipment and other traffic.
- Place a non-collapsing, non-water holding cover over the washout facility prior to a predicted rainfall event to prevent accumulation of water and possible overflow of the system (optional).
- Install signage that identifies concrete washout areas.
- Post signs directing contractors and suppliers to designated locations.
- Where necessary, provide stable ingress and egress (see Temporary Construction Ingress/Egress Pad on page 17) or alternative approach pad for concrete washout systems.

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## CONCRETE WASHOUT

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

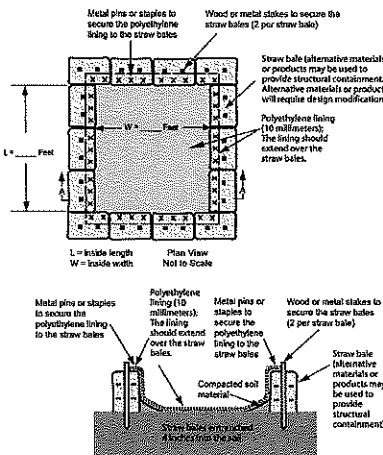
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## CONCRETE WASHOUT

### Concrete Washout (Above Grade System) Worksheet

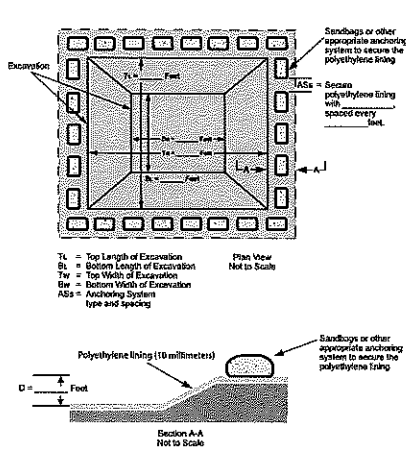


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## CONCRETE WASHOUT

### Concrete Washout (Below Grade System) Worksheet



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STORM WATER POLLUTION PREV. PLAN DETAILS  
WESTWIND at CUMBERLAND  
SECTION 1  
FRANKLIN, FRANKLIN TOWNSHIP  
JOHNSON COUNTY, INDIANA

DRAWN BY: PDR  
CHECKED BY: BKR  
SHEET NO: C317  
S.E.A. JOB NO: 91595ARB-S1

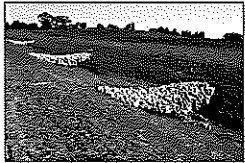
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REGISTERED PROFESSIONAL ENGINEER  
No. 19358  
STATE OF INDIANA  
CERTIFIED: 12/02/21  
David J. Stoepfelwirth

DATE: _____  
REVISIONS: _____  
BY: _____

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 velocities 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.
- Side slope ratio of 2:1 or flatter.
- Spacing -- toe of the upstream dam at same elevation as overflow weir of the downstream dam.

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ROCK CHECK DAM

Overflow Areas

Stabilized to reduce scour/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 Reemstone 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. 8 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. This lining should extend a minimum distance of six feet below the dam.

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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

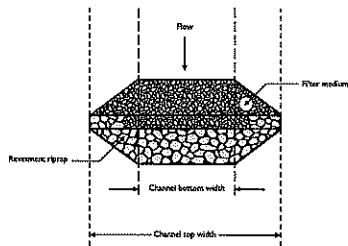
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ROCK CHECK DAM

Exhibit 2



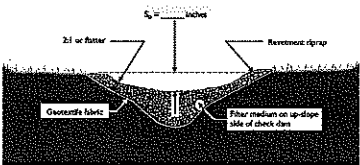
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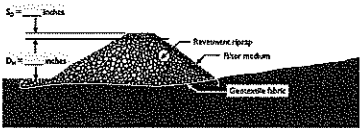
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ROCK CHECK DAM

Rock Check Dam Worksheet



$S_p$  = Spillway Depth  
NOTE: For minimum dimensions see the "Specifications" section of this measure.



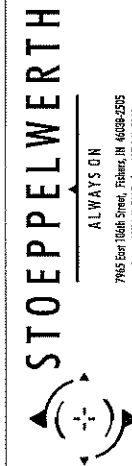
$D_u$  = Dam Height  
 $S_p$  = Spillway Depth  
NOTE: For minimum dimensions see the "Specifications" section of this measure.

Source: Adapted from Martin C. Voth, Erosion and Sediment Control Planning and Design Manual, 1993

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STORM WATER POLLUTION PREV. PLAN DETAILS

WESTWIND at CUMBERLAND  
SECTION 1

FRANKLIN, FRANKLIN TOWNSHIP  
JOHNSON COUNTY, INDIANA

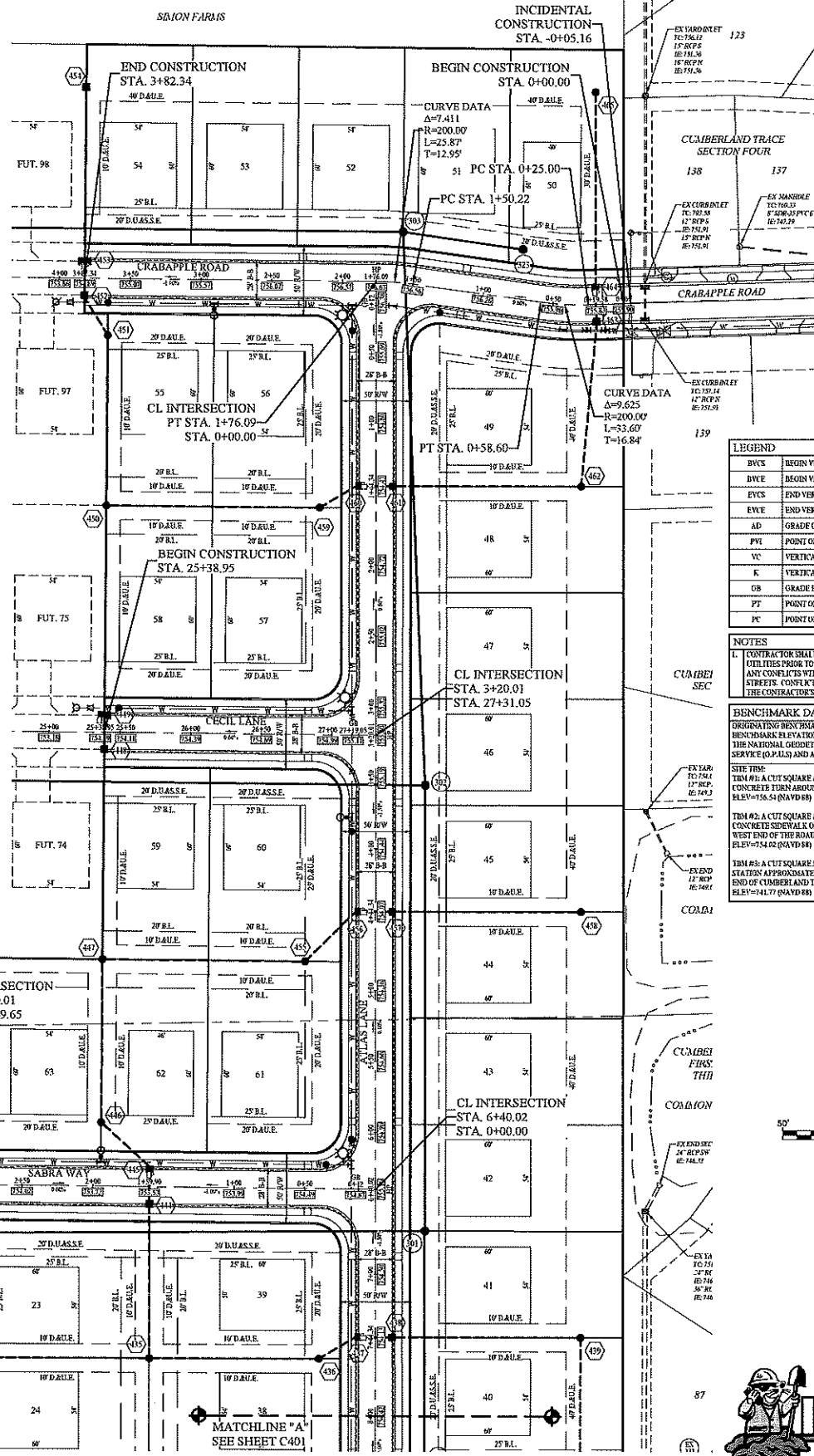
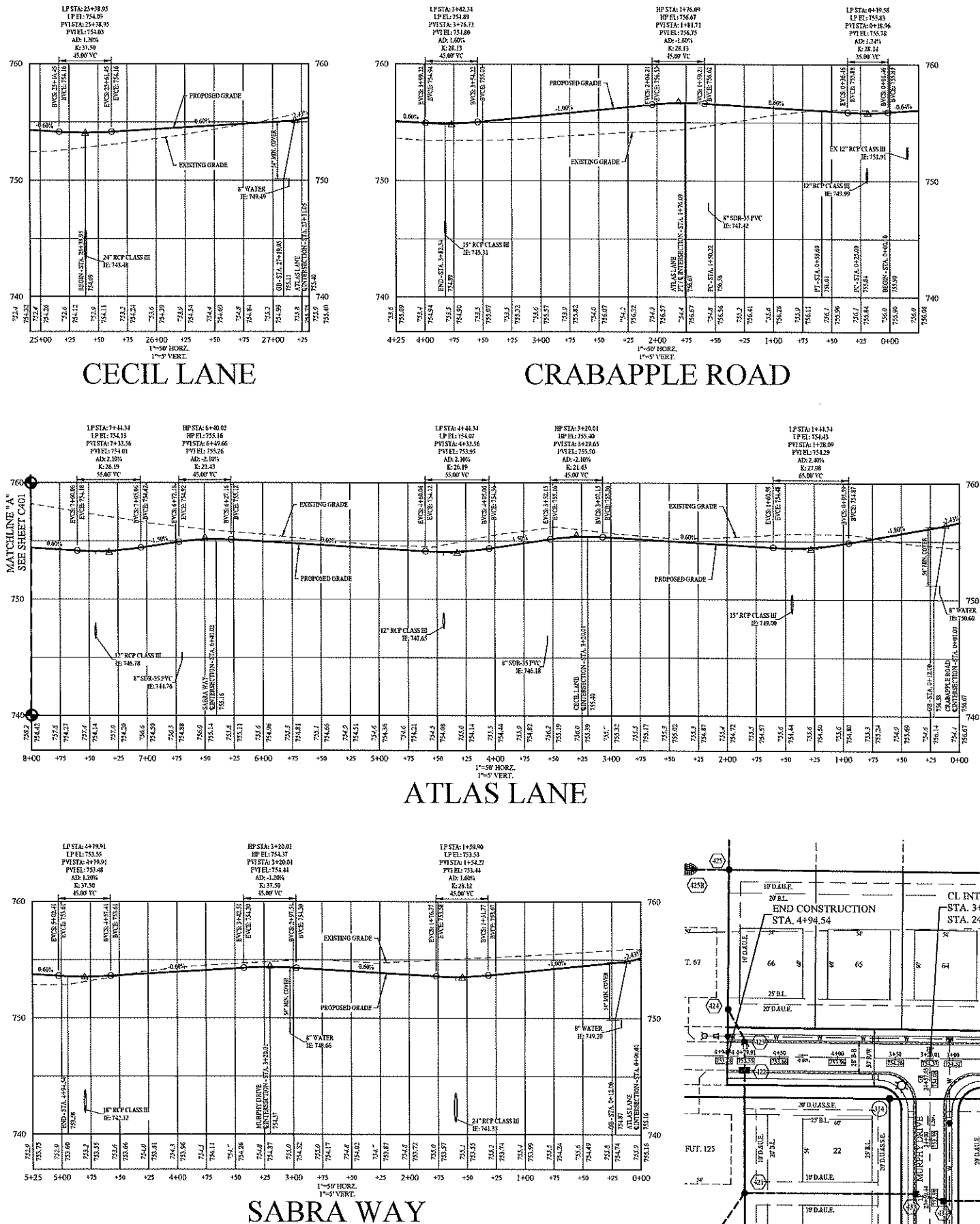
STOEPFELWERTH  
ALWAYS ON

7945 East 116th Street, Fishers, IN 46038-2505  
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CERTIFIED: 12/02/21  
David J. Stoepfelwerth  
REGISTERED PROFESSIONAL ENGINEER  
No. 19358  
STATE OF INDIANA

DRAWN BY: PDR  
CHECKED BY: BKR  
SHEET NO. C318  
S & A NUMBER 91595ARB-S1



LEGEND	
BVC	BEGIN VERTICAL CURVE STATION
BVE	BEGIN VERTICAL CURVE ELEVATION
EVC	END VERTICAL CURVE STATION
EVE	END VERTICAL CURVE ELEVATION
AD	GRADE CHANGE
PVI	POINT OF VERTICAL INTERSECTION
W	VERTICAL CURVE
E	VERTICAL CURVE E-VALUE
GB	GRADE BREAK
PT	POINT OF TANGENCY
PC	POINT OF CURVATURE

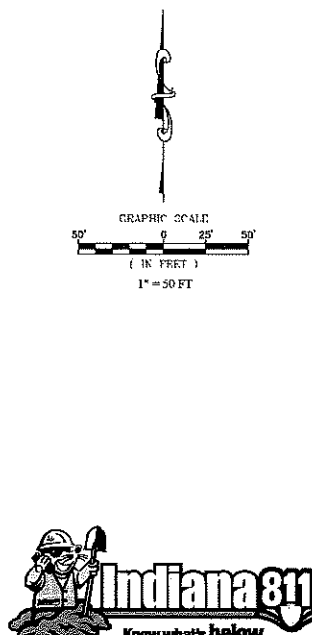
NOTES	
1. CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING CONDUITS PRIOR TO CONSTRUCTION TO CONFIRM THERE IS NO CONFLICT WITH OTHER UTILITIES. SIGNAGE SHALL BE INSTALLED AFTER CONSTRUCTION BEGINS AND SHALL BE THE CONTRACTOR'S RESPONSIBILITY.	

BENCHMARK DATA	
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (NAD83) AND ARE REFERENCED TO THE NAD83 DATUM.	

SITE INFO	
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=754.51 (NAD83)	
TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=754.51 (NAD83)	
TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LIFT STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRACE, SECTION ONE, PHASE TWO. ELEV=754.77 (NAD83)	



STREET PLAN & PROFILES

WESTWIND at CUMBERLAND

SECTION 1

STOEPPELWERTH

ALWAYS ON

795 East 10th Street, Ellettsville, IN 47206-2905  
phone: 317.249.2525 fax: 317.249.2542

INDIANA 811

Know what's below.  
811 before you dig.

FRANKLIN, FRANKLIN TOWNSHIP

JOHNSON COUNTY, INDIANA

DRAWN BY: PDR

CHECKED BY: BKR

SHEET NO: C400

DATE: 11/30/21

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CERTIFIED: 120221

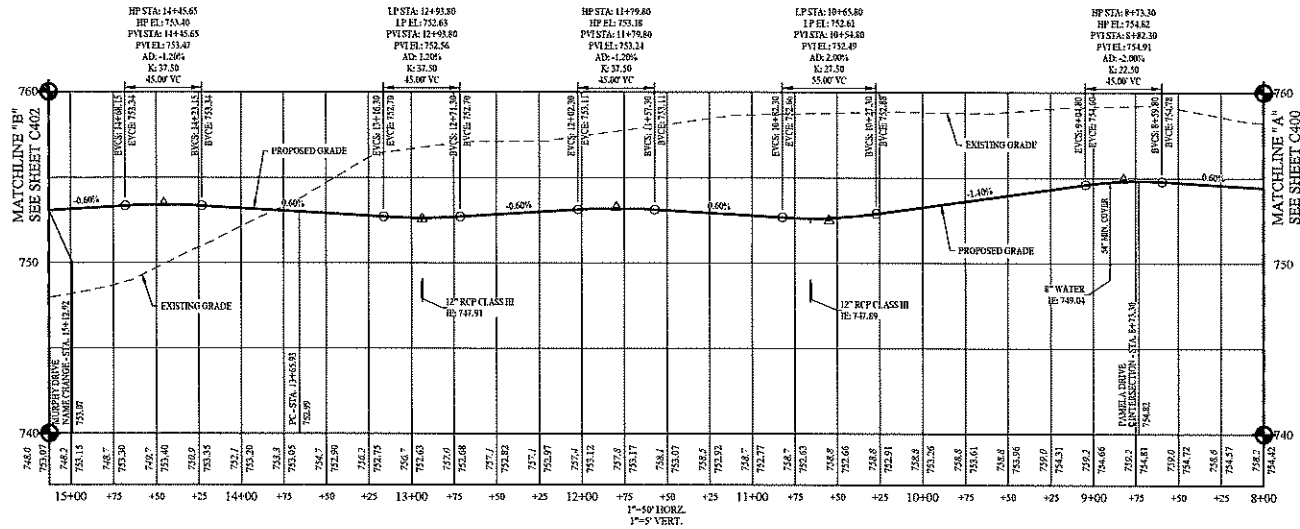
David J. Stoepelwerth

REGISTERED PROFESSIONAL ENGINEER

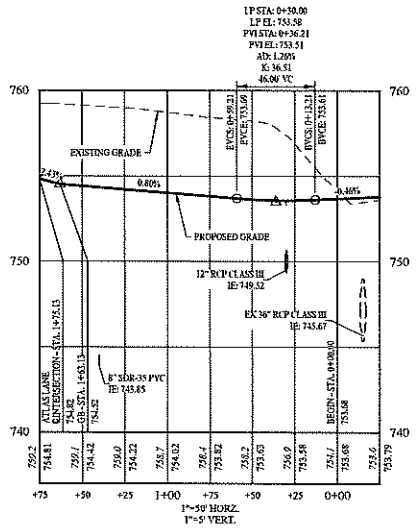
STATE OF INDIANA

No. 19358

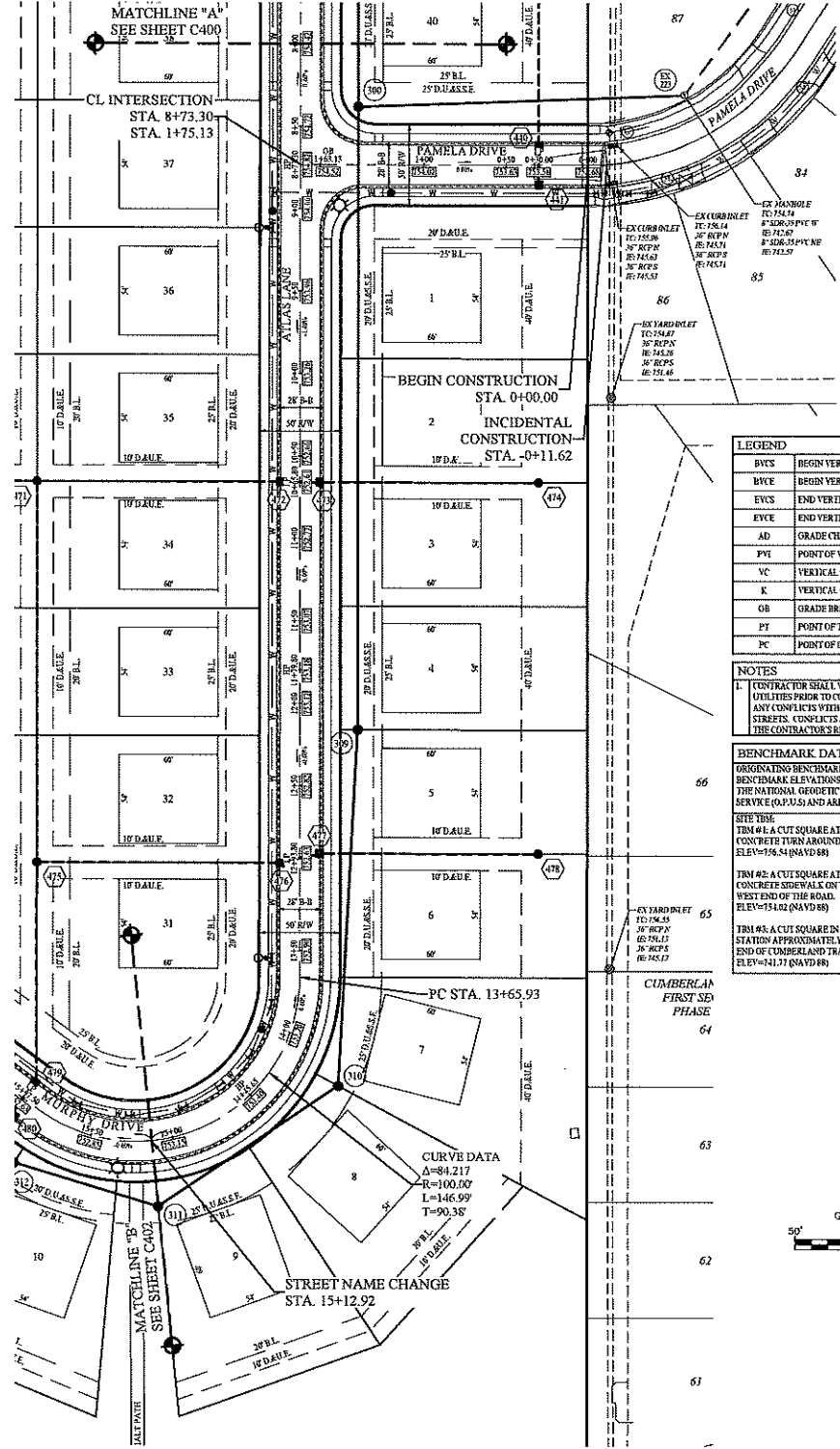
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ATLAS LANE



PAMELA DRIVE

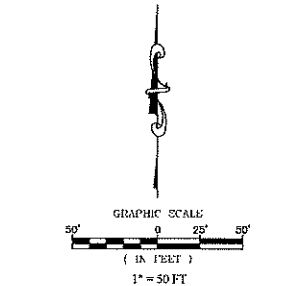


LEGEND	
BVC	BEGIN VERTICAL CURVE STATION
BVE	BEGIN VERTICAL CURVE ELEVATION
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OB	GRADE BREAK
PT	POINT OF TANGENCY
PC	POINT OF CURVATURE

NOTES  
1. CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING UTILITY LINES 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.

BENCHMARK DATA  
ORIGINATING BENCHMARK  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY (NAD83) POSITIONING USER SERVICE (NAD83) AND ARE REFERENCED TO THE NAD83 DATUM.

SITE INFO  
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF CRASAPLE ROAD. ELEV=756.51 (NAD83)  
TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.62 (NAD83)  
TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LOT 7 STATION APPROXIMATELY 20 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAILS SECTION ONE, PHASE TWO. ELEV=741.17 (NAD83)



STREET PLAN & PROFILES  
WESTWIND at CUMBERLAND  
SECTION 1

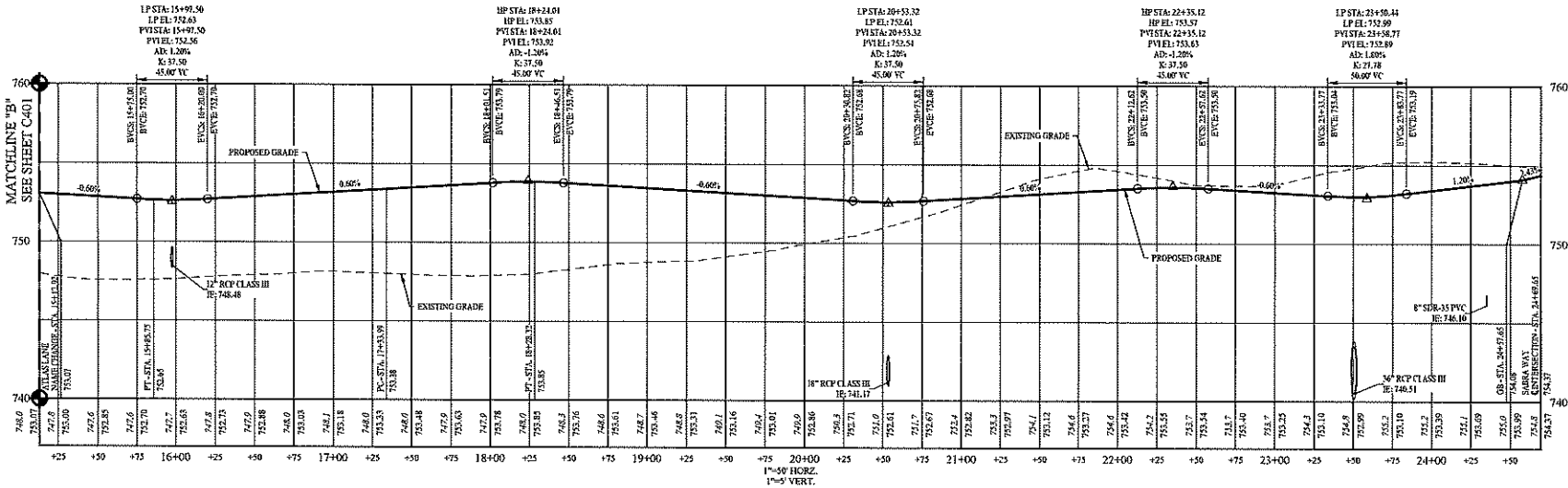
FRANKLIN, FRANKLIN TOWNSHIP  
JOHNSON COUNTY, INDIANA

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

CERTIFIED: 12/02/21  
David J. Stoepelwerth

DRAWN BY: PDR  
CHECKED BY: BKR  
SHEET NO. C401  
S.A. & S.D. NO. 91595ARB-S1

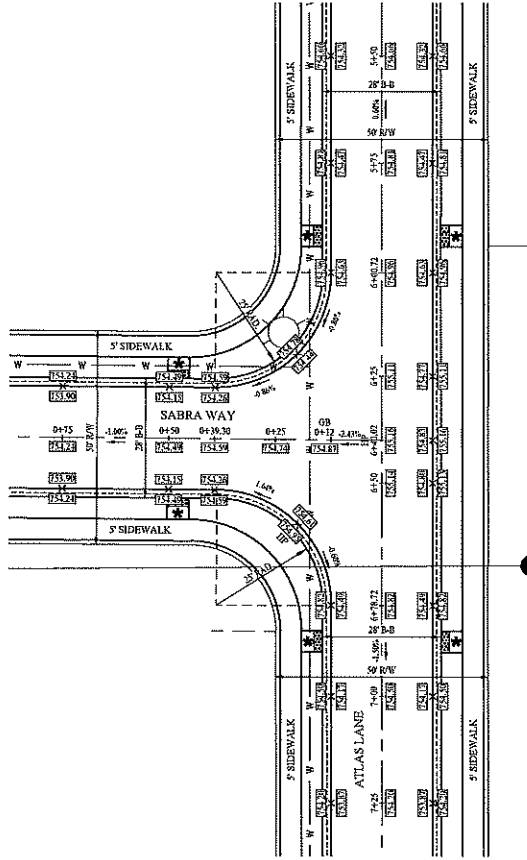
DATE: _____  
REVISIONS: _____  
BY: _____



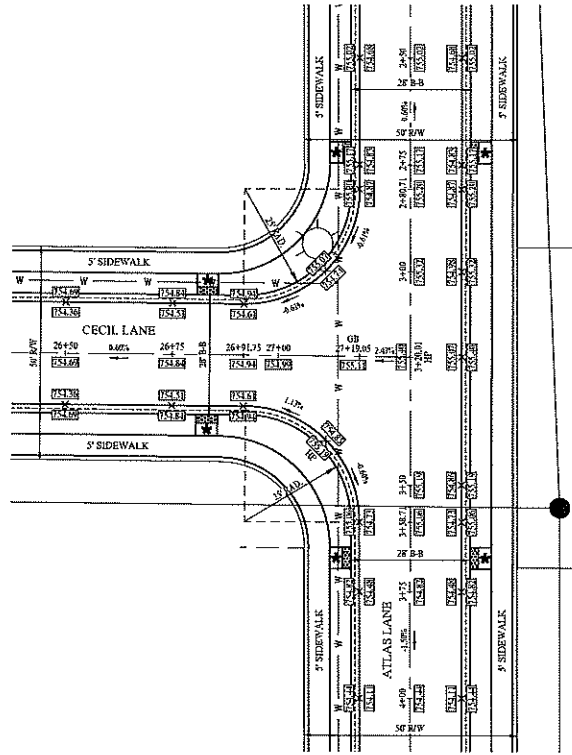
**NOTES**

1. 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 SOLE THE CONTRACTOR'S RESPONSIBILITY.

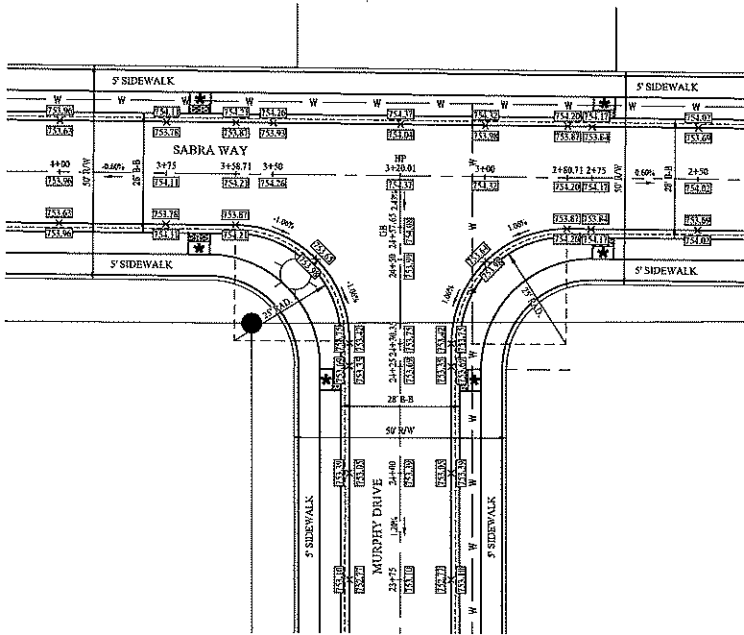
SITE TBM:  
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE  
CONCRETE TURN AROUND ON THE NORTH SIDE OF CRABAPPLE ROAD  
ELEV=756.54 (NAVD83)



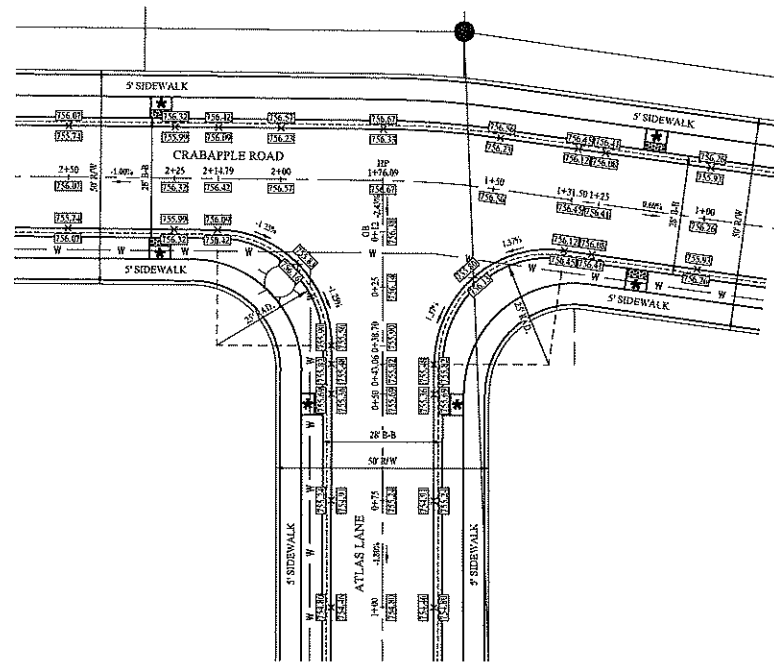
**INTERSECTION DETAIL**  
**ATLAS LANE & SABRA WAY**  
SCALE: 1" = 20'



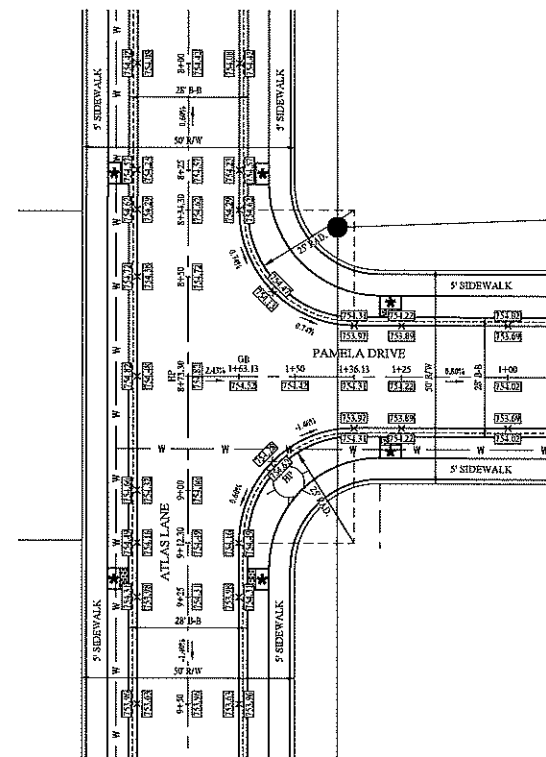
**INTERSECTION DETAIL**  
**ATLAS LANE & CECIL LANE**  
**SCALE: 1" = 20'**



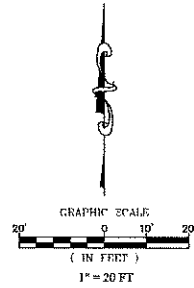
**INTERSECTION DETAIL**  
**SABRA WAY & MURPHY DRIVE**  
SCALE: 1" = 20'



**INTERSECTION DETAIL**  
**CRABAPPLE ROAD & ATLAS LANE**  
SCALE: 1" = 20'



**INTERSECTION DETAIL**  
**ATLAS LANE & PAMELA DRIVE**  
**SCALE: 1" = 20'**



<b>LEGEND</b>	
	ADA RAMP TO BE INSTALLED SEE DETAILS ON SHEET C802A

**BENCHMARK DATA**

**ORIGINATING BENCHMARK:**  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (NAD 83) AND ARE REFERENCED TO THE NAVD 83 DATUM.

**SITE TBM:**  
TBM#1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TUNNEL AROUND ON THE NORTH SIDE OF CRABAPPLE ROAD.  
ELEV=756.54 (NAVD 83)

TBM#2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE TUNNEL ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD.  
ELEV=754.02 (NAVD 83)

TBM#3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LIFT STATION APPROXIMATELY 200 FEET FROM THE POND AT THE WEST END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO.  
ELEV=741.77 (NAVD 83)



STOEPPELWERTH

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

CERTIFIED: 12/02/21

*David J. Stoppelworth*

DAVID J. STOEPPEL-WORTH  
REGISTERED  
No. 19358  
STATE OF INDIANA  
PROFESSIONAL ENGINEER

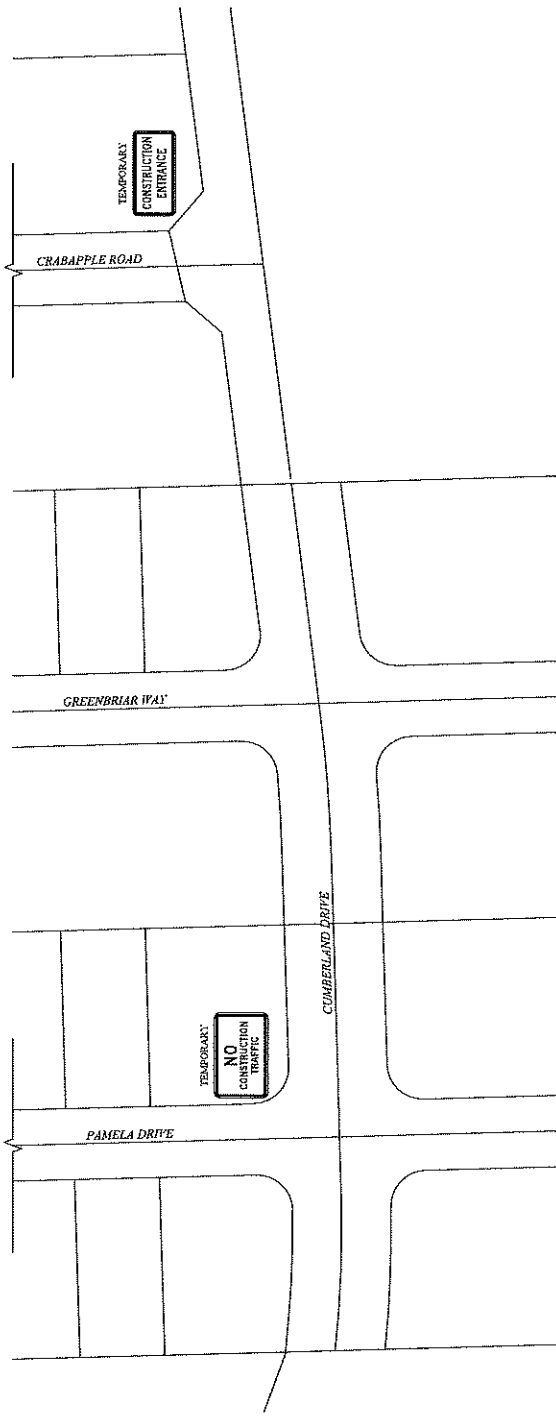
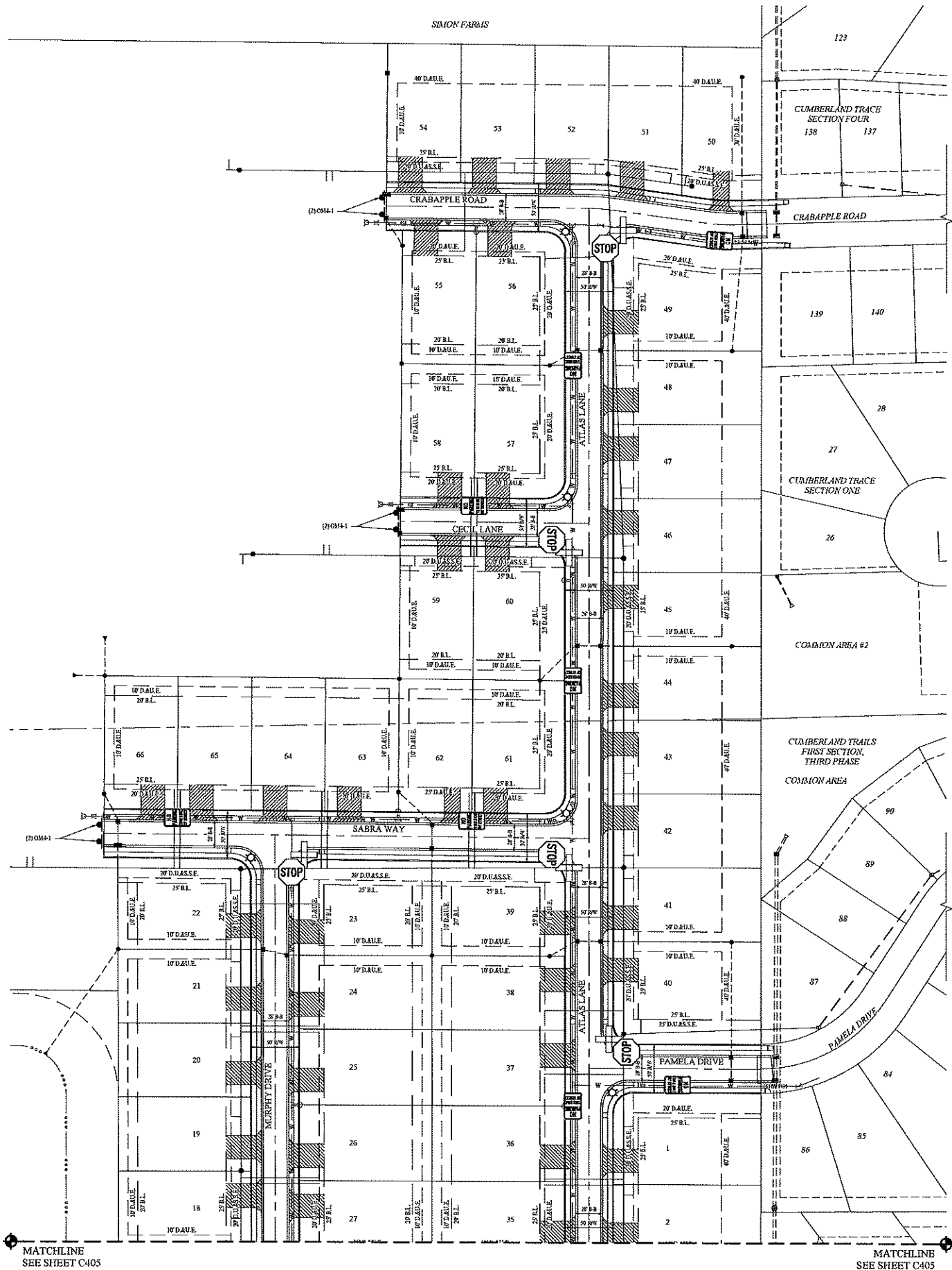
INTERSECTION DETAILS

WESTWIND at CUMBERLAND

SECTION 1

FRANKLIN TOWNSHIP      JOHNSON COUNTY, INDIANA

DRAWN BY: PDR	CHECKED BY: BKR
SHEET NO. <b>C403</b>	
S & A JOB NO. 91595ARB-S1	

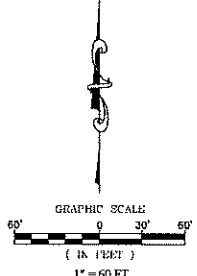


LEGEND		
	STREET NAME SIGN (R1-1)	6
	STOP SIGN (R1-1)	3
	"NO PARKING THIS SIDE OF STREET" (R1-1 MOD - SEE DETAIL, SHEET C405)	10
	END OF ROAD MARKER (R14-1)	6
	STREET LIGHT	7

- NOTES
1. ALL TRAFFIC CONTROL SIGNS SHALL CONFORM TO CHAPTER 2 OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), CURRENT EDITION.
  2. ALL STREET LIGHTING SHALL CONFORM TO JOHNSON COUNTY REMC GUIDELINES AND STANDARDS.
  3. ALL STREET SIGNS SHALL CONFORM TO CURRENT CITY STANDARDS (WHITE BACKGROUND, BLACK LETTERING, CITY SEAL INSTALLED WITH SIGNS).

CITY OF FRANKLIN SUBDIVISION CONTROL ORDINANCE SECTION 6.13 STREET SIGN STANDARDS

- A. GENERAL STREET SIGN REQUIREMENTS: STREET SIGNS, INCLUDING TRAFFIC NAME SIGNS, STOP SIGNS, "NO PARKING" SIGNS, AND ALL OTHER APPROPRIATE REGULATORY SIGNS, SHALL BE INSTALLED BY THE ENGINEER 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 ENGINEER SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF TEMPORARY STREET AND TRAFFIC CONTROL SIGNS DURING THE PERMANENT SIGNS ARE INSTALLED AND ACCEPTED BY THE BOARD OF PUBLIC WORKS & SAFETY.
2. PERMITS: AT THE CITY ENGINEER'S DISCRETION, THE PLANNING DEPARTMENT MAY WITHHOLD THE ISSUANCE OF IMPROVEMENT LOCATION PERMITS, INCLUDING THOSE FOR MODEL HOMES AND SPECULATIVE STREET LOTS, UNTIL APPROPRIATE PERMANENT OR TEMPORARY STREET SIGNS HAVE BEEN INSTALLED.
- C. STREET SIGN STANDARDS: ALL STREET SIGN TYPES AND LOCATIONS SHALL CONFORM TO THE UNIFORM MANUAL OF TRAFFIC CONTROL DEVICES, APPLICABLE EDITION, STANDARD AND SPECIFICATIONS, THE REQUIREMENTS OF THE CITY ENGINEER, THE SPECIFICATIONS OF THE BOARD OF PUBLIC WORKS & SAFETY, AND THE FOLLOWING:
1. SIGNS: 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 SIGNPOST LOCATIONS: STOP 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 INFORMATION SIGNPOST LOCATIONS: SPEED LIMIT AND INFORMATION 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 OR SHOULDER.
- d. SIDEWALK OBSTRUCTION PROHIBITED: NO SIGNPOST SHALL BE LOCATED IN OR OBSTRUCTING A SIDEWALK.
2. STREET NAME SIGNS: EACH STREET NAME SIGN SHALL BE MADE OF WHITE REFLECTIVE MATERIAL, DOUBLE-BLADDED METAL WITH CITY SEAL AND SHIELD AND 4 INCH OR LARGER BLACK LETTERS MOUNTED AT THE TOP OF THE POST WITH THE STREET NAME LABEL EDGES WITH SIGNS.
3. STOP SIGNS: EACH STOP SIGN SHALL BE A MINIMUM OF 36 INCHES IN WIDTH AND HAVE A HIGH-INTENSITY FUSION. THERE SHALL BE A MINIMUM OF 7 FEET FROM THE TOP OF THE ADJACENT CURB TO THE BOTTOM OF THE SIGN.
4. SPEED LIMIT AND INFORMATION SIGNS: SPEED LIMIT AND OTHER INFORMATION SIGNS SHALL BE A 2 INCH BY 36 INCH VERTICAL RECTANGLE WITH A HIGH-INTENSITY FUSION.



STREET SIGN PLAN

WESTWIND at CUMBERLAND SECTION 1

FRANKLIN, FRANKLIN TOWNSHIP JOHNSON COUNTY, INDIANA

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

CERTIFIED: 12/02/21

David J. Stoeppelwerth  
REGISTERED PROFESSIONAL ENGINEER  
No. 19358  
STATE OF INDIANA

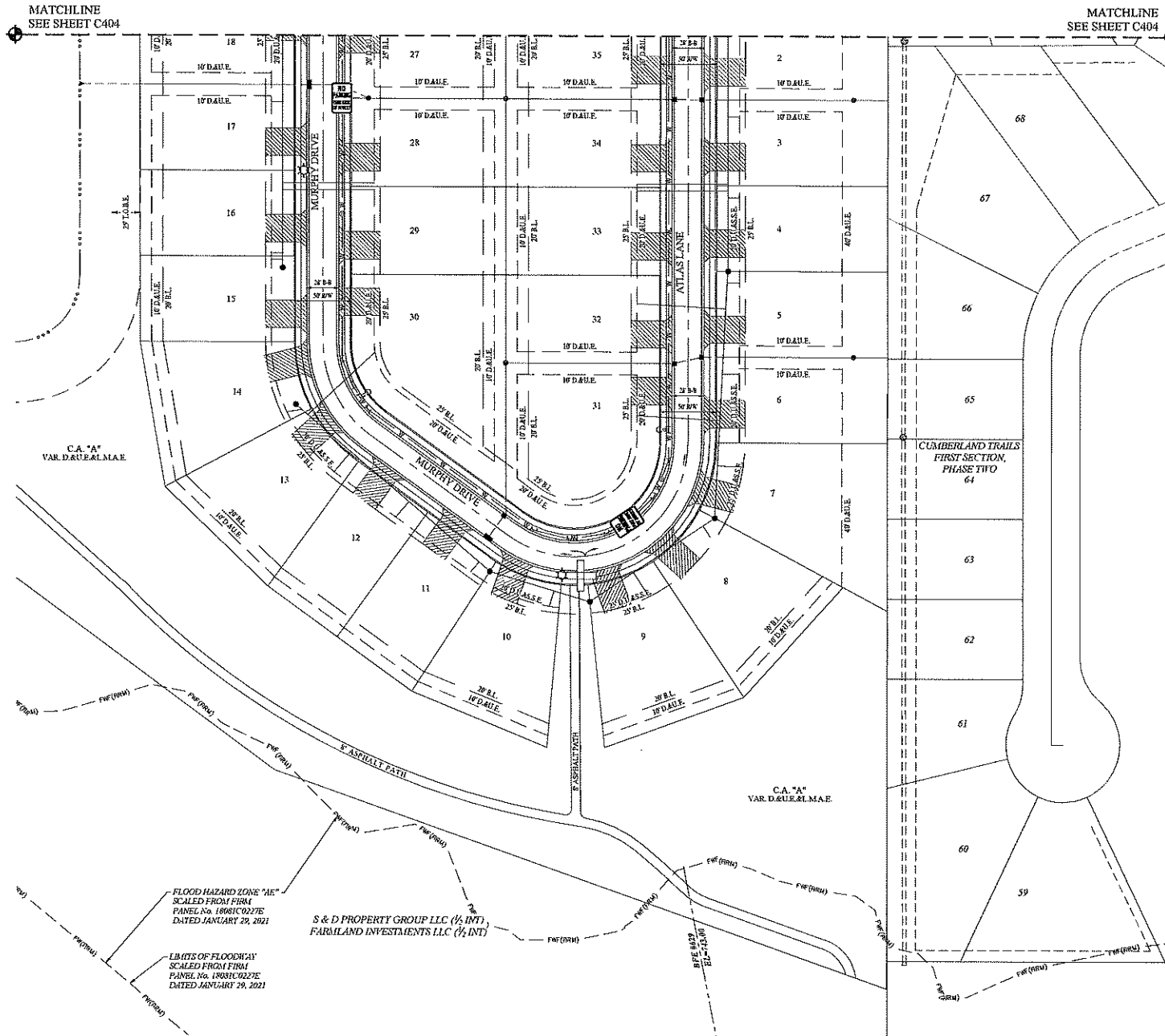
STOEPPELWERTH ALWAYS ON

7945 East 16th Street, Ellettsville, IN 46032-2505  
phone: 317.497.5955 fax: 317.497.5942

DRAWN BY: PDR CHECKED BY: BKR

SHEET NO: C404

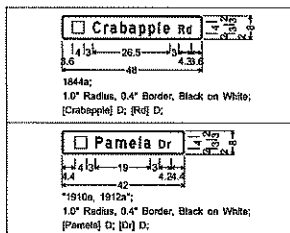
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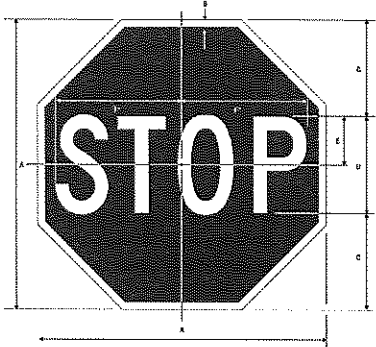
LEGEND		
	STREET NAME SIGN (R7-1)	6
	STOP SIGN (R1-1)	9
	"NO PARKING THIS SIDE OF STREET" (R7-1) MOD - SEE DETAIL, THIS SHEET	10
	END OF ROAD MARKER (RM4-1)	6
	STREET LIGHT	7

- NOTES
1. ALL TRAFFIC CONTROL SIGNS SHALL CONFORM TO CHAPTER 2 OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), CURRENT EDITION.
  2. ALL STREET LIGHTING SHALL CONFORM TO JOHNSON COUNTY REMC GUIDELINES AND STANDARDS.  
FIXTURES FOR THIS SUBDIVISION SHALL BE "DECORATIVE STREET LIGHT - TRADITIONAL" USING 51 WATT LED BULBS.
  3. ALL STREET SIGNS SHALL CONFORM TO CURRENT CITY STANDARDS (WHITE BACKGROUND, BLACK LETTERING, CITY SEAL INSTALLED WITH SIGNS).

- 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 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.
1. TEMPORARY SIGNS  
THE SUBDIVISION 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 THE DISCRETION OF THE PLANNING DIRECTOR MAY WITHHOLD THE ISSUANCE OF IMPROVEMENT LOCATION PERMITS, INCLUDING THOSE FOR MOBILE HOMES AND SPECULATIVE STRUCTURES, UNTIL APPROPRIATE PERMANENT OR TEMPORARY STREET SIGNS HAVE BEEN INSTALLED.
- C. STREET SIGN STANDARDS  
ALL STREET SIGN AND POST TYPES AND LOCATIONS SHALL CONFORM TO THE UNIFORM MANUAL OF TRAFFIC CONTROL DEVICES, APPLICABLE EDITION STANDARDS AND SPECIFICATIONS, THE REQUIREMENTS OF THE CITY ENGINEER, THE SPECIFICATIONS OF THE BOARD OF PUBLIC WORKS & SAFETY, AND THE FOLLOWING:
1. SIGNS  
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 PRIOR TO THE STREET RIGHT-OF-WAY, AND CLOSER THAN 4 FEET FROM THE EDGE OF THE TRAVELED PORTION OF THE STREET.
- B. STOP SIGNPOST LOCATIONS  
STOP SIGNPOSTS SHALL BE LOCATED SO THAT THE EDGE OF THE SIGN IS A MINIMUM OF 7 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 OR SHOULDER).
- 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, DOUBLE-ALUMINUM WITH CITY SEAL AND SPACER AND BEHOLD LARGE 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 30 INCHES IN WIDTH AND HAVE A HIGH-INTENSITY CORNER. THERE 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 CORNER.

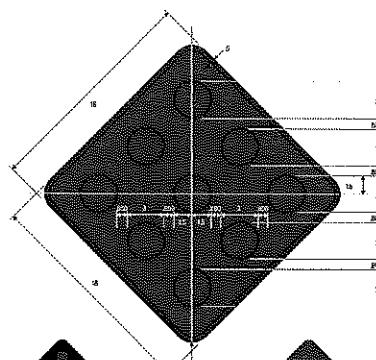


SEE NOTE 3 FOR CITY SIGN STANDARDS



A	B	C	D	E	F
18	24	6	6	3	2 1/2
24	48	8	8	4	10
30	36	10	10	5	12 1/2
36	48	12	12	6	15
42	120	18	18	8	20

COLORS: LEGEND - WHITE (RETROREFLECTIVE)  
BACKGROUND - RED (RETROREFLECTIVE)

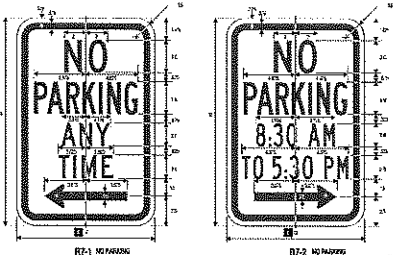


RM4-1 COLORS  
REFLECTORIZED - RED (RETROREFLECTIVE)  
BACKGROUND - RED  
BORDER - RED (RETROREFLECTIVE)

RM4-2 COLORS  
REFLECTORIZED - RED (RETROREFLECTIVE)  
BACKGROUND - BLACK

RM4-3 COLORS  
REFLECTORIZED - RED (RETROREFLECTIVE)

114

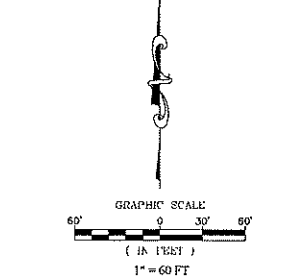


COLORS: LEGEND - RED (RETROREFLECTIVE)  
BACKGROUND - WHITE (RETROREFLECTIVE)  
*See page 62 for lettering

** USE R7-1 FOR LETTERING AND DIMENSION REFERENCE

COLORS: LEGEND - RED (RETROREFLECTIVE)  
BACKGROUND - WHITE (RETROREFLECTIVE)  
BORDER - BLACK

100



STREET SIGN PLAN  
WESTWIND at CUMBERLAND  
SECTION 1

JOHNSON COUNTY, INDIANA  
FRANKLIN TOWNSHIP

STOEPPELWERTH  
ALWAYS ON

7945 East 10th Street, Fishers, IN 46038-2505  
phone: 317.490.5255 fax: 317.490.5242

LEGEND

REVISIONS

DATE

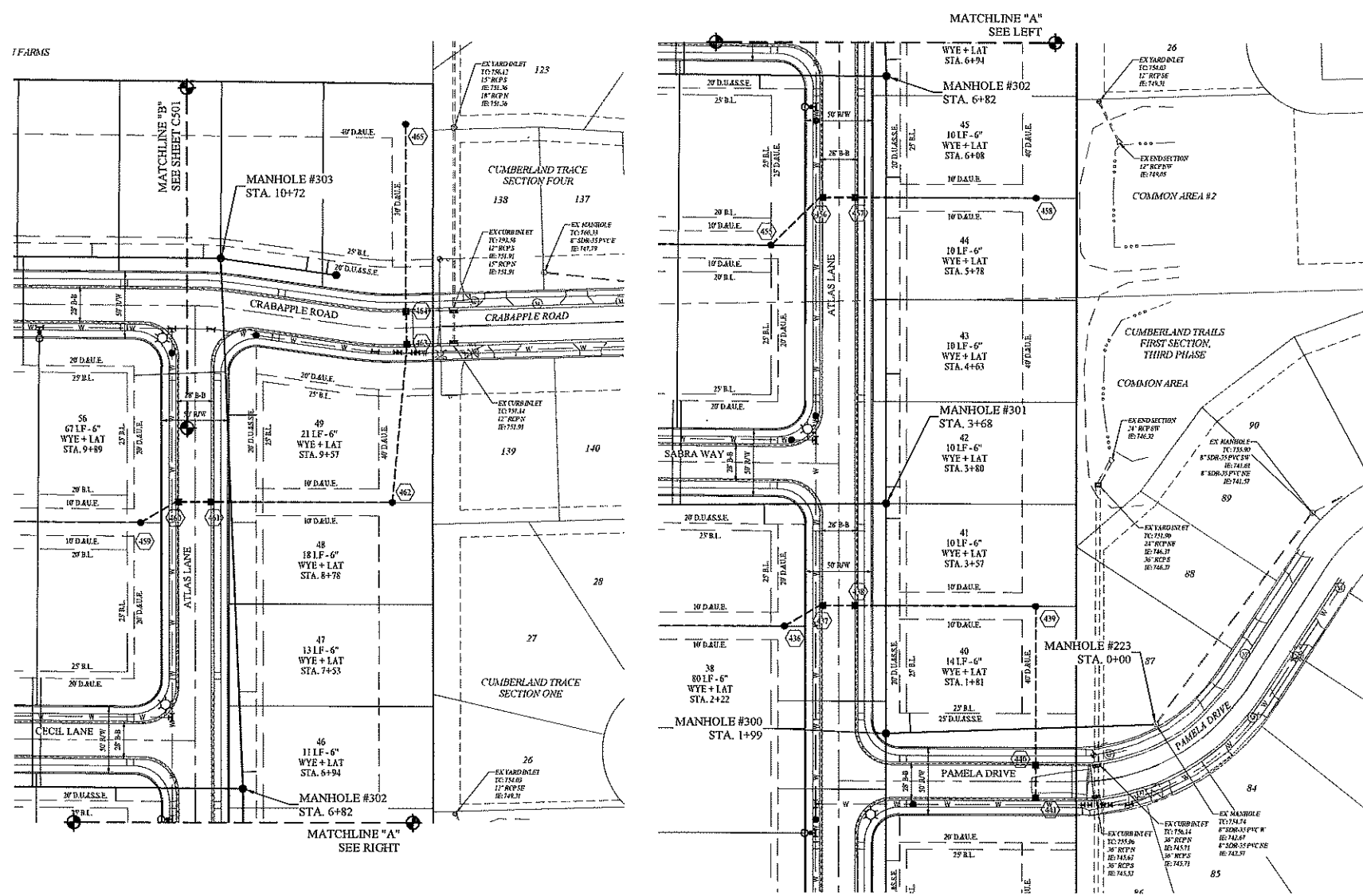
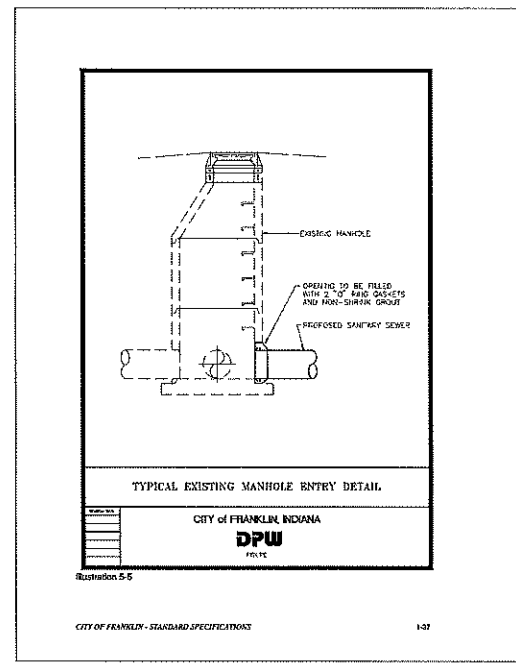
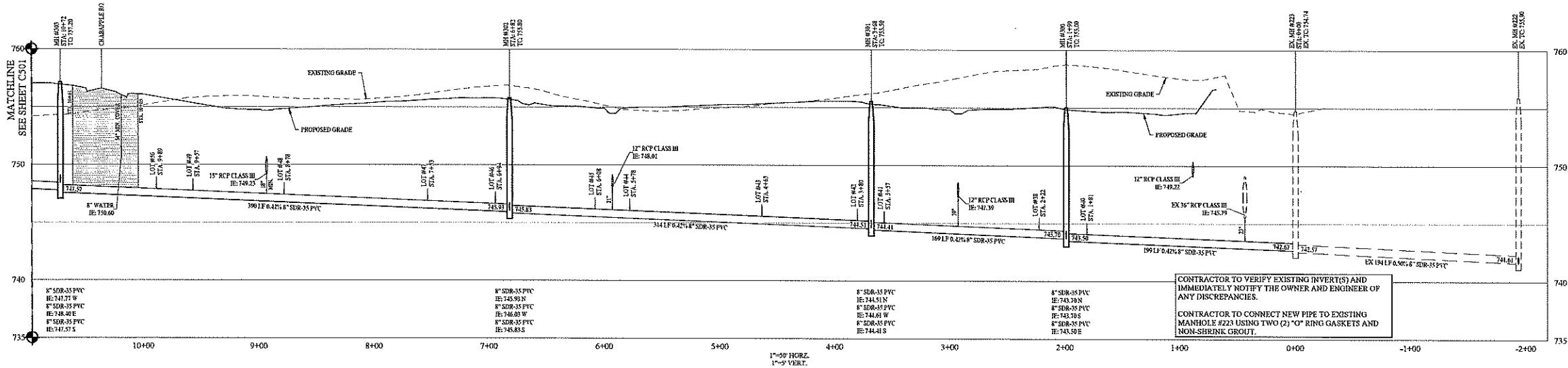
BY

DRAWN BY: PDR

CHECKED BY: BKR

SHEET NO: C405

S.E.A. K&B NO: 9155ARB-S1



LEGEND	
EXISTING FEATURES	
W	WATER MAIN
FM	FORCE MAIN, SANITARY
SS	SANITARY SEWER
SS	STORM SEWER
PROPOSED FEATURES	
W	WATER MAIN
FM	SANITARY SEWER
SS	STORM SEWER
SS	DENOTES FULL DEPTH GRANULAR BACKFILL

**NOTES**

- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE ARE NO CROSSING CONFLICTS. CONFLICTS THAT ARE DISCOVERED AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.
- 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 CLARIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.
- IND. S. CODES PER THE TEN STATE STANDARDS SHALL PREVAIL IN ALL CASES.
- ALL WATER MAINS SHALL MAINTAIN 18 INCHES VERTICAL CLEARANCE AND 10 FEET HORIZONTAL CLEARANCE.
- SEE SHEET C503 FOR SANITARY SEWER STRUCTURE DATA TABLE.

**BENCHMARK DATA**

ORIGINATING BENCHMARK:  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (NAD 83) AND ARE REFERENCED TO THE NAVD 83 DATUM.

**SITE INFO**

TM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=156.51 (NAVD 83)

TM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=154.02 (NAVD 83)

TM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LOT STATION APPROXIMATELY 1200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO. ELEV=141.77 (NAVD 83)

STOEPPELWERTH

ALWAYS ON

7945 East 106th Street, Fishers, IN 46038-2505  
phone: 317.490.2505 fax: 317.240.2545

SANITARY SEWER PLAN & PROFILES

WESTWIND at CUMBERLAND

SECTION 1

FRANKLIN, FRANKLIN TOWNSHIP

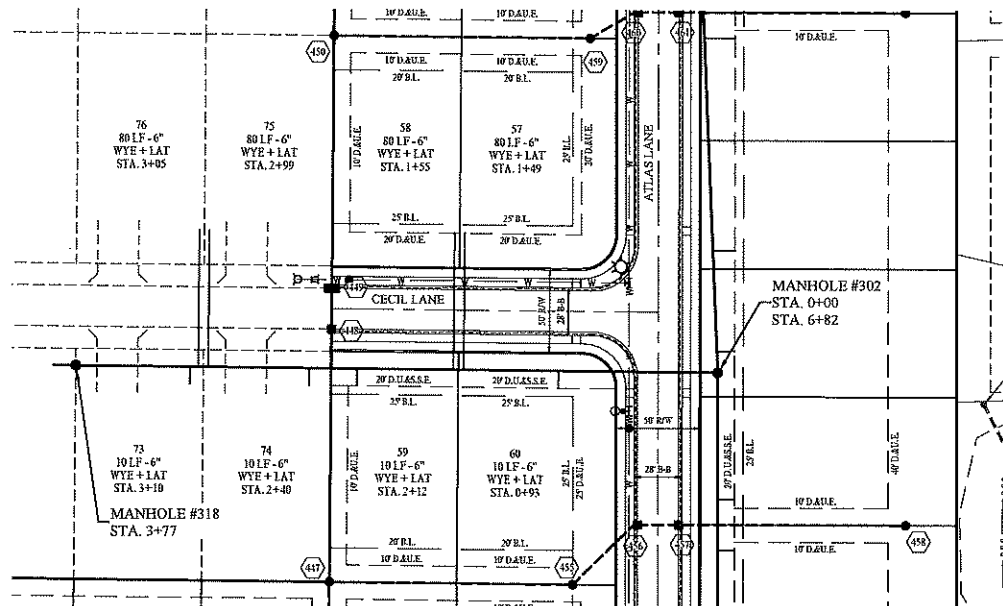
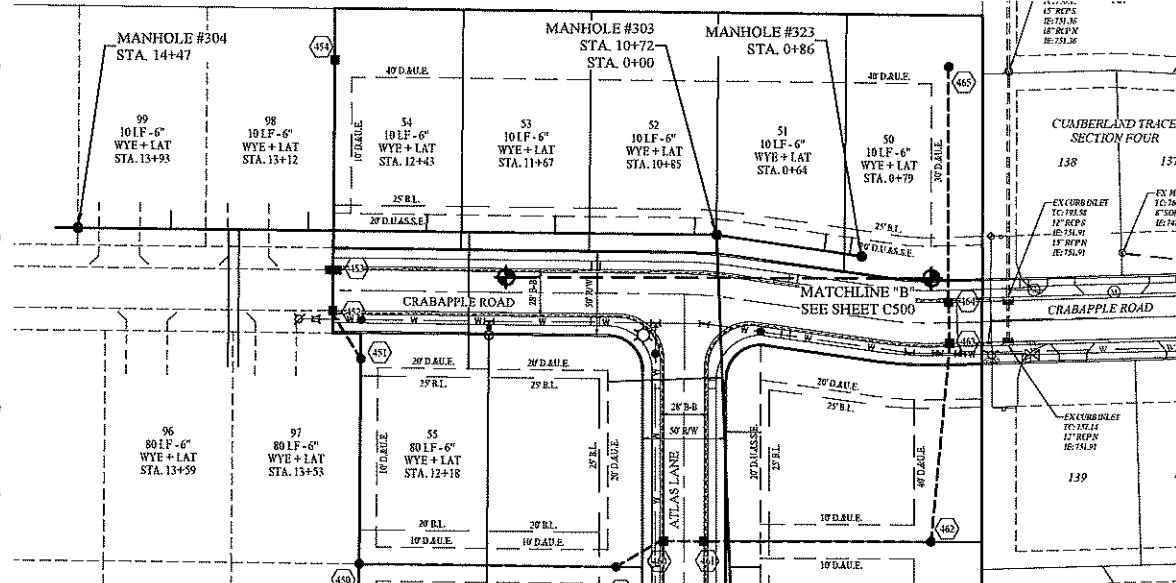
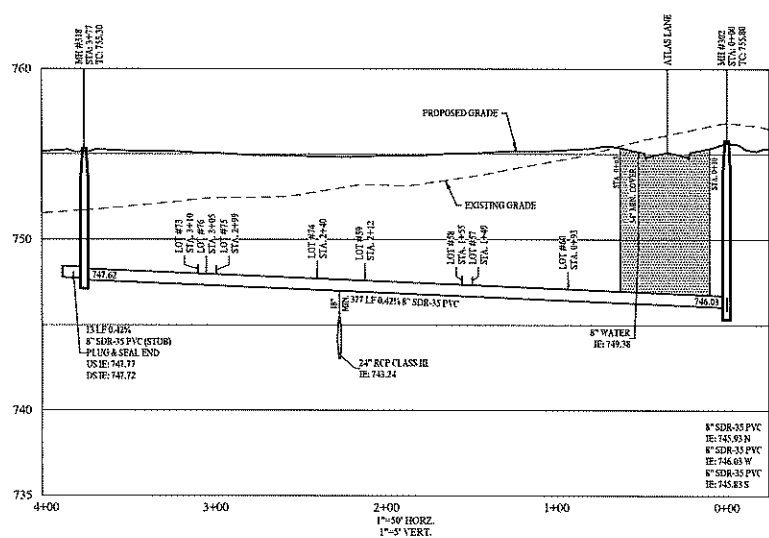
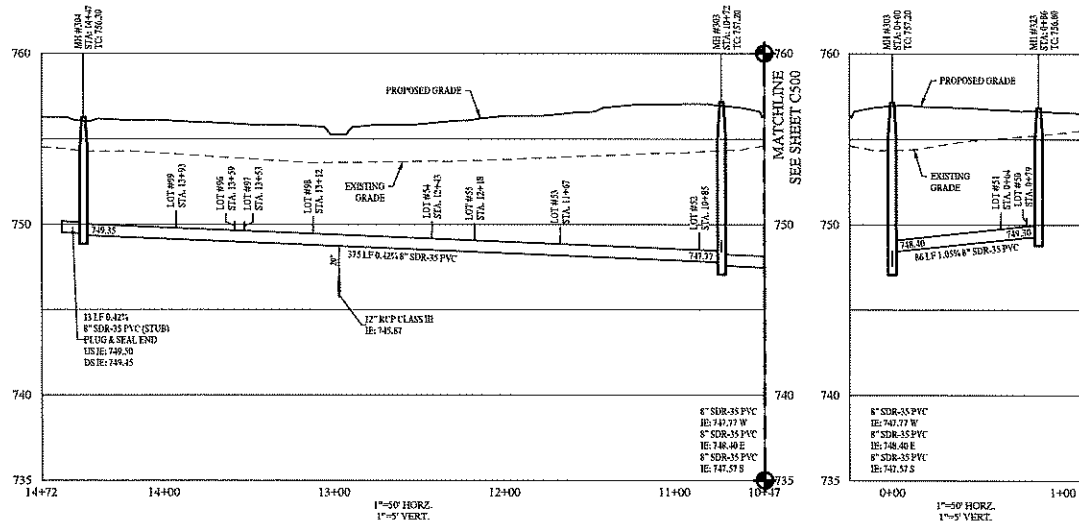
JOHNSON COUNTY, INDIANA

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

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

CERTIFIED: 12/02/21  
David J. Stoeppelwerth

DRAWN BY: PDR  
CHECKED BY: BKR  
SHEET NO: C500  
S.A.K.B.R.D.  
915295ARB-S1



**LEGEND**

**EXISTING FEATURES**

- W WATER MAIN
- FM FORTYMAN, SANITARY
- SS SANITARY SEWER
- ST STORM SEWER

**PROPOSED FEATURES**

- W WATER MAIN
- SS SANITARY SEWER
- ST STORM SEWER
- DN DRY-PILE DEPTH GRANULAR BACKFILL

**NOTES**

- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE ARE NO CROSSING CONFLICTS. CONFLICTS THAT ARE DISCOVERED AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.
- 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.
- MINI SLOPES PER THE TENSATE STANDARDS SHALL PREVAIL IN ALL CASES.
- ALL WATER MAINS SHALL MAINTAIN 18 INCHES VERTICAL CLEARANCE AND 10 FEET HORIZONTAL CLEARANCE.
- SEE SHEET C500 FOR SANITARY SEWER STRUCTURE DATA TABLE.

**BENCHMARK DATA**

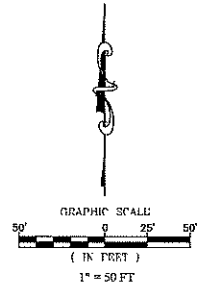
ORIGINATING BENCHMARK:  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (NIPUS) AND ARE REFERENCED TO THE NAVD 83 DATUM.

**SITE INFO**

TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TUNN AROUND ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=756.54 (NAVD 83)

TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.02 (NAVD 83)

TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LIFT STATION APPROXIMATELY 300 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAIL 5, SECTION ONE, PHASE TWO. ELEV=741.77 (NAVD 83)



**STOEPPELWERTH**

**ALWAYS ON**

7665 East 10th Street, Fishers, IN 46038-2935  
phone: 317.897.5955 fax: 317.897.2942

**SANITARY SEWER PLAN & PROFILES**

**WESTWIND at CUMBERLAND**

**SECTION 1**

FRANKLIN, FRANKLIN TOWNSHIP JOHNSON COUNTY, INDIANA

DATE: _____ BY: _____

REVISIONS: _____

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

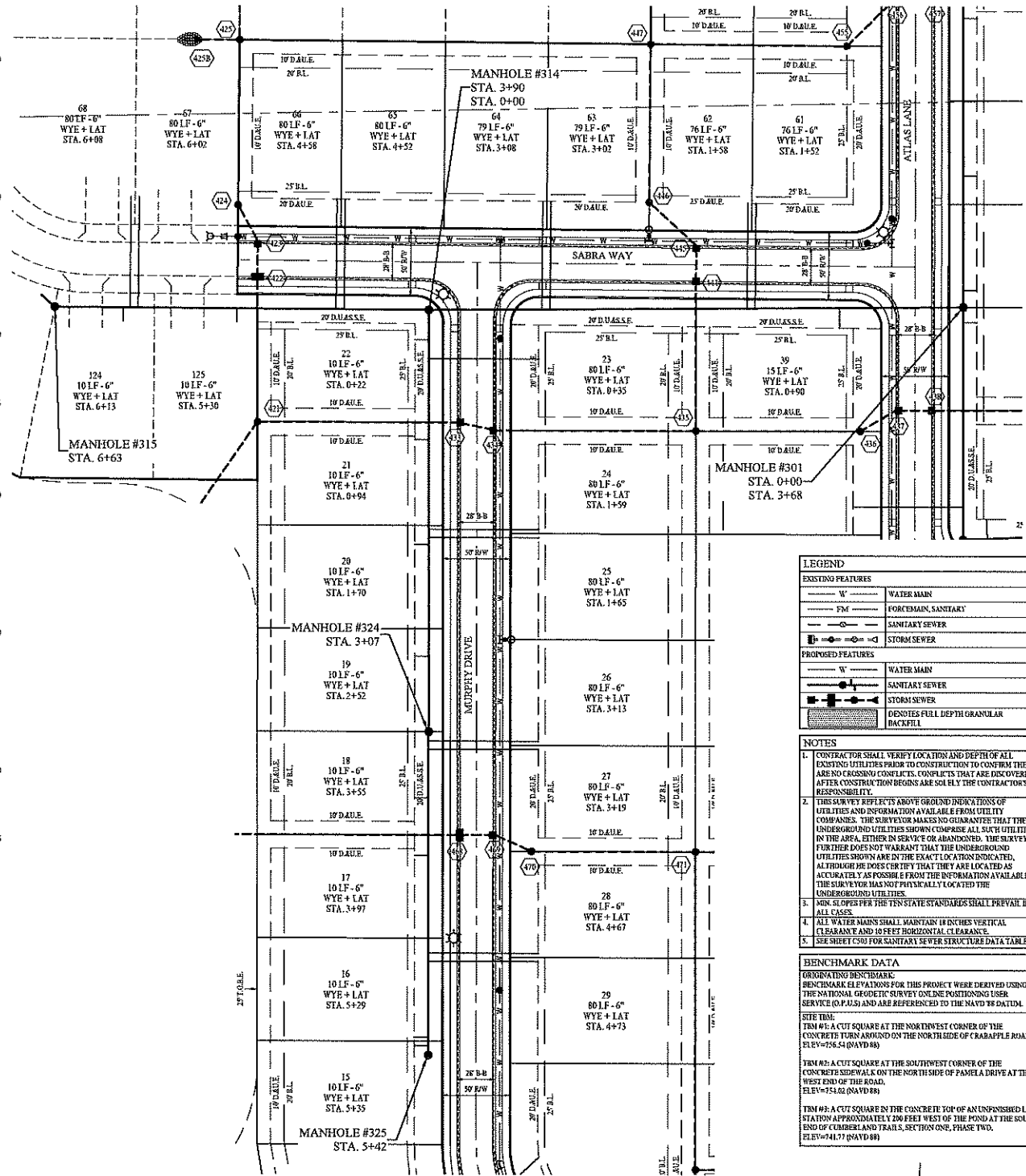
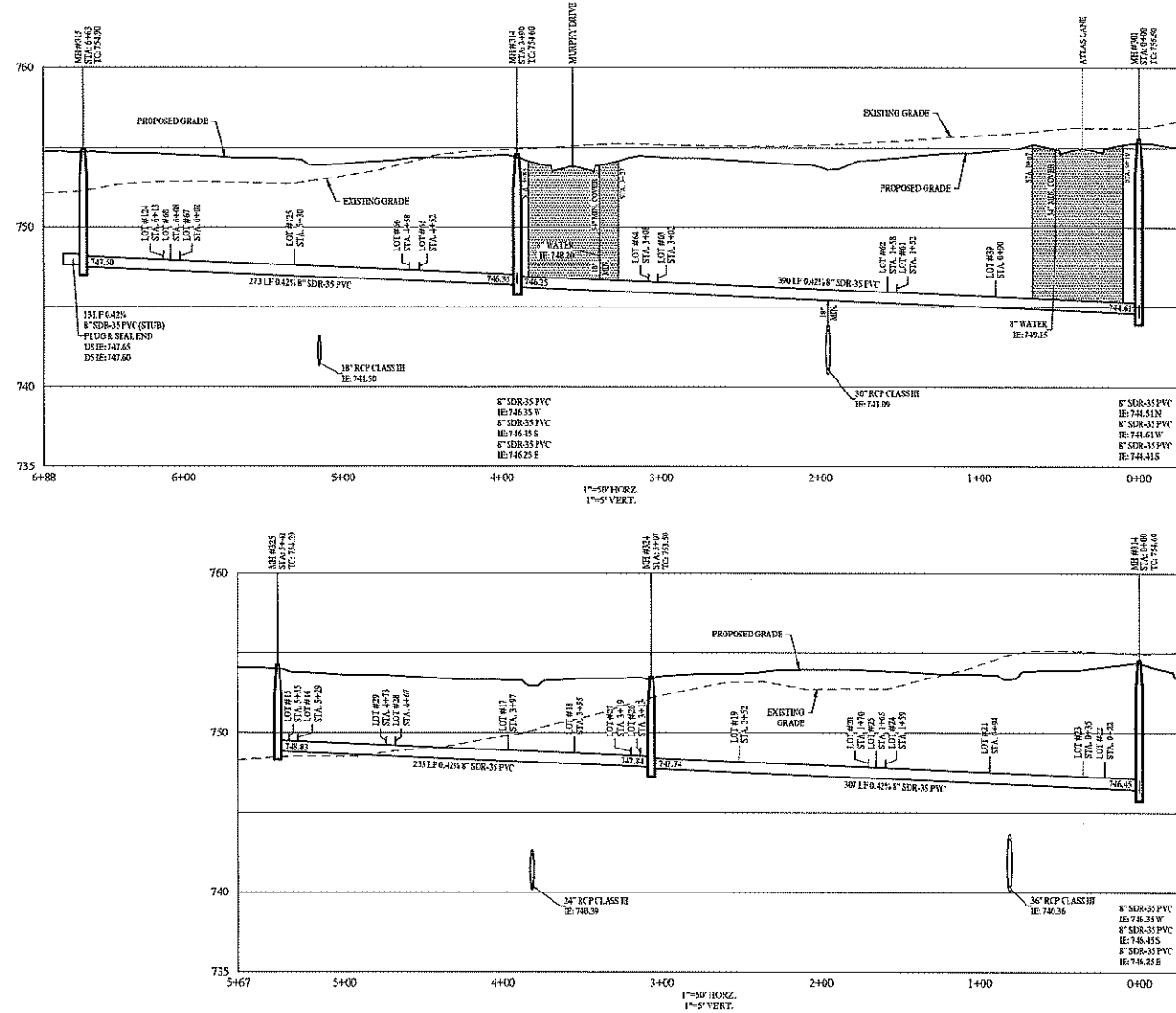
CERTIFIED: 12/02/21

*David J. Stoepfel*

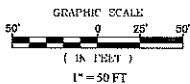
REGISTERED PROFESSIONAL ENGINEER  
No. 19358  
STATE OF INDIANA

DRWNS BY: PDR  
CHECKED BY: BKR  
SHEET NO: C501  
S.E.A.K.B. 90  
91595ARB-S1





LEGEND	
EXISTING FEATURES	
W	WATER MAIN
FM	FORCE MAIN, SANITARY
S	SANITARY SEWER
ST	STORM SEWER
PROPOSED FEATURES	
W	WATER MAIN
S	SANITARY SEWER
ST	STORM SEWER
DE	DEMOTES FULL DEPTH GRANULAR BACKFILL
NOTES	
1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE ARE NO CONFLICTS. FROM LETS THAT ARE DISCOVERED AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.	
2. THE SURVEY REPORTS ABOVE GROUND INTERSECTIONS OF UTILITIES AND INFORMATION AVAILABLE FROM UTILITY COMPANIES. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPARE 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.	
3. MIN. SLOPES PER THE TEN STATE STANDARDS SHALL PREVAIL IN ALL CASES.	
4. ALL WATER MAINS SHALL MAINTAIN 18 INCHES VERTICAL CLEARANCE AND 16 FEET HORIZONTAL CLEARANCE.	
5. SEE SHEET C503 FOR SANITARY SEWER STRUCTURE DATA TABLE.	
BENCHMARK DATA	
ORIGINATING BENCHMARK: BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GRADE/UTILITY SURVEY ONLINE POSITIONING USER SERVICE (O-P-U-S) AND ARE REFERENCED TO THE NAVD 83 DATUM.	
SITE TIES:	
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=756.54 (NAVD 83)	
TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PINEAPPLE DRIVE AT THE WEST END OF THE ROAD. ELEV=751.62 (NAVD 83)	
TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LEFT STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAIL, SECTION ONE, PHASE TWO. ELEV=741.77 (NAVD 83)	



STOEPPELWERTH

SANITARY SEWER PLAN & PROFILES  
WESTWIND at CUMBERLAND  
SECTION 1

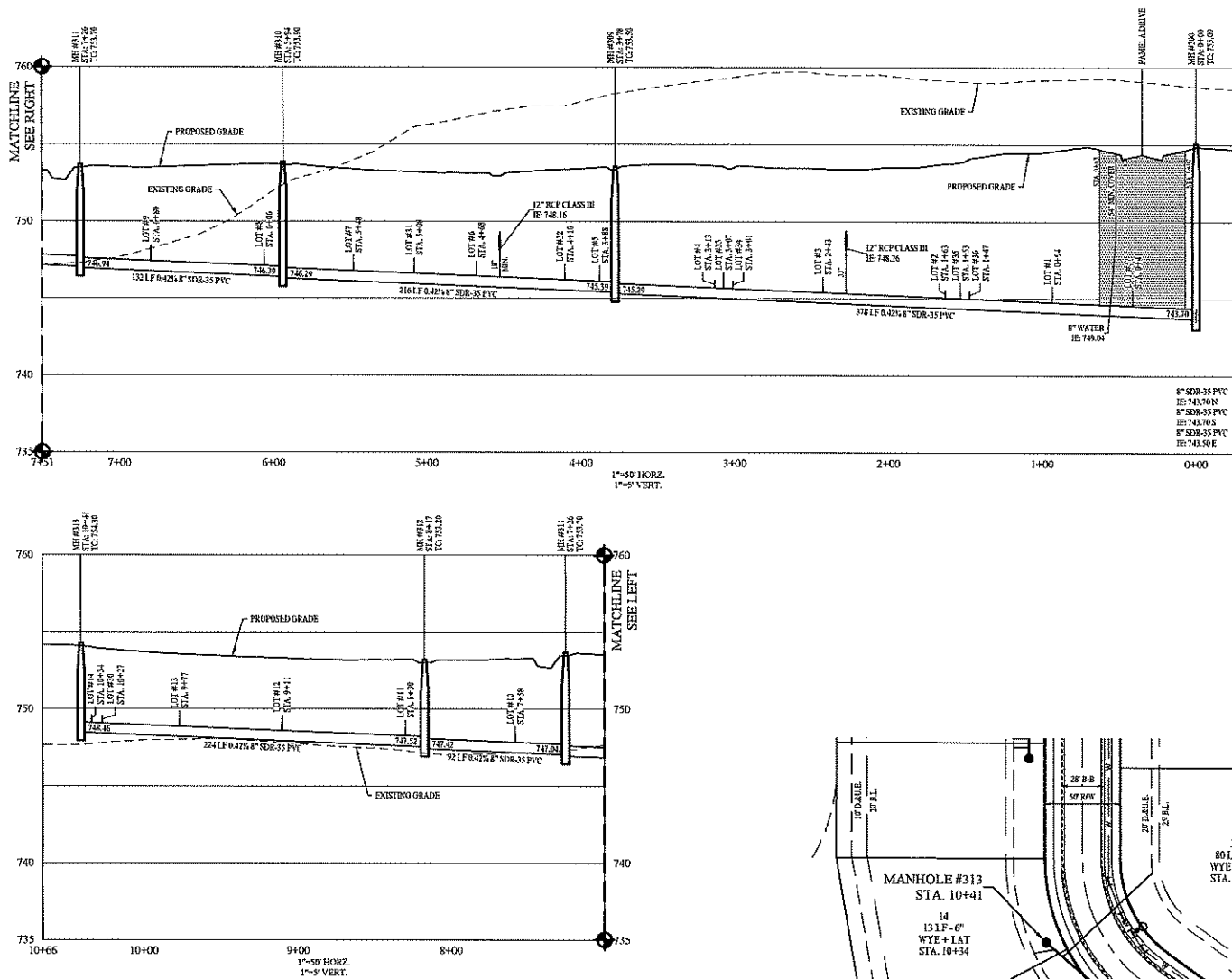
DRAWN BY: PDR  
CHECKED BY: BKR  
SHEET NO: C502  
S & A JOB NO: 91595ARB-S1

THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A RETAINMENT OR SURVEY OF A SURVEYOR LOCATION REPORT.  
DAVID W. STOEPPELWERTH  
REGISTERED PROFESSIONAL ENGINEER  
No. 19358  
STATE OF INDIANA  
CERTIFIED: 12/02/21  
David J. Stappert

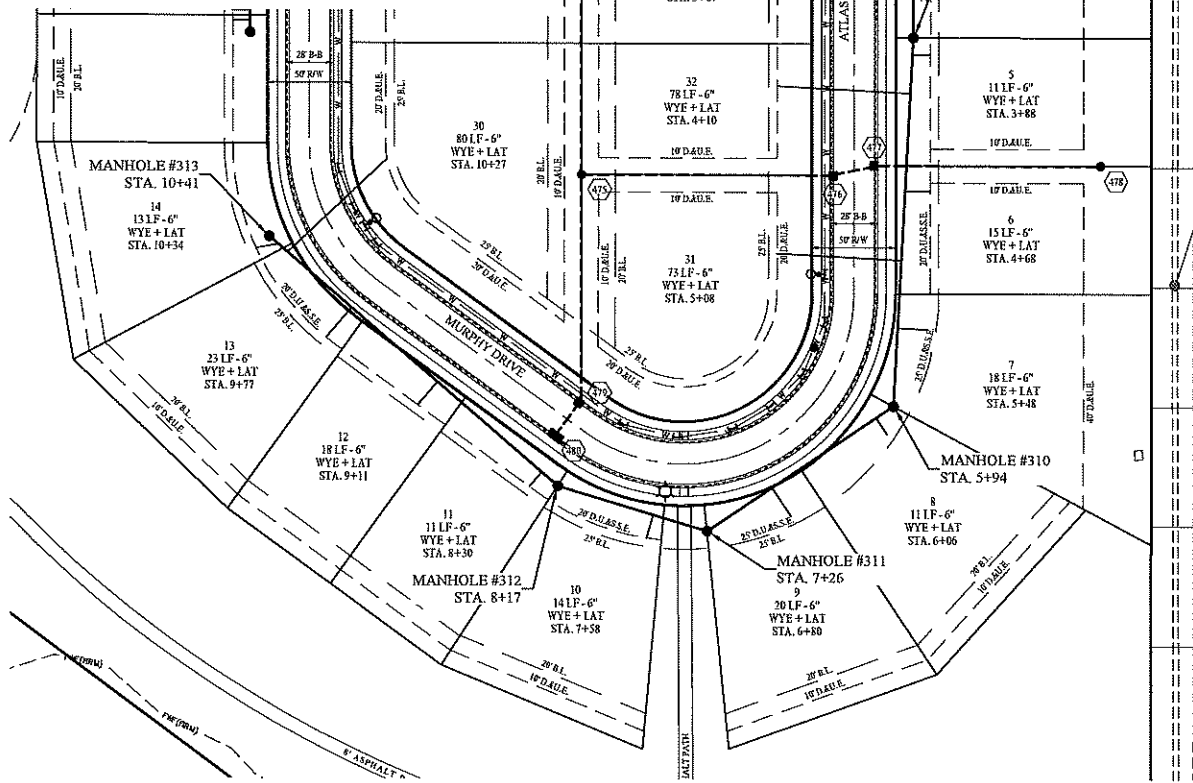
ALWAYS ON  
7905 East 106th Street, Fishers, IN 46038-2055  
phone: 317.846.5265 fax: 317.846.2942

JOHNSON COUNTY, INDIANA  
FRANKLIN, FRANKLIN TOWNSHIP

DATE NAME REVISIONS BY



SANITARY STRUCTURE DATA TABLE													
No.	TYPE	TC ELEV	CASTING TYPE	DIA IN	DIR IN	INV IN	DIA OUT	DIR OUT	INV OUT	PIPE SLOPE	PIPE NAME	LEN	MATL
300	4" MH	755.00	R-1772	8"	N	743.70	8"	E	743.50	0.42%	300-301 SDR-35 PVC	109'	SDR-35 PVC
301	4" MH	755.50	R-1772	8"	N	743.51	8"	S	744.11	0.42%	301-302 SDR-35 PVC	314'	SDR-35 PVC
302	4" MH	755.80	R-1772	8"	N	743.03	8"	S	745.83	0.42%	302-303 SDR-35 PVC	307'	SDR-35 PVC
303	4" MH	757.20	R-1772	8"	N	741.77	8"	S	747.57	0.42%	303-304 SDR-35 PVC	375'	SDR-35 PVC
304	4" MH	756.30	R-1772	8"	N	746.45	8"	E	746.35	0.42%	304-305 SDR-35 PVC	13'	SDR-35 PVC
309	4" MH	755.50	R-1772	8"	S	745.39	8"	N	745.29	0.42%	309-310 SDR-35 PVC	250'	SDR-35 PVC
310	4" MH	753.00	R-1772	8"	SW	746.39	8"	N	746.29	0.42%	310-311 SDR-35 PVC	132'	SDR-35 PVC
311	4" MH	753.70	R-1772	8"	W	747.04	8"	NE	746.94	0.42%	311-312 SDR-35 PVC	92'	SDR-35 PVC
312	4" MH	753.20	R-1772	8"	NW	747.52	8"	E	747.42	0.42%	312-313 SDR-35 PVC	224'	SDR-35 PVC
313	4" MH	754.30	R-1772	8"	SE	746.46	8"	SE	746.36	0.42%	313-314 SDR-35 PVC	273'	SDR-35 PVC
314	4" MH	754.60	R-1772	8"	W	746.35	8"	E	746.25	0.42%	314-315 SDR-35 PVC	309'	SDR-35 PVC
315	4" MH	754.90	R-1772	8"	NW	747.60	8"	E	747.50	0.42%	315-316 SDR-35 PVC	273'	SDR-35 PVC
316	4" MH	755.30	R-1772	8"	W	747.72	8"	E	747.62	0.42%	316-317 SDR-35 PVC	377'	SDR-35 PVC
317	4" MH	756.80	R-1772	8"	W	749.30	8"	W	749.20	1.00%	317-318 SDR-35 PVC	86'	SDR-35 PVC
318	4" MH	753.50	R-1772	8"	S	747.74	8"	N	747.64	0.42%	318-319 SDR-35 PVC	269'	SDR-35 PVC
319	4" MH	754.20	R-1772	8"	N	746.85	8"	N	746.75	0.42%	319-320 SDR-35 PVC	239'	SDR-35 PVC



**LEGEND**

**EXISTING FEATURES**

- W - WATER MAIN
- FM - FORCE MAIN, SANITARY
- SS - SANITARY SEWER
- SS - STORM SEWER

**PROPOSED FEATURES**

- W - WATER MAIN
- FM - FORCE MAIN, SANITARY
- SS - SANITARY SEWER
- SS - STORM SEWER
- SS - DENSE FILL DEPTH GRANULAR BACKFILL

**NOTES**

- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE ARE NO CROSSING CONFLICTS. CONFLICTS THAT ARE DISCOVERED AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.
- 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.
- MIN. SLOPES PER THE ILL. STATE STANDARDS SHALL PREVAIL IN ALL CASES.
- ALL WATER MAINS SHALL MAINTAIN 18 INCHES VERTICAL CLEARANCE AND 10 FEET HORIZONTAL CLEARANCE.

**BENCHMARK DATA**

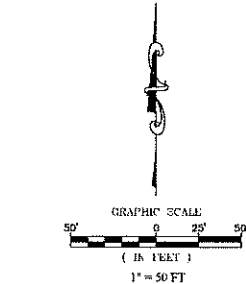
ORIGINATING BENCHMARK:  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED (GSD) THE NATIONAL GEODETIC SURVEY ON THE POSITIONING USER SERVICE (D.P.U.S.) AND ARE REFERENCED TO THE NAVD 83 DATUM.

**SITE INFO:**

TRM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE CURB AND GUTTER ON THE NORTH SIDE OF PAMELA DRIVE, ELEV=756.54 (NAVD 83)

TRM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD, ELEV=754.02 (NAVD 83)

TRM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNPAVED LEFT STATION APPROXIMATELY 200 FEET WEST OF THE END OF THE ROAD, ELEV=754.77 (NAVD 83)



**STOEPPELWERTH**

**SANITARY SEWER PLAN & PROFILES**

**WESTWIND at CUMBERLAND**

**SECTION 1**

FRANKLIN, FRANKLIN TOWNSHIP, JOHNSON COUNTY, INDIANA

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

CERTIFIED: 12/02/21

David J. Stoepelwerth

REGISTERED PROFESSIONAL ENGINEER

STATE OF INDIANA

No. 19358

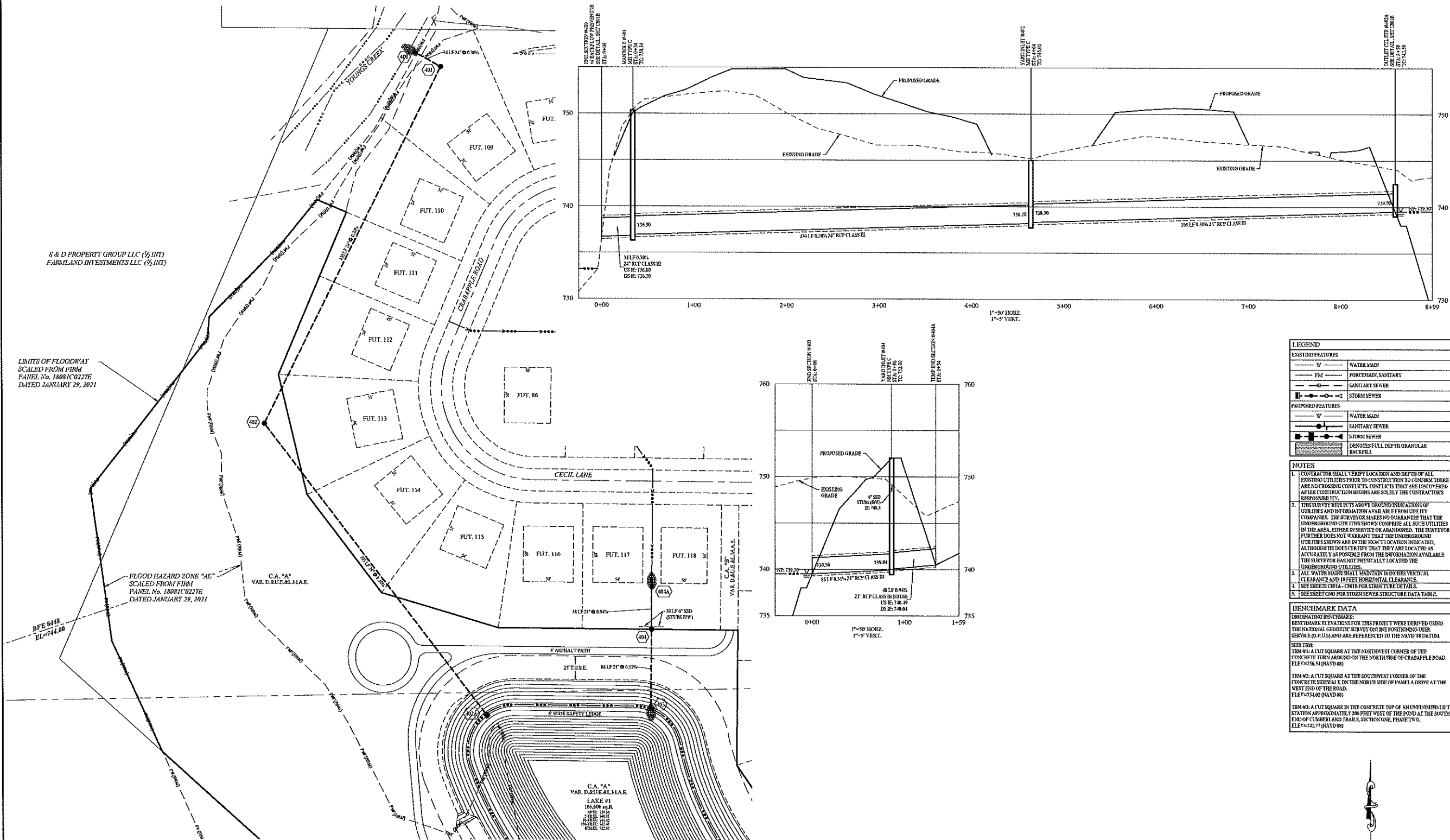
DATE: NAME: REVISIONS: BY:

DRAWN BY: PDR

CHECKED BY: BKR

SHEET NO: C503

SAK KNO 91595ARB-S1



STORM SEWER PLAN & PROFILES  
WESTWIND at CUMBERLAND  
SECTION 1

STOEPPELWERTH

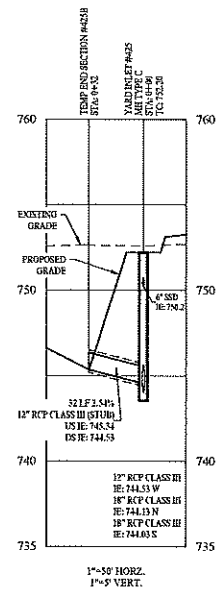
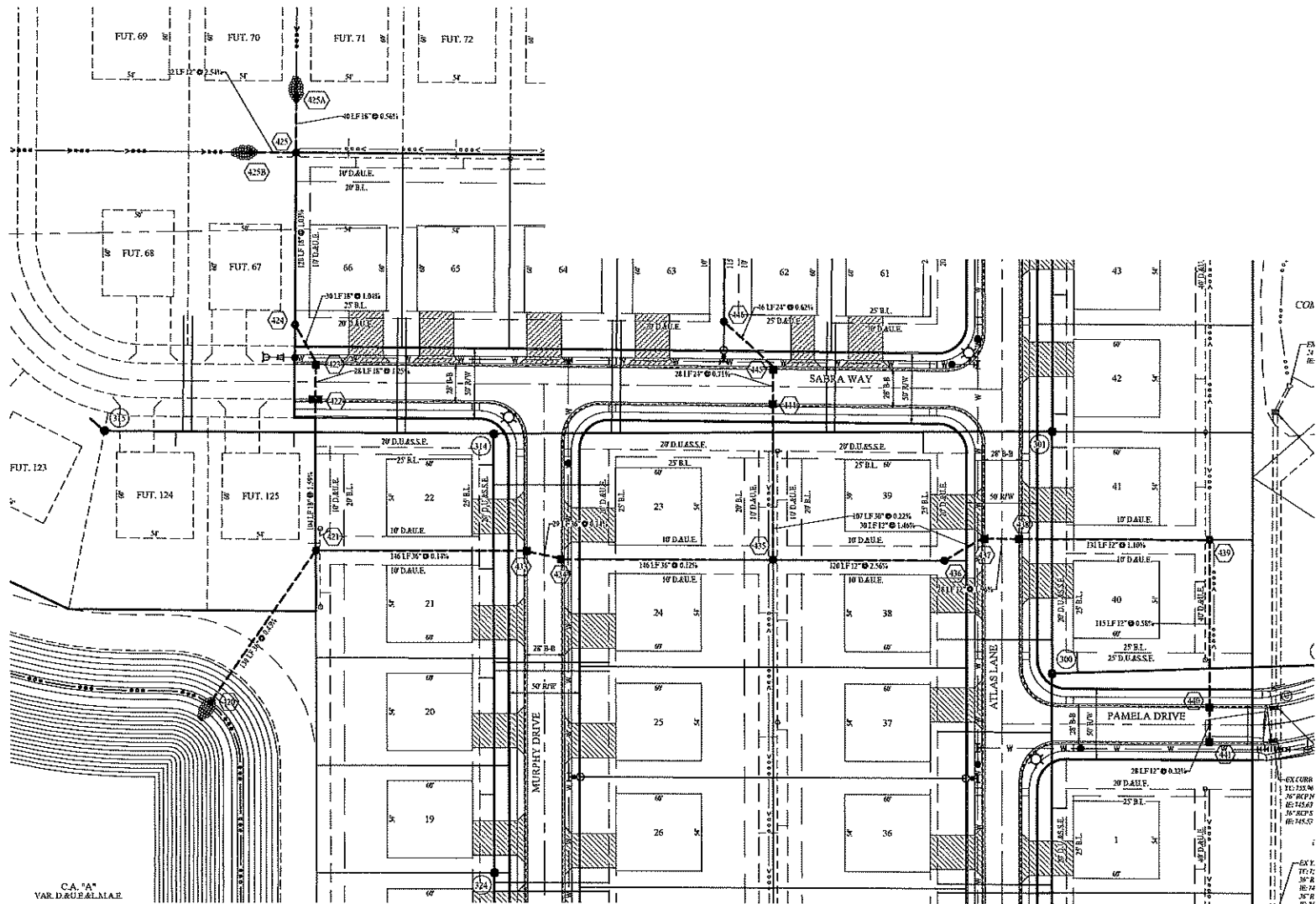
**ALWAYS ON**  
7965 East 106th Street, Fishers, IN 46038-2505  
phone: 317.849.5935 fax: 317.849.5942

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

REPORT: CERTIFIED: 12/02/21  
David J. Stippelweh

[illegible]

File Name: S:\1565\ARB-S\DIV\CS600 - Storm Plan & Profile.dwg - C601  
Modified By: November 30, 2021 8:38:22 AM / pchrichards  
Plotted By: November 30, 2021 7:15:48 AM / Paul Richards



**LEGEND**

**EXISTING FEATURES**

- W - WATER MAIN
- PM - FORCE MAIN, SANITARY
- SS - SANITARY SEWER
- SS - STORM SEWER

**PROPOSED FEATURES**

- W - WATER MAIN
- PM - SANITARY SEWER
- SS - STORM SEWER
- SS - DEDICATED FULL DEPTH GRANULAR BACKFILL

**NOTES**

1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE ARE NO CROSSING CONFLICTS. CONFLICTS THAT ARE DISCOVERED AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.
2. THIS SURVEY REFLECTS ABOVE GROUND INDICATIONS OF UTILITIES AND INFORMATION AVAILABLE FROM UTILITY COMPANIES. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN CONFORM 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 ACTUALLY AS POSSED FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.
3. ALL WATER MAINS SHALL MAINTAIN INCHES VERTICAL CLEARANCE AND 18 FEET HORIZONTAL CLEARANCE.
4. SEE SHEETS C601A - C601B FOR STRUCTURE DETAILS.
5. SEE SHEET C601 FOR STORM SEWER STRUCTURE DATA TABLE.

**BENCHMARK DATA**

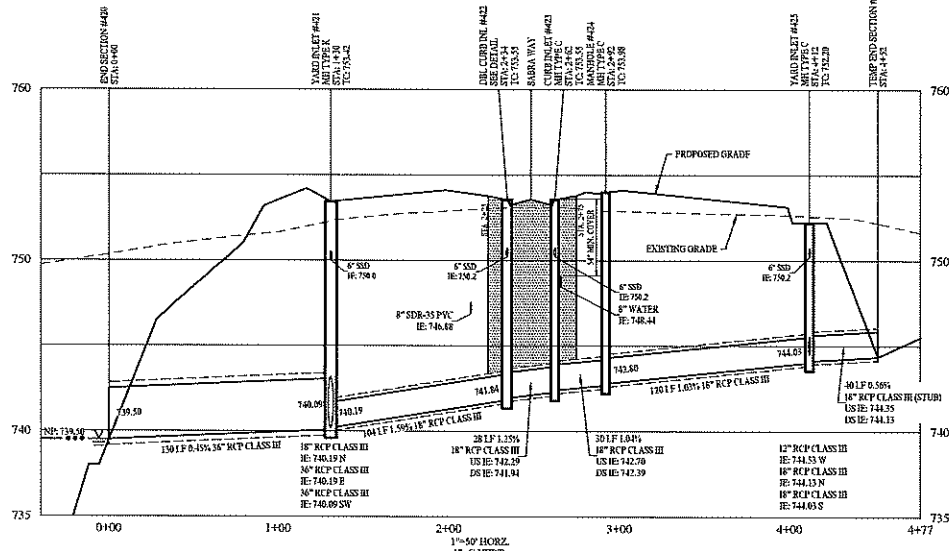
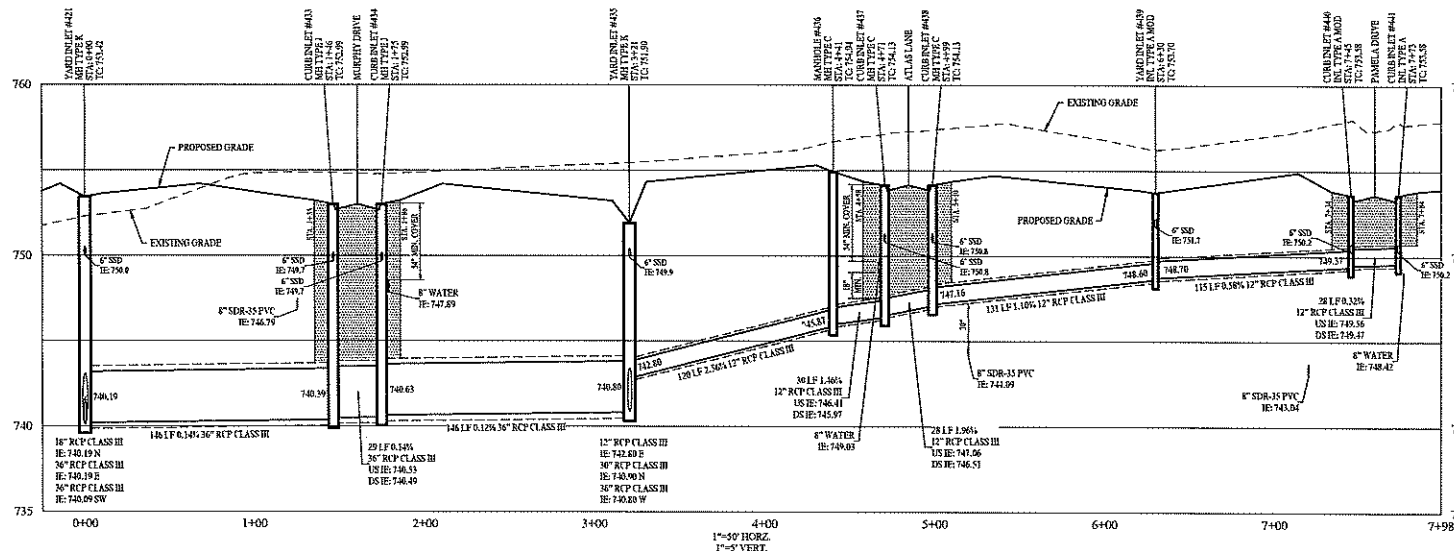
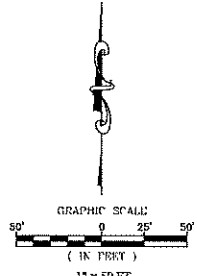
ORIGINATING BENCHMARK  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (NAD 83) AND ARE REFERENCED TO THE NAD 83 DATUM.

**SITE DATA**

TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF CRANFORD ROAD. ELEV=754.62 (NAD 83)

TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.62 (NAD 83)

TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LIFT STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAIL, SECTION ONE, PHASE TWO. ELEV=744.77 (NAD 83)



**STOEPPELWERTH**  
ALWAYS ON  
7945 East 10th Street, Indianapolis, IN 46082-5905  
phone: 317.949.5338 fax: 317.949.5942

**STORM SEWER PLAN & PROFILES**  
**WESTWIND at CUMBERLAND**  
**SECTION 1**  
FRANKLIN, FRANKLIN TOWNSHIP  
JOHNSON COUNTY, INDIANA

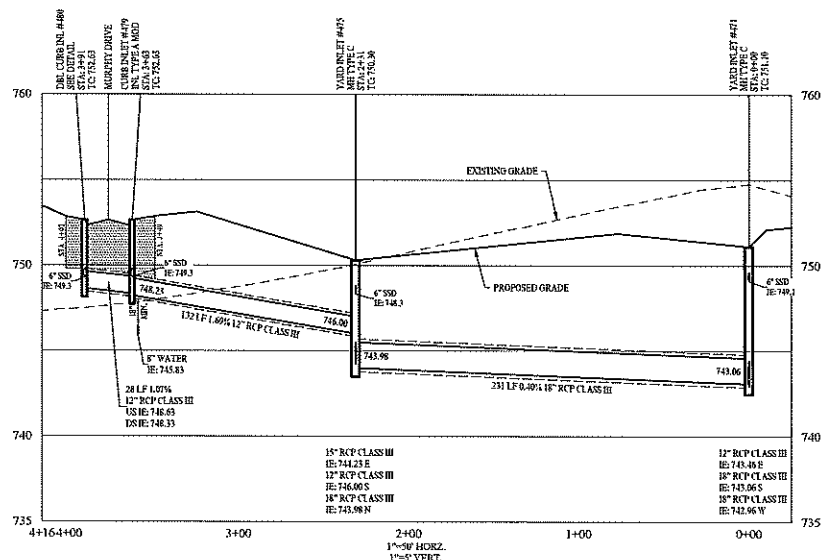
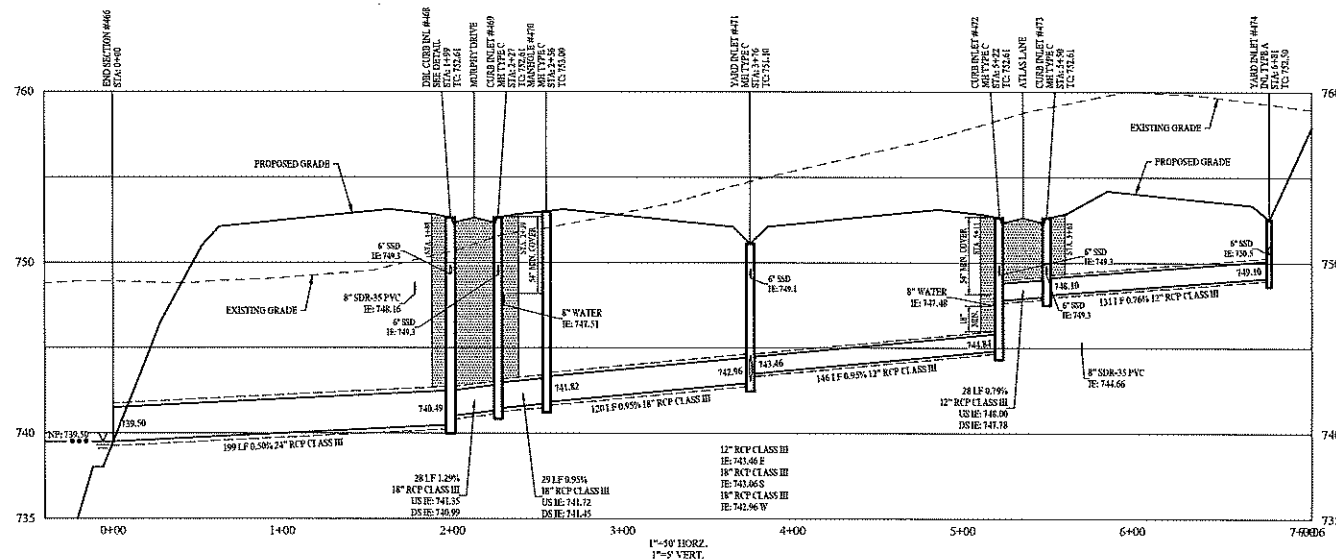
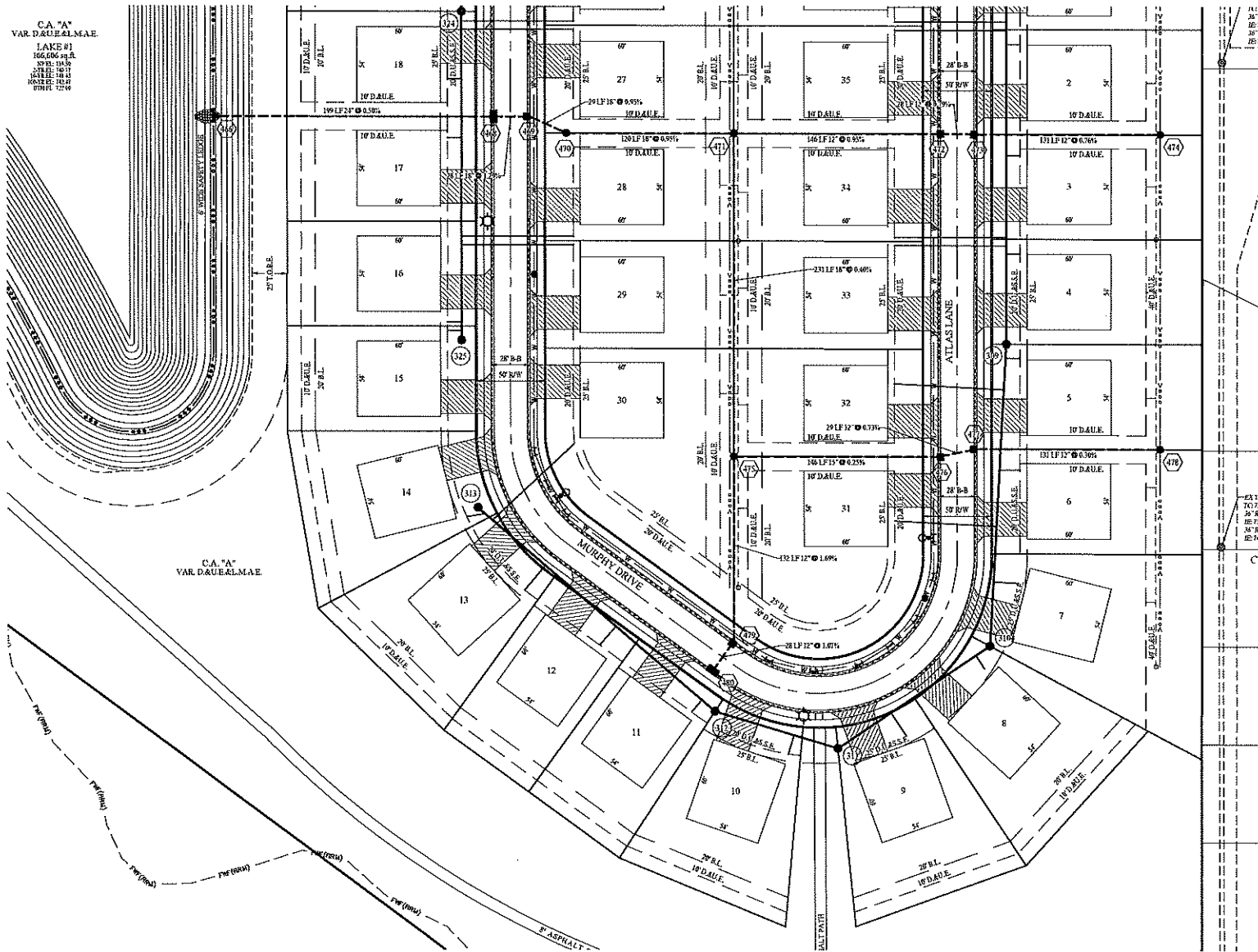
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CHECKED BY: BKR  
SHEET NO: C601  
S.A.A. 811 NO: 91592ARB-S1

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

CERTIFIED: 12/02/21  
David J. Stoepelwerth  
PROFESSIONAL ENGINEER  
No. 19358  
STATE OF INDIANA

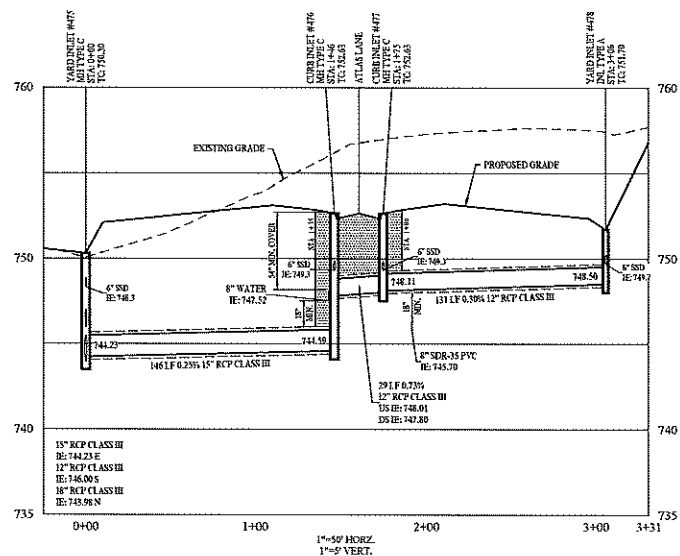
DATE: _____  
BY: _____  
REVISIONS: _____





STORM STRUCTURE DATA TABLE											
No.	NAME	TYPE	TC ELEV	CASTING TYPE	DIA IN	DIA OUT	INVERT	DIA IN	DIA OUT	INVERT	PIPE SLOPE
400	END SECTION				24"	36"	736.70	24"	36"	736.80	0.30%
401	MANHOLE	MI TYPE C	736.34	R-1772	24"	36"	736.80	24"	36"	736.80	0.30%
402A	OUTLET CUL STR	SEE DETAIL	742.50	SEE DETAIL	24"	36"	739.50	24"	36"	739.50	0.30%
402	YARD INLET	MI TYPE C	745.00	R-4342	24"	36"	738.30	24"	36"	738.30	0.30%
403	END SECTION				24"	36"	739.50	24"	36"	739.50	0.30%
404A	TEMP END SECTION				24"	36"	740.49	24"	36"	740.49	0.30%
404	YARD INLET	MI TYPE C		R-4342	24"	36"	740.64	24"	36"	739.94	0.30%
405	END SECTION				24"	36"	740.19	24"	36"	740.19	0.30%
421	YARD INLET	MI TYPE K	753.42	R-4342	18"	36"	740.19	36"	36"	740.09	0.45%
422	DBL CURB INLET	SEE DETAIL	753.55	R-3501-TL & TR	18"	36"	741.94	18"	36"	741.84	1.59%
423	CURB INLET	MI TYPE C	753.55	R-3501-TR	18"	36"	742.39	18"	36"	742.29	1.25%
424	MANHOLE	MI TYPE C	753.58	R-1772	18"	36"	742.80	18"	36"	742.70	1.04%
425A	TEMP END SECTION				18"	36"	744.35	18"	36"	744.35	0.50%
425B	TEMP END SECTION				18"	36"	745.34	18"	36"	745.34	2.54%
425	YARD INLET	MI TYPE C		R-4342	24"	36"	744.33	24"	36"	744.03	1.00%
433	CURB INLET	MI TYPE J	752.09	R-3501-TL	36"	36"	740.49	36"	36"	740.39	0.14%
434	CURB INLET	MI TYPE J	752.09	R-3501-TL	36"	36"	740.63	36"	36"	740.53	0.14%
435	YARD INLET	MI TYPE K	751.90	R-4342	12"	36"	742.80	36"	36"	742.80	1.00%
436	MANHOLE	MI TYPE C	754.94	R-1772	12"	36"	743.91	12"	36"	743.87	2.56%
437	CURB INLET	MI TYPE C	754.13	R-3501-TL	12"	36"	746.51	12"	36"	746.41	1.40%
438	CURB INLET	MI TYPE C	754.13	R-3501-TR	12"	36"	747.16	12"	36"	747.06	1.90%
439	YARD INLET	BNL TYPE A MOD	753.70	R-4342	12"	36"	748.70	12"	36"	748.60	1.18%
440	CURB INLET	BNL TYPE A MOD	753.58	R-3501-TR	12"	36"	749.47	12"	36"	749.37	0.88%
441	CURB INLET	BNL TYPE A	753.58	R-3501-TL	12"	36"	749.56	12"	36"	749.56	0.32%
444	CURB INLET	MI TYPE J	753.53	R-3501-TR	24"	36"	741.23	36"	36"	741.13	0.23%
445	CURB INLET	MI TYPE C	753.53	R-3501-TR	24"	36"	741.53	36"	36"	741.43	0.71%
446	MANHOLE	MI TYPE C	754.14	R-1772	24"	36"	741.92	24"	36"	741.82	0.62%
447	YARD INLET	MI TYPE C	752.20	R-4342	24"	36"	742.73	24"	36"	742.63	0.62%
448	CURB INLET	MI TYPE C	754.09	R-3501-TR	24"	36"	743.42	24"	36"	743.32	0.48%
449	DBL CURB INLET	SEE DETAIL	754.09	R-3501-TL & TR	24"	36"	743.63	24"	36"	743.53	0.39%

STORM STRUCTURE DATA TABLE											
No.	NAME	TYPE	TC ELEV	CASTING TYPE	DIA IN	DIA OUT	INVERT	DIA IN	DIA OUT	INVERT	PIPE SLOPE
450	YARD INLET	MI TYPE C	752.90	R-4342	18"	36"	744.47	18"	36"	744.37	0.23%
451	MANHOLE	MI TYPE C	755.36	R-1772	18"	36"	744.88	18"	36"	744.78	0.26%
452	CURB INLET	MI TYPE C	754.89	R-3501-TL	15"	36"	745.21	18"	36"	745.16	0.26%
453	DBL CURB INLET	SEE DETAIL	754.89	R-3501-TL & TR	12"	36"	745.65	15"	36"	745.46	0.68%
454	YARD INLET	MI TYPE C	753.10	R-4342	12"	36"	745.50	12"	36"	745.50	1.25%
455	MANHOLE	MI TYPE C	754.13	R-1772	12"	36"	745.50	12"	36"	745.80	1.51%
456	CURB INLET	MI TYPE C	754.03	R-3501-TL	12"	36"	747.53	12"	36"	747.36	0.79%
457	CURB INLET	MI TYPE C	754.03	R-3501-TR	12"	36"	747.86	12"	36"	747.76	0.75%
458	YARD INLET	BNL TYPE A	752.20	R-4342	12"	36"	748.80	12"	36"	748.80	0.72%
459	MANHOLE	MI TYPE C	754.80	R-1772	15"	36"	746.24	15"	36"	746.14	0.91%
460	CURB INLET	MI TYPE C	754.43	R-3501-TL	15"	36"	748.90	15"	36"	748.90	0.50%
461	CURB INLET	MI TYPE C	754.43	R-3501-TR	15"	36"	749.30	15"	36"	749.10	0.71%
462	YARD INLET	BNL TYPE A MOD	753.93	R-4342	15"	36"	749.39	15"	36"	749.49	0.23%
463	CURB INLET	MI TYPE C	755.83	R-3501-TL	12"	36"	749.94	15"	36"	749.84	0.22%
464	CURB INLET	MI TYPE C	755.83	R-3501-TR	12"	36"	750.14	12"	36"	750.04	0.26%
465	YARD INLET	BNL TYPE A	753.30	R-4342	12"	36"	750.55	12"	36"	750.55	0.30%
466	END SECTION				24"	36"	759.50	24"	36"	759.50	0.30%
468	DBL CURB INLET	SEE DETAIL	752.64	R-3501-TL & TR	18"	36"	749.99	24"	36"	749.39	0.50%
469	CURB INLET	MI TYPE C	752.64	R-3501-TR	18"	36"	749.45	18"	36"	749.35	1.29%
470	MANHOLE	MI TYPE C	753.00	R-1772	18"	36"	749.62	18"	36"	749.72	0.95%
471	YARD INLET	MI TYPE C	751.10	R-4342	12"	36"	749.46	12"	36"	749.26	0.55%
472	CURB INLET	MI TYPE C	752.64	R-3501-TL	12"	36"	749.78	12"	36"	749.68	0.95%
473	CURB INLET	MI TYPE C	752.64	R-3501-TR	12"	36"	749.10	12"	36"	749.00	0.79%
474	YARD INLET	BNL TYPE A	752.50	R-4342	12"	36"	749.10	12"	36"	749.10	0.76%
475	YARD INLET	MI TYPE C	750.30	R-4342	12"	36"	749.60	12"	36"	749.50	0.40%
476	CURB INLET	MI TYPE C	752.63	R-3501-TL	12"	36"	749.88	15"	36"	749.49	0.23%
477	CURB INLET	MI TYPE C	752.63	R-3501-TR	12"	36"	749.11	12"	36"	749.01	0.73%
478	YARD INLET	BNL TYPE A	751.70	R-4342	12"	36"	748.50	12"	36"	748.50	0.30%
479	CURB INLET	BNL TYPE A MOD	752.63	R-3501-TL	12"	36"	748.33	12"	36"	748.23	1.69%
480	DBL CURB INLET	SEE DETAIL	752.63	R-3501-TL & TR	12"	36"	748.63	12"	36"	748.63	1.01%



**LEGEND**  
**EXISTING FEATURES**  
W WATER MAIN  
FM FIRE MAIN  
S SANITARY SEWER  
SS STORM SEWER  
**PROPOSED FEATURES**  
W WATER MAIN  
FM FIRE MAIN  
S SANITARY SEWER  
SS STORM SEWER  
D DENSE FILL DEPTH GRANULAR BACKFILL

**NOTES**  
1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION TO CONFIRM THERE ARE NO CROSSING CONFLICTS. CONFLICTS THAT ARE DISCOVERED AFTER CONSTRUCTION BEGINS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.  
2. 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. ALL UTILITIES ARE SHOWN AS LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.  
3. ALL WATER MAINS SHALL MAINTAIN 18 INCHES VERTICAL CLEARANCE AND 10 FEET HORIZONTAL CLEARANCE.  
4. SEE SHEETS C604 - C610 FOR STRUCTURE DETAILS.

**BENCHMARK DATA**  
**ORIGINATING BENCHMARK:**  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY AND ARE POSTED TO THE USER SERVICE (N.G.S.) AND ARE REFERENCED TO THE NAVD 83 DATUM.  
**SITE TIES:**  
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN ARROUND ON THE NORTH SIDE OF CHABAPPE ROAD. ELEV=752.64 (NAVD 83)  
TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.02 (NAVD 83)  
TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LEFT STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND AND TRAIL, SECTION ONE, PHASE TWO. ELEV=741.77 (NAVD 83)

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

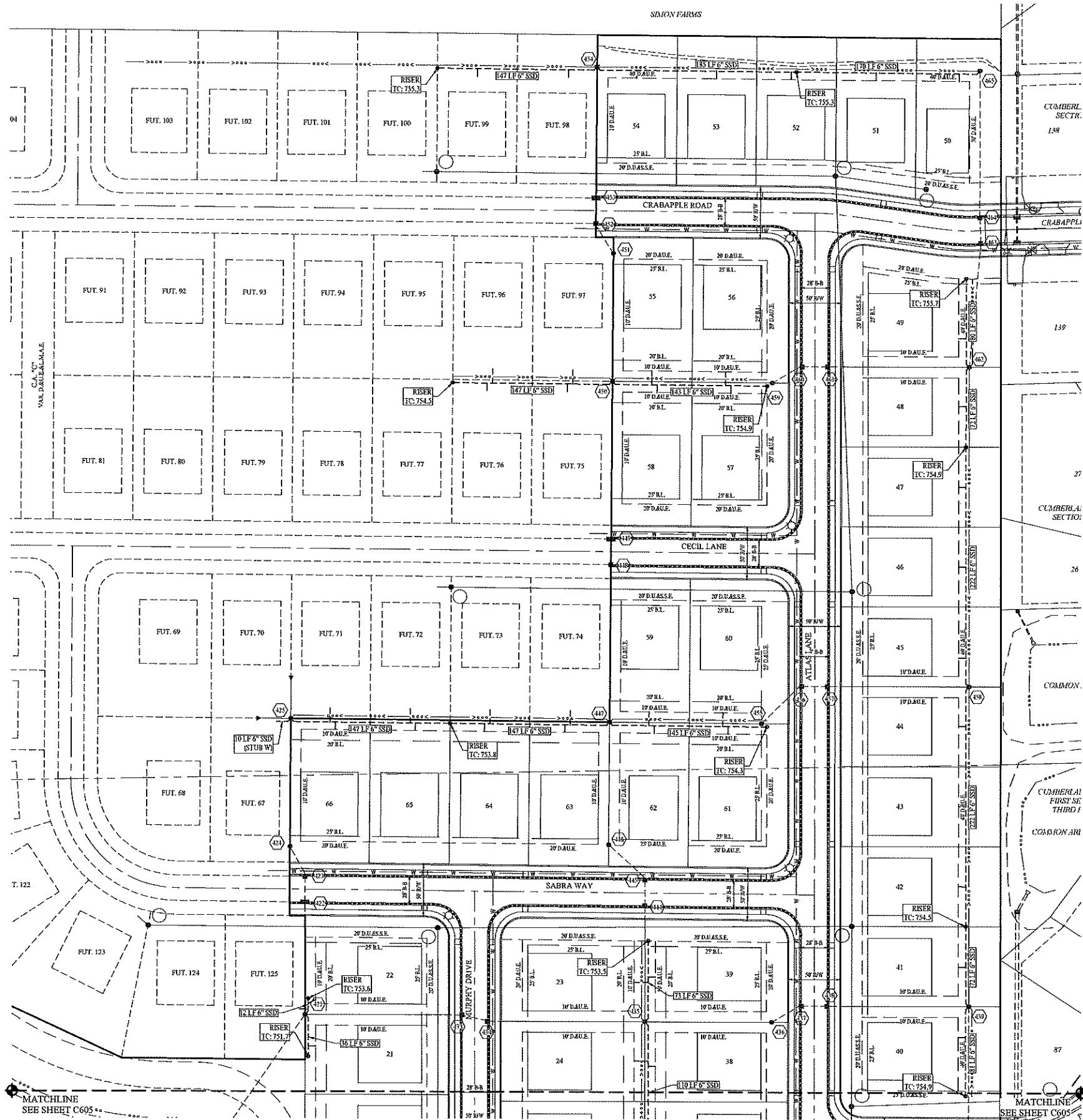
**INDIANA 811**  
Know what's below.  
811 before you dig.

**STOEPPELWERTH**  
REGISTERED PROFESSIONAL ENGINEER  
No. 19358  
STATE OF INDIANA  
David J. Stoepelwerth  
CERTIFIED: 12/02/21  
7945 East 166th Street, Fishers, IN 46038-2505  
phone: 317.846.5935 fax: 317.846.5942

**STORM SEWER PLAN & PROFILES**  
**WESTWIND at CUMBERLAND**  
**SECTION 1**  
FRANKLIN, FRANKLIN TOWNSHIP  
JOHNSON COUNTY, INDIANA

**C603**  
S & A KID NO  
91595ARB-S1

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Modified / By: November 23, 2021 4:04:04 PM / jrichards  
Plotted / By: November 30, 2021 7:18:21 AM / Paul Richards



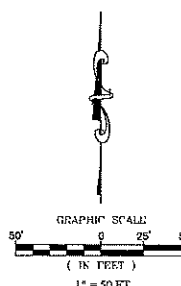
LEGEND	
EXISTING FEATURES	
W	WATER MAIN
SS	SANITARY SEWER
ST	STORM SEWER
PROPOSED FEATURES	
W	WATER MAIN
SS	SANITARY SEWER
ST	STORM SEWER
SW	SWALE FLOWLINE
CG	CURB & GUTTER w/ 4" UNDERDRAIN
SD	6" SUB-SURFACE DRAIN (SWALE)

- NOTES
- FOR SWALE UNDERDRAIN DETAIL, SEE SHEET C608.
  - CONTRACTOR SHALL VERIFY DEPTHS OF ALL EXISTING UTILITY LINES FROM 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.
  - THIS SURVEY REFLECTS ABOVE-GROUND INDICATIONS OF UTILITIES AND INFORMATION AVAILABLE FROM UTILITY COMPANIES. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPARE 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.

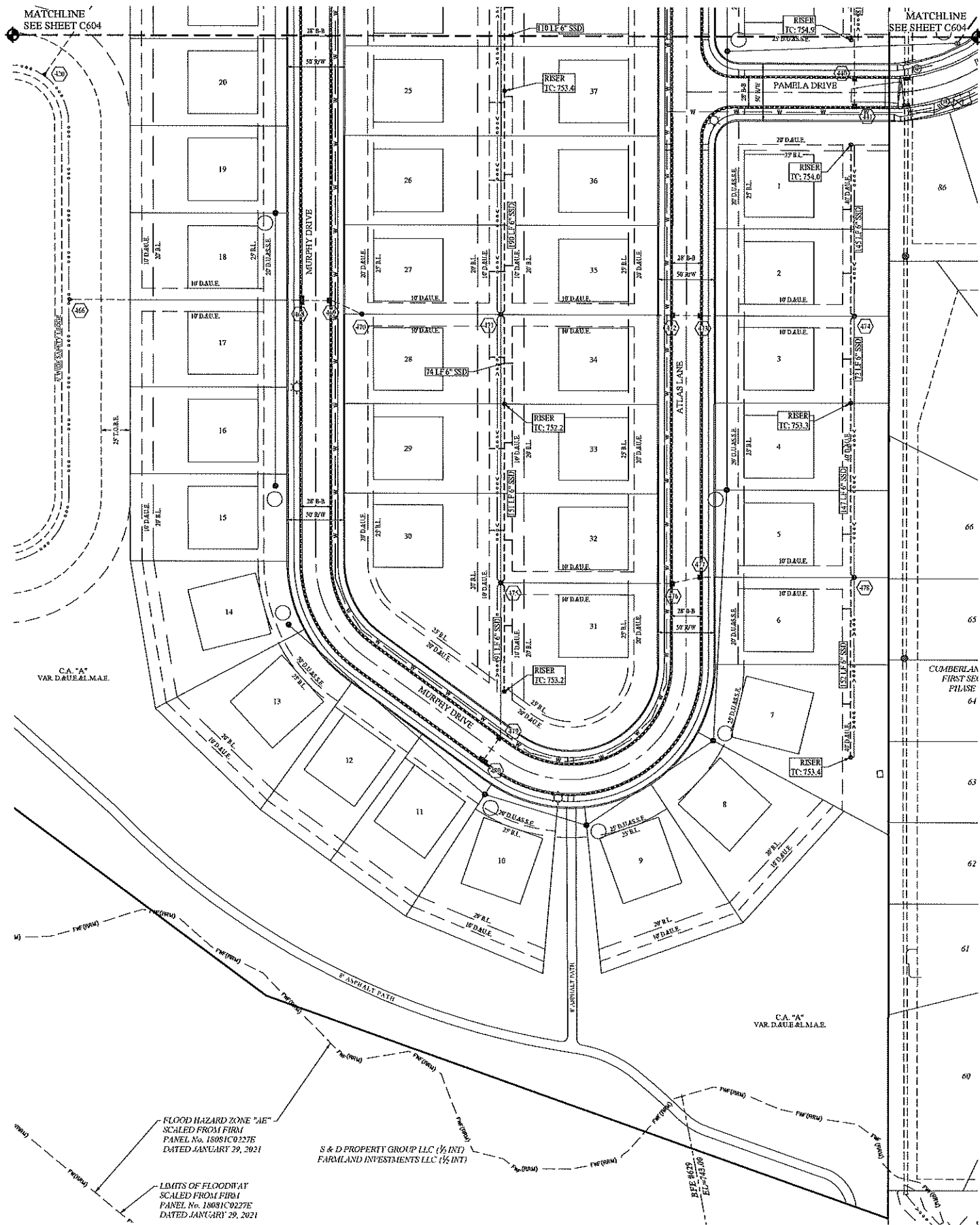
BENCHMARK DATA

ORIGINATING BENCHMARKS  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (NAD 83) AND ARE REFERENCED TO THE NAD 83 DATUM.

SITE TIES:  
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=756.51 (NAVD 83)  
TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.02 (NAVD 83)  
TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LOT STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO. ELEV=741.77 (NAVD 83)



SUB-SURFACE DRAIN / SUMP CONNECTION PLAN		STOEPPELWERTH		THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A REPLACEMENT OR SUPPLEMENT TO THE SURVEYOR'S LOCATION REPORT.	
WESTWIND at CUMBERLAND SECTION 1		ALWAYS ON		CERTIFIED: 12/02/21	
FRANKLIN, FRANKLIN TOWNSHIP		JOHNSON COUNTY, INDIANA		David J. Stoeppelwerth	
DESIGNED BY: PDR	CHECKED BY: BKR	SHEET NO: C604		DATE: 12/02/21	
S.A.K. NO. 91525ARB-S1		S.A.K. NO. 91525ARB-S1		BY: BT	



**LEGEND**

**EXISTING FEATURES**

- W" WATER MAIN
- SANITARY SEWER
- STORM SEWER

**PROPOSED FEATURES**

- W" WATER MAIN
- SANITARY SEWER
- STORM SEWER
- SWALE FLOWLINE
- CURB & GUTTER w/ 4" UNDERDRAIN
- 6" SUB-SURFACE DRAIN (SWALE)

**NOTES**

1. FOR SWALE UNDERDRAIN DETAIL, SEE SHEET C604. FOR CURB UNDERDRAIN DETAIL, SEE SHEET C604.
2. 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 BEINGS ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.
3. 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.

**BENCHMARK DATA**

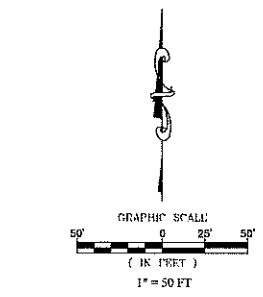
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**SITE TIES:**

TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=754.51 (NAD 83)

TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.02 (NAD 83)

TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNIMPROVED LIFT STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAIL, SECTION ONE, PHASE TWO. ELEV=741.77 (NAD 83)



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

CERTIFIED: 12/02/21

*David J. Stoeppelwerth*

REGISTERED PROFESSIONAL ENGINEER

No. 19358

STATE OF INDIANA

**STOEPPELWERTH**

ALWAYS ON

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phone: 317.846.5265 fax: 317.846.5242

SUB-SURFACE DRAIN / SUMP CONNECTION PLAN

WESTWIND at CUMBERLAND SECTION 1

FRANKLIN TOWNSHIP JOHNSON COUNTY, INDIANA

DRAWN BY: PDR

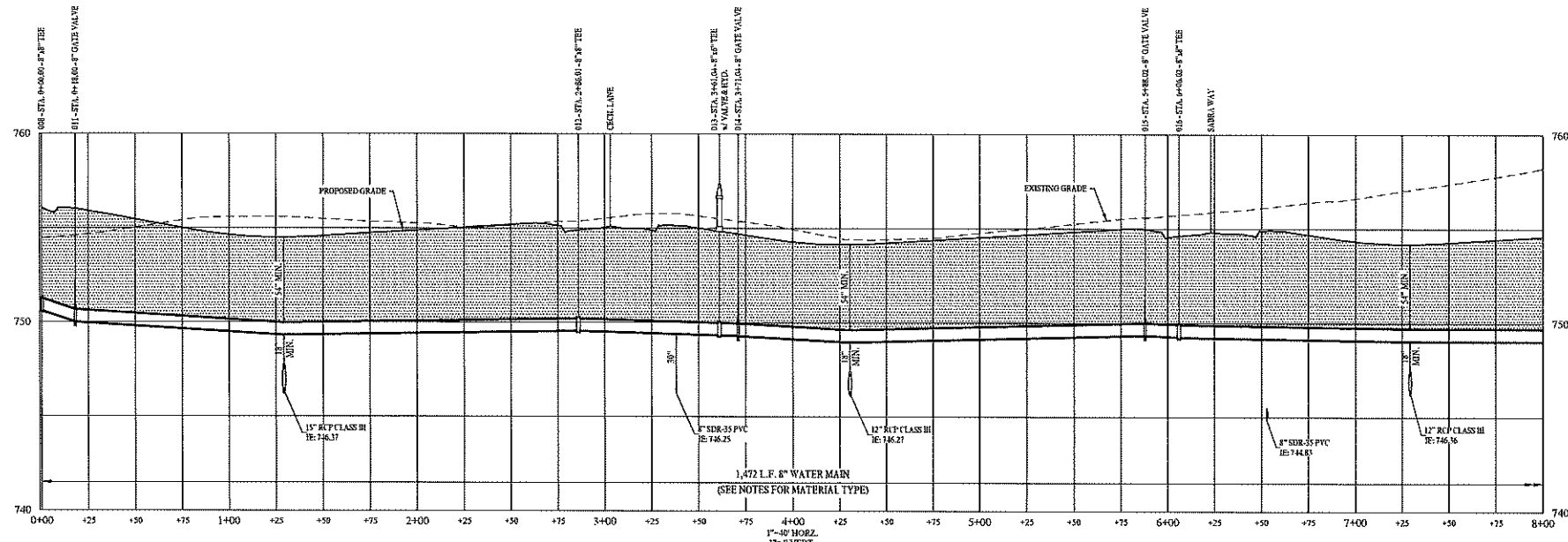
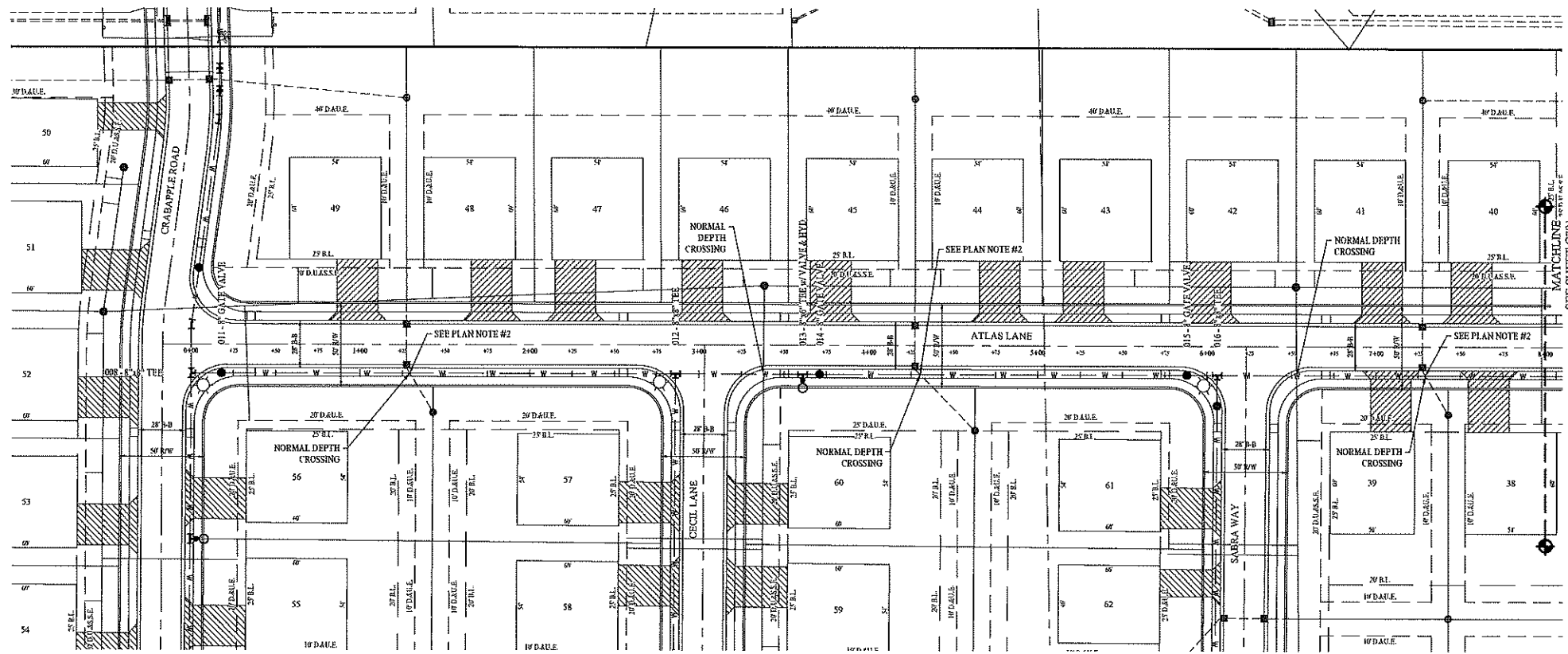
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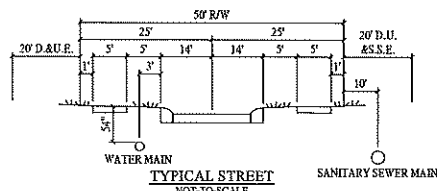
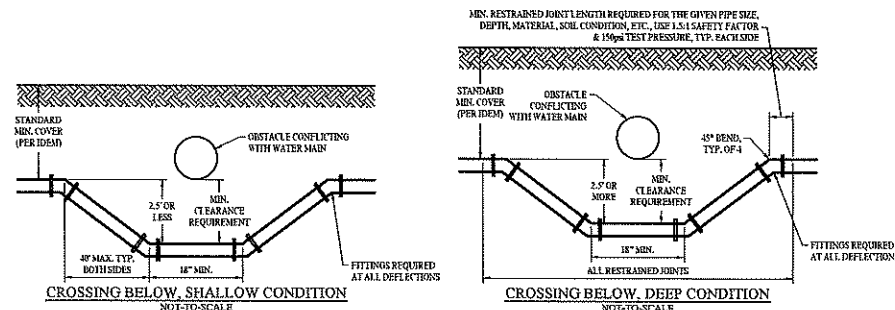
S.A. KIRK

91595ARB-S1

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November 30, 2021 8:35:58 AM / pchards  
November 30, 2021 8:37:34 AM / Paul Richards  
Modified / By:  
Plotted / By:



## ATLAS LANE



WATER MAIN PIPE TABLE		
SIZE	MATERIAL	LENGTH
8"	PVC C-900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52	3,757 L.F.
6"	D.I. THICKNESS CLASS 52 LATERAL FOR TEMP. HYDRANT	30 L.F.
TOTAL LENGTH		3,787 L.F.

**BENCHMARK DATA**  
ORIGINATING BENCHMARK  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (N-GPS) AND ARE REFERENCED TO THE NAVD 83 DATUM.  
SITE INFO  
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=756.51 (MAYD 88)  
TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMLA DRIVE AT THE WEST END OF THE ROAD. ELEV=756.51 (MAYD 88)  
TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LOT STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO. ELEV=741.71 (MAYD 88)

LEGEND	
EXISTING FEATURES	
W	WATER MAIN
OE	ELECTRICAL LINE, OVERHEAD
G	GAS MAIN
SS	SANITARY SEWER
ST	STORM SEWER
WV	WATER, FIRE HYDRANT
WD	WATER, VALVE
WM	WATER, METER
GV	GAS, VALVE
PROPOSED FEATURES	
W	WATER MAIN
SS	SANITARY SEWER
ST	STORM SEWER
WV	HYDRANT w/ 4" VALVE
WD	GATE VALVE
RD	REDUCER
TF	TEE
4	BEND, HORIZONTAL
N	BEND, VERTICAL

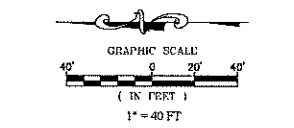
FOR SPEC ON ALL WATER-RELATED MATERIAL, STRUCTURE, ACCESSORY, INSTALLATION, HANDLING, ETC., CONTRACTOR TO REFER TO INDIANA AMERICAN WATER PIPELINE SPECIFICATIONS, LATEST REVISION.

### WATER UTILITY INSTALLATION NOTES

- INSTALLATION OF WATER MAIN, FITTINGS, VALVES, FIRE HYDRANTS, AND APPURTENANCES SHALL BE IN ACCORDANCE WITH INDIANA AMERICAN WATER STANDARDS AND SPECIFICATIONS, LATEST REVISION.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER MAIN PRIOR TO CONSTRUCTION.
- AT THE POINT OF CONNECTION TO EXISTING WATER MAINS, A TAPPING SLEEVE AND VALVE MAY BE REQUIRED TO BE INSTALLED IN THE EXISTING WATER MAIN (CANNOT BE SHOT DOWN WITHOUT IMPACTING CUSTOMERS). TO BE DETERMINED AT THE PRE-CONSTRUCTION MEETING.
- FOR PVC C-900 PIPE INSTALLATION: DR-14 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 RESTRAINT HARNESSES. SELECT FILL MATERIAL REQUIRED FOR BEDDING AND EMBEDEDMENT REGARDLESS OF PIPES PROXIMITY TO PAVEMENT. PVC C-900 PIPE IS NOT ALLOWED FOR PIPES LARGER THAN 12-INCH.
- 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, FUSION RESTRAINTING CASSETS 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 1506.
- FOR HDPE PIPE INSTALLATION: HDPE DR-11 FOR SIZES 4-INCH AND LARGER, HDPE DR-14 FOR 12-INCH, AND 18-INCH FOR SIZES SMALLER THAN 4-INCH. HDPE BENDS, TEES, AND CROSSES ARE NOT ACCEPTABLE. PRESSURE TESTING OF HDPE PIPE DIFFERS FROM DUCTILE IRON AND PVC PIPE. SEE SPECIFICATION SECTION 1503A.0. PIPE FUSION MUST BE COMPLETED BY CERTIFIED TECHNICIANS (CERTIFICATION TO BE SUBMITTED PRIOR TO PRE-CONSTRUCTION MEETING).
- ENCASE ALL DUCTILE IRON PIPING, DUCTILE IRON FITTINGS, VALVES, HYDRANTS, RESTRAINT HARNESSES, AND ALL OTHER METALLIC APPURTENANCES IN 12-INCH BLUE POLYETHYLENE.
- ALL PIPE HYDRANT LATERALS SHALL BE DUCTILE IRON PIPE.
- ALL 30" TIGHT AND 18" TIGHT AND 12" TIGHT HORIZONTAL OR FLUOROPOLYMER CORE RESISTANT COATINGS.
- ALL FITTINGS SHALL BE RESTRAINED USING NO RETAINER GLANDS.
- THRUST RESTRAINT TO BE ACHIEVED THROUGH THE RESTRAINT OF PIPE JOINTS AND FITTINGS. THRUST BLOCKS ARE NOT AN ACCEPTABLE MEANS OF THRUST RESTRAINT, EXCEPT WHEN REQUIRED IN CONNECTION TO EXISTING WATER MAIN AND FOR INSTALLATION OF FIRE HYDRANTS. SEE SPECIFICATION SECTIONS 1506 AND 1510 FOR PIPE JOINT RESTRAINT REQUIREMENTS FOR DUCTILE IRON AND PVC PIPE.
- COPPER-CLAD STEEL TRACER WIRE REQUIRED ON INSTALLATION OF ALL PIPE. TRACER WIRE SHALL BE TAPPED TO PIPE OR POLYETHYLENE ENCASUREMENT AT A MINIMUM SPACING OF 10-FEET. SPURS SHALL BE ENCASED IN WATERPROOF CONDUCTIVE WIRE AND CONNECTIONS ARE TO BE COMPATIBLE AND FROM THE SAME MANUFACTURER. DETECTABLE TAPE IS REQUIRED ONE FOOT ABOVE PIPE. CONTINUITY SHALL BE TESTED AFTER COMPLETION OF BACKFILL.
- SELECT FILL MATERIAL REQUIRED FOR FINAL BACKFILL WHEN WITHIN 4-FEET OF PAVEMENT PER SPECIFICATION SECTION 0220.
- MAINTAIN THE REQUIRED 10-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 SPECIFICATION 8-2.9 OF THE INDIAN ADMINISTRATIVE CODE FOR MORE INFORMATION.
- MAINTAIN MINIMUM COVER DEPTH OF 54" AND A MAXIMUM OF 54"±24".

### PLAN NOTES

- 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.
- CONTRACTOR SHALL MAINTAIN A MINIMUM OF 7' (54") 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.
- SEE WATER MAIN JOINT RESTRAINT SCHEDULE ON SHEET C701.



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

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

DAVID J. STOEPPELWERTH  
CERTIFIED: 12/02/21  
David J. Stoepfelwerth

STOEPPELWERTH  
ALWAYS ON

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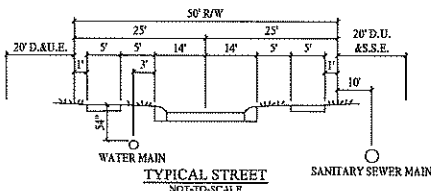
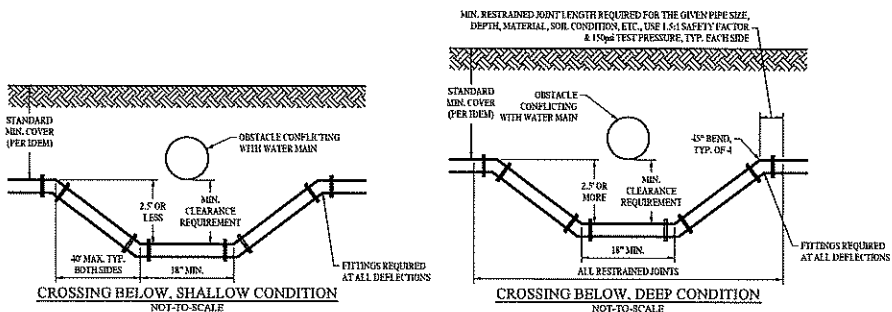
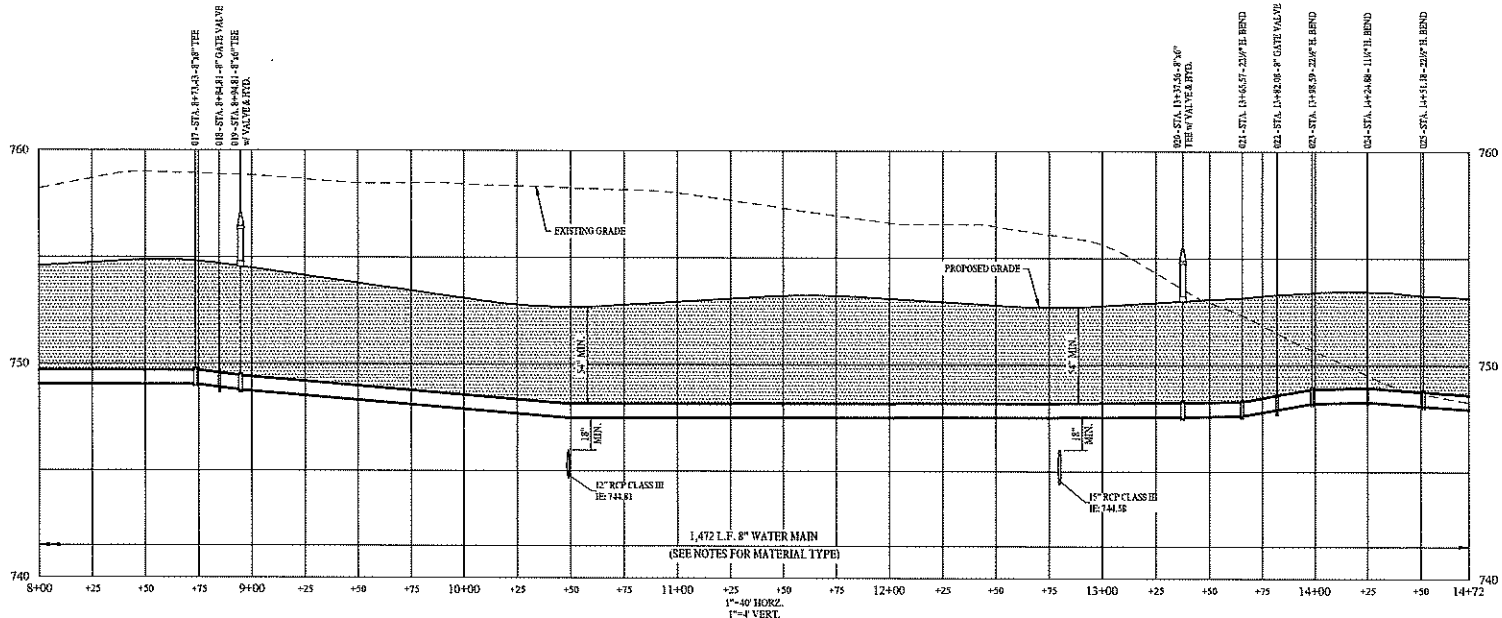
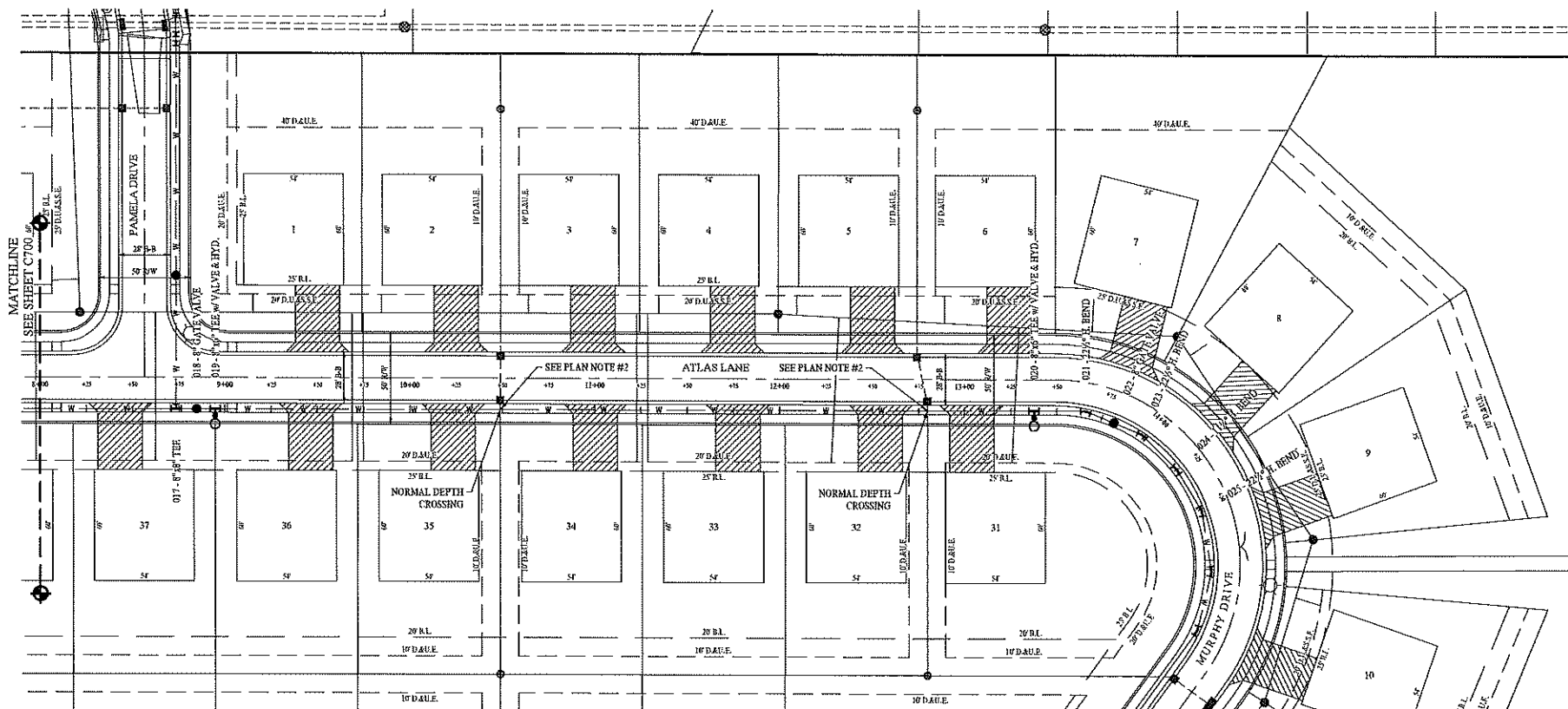
WATER PLAN & PROFILES  
WESTWIND at CUMBERLAND  
SECTION 1

FRANKLIN, FRANKLIN TOWNSHIP  
JOHNSON COUNTY, INDIANA

DRAWN BY: PDR  
CHECKED BY: BKR

SHEET NO. C700

S & A XID NO. 91595ARB-S1



WATER MAIN PIPE TABLE		
SIZE	MATERIAL	LENGTH
8"	PVC C-900 DR-14, HDPE DR-11, OR D.I. THICKNESS CLASS 52	3,757 L.F.
6"	D.I. THICKNESS CLASS 52 LATERAL FOR TEMP. HYDRANT	361 F.
		TOTAL LENGTH 3,767 L.F.

**BENCHMARK DATA**  
ORIGINATING BENCHMARK:  
NEW HAMPSHIRE ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (N-POS) AND ARE REFERENCED TO THE NAVD 83 DATUM.  
SITE TBM:  
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD.  
ELEV=756.54 (NAVD 83)  
TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD.  
ELEV=754.02 (NAVD 83)  
TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNFINISHED LIFT STATION APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO.  
ELEV=741.77 (NAVD 83)

LEGEND	
EXISTING FEATURES	
W	WATER MAIN
CH/E	ELECTRICAL LINE, OVERHEAD
G	GAS MAIN
SS	SANITARY SEWER
SS	STORM SEWER
WV	WATER, FIRE HYDRANT
WV	WATER, VALVE
GM	GAS, METER
GV	GAS, VALVE
PROPOSED FEATURES	
W	WATER MAIN
SS	SANITARY SEWER
SS	STORM SEWER
WV	HYDRANT 4\"/>
WV	GATE VALVE
WV	REDUCER
WV	TEE
WV	BEND, HORIZONTAL
WV	BEND, VERTICAL

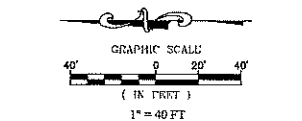
FOR SPEC'S ON ALL WATER-RELATED MATERIAL, STRUCTURE, ACCESSORY, INSTALLATION, HANDLING, ETC., CONTRACTOR TO REFER TO INDIANA AMERICAN WATER PIPELINE SPECIFICATIONS, LATEST REVISION.

#### 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. AT THE POINT OF CONNECTION TO EXISTING WATER MAINS, A TAPPING SLEEVE AND VALVE MAY BE REQUIRED TO BE INSTALLED IF THE EXISTING WATER MAIN CANNOT BE SMIT DOWN WITHOUT IMPACTING CUSTOMERS, TO BE DETERMINED AT THE PRE-CONSTRUCTION MEETING.
4. FOR PVC C-900 PIPE INSTALLATION, DR-14 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 PIPES TO PIPE JOINTS ARE REQUIRED, ALL JOINTS SHALL BE RESTRAINED WITH EXTERNAL SPLIT SERRATED RESTRAINT HARNESSES. SELECT FILL MATERIAL REQUIRED FOR BENDING AND EMBEDMENT REGARDLESS OF PIPES PROXIMITY TO PAVEMENT. PVC C-900 PIPE IS NOT ALLOWED FOR PIPES LARGER THAN 12-INCH.
5. 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 INTERNAL STAINLESS STEEL LOCKING SCREWS 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 SECTION 021600 SECTION 1500.
6. FOR PIPE INSTALLATION, DEPT. ON 11 FOR SIZES 4-INCH AND LARGER, DEPT. 8 FOR 3-INCH, AND CTS DR-10 FOR SIZES SMALLER THAN 3-INCH. HOPE BENDS, TEES, AND CROSSES ARE NOT ACCEPTABLE. PRESSURE TESTING OF HOPE PIPE DIFFERS FROM DUCTILE IRON AND PVC PIPE. SEE SPECIFICATION SECTION 021600-01. PIPE FUSION MUST BE COMPLETED BY CERTIFIED TECHNICIAN. CERTIFICATION TO BE SUBMITTED PRIOR TO PRE-CONSTRUCTION MEETING.
7. ENCASE ALL DUCTILE IRON PIPING, DUCTILE IRON FITTINGS, VALVES, HYDRANTS, RESTRAINT HARNESSES, AND ALL OTHER METALLIC APPURTENANCES IN 18-INCH RADIUS POLYETHYLENE.
8. ALL FIRE HYDRANT LATERALS SHALL BE DUCTILE IRON PIPES.
9. ALL 1/2\"/>
10. ALL FITTINGS SHALL BE RESTRAINED USING NO RETAINER GLANDS.
11. THRUST RESTRAINT TO BE ACHIEVED THROUGH THE RESTRAINT OF PIPE JOINTS AND FITTINGS. THRUST BLOCKS ARE NOT AN ACCEPTABLE MEANS OF THRUST RESTRAINT, EXCEPT WHEN REQUIRED IN CONNECTING TO EXISTING WATER MAIN AND FOR INSTALLATION OF FIRE HYDRANTS. SEE SPECIFICATION SECTIONS 15100 AND 15130 FOR PIPE JOINT RESTRAINT REQUIREMENTS FOR DUCTILE IRON AND PVC PIPE.
12. COPPER CLAD STEEL TRACER WIRE REQUIRED ON INSTALLATION OF ALL PIPE. TRACER WIRE SHALL BE TAPPED TO PIPE OR POLYETHYLENE ENCASUREMENT AT A MINIMUM SPACING OF 10-FEET. SPLICES SHALL BE ENCASED IN WATERPROOF CONCRETE. WIRE AND CONNECTIONS ARE TO BE COMPLIABLE AND FROM THE SAME MANUFACTURER. DETECTABLE TAPE IS REQUIRED ONE FOOT ABOVE PIPE. CONTINUITY SHALL BE TESTED AFTER COMPLETION OF BACKFILL.
13. SELECT FILL MATERIAL REQUIRED FOR FINAL BACKFILL WHEN WITHIN 5-FEET OF PAVEMENT PER SPECIFICATION SECTION 02110.
14. MAINTAIN THE REQUIRED 10-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 SPECIFICATION SECTION 021600-01 FOR MORE INFORMATION.
15. 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' (3\"/>
3. SEE WATER MAIN JOINT RESTRAINT SCHEDULE ON SHEET C705.

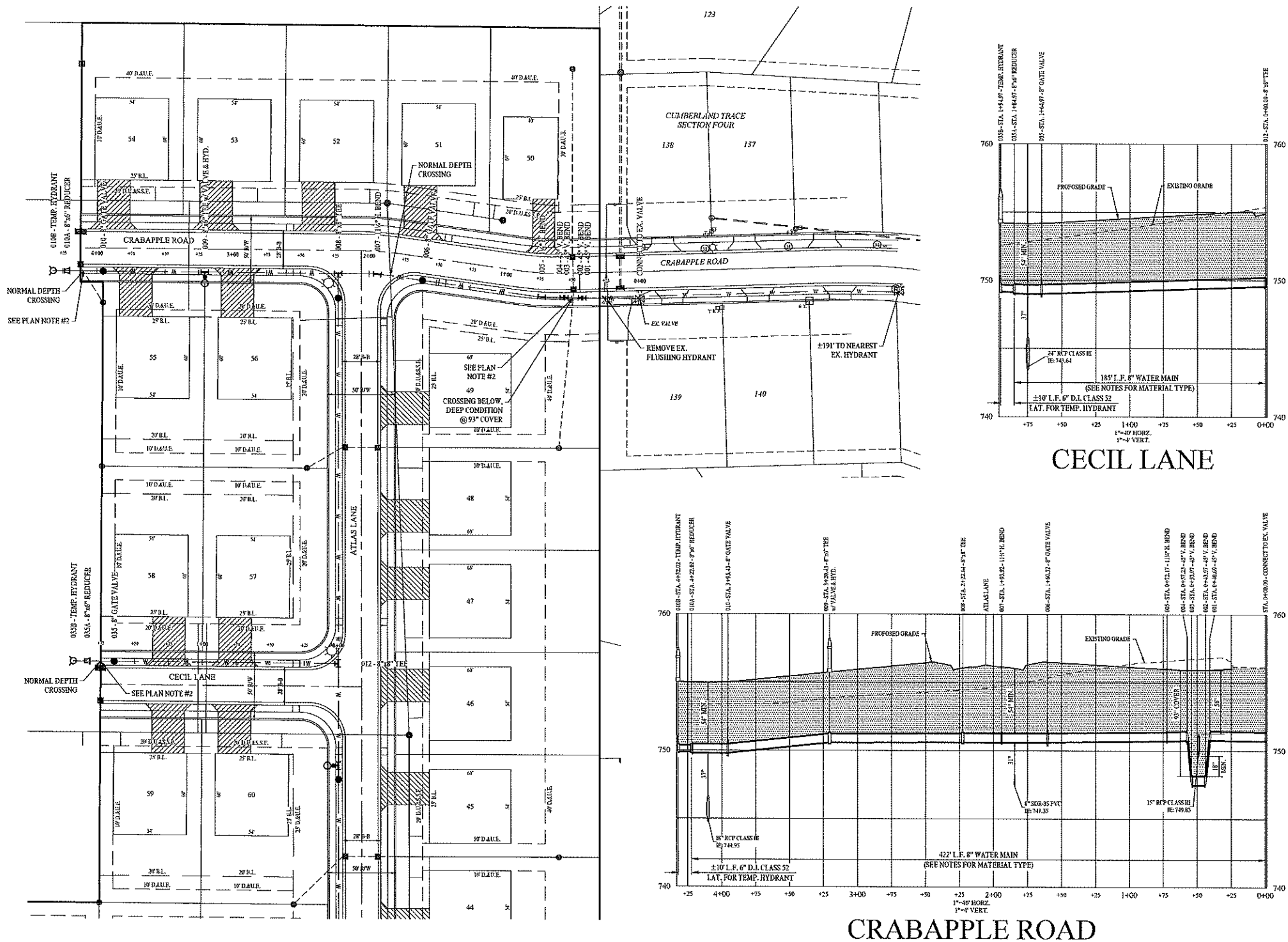


STOEPPELWERTH  
REGISTERED PROFESSIONAL ENGINEER  
No. 19358  
STATE OF INDIANA  
David J. Stoepfelwerth  
CERTIFIED: 12/02/21  
THIS DRAWING IS NOT INTENDED TO BE REPRESENTED AS A REFERENCE OR SURVEY OR A SURVEYOR LOCATION REPORT.

WATER PLAN & PROFILES  
WESTWIND at CUMBERLAND  
SECTION 1  
FRANKLIN, JOHNSON COUNTY, INDIANA

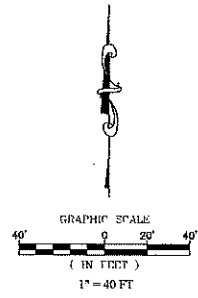
DRAWN BY: PDR  
CHECKED BY: BKR  
SHEET NO: C701  
SAAKNO: 91595ARB-S1





WATER MAIN PIPE TABLE		
SIZE	MATERIAL	LENGTH
6"	PVC C-900 DR-11, HOPE DR-11, OR D.I. THICKNESS CLASS 52	3,757 L.F.
6"	D.I. THICKNESS CLASS 52 LATERAL FOR TEMP. HYDRANT	30 L.F.
TOTAL LENGTH		3,787 L.F.

**BENCHMARK DATA**  
ORIGINATING BENCHMARK  
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONE-DIMENSIONAL POSITIONING USER SERVICE (NAD 83) AND ARE REFERENCED TO THE NAVD 83 DATUM.  
SITE TIE:  
TBM #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF CRABAPPLE ROAD. ELEV=154.54 (NAVD 83)  
TBM #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PINEAPPLE DRIVE AT THE WEST END OF THE ROAD. ELEV=154.42 (NAVD 83)  
TBM #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNDESIGNED LEFT STATION APPROXIMATELY 200 FEET WEST OF THE POINT AT THE SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO. ELEV=141.77 (NAVD 83)



LEGEND	
EXISTING FEATURES	
W	WATER MAIN
OHE	ELECTRICAL LINE, OVERHEAD
G	GAS MAIN
SS	SANITARY SEWER
SS	STORM SEWER
W	WATER, FIRE HYDRANT
W	WATER, VALVE
M	WATER, METER
G	GAS, VALVE
PROPOSED FEATURES	
W	WATER MAIN
SS	SANITARY SEWER
SS	STORM SEWER
W	HYDRANT w/ 6" VALVE
W	GATE VALVE
R	REDUCER
T	TEE
B	BEND, HORIZONTAL
V	BEND, VERTICAL

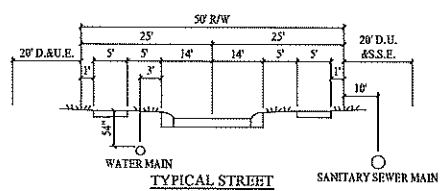
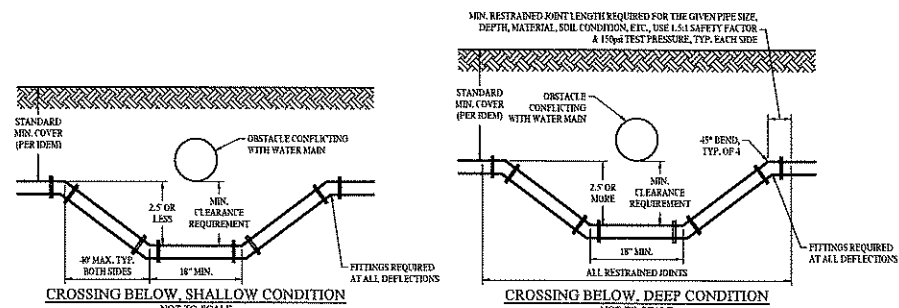
FOR SPEC'S ON ALL WATER-RELATED MATERIAL, STRUCTURE, ACCESSORY, INSTALLATION, HANDLING, ETC., CONTRACTOR TO REFER TO INDIANA AMERICAN WATER PIPELINE SPECIFICATIONS, LATEST REVISION.

**WATER UTILITY INSTALLATION NOTES**

- INSTALLATION OF WATER MAIN, FITTINGS, VALVES, FIRE HYDRANTS, AND APPURTENANCES SHALL BE IN ACCORDANCE WITH INDIANA AMERICAN WATER PIPELINE SPECIFICATIONS, LATEST REVISION.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER MAIN PRIOR TO CONSTRUCTION.
- AT THE POINT OF CONNECTION TO EXISTING WATER MAINS, A TAPPING ELBOW AND VALVE MAYBE REQUIRED TO BE INSTALLED TO THE EXISTING WATER MAIN. NO JOINTS SHALL BE SHOT DOWN WITHOUT IMPACTING CUSTOMERS. TO BE SUBMITTED AT THE PRE-CONSTRUCTION MEETING.
- FOR PVC C-900 PIPE INSTALLATION: DR-11 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 JOINTS IS REQUIRED, ALL JOINTS SHALL BE RESTRAINED WITH EXTERNAL SPIRIT SEPARATED RESTRAINT BARRIERS. SELECT FILL MATERIAL REQUIRED FOR BENDING AND EMBEDEDMENT REGARDLESS OF PIPES PROXIMITY TO PAVEMENT. PVC C-900 PIPE IS NOT ALLOWED FOR PIPES LARGER THAN 12-INCH.
- FOR DUCTILE IRON PIPE INSTALLATION: THICKNESS CLASS 52 FOR TYPICAL DISTRIBUTION MAINS 12-INCH NOMINAL SIZE AND SMALLER. WHEN RESTRAINT OF PIPE JOINTS ARE REQUIRED, FUSION RESTRAINTING GASKETS WITH INTEGRAL STAINLESS STEEL LOCKING SEGMENTS ARE PERMITTED ON PIPE-TO-PIPE CONNECTIONS 12-INCH NOMINAL SIZE AND SMALLER OR ONLY PIPE-TO-PIPE CONNECTIONS GREATER THAN 12-INCH NOMINAL SIZE SHALL BE RESTRAINED PER SPECIFICATION SECTION 1510.
- FOR HOPE PIPE INSTALLATION: HOPE DR-11 FOR SIZES 4-INCH AND LARGER, HOPE DR-11 FOR 3-INCH, AND 12-INCH FOR SIZES SMALLER THAN 3-INCH. HOPE BENDS, TEES, AND CROSSES ARE NOT ACCEPTABLE. PRESSURE TESTING OF HOPE PIPE DIFFERS FROM DUCTILE IRON AND PVC PIPE. SEE SPECIFICATION SECTION 1503-3.0. PIPE FUSION MUST BE COMPLETED BY CERTIFIED TECHNICIAN. CERTIFICATION TO BE SUBMITTED PRIOR TO PRE-CONSTRUCTION MEETING.
- ENCASE ALL DUCTILE IRON PIPING, DUCTILE IRON FITTINGS, VALVES, HYDRANTS, RESTRAINT BARRIERS, AND ALL OTHER METALLIC APPURTENANCES IN 12-INCH BLUE POLYETHYLENE.
- ALL PIPE HYDRANT LATERALS SHALL BE DUCTILE IRON PIPE.
- ALL MET BOLTS AND FLANGE BOLTS SHALL HAVE NYLON OR FLUOROPOLYMER CORROSION RESISTANT COATING.
- ALL FITTINGS SHALL BE RESTRAINED USING JOINT RESTRAINT GLANDS.
- THRUST RESTRAINT TO BE ACHIEVED THROUGH THE RESTRAINT OF PIPE JOINTS AND FITTINGS. THRUST BLOCKS ARE NOT AN ACCEPTABLE MEANS OF THRUST RESTRAINT, EXCEPT WHEN REQUIRED ON CONNECTION TO EXISTING WATER MAIN AND FOR INSTALLATION OF FIRE HYDRANTS. SEE SPECIFICATION SECTIONS 1510S AND 1512S FOR PIPE JOINT RESTRAINT REQUIREMENTS FOR DUCTILE IRON AND PVC PIPE.
- 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 CONNECTING WIRE AND CONNECTIONS ARE TO BE COMPARABLE AND FROM THE SAME MANUFACTURER. DETECTABLE TAPE IS REQUIRED ONE FOOT ABOVE PIPE. CONTINUITY SHALL BE TESTED AFTER COMPLETION OF BACKFILL.
- SELECT FILL MATERIAL REQUIRED FOR FINAL BACKFILL WHEN WITHIN 5-FEET OF PAVEMENT PER SPECIFICATION SECTION 0210.
- MAINTAIN THE REQUIRED 18-INCH 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 0210 AC 8.3.2.4 OF THE INDIANA ADMINISTRATIVE CODE FOR MORE INFORMATION.
- MAINTAIN MINIMUM COVER DEPTH OF 54" AND A MAXIMUM OF 54"±24", UNLESS OTHERWISE SPECIFIED.

**PLAN NOTES**

- WATER MAIN PIPE SHALL BE PVC C-900 DR-11, HOPE 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.
- CONTRACTOR SHALL MAINTAIN A MINIMUM OF 7' (21'±10' 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.
- SEE WATER MAIN JOINT RESTRAINT SCHEDULE ON SHEET C705.



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

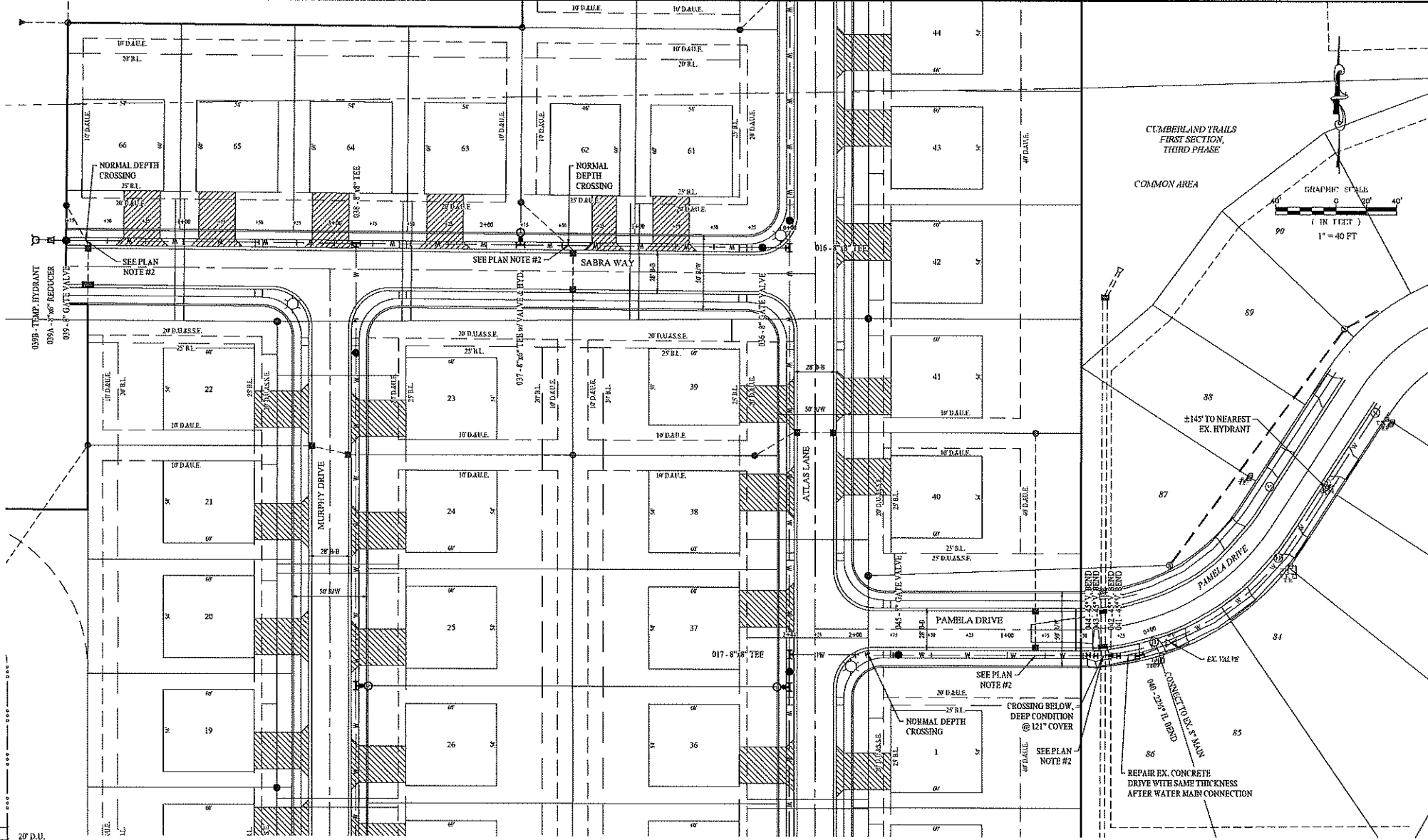
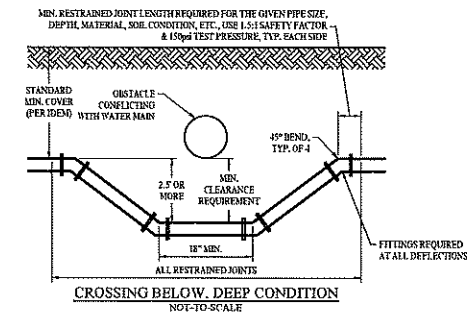
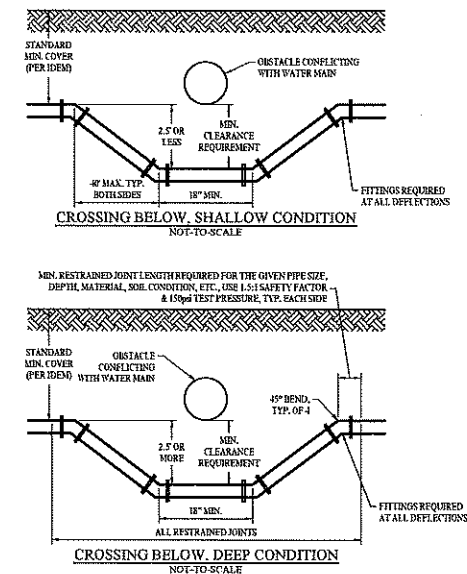
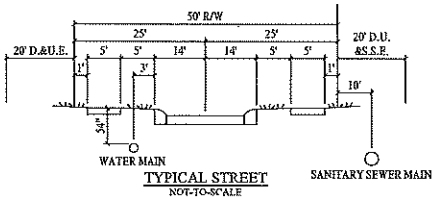
DAVID J. STOEPPELWERTH  
REGISTERED PROFESSIONAL ENGINEER  
No. 19358  
STATE OF INDIANA  
CERTIFIED: 12/02/21  
David J. Stoepfelwirth

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WATER PLAN & PROFILES  
WESTWIND at CUMBERLAND  
SECTION 1  
FRANKLIN, FRANKLIN TOWNSHIP  
JOHNSON COUNTY, INDIANA

DRAWN BY: PDR  
CHECKED BY: BKR  
SHEET NO: C703  
3 E A KIN 300  
91595ARB-S1

BENCHMARK DATA	
ORIGINATING BENCHMARK	
BENCHMARK ELEVATIONS FOR THIS PROJECT WERE DERIVED USING THE NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (NAD 83) AND ARE REFERENCED TO THE NAD 83 DATUM.	
SIDE TIE:	
TIME #1: A CUT SQUARE AT THE NORTHWEST CORNER OF THE CONCRETE TURN AROUND ON THE NORTH SIDE OF CRADAPLE ROAD. ELEV=756.54 (NAD 83)	
TIME #2: A CUT SQUARE AT THE SOUTHWEST CORNER OF THE CONCRETE SIDEWALK ON THE NORTH SIDE OF PAMELA DRIVE AT THE WEST END OF THE ROAD. ELEV=754.00 (NAD 83)	
TIME #3: A CUT SQUARE IN THE CONCRETE TOP OF AN UNBARRICADED LEFT TURN APPROXIMATELY 200 FEET WEST OF THE POND AT THE SOUTH END OF CUMBERLAND TRAILS, SECTION ONE, PHASE TWO. ELEV=741.71 (NAD 83)	



LEGEND	
EXISTING FEATURES	
W	WATER MAIN
OH	ELECTRICAL LINE, OVERHEAD
G	GAS MAIN
SS	SANITARY SEWER
SW	STORM SEWER
WV	WATER, FIRE HYDRANT
WM	WATER, METER
GV	GAS, VALVE
PROPOSED FEATURES	
W	WATER MAIN
SS	SANITARY SEWER
SW	STORM SEWER
WV	HYDRANT w/ 6" VALVE
WM	REDUCER
WV	TEE
WV	BEND, HORIZONTAL
WV	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.

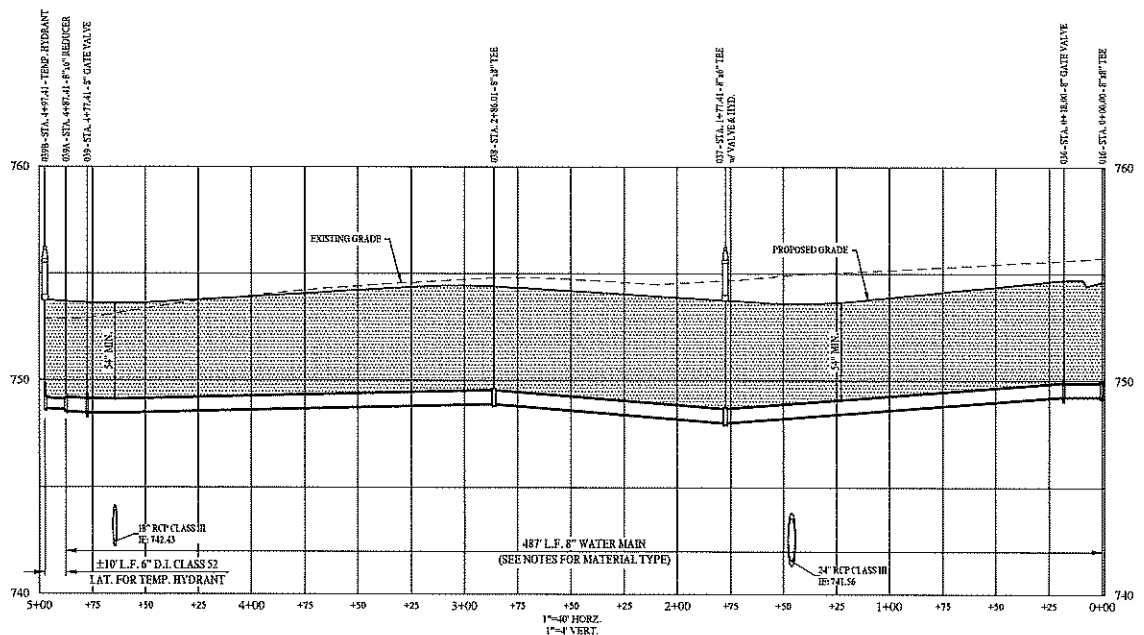
#### WATER UTILITY INSTALLATION NOTES

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. AT THE POINT OF CONNECTION TO EXISTING WATER MAINS, A TAPPING ELBOW AND VALVE MAYBE REQUIRED TO BE INSTALLED IF THE EXISTING WATER MAIN CANNOT BE SHUT DOWN WITHOUT IMPACTING CUSTOMERS, TO BE OBTAINED AT THE PRE-CONSTRUCTION MEETING.
4. FOR PVC 600 PIPE INSTALLATION, DR14 PIPE IS REQUIRED. DEFLECTION OF PIPE JOINTS AND BENDING OF PIPES ARE NOT PERMITTED. ALL ANGLES SHALL BE MADE WITH PROPER FITTING. WHEN RESTRAINT OF PIPE-TO-PIPE JOINTS ARE REQUIRED, ALL JOINTS SHALL BE RESTRAINED WITH EXTERNAL SELF-SEALING RESTRAINT HARNESSES. SELECT FILL MATERIAL REQUIRED FOR BEDDING AND EMBEDEDMENT. REMAINERS OF PIPES FROM 10' TO PAVEMENT. PVC 600 PIPE IS NOT ALLOWED FOR PIPES LARGER THAN 18-INCH.
5. FOR DUCTILE IRON PIPE INSTALLATION, THICKNESS CLASS 52 FOR TYPICAL DISTRIBUTION MAINS IS 18-INCH. NON-BELL END AND SMALL END. 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 15.08.
6. FOR HOPE PIPE INSTALLATION, LIPS DR1 FOR SIZES 18-INCH AND LARGER, DR10 FOR 24-INCH, AND C/D 200 FOR SIZES SMALLER THAN 18-INCH. HOPE BENDS, TEES, AND CROSSES ARE NOT ACCEPTABLE. PRESSURE TESTING OF HOPE PIPE DIFFERS FROM DUCTILE IRON AND PVC PIPE. SEE SPECIFICATION SECTION 15.08-1.0. PIPE FUSION MUST BE COMPLETED BY CERTIFIED TECHNICIANS. CERTIFICATION TO BE SUBMITTED PRIOR TO PRE-CONSTRUCTION MEETING.
7. ENCASE ALL DUCTILE IRON PIPING, DUCTILE IRON FITTINGS, VALVES, HYDRANTS, RESTRAINT HARNESSES, AND ALL OTHER METALLIC APPURTENANCES IN 12-INCH BLUE POLYETHYLENE.
8. ALL FIRE HYDRANT LATERALS SHALL BE DUCTILE IRON PIPE.
9. ALL 18" AND 24" FLANGES SHALL HAVE DAY EXTERNAL OR FLANGORITE W/ CORROSION RESISTANT COATING.
10. ALL FITTINGS SHALL BE RESTRAINED USING ANKERS AND RINGS.
11. THIRST RESTRAINT TO BE ACHIEVED THROUGH THE RESTRAINT OF PIPE JOINTS AND FITTINGS. THIRST BLOCKS ARE NOT AN ACCEPTABLE MEANS OF THIRST RESTRAINT, EXCEPT WHEN REQUIRED IN CONNECTION TO EXISTING WATER MAIN AND FOR INSTALLATION OF FIRE HYDRANTS. SEE SPECIFICATION SECTIONS 15.05 AND 15.10 FOR PIPE JOINT RESTRAINT REQUIREMENTS FOR DUCTILE IRON AND PVC PIPE.
12. COVER-CLAD STEEL TRACKERS ARE 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 CONNECTOR. WIRE AND CONNECTORS ARE TO BE COMPATIBLE AND FROM THE SAME MANUFACTURER. DETECTABLE TAPE IS REQUIRED ONE FOOT ABOVE PIPE. CONTINUITY SHALL BE TESTED AFTER COMPLETION OF BACKFILL.
13. SELECT FILL MATERIAL REQUIRED FOR FINAL BACKFILL WHEN WITHIN 5-FOOT OF PAVEMENT PER SPECIFICATION SECTION 02.06.
14. MAINTAIN THE REQUIRED 18-FOOT OF HORIZONTAL SEPARATION AND 18-ANCHES OF VERTICAL SEPARATION FROM SANITARY AND STORM SEWERS. MAINTAIN 6-FOOT OF HORIZONTAL SEPARATION FROM SANITARY AND STORM STRUCTURES. SEE SPECIFICATION SECTION 15.08 AND 15.10 FOR PIPE JOINT RESTRAINT REQUIREMENTS FOR DUCTILE IRON AND PVC PIPE.
15. MAINTAIN MINIMUM COVER DEPTH OF 5' AND A MAXIMUM OF 5'±24", UNLESS OTHERWISE NOTED.

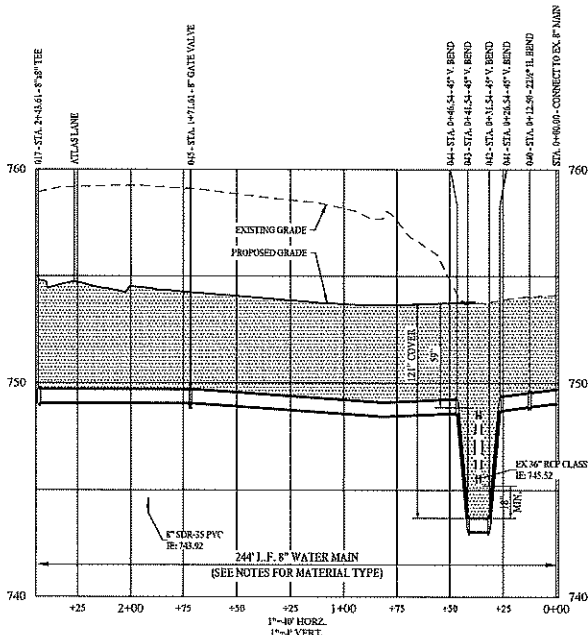
#### PLAN NOTES

1. WATER MAIN PIPE SHALL BE PVC 600 DR-14, HOPE 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 ON SAID STORM STRUCTURE.
3. SEE WATER MAIN JOINT RESTRAINT SCHEDULE ON SHEET C705.

WATER MAIN PIPE TABLE		
SIZE	MATERIAL	LENGTH
6"	PVC 600 DR-14, HOPE DR-11, OR D.I. THICKNESS CLASS 52	3,757 L.F.
6"	D.I. THICKNESS CLASS 52 LATERAL FOR TEMP. HYDRANT	30 L.F.
TOTAL LENGTH		3,787 L.F.



SABRA WAY



PAMELA DRIVE



STOEPELWERTH

ALWAYS ON

7945 East 106th Street, Fishers, IN 46038-2105  
Phone: 317.840.2965 Fax: 317.840.2962

WATER PLAN & PROFILES

WESTWIND at CUMBERLAND

SECTION 1

FRANKLIN TOWNSHIP

JOHNSON COUNTY, INDIANA

DAVID J. STOEPELWERTH

REGISTERED PROFESSIONAL ENGINEER

No. 19358

STATE OF INDIANA

12/02/21

David J. Stoepelwerth

DRAWN BY: PDR

CHECKED BY: BKR

DATE: 11/30/21

BY: [Signature]

C704

5-A-A-RB-NO

91595ARB-S1





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 surface 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 Surfaces

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, waterbound macadam, oil-bound 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 material, acceptable to the City Engineer and DPW, to 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 uninterrupted 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 replaced with the site of the work.

C. Temporary Pavement Reinforcement

Trench surfaces of highly traveled streets and roads may be, at the direction of DPW, required to receive a temporary pavement reinforcement of cold mixed bituminous pavement. This temporary pavement shall be surface estimate Class A or B prepared and placed in accordance with Section 406 - Cold Mix Road 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 in proper grade so as not to impede the safe flow of traffic until the permanent pavement replacement is made.

D. Permanent Paving

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 restored according to the following requirements:

Avoid 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 tieups of 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, wetted down and edges swept. The use of flexible joint material is required at needed. All chunks of existing material larger than three (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 or W1.4 meeting ASTM Designation #97). The concrete layer shall be six inches thick. All right 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 restored with binder and surface of the thickness specified and as follows:

Areas subject to Class C asphalt pavement replacement shall have the existing edges (those 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 by three (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 cutback, it shall be re-compacted with a 100-ton roller or other suitable equipment if approved by the City Engineer. Care shall be taken to ensure that not less than six (6) inches of compacted 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 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 trenches 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 Noted/Not by Resurfacing

The shoulder 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 Gravel Surfaces

All gravel 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, stone, shells, 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 Gravel Areas with Seed

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

2. Restoration of Gravel Areas with Seed and Mulch

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

- 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:

- 35% Kentucky Bluegrass  
30% Perennial Ryegrass (Lolium Perenne)  
35% Kentucky 31 Fescue  
5% Iron Chloride

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

- b. Matching Material: Materials for mulching shall be wheat, oats, barley or rye straw only. All materials shall be reasonably free from weed seeds, foreign material, and other grains and chaff, and shall contain no Johnson Grass. The straw shall be reasonably bright in color and shall not be moldy, rotting, caked, or of otherwise low quality. The straw shall be dry on delivery, and spread evenly.

Match not 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 grass mat, straw woven with a strap consisting of one (1) pair of straps per two (2) inches and a filling consisting of two (2) pairs inch. Subgrade edges and corners shall be reinforced with polyethylene filament. The material shall have a minimum width of forty-five (45) inches.

SECTION 9

INSPECTION, TESTING AND ACCEPTANCE

9.01 General

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

Convention permits for railway 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 services 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 ft/day  
Final Inspection = Verification of As-Built = 6 hours  
Inspection Time = 20 - 30 hrs/week

Where a lift station is required, additional time for the inspection during construction and final startup 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 to-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 may be present during all final tests.

Sewers whose crowns are below ground water level at times of testing shall be tested by infiltration. Where crown of pipe is above ground water level, sewers shall be tested for exfiltration. If ground water level varies during period of construction, sewers may be tested for both. Spans are not to be tested for Final Acceptance until complete.

Immediately preceding all leakage tests (infiltration, exfiltration and air) the sewer to be tested shall be cleaned by flushing a ball through the line. Contractor shall furnish an inflatable rubber ball of a size that will inflate to fit snugly into the pipe to be tested. The ball may, 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 flowing. 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 constant section of sewer shall be isolated between manholes. The open section of sewer shall be plugged watertight 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 during the test twenty-four (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 gallons/mile.

3. Exfiltration Tests

A section or sections of sanitary sewer between manholes shall be isolated by water tight bulkhead. 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 water to stabilize on the right of the section shall be refilled with water to the original level. After one (1) hour more, the volume of water lost in this 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 inch of sewer per inch of pipe diameter (0.158 gph/in/100 ft.).

5. Low Pressure Air Testing

For gravity sanitary sewers installed with the 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 faults.

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, recently cleaned and without the integral test pressure. Each plug or cap shall be readily removable, and their removal shall provide a socket suitable for making a flexible-jointed lateral connection or extension.

Air shall be securely bled to prevent possible blowout due to internal air pressure. One plug shall have an inlet tap, or other provision for connecting a hose 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 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 watch 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:

$$T = \frac{0.0850 \cdot D^3 \cdot Q}{Q}$$

Where: T = Time in seconds

K = 0.0419 D³ DL, but not less than 10

Q = Rate of loss (40.00 cfm/in. ft. of internal surface)

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. Joints shall be isolated with an expanding shield equipped with baskets which fit tightly against pipe walls 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 measured time interval for the pressure to drop from 3.5 psig to 2.5 psig is less than the required time as calculated, one or 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 Leakage

If infiltration or exfiltration rate of 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. Under no circumstances will granting be considered an acceptable means of repair. When repairs have been completed, but not more than thirty (30) days after first test, sewer section 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 of television inspection or by color photography with equipment 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 review 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 or necessary to develop actual program for inspection and repair. Contractor shall not proceed to repair line until he receives written permission to proceed from City Engineer, DPW or DPW's representative. All inspections, repairs, repair, 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 jamming of certain or all sections. Jamming must show a "full crown" and no excessive puddling effects in the span.

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/ABS 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 after 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 pipes exceeding this deflection shall be considered to have reached the limit of this serviceability and shall be relaid or replaced by the Owner/Contractor.

The rest 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 manhole, sphere, 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 manufacturer's recommended size. A version of ten (10) inches of mercury shall be drawn and the vacuum gauge shall be checked and specifically without the aid of mechanical devices.

C. Sanitary 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 cylinder to seal the manhole at the manhole frame, and a vacuum pump. A vacuum gauge shall be located in-line between the test cylinder 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 low 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 checked in place so as not to meet during the test. The vacuum testing cylinder 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 = 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 add 2' add:	5 7 8

Contractor shall submit to the DPW the results of each manhole vacuum test. Each report 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 repaired by Contractor and retested 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 sewer. 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 tying 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 jammed, 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 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 5.727 IAC 15-5 for land alteration which disturbs 5 acres or more.

10.02 Permitting Requirements

If the Owner/Contractor is required to submit a soil erosion control plan to the State under Rule 5.027 IAC 15-5A, 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, letters of intent, submittals, plans and other erosion and sediment control related information shall be submitted to the DPW and City Engineer.

10.03 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 site 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. Three 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 stockpiles shall be stabilized utilizing either vegetative establishment, sediment trapping barriers, or erosion control structures such as burlap 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 areas, roads and stream crossings shall be identified on the site erosion 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 mowing 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 projects. 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 - Established areas which are in a final grade shall be permanent seeded within seven (7) days. At the discretion of the DPW, barren areas to be rough graded and left undisturbed for more than thirty (30) days shall be established with temporary vegetation, and dormant seedlings will be required during seasonal periods (October through February) for those barren areas to be left undisturbed for one hundred and twenty (120) days or longer.
- C. Slope Protection - Slope protection shall be provided by use of temporary and permanent diversion levees, vegetative cover, and slope drains. Concentrated streamer 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 leaving a development site shall be confined to an open channel, storm sewer pipe or culvert which is capable of receiving this discharge. Runoff velocities shall be controlled during all storm events 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 are to be followed in the development of all control plans. Rule 5 does not give specific requirements for use of various practices leaving that 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 (HIEDCA) 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  
Division of Soil Conservation  
Indiana Department of Natural Resources  
402 West Washington Street, Room W-285  
Indianapolis, Indiana 46204-2748

STOEPPELWERTH  
ALWAYS ON  
7945 East 16th Street, Fisher, IN 46038-2905  
phone: 317.840.5795 fax: 317.849.5942

CONSTRUCTION DETAILS  
WESTWIND at CUMBERLAND  
SECTION 1

DRAWN BY: PDR  
CHECKED BY: BKR  
SHEET NO  
C800B  
2 & A KWD  
91595ARB-S1

JOHNSON COUNTY, INDIANA  
FRANKLIN TOWNSHIP

DATE: NAOK  
REVISIONS

BY

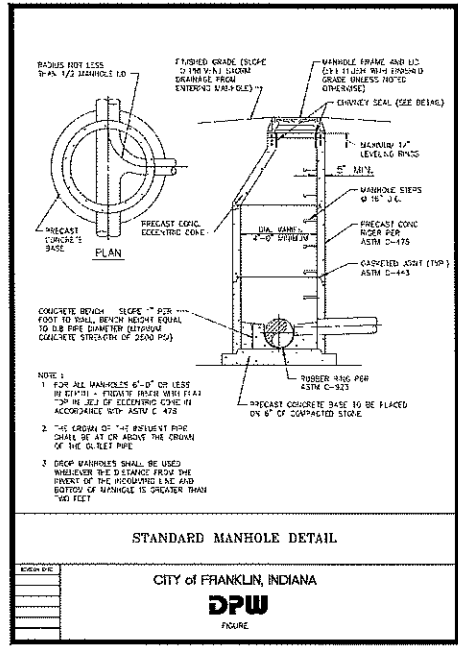


Illustration 5-1

CITY OF FRANKLIN - STANDARD SPECIFICATIONS

1-33

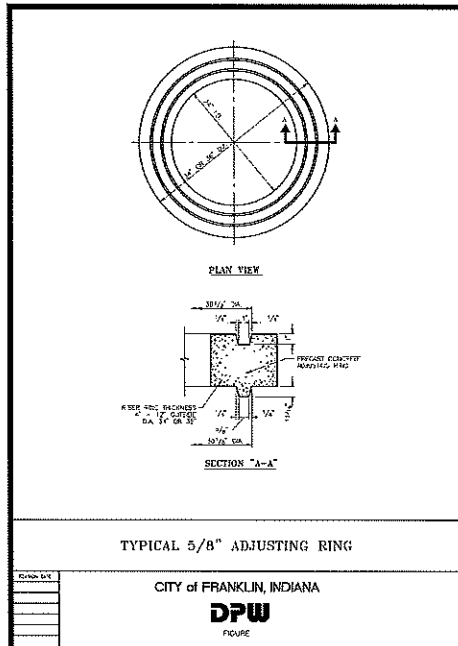


Illustration 5-6

CITY OF FRANKLIN - STANDARD SPECIFICATIONS

1-38

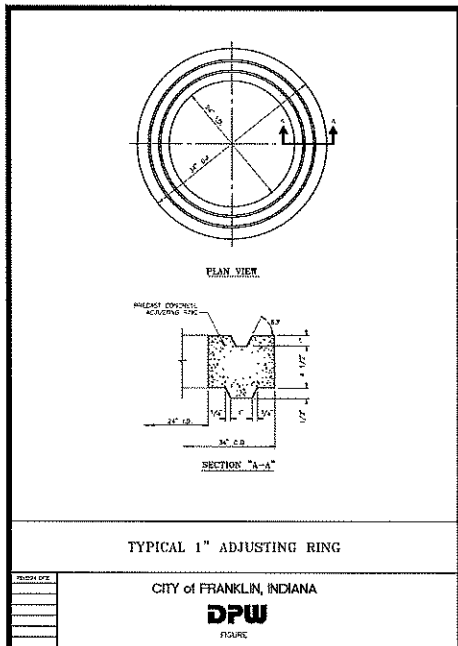


Illustration 5-7

CITY OF FRANKLIN - STANDARD SPECIFICATIONS

1-39

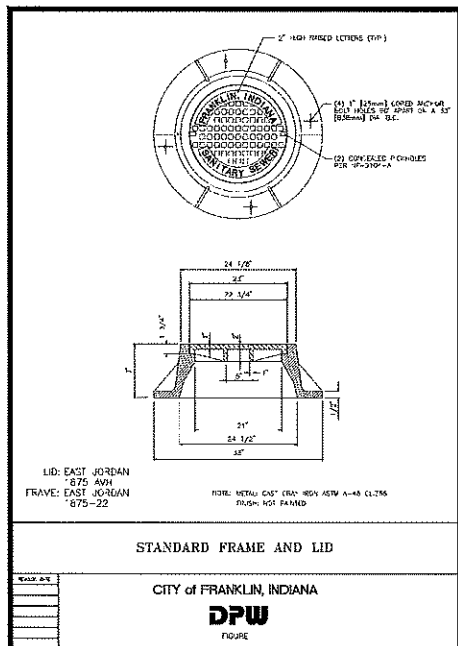


Illustration 5-8

CITY OF FRANKLIN - STANDARD SPECIFICATIONS

1-40

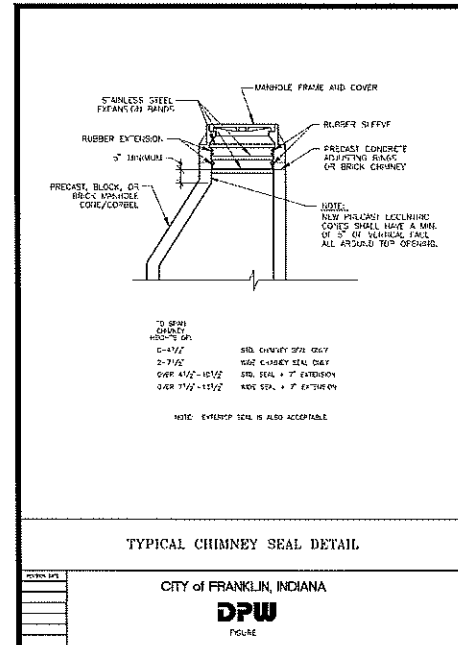


Illustration 5-10

CITY OF FRANKLIN - STANDARD SPECIFICATIONS

1-42

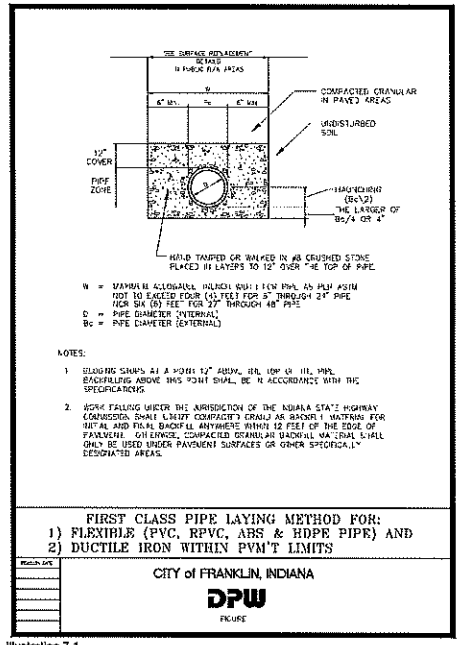


Illustration 7-1

CITY OF FRANKLIN - STANDARD SPECIFICATIONS

1-70

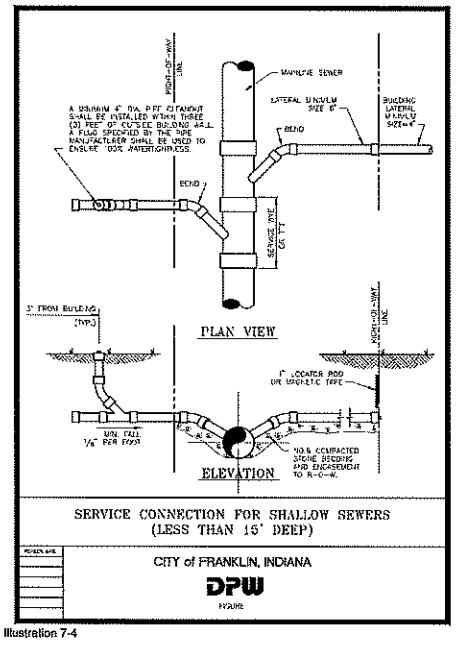
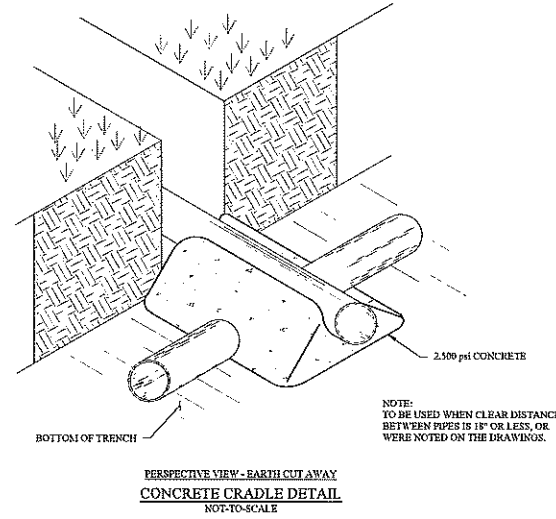


Illustration 7-4

CITY OF FRANKLIN - STANDARD SPECIFICATIONS

1-73



STOEPPELWERTH

ALWAYS ON

7945 East 108th Street, Fishers, IN 46038-1305  
phone: 317.490.5905 fax: 317.490.2942

CONSTRUCTION DETAILS

WESTWIND at CUMBERLAND

SECTION 1

FRANKLIN, FRANKLIN TOWNSHIP

JOHNSON COUNTY, INDIANA

CONSTRUCTION DETAILS

WESTWIND at CUMBERLAND

SECTION 1

FRANKLIN, FRANKLIN TOWNSHIP

DRAWN BY: PDR

CHECKED BY: BKR

SHEET NO.

C800C

SCALE: AS SHOWN

91595ARB-S1

THIS DRAWING IS NOT INTENDED TO BE USED FOR ANY OTHER PROJECT OR FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN CONSENT OF STOEPPELWERTH & ASSOCIATES, INC.

DAVID J. STOEPPELWERTH

REGISTERED PROFESSIONAL ENGINEER

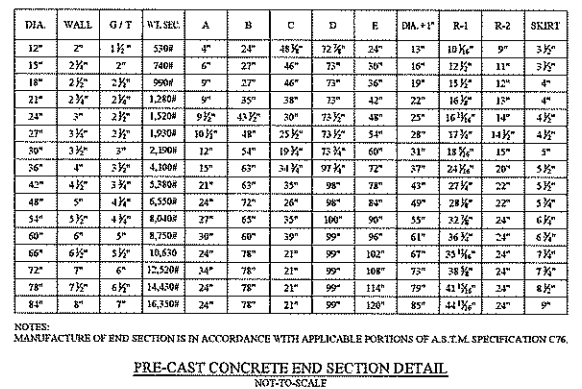
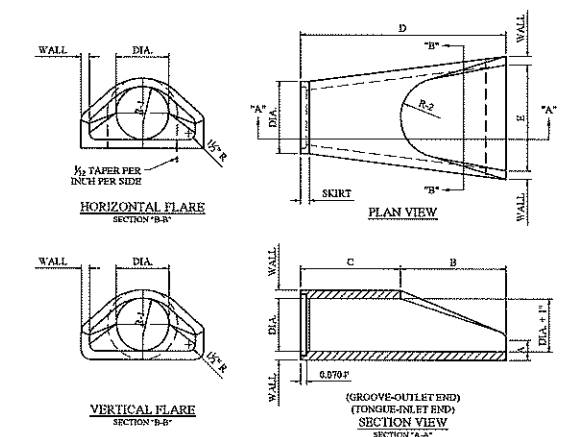
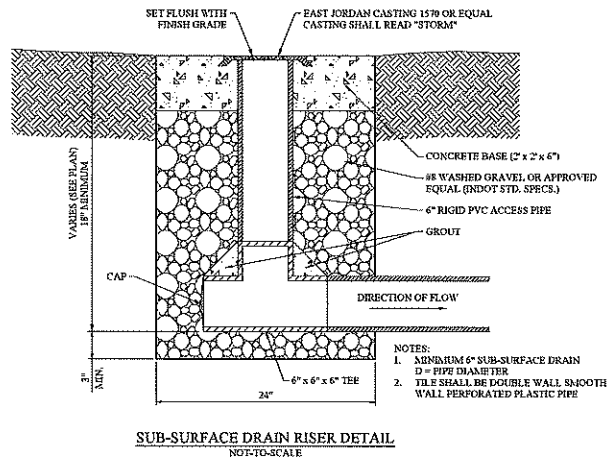
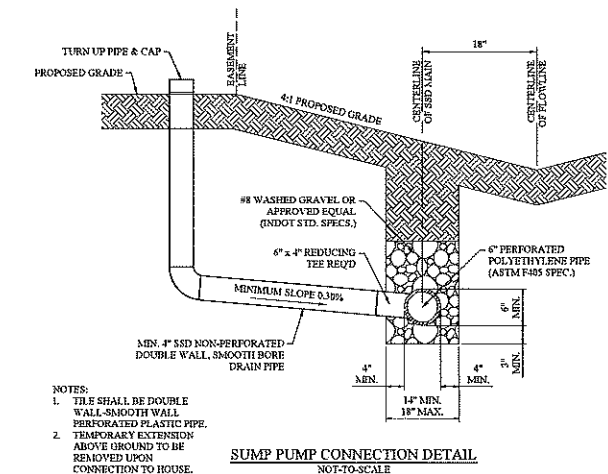
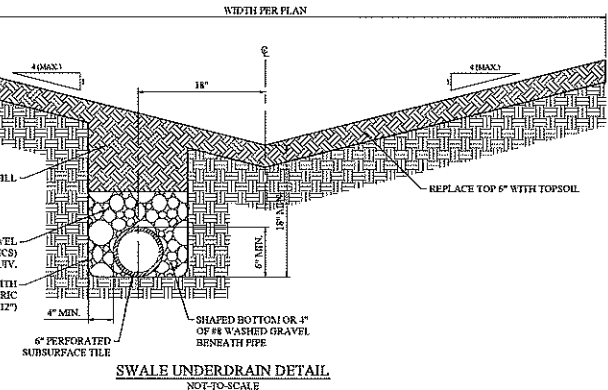
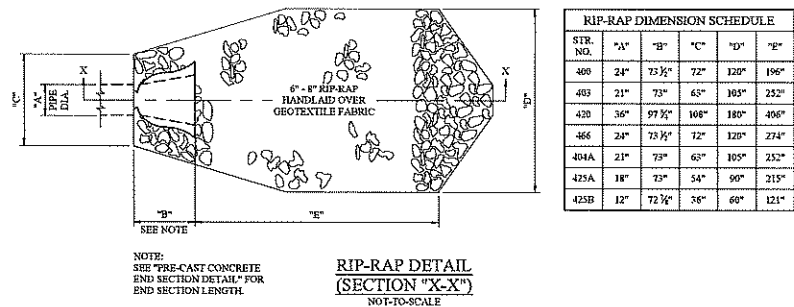
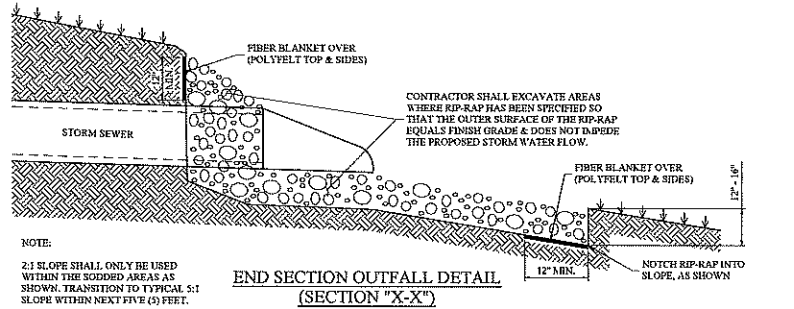
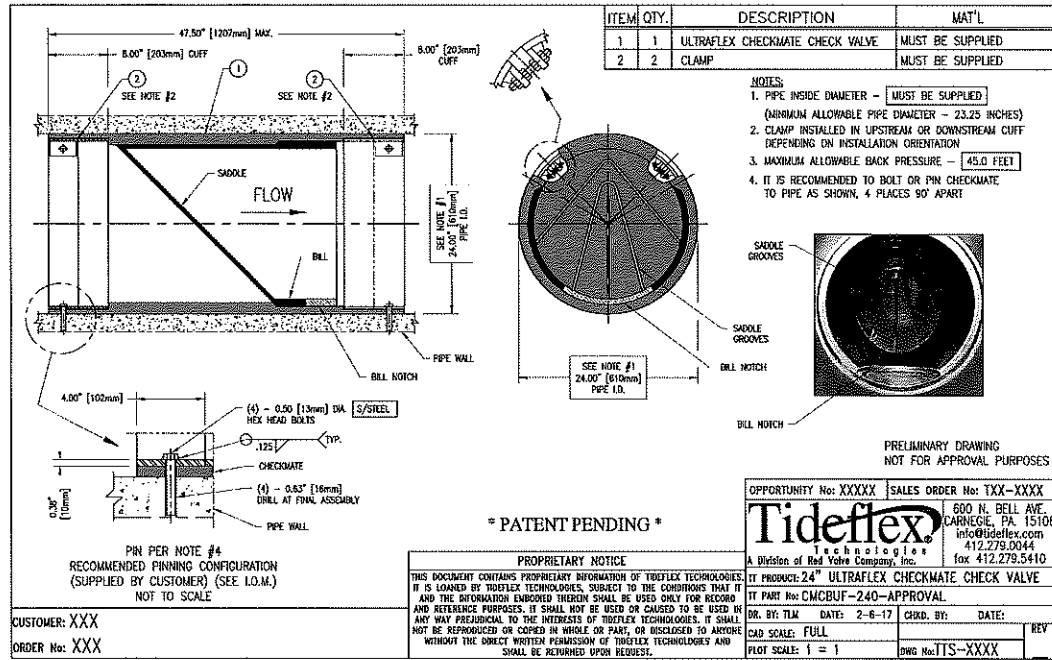
No. 19358

STATE OF INDIANA

CERTIFIED: 12/02/21

David J. Stoepfelwerth





STOEPPELWERTH

CONSTRUCTION DETAILS  
WESTWIND at CUMBERLAND  
SECTION 1  
FRANKLIN, FRANKLIN TOWNSHIP  
JOHNSON COUNTY, INDIANA

C801B  
S.A. & B. NO  
91595ARB-S1

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

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

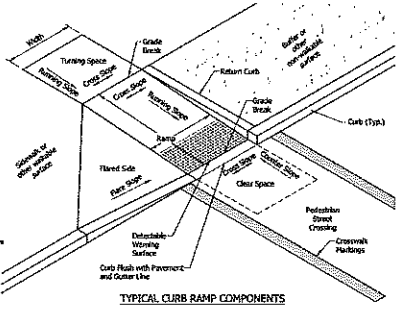
CERTIFIED: 12/02/21  
David J. Stoepelwerth

BY: [Signature]  
DATE: [Blank]  
REVISIONS: [Blank]

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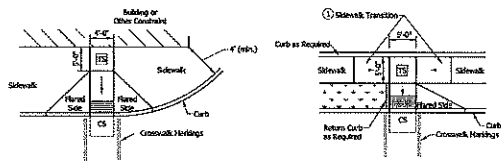
**GENERAL NOTES:**

- [illegible]



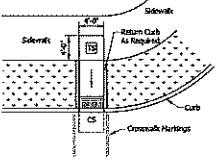
### TYPICAL CURB RAMP COMPONENTS

INDIANA DEPARTMENT OF TRANSPORTATION		
CURB RAMP DRAWING INDEX AND GENERAL NOTES		
SEPTEMBER 2018		
STANDARD DRAWING NO.		E 604-SWCR-01
	<i>Elizbeth W. Phillips</i>	03/29/18
	DESIGN STANDARDS ENGINEER	DATE
	<i>John Locke</i>	04/25/18
	CHIEF ENGINEER	DATE



**PERPENDICULAR CURB RAMP  
ADJACENT WALKABLE SURFACE**

### TIERED PERPENDICULAR CURB RAMP



PERPENDICULAR CURB RAMP  
ADJACENT NON-WALKABLE SURFACE

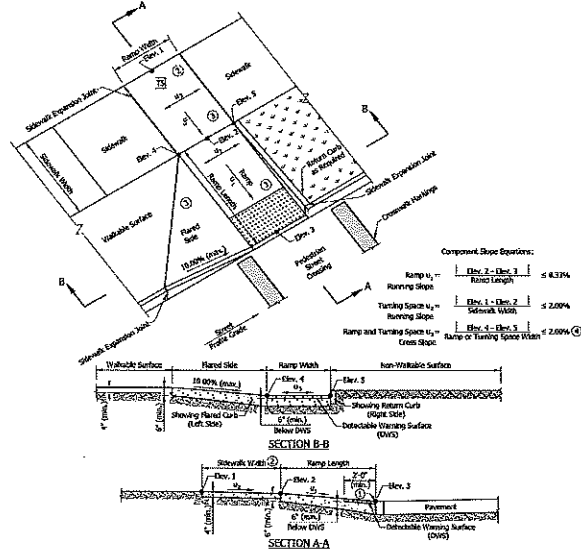
**NOTES:**

- ① Where insufficient width between the curb and back of sidewalk prevents 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 0.33%. See Standard Drawing Series E-604-SIDWALK for sidewalk details.
2. 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 running slope.

**LEGEND:**

-  Buffer or Other Non-Valuable Surface

INDIANA DEPARTMENT OF TRANSPORTATION		
PERPENDICULAR CURB RAMP TYPICAL PLACEMENT		
SEPTEMBER 2018		
STANDARD DRAWING NO.		E 604-SWCR-02
	<i>Elizabeth W. Phillips</i> DESIGN STANDARDIZATION ENGINEER	01/29/19 DATE
	<i>John Leckie</i> CHIEF ENGINEER	04/23/18 DATE



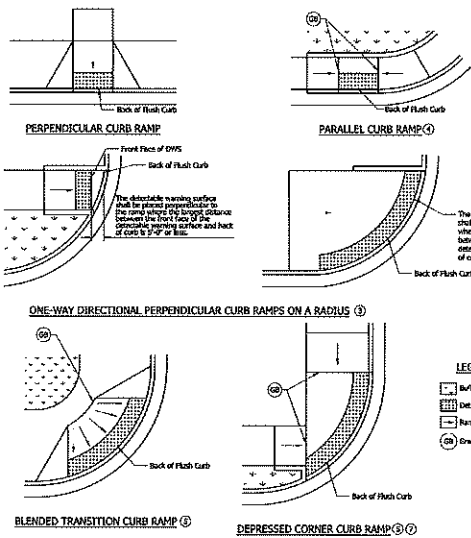
**NOTES:**

- ① The bottom edge of the ramp and top of curb shall be flush with the edge of adjacent pavement and gutter line;
- ② 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. When a normal perpendicular curb ramp is used, a constrained turning space shall have a minimum clear dimension of 5 ft x 5 ft.
- ③ Curb ramp surface shall be convex barrel treatment to the running slope.
- ④ See Standard Drawing E 604-SWCR-01 for cross slope exceptions.
- ⑤ See Standard Drawing E 604-SWCR-12, -13, and -14 for Detectable Warning Surface placement, configuration, and details.
- ⑥ See Standard Drawing E 604-CSS-01 for sidewalk expansion joint details.

**LEGEND:**

- 
- Buffer or Other Non-Valuable Surface

INDIANA DEPARTMENT OF TRANSPORTATION									
PERPENDICULAR CURB RAMP COMPONENT DETAILS									
SEPTEMBER 2018									
STANDARD DRAWING NO.	E 604-SWCR-04								
	<table border="0"> <tr> <td><i>Elizabeth W. Phillips</i></td> <td>03/29/18</td> </tr> <tr> <td>DESIGN STANDARDS ENGINEER</td> <td>DATE</td> </tr> <tr> <td><i>John Eckert</i></td> <td>04/25/18</td> </tr> <tr> <td>CHECK ENGINEER</td> <td>DATE</td> </tr> </table>	<i>Elizabeth W. Phillips</i>	03/29/18	DESIGN STANDARDS ENGINEER	DATE	<i>John Eckert</i>	04/25/18	CHECK ENGINEER	DATE
<i>Elizabeth W. Phillips</i>	03/29/18								
DESIGN STANDARDS ENGINEER	DATE								
<i>John Eckert</i>	04/25/18								
CHECK ENGINEER	DATE								

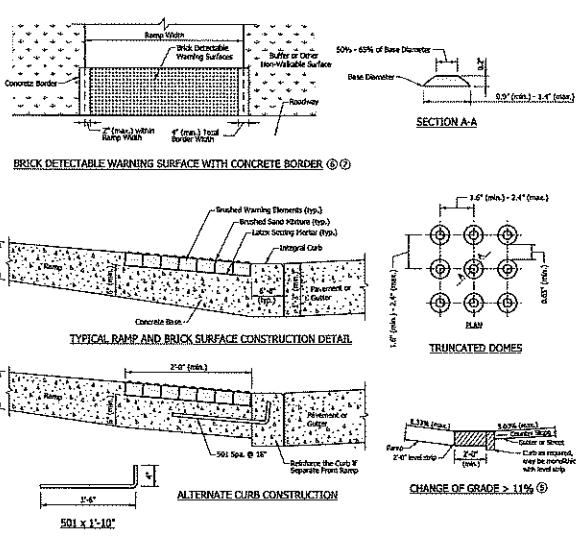


**NOTES:**

- 1 The detectable warning surface shall be placed at the curb, edge, highway, or railroad crossing. See Standard Drawing 6-604-12EW-03 for a detectable warning surface placement at a railroad crossing.
- 2 The detectable warning surface shall extend a minimum of 17 m (56 ft) in the direction of pedestrian travel and extend the full width as shown. The detectable surface shall not be placed over a grade break.
- 3 Where the distance from the face of the detectable warning surface to 5 ft or less from the back of curb, the detectable warning surface shall be placed perpendicular to the ramp. Where the distance from the back of curb to the face of the detectable warning surface is greater than 5 ft, the detectable warning surface shall be placed at the back of the curb. See Standard Drawing 6-604-12EW-03 for alternate placement of detectable warning surface placement.
- 4 The detectable warning surface on a spalled curb ramp shall be placed on the landing space at the flush transition between the street and ramp.
- 5 The detectable warning surface on a elevated transition or depressed curb shall be placed at the back of curb as shown or in an alternate placement. See Standard Drawing 6-604-12EW-03 for alternate detectable warning surface placement.
- 6 See Standard Drawing 6-604-12EW-03 for alternate warning surface details.

## INDIANA DEPARTMENT OF TRANSPORTATION

DETECTABLE WARNING SURFACE PLACEMENT AND CONFIGURATION SEPTEMBER 2018 STANDARD DRAWING NO. E 604-SWCR-12	
	/s/ Elizabeth W. Phillips 03/29/19 DESIGN STRUCTURES ENGINEER DATE  /s/ John Cordis 04/25/19 CDRR ENGINEER DATE



**NOTES:**

1. Detachable water surface shall consist of flat, rounded dome. Dome shall be aligned in a square or radial grid pattern, with diameter and center-to-center spacing within the ranges specified.
2. The detachable water surface may be held out. Truncated dome spacing between adjacent ponds shall be within the ranges specified.
3. The detachable water surface shall connect visually with adjacent water surface.
4. The detachable water surface shall extend a minimum of 2 ft in the direction of pedestrian travel and extend the full width of the walk. The detachable water surface shall not be placed across a grade break.
5. The maximum clear height of the actor or object above the bottom of the ramp shall be 10 ft. When the alignment is horizontal, the maximum height shall be the maximum height of the alignment. When the alignment is sloped, the maximum height shall be the maximum height of the alignment plus the vertical clearance of the alignment.
6. When a concrete border is used for forming, the border shall be cast continuously with the curb and concrete shall be finished with the curb. The border shall not be wider than 24 in. and shall be finished with the curb.
7. When forming other than a concrete border is used, the edge restraint shall not encroach upon the reset itself.

## INDIANA DEPARTMENT OF TRANSPORTATION

DETECTABLE WARNING SURFACE DETAILS									
SEPTEMBER 2018									
STANDARD DRAWING NO. E 604-SWCR-14									
	<table border="0"> <tr> <td><i>/s/ Elizabeth W. Phillips</i></td> <td>03/29/18</td> </tr> <tr> <td>DESIGN STANDARDS ENGINEER</td> <td>DATE</td> </tr> <tr> <td> <i>/s/ John Luczko</i></td> <td> 04/25/18</td> </tr> <tr> <td>CHIEF ENGINEER</td> <td>DATE</td> </tr> </table>	<i>/s/ Elizabeth W. Phillips</i>	03/29/18	DESIGN STANDARDS ENGINEER	DATE	 <i>/s/ John Luczko</i>	 04/25/18	CHIEF ENGINEER	DATE
<i>/s/ Elizabeth W. Phillips</i>	03/29/18								
DESIGN STANDARDS ENGINEER	DATE								
 <i>/s/ John Luczko</i>	 04/25/18								
CHIEF ENGINEER	DATE								

## NOTE

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

STOEPPELWERTH

## CONSTRUCTION DETAILS

WESTWIND at CUMBERLAND  
SECTION 1

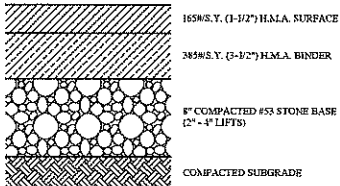
FRANKLIN, FRANKLIN TOWNSHIP

DRAWN BY: <b>PDR</b>	CHECKED BY: <b>BKR</b>
SHEET NO. <b>C802A</b>	
S & A JOB NO. <b>91595ARB-S1</b>	

SPECIAL PROVISION FOR LIME MODIFICATION

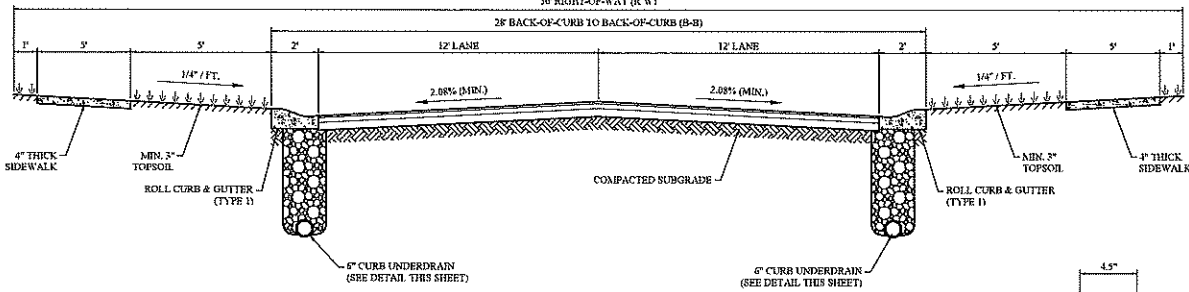
STREET CONSTRUCTION

- 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:**
- High calcium or dolomite Hydrated Lime (Ca(OH)₂ + 4H₂O) shall have a minimum of 90% total available calcium hydroxide content and the hydrates must contain no more than 3% carbon dioxide content if sampled at the lime plant, or no more than 7% if sampled at the job site.
  - 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 C175.
  - Maximum Mechanical Moisture content shall be 4%.
  - 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 as ASTM C110.
  - 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:**
- 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 dampness, and the facility shall be approved by the Inspecting Engineer prior to commencement of any lime work.
  - Each shipment shall be accompanied by a bill of lading and by a certificate of compliance stating conformance to the applicable specification requirements.
  - The Contractor shall take appropriate preventive and protective (safety) measures that shall be exercised by those working with this material. All safety measures shall comply with applicable OSHA requirements.
- MIXTURE COMPOSITION:**
- Sample: At his own expense, the Contractor shall provide a minimum of 10 pounds (5 Kg) of lime and 100 pounds (50 Kg) of soil to be used at least 10 days prior to the construction of the lime modified soils if requested by the Inspecting Engineer.
  - 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:**
- Temperature and Weather Limitations: No lime modification shall be performed at a soil temperature less than 45° F (7° 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.
  - Preparation of Existing Roadway: All deleterious material, such as stumps, roots, turf, etc. and aggregate larger than 3" (75 mm) shall be removed. Any soil organic soils shall be removed as directed by the Inspecting Engineer.
  - 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 then 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 objectionable 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 same 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.
- 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 thickness has been obtained and clods are broken down so that 100% exclusion of rock particles will pass a one-inch (25mm) sieve and at least 50% 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.
  - Compaction: Compaction of the mixtures 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 covered, 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.
- 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 is 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:** Preparing lime modified soils will be measured in square yards of the thickness specified.
- 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.
  - Measured Quantities: Preparing 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 the 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.

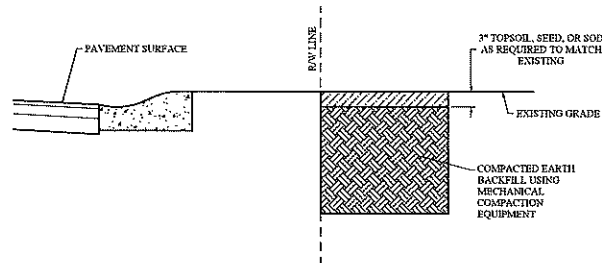


PAVEMENT DETAIL  
NOT-TO-SCALE

CROSS SLOPE DESIGN DATA (ON ROLL CURB & GUTTER)		
STREET WIDTH (B-B)	LANE WIDTH	DESIGN SLOPE
20'	8'	4.13%
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%



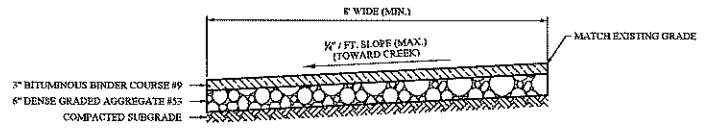
TYPICAL ROADWAY & PAVEMENT  
COMPOSITION SECTION  
NOT-TO-SCALE



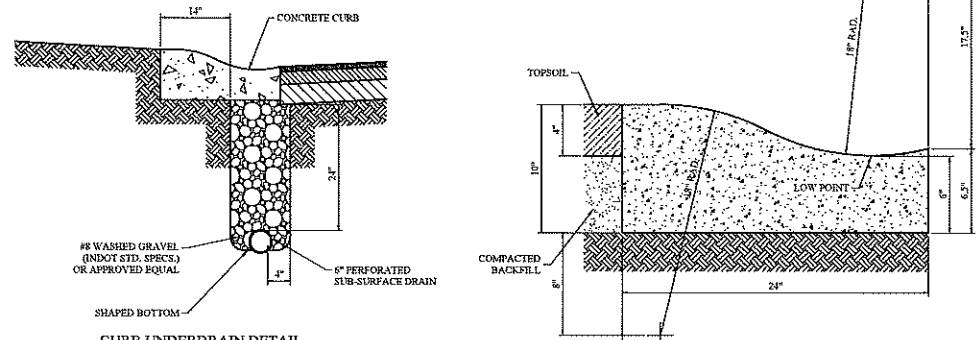
STANDARD FULL DEPTH  
GRANULAR BACKFILL DETAIL  
(PER STANDARD PLAN 92-02)  
NOT-TO-SCALE

NOTES:

- GRANULAR BACKFILL WILL NOT BE REQUIRED WHEN ENTIRE TRENCH AREA IS 5'-6" OR MORE BEYOND THE BACK EDGE OF THE EXISTING CURB.
- ALL EXCAVATED AREAS UNDER PAVED ROADWAYS, OR WITHIN 5'-6" OF THE PAVEMENT EDGE, OR BACK EDGE OF CURB SHALL BE BACKFILLED WITH GRANULAR MATERIAL TO WITHIN 1" 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'-6" FROM THE EDGE OF THE ROADWAY AT SURFACE, THE ENTIRE TRENCH MUST BE BACKFILLED WITH GRANULAR MATERIAL.

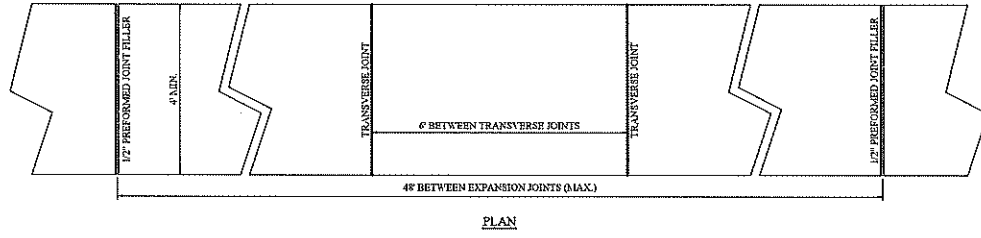


ASPHALT PATH SECTION DETAIL  
(TO BE ADA COMPLIANT)  
NOT-TO-SCALE



CURB UNDERDRAIN DETAIL  
NOT-TO-SCALE

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

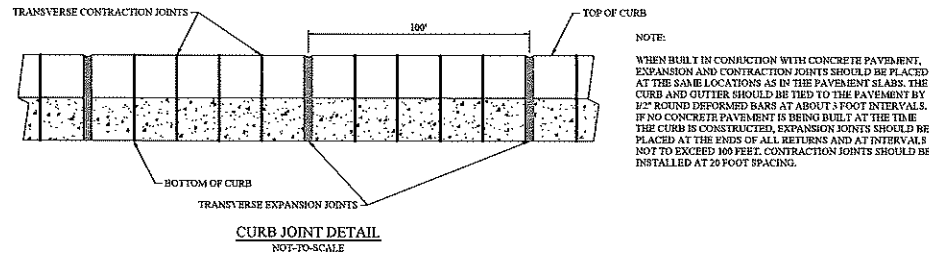


PLAN

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 DRIVE SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 207.02 OF THE STANDARD SPECIFICATIONS.



CURB JOINT DETAIL  
NOT-TO-SCALE

NOTE:

WHEN BUILT IN CONNECTION 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 12" 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.

STOEPPELWERTH  
REGISTERED PROFESSIONAL ENGINEER  
No. 19358  
STATE OF INDIANA  
CERTIFIED: 12/02/21  
David J. Stoepelwerth

THIS DRAWING IS NOT INTENDED TO BE USED FOR ANY OTHER PROJECT OR FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN CONSENT OF THE ENGINEER. THE ENGINEER ASSUMES NO LIABILITY FOR ANY DAMAGE OR INJURY TO PERSONS OR PROPERTY ARISING FROM THE USE OF THIS DRAWING FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT WAS PREPARED.

CONSTRUCTION DETAILS  
WESTWIND at CUMBERLAND  
SECTION 1  
FRANKLIN, FRANKLIN TOWNSHIP  
JOHNSON COUNTY, INDIANA

DRAWN BY: PDR  
CHECKED BY: BKR  
SHEET NO.  
C802B  
X & A K&B NO  
91595ARB-S1

Table of Contents   SECTION 19022 FLUSHING AND CLEANING PIPELINES   PART 1: GENERAL   1.01 SCOPE OF WORK   A. The work under this section consists of providing all labor, materials, tools, equipment, and services required to complete the following as specified for the piping, valves, and appurtenances installed under these Contract Documents as specified in this section.   B. Flush the pipelines to remove all particulate matter and air.   C. Clean the pipelines using foam pipe, swabs, or "go-devils", as described herein, whenever the specified flushing velocity cannot be achieved and/or normal flushing will not sufficiently remove dirt and debris that may be introduced during construction.   D. Flushing and cleaning required by this section shall be completed prior to testing and disinfecting of the pipeline, except as modified when the slug method of disinfection is approved and followed.   E. Contractor shall identify appropriate disposal locations for flushed water and secure all required approvals and permits. All disposal locations shall be authorized by the appropriate stormwater governance authority. Contractor assumes all responsibility for any permit violations, erosion, flooding, fire risk, and other damage or injury resulting from flushing activities.   1.02 GENERAL REQUIREMENTS   A. New pipeline shall be connected to existing in-service water main at one end only in order to allow sufficient water flow rate to be introduced for successful completion of all required flushing, testing and disinfection. A new line valve (gate or butterfly) shall be installed at this connection point to isolate the new main from the existing water main during pressure testing and disinfection, unless otherwise authorized in writing by the Owner. At each other proposed connection to existing water main(s), Contractor shall provide a temporary plug or cap at the end of the new water main with adequate restraint and/or blocking to allow all flushing, testing, and disinfection to be completed prior to final connection to the existing main(s). Contractor shall also provide adequate temporary air release, blow-off assemblies, and sampling taps to accommodate filling, flushing, and disinfecting the pipeline(s) in accordance with Section 15100. Contractor shall take all possible precautions to prevent backflow into the existing water main during construction, filling, flushing, testing, and disinfection.   B. Flushing is no substitute for preventive measures during construction. Normal pipeline flushing is often inadequate to remove all the entrapped air, loose debris, and certain other contaminants, such as silt deposits, which must be flushed at 11/20/19 - Pipeline 15025 - 1		any feasible velocity. Contractor shall adhere to the requirements of Section 15000 to prevent contamination of the pipeline. In no case shall any objects be left in the main during installation.   C. In cases where, in the opinion of the Engineer, normal pipeline flushing is unable to remove all entrapped air and debris, Contractor shall use polyurethane foam pipe and/or polystyrene hard foam swabs to remove all foreign matter from the pipeline (i.e., "pig" the pipeline).   1.03 WORK BY OWNER   A. Owner will furnish water for testing and flushing, and disinfecting pipelines in accordance with Section 01500 up to ten (10) times the volume of the new pipeline(s). If additional water is needed, then the Owner will furnish the water and may charge the Contractor for the additional water as specified in Section 01500.   1.04 COORDINATION OF WORK   A. Coordinate with Engineer and Owner before flushing to ensure that an adequate volume of flushing water is available at sufficiently high pressure (to maintain at least 40 psi residual pressure unless otherwise approved by the water supply system's owner) and to determine any applicable time constraints or other special requirements. Owner may require flushing only during low demand hours and/or when the distribution system flow is above an allowable minimum level. Determine if the water can be disposed of safely and arrange disposal location(s) for chlorinated water per Section 15020. Notify the Owner, Engineer, Resident Project Representative, and the following prior to flushing or cleaning:   1. Local fire department   2. Other utilities, such as gas, electric and telephone companies, who may have underground facilities in the area.   3. Local storm sewer and sanitary sewer departments.   4. Customers who may be inconvenienced by reduced pressure or dirty water. Contractor shall coordinate with the Owner and Engineer to identify customers requiring notification.   5. Property owners where water will be disposed of to localities other than a sanitary sewer.   6. Coordinate with Owner, who shall operate any valves and/or hydrants on the operating distribution system. Close valves and hydrants sufficiently slowly to prevent water hammer. Open each fire hydrant and blow-off valve slowly until the desired flow rate is obtained. When flushing from a dry barrel fire hydrant, open the hydrant valve fully to prevent water from escaping into the ground through the fire hydrant barrel drain and use the gate valve upstream of the hydrant for throttling purposes.   11/20/19 - Pipeline 15025 - 3		C. Contractor shall contact the local storm sewer and/or sanitary sewer department to obtain permission and coordinate disposal of water. Chlorinated water shall be discharged to a sanitary sewer system if available. If adequate capacity exists, and if approved by the sewer department, if an authorized sanitary sewer disposal location is not available, Contractor shall secure an authorized alternative disposal site(s).   D. Alternative disposal site(s) shall be a storm sewer system if available, adequate capacity exists and if approved by the appropriate stormwater governance authority. Otherwise, alternative disposal site(s) shall be an adequately-sized waterway that is authorized by the appropriate stormwater governance authority and the property owner. In the event that no authorized discharge location with adequate capacity can be identified, Contractor shall obtain authorization and construct a temporary ponding area of adequate size to detain the flushed water until it can be discharged to an authorized sewer or waterway or until it evaporates and permeates into the soil.   E. Any alternative disposal sites on private property or that are tributary to a private lake or pond or freshwater water source shall also be approved in writing by the property owner(s). Contractor shall obtain permission and coordinate with affected property owners for disposal of all water discharged from water mains.   F. Contractor shall secure all approvals as required in this section and in Section 15020.   G. Coordinate flushing and cleaning activities with disinfection activities and comply with Section 15020.   1.05 PROTECTION DURING FLUSHING AND CLEANING   A. Protect the work staff and the public during operation of hydrants and valves. Keep children away from the flow of flushing water.   B. When needed to avoid damage to property (including soil erosion) and the flooding of streets or buildings, employ emergency detouring.   C. If flushed water is discharged into a sanitary or storm sewer, provide adequate barricades and warning devices around any open manhole lids or other safety hazards.   D. Proper disinfection and disposal of flush water is the responsibility of the Contractor. All water with chlorine residue higher than 0.01 ppm (mg/L) shall be disposed of as required in Section 15020.   E. These safety considerations also apply to main cleaning, flushing, and disinfection activities specified in Section 15020. See General Conditions Article 6.   11/20/19 - Pipeline 15025 - 4		Table of Contents   SECTION 19022 DUCTILE IRON PIPE AND FITTINGS   PART 1: GENERAL   1.01 SCOPE OF WORK   The work under this section consists of providing all labor, materials, tools, equipment, and services required to install and test all 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 Specification. 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.   1.02 SUBMITTALS   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 01000.   B. Required certifications include those specified under Quality Assurance below.   1.03 QUALITY ASSURANCE   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.   B. The certification for ductile iron fittings shall be a fitting description, quantity, bare fitting weight, source, and applicable AWWA standard (C110 or C153). The certification shall accompany each delivery of the material to the project site.   C. Owner reserves the right to sample and test these materials subsequent to delivery at the project site.   D. If manufacturer's certification of compliance must accompany each shipment.   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 among other documentation that may be required, provide certificates of compliance on the components supplied.   11/20/19 - Pipeline 15105 - 1		1.06 SUBMITTALS   Contractor shall submit the following in accordance with Section 01000:   A. Contractor shall submit the proposed temporary connection (when required) between existing water main and new pipeline for filling, flushing, and disinfection, including cut sheets for the proposed backflow preventer. The method to be used and backflow preventer must be approved by the Owner prior to filling the pipeline.   B. Before performing any cleaning activities, Contractor shall submit to the Engineer a proposed cleaning plan as required herein and cut sheets for any swabs and/or pipe accessories to be used.   C. Contractor shall submit copies of all written approvals obtained for disposal of flushed water.   1.07 RELATED WORK   A. Section 01000 Summary of Work   B. Section 01011 Special Provisions   C. Section 01075 Basis of Payment   D. Section 01000 Submittals   E. Section 01000 Products   F. Section 15000 Piping - General Provisions (including construction methods to avoid contamination)   G. Section 15020 Disinfecting Pipelines   H. Section 15030 Pressure and Leakage Tests   I. Section 15170 Tapping Sleeves, Saddles and Valves   J. Section 15190 Fire Hydrants   K. Section 15190 Air Valves, Blow-off Assemblies and Sampling Taps   L. Section 15200 Service Lines   1.08 REFERENCE   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   11/20/19 - Pipeline 15025 - 5		Table of Contents   SECTION 19022 DUCTILE IRON PIPE AND FITTINGS   PART 1: GENERAL   1.01 SCOPE OF WORK   The work under this section consists of providing all labor, materials, tools, equipment, and services required to install and test all 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 Specification. 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Section 01000 Submittals   E. Section 01000 Products   F. Section 02210 trenching, Backfilling and Compacting   G. Section 02550 Identification/Location Guide   H. Section 15000 Piping - General Provisions   I. Section 15020 Disinfecting Pipelines   J. Section 15030 Pressure and Leakage Tests   K. Section 15030 Pressure and Leakage Tests   L. Section 15130 Piping Specialties   M. Section 15190 Gate Valves   N. Section 15195 Butterfly Valves   O. Section 15170 Tapping Sleeves, Saddles, and Valves   P. Section 15190 Fire Hydrants   Q. Section 15195 Abandonment of Mains and Hydrants   R. Section 15190 Air Valves, Blow-off Assemblies and Sampling Taps   S. Section 15200 Service Lines   1.05 REFERENCE   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 included 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.   A. ASME / ANSI B1.1 - Unified Inch Screw Threads   11/20/19 - Pipeline 15105 - 3		standards, those other standards are included 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.   A. AWWA C551 Standard for Disinfecting Water Mains   B. ANSI/AWWA C555 Field Disinfection   PART 2: PRODUCTS   2.01 MATERIALS AND EQUIPMENT   Provide the foam cleaning plugs (swabs or pigs) and other equipment as needed to clean pipelines in accordance with the Engineer. Do not use wire cleaning plugs which utilize bristles, wire brushes, carboride abrasives, steel studs, or any other type abrasive unless specifically approved by the Engineer in writing. Consult a manufacturer of pipe cleaning plugs, such as Knapx Piggy Pig (Houston, Texas), to determine the type and size of cleaning plug best suited for the application. Two types of plugs may be considered and are described as follows:   A. Swabs:   1. Swabs used for cleaning mains shall be made of polyurethane foam. This foam has a density of 1 to 2 pounds per cubic foot. Swabs shall be System used from commercial manufacturers of swabs for pipes. Both soft and hard grade foam swabs are available. New mains are typically cleaned with hard foam swabs.   2. Use swabs cut into cubes and cylinders slightly larger than the size of the pipe to be cleaned (typically up to one inch larger in width/diameter for pipe up to 12 inches diameter or up to 3 inches larger for pipe larger than 12 inches diameter). The swab width/diameter must be considered individually for each operation. Length of swabs shall be coordinated with the manufacturer. The Contractor is solely responsible for determining swab string and any consequences of using an inappropriately-sized swab.   B. Pigs   1. Alternatives such as cleaning pigs are available and are commonly referred to as a pig. Pipeline pigs, if used, shall be commercially manufactured for the specific purpose of cleaning pipes. They shall be made of polyurethane foam weighing 2 to 15 lb./cu.ft. Cleaning pigs are built shaped and come in various grades of flexibility and roughness. Cleaning pigs shall be sized for the specific pipe main diameter and are typically 1/4-inch to 1/2-inch larger in diameter than the pipe to be cleaned. The Contractor is solely responsible for ensuring that correctly-sized pigs are used and any consequences of using an inappropriately-sized cleaning pig.   11/20/19 - Pipeline 15105 - 4		Table of Contents   SECTION 19022 DUCTILE IRON PIPE AND FITTINGS   PART 1: GENERAL   1.01 SCOPE OF WORK   The work under this section consists of providing all labor, materials, tools, equipment, and services required to install and test all 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 Specification. 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.   1.02 SUBMITTALS   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 01000.   B. Required certifications include those specified under Quality Assurance below.   1.03 QUALITY ASSURANCE   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.   B. The certification for ductile iron fittings shall be a fitting description, quantity, bare fitting weight, source, and applicable AWWA standard (C110 or C153). The certification shall accompany each delivery of the material to the project site.   C. Owner reserves the right to sample and test these materials subsequent to delivery at the project site.   D. If manufacturer's certification of compliance must accompany each shipment.   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 among other documentation that may be required, provide certificates of compliance on the components supplied.   11/20/19 - Pipeline 15105 - 5		1.06 SUBMITTALS   Contractor shall submit the following in accordance with Section 01000:   A. Contractor shall submit the proposed temporary connection (when required) between existing water main and new pipeline for filling, flushing, and disinfection, including cut sheets for the proposed backflow preventer. The method to be used and backflow preventer must be approved by the Owner prior to filling the pipeline.   B. Before performing any cleaning activities, Contractor shall submit to the Engineer a proposed cleaning plan as required herein and cut sheets for any swabs and/or pipe accessories to be used.   C. Contractor shall submit copies of all written approvals obtained for disposal of flushed water.   1.07 RELATED WORK   A. Section 01000 Summary of Work   B. Section 01011 Special Provisions   C. Section 01075 Basis of Payment   D. Section 01000 Submittals   E. Section 01000 Products   F. Section 15000 Piping - General Provisions (including construction methods to avoid contamination)   G. Section 15020 Disinfecting Pipelines   H. Section 15030 Pressure and Leakage Tests   I. Section 15170 Tapping Sleeves, Saddles and Valves   J. Section 15190 Fire Hydrants   K. Section 15190 Air Valves, Blow-off Assemblies and Sampling Taps   L. Section 15200 Service Lines   1.08 REFERENCE   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   11/20/19 - Pipeline 15105 - 6		standards, those other standards are included 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.   A. AWWA C551 Standard for Disinfecting Water Mains   B. ANSI/AWWA C555 Field Disinfection   PART 2: PRODUCTS   2.01 GENERAL   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.   B. All materials that come in contact with potable water, including Manholes, shall be evaluated, tested, and certified for compliance with NSF/ANSI Standard 61.   PART 2: PRODUCTS   2.01 GENERAL   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.   B. 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If manufacturer's certification of compliance must accompany each shipment.   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 among other documentation that may be required, provide certificates of compliance on the components supplied.   11/20/19 - Pipeline 15105 - 8		1.04 RELATED WORK   A. Section 01000 Summary of Work   B. Section 01011 Special Provisions   C. Section 01075 Basis of Payment   D. Section 01000 Submittals   E. Section 01000 Products   F. Section 02210 trenching, Backfilling and Compacting   G. Section 02550 Identification/Location Guide   H. Section 15000 Piping - General Provisions   I. Section 15020 Disinfecting Pipelines   J. Section 15030 Pressure and Leakage Tests   K. Section 15030 Pressure and Leakage Tests   L. Section 15130 Piping Specialties   M. Section 15190 Gate Valves   N. Section 15195 Butterfly Valves   O. Section 15170 Tapping Sleeves, Saddles, and Valves   P. Section 15190 Fire Hydrants   Q. Section 15195 Abandonment of Mains and Hydrants   R. Section 15190 Air Valves, Blow-off Assemblies and Sampling Taps   S. Section 15200 Service Lines   1.05 REFERENCE   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 included 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.   A. ASME / ANSI B1.1 - Unified Inch Screw Threads   11/20/19 - Pipeline 15105 - 9		1.06 SUBMITTALS   Contractor shall submit the following in accordance with Section 01000:   A. Contractor shall submit the proposed temporary connection (when required) between existing water main and new pipeline for filling, flushing, and disinfection, including cut sheets for the proposed backflow preventer. The method to be used and backflow preventer must be approved by the Owner prior to filling the pipeline.   B. Before performing any cleaning activities, Contractor shall submit to the Engineer a proposed cleaning plan as required herein and cut sheets for any swabs and/or pipe accessories to be used.   C. Contractor shall submit copies of all written approvals obtained for disposal of flushed water.   1.07 RELATED WORK   A. Section 01000 Summary of Work   B. Section 01011 Special Provisions   C. Section 01075 Basis of Payment   D. Section 01000 Submittals   E. Section 01000 Products   F. 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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.   A. AWWA C551 Standard for Disinfecting Water Mains   B. ANSI/AWWA C555 Field Disinfection   PART 2: PRODUCTS   2.01 MATERIALS AND EQUIPMENT   Provide the foam cleaning plugs (swabs or pigs) and other equipment as needed to clean pipelines in accordance with the Engineer. Do not use wire cleaning plugs which utilize bristles, wire brushes, carboride abrasives, steel studs, or any other type abrasive unless specifically approved by the Engineer in writing. Consult a manufacturer of pipe cleaning plugs, such as Knapx Piggy Pig (Houston, Texas), to determine the type and size of cleaning plug best suited for the application. Two types of plugs may be considered and are described as follows:   A. Swabs:   1. Swabs used for cleaning mains shall be made of polyurethane foam. This foam has a density of 1 to 2 pounds per cubic foot. Swabs shall be System used from commercial manufacturers of swabs for pipes. Both soft and hard grade foam swabs are available. New mains are typically cleaned with hard foam swabs.   2. Use swabs cut into cubes and cylinders slightly larger than the size of the pipe to be cleaned (typically up to one inch larger in width/diameter for pipe up to 12 inches diameter or up to 3 inches larger for pipe larger than 12 inches diameter). The swab width/diameter must be considered individually for each operation. Length of swabs shall be coordinated with the manufacturer. The Contractor is solely responsible for determining swab string and any consequences of using an inappropriately-sized swab.   B. Pigs   1. Alternatives such as cleaning pigs are available and are commonly referred to as a pig. Pipeline pigs, if used, shall be commercially manufactured for the specific purpose of cleaning pipes. They shall be made of polyurethane foam weighing 2 to 15 lb./cu.ft. 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Section 01000 Submittals   E. Section 01000 Products   F. Section 02210 trenching, Backfilling and Compacting   G. Section 02550 Identification/Location Guide   H. Section 15000 Piping - General Provisions   I. Section 15020 Disinfecting Pipelines   J. Section 15030 Pressure and Leakage Tests   K. Section 15030 Pressure and Leakage Tests   L. Section 15130 Piping Specialties   M. Section 15190 Gate Valves   N. Section 15195 Butterfly Valves   O. Section 15170 Tapping Sleeves, Saddles, and Valves   P. Section 15190 Fire Hydrants   Q. Section 15195 Abandonment of Mains and Hydrants   R. Section 15190 Air Valves, Blow-off Assemblies and Sampling Taps   S. Section 15200 Service Lines   1.05 REFERENCE   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. 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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.   A. AWWA C551 Standard for Disinfecting Water Mains   B. ANSI/AWWA C555 Field Disinfection   PART 2: PRODUCTS   2.01 MATERIALS AND EQUIPMENT   Provide the foam cleaning plugs (swabs or pigs) and other equipment as needed to clean pipelines in accordance with the Engineer. Do not use wire cleaning plugs which utilize bristles, wire brushes, carboride abrasives, steel studs, or any other type abrasive unless specifically approved by the Engineer in writing. Consult a manufacturer of pipe cleaning plugs, such as Knapx Piggy Pig (Houston, Texas), to determine the type and size of cleaning plug best suited for the application. Two types of plugs may be considered and are described as follows:   A. Swabs:   1. Swabs used for cleaning mains shall be made of polyurethane foam. This foam has a density of 1 to 2 pounds per cubic foot. 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Cleaning pigs are built shaped and come in various grades of flexibility and roughness. Cleaning pigs shall be sized for the specific pipe main diameter and are typically 1/4-inch to 1/2-inch larger in diameter than the pipe to be cleaned. The Contractor is solely responsible for ensuring that correctly-sized pigs are used and any consequences of using an inappropriately-sized cleaning pig.   11/20/19 - Pipeline 15105 - 17		Table of Contents   SECTION 19022 DUCTILE IRON PIPE AND FITTINGS   PART 1: GENERAL   1.01 SCOPE OF WORK   The work under this section consists of providing all labor, materials, tools, equipment, and services required to install and test all 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 Specification. 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.   1.02 SUBMITTALS   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 01000.   B. Required certifications include those specified under Quality Assurance below.   1.03 QUALITY ASSURANCE   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.   B. The certification for ductile iron fittings shall be a fitting description, quantity, bare fitting weight, source, and applicable AWWA standard (C110 or C153). The certification shall accompany each delivery of the material to the project site.   C. Owner reserves the right to sample and test these materials subsequent to delivery at the project site.   D. If manufacturer's certification of compliance must accompany each shipment.   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 among other documentation that may be required, provide certificates of compliance on the components supplied.   11/20/19 - Pipeline 15105 - 18		1.04 RELATED WORK   A. Section 01000 Summary of Work   B. Section 01011 Special Provisions   C. Section 01075 Basis of Payment   D. Section 01000 Submittals   E. Section 01000 Products   F. Section 02210 trenching, Backfilling and Compacting   G. Section 02550 Identification/Location Guide   H. Section 15000 Piping - General Provisions   I. Section 15020 Disinfecting Pipelines   J. Section 15030 Pressure and Leakage Tests   K. Section 15030 Pressure and Leakage Tests   L. Section 15130 Piping Specialties   M. Section 15190 Gate Valves   N. Section 15195 Butterfly Valves   O. Section 15170 Tapping Sleeves, Saddles, and Valves   P. Section 15190 Fire Hydrants   Q. Section 15195 Abandonment of Mains and Hydrants   R. Section 15190 Air Valves, Blow-off Assemblies and Sampling Taps   S. Section 15200 Service Lines   1.05 REFERENCE   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   11/20/19 - Pipeline 15105 - 19		standards, those other standards are included 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.   A. AWWA C551 Standard for Disinfecting Water Mains
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D. <b>Restrainted Mechanical Joints:</b>   1. Use approved restrainted joint device according to Section 15130. Slip the follower gland and gasket over the pipe plain and making sure that the small side of the gasket and tip of the gland face the ball socket. Insert the plain into the ball 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 ball socket joints alternately per manufacturer's recommendations to the manufacturer's recommended torque rating or, if not provided, to the following nominal torques as specified in AWWA C111 Table A.1:  <table><tr><th>Ball Size (inch)</th><th>Pipe Nominal Size (inches)</th><th>Range of Torque in Foot-Pounds</th></tr><tr><td>5/8</td><td>3</td><td>45-60</td></tr><tr><td>3/4</td><td>4 - 24</td><td>75 - 90</td></tr><tr><td>1</td><td>30 - 36</td><td>100 - 120</td></tr><tr><td>1-1/4</td><td>42 - 48</td><td>120 - 150</td></tr></table>  2. Secure restrainted joint device to pipe barrel in accordance with Section 15130 and the restraint device manufacturer's recommendations.   E. <b>Ball and Socket Joints:</b>   Assemble and install the ball and socket joint according to the manufacturer's recommendations. Thoroughly clean and lubricate the joint. Check the material ring tension.   F. <b>Pipe Protection</b>   1. Comply with requirements of Section 15000. LRI pipe in accordance with AWWA Standards C900 and manufacturer's recommendations, subject to the restrictions herein and in Section 15000.   2. Protect cement-mortar lining from damage during transportation (off- and on-site), preparation and installation. Transporting or lifting pipe by inserting lifting forks, chains, hooks, or any other device inside the pipe shall not be permitted. No exception shall be made during installation of polyethylene encasement or any other lining.   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 on construction equipment shall not be permitted unless the pipe is supported on pallets or lumber and fixed directly with the forks.   4. Protect pipe from damage from the jacking device (backhoe bucket, pipe jack, etc.) when assembling each pipe joint (i.e. "pushing home" every pipe). Wood or other suitable (non-metallic) material consistent with the pipe manufacturer's recommendations shall be used to push home the pipe.		Ball Size (inch)	Pipe Nominal Size (inches)	Range of Torque in Foot-Pounds	5/8	3	45-60	3/4	4 - 24	75 - 90	1	30 - 36	100 - 120	1-1/4	42 - 48	120 - 150	<b>SECTION 15126</b> <b>POLYVINYL CHLORIDE (PVC) PIPE</b>   <b>PART 1: GENERAL</b>   <b>1.01 SCOPE OF WORK</b>   The work under this section consists of providing all labor, materials, tools, equipment, and services required to install and test all polyvinyl chloride (PVC) pressure pipe (4 inches through 12 inches nominal diameter only) with ductile-iron-pipe-equivalent outside diameters 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.   <b>1.02 SUBMITTALS</b>   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.   B. Required certifications include those specified under Quality Assurance below.   <b>1.03 QUALITY ASSURANCE</b>   A. PVC pipe shall meet the minimum quality requirements by conforming to the below-referenced AWWA/ANSI standards as modified herein. PVC pipe will be accepted on the basis of the Manufacturer's certification that the materials conform to this section.   B. The Owner reserves the right to sample and test these materials subsequent to delivery at the project site.   <b>1.04 RELATED WORK</b>   A. Section 01000 Summary of Work   B. Section 01011 Special Provisions   C. Section 01075 Basis of Payment   D. Section 01300 Submittals   E. Section 01800 Products   F. Section 02210 Trenching, Backfilling and Compacting		G. Section 02050 Identification/Location Guide   H. Section 15000 Piping - General Provisions   I. Section 15020 Disinfecting Pipelines   J. Section 15025 Flushing and Cleaning Pipelines   K. Section 15030 Pressure and Leakage Tests   L. Section 15105 Ductile Iron Pipe and Fittings   M. Section 15130 Piping Specialties   N. 15150 Gate Valves   O. Section 15170 Tapping Sleeves, Saddles, and Valves   P. Section 15180 Fire Hydrants   Q. Section 15185 Abandonment of Mains and Hydrants   R. Section 15190 Air Valves, Blow-off Assemblies and Sampling Taps   S. Section 15200 Service Lines   <b>1.05 REFERENCE</b>   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 included 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.   A. ASTM D1784 - Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Composites   B. ASTM D2122 - Determining Dimensions of Thermoplastic Pipes and Fittings   C. ASTM D2162 Poly(Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion   D. ASTM D2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)   E. ASTM D2412 - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading		F. ASTM D2555 - Standard Practice for Making Solvent Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings   G. ASTM F412 - Standard Terminology Relating to Plastic Piping Systems   H. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipes   I. ASTM F1688 - Standard Guide for Construction Procedures for Buried Plastic Pipes   J. AWWA C905 - Underground Installation of Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVC-C) Pressure Pipes and Fittings   K. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipes, and Fabricated Fittings, 4 In. Through 12 In., for Water Transmission and Distribution   L. AWWA Manual M23 - PVC Pipes - Design and Installation   M. NSF/ANSI 14 Plastic Piping System Components and Related Materials   N. NSF/ANSI 61 Drinking Water System Components - Health Effects   O. Plastic Pipe Institute TR-2, PVC Range Composition Listing of Qualified Ingredients   <b>PART 2: PRODUCTS</b>   <b>2.01 GENERAL</b>   A. No foreign-manufactured pipe shall be allowed. All pipe and restraints shall be produced solely in the United States.   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.   C. All materials that come in contact with potable water, including lubricants, shall be evaluated, tested, and certified for conformance with NSF/ANSI Standard 61.   <b>2.02 PIPE MATERIALS</b>   A. All PVC pipe shall be PVC 1120 pressure pipe made from clean, virgin class 1545A PVC compound conforming to test specification ASTM D1784 with outside diameter dimensions of cast iron pipe and shall conform to all applicable requirements of ASTM D1784 and D2241. The PVC compound shall be tested and certified suitable for potable water products by the National Sanitation Foundation (NSF) Testing Laboratory (NSF Standard No. 61). All PVC pipe shall be blue in color.		B. PVC pipe 4 inch through 12 inch nominal size shall meet the requirements of AWWA C900. When AWWA C900 conflicts with the listed ASTM standards, the requirements of AWWA C900 shall prevail.   C. <b>Pipe Class:</b> All PVC pipe installed shall be DR 14 (350 psi Pressure Class per AWWA C900) 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 over-surge pressure determined by the depth of burial in field. When Certi-Lok™ restrained joint C900 PVC pipe is installed by horizontal directional drilling method, it shall be DR 14 (350 psi Pressure Class per AWWA C900) unless otherwise indicated on the Drawings or specified in Section 01011. PVC pipe pressure classes were increased in the latest revision of AWWA C900, however, <i>existing water lines installed before the revision to DR 14 shall remain in the original pressure class measures in AWWA C900 listed revision. DR 14 shall not be subjected to working pressures exceeding 200 psi.</i>   D. Minimum pipe stiffness (PiST) at 5% deflection shall be as follows when tested in accordance with D2241:   1. DR 14 pipe: 914 psi for all sizes   E. The pipe shall be designed to pass a quick burst test pressure of 985 psi (DR 14 pipe) applied in 60 to 70 seconds when tested in accordance with ASTM D1599, as referenced in ASTM D2241.   F. Standard laying lengths shall be 20-feet (±1 inch). Random lengths of not more than 15% of the total footage of each site may be shipped in less of the standard lengths. Remains of reclaimed material shall not be accepted.   G. The pipe shall have ball and rigid joints 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 high-heat (&gt;20 h) applications in all respects.   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 Plast-Lok gaskets are not permitted for use with PVC pipe. Certi-Lok™ restrained joint C900 pipe may be used where restrained joint pipe is required, including horizontal directional drilling applications where allowed by Section D2458 and approved by the Engineer. Restrainted joint PVC pipe shall utilize couplings with high-strength, flexible thermoplastic spigots, which shall be installed in accordance with the manufacturer's instructions. The spigots shall be coupled 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 built-in elastomeric sealing gaskets meeting the requirements of ASTM F477. Joints shall meet the zero leakage test requirements of ASTM D3159. The pipe, couplings, and locking spigots shall be completely non-metallic.		12/2019 - Pipeline 15105 - 9	
Ball Size (inch)	Pipe Nominal Size (inches)	Range of Torque in Foot-Pounds																								
5/8	3	45-60																								
3/4	4 - 24	75 - 90																								
1	30 - 36	100 - 120																								
1-1/4	42 - 48	120 - 150																								
and interchangeable, and the complete restrainted joint pipe system shall meet all requirements of AWWA C900. Restrainted joint "sweeps" shall not be used.   <b>I. Fittings</b>   No PVC fittings (including "sweeps") 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.   <b>2.03 MANUFACTURERS</b>   Acceptable PVC pipe manufacturers are:   A. JM Eagle, Inc. 6200 West Century Boulevard Los Angeles, CA 90045 (800) 651-1004 <a href="http://www.jmeagle.com">www.jmeagle.com</a>   B. North American Pipe Corporation 2801 Port Oak Blvd., Suite 600 Houston, TX 77058 (713) 840-7473 <a href="http://www.northamericanpipe.com">www.northamericanpipe.com</a>   C. Diamond Plastics Corporation 1212 Johnson Road Grand Island, NE 68803 (800) PVC-PIPE <a href="http://www.dcpcc.com">www.dcpcc.com</a>   D. Northern Pipe Products 1302 38th Street NW Fargo, ND 58102 (800) 747-7052 <a href="http://www.northernpipe.com">www.northernpipe.com</a>   E. Sandecor Pipe 875 International Boulevard Chattanooga, TN 37400 (800) 609-3553 <a href="http://www.sandecorpipe.com">www.sandecorpipe.com</a>   F. Vulcan Plastics, a division of Consolidated Pipe &amp; Supply Company Inc. 1205 Hilltop Parkway Birmingham, AL 35204 (800) 467-7261 <a href="http://www.consolidatedpipe.com">www.consolidatedpipe.com</a>		<b>PART 3: EXECUTION</b>   <b>3.01 PACKAGING, HANDLING AND STORAGE</b>   A. The manufacturer shall ensure that the interior of all pipe is clean and install plastic dividers plug in all pipes to keep the pipe interior clean or cover adequately to prevent dirt or block material from entering pipes.   B. Sections of pipe having been discovered with cuts or gouges in excess of 10% of the pipe wall thickness shall not be used.   C. Any section of pipe showing a crack or voids has received 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.   <b>3.02 INSTALLATION</b>   Except as modified herein, installation of PVC pipe shall be in full accordance with AWWA C900, AWWA Manual M23, and the Uni-Ball "Handbook of PVC Pipe Design and Construction." In the event of conflicting requirements or guidelines within these referenced publications, the requirements of AWWA C900 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:   A. Assemble pipe using the following types of joints:     - Gasketed bell joint - Integral with the pipe.   - Gasketed coupling - A double gasketed coupling as specified in Section 15130, or   - Restrainted mechanical joint (for pipe to fitting and pipe to valve joints only) - As specified in Section 15130.   - Restrainted Joint Coupling - Joints for restrained joint PVC pipes (Certi-Lok™) shall be as specified in Article 2.02 above.      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.   C. Do not remove factory installed gaskets. Keep the joint free of dirt, sand, grit, grease or any foreign material. Apply NSF certified lubricant when assembling gasketed joints in accordance with the pipe manufacturer's requirements. The use of improper lubricants can damage gaskets.   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 "slew" the joint; but, it is, do not suspend the pipe and swing it into the bell. The spigot end of the pipe is marked by the manufacturer to indicate the proper depth of insertion, and Contractor shall use extreme caution to avoid over-inserting pipe into the bell.   E. Protect pipe from damage when assembling ("pushing home") pipe joints. Wood or other suitable (non-metallic) material consistent with the pipe manufacturer's recommendations shall be used as a cushion while pushing home the pipe. Avoid metal to plastic contact. Melter deflection of PVC pipe joints nor bending of PVC pipe are permitted. All angles shall be made with proper fittings.   F. PVC pipe shall not be installed with less than 3 feet of cover. DR 14 PVC pipe shall not be installed with more than 35 feet of cover.   G. Pressure testing of DR 14 PVC pipe shall not exceed 305 psi.   H. Only ductile iron fittings per specification 15105 may be used with PVC pipe. PVC fittings are not permitted. See detail drawings and Section 15130 for connections between different pipe materials.   I. Research has documented that certain pipe materials (such as polyvinyl chloride, polyethylene, and polypropylene) and certain elastomers (such as those used in gasket materials) may be subject to permeation by lower-molecular weight organic solvents or petroleum products. Products specified in this section shall only be installed in soils that are free of both petroleum products and organic solvents. If during the course of pipeline installation, the Contractor identifies or suspects the presence of petroleum products or any unknown chemical substance in the native soil, Contractor shall stop installing pipe in the area of suspected contamination and notify the Engineer immediately. Contractor shall not resume installing piping in the area of suspected contamination until direction is provided by the Engineer.   J. Unless otherwise shown on the Drawings or indicated in Section 01011, PVC pipe shall not be installed at sites where frequent excavation can be anticipated in the vicinity of the pipe (including basement plant and basement station sites), where the pipeline is laid on a river channel bottom, or with less than 3 feet of cover over the top of pipe. PVC pipe shall not be installed in any dimension with less than 3 feet or more than 30 feet of cover over the crown of the pipe. Unless otherwise shown on the Drawings or approved in writing by the Engineer.   <b>3.03 TAPPING</b>   A. Use a tapping sleeve or saddle in accordance with Section 15170 and/or 15200 (as appropriate).   <b>END OF SECTION</b>		<b>SECTION 15125</b> <b>HIGH DENSITY POLYETHYLENE (HDPE) PIPE</b>   <b>PART 1: GENERAL</b>   <b>1.01 SCOPE OF WORK</b>   A. The work under this section consists of providing all labor, materials, tools, equipment, and services required to provide and test all high density polyethylene (HDPE) pressure pipe and fittings (4 inches through 48 inches nominal diameter) with ductile-iron-pipe-equivalent outside diameters for water distribution and transmission as indicated on the Drawings and as specified within this section and related sections of the Specifications. This section shall also apply to installation of HDPE water mains smaller than 4-inch diameter to the extent applicable (materials for HDPE pipe smaller than 4-inch diameter are specified in Section 15200). Contractor shall furnish and install all required pipe, pipe restraint components, and other related components. HDPE pipe will not be furnished by the Owner. Refer to Sections 01000, 01011 and 01075 for materials to be furnished by the Owner.   B. When water mains smaller than 4-inch diameter are required, high density polyethylene pipe in accordance with Section 15200 shall be used.   <b>1.02 SUBMITTALS</b>   A. Contractor shall submit Shop Drawings, manufacturer's literature and product data, installation instructions, certifications and other required submittals for all products furnished under this section in accordance with Section 01300.   B. The following product data is required from the pipe manufacturer:     - Pipe Size   - Dimensionality   - Pressure Class   - Color   - Recommended Minimum Bending Radius   - Recommended Maximum Safe Pull Force (if pipe will be used for directional drilling, pipe boring, or other trenchless installation method)   - Certificate of compliance from the pipe manufacturer that the product pipe is in compliance with Project requirements.   - Submittal fusion method(s), quality control procedures, and documentation for fusion process.      C. Fusion Technician Certifications: Submit required certifications, including those specified under Quality Assurance below and all proposed fusion techniques		11/2019 - Pipeline 15120 - 2																				
those specific pipes will take place. Approval of the products or tests is not implied by the Engineer's decision not to inspect the manufacturing, testing, or finished pipes.   <b>D. HDPE pipe shall be fused only by certified fusion technicians, as documented by the pipe supplier or manufacturer, by the fusion machine manufacturer, or by other documentation acceptable to the Engineer. The fusion equipment operator shall be fully trained in the use of the respective equipment.</b>   <b>E. Owner and Engineer reserve the right to perform onsite exit checks for fusion technicians' qualifications and to stop any fusion work being performed by personnel unable to promptly provide documentation of the required qualifications.</b>   <b>F. For HDPE installations 19-inch diameter and larger, Contractor shall, upon request by the Owner or Engineer, and at no additional cost to the Owner, arrange for the pipe manufacturer's field representative to be on-site during installation of HDPE to oversee the fabrication of five (5) butt fusion joints for each work crew installing this type of joint.</b>   <b>1.04 RELATED WORK</b>   A. Section 01000 Summary of Work   B. Section 01011 Special Provisions   C. Section 01075 Basis of Payment   D. Section 01300 Submittals   E. Section 01500 Products   F. Section 02210 Trenching, Backfilling and Compacting   G. Section 02350 Pipe Burying of Water Mains   H. Section 02450 Horizontal Directional Drilling (HDD)   I. Section 02550 Identification/Location Guide   J. Section 15000 Piping - General Provisions   K. Section 15020 Disinfecting Pipelines   L. Section 15025 Flushing and Cleaning Pipelines   M. Section 15030 Pressure and Leakage Tests   N. Section 15105 Ductile Iron Pipes and Fittings   O. Section 15130 Piping Specialties		<b>P. Section 15150 Gate Valves</b>   <b>Q. Section 15156 Butterfly Valves</b>   <b>R. Section 15170 Tapping Sleeves, Saddles, and Valves</b>   <b>S. Section 15190 Fire Hydrants</b>   <b>T. Section 15185 Abandonment of Mains and Hydrants</b>   <b>U. Section 15190 Air Valves, Blow-off Assemblies and Sampling Taps</b>   <b>V. Section 15200 Service Lines</b>   <b>1.05 REFERENCE</b>   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 included 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.   A. ASTM D638 - Standard Test Method for Tensile Properties of Plastics   B. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials   C. ASTM D1238 - Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer   D. ASTM D1556 - Standard Test Method for Density of Plastics by the Density-Gradient Technique   E. ASTM D2374 - Standard Practice for Underground Installation of Thermoplastic Pressure Piping   F. ASTM D2837 - Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products   G. ASTM D3261 - Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipes and Tubing   H. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials   I. ASTM F412 - Standard Terminology Relating to Plastic Piping Systems		<b>J. ASTM F714 - Standard Specification for Polyethylene (PE) Pipe (SDR-PR) Based on Outside Diameter</b>   <b>K. ASTM F1855 - Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene (PEX) Pipes and Tubing</b>   <b>L. ASTM F1473 - Standard Test Method for Notch Tensile Test to Measure the Resistance to Slow Crack Growth of Polyethylene Pipes and Hoses</b>   <b>M. ASTM F1290 - Standard Practice for Electrofusion Joining Polyethylene Pipes and Fittings</b>   <b>N. ASTM F1688 - Standard Guide for Construction Procedures for Buried Plastic Pipes</b>   <b>O. ASTM F2296 - Standard Specification for Fabricated Fittings of Butt-Fused Polyethylene (PE) Plastic Pipes, Fittings, Saddle Stock, Pipe Stock or Block Stock</b>   <b>P. ASTM F2820 - Standard Practice for Heat Fusion Joining of Polyethylene Pipes and Fittings</b>   <b>Q. Plastic Pipe Institute TN 34 - Installation Guidelines for Electrofusion Couplings 14" and Larger</b>   <b>R. AWWA C906 - Polyethylene (PE) Pressure Pipes and Fittings, 4 In. Through 6 In. (100 mm Through 1,650 mm), for Waterworks</b>   <b>S. AWWA Manual M55 - PE Pipe Design and Installation</b>   <b>T. Plastic Pipe Institute (PPI) "Handbook of Polyethylene Pipe"</b>   <b>U. PPI TR-33 - Generic Butt Fusion Joining Procedure for Field Joining of Polyethylene Pipes</b>   <b>V. NSF/ANSI 14 Plastic Piping System Components and Related Materials</b>   <b>W. NSF/ANSI 61 Drinking Water System Components - Health Effects</b>   <b>X. NSF/ANSI 372 Drinking Water System Components - Lead Content</b>   <b>PART 2: PRODUCTS</b>   <b>2.01 GENERAL</b>   A. No foreign-manufactured items provided under this section shall be allowed. All pipe, fittings, couplings, and other HDPE requirements shall be produced solely in the United States.   B. HDPE pipe shall be used where shown on the Drawings and may be used where approved by the Engineer. HDPE pipe shall be used both for pipe boring applications installed in accordance with Section 02350 and for horizontal directional drilling applications installed in accordance with Section 02458 unless otherwise shown on the Drawings or specified in Section 01011 or 01075, listed in the Schedule of Prices, or otherwise approved by the Engineer and Owner.   C. The nominal pipe diameter shall be as specified on the Contract Drawings. HDPE pipe sizes shall be nominal diameters of 4", 6", 8", 12", 16", 20", 24", 30", 36", 42", or 48" only with outside diameters conforming to ductile iron pipe sizes (DIPS). HDPE pipe size shall be selected to provide the required inside diameter, which may require pipe to be installed, at the Engineer's direction, to the next size listed above when HDPE pipe is used in place of ductile iron or PVC pipe.   D. HDPE fittings shall not be used except for saddles, adapters and temporary caps as specified below. All other fittings shall be ductile iron.   E. All materials that come in contact with potable water, including lubricants, shall be evaluated, tested, and certified for conformance with NSF/ANSI Standard 61.   <b>2.02 HDPE PIPE AND FITTINGS</b>   A. All HDPE pipe and fittings shall fully meet the requirements of AWWA C906 and shall be made from the same virgin resin meeting the requirements of the Plastic Pipe Institute (PPI) material designation PE 34083608 or PE 4710 (where PE 4710 is required on the Drawings, in Section 01011, and/or in Section 01075, PE 34083608 shall not be permitted) with an ASTM D3350 minimum cell classification of PE 340840C. A higher number cell classification limit which gives a desirable higher primary property per ASTM D3350 may be substituted for approval by the Engineer and, if approved, may be used at no extra cost to the Owner.   B. The pipe and fittings shall contain no recycled compound except for rework material generated in the manufacturer's own plant that has the same cell classification as the material to which it is being added. The pipe shall be homogeneous throughout and free of visible cracks, holes, voids, foreign inclusions, or other defects that may affect the wall integrity.   C. The material shall have a minimum Hydrostatic Design Basis (HDB) of 1,600 psi (11.03 MPa) at 73 degrees F per ASTM D 2837. The material shall be black with minimum 2% carbon black for ultraviolet protection. Permanent identification of water piping service shall be provided by co-extruding longitudinal blue stripes into the pipe outside surface at no less than two locations around the pipe's circumference, or at least one stripe is visible from any angle. The striping material shall be the same material as the pipe material except for color, which shall be blue. Stripes printed or painted on the outside surface shall not be acceptable.   D. All HDPE pipe and fittings shall be minimum Pressure Class 160 psi with wall thickness not less than dimension ratio (DR) 11, unless otherwise shown on the Drawings or specified in Section 01011, 02458 or this section. However, all HDPE pipe installed with more than 30 feet of cover and all HDPE pipe installed		11/2019 - Pipeline 15120 - 3																				
by pipe bursting methods shall be minimum Pressure Class 200 psi and wall thickness not less than DR 9.0, unless otherwise shown on the Drawings or specified in Section 02350 or 01011. HDPE pipe shall not be subjected to working pressures exceeding the minimum Pressure Class.   E. HDPE elbows, bends, tees, and crosses are not allowed.   <b>2.03 FITTINGS, SADDLES, ADAPTERS AND TEMPORARY CAPS</b>   A. Plain and butt fused mechanical joint adapter fittings shall be used when joining polyethylene pipe to valves, ductile iron fittings, or other pipe materials. Butt fusion fittings shall comply with ASTM D2671. When using a butt-fused adapter, a Type 316 stainless steel gasket shall be used.   B. Butt fused IPS to DIPS adapters shall be used to connect DIPS-size HDPE pipe to IPS-size HDPE pipe.   C. Saddles for branch/service connections 2-inch diameter and smaller shall be conventional fusion type, side fusion (downward faced) tapping saddles in conformance with ASTM D1699, D1599, and AWWA C906, rated for at least 200 psi working pressure with NSF-61 and NSF-272-compliant flange (saddle) brass alloy insert per AWWA C906 (C10) limits unless otherwise specified in Section 01011 or 01075. A higher number cell classification shall be provided around the outer diameter of the branch outlet connecting the branched insert.   D. HDPE branch saddles for 3-inch diameter branch/service connections shall be conventional fusion or electrofusion type as directed and/or approved by the Owner or Engineer. 8-inch saddles shall be DR 11 or DR 9 PE 34083608 or PE 4710 with a pressure rating that equals or exceeds the nominal Pressure Class. No HDPE saddles shall be permitted for branch/service connections larger than 3-inch.   E. Electrofusion fittings, couplings, and saddles shall only be used where permitted by the Engineer and shall not be permitted for use with HDD. Electrofusion fittings shall comply with ASTM F1055.   F. Mechanical (compression) fittings and couplings shall be as specified in Sections 15105 and 15150 and shall use gaskets and restraining devices specifically designed for, tested and found to be acceptable for use with polyethylene pipe. Type 316 stainless steel stiffeners shall be utilized in the HDPE pipe with all mechanical joint (compression) ductile iron fittings, couplings, and valves. Compression-type HDPE or PVC fittings shall not be used. T-bands and elbows shall be high-strength, corrosion-resistant low-alloy steel with the characteristics listed in Table 6 of AWWA C111. T-bands shall be Xylan or Fluoroket II (corrosion resistant). Other facts and note shall be as specified in Section 15130.		11/2019 - Pipeline 15120 - 4																								
11/2019 - Pipeline 15125 - 3		11/2019 - Pipeline 15125 - 2																								
11/2019 - Pipeline 15125 - 4		11/2019 - Pipeline 15125 - 5																								

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

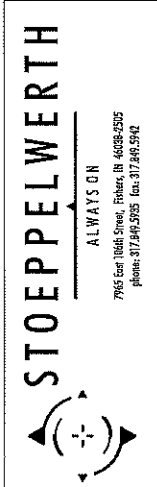
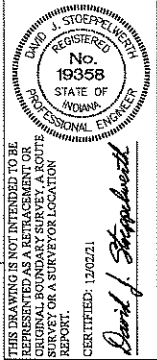
REGISTERED PROFESSIONAL ENGINEER  
No. 19358  
STATE OF INDIANA  
David J. Stoepelwerth

CERTIFIED: 12/02/21

STOEPPELWERTH  
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CONSTRUCTION DETAILS  
WESTWIND AT CUMBERLAND  
SECTION 1  
FRANKLIN, FRANKLIN TOWNSHIP, JOHNSON COUNTY, INDIANA

DRAWN BY: PDR  
CHECKED BY: BKR  
SHEET NO. 91505A.B.S.1  
C803B



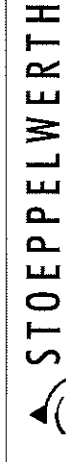
CONSTRUCTION DETAILS  
WESTWIND at CUMBERLAND  
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FRANKLIN, FRANKLIN TOWNSHIP  
JOHNSON COUNTY, INDIANA

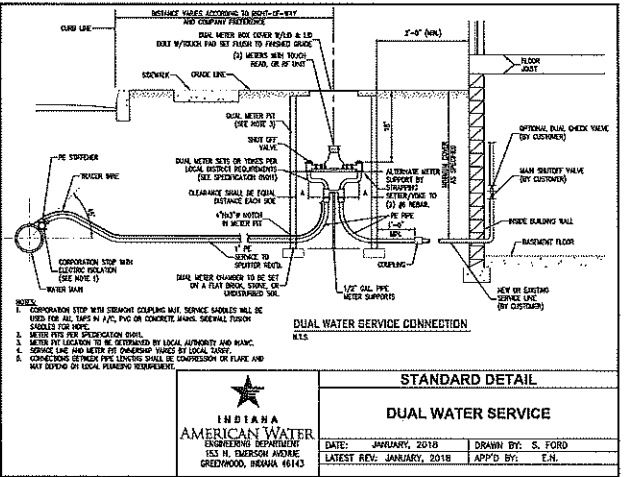
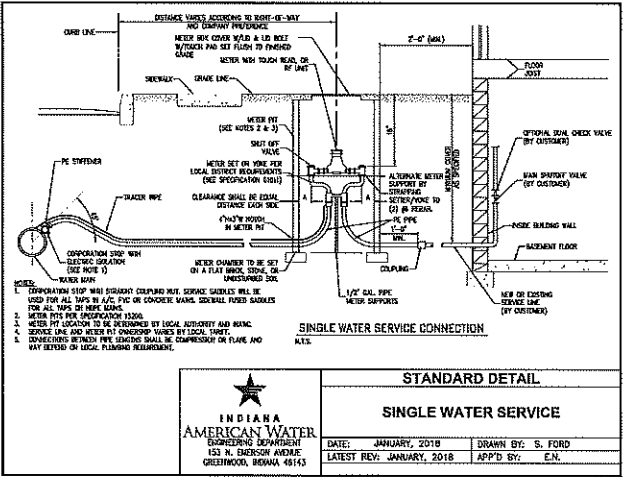
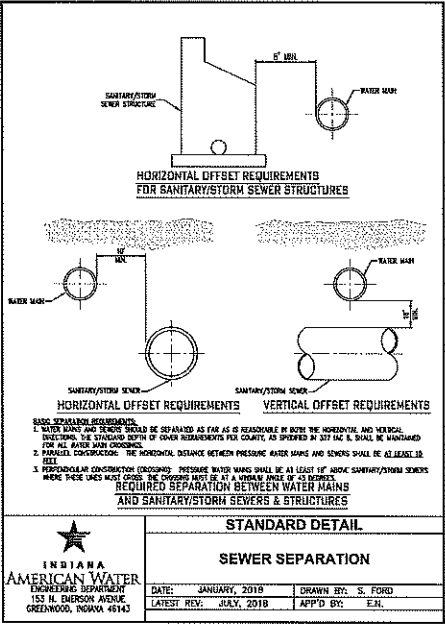
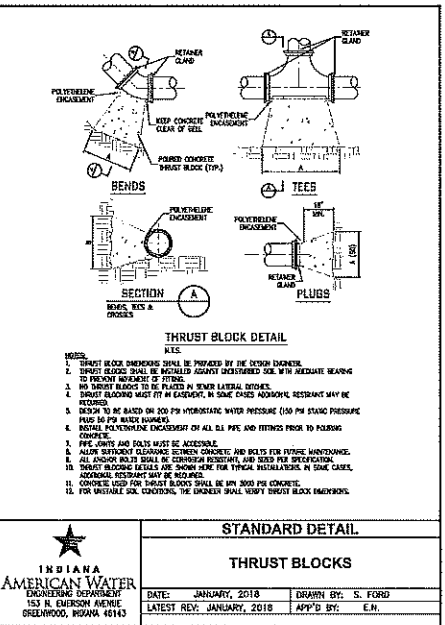
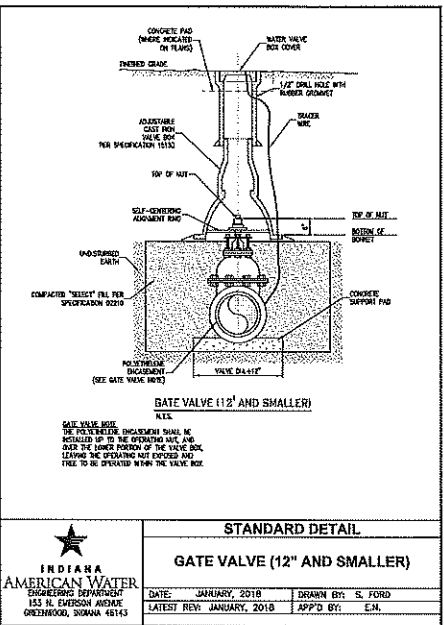
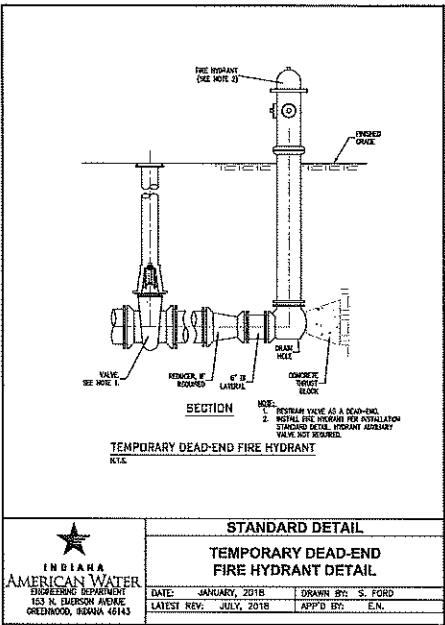
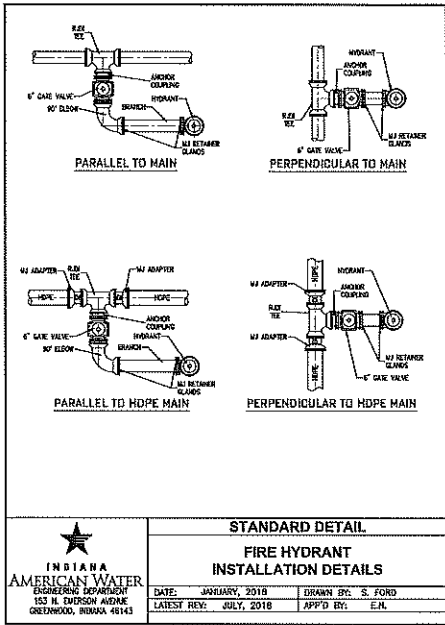
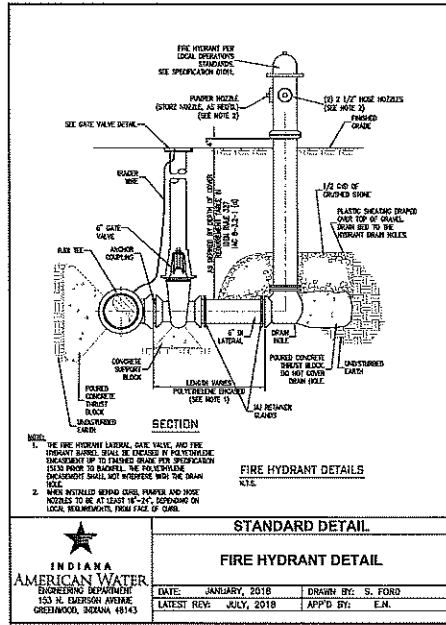
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2.04 PIPE ROLLERS   A. Pipe rollers shall be designed for the purpose of supporting and guiding pipe with minimal friction.   B. Pipe rollers shall be of sufficient size to fully support the weight of the pipe during handling and installation and shall not damage the pipe in any way. Spacing shall be as recommended by the HDPE pipe manufacturer and shall prevent pipe abrasions and additional stress on the pipe.   2.05 ACCEPTABLE MANUFACTURERS—HDPE PIPE AND FITTINGS   A. Performance Pipe A Division of Chatham Phillips Chemical Company 5085 West Park Blvd., Suite 500 P.O. Box 200048 Ft. Worth, Texas 76108   B. JM Eagle 5200 West Century Boulevard Los Angeles, California 90045   C. WFL Plastics Corporation 3975 Lone Star Circle, Suite 300 Fort Worth, TX 76177   D. Poly-Cam (Series 415 side fusion saddles only) 1101 McKinley St. Anaheim, CA 92803   E. ISCO Industries (adapters and fittings only) 920 Barker Ave. Louisville, KY 40204 *Pipes manufactured by Performance Pipe or JM Eagle may be supplied through ISCO.   F. Georg Fischer Central Plastics LLC Pipe &amp; Fabricated Products (formerly Independent Pipe Products Inc.) (adapters and fittings only) 28025 Independence Shawnee, OK 74804   G. Napi American Inc. (adapters and fittings only) 1511 Eggenway Way Houston, TX 77039   H. Improved Piping Products, Inc. (adapters and fittings only) 4311 Director Drive San Antonio, TX 78219		I. Improved Piping Products, Inc. (adapters and fittings only) 4311 Director Drive San Antonio, TX 78219   PART 3. EXECUTION   3.01 PACKAGING, HANDLING, AND STORAGE   A. The manufacturer shall ensure that the interior of all pipe is clean and install plastic dividers in all pipes to keep the pipe interior clean or cover adequately to prevent dust or rock entrainment from entering pipes.   B. Contractor shall take care not to damage any HDPE pipe. All pipes shall be visually inspected for gouges. Gouges in excess of ten percent (10%) of the pipe wall thickness are considered excessive and are not acceptable. In areas where excessive gouges or other damage is present, the affected pipe section shall be cut out and removed. The remaining, undamaged portions of the pipe shall be rejoined by butt fusion to make a continuous section.   3.02 PIPE INSTALLATION   Installation of HDPE pipe and fittings shall be in full accordance with AWWA Manual M25, except as modified herein. Contractor shall follow the provisions of Sections 0210, 0250, 0245, and 10000, other sections as applicable, and all manufacturers' recommendations, in addition to the following requirements:   A. Trenching, bedding, and backfilling shall be comply with Section 0210. Trenching shall be performed in accordance with ASTM D2774.   B. Unless authorized in writing by the Engineer on a case-by-case basis, changes in direction shall be accomplished by bending the pipe in lieu of installing a fitting, subject to approval by the Engineer. Maximum pipe bending radius shall be in conformance with AWWA Manual M25 and the manufacturer's recommendation for the specific diameter and deflection ratio (DR) of the pipe. The following table shows minimum bending radius based upon the allowable strain of the pipe wall. Potential flow restrictions, surge and other non-trench stability and pipe strain issues may reduce the values shown here per the Engineer's and/or manufacturer's recommendations. The minimum bend radius multiplier determines the minimum (lock) radius of the pipe curvature, which is calculated by multiplying the outside diameter of the pipe by the multiplier for the appropriate DR used. Bending radius allowed by the manufacturer can vary, so Contractor shall verify the multiplier with the manufacturer prior to cutting the pipe. In no case shall the installed radius be less than 125% of the manufacturer's permitted bending radius.		PE pipe Dimension Ratio (DR) 11.0 9.0 20 times pipe O.D.   *When installed by HDD, minimum bending radius shall be as specified in Section 0245B.   C. The HDPE pipe shall be continuously or partially supported on rollers or other Engineer-approved friction-reducing implements during joining and installation, such that the pipe is not over-stressed or critically abraded prior to or during installation. A sufficient quantity of rollers or other approved implements, spaced per the pipe manufacturer's guidelines, shall be used to assure adequate support and resist excessive sagging of the pipe during installation. Contractor shall ensure that pipe is not permitted to slide sideways on the rollers or other implements.   D. Tracer wires shall be installed with the HDPE pipe as specified in Section 0245B and 0255B.   E. HDPE pipe shall not be employed with directional drilling through rock or other abrasive conditions unless it is encased and only with approval of the Engineer.   F. Research has documented that certain pipe materials (such as polyethylene, polypropylene, polyvinyl chloride, and asbestos cement) and certain elastomers, such as used in packing gaskets and packing glands, may be subject to permeation by lower-molecular weight organic solvents or petroleum products. Products supplied in this section shall only be installed in areas that are free of both petroleum products and organic solvents. If during the course of pipeline installation the Contractor identifies or suspects the presence of petroleum products or any unknown chemical substance in the native soil, Contractor shall stop installing piping in the area of suspected contamination and notify the Engineer immediately. Contractor shall not resume installing piping in the area of suspected contamination until direction is provided by the Engineer.   G. Unless otherwise shown on the Drawings or indicated in Section 01011, HDPE pipe shall not be installed at sites where frequent excavation can be anticipated in the vicinity of the pipe (including treatment plant and booster station sites) or where the pipeline is laid on a clear channel bottom (except when installed by HDD). HDPE pipe shall not be installed in any circumstance with less than 3 feet or more than 25 feet of cover over the crown of the pipe.   3.03 PIPE AND FITTING JOINING   A. All HDPE pipe joining shall be by butt fusion procedures. Electrofusion shall be used only as permitted by the Engineer. Service connections shall be as specified in Article 3.04 below.   B. HDPE pipe thermal butt fusion welding is to be performed in accordance with the Plastic Pipe Institute "Handbook of Polyethylene Pipe," Polyethylene Joining Procedures, and 49 CFR 192, Subpart F, latest edition.		C. Butt fusion and electrofusion procedures shall be in accordance with the manufacturer's recommendations and the requirements herein. Surfaces must be clean and dry before joining. The wall thickness of the adjoining pipe shall have the same DR at the point of fusion unless a specific fitting is specified.   D. Each butt-fused joint shall be precisely aligned and shall have uniform not back beads resulting from the use of proper temperature and pressure. The joint interface surfaces shall be smooth. Internal bead projections shall not be greater than 3/16-inch, or they shall be removed. The fused joint shall be watertight. The tensile strength at yield of the butt-fusion joints shall not be less than that of the pipe. A specimen of pipe cut across the butt-fusion joint shall be tested in accordance with ASTM D-638.   E. Only appropriately sized and certified fusion machines that have been approved by the pipe manufacturer shall be used for the fusion process. Fusion machines must incorporate the following provisions, including the following elements:      1. <b>HEAT PLATE</b> - Heat plates shall be in good condition with no deep gouges or scratches. Plates shall be clean and free of any debris or contamination. Heater controls shall function properly, cord and plug shall be in good condition. The appropriately sized heat plate shall be capable of maintaining a uniform and consistent heat profile and temperature for the size of pipe being fused, per the pipe manufacturer's guidelines.    2. <b>CARTIDGE</b> - Cartridge shall travel smoothly with no binding at less than 50 psi. Jaws shall be in good condition with proper inserts for the pipe size being fused. Insert pins shall be installed with no interference to cartridge travel.    3. <b>GENERAL MACHINE</b> - Overview of machine body shall yield no obvious defects, missing parts, or potential safety issues during fusion.    4. <b>DATA LOGGING DEVICE</b> - The current version of the pipe manufacturer's recommended and compatible software shall be used. Data logging device operation and maintenance manual shall be with the unit at all times. If using for extended periods of time, an independent 110V power source shall be available to extend battery life.      F. Integrity of heating plate in the fusion equipment shall be checked a minimum of twice per each 8 hour work shift for temperature uniformity.   G. Other equipment specifically required for the fusion process shall include the following:      1. Pipe rollers shall be used for support of pipe to allow side of the machine    2. A weather protection canopy that allows full machine motion of the heat plate, fusion assembly and cartridge shall be provided for fusion in inclement and for windy weather.    3. Fusion machine operation and maintenance manual shall be kept with the fusion machine at all times.    4. Facing blades shall be appropriate for cutting HDPE pipe.		H. <b>JOINT RECORDING</b>      1. Butt fusion equipment shall be equipped with a Data Logger. Records of each weld (including, as a minimum, heater temperature, fusion pressure, and a graph of the fusion cycle) shall be appropriately identified and provided to the Engineer daily.    2. Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) connected to the fusion machine. The fusion data logging and joint report shall be generated by software developed specifically for the butt-fusion of thermoplastic pipe. The software shall register and/or record the parameters required by the pipe manufacturer and these Specifications. Data not logged by the data logger shall be recorded manually and be included in the Fusion Technician's joint report.    3. Electrofusion reports of each weld shall be appropriately identified and provided to the Engineer. The reports shall include, as a minimum, the fusion data, time, ambient temperature, fitting type and size, user ID, and the manufacturer of the part.    4. Quality Control of HDPE fusion process (both butt fusion and electrofusion, as applicable) shall be adhered to and monitored by Contractor with all related documentation submitted to the Engineer.    5. All fused joints will be subject to acceptance by the Engineer prior to pipe installation. All defective joints shall be cut out and replaced at no cost to the Owner. Any section of the pipe with a gash, blister, abrasion, nick, scar, or other deterioration (both greater in depth than ten percent (10%) of the wall thickness shall not be used and must be removed from the site. However, a defective area of the pipe may be cut out and the joint fused in accordance with the procedures stated above. In addition, if in the opinion of the Engineer any section of pipe has other defects, including those hereinafter listed, that may indicate damaged, improperly manufactured, faulty, or substandard pipe, said pipe shall be discarded or returned to the manufacturer and not used. Defects warranting pipe rejection include the following: concentrated ridges, discoloration, excessive spot roughness, and pitting; insufficient or variable wall thickness; pipe damage from bending, crushing, stretching or other stress; pipe damage that impacts the pipe strength, the intended use, the internal diameter of the pipe, internal roughness characteristics; or any other defect of manufacturing or handling.    6. Unless otherwise approved in writing by the Owner and Engineer, mechanical (compression) fittings shall be used only when joining polyethylene materials to other piping materials or valves and shall be installed as specified in Sections 15103 and 15130. Blocking must be provided at changes in direction for any mechanical fittings.    7. <b>ELECTROFUSION</b>    1. Electrofusion joining shall be done in accordance with the fitting and pipe manufacturers' recommended procedures and ASTM F 1230 and PPI TM 34. The process of electrofusion requires an electricity source, a transformer (commonly called an electrofusion box) that has two leads, a method to read	
11/2019 - Pipeline	15125-8	11/2019 - Pipeline	15125-9	11/2019 - Pipeline	15125-10	11/2019 - Pipeline	15125-11	11/2019 - Pipeline	15125-12
electronically (by laser or otherwise) input from the barcodes of the fitting, and a fitting that is compatible with the type of electrofusion box used. The electrofusion box shall be capable of reading and storing the input parameters and the fusion results for later download to a record file.   2. Qualification of the fusion technician shall be demonstrated by evidence of electrofusion training within the past year on the equipment to be utilized for this application. For a pipe surface to be properly prepared for electrofusion, the outer layer or "skin" of the pipe shall be removed to expose a clean, virgin pipe material. This can be achieved by using one of several types of approved scraping tools. Wood rasps or metal files are not acceptable methods. It is very important to note that abrasive materials, such as sandpaper or emery cloth, should never be used in place of a scraping tool. A minimum of 0.007 to 0.010 inch of the pipe's surface material shall be removed during the scraping process in order to expose a clean virgin material. The pipe surface shall be clean and free from any type of contaminants that may be spread before scraping begins. Should the pipe surface be contaminated with dirt, mud or oiling fluids before scraping, plain water shall be used to remove the surface level of these contaminants. However, water shall not be used to clean the pipe surfaces once the virgin material has been exposed. In those instances, a minimum 70% isopropyl alcohol concentration, with no additional additives, shall be used as a cleaning agent. For applications where a fitting will be moved around on the pipe, such as a repair application where a coupling will be pushed completely over one end of the pipe, the pipe shall be scraped for the entire length of the coupling to prevent a clean fitting from being contaminated by scraped pipe.   3. Marks may be made on the outer surface of the pipe as a visual aid to help indicate the required scraper coverage. Marks made on the pipe shall not be made with a "grease pencil" or other type of petroleum based marker that will leave a contaminant behind.   4. Care shall be taken to ensure that the polyethylene pipe is not cut-off-round before attempting the electrofusion process. Out of round pipe shall be removed or corrected in accordance with the pipe manufacturer's instructions.   5. All pipe that shall be fitted with electrofusion couplings shall be restrained or sufficiently supported on each side of the pipe to restrict movement during the fusion and cooling process and eliminate or minimize sources of stress and/or strain until both the fusion cycle and the cooling cycle are completed. Electrofused fittings shall be cooled for the time required by the manufacturer.   6. Electrofusion fittings shall only be re-fused in the event of an input power interruption. I.e. fusion locks were detected during fusion, generator runs out of fuel, processor malfunction, or other circumstance that results in processor input power interruption.   N. Polyethylene pipe shall be joined to ductile iron pipe by the use of butt-fused mechanical joint adapters as specified in Part 2. When using a butt-fused adapter to connect to a valve or to another pipe material, a Type 316 stainless steel sulfidizer shall be used.		C. Flange adapters, when required, shall be butt fused to the polyethylene pipe and shall use Type 316 stainless steel sulfidizer rings. Flange bolts must span the entire width of the flange joint, and provide sufficient thread length to fully engage the nut. JM Adapter kit shall include HDPE anchor fitting, standard rubber gasket, extra length corrosion resistant T-bolt, internal Type 316 stainless steel sulfidizer, and C-153 (2'-12") or C-110 (14'-24") heavy duty ductile iron gland ring.   3.04 SERVICE CONNECTIONS AND TAPPING   A. Unless specifically indicated on the Contract Drawings, no mechanical service saddles or taps are permitted on HDPE pipe without written approval by the Owner.   B. Side-tap (side-wall fused) polyethylene hot tapping saddles shall be provided for each 2-inch nominal diameter and smaller branch/service connection to HDPE mains as specified in Part 2 above, and branch saddles for 3-inch branch/service connections to HDPE mains shall be provided as specified in Part 2 above. HDPE main shall be tapped with a tapping tool or machine that meets the pipe and saddle manufacturer's requirements. Installation of side-wall fused polyethylene saddles and HDPE branch saddles shall be in accordance with AWWA Manual M25, PPI TR-33, ASTM F2009 and shall be by the conventional saddle fusion method unless otherwise approved in writing by the Owner.   C. Connections to new mains larger than 3-inch nominal diameter shall be made with ductile iron tees in accordance with Section 15105 and 15130.   D. For connections larger than 3-inch nominal diameter to existing HDPE mains, mechanical clamps or tapping sleeves or saddles designed for HDPE pipe (at the correct outside diameter) and meeting the requirements of Section 15110 shall be used unless otherwise indicated on the Drawings and/or specified in Section 01011 under 01075.   3.05 ANCHOR RESTRAINTS   A. Concrete anchor collars located at each end of the watermain shall be provided.   3.06 TESTING   A. Pressure testing shall be conducted in accordance with the Manufacturer's recommended procedures and Section 15030, or as otherwise recommended in writing by the Engineer.   B. Stream Crossings shall be pressure tested prior to chlorination and disinfection.		C. A 1/4-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					
11/2019 - Pipeline	15125-13	11/2019 - Pipeline	15125-14	11/2019 - Pipeline	15125-15				

CONSTRUCTION DETAILS		WESTWIND at CUMBERLAND SECTION 1		FRANKLIN, FRANKLIN TOWNSHIP	
DRAWN BY: PDR		CHECKED BY: BKR		SHEET NO. C803C	
2.8.4.2020		91595 ARB-S1		JOHNSON COUNTY, INDIANA	

STOEPPELWERTH		ALWAYS ON		7945 East 106th Street, Elkhart, IN 46531-2505 phone: 317.490.5755 fax: 317.490.5449	
THIS DRAWING IS NOT INTENDED TO BE USED FOR ANY OTHER PROJECTS WITHOUT THE WRITTEN CONSENT OF STOEPPELWERTH & ASSOCIATES, INC. A PROFESSIONAL ENGINEER.		CERTIFIED: 12/02/21		David J. Stoeppelwirth	
REGISTERED PROFESSIONAL ENGINEER		No. 19358		STATE OF INDIANA	





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

CERTIFIED: 12/02/21

*David J. Stoepelwerth*

**STOEPPELWERTH**

ALWAYS ON

7945 East 106th Street, Fishers, IN 46038-2595  
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CONSTRUCTION DETAILS

WESTWIND at CUMBERLAND

SECTION 1

FRANKLIN, FRANKLIN TOWNSHIP

JOHNSON COUNTY, INDIANA

DRAWN BY: PDR

CHECKED BY: BKR

SHIFT NO:

**C803D**

S&A R81810

91595ARB-S1

DATE: JANUARY, 2018

LATEST REV: JANUARY, 2018

APP'D BY: E.M.

6.15 Street Tree Standards (cont.)

Permitted Street Trees

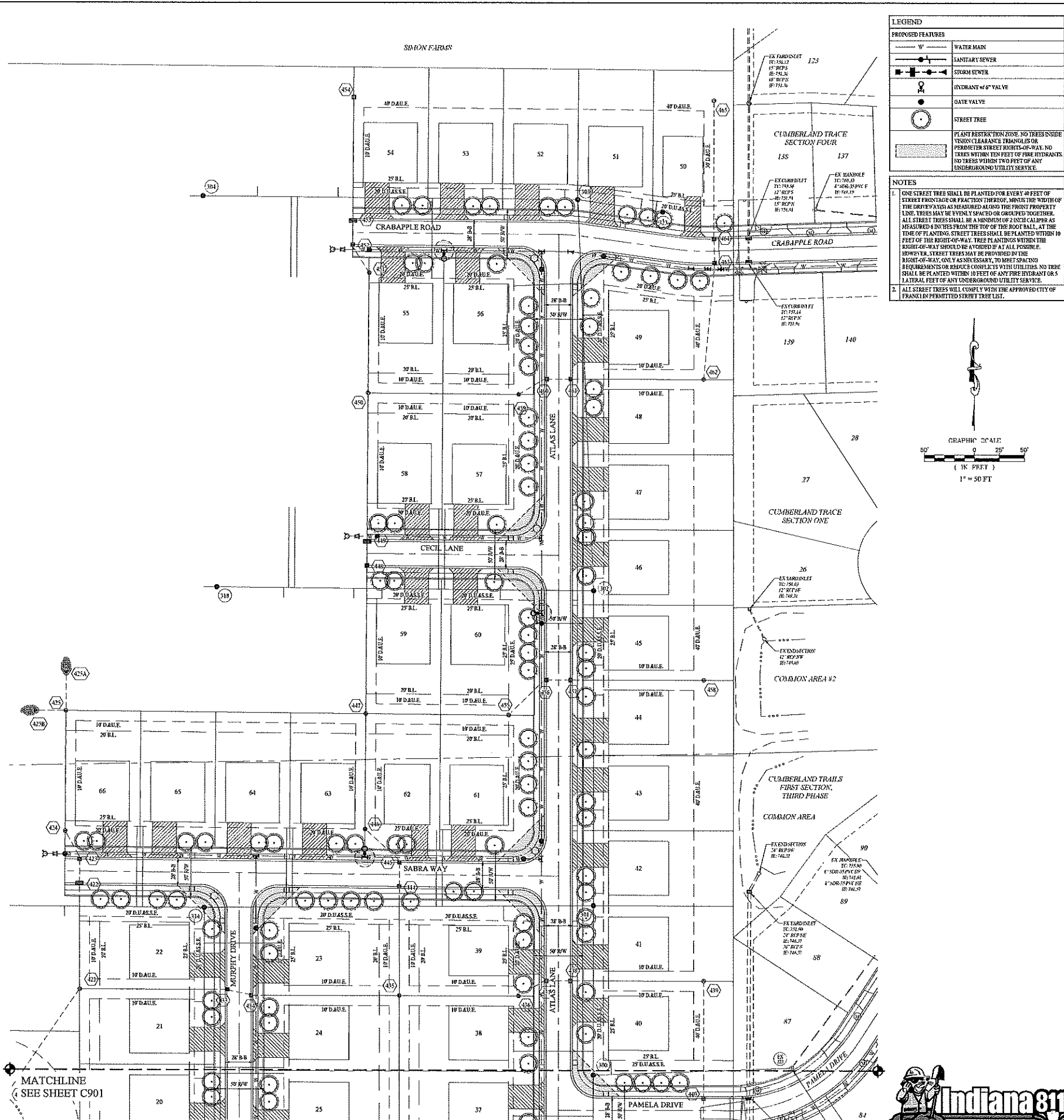
Common Name	Scientific Name
Hornbeam	
American Hornbeam	<i>Corpius Caroliniana</i>
Upright European Hornbeam	<i>Corpius Retusa "Fastigiata"</i>
Elm	
Accolade Elm	<i>Ulmus Japonica x Wilsoniana "Morion"</i>
Frontier Elm	<i>Ulmus Crispifolia x Parvifolia "Frontier"</i>
Homesced Elm	<i>Ulmus "Homesced" (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>
Sweedish Upright Linden	<i>Tilia Cordata "Sweedish Upright"</i>
Maple	
Armstrong Red Maple	<i>Acer Rubrum "Autumn Flame"</i>
Paperbark Maple	<i>Acer Griseum</i>
Red Sunset Red Maple	<i>Acer Rubrum "Red Sunset"</i>
Striped Maple	<i>Acer Pennsylvanicum</i>
Sugar Maple	<i>Acer Saccharum</i>
Tillford Red Maple	<i>Acer Rubrum "Tillford"</i>
Trident Maple	<i>Acer Buergianum</i>
Oak	
Bur Oak	<i>Quercus Macrocarpa</i>
Chestnut Oak	<i>Quercus Prinus</i>
Chinkapin Oak	<i>Quercus Muhlenbergii</i>
English Oak	<i>Quercus Robur</i>
Laurel Oak	<i>Quercus Huachucae</i>
Pin Oak	<i>Quercus Palustris</i>
Post Oak	<i>Quercus Stellata</i>
Red Oak	<i>Quercus Borealis</i>
Scarlet Oak	<i>Quercus Coccinea</i>
Single Oak	<i>Quercus Inimica</i>
Shumard Oak	<i>Quercus Shumardi</i>
White Oak	<i>Quercus Alba</i>
Common Alder	<i>Alnus Glutinosa</i>
Golden Rain Tree	<i>Koelerutaria Pinnatifida</i>
London Plane Tree	<i>Platanus x Acerifolia</i>

CITY OF FRANKLIN SUBMITTION CONTROL ORDINANCE, EFFECTIVE DATE - APRIL 11, 2005  
REVISED PER ORDINANCE #201907

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Subdivisions Standards



STREET TREE PLAN  
WESTWIND at CUMBERLAND  
SECTION 1

STOEPPELWERTH  
ALWAYS ON  
7945 East 106th Street, Fishers, IN 46038-2505  
phone: 317.440.5905 fax: 317.440.5942

FRANKLIN, FRANKLIN TOWNSHIP  
JOHNSON COUNTY, INDIANA

LEGEND

PROPOSED FEATURES

WATER MAIN  
SANITARY SEWER  
STORM SEWER  
HYDRANT 4" VALVE  
GATE VALVE  
STREET TREE

NOTES

1. ONE STREET TREE SHALL BE PLANTED FOR EVERY 25 FEET OF STREET FRONTAGE OR FRACTION THEREOF, MINUS THE WIDTH OF THE DRIVEWAYS AS MEASURED ALONG THE FRONT PROPERTY LINE. TREES MAY BE EVENLY SPACED OR GROUPED TOGETHER. ALL STREET TREES SHALL BE A MINIMUM OF 2 INCH CALIBER AS MEASURED 6 INCHES FROM THE TOP OF THE ROOT BALL, AT THE TIME OF PLANTING. STREET TREES SHALL BE PLANTED WITHIN 10 FEET OF THE RIGHT-OF-WAY. TREE PLANTING WITHIN THE RIGHT-OF-WAY SHOULD BE AVOIDED IF AT ALL POSSIBLE. HOWEVER, STREET TREES MAY BE PROVIDED IN THE RIGHT-OF-WAY ONLY AS NECESSARY, TO MEET SPACING REQUIREMENTS OR RESOLVE CONFLICTS WITH UTILITIES. NO TREE SHALL BE PLANTED WITHIN 10 FEET OF ANY FIRE HYDRANT OR 5 LATERAL FEET OF ANY UNDERGROUND UTILITY SERVICE.

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

THIS DRAWING IS NOT INTENDED TO BE USED AS A BASIS FOR ANY OTHER SURVEY OR A SURVEYOR LOCATION REPORT.

DAVID J. STOEPPELWERTH  
REGISTERED PROFESSIONAL ENGINEER  
No. 19358  
STATE OF INDIANA  
CERTIFIED: 12/02/21  
David J. Stoepelwerth

DRAWN BY: PDR  
CHECKED BY: BKR  
SHEET NO.: C900  
S.A.A. PRO NO. 91595ARB-S1

### 6.15 Street Tree Standards (cont.)

#### Permitted Street Trees

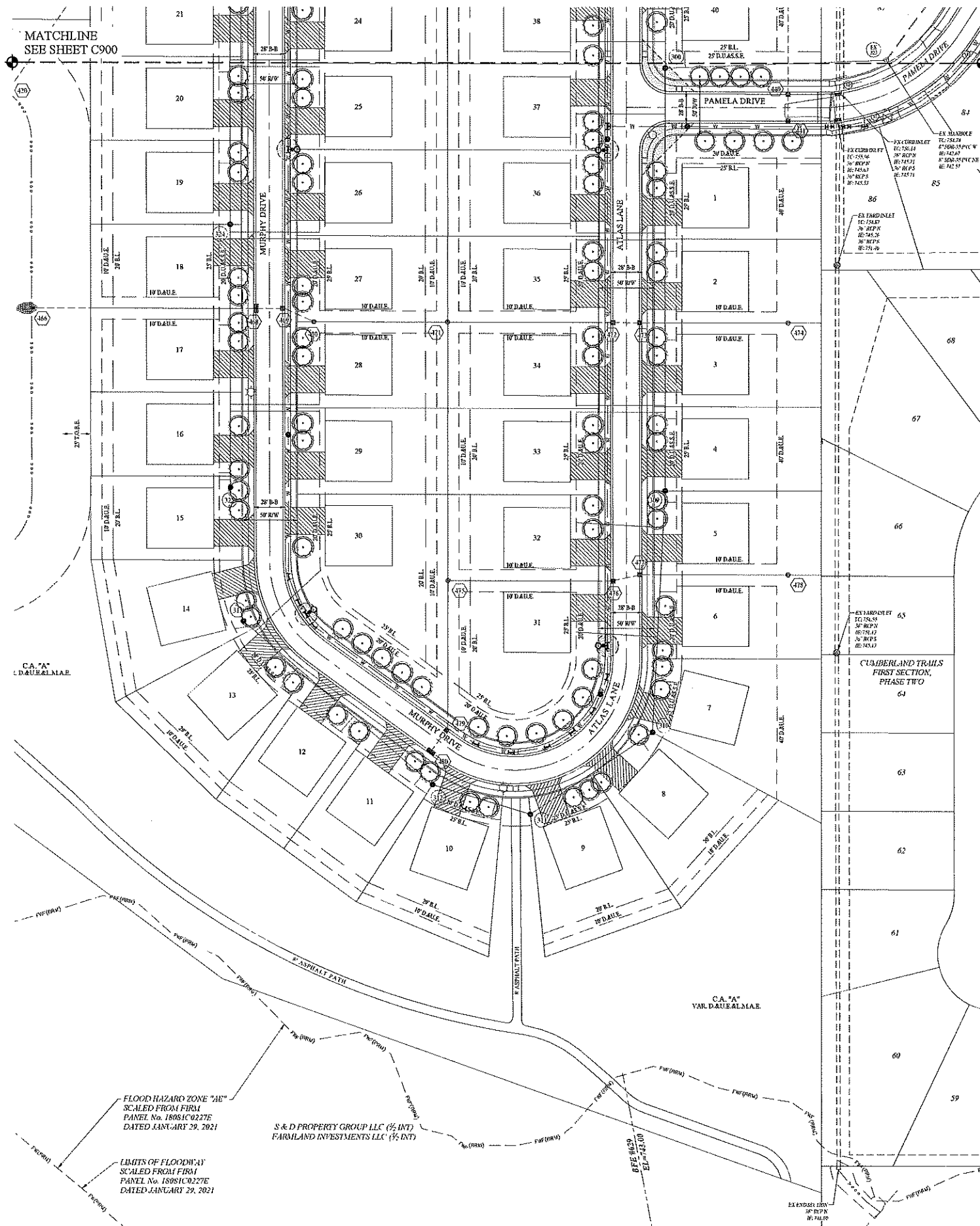
Common Name	Scientific Name
<b>Hornbeam</b>	
American Hornbeam	<i>Carpinus Caroliniana</i>
Upright European Hornbeam	<i>Carpinus Betulus</i> "Fastigiata"
<b>Elm</b>	
Accolade Elm	<i>Ulmus Japonica</i> x <i>Wibsonianus</i> "Morton"
Frontier Elm	<i>Ulmus Carolinensis</i> x <i>Parvifolia</i> "Frontier"
Homestead Elm	<i>Ulmus</i> "Homestead" (copied hybrid)
<b>Ash</b>	
Green Ash	<i>Fraxinus Pennsylvanica</i>
White Ash	<i>Fraxinus Americana</i>
<b>Ginkgo (Male)</b>	
Fairmount Ginkgo	<i>Ginkgo Biloba</i> "Fairmount"
Sentry Ginkgo	<i>Ginkgo Biloba</i> "Sentry"
Upright Ginkgo	<i>Ginkgo Biloba</i> "Upright"
<b>Honeylocust</b>	
Majestic Honeylocust	<i>Gleditsia Triacanthos Inermis</i> "Majestic"
Moraine Honeylocust	<i>Gleditsia Triacanthos Inermis</i> "Moraine"
Shademaster Honeylocust	<i>Gleditsia Triacanthos Inermis</i> "Shademaster"
Skyline Honeylocust	<i>Gleditsia Triacanthos Inermis</i> "Skyline"
Sunburst Honeylocust	<i>Gleditsia Triacanthos Inermis</i> "Sunburst"
<b>Linden</b>	
Basswood	<i>Tilia Americana</i>
Chancellor Linden	<i>Tilia Cordata</i> "Chancellor"
Greenspire Linden	<i>Tilia Cordata</i> "Greenspire"
Silver Linden	<i>Tilia Cordata</i> "Silver"
Swedish Upright Linden	<i>Tilia Cordata</i> "Swedish Upright"
<b>Maple</b>	
Armstrong Red Maple	<i>Acer Rubrum</i> "Autumn Flame"
Paperbark Maple	<i>Acer Griseum</i>
Red Sunset Red Maple	<i>Acer Rubrum</i> "Red Sunset"
Striped Maple	<i>Acer Pennsylvanicum</i>
Sugar Maple	<i>Acer Saccharum</i>
Tulard Red Maple	<i>Acer Rubrum</i> "Tulard"
Trident Maple	<i>Acer Buergerianum</i>
<b>Oak</b>	
Bar Oak	<i>Quercus Macrocarpa</i>
Chestnut Oak	<i>Quercus Prinus</i>
Chinkapin Oak	<i>Quercus Michauxii</i>
English Oak	<i>Quercus Robur</i>
Laural Oak	<i>Quercus Hemisphaerica</i>
Pin Oak	<i>Quercus Palustris</i>
Post Oak	<i>Quercus Stellata</i>
Red Oak	<i>Quercus Borealis</i>
Scarlet Oak	<i>Quercus Coccinea</i>
Shingle Oak	<i>Quercus Inburiana</i>
Shumard Oak	<i>Quercus Shumardii</i>
White Oak	<i>Quercus Alba</i>
<b>Common Alder</b>	<i>Alnus Glutinosa</i>
<b>Golden Rain Tree</b>	<i>Koeleria paniculata</i>
<b>London Plane Tree</b>	<i>Platanus x acerifolia</i>

CITY OF FRANKLIN SUBMISSION CONTROL ORDINANCE, EFFECTIVE DATE - APRIL 11, 2005  
REVISED PER ORDINANCE 2019-07

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Subdivisions Standards



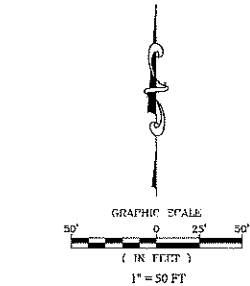
**LEGEND**

**PROPOSED FEATURES**

- WATER MAIN
- SANITARY SEWER
- STORM SEWER
- HYDRANT 4" VALVE
- GATE VALVE
- STREET TREE

**NOTES**

- ONE STREET TREE SHALL BE PLANTED FOR EVERY 40 FEET OF STREET FRONTAGE OR FRACTION THEREOF, MINUS THE WIDTH OF THE DRIVEWAYS AS MEASURED ALONG THE FRONT PROPERTY LINE. TREES MAY BE EVENLY SPACED OR GROUPED TOGETHER. ALL STREET TREES SHALL BE A MINIMUM OF 2 INCH CALIPER AS MEASURED 4 INCHES FROM THE TOP OF THE ROOT BALL AT THE TIME OF PLANTING. STREET TREES SHALL BE PLANTED WITHIN 10 FEET OF THE RIGHT-OF-WAY. TREE PLANTINGS WITHIN THE RIGHT-OF-WAY SHOULD BE AVOIDED IF AT ALL POSSIBLE. HOWEVER, STREET TREES MAY BE PROVIDED IN THE RIGHT-OF-WAY, ONLY AS NECESSARY, TO MEET SPACING REQUIREMENTS OR TO PREVENT CONFLICTS WITH UTILITIES. NO TREE SHALL BE PLANTED WITHIN 10 FEET OF ANY FIRE HYDRANT OR 5 LATERAL FEET OF ANY UNDERGROUND UTILITY SERVICE.
- ALL STREET TREES WILL COMPLY WITH THE APPROVED CITY OF FRANKLIN PERMITTED STREET TREE LIST.



**STOEPPELWERTH**

REGISTERED PROFESSIONAL ENGINEER

NO. 19358

STATE OF INDIANA

CERTIFIED: 12/02/21

David J. Stoepelwerth

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

STREET TREE PLAN

WESTWIND at CUMBERLAND SECTION 1

FRANKLIN, FRANKLIN TOWNSHIP JOHNSON COUNTY, INDIANA

DRAWN BY: PDR

CHECKED BY: BKR

SHEET NO: C901

DATE: 11/30/21

1555ARB-S1