CONDOMINIUM DEVELOPMENT PLAN
THE HAVEN AT LIBERTY GROVE

INDEPENDENCE, KENTON COUNTY, KENTUCKY

JULY, 2024

CONSULTING ENGINEER

HREZO
Engineering, Inc.

ENGINEERING CERTIFICATION • ENGINEERING CONSULTING
FULL ENGINEERING SERVICES • FULL ARCHITECTURAL SERVICES
CONSTRUCTION MANAGEMENT • SURVEYING SERVICES

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289 MADISON PIKE
FT. MITCHELL, KENTUCKY 41017

ARLINGHAUS BUILDERS INC.
142 BARNWOOD DRIVE
EDGEWOOD, KENTUCKY 41017

PROJECT# ENG2311
CONDO DEVELOPMENT PLAN
INDEPENDENCE, KENTON COUNTY, KENTUCKY
APRIL, 2024
HREZO ENGINEERING, INC.

ROBERT JOSEPH HREZO P.E.
KENTUCKY REGISTRATION #PE23254

DATE CERTIFIED

VICINITY MAP

NOT TO SCALE

PLANNED UNIT DEVELOPMENT NOTES

1. CURRENT ZONING: FOR THE SUBJECT PROPERTY IS AS FOLLOWS: (CITY OF INDEPENDENCE ZONING REGULATIONS)
   CURRENT ZONING - PUD - PLAN UNIT DEVELOPMENT
   RESIDENTIAL
   MINIMUM LOT SIZE: 9,200 SF
   MINIMUM FRONT YARD: 15 FEET
   MINIMUM SIDE YARD: 5 FEET
   MINIMUM REAR YARD: 15 FEET
   DENSITY: 13.43 D.U. PER NET ACRE
   MAXIMUM HEIGHT: 35 FEET
2. MADISON PIKE HAS A POSTED SPEED LIMIT OF 25 MPH ALONG THE FRONT OF THE PROPOSED SITE. AN ENCROACHMENT PERMIT WILL NEED TO BE FILED AND APPROVED BY KENTUCKY TRANSPORTATION CABINET. THE TRAFFIC IMPACT STUDY SHOWS NOT IMPROVEMENTS NEEDED TO MADISON PIKE. DEVELOPER UNDERSTANDS THAT THE KENTUCKY TRANSPORTATION CABINET WILL HAVE FINAL APPROVAL, AND WILL AGREE TO THE REQUIREMENTS IMPOSED FOR THE ENCROACHMENT PERMIT.
3. THE PROPOSED DEVELOPMENT IS INCORPORATING OPEN SPACE, THAT WILL BE OWNED AND MAINTAINED BY A HOME OWNERS ASSOCIATION.
4. ONE ENTRANCE SIGN SHALL BE CONSTRUCTED AND THE LANDSCAPING WILL BE ACCORDING PROVIDED LANDSCAPE PLAN.
5. STREET NAMES SHOWN HEREON WILL BE VERIFIED AND RESERVED UPON APPROVAL OF THE STAGE II PLANS.
   HAVEN GROVE ROAD - 24 R/W WITH PAVEMENT WIDTH OF 22 FEET FROM BACK OF CURB TO BACK OF CURB WITH 8' EASEMENT FOR MAINTENANCE AND UTILITIES.
   OASIS DRIVE - 24 R/W WITH PAVEMENT WIDTH OF 22 FEET FROM BACK OF CURB TO BACK OF CURB WITH 8' EASEMENT FOR MAINTENANCE AND UTILITIES.
   SERENITY TERRACE - 24 R/W WITH PAVEMENT WIDTH OF 22 FEET FROM BACK OF CURB TO BACK OF CURB WITH 8' EASEMENT FOR MAINTENANCE AND UTILITIES.
6. CUL-DE-SAC IS A OFFSET TEAR DROP CUL-DE-SAC ACCORDING TO THE CURRENT SUBDIVISION REGULATIONS.
7. THE PROPOSED DEVELOPMENT WILL CONSIST OF CONDOMINIUMS ACCORDING TO RENDERING PROVIDED AND SUBMITTED AS PART OF THE APPROVED MAP AMENDMENT.
8. GAS, ELECTRIC, CATV AND TELEPHONE SHALL BE INSTALLED UNDERGROUND FOR THE ENTIRE DEVELOPMENT.
9. STREET LIGHTS WILL BE DUKE ENERGY DELUXE TRADITIONAL LED WITH POLE STYLE B, AND WILL BE PROVIDED AND INSTALLED BY THEM.
10. COMMUNITY FENCING WILL BE AS FOLLOWS:
    DOG PARK - KENTUCKY BOARD W/ WIRE MESH NOT TO EXCEED 4' IN HEIGHT
    OTHER FENCING IF NEEDED WILL BE KENTUCKY 4-BOARD FENCE NOT TO EXCEED 4' IN HEIGHT
11. WALKING TRAILS WILL BE 4' WIDE ASPHALT PATH, SEE DETAIL AND SITE PLANS FOR LOCATIONS.
12. SITE WALLS WILL BE EITHER REDI-ROCK GRAVITY WALLS OR ALLEN BLOCK WALLS WITH NATURAL COLORS AND DECORATIVE PATTERNS.
13. DUMPSTER ENCLOSURE SHALL BE CONSTRUCTED AS CONCRETE RETAINING WALLS AND DOORS FOR GARBAGE TRUCK ACCESS, SEE DETAIL.
14. EXTERIOR CONSTRUCTION WILL CONSIST OF PARTIAL FRONT BRICK AS 4th OPTION., ALONG WITH FIBER CEMENT BOARD PANELS W/ 1X2 BATTENS AT 16" ON CENTER. EXTERIOR TRIM SHALL BE 1X4 ROUGH CEDAR PAINTED. 5" ALUMINUM, K-STYLE CONTINUOUS GUTTERS PAINTED WHT X 3" RECTANGULAR DOWNSPOUTS. ROOFING MATERIAL WILL BE FIBERGLASS SHINGLES, CAMELOT II - AGED OAK, FLASHING AND VALLEYS PAINTED TO MATCH ROOF COLORS. SEE RENDERINGS PROVIDED BY FISHER HOMES.
15. A HOME OWNERS ASSOCIATION WILL BE SET UP TO MANAGE THE OPEN SPACE, MAINTENANCE OF THE EXTERIORS OF THE BUILDINGS, SITE LANDSCAPING, PARKING PADS, SIDEWALKS, WALKING TRAILS, FENCING AND OTHER SITE ITEMS AS REQUIRED.
16. THE DECLARATION OF COVENANTS FOR THE CONDOMINIUMS WILL INCLUDE THE FOLLOWING ITEMS AS REQUIRED BY THE APPROVAL OF THE MAP AMENDMENT:
    16.1. RENTALS ARE NOT PERMITTED, EXCEPT UNDER EXTREME CIRCUMSTANCES, AND WITH HOME OWNERS ASSOCIATION BOARD APPROVAL. THIS APPROVED RENTAL WILL NOT EXCEED ONE YEAR TIME FRAME.
    16.2. MULTIPLE UNITS SHALL NOT BE OWNED BY THE SAME INDIVIDUAL OR OWNERSHIP ENTITY.
17. THE DECLARATION OF COVENANTS NEEDS TO BE APPROVED BY THE CITY PRIOR TO FINAL PLAT AND BUILDING PERMIT APPROVAL.

SYMBOL LEGEND

- EXISTING POWER POLE
- EXISTING FIRE HYDRANT
- EXISTING MAILBOX
- EXISTING GAS VALVE
- EXISTING GAS VALVE BOX
- WATER VALVE SHOWN ON NKWD MAPPING - NOT FOUND
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING MANHOLE (SAN = SANITARY STM = STORM)
- EXISTING CURB INLET
- EXISTING CATCH BASIN
- EXISTING COMMUNICATIONS PEDESTAL
- EXISTING ELECTRICAL TRANSFORMER
- EXISTING SIGN
- EXISTING STORM HEADWALL STRUCTURE
- EXISTING TREE
- PROPOSED FIRE HYDRANT
- PROPOSED WATER METER
- PROPOSED WATER VALVE
- PROPOSED AIR RELEASE VALVE
- DIRECTION OF GRADE DRAINAGE
- DIRECTION OF PIPE DRAINAGE
- SURVEY CONTROL POINT
- B- BORING LOCATION
- NORTH ARROW
- KEYNOTE REFERENCE
- LIGHT POLE
- GROUND LIGHT

LINETYPE LEGEND

- EXISTING PROPERTY LINE & RIGHT OF WAY LINE
- EXISTING UTILITY EASEMENT
- EXISTING SANITARY SEWER OR COMBINED
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- EXISTING WATER SERVICE
- EXISTING UNDERGROUND GAS
- EXISTING OVERHEAD ELECTRIC
- EXISTING UNDERGROUND ELECTRIC
- EXISTING UNDERGROUND TELEPHONE
- EXISTING FENCE
- PROPOSED WATER SERVICE
- PROPOSED WATER LINE
- EXISTING WATER LINE TO BE ABANDONED

GENERAL NOTES

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE EXACT SIZE, TYPE, AND LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION STAKING.
2. LOCATION OF EXISTING UTILITIES AND STRUCTURES, BOTH SURFACE AND SUBSURFACE, ARE SHOWN ON THE PLANS FROM DATA AVAILABLE AT THE TIME OF BIDDING, AND ARE CORRECT TO THE BEST OF OUR KNOWLEDGE. DURING CONSTRUCTION THE CONTRACTOR SHALL USE DILIGENCE IN PROTECTING FROM DAMAGE ALL EXISTING UTILITIES AND STRUCTURES WHETHER SHOWN ON THE PLAN OR NOT. IF DAMAGE IS CAUSED, THE CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR OR RESTORATION OF SAME TO THE SATISFACTION OF THE ENGINEER AND THE UTILITY COMPANY.
3. PLANS PREPARED FROM AVAILABLE DATA FROM MULTIPLE SOURCES. PROPERTY LINES, LAYOUT, GRADES AND ELEVATIONS TO BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION. (COST SHALL BE INCIDENTAL TO THE OVERALL PROJECT)
4. HORIZONTAL AND VERTICAL DATUM FOR PROJECT BASED ON NORTHERN KENTUCKY CONTROL NETWORK (NAD 83), (NAVD 88) - CONTROL MONUMENTS FOUND AND USED -
5. ALL SHUT DOWNS AND TIE INS TO BE COORDINATED AND VERIFIED WITH NORTHERN KENTUCKY WATER DISTRICT PRIOR TO SHUT DOWN OR TIE IN. CONTACT NORTHERN KENTUCKY WATER DISTRICT (859) 578-6898.
6. ALL WATER MAIN WORK TO BE COMPLETED PER NORTHERN KENTUCKY WATER DISTRICT SPECIFICATIONS.
7. UTILITY CONTACT INFORMATION IN THE PROJECT AREA:
   SANITATION DISTRICT No. 1 - 859 578-7450
   DUKE ENERGY - 859 534-4370
   CINCINNATI BELL - 513 566-8089
   SPECTRUM CABLE - 859 431-0300
   NORTHERN KENTUCKY WATER DISTRICT - 859 578-6898
8. TRAFFIC SAFETY AND CONTROL ALONG THE PROJECT ROUTE WILL BE DONE IN ACCORDANCE WITH SPECIFICATIONS AND REQUIREMENTS PER THE KENTUCKY TRANSPORTATION CABINET. COORDINATE LANE CLOSURES AND WORK AREAS WITH KENTUCKY TRANSPORTATION COMPANY. (KYTC PERMIT BY NKWD. REFER TO PERMIT IN SPECIFICATION BOOK.)
9. BMP (BEST MANAGEMENT PRACTICES) ARE REQUIRED TO KEEP SEDIMENT, DEBRIS AND FLUIDS FROM THE PROPOSED CONSTRUCTION ACTIVITIES FROM ENTERING THE EXISTING STORM SYSTEM. APPROVED CATCH BASIN FILTERS SHALL BE INSTALLED AROUND INLETS IN THE CONSTRUCTION AREA DURING THE ENTIRE CONSTRUCTION PHASE. APPROVED SILT FENCING OR STRAW BALE BARRIERS SHALL BE INSTALLED IN AREAS OUTSIDE OF PAVEMENT TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION AREA.
10. CONTRACTOR IS RESPONSIBLE FOR KEEPING FILED NOTES THAT PROVIDE SUFFICIENT DATA FOR PREPARING "RECORD DRAWINGS" UPON COMPLETION OF THE PROJECT.
11. A KYTC ENCROACHMENT PERMIT WILL BE SUBMITTED FOR THE ACCESS TO MADISON PIKE.
12. THE SITE WILL BE DEVELOPED IN ONE PHASE.

HOT MIX ASPHALT PAVEMENT

GENERAL

1. ASPHALT BASE AND SURFACE MATERIALS SHALL MEET OR EXCEED THE REQUIREMENTS AND SPECIFICATIONS AS INDICATED IN THE KENTUCKY TRANSPORTATION CABINET (KYTC) CONSTRUCTION AND MATERIALS SPECIFICATIONS MANUAL (LATEST EDITION) SECTION 300 & 400 OR ENGINEERS APPROVED EQUAL.
2. ASPHALT BASE WORK, TESTING AND PLACEMENT SHALL MEET OR EXCEED THE SPECIFICATIONS AS PER THE KYTC CONSTRUCTION AND MATERIALS SPECIFICATIONS MANUAL (LATEST EDITION) SECTION 300 & 400 OR ENGINEERS APPROVED EQUAL.
3. ASPHALT SURFACE WORK, TESTING AND PLACEMENT SHALL MEET OR EXCEED THE SPECIFICATIONS AS PER THE KYTC CONSTRUCTION AND MATERIALS SPECIFICATIONS MANUAL (LATEST EDITION) SECTION 300 & 400 OR ENGINEERS APPROVED EQUAL.
4. PAVEMENT MARKINGS WILL NOT BE APPLIED UNTIL LAYOUT, COLORS AND PLACEMENT HAVE BEEN VERIFIED BY OWNER. COLOR TO BE THOSE DEFINED BY KYTC CONSTRUCTION AND MATERIALS SPECIFICATIONS MANUAL (LATEST EDITION) SECTION 842 & 846 OR ENGINEERS APPROVED EQUAL. ALLOW PAVING TO AGE FOR A MINIMUM OF 30 DAYS PRIOR TO MARKING. SWEEP AND CLEAN SURFACE TO ELIMINATE LOOSE MATERIAL AND DUST. APPLY PAINT WITH MECHANICAL EQUIPMENT TO PRODUCE PAVEMENT MARKINGS OF DIMENSIONS INDICATED WITH UNIFORM STRAIGHT EDGES. APPLY AT MANUFACTURES RECOMMENDED RATES AND TEMPERATURE RANGE.
5. PAINT FOR PARKING AREAS SHALL BE HIGH QUALITY, WHITE, WATER BASED.

SITE ELECTRIC

GENERAL

1. PROVIDE SITE ELECTRICAL AS REQUIRED BY ELECTRICAL/ARCHITECTURAL TELEPHONE AND/OR CABLE DRAWINGS.
2. PROPOSED SITE LIGHTING WILL BE DUKE ENERGY STREET LIGHTS WITHIN THE UTILITY EASEMENT. FINAL PLACEMENT WILL BE DESIGNED BY DUKE ENERGY

SITE CONCRETE

1. CONCRETE WORK AND TESTING SHALL CONFORM TO ALL REQUIREMENTS OF ACI 301-96, "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS," EXCEPT AS MODIFIED BY THE SUPPLEMENTAL REQUIREMENTS BELOW.
2. CONCRETE MIX DESIGN SHALL BE SUBMITTED FOR EACH TYPE OF CONCRETE TO THE OWNER FOR APPROVAL IN ACCORDANCE WITH ACI 301-96 SECTION 4.2.3.4, "FIELD TEST DATA OR TRIAL MIXTURES."
3. CAST-IN-PLACE CONCRETE SHALL BE:
   A) READY MIX ASTM-C94
   B) F'c FOR LEVELING PAD TO BE 4,000PSI @28 DAYS WITH FIBER MEASH ADDITATIVE.
4. CONCRETE WORK IN COLD WEATHER SHALL CONFORM TO ALL REQUIREMENTS OF ACI 306.1-90, "STANDARD SPECIFICATION FOR COLD WEATHER CONCRETING," AND ACI 306R-88, "COLD WEATHER CONCRETING."
5. CONCRETE WORK IN HOT WEATHER SHALL CONFORM TO ALL REQUIREMENTS OF ACI 305R-91, "HOT WEATHER CONCRETING."
6. ALL CONCRETE THAT IS EXPOSED TO FREEZE AND THAW CYCLES SHALL HAVE 5% AIR ENTRAINMENT, ±1%
7. WATER REDUCER IF USED SHALL BE HIGH RANGE WATER REDUCER (HRWR) ADMIXTURE, ASTM C494.
8. LIMIT TOTAL AMOUNT OF CHLORIDE ION CONTENT IN CONCRETE TO AMOUNT INDICATED IN TABLE 4.2.2.6 OF ACI 318-96. ADMIXTURES CONTAINING CHLORIDE ARE NOT PERMITTED IN REINFORCING CONCRETE OR CONCRETE CONTAINING METALS.
9. CONCRETE SLUMP SHALL BE 4" MAX. AND SHALL BE MEASURED PRIOR TO THE ADDITION OF HRWR.
10. ALL CAST-IN-PLACE CONCRETE SHALL BE POURED CONTINUOUSLY WITH NO COLD JOINTS, AND VIBRATED ADEQUATELY TO PREVENT ANY AIR POCKETS AND HONEYCOMB EFFECT. IF VERTICAL CONTROL JOINTS ARE NECESSARY, INSTALL A CONTINUOUS, PREFORMED NEOPRENE GASKET. REINFORCING SHALL EXTEND ACROSS THE JOINT UNLESS OTHERWISE NOTED. COLD JOINTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
11. WATER IS NOT TO BE ADDED TO CONCRETE MIX ON SITE UNLESS APPROVED IN WRITING BY ENGINEER.
12. REINFORCEMENT COVER SHALL BE 3" AT EARTH FORM AND 2" AT FORM WORK, UNLESS OTHERWISE NOTED
13. ALL REINFORCING STEEL SHALL BE ASTM A615 GRADE 60KSI YIELD STRENGTH.
14. ALL CONCRETE FLATWORK SHALL INCLUDE A MINIMUM:
   A) 1-1/2# / CY FIBERMESH REINFORCING, OR
   B) ENGINEER APPROVED REINFORCING

SITE WORK

1. INSPECT SOIL FOR PROPER BEARING CONDITIONS. REPORT UNDERGROUND WATER, DEBRIS, OR OTHER UNDESIRABLE CONDITIONS TO THE OWNER. REMOVE ALL LOOSE DIRT AND DEBRIS BEFORE PLACING CONCRETE. FOOTINGS TO BE PLACED ON LEVEL, UNDISTURBED SOIL, OR FILL COMPACTED TO 3000 PSF MIN. UNKNOWN UNDERGROUND CONDITIONS WHICH PRESENT INADEQUATE BEARING AND/OR UNEXPECTED, NECESSARY ROCK EXCAVATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL MAKE THE OWNER AWARE OF THESE CONDITIONS PRIOR TO PROCEEDING WITH SUCH WORK.
2. CONTRACTOR SHALL CONTACT UTILITY COMPANIES FOR LOCATION OF ALL UNDERGROUND SERVICES AND IS RESPONSIBLE FOR THEIR PROTECTION AND SUPPORT.
3. COMPACTION:
   A. ALL FILL MATERIALS SHALL BE APPROVED BY A GEOTECHNICAL CONSULTANT.
   B. BACKFILL ALONG LEVELING PAD TO BE CLAYEY MATERIAL COMPACTED IN 6" LIFTS TO 98% STANDARD PROCTOR DENSITY.
4. ALL AREAS WITHIN THE UTILITY TRENCHES, MUST BE FREE OF ANY WET AND/OR SOFT AREAS PRIOR TO PLACEMENT OF FILL MATERIAL OR SLAB.
5. SLOPE GRADE AS SHOWN ON PLANS KEEP GRADE A MIN. OF 9" FROM TOP OF CONCRETE FOUNDATIONS. SLOPE GRADE AWAY FROM STRUCTURE 6" IN 10'-0" MIN.

STORM SEWER

GENERAL

1. IMPERVIOUS SURFACE AREA WILL INCREASE FOR THE OVERALL SITE. THE STORM WATER GENERATED BY THIS PROJECT CAN EASILY BE CONTAINED IN THE EXISTING LAKE AND EXISTING DETENTION POND.
2. THE CONTRACTOR SHALL CONTACT AND COORDINATE ALL LOCAL UTILITY COMPANY COMMUNICATION AND HAVE UTILITIES MARKED ON-SITE PRIOR TO EXCAVATION.
3. CONTRACTOR SHALL FURNISH AND INSTALL PIPING AND FITTINGS REQUIRED FOR THE STORM SEWER COLLECTION SYSTEM AS SHOWN ON THE PLANS. WORK SHALL INCLUDE BUT NOT BE LIMITED TO BOTH MAINLINE SEWER, LATERALS, AND STRUCTURES NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM AS SHOWN.
4. ALL WORK SHALL CONFORM TO APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION. EACH CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, TESTS AND INSPECTIONS AS REQUIRED BY AUTHORITIES HAVING JURISDICTION FOR HIS OWN WORK.
5. WORKMANSHIP SHALL REPRESENT THE HIGHEST STANDARD OF THE INDUSTRY. GUARANTEE ALL MATERIAL AND WORKMANSHIP FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE.
6. MATERIALS SHALL BE MANUFACTURERS STANDARD COMMERCIAL GRADE UNLESS SPECIFIED HEREIN. ALL MATERIALS SHALL BE NEW, UNLESS SPECIFIED OTHERWISE.

MATERIAL

1. HDPE PIPE 4"-60" DIA.
   1.1. PIPE SHALL BE ADS N12 CORRUGATED HDPE WT (WATERTIGHT) PIPING; AASHTO M252, TYPE S OR EQUAL.
   1.2. MINIMUM COVER SHALL BE:
      1.2.1. 4"-48" PIPE: 1'-0" MIN. FROM CROWN OF PIPE.
      1.2.2. 60" PIPE: 2'-0" MIN. FROM CROWN OF PIPE.
   1.3. FITTINGS: ASTM F2306.
   1.4. INSTALLATION OF PIPE SHALL COMPLY WITH ASTM D2321 AND ADS INSTALLATION GUIDELINES.
2. ALL JOINTS SHALL BE MADE WITH INTEGRALLY-FORMED BELL AND SPIGOT N-12 JOINTS MEETING AASHTO M252, M294 OR ASTM F2360
3. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING STORM SEWER PIPING FROM PROPOSED CONSTRUCTION TO EXISTING CATCH BASIN OR AS DESIGNATED ON PLANS.
4. CONTRACTOR TO PROVIDE ALL FITTINGS SUCH AS WYE'S, TEE'S, REDUCERS, COUPLERS, ETC. FOR A COMPLETE AND OPERATIONAL PROJECT.

INSTALLATION

1. TRENCH EXCAVATION - CONTRACTOR SHALL DO ALL EXCAVATION NECESSARY FOR AND PROPERLY INCIDENTAL TO THE PROPER COMPLETION OF WORK CALLED FOR BY THE DRAWINGS AND SPECIFICATIONS. HE SHALL FURNISH ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT NECESSARY FOR THE WORK CONTEMPLATED. POWER SHOVEL OR EXCAVATION MACHINE MAY BE USED, AND CARE SHALL BE TAKEN AT ALL TIMES TO KEEP SAID MACHINE OUT OF ELECTRIC OR TELEPHONE LINES PASSING ACROSS OR ALONG THE SITE OF THE WORK.

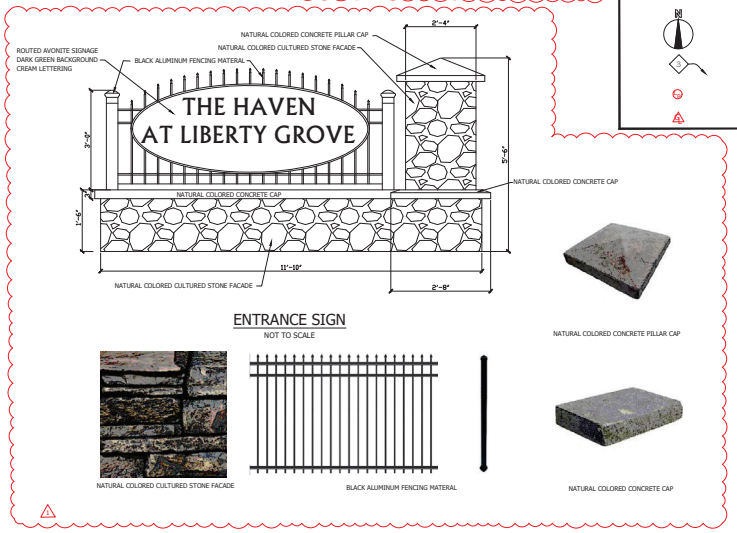
OTHER

1. CATCH BASINS SHALL BE PROVIDED WITH A MINIMUM SLOPE OF 1 % FROM INFLUENT INVERT TO EFFLUENT INVERT.
2. MIN. SLOPE SHALL BE 0.5% OR AS SPECIFIED ON PLANS.
3. SEE BACKFILL DETAILS FOR ADDITIONAL INFORMATION ON PIPE PLACEMENT IN TRENCH.

DRAWING INDEX

			DRAWING REVIEW - 2-2-24	PERMITTING - 2-27-24	BID SET - 3-12-24	STAGE 1 - 7-3-24	STAGE 1 REVISED - 7-24-24
GENERAL		COVER SHEET	•	•	•	•	•
	PR-1	PROJECT REFERENCE & SHEET INDEX	•	•	•	•	R
	EC-1	EXISTING CONDITIONS PLAN	•	•	•	•	R
	C-1.1	OVERALL SITE LAYOUT PLAN	•	•	R	R	R
	C-1.2	WALL DETAIL LAYOUT		•	R	R	R
	C-2.1	OVERALL GRADING PLAN	•	•	R	R	R
	C-3.1	OVERALL UTILITY LAYOUT	•	•	R	R	R
	C-3.2	STORM SEWER PROFILES	•	•	R	R	R
	C-3.3	STORM SEWER PROFILES		•	R	R	R
	C-3.4	SANITARY SEWER PROFILES		•	R	R	R
	C-3.5	WATER LINE PROFILE		•	R	R	R
	C-4.1	EROSION CONTROL NOTES	•	•	R	R	R
	C-4.2	EROSION CONTROL PLAN	•	•	R	R	R
	C-5.1	DETAILS SHEET	•	•	R	R	R
	C-5.2	DETAILS SHEET	•	•	R	R	R
	C-5.3	DETAILS SHEET					•

NOTES: "•" = ORIGINAL, "R" = NO CHANGE, "R" = REVISED



ENTRANCE SIGN

NOT TO SCALE

NATURAL COLORED CULTURED STONE FACADE

BLACK ALUMINUM FENCING MATERAL

NATURAL COLORED CONCRETE PILLAR CAP

NATURAL COLORED CONCRETE CAP

KENTUCKY UNDERGROUND PROTECTION INC. CALL 2 WORKING DAYS BEFORE YOU DIG! 811

CLIENT:
MADISON PIKE PARTNERS LLC
5 TOWER DRIVE
NEWPORT, KENTUCKY 41071

OWNERS:
ANR LOGISTICS LLC
289 MADISON PIKE
FT. MITCHELL, KENTUCKY 41017

ARLINGHAUS BUILDERS INC.
142 BARNWOOD, KENTUCKY 41017

TAX PARCELS FOR SUBJECT SITE

047-10-00-083.00, 047-10-00-087.00, 047-00-01-041.00, 047-00-01-042.00 AND 047-00-01-011.00

PARKING COUNT

72 GARAGE SPACES
72 DRIVE WAY SPACES
113 OFF STREET PARKING RESIDENTIAL
257 SPACE FOR RESIDENTIAL
2.34 SPACES PER UNIT

AREA / DENSITY

4.17 ACRES OF OPEN SPACE
4.02 ACRES IN LOTS
1.07 ACRES IN RIGHT-OF-WAY
9.26 ACRES TOTAL

DENSITY CALCULATION
110 TOTAL UNITS
8.19 ACRES IN LOTS AND OPEN SPACE
13.43 UNITS PER NET ACRE

OPEN SPACE
45.0% OPEN SPACE PROVIDED

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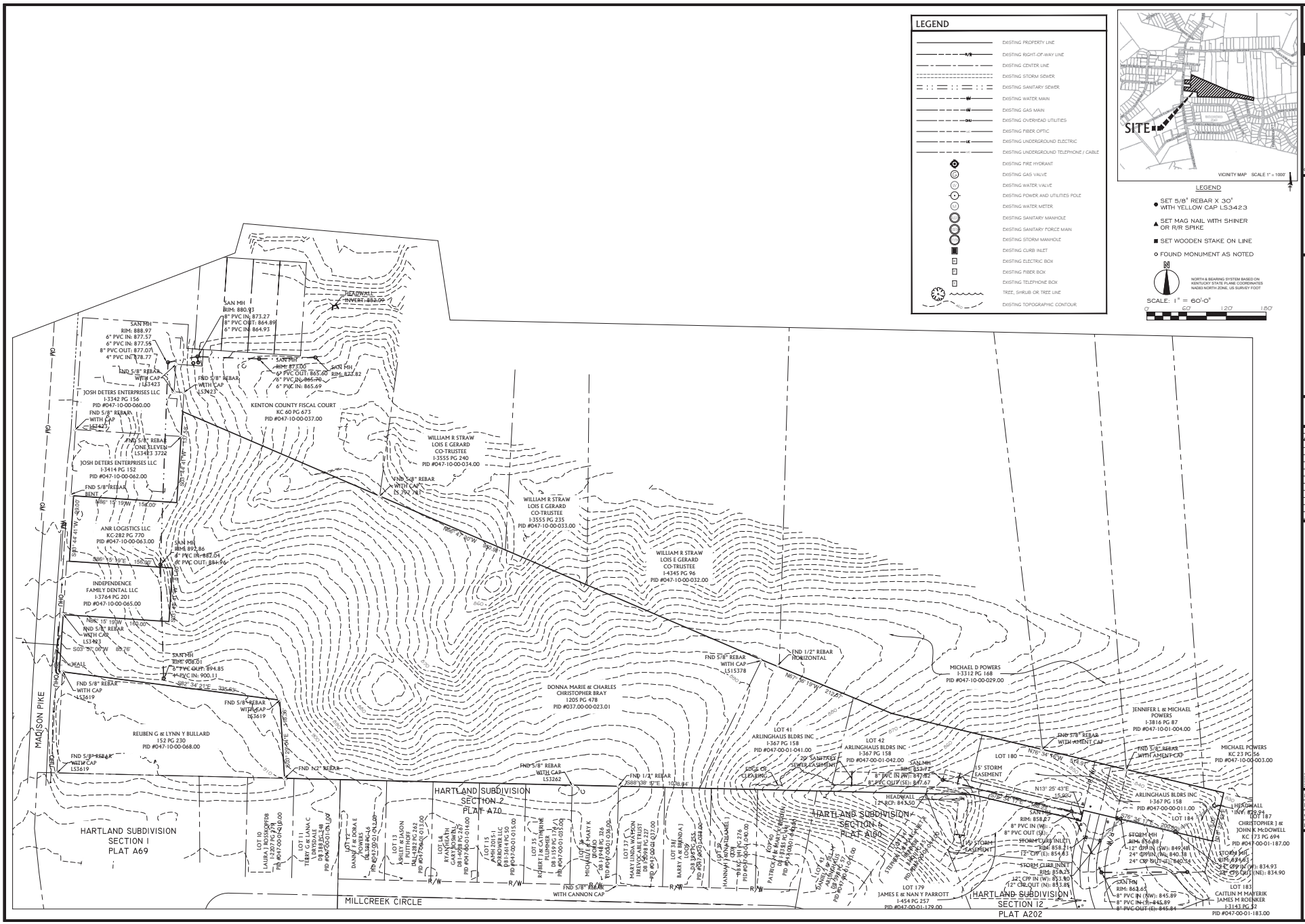
REVISION	DATE
1. PDS REVISIONS FROM 7-24-24	7-26-24

PROJECT: THE HAVEN AT LIBERTY GROVE
CLIENT: MADISON PIKE PARTNERS, LLC
CONTACT: ANR LOGISTICS LLC: 289 MADISON PIKE, FT. MITCHELL, KENTUCKY 41017
ARLINGHAUS BUILDERS INC.: 142 BARNWOOD, KENTUCKY 41017

DATE: SEE RELEASE DATES
DRAWN BY: JCE
CHECKED BY: RJH
PROJECT: ENG 2311

PROJECT REFERNCE & SHEET INDEX

PR-1



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REVISION	DATE
1 REVISED PER PDS	7-25-24

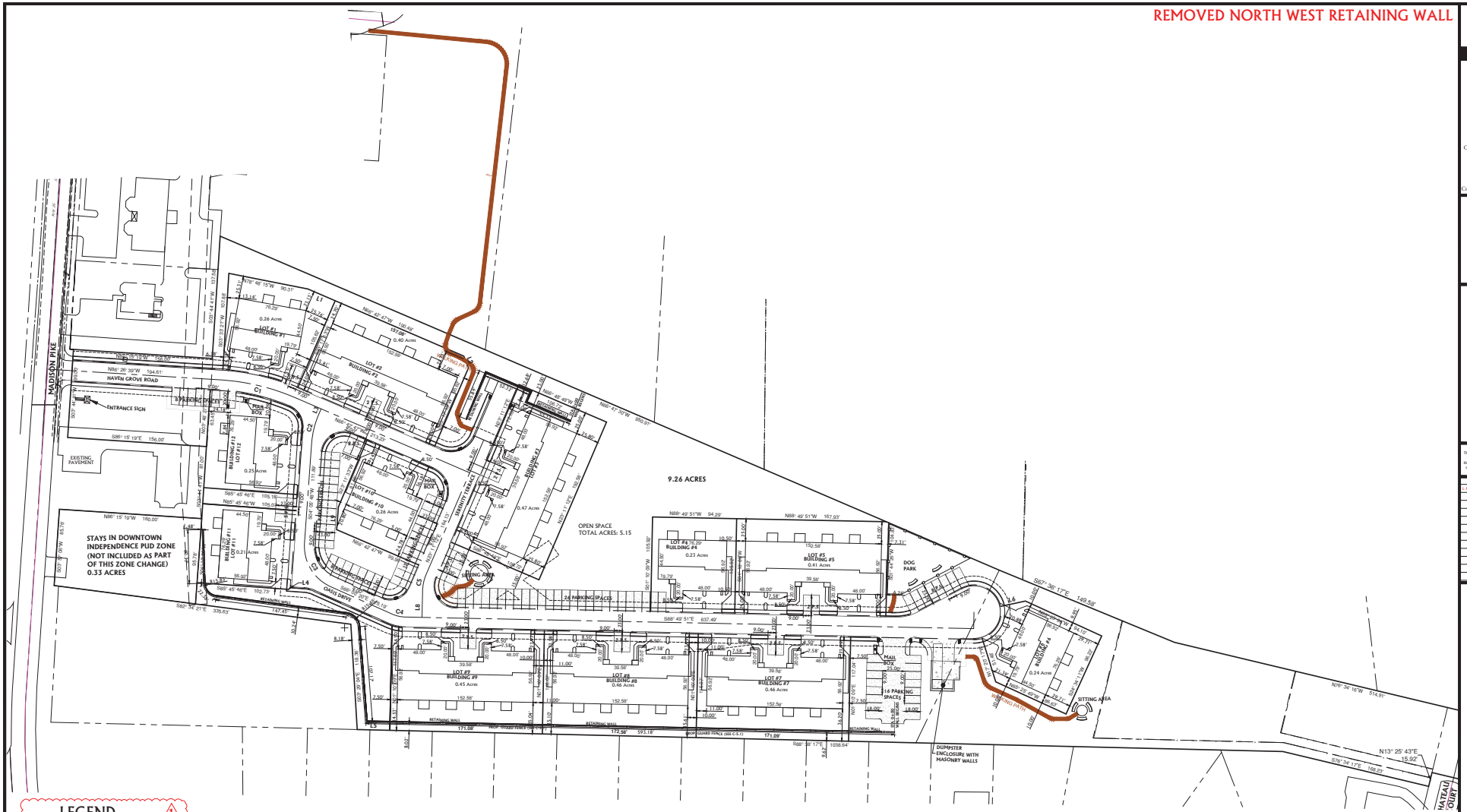
PROJECT: THE HAVEN AT LIBERTY GROVE
CLIENT: MADISON PIKE PARTNERS, LLC
OWNER: ANR LOGISTICS LLC; 289 MADISON PIKE, FT. MITCHELL, KENTUCKY 41017
ARLINGHAUS BUILDERS INC.; 142 BARNWOOD, KENTUCKY 41017

DATE: SEE RELEASE DATES
DRAWN BY: .
CHECKED BY: .
PROJECT: ENG 2311

EXISTING CONDISTIONS

1

REMOVED NORTH WEST RETAINING WALL



LEGEND

- LIGHT DUTY ASPHALT
- LIGHT DUTY CONCRETE
- HEAVY DUTY CONCRETE

PAVEMENT THICKNESS PER KENTON COUNTY STANDARDS. SEE TABLE 4.4-2 ON SHEET 5.3.

- 4' ASPHALT WALKING TRAIL

OVERALL SITE LAYOUT PLAN

SCALE: 1" = 50'

0 50' 100' 150'

Curve Table

Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C1	86.09	250.00	19.73	N76° 34' 43"W	85.67
C2	33.49	100.00	19.19	S13° 41' 31"W	33.34
C3	61.18	50.00	70.10	S30° 57' 16"E	57.42
C4	15.34	39.00	22.53	S77° 25' 06"E	15.42
C5	19.21	59.00	22.02	N12° 19' 40"E	19.10

Parcel Line Table

Line #	Length	Direction
L1	23.40	N66° 42' 46.43"W
L2	14.14	N21° 42' 46.43"W
L3	6.94	S23° 17' 13.57"W
L4	3.13	S69° 05' 48.26"E
L5	36.62	N88° 39' 17.21"W
L6	28.50	S77° 50' 17.03"W
L7	18.58	N1° 09' 21.40"E
L8	29.23	N1° 10' 09.03"E
L9	25.47	N4° 05' 48.26"E

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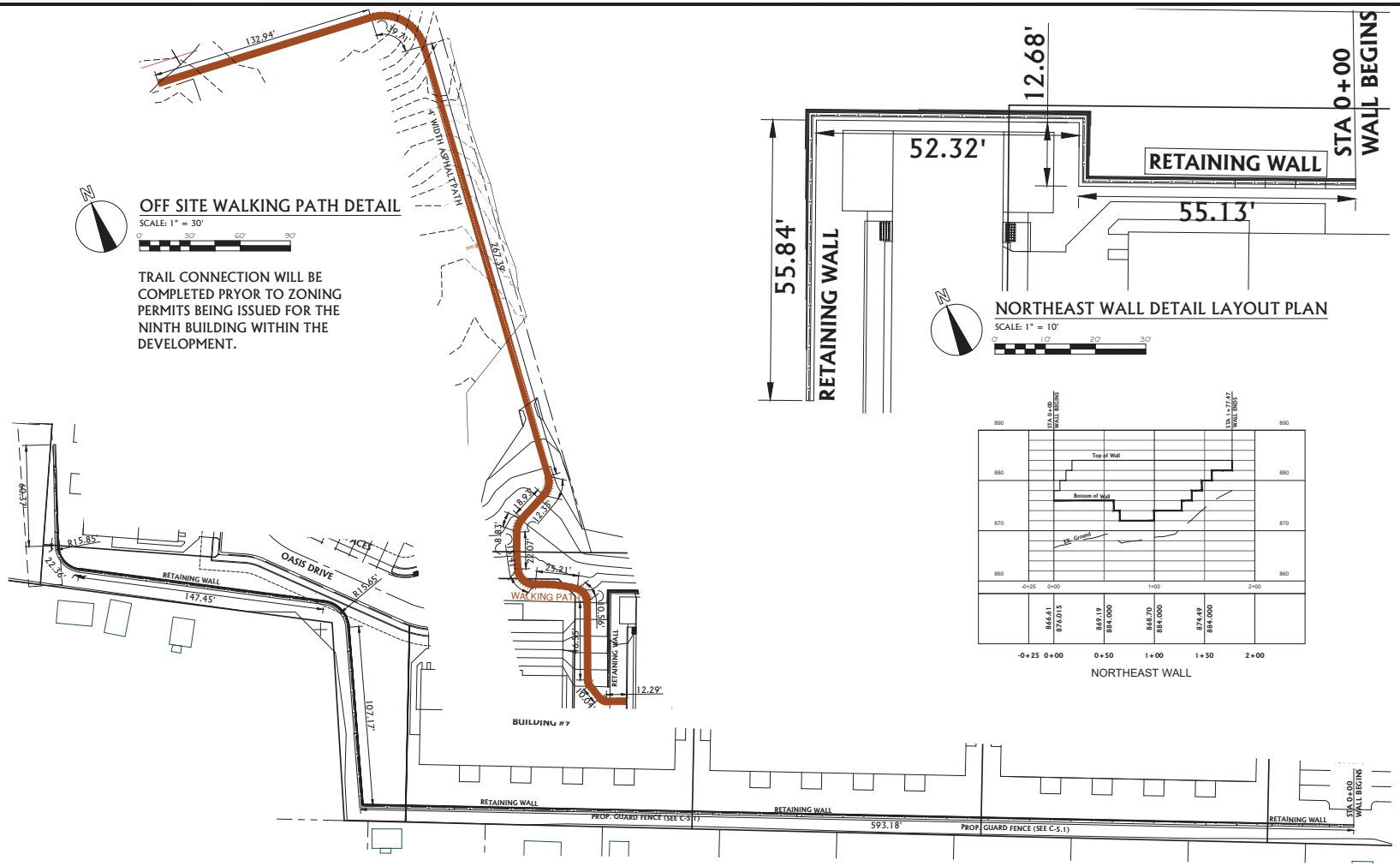
REVISION	DATE
1. PDS REVISIONS FROM 7-24-24	7-25-24

PROJECT: THE HAVEN AT LIBERTY GROVE
CLIENT: MADISON PIKE PARTNERS, LLC
Contact: ANR LOGISTICS LLC: 289 MADISON PIKE, FT. MITCHELL, KENTUCKY 41017
ARLINGHAUS BUILDERS INC.: 142 RARNWOOD, KENTUCKY 41017

DATE: SEE RELEASE DATES
DRAWN BY: JCE
CHECKED BY: RJH
PROJECT: ENG 2311

SITE LAYOUT PLAN

C-1.1



OFF SITE WALKING PATH DETAIL

SCALE: 1" = 30'

0' 30' 60' 90'

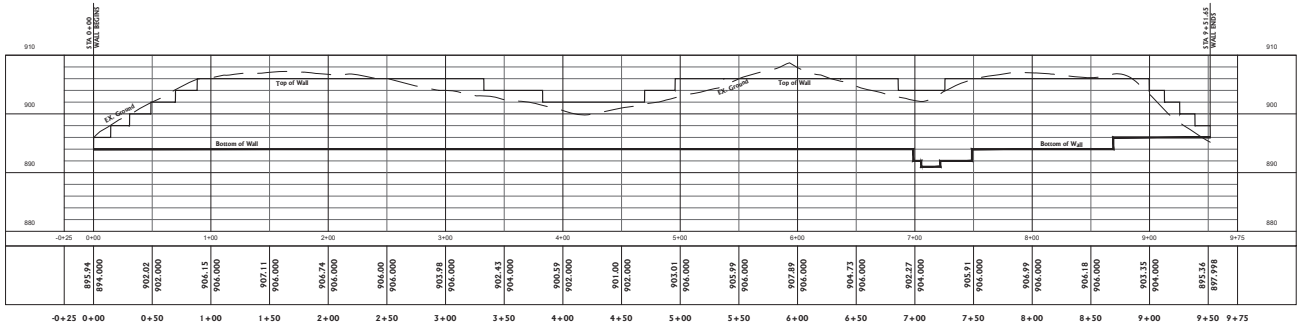
TRAIL CONNECTION WILL BE COMPLETED PRYOR TO ZONING PERMITS BEING ISSUED FOR THE NINTH BUILDING WITHIN THE DEVELOPMENT.

NORTHEAST WALL DETAIL LAYOUT PLAN

SCALE: 1" = 10'

0' 10' 20' 30'

NORTHEAST WALL



SOUTHERN WALL DETAIL LAYOUT PLAN

SCALE: 1" = 50'

0' 50' 100' 150'

WALL PROFILE VIEWS

VERTICLE SCALE: 1" = 10'

HORIZONTAL SCALE: 1" = 50'

⚠ REMOVED NORTH WEST RETAINING WALL

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REVISION	DATE
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PROJECT: THE HAVEN AT LIBERTY GROVE

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ARLINGHAUS BUILDERS INC.: 142 RARNWOOD, KENTUCKY 41017

DATE:	SEE RELEASE DATES
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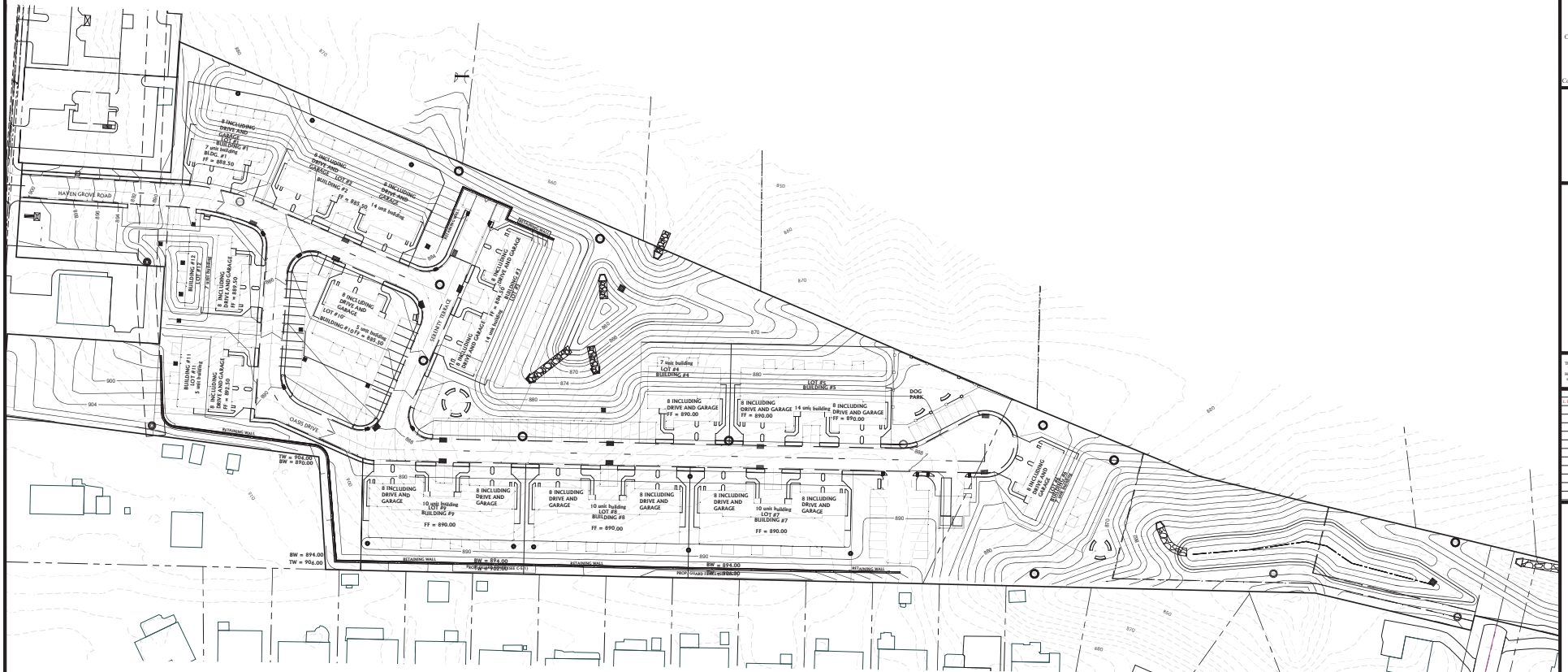
PROJECT:	ENG 2311

WALL DETAIL LAYOUT

C-1.2



N

OVERALL GRADING PLAN

SCALE: 1" = 50'

0' 50' 100' 150'

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REVISION	DATE
1. PDS REVISIONS FROM 7-24-24	7-26-24

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OWNER: ANR LOGISTICS LLC: 289 MADISON PIKE, FT. MITCHELL, KENTUCKY 41017
ARLINGHAUS BUILDERS INC.: 142 BARNWOOD, KENTUCKY 41017

DATE:	SEE RELEASE DATES
DRAWN BY:	JCE
CHECKED BY:	RJH
PROJECT:	ENG 2311

GRADING PLAN

C-2.1

DETENTION STRUCTURE N

STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT
N DETENTION	RIM = 864.68 INV OUT = 858.00		24" REINFORCED CONCRETE PIPE INV OUT =858.00
N HEADWALL	RIM = 856.00 INV IN = 854.00	24" REINFORCED CONCRETE PIPE INV IN =854.00	

DETENTION STRUCTURE W

STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT
E DETENTION	RIM = 851.33 INV OUT = 848.00		36" REINFORCED CONCRETE PIPE INV OUT =848.00
DETENTION MH	RIM = 848.57 INV IN = 842.23 INV OUT = 842.23	36" REINFORCED CONCRETE PIPE INV IN =842.23	36" REINFORCED CONCRETE PIPE INV OUT =842.23
E HEADWALL	RIM = 843.86 INV IN = 840.03	36" REINFORCED CONCRETE PIPE INV IN =840.03	

Sanitary

STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT
SAN MH 103	RIM = 889.57 INV IN = 870.76 INV OUT = 870.66	8" INV IN =870.76	8" INV OUT =870.66
SAN MH 102	RIM = 889.08 INV IN = 869.58 INV OUT = 869.48	8" INV IN =869.58	8" INV OUT =869.48
SAN MH 101	RIM = 888.69 INV IN = 868.56 INV OUT = 868.46	8" INV IN =868.56	8" INV OUT =868.46
SAN MH 106	RIM = 885.45 INV OUT = 874.45		8" INV OUT =874.45
SAN MH 104	RIM = 884.20 INV IN = 871.52 INV OUT = 871.42	8" INV IN =871.52	8" INV OUT =871.42
SAN MH 105	RIM = 883.03 INV IN = 872.03 INV OUT = 871.93	8" INV IN =872.03	8" INV OUT =871.93
SAN MH 100	RIM = 871.46 INV IN = 866.69 INV OUT = 850.25	8" INV IN =866.69	8" INV OUT =850.25
EX. SAN MH 2	RIM = 862.62 INV IN = 845.89 INV OUT = 845.84	8" INV IN =845.89	8" INV OUT =845.84
EX SAN MH 3	RIM = 858.26 INV IN = 846.68 INV OUT = 846.68	8" INV IN =846.68	8" INV OUT =846.68
EX. SAN MH 1	RIM = 856.80 INV IN = 845.05	8" INV IN =845.05	
EX SAN MH 4	RIM = 852.72 INV IN = 847.82 INV OUT = 847.67	8" INV IN =847.82	8" INV OUT =847.67

200 Series

STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT
CB 209	RIM = 887.98 INV OUT = 884.98		12" INV OUT =884.98
CURB INLET 208	RIM = 884.76 INV IN = 881.76 INV OUT = 881.76	12" INV IN =881.76	12" INV OUT =881.76
CB 203	RIM = 884.00 INV IN = 876.98 INV OUT = 876.98	18" INV IN =876.98	18" INV OUT =876.98
CURB INLET 204	RIM = 882.96 INV IN = 877.64 INV OUT = 877.39	15" INV IN =877.64	18" INV OUT =877.39
CURB INLET 206	RIM = 882.78 INV IN = 878.24 INV OUT = 878.46	15" INV IN =878.24	15" INV OUT =878.46
CURB INLET 260	RIM = 882.73 INV OUT = 879.48		15" INV OUT =879.48
CURB INLET 207	RIM = 882.73 INV IN = 879.51 INV IN = 879.26 INV OUT = 879.26	12" INV IN =879.51 15" INV IN =879.26	15" INV OUT =879.26
CURB INLET 205	RIM = 882.67 INV IN = 878.03 INV OUT = 878.03	15" INV IN =878.03	15" INV OUT =878.03
UNDERDRAIN 252	RIM = 877.91 INV OUT = 874.91		12" INV OUT =874.91
UNDERDRAIN 251	RIM = 873.37 INV IN = 869.56 INV OUT = 869.56	12" INV IN =869.56	12" INV OUT =869.56
UNDERDRAIN 250	RIM = 872.99 INV IN = 868.42 INV OUT = 868.42	12" INV IN =868.42	12" INV OUT =868.42
MH 202	RIM = 868.50 INV IN = 865.14 INV IN = 865.64 INV OUT = 864.64	18" INV IN =865.14 12" INV IN =865.64	24" INV OUT =864.64
MH 201	RIM = 866.77 INV IN = 863.00 INV OUT = 863.00	24" INV IN =863.00	24" INV OUT =863.00
HW 200	RIM = 864.58 INV IN = 862.00	24" INV IN =862.00	

300 Series

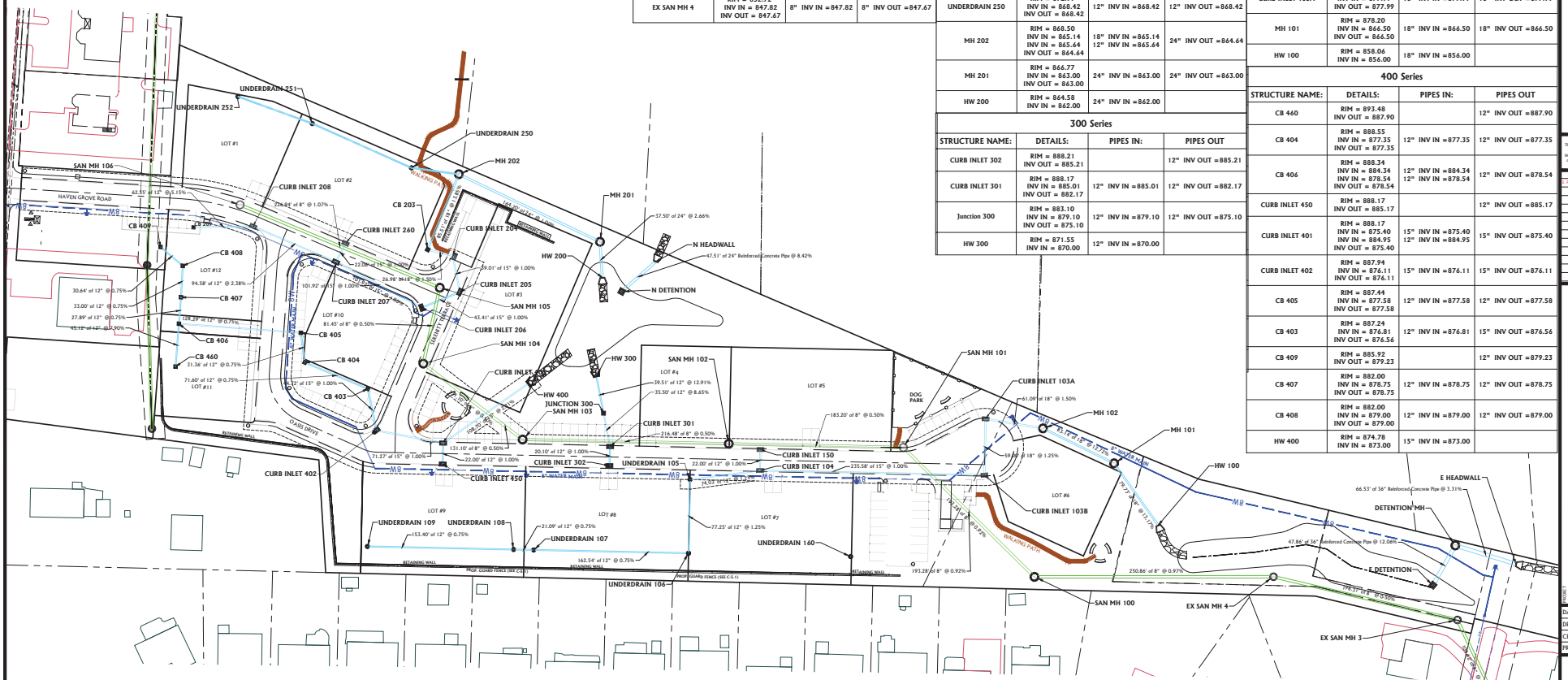
STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT
CURB INLET 302	RIM = 888.21 INV OUT = 885.21		12" INV OUT =885.21
CURB INLET 301	RIM = 888.17 INV IN = 885.01 INV OUT = 882.17	12" INV IN =885.01	12" INV OUT =882.17
Junction 300	RIM = 883.10 INV IN = 879.10 INV OUT = 875.10	12" INV IN =879.10	12" INV OUT =875.10
HW 300	RIM = 871.55 INV IN = 870.00	12" INV IN =870.00	

100 Series

STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT
UNDERDRAIN 105	RIM = 889.71 INV IN = 882.51 INV OUT = 882.51	12" INV IN =882.51	12" INV OUT =882.51
UNDERDRAIN 106	RIM = 889.20 INV IN = 883.47 INV OUT = 883.47	12" INV IN =883.47	12" INV OUT =883.47
UNDERDRAIN 107	RIM = 889.00 INV IN = 884.69 INV OUT = 884.69	12" INV IN =884.69	12" INV OUT =884.69
UNDERDRAIN 108	RIM = 889.00 INV IN = 884.85 INV OUT = 884.85	12" INV IN =884.85	12" INV OUT =884.85
UNDERDRAIN 109	RIM = 889.00 INV OUT = 886.00		12" INV OUT =886.00
UNDERDRAIN 160	RIM = 889.00		
CURB INLET 104	RIM = 888.37 INV IN = 881.58 INV IN = 885.15 INV OUT = 881.33	12" INV IN =881.58 12" INV IN =885.15	15" INV OUT =881.33
CURB INLET 150	RIM = 888.37 INV OUT = 885.37		12" INV OUT =885.37
MH 102	RIM = 886.75 INV IN = 877.07 INV OUT = 877.07	18" INV IN =877.07	18" INV OUT =877.07
CURB INLET 103B	RIM = 886.68 INV IN = 878.98 INV OUT = 878.73	15" INV IN =878.98	18" INV OUT =878.73
CURB INLET 103A	RIM = 886.68 INV IN = 877.99 INV OUT = 877.99	18" INV IN =877.99	18" INV OUT =877.99
MH 101	RIM = 878.20 INV IN = 866.50 INV OUT = 866.50	18" INV IN =866.50	18" INV OUT =866.50
HW 100	RIM = 858.06 INV IN = 856.00	18" INV IN =856.00	

400 Series

STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT
CB 460	RIM = 893.48 INV OUT = 887.90		12" INV OUT =887.90
CB 404	RIM = 888.55 INV IN = 877.35 INV OUT = 877.35	12" INV IN =877.35	12" INV OUT =877.35
CB 406	RIM = 888.34 INV IN = 884.34 INV IN = 878.54 INV OUT = 878.54	12" INV IN =884.34 12" INV IN =878.54	12" INV OUT =878.54
CURB INLET 450	RIM = 888.17 INV OUT = 885.17		12" INV OUT =885.17
CURB INLET 401	RIM = 888.17 INV IN = 875.40 INV IN = 884.95 INV OUT = 875.40	15" INV IN =875.40 12" INV IN =884.95	15" INV OUT =875.40
CURB INLET 402	RIM = 887.94 INV IN = 876.11 INV OUT = 876.11	15" INV IN =876.11	15" INV OUT =876.11
CB 405	RIM = 887.44 INV IN = 877.58 INV OUT = 877.58	12" INV IN =877.58	12" INV OUT =877.58
CB 403	RIM = 887.24 INV IN = 876.81 INV OUT = 876.56	12" INV IN =876.81	15" INV OUT =876.56
CB 409	RIM = 885.92 INV OUT = 879.23		12" INV OUT =879.23
CB 407	RIM = 882.00 INV IN = 878.75 INV OUT = 878.75	12" INV IN =878.75	12" INV OUT =878.75
CB 408	RIM = 882.00 INV IN = 879.00 INV OUT = 879.00	12" INV IN =879.00	12" INV OUT =879.00
HW 400	RIM = 874.78 INV IN = 873.00	15" INV IN =873.00	



N

UTILITY LAYOUT PLAN

SCALE: 1" = 50'

0 30 60 90

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REVISION	DATE
1. PDS REVISIONS FROM 7-24-24	7-25-24

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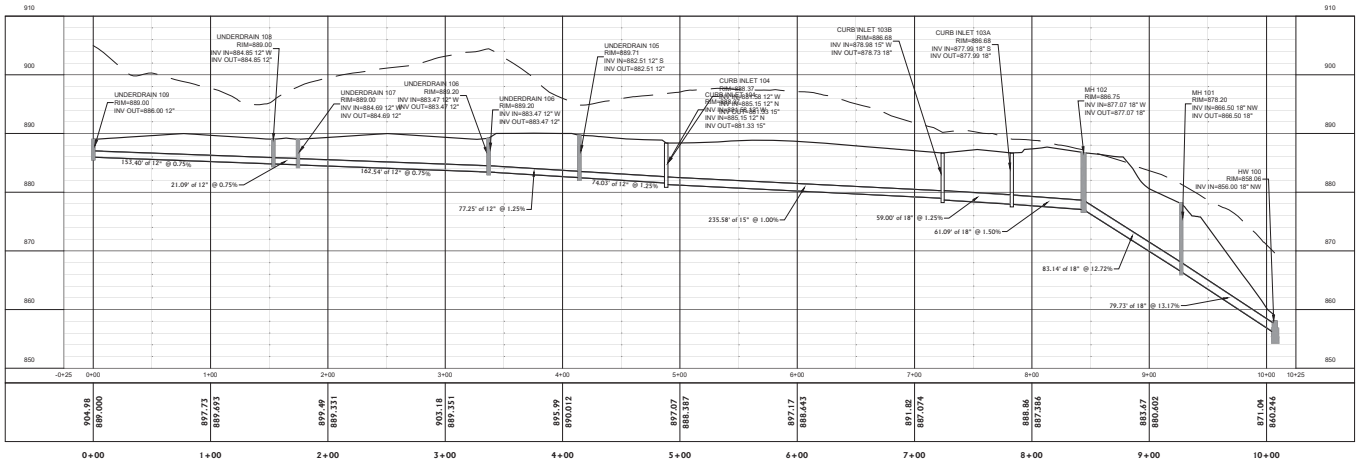
ARLINGHAUS BUILDERS INC.: 142 RARNWOOD, KENTUCKY 41017

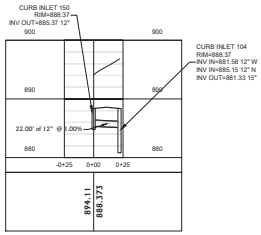
DATE: SEE RELEASE DATES
DRAWN BY: JCE
CHECKED BY: RJH
PROJECT: ENG 2311

UTILITY LAYOUT

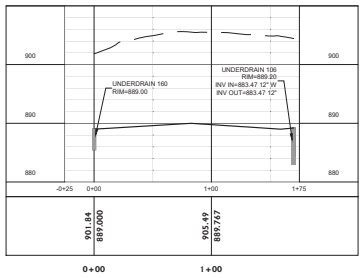
C-3.1



109 to HW 100



150 Storm Branch



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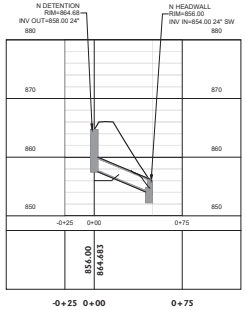
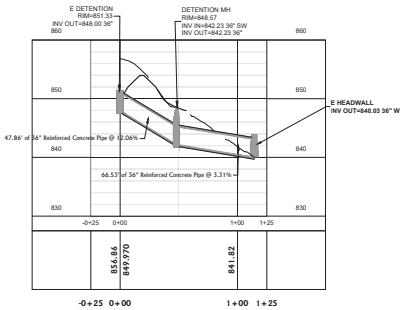


N DETENTION



E DETENTION

PROFILE VIEWS

VERTICLE SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 50'

STORM PROFILES

SCALE: 1" = 50'

0 50 100 150

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ARLINGHAUS BUILDERS INC. 142 BARNWOOD, KENTUCKY 41017

DATE:	SEE RELEASE DATES
DRAWN BY:	JCE
CHECKED BY:	RJH
PROJECT:	ENG 2311

STORM PROFILES

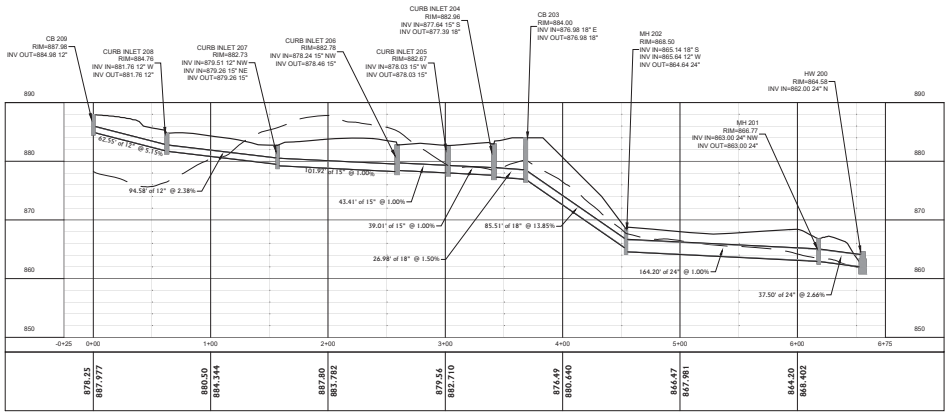
C-3.2

STORM PROFILES

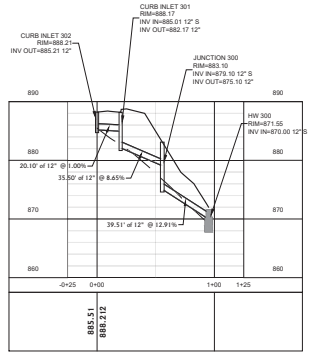
SCALE: 1" = 50'

PROFILE VIEWS

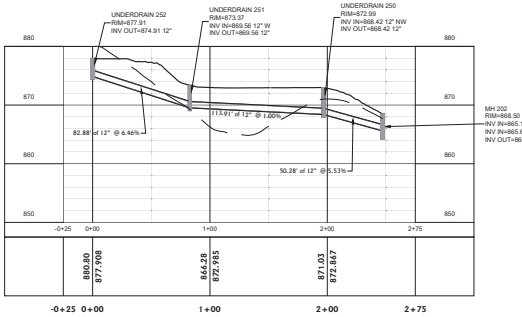
VERTICLE SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 50'



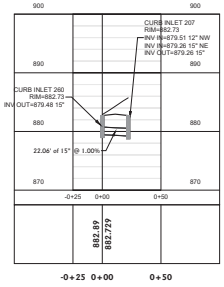
209 to HW 200



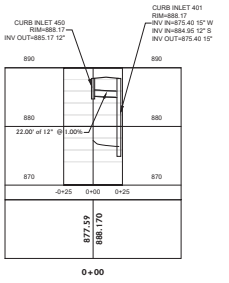
302 to HW 300



North Underdrain



Storm Branch 250



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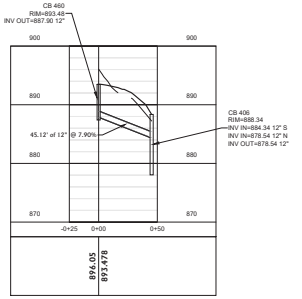

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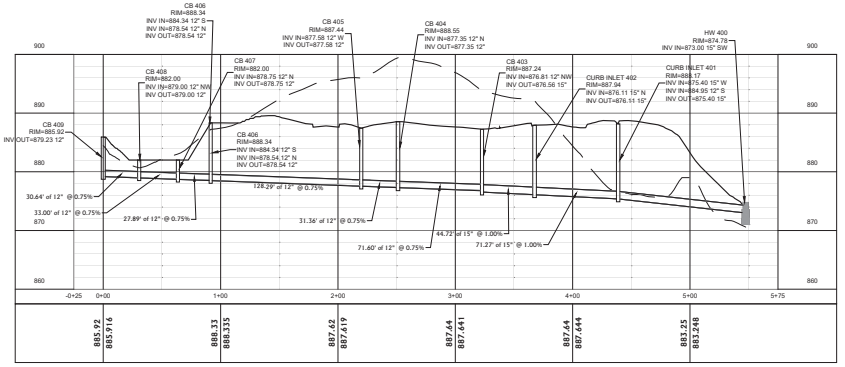

409 to HW 400

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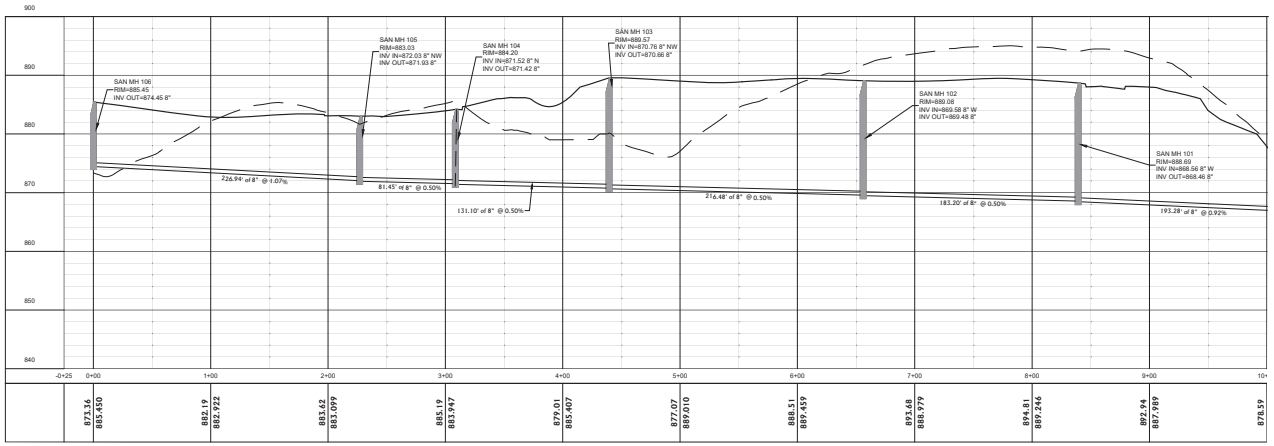
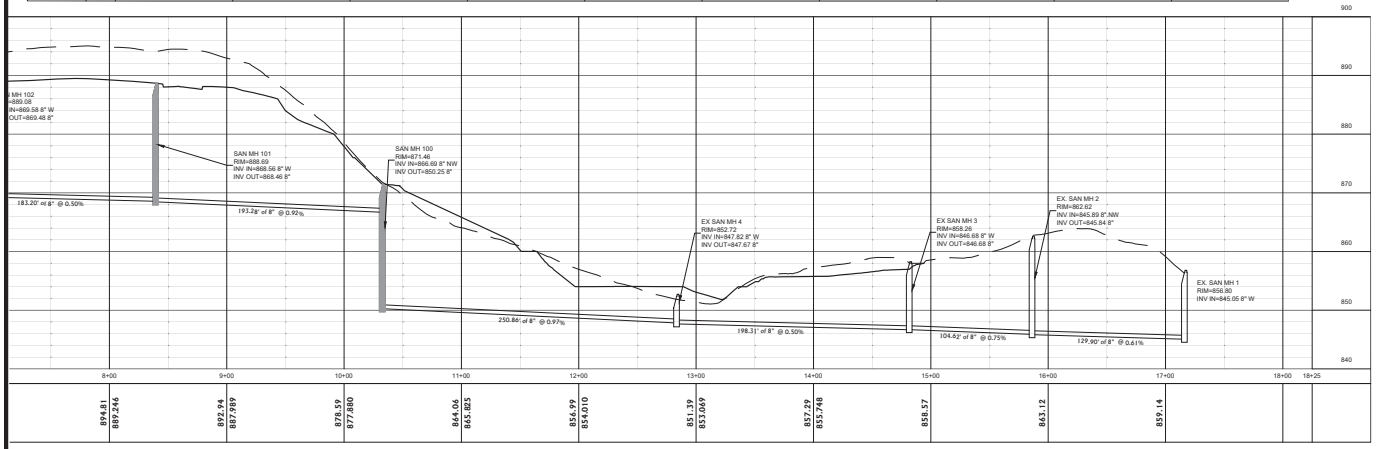
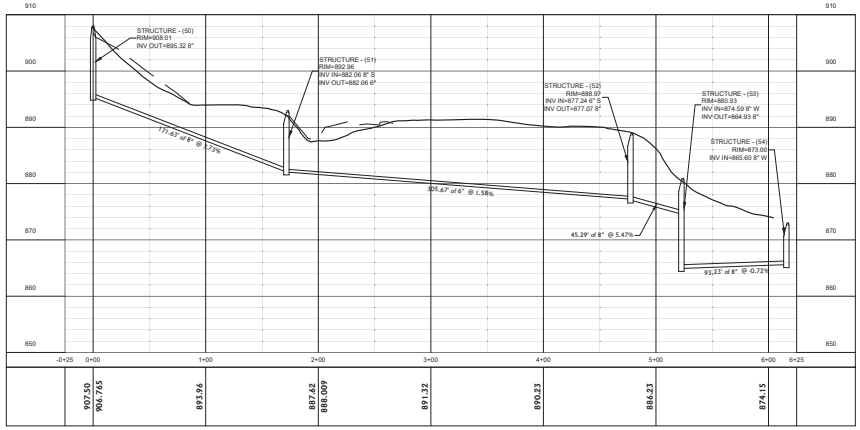
PROJECT:	ENG 2311

STORM SEWER PROFILES

C-3.3







PROFILE VIEWS

VERTICLE SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 50'

SANITARY PROFILES

SCALE: 1" = 50'

0 50 100 150

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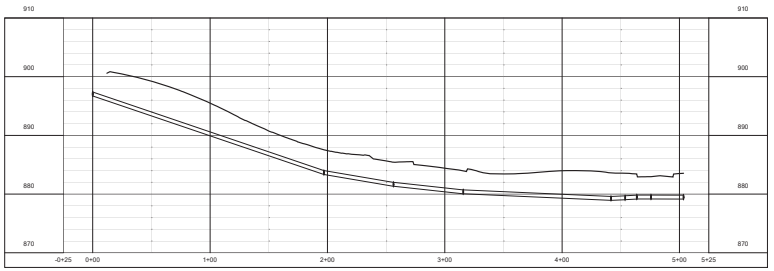
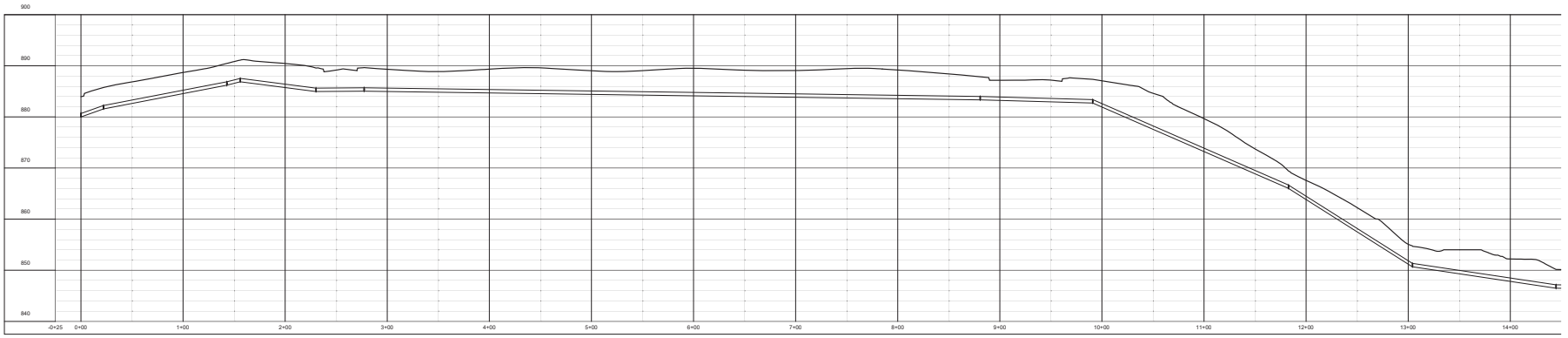
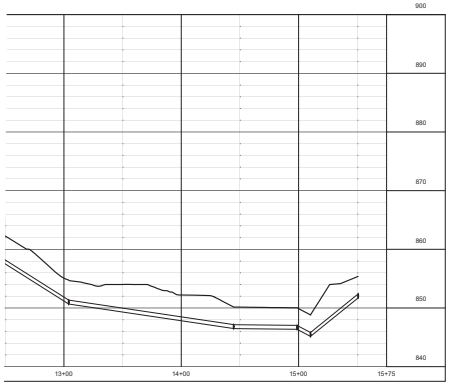
CHECKED BY:	RJH
PROJECT:	ENG 2311

SANITARY SEWER PROFILES

C-3.4







PROFILE VIEWS

VERTICLE SCALE: 1" = 10'
HORIZONTAL SCALE: 1" = 50'

N

WATER LINE PROFILE

SCALE: 1" = 50'

0' 50' 100' 150'

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REVISION	DATE
1. PDS REVISIONS FROM 7-24-24	7-25-24

PROJECT: THE HAVEN AT LIBERTY GROVE
CLIENT: MADISON PIKE PARTNERS, LLC
OWNER: ANR LOGISTICS LLC: 289 MADISON PIKE, FT. MITCHELL, KENTUCKY 41017
ARLINGHAUS BUILDERS INC.: 142 BARNWOOD, KENTUCKY 41017

DATE:	SEE RELEASE DATES
DRAWN BY:	JCE
CHECKED BY:	RJH
PROJECT:	ENG 2311

WATER LINE PROFILE

C-3.5

EROSION & SEDIMENT CONTROL NOTES FOR CONSTRUCTION

1. POTENTIAL POLLUTANT SOURCES ASSOCIATED WITH CONSTRUCTION ACTIVITIES INCLUDE BUT ARE NOT LIMITED TO; FUEL OIL, CONCRETE WASTE, CONSTRUCTION DEBRIS, SEDIMENT # FERTILIZER.
2. A COPY OF THE APPROVED EROSION # SEDIMENT CONTROL BOOK, PLANS, N.O.I PERMIT AND INSPECTION LOG WILL BE AVAILABLE AT THE SITE AT ALL TIMES.
3. EROSION CONTROL, RUNOFF AND SEDIMENT CONTROLS WILL BE MAINTAINED BY WEEKLY INSPECTIONS AND INSPECTIONS AFTER A 1/2" RAIN EVENT. INSPECTION DATES AND NOTES WILL BE KEPT IN THE INSPECTION LOG. ADJUSTMENTS AND ADDITIONS WILL BE MADE AS NEEDED TO KEEP CONTROLS OPERATING IN AN EFFICIENT MANNER. ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER FROM THE BEGINNING OF CONSTRUCTION UNTIL AN ACCEPTABLE VEGETATIVE COVER IS ESTABLISHED. INSPECTION BY THE CONTRACTOR AND ANY NECESSARY REPAIRS SHALL BE PERFORMED ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES. POTENTIALLY ERODIBLE AREAS DRAINAGE WAYS, MATERIAL STORAGE, STRUCTURAL DEVICES, CONSTRUCTION ENTRANCES AND EXITS ALONG WITH EROSION AND SEDIMENT CONTROL LOCATIONS ARE EXAMPLES OF SITES THAT NEED TO BE INSPECTED.
4. TEMPORARY SURFACE STABILIZATION WILL BE ESTABLISHED IN 7 DAYS ON ALL BARE AREAS THAT WILL NOT BE DISTURBED FOR 15 DAYS. TEMPORARY STABILIZATION RECOMMENDATIONS ARE SHOWN BELOW:

SEED SPECIES	RATE (PER ACRE)	PLANTING DEPTH	OPTIMUM DATES
WHEAT OR RYE	150 LB	1 TO 1-1/2 IN	9/15 - 10/30
SPRING OATS	100 LB	1 IN	3/1 - 4/15
ANNUAL RYEGRASS	40 LB	1/4 IN	3/1 -5/1, 8/1 - 9/1
SUDANGRASS	35 LB	1 TO 2 IN	5/1 - 7/30
ANCHORED MULCHING	2 TONS		10/30 - 3/1

ANCHORED MULCHING OF TEMPORARY SEEDING IS REQUIRED. STRAW AT THE RATE OF 90 LB PER 1000 SQ.FT. OR 2 TONS PER ACRE.

5. IF CONSTRUCTION EQUIPMENT FUEL STORAGE IS ON SITE IT SHALL BE KEPT IN AN APPROVED FUEL STORAGE TANK AND INSIDE A SEALED METAL TUB TO PREVENT LEAKAGE OR SPILLS ONTO THE GROUND.
6. PROPER MANAGEMENT AND DISPOSAL OF CONSTRUCTION WASTE MATERIAL IS REQUIRED BY THE CONTRACTOR. MATERIALS INCLUDE STOCKPILES, SURPLUS, DEBRIS AND ALL OTHER BY PRODUCTS FROM THE CONSTRUCTION PROCESS. PRACTICES INCLUDE DISPOSAL, PROPER MATERIALS HANDLING, SPILL PREVENTION AND CLEANUP MEASURES.

SPILL PREVENTION AND CLEANUP SHALL MEET THE SPILL PREVENTION # SPILL RESPONSE REQUIREMENTS FROM THE KENTUCKY EMERGENCY RESPONSE AND ANY OTHER LOCAL, STATE OR FEDERAL AGENCY REQUIREMENTS. IF A SPILL OCCURS WHICH IS NOT AN EXCLUSION AS INDICATED BY THE KENTUCKY EMERGENCY RESPONSE THE CONTRACTOR IS TO IMMEDIATELY CONTACT THE KENTUCKY EMERGENCY RESPONSE (EMERGENCY RESPONSE, SPILL REPORTING) INFORMATION NECESSARY FOR REPORTING CAN BE FOUND ON THIS SHEET. SPILL CONTAINMENT SUCH AS TEMPORARY DAMMING OR ABSORPTION CAN BE INSTITUTED IF THERE IS NO IMMEDIATE HAZARD OR SAFETY ISSUES TO PERSONNEL ON SITE.

POST CONSTRUCTION EROSION CONTROL NOTES

1. POTENTIAL POLLUTANT SOURCES FROM THE FUTURE PROPOSED LAND USE FOR THE SITE INCLUDE LANDSCAPING MAINTENANCE (FERTILIZERS, WEED KILLERS, ETC) AND GENERAL DEBRIS AND SEDIMENTS.
2. FINAL GRADING, SEEDING AND LANDSCAPING WILL BE ESTABLISHED AT THE END OF THE CONSTRUCTION PHASE. PERMANENT SEEDING SPECIFICATIONS ARE SHOWN BELOW:

SEED MIXTURES AND SEED APPLICATION RATES SHALL VARY ACCORDING TO AREA TO BE SEEDED. IN RURAL OR GENERAL PURPOSE OR AS DIRECTED BY THE ENGINEER, THE FOLLOWING SEED MIXTURES SHALL BE APPLIED AT 170 LBS. / ACRE:

95 LBS. OF ALTA FESCUE OR 60 LBS. OF KENTUCKY 31 FESCUE
45 LBS. OF PERENNIAL RYE GRASS
10 LBS. OF JASPER RED FESCUE

ALL SEED MIXTURES SHALL HAVE A MINIMUM PURITY OF 85% AND MINIMUM GERMINATION RATE OF 85%.

IN ALL OTHER AREAS (I.E. RESIDENTIAL LAWNS, URBAN AREAS) OR AS DIRECTED BY THE ENGINEER, A SEED MIXTURE CONFORMING TO THE REQUIREMENTS OF SEED MIXTURE TYPE U AS SET FORTH IN SECTION 621.05 OF THE INDIANA DEPARTMENT OF HIGHWAYS STANDARD SPECIFICATION SHALL BE APPLIED AT A RATE OF 150 LBS. / ACRE.

ON ALL GRADES WITH A 3:1 OR GREATER SLOPE, SEED MIXTURE TYPE "CV" AS SET FORTH IN SECTION 621.05 OF THE INDIANA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, SHALL BE SUPPLEMENTED TO THE ABOVE SEED MIXTURES AND APPLIED AS DESCRIBED HEREIN.

ANCHORED MULCHING OF PERMANENT SEEDING IS REQUIRED. STRAW AT THE RATE OF 90 LB PER 1000 SQ.FT. OR 2 TONS PER ACRE. ANCHOR MULCHING BY CRIMPING OR TACKIFYING.

3. PERMANENT SEEDING, LANDSCAPING, MULCHING AND NATURAL VEGETATIVE COVER WILL BE USED TO FILTER SEDIMENTS AND RUNOFF LEAVING THE DISTURB AREAS AND MAINTAIN THE RUNOFF RATE NEARER TO THAT WHICH EXISTED PRIOR TO CONSTRUCTION.
4. STORM WATER QUALITY CONTROL MEASURES (I.E., SILT FENCING, CHECK DAMS,ETC) SHALL BE LEFT IN PLACE UNTIL VEGETATIVE COVER IS TOTALLY RE-ESTABLISHED.
5. EXISTING RIP-RAP WILL BE REPLACED IF DISTURBED.
6. CONSTRUCTION ENTRANCES WILL REMAIN IN PLACE WITH PERIODIC MAINTENANCE UNTIL THE END OF CONSTRUCTION.
7. PERIODIC INSPECTION OF THE DISTURBED CONSTRUCTION SITE SHALL BE DONE TO INSURE VEGETATIVE COVER IS GROWING AND ESTABLISHED. REPAIR AND MAINTENANCE SHALL BE PERFORMED IN AREAS NEEDING ATTENTION TO INSURE MINIMAL LOSS TO EROSION.

GENERAL NOTES

1. CONTRACTOR IS ULTIMATELY RESPONSIBLE FOR KEEPING RUNOFF # SEDIMENT FROM REACHING THE STREAMS AND LAKES. DRAWINGS ARE LARGE SCALE AND NOT ALL INCLUSIVE. ADDITIONAL EROSION CONTROL MEASURES (SILT FENCE, ROCK CHECKS,ETC) MAY BE REQUIRED IN DITCHES AND ON SLOPES AS NEEDED OR REQUIRED BY THE KENTON COUNTY PLANNING AND DEVELOPMENT SERVICES.
2. THERE ARE NO KNOWN AREAS ON THE SITE WHERE STORM WATER MAY BE POTENTIALLY DISCHARGED TO GROUND WATER.
3. THE SOIL TYPES FOR THE PROPERTY ACCORDING TO THE SOIL SURVEY OF BOONE, CAMPBELL, AND KENTON COUNTIES, KENTUCKY AS PREPARED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE ARE SHOWN ON THE PLAN.
4. THERE ARE NO OFFSITE CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT .
5. TEMPORARY STOCKPILE OF TOPSOIL AS NEEDED. ANY AND ALL TOPSOIL PILES WILL BE PROTECTED FROM EROSION RUNOFF BY USING SILT FENCE AROUND THE PERIMETER OF THE BASE OF THE STOCKPILE.
6. THERE IS A CONCRETE WASHOUT ON SITE AND ALL HEAVY EQUIPMENT AND TRUCKS MUST EXIT SITE THROUGH GRAVEL CONSTRUCTION ENTRANCES.
7. RECEIVING WATERS ARE A TRIBUTARY OF UPPER BANKLICK CREEK.
8. THE SITE LIES WITHIN A HAZARD FLOOD ZONE "X" A AND DOES NOT LIE WITHIN THE 100 YEAR FLOOD PLAIN.
9. TEMPORARY GRADING AND TEMPORARY SEEDING TO OCCUR BEFORE PROCEEDING WITH ANY PARKING LOT CONSTRUCTION (SEE NOTE # 4 BELOW IN EROSION # SEDIMENT CONTROL NOTES FOR CONSTRUCTION). FINAL GRADING AND SEEDING PER NOTE 2. POST CONSTRUCTION
10. THE AREA IS ZONED R-M, R-CVS AND PUD. THE AREAS OUTSIDE THE PROJECT AREA ARE ZONED R-M TO THE NORTH, PUD TO THE WEST AND SOUTH, R-CVS TO THE SOUTH AND EAST.
11. ONLY AREA BEING DISTURBED WILL BE THE CONSTRUCTION LIMITS OF THE PARKING AREA.
12. THE GROUND COVER IN THE PROJECT IS MOSTLY GRASS, WITH A SMALL WETLAND IN THE NORTHEAST CORNER

SITE AND OWNER INFORMATION

ANR LOGISTICS, LLC
289 MADISON PIKE
FT. MITCHELL, KY 41017

ARLINGHAUS BUILDERS INC.
142 BARNWOOD
EDGEWOOD, KY 41017

EAST SIDE OF MADISON PIKE, INDEPENDENCE, KENTUCKY KENTON COUNTY AND THE NORTH SIDE OF MILLCREEK CIRCLE

LAT. 38-56-29 N
LONG. 84-32-29 W

PHONE: ***.***.****

I. PURPOSE OF THE PLANS

THESE PLANS WERE PRODUCED TO AID THE OWNERS AND / OR THE CONTRACTOR WITH WATER MANAGEMENT AND MINIMIZING EROSION AND RUNOFF FROM THE SITE UNDERGOING CONSTRUCTION ACTIVITIES. THE OWNER AND THE CONTRACTOR SHOULD USE THE PLANS AND THE DETAILS PROVIDED TO MINIMIZE EROSION AND PRODUCE A CLEANER MORE PRESENTABLE SITE. THE INTENT IS TO PROVIDE GENERAL GUIDELINES ON SEDIMENT AND EROSION CONTROL AND WATER MANAGEMENT FOR THIS SITE. ADDITIONAL MEASURES MAY BE NECESSARY TO ADEQUATELY CONTROL EROSION AND RUNOFF FROM THE SITE. THE CONSTRUCTION / GRADING PLANS ARE INTENDED TO BE USED FOR THE OVERALL GRADING ACTIVITIES, UTILITY INFRASTRUCTURE CONSTRUCTION AND PROVIDE MINIMUM REQUIREMENTS FOR EROSION CONTROL AND WATER MANAGEMENT AFTER GENERAL DEVELOPMENT. ADDITIONALLY, THE PLANS ARE ATTACHED TO AND ARE A PART OF THE NOTICE OF INTENT (NOI) APPLICATION AND PERMIT. UPON COMPLETION OF THE ACTIVITIES GOVERNED BY THE PERMIT FOR THIS SPECIFIC PROJECT, A NOTICE OF TERMINATION (NOT) WILL BE FILED.

II. PROJECT DESCRIPTION

THE PROJECT SITE IS A MULTI FAMILY HOME DEVELOPMENT IN INDEPENDENCE KENTUCKY. THE PROJECT PLAN IS TO GRADE AND DEVELOP THE EXISTING SITE FOR A FUTURE COMMERCIAL DEVELOPMENT. UNDERGROUND UTILITIES INCLUDE STORM WATER, SANITARY, WATER, ELECTRIC AND COMMUNICATION. THE STORM WATER WILL BE DIRECTED THROUGH A SYSTEM OF DRAINAGE SWALES, STORM SEWER PIPING, STORM SEWER STRUCTURES, AND DETENTION PONDS OFF SITE. A SMALL PORTION OF THE PROPOSED STORM WATER FROM THIS EXPANSION PROJECT WILL BE DISCHARGED ONTO THE EXISTING DEVELOPED AREAS.

TRIBUTARY TO UPPER BANKLICK CREEK

III. SEQUENCE OF MAJOR ACTIVITIES

THE SITE CONSTRUCTION WILL OCCUR IN THREE PHASES. PRE - CONSTRUCTION SILT FENCING WILL BE PLACED AS INDICATED ON THE EROSION CONTROL PLANS PRIOR TO ANY EXCAVATION. THE CONSTRUCTION ENTRANCE FOR INGRESS AND EGRESS WILL BE ESTABLISHED AND CAN BE UPGRADED AS NEEDED. ALL CONSTRUCTION TRAFFIC WILL BE REQUIRED TO USE THE CONSTRUCTION ENTRANCE AND ANY MUD AND / OR DEBRIS TRACKED ONTO EXISTING PAVEMENT SHALL BE CLEANED BY THE CONTRACTOR AS SOON AS POSSIBLE. UTILITY CONSTRUCTION WILL OCCUR AS THE DISTURBED SITE IS BROUGHT TO SUB GRADE. EROSION CONTROL MEASURES WILL BE ESTABLISHED WITH THE UTILITIES TO PREVENT EROSION AND RUNOFF FROM LEAVING THE SITE. EROSION CONTROL WILL BE PERIODICALLY INSPECTED (AFTER EVERY 1/2" RAIN EVENT AND ONCE A WEEK) AND MAINTAINED TO KEEP THE SITE CLEAN AND EROSION TO A MINIMUM. THE LAST PART OF THE CONSTRUCTION PHASE WILL BE TO PERMANENTLY SEED, AND PLANT LANDSCAPING. ALL EROSION CONTROL MEASURES WILL BE LEFT IN PLACE UNTIL PERMANENT SEEDING AND LANDSCAPING IS COMPLETE.

ALL WORK WILL BE COMPLETED AS A SINGLE GENERAL CONTRACT, WITH ONLY A SINGLE CONSTRUCTION PHASE. THE ABOVE SEQUENCE MAY CHANGE BASED ON WEATHER CONDITIONS, MORE THAN ONE WORK CREW OPERATING AT ONE TIME AND CONTRACTOR'S METHOD OF SCHEDULING. PERIODIC MAINTENANCE OF ALL EROSION CONTROL MEASURES WILL BE PERFORMED TO KEEP EVERYTHING IN GOOD WORKING ORDER AND TO PREVENT SOIL EROSION, RUNOFF AND SEDIMENTS FROM LEAVING THE SITE.

FAILURE TO COMPLY WITH EROSION CONTROL MEASURES WILL RESULT IN WORK STOPPAGE UNTIL EROSION MEASURES ARE PUT IN PLACE OR CORRECTED TO THE SATISFACTION OF THE BOONE COUNTY PUBLIC WORKS DEPARTMENT.

IV. SOIL TYPES

THE SOIL TYPES FOR THE PROPERTY ACCORDING TO THE SOIL SURVEY OF KENTON COUNTY, KENTUCKY AS PREPARED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE ARE SHOWN ON THE PLAN.

NIB = NICHOLSON SILT LOAM, 2 TO 6 PERCENT SLOPES
NIC = NICHOLSON SILT LOAM, 6 TO 12 PERCENT SLOPES
FdD3 = FAYWOOD SILTY CLAY, 12 TO 20 PERCENT SLOPES, SEVERELY ERODED
EdE2 = EDEN SILTY CLAY LOAM, 20 TO 35 PERCENT SLOPES, ERODED

V. HYDROLOGIC UNIT CODE

THE HYDROLOGIC UNIT CODE (12 DIGIT) AS INDICATED FROM THE UNITED STATES GEOLOGICAL SURVEY (USGS) FOR THIS PROJECT IS 051001011304

VI. RUNOFF, SEDIMENT & EROSION CONTROL METHODS

THE FOLLOWING METHODOLOGIES SHALL BE UTILIZED TO MANAGE RUNOFF, EROSION AND SEDIMENT CONTROL FOR THIS SITE:

- LAND GRADING SILT FENCING
- CATCH BASIN INLET PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE
- TEMPORARY SEEDING AND STABILIZATION.
- PERMANENT SEEDING, SODDING AND LANDSCAPING.
- RIP-RAP IN DRAINAGE SWALES

VII. ADDITIONAL WATER QUALITY PERMITS

NONE REQUIRED.

VIII. KENTUCKY EMERGENCY RESPONSE

QUICK REFERENCE SHEET
CONTACT NUMBERS AND EVALUATION TECHNIQUES FOR ENVIRONMENTAL THREATS

PERSONAL SAFETY, ESPECIALLY YOURS, IS ALWAYS THE FIRST PRIORITY. DO NOT ENDANGER YOURSELF BY ENTERING HAZARDOUS ENVIRONMENTS. STAY UPWIND OF SPILLS AND AIR RELEASES. NEVER TASTE SPILLED MATERIALS. NEVER INHALE SMELLS TO IDENTIFY SPILLS. NEVER TOUCH UNKNOWN MATERIALS WITHOUT PROPER PERSONAL PROTECTIVE EQUIPMENT. BE AWARE OF HIGHWAY, WATER AND NIGHT TIME SAFETY ISSUES. THE BURDEN OF PROVIDING INFORMATION AND PERFORMING SPILL RESPONSES ALWAYS FALLS ON THE SPILLER, NOT YOU. PLEASE LET US KNOW IF YOU NEED ADDITIONAL GUIDANCE OR DO NOT FEEL COMFORTABLE BEING INVOLVED IN A SITUATION.

CONTACT NUMBERS:

STATE CONTACTS:
911
COMMONWEALTH OF KENTUCKY DIVISION OF EMERGENCY MANAGEMENT AREA 6 - BURLINGTON READINESS CENTER - 859.586.4400

FEDERAL CONTACTS:
NATIONAL RESPONSE CENTER (FEDERAL SPILL REPORTING) 800-424-8802
US EPA, REGION V (24 HOUR EMERGENCY) 312-353-2318
AGENCY FOR TOXIC SUBSTANCE AND DISEASE REGISTRY 404 639-0615
US COAST GUARD, MARINE SAFETY OFFICE, LOUISVILLE, KY 502-582-6825 OTHER CONTACTS:
HOLEY MOLEY (FOR LOCATING UNDERGROUND UTILITIES) 800-382-554
CHEMTREC (CHEMICAL DATA INFORMATION) 800-424-9300

QUICK REFERENCE INFORMATION SHEET FOR ASSESSING SPILLS AND THREATS TO WATER

CONTACTS
1. SPILLER INFORMATION : NAME, ADDRESS, CONTACT NUMBERS
2. LAND OWNER INFORMATION : (IF DIFFERENT): NAME, ADDRESS, CONTACT NUMBERS
3. SPILL LOCATION (IF DIFFERENT): FACILITY NAME, ADDRESS, DIRECTIONS, CONTACT NUMBERS
4. OTHER CONTACTS FOR: LEASE HOLDERS, CONTRACTORS, RESPONSE AGENCIES

CIRCUMSTANCES
5. SPILLED MATERIAL /DESCRIPTION. MATERIAL SAFETY DATA SHEET. WHAT IS IT USED FOR ?
6. DATE AND TIME OF SPILL (WHEN FOUND VS. WHEN SPILL LIKELY BEGAN)
7. CAUSE OF SPILL.
8. HAS THE SPILL LED TO THREATS OF HUMAN SAFETY ? ANY EVACUATIONS ? ANY INJURIES ?
9. HAS THE RELEASE STOPPED ? CAN IT BE STOPPED WITHOUT COMPROMISING SAFETY ?
10. WAS THERE AN IMMEDIATE OR ANY SPILL RESPONSE ? MANY FIRE AND STREET DEPARTMENTS INITIALLY DAM OR ABSORB SPILLS WITH KITTY LITTER OR SAND. SPILLERS ARE ULTIMATELY RESPONSIBLE FOR INITIATING AND COMPLETING A SPILL RESPONSE.

SPILL CHARACTERISTICS
11. DESCRIBE AREA AFFECTED , ESTIMATE SQUARE FEET OR MILES OF AFFECTED WATER.
12. DESCRIBE AMOUNT SPILLED , AMOUNT CONTAINED, CAPACITY OF CONTAINERS OR VESSELS.
13. AMOUNT RECOVERED OR WHY NO RECOVERY (VERY FEW EXCEPTIONS).

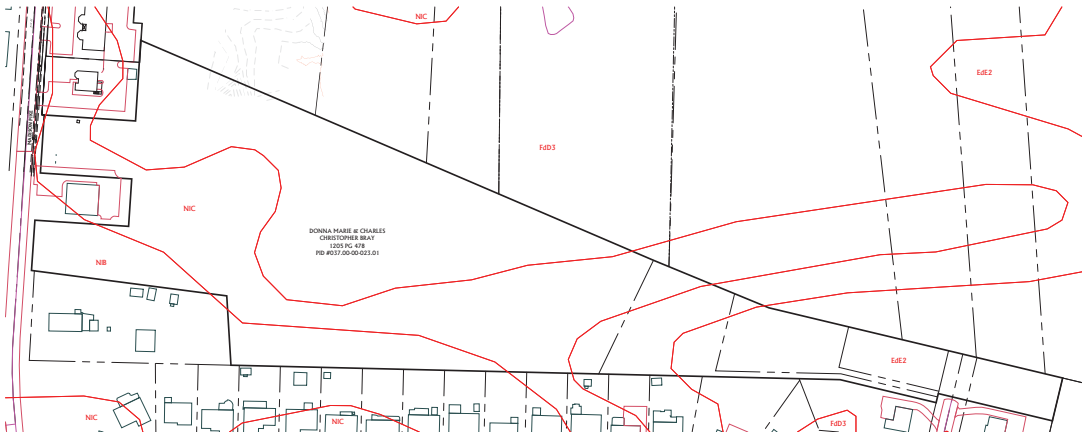
SPILLS TO WATER
14. ARE THERE SURFACE WATERS NEARBY OR INVOLVED ? ROADSIDE DITCHES, STREAMS, PONDS ?
15. ARE THE SURFACE WATERS STANDING, FLOWING, DISCHARGING ? TO WHERE ?
16. DO YOU SEE FISH OR OTHER ANIMALS IN OR NEAR THE WATER? ARE THEY ALIVE, STRESSED, DEAD ?
17. ARE THERE DITCHES, LOW AREAS, STORM DRAINS INLETS, FIELD TILE RISERS TO WATER ?

SPILLS TO SOIL
18. ARE THERE SANDY OR GRAVELLY NATIVE SOILS , BACKFILL AREAS, DRY WELLS NEARBY / INVOLVED ?
19. ARE THERE WATER WELLS, PIPELINES, PHONE LINES, OR UTILITIES THAT SPILLS MIGHT FOLLOW ?

SPILLS TO TILES, SEWERS, STORM DRAINS
20. FOR IMPACTED STORM DRAINS/STORM SEWERS , ARE THERE SIGNS OF THE SPILLED MATERIAL IN MANHOLES OR CATCHMENT BASINS ? CHECK WHERE THE STORM DRAIN EXITS INTO SURFACE WATER. CAN SPILLED MATERIALS BE SAFELY CONTAINED AND COLLECTED FROM CATCHMENT BASINS OR STORM DRAIN OUTLETS BEFORE ENTERING WATER ?
21. FOR IMPACTED COMBINED OR SANITARY SEWER SYSTEMS, CONTACT THE WASTEWATER UTILITY. WILL THE MATERIAL BE SAFELY TREATED ? WILL IT UPSET OR FLOW THROUGH THE PLANT ? CAN THEY SAFELY SEPARATE AND CONTAIN IT WITHOUT HURTING THEIR PLANT ? ARE THEY EXPERIENCING ANY BYPASS EVENTS WHERE SPILLED MATERIALS MAY DISCHARGE DIRECTLY TO WATER ? CHECK BYPASS OUTFALLS FOR SPILLED MATERIAL. CALL EDM EMERGENCY RESPONSE SECTION AT 888-233-7745 IMMEDIATELY FOR UPSET PLANTS. NON EMERGENCY TREATMENT PLANT QUESTIONS MAY GO TO EDM, OFFICE OF WATER MANAGEMENT. WATER INSPECTIONS SECTIONS AT 800-451-6027.

IX. SITE INSPECTION LOG

DATE	INSPECTOR	CORRECTIVE ACTIONS PERFORMED (DATE)



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SITE SOIL MAP

SCALE: 1" = 100'

0' 100' 200' 300'

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Contact@HrezoEngineering.com

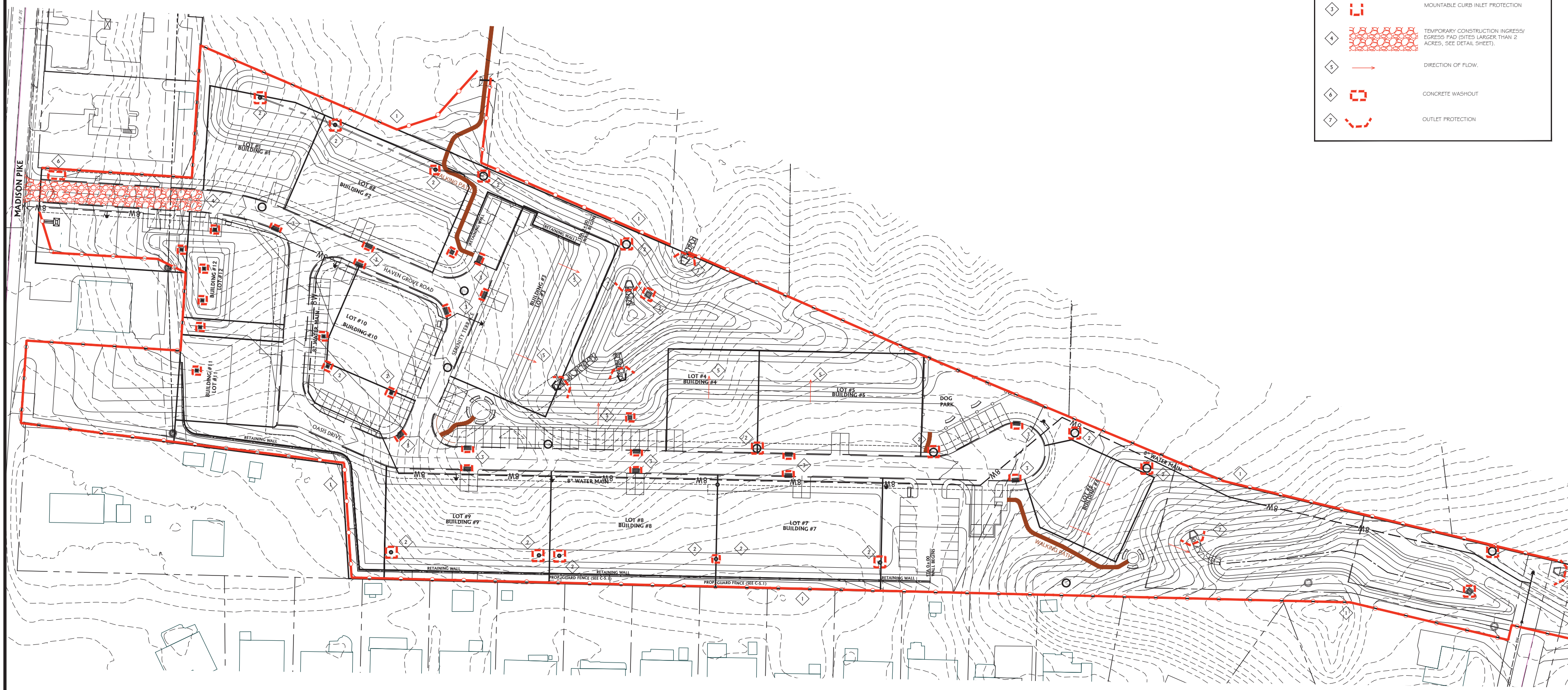
REVISION	DATE
- POS. REVISIONS FROM 7-24-24	7-25-24

PROJECT: THE HAVEN AT LIBERTY GROVE
CLIENT: MADISON PIKE PARTNERS, LLC
OWNER: ANR LOGISTCS LLC. 289 MADISON PIKE, FT. MITCHELL, KENTUCKY 41017
ARLINGHAUS BUILDERS INC.: 142 BARNWOOD, EDGEWOOD, KENTUCKY 41017

DATE: SEE RELEASE DATES
DRAWN BY: JCE
CHECKED BY: RJH
PROJECT: ENG 2311

EROSION CONTROL PLANS

C-4.1



KEYNOTES

1	SILT FENCING IS TO BE PLACED AFTER CLEARING. REMOVE SILT FENCE AFTER VEGETATIVE COVER IS RE-ESTABLISH
2	STRAW BALE AROUND CATCH BASIN
3	MOUNTABLE CURB INLET PROTECTION
4	TEMPORARY CONSTRUCTION INGRESS/ EGRESS PAD (SITES LARGER THAN 2 ACRES, SEE DETAIL SHEET).
5	DIRECTION OF FLOW.
6	CONCRETE WASHOUT
7	OUTLET PROTECTION

EROSION CONTROL PLAN

SCALE: 1" = 50'

0' 50' 100' 150'

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REVISION	DATE
1. PDS REVISIONS FROM 7-24-24	7-25-24

PROJECT: THE HAVEN AT LIBERTY GROVE

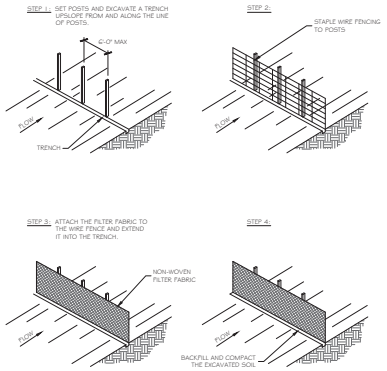
CLIENT: MADISON PIKE PARTNERS, LLC

OWNER: ANR LOGISTCS LLC: 289 MADISON PIKE, FT. MITCHELL, KENTUCKY 41017
ARLINGHAUS BUILDERS INC: 142 BARNWOOD, KENTUCKY 41017

DATE:	SEE RELEASE DATES
DRAWN BY:	JCE
CHECKED BY:	RJH
PROJECT:	ENG 2311

EROSION CONTROL PLANS

C-4.2

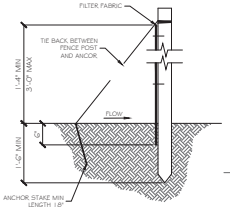


NOTES:

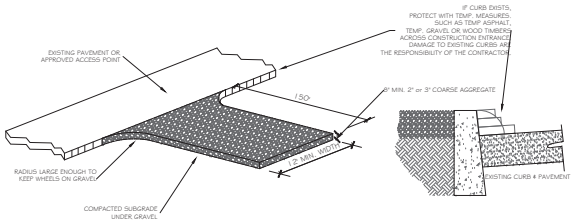
1. SILT FENCE SHALL BE PLACED AS CLOSE AS POSSIBLE TO EDGE OF CONSTRUCTION LIMITS ALONG CONTOUR LINES.
2. WOOD POSTS SHALL BE 1 1/2" X 1 1/2" SQUARE (MINIMUM) CUT, OR 1 3/4" DIAMETER (MINIMUM) ROUND AND SHALL BE OF SOUND QUALITY HARDWOOD. STEEL POSTS MAY BE USED AND SHALL BE STANDARD T OR U SECTION WEIGHING NOT LESS THAN 1.0 POUNDS PER LINEAR FOOT.
3. FILTER FABRIC SHALL BE FASTENED SECURELY TO EACH FENCE POST WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. WHERE ENDS OF FILTER FABRIC COME TOGETHER, THEY SHALL BE OVERLAPPED, FOLDED AND STAPLED TO PREVENT SEDIMENT BYPASS.
5. SILT FENCE SHALL BE INSPECTED AFTER EACH RAINFALL EVENT AND MAINTAINED WHEN BULGES OCCUR OR WHEN SEDIMENT ACCUMULATION REACHES 50% OF THE FABRIC HEIGHT.

SILT FENCE BARRIER INSTALLATION

SCALE: NTS

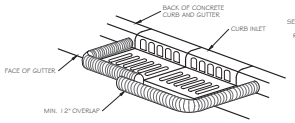


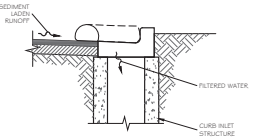
SECTION



TEMPORARY CONSTRUCTION ACCESS

SCALE: NTS



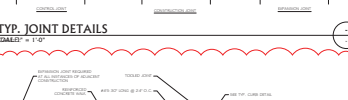


1. PLACE AN ADEQUATE NUMBER OF SLOPEGARD 3 ROLLS AROUND AN INLET TO PROVIDE COMPLETE PROTECTION. LEAVE APPROXIMATELY 3'-4" BETWEEN THE SLOPEGARD 3 ROLLS AND THE INLET. ENDS SHOULD OVERLAP ABOUT 12 INCHES.
2. INSPECT INLET PROTECTION DEVICE BEFORE AND AFTER RAIN EVENTS, AND WEEKLY THROUGHOUT THE RAINY SEASON. DURING EXTENDED RAIN EVENTS, INSPECT AT LEAST ONCE EVERY 24 HOURS.
3. REMOVE AND PROPERLY DISPOSE OF ACCUMULATED SILT AND DEBRIS TO ALLOW FOR PROPER FUNCTION OF DEVICE.

SEDIMENTATION CONTROL DEVICE - SLOPEGARD 3
KRISTAR ENTERPRISES, INC.,
SANTA ROSA, CA (800) 579-8819 "OR APPROVED EQUAL"

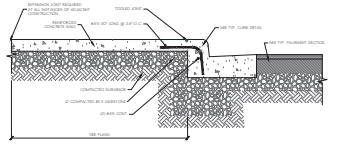
TEMP. DOUBLE CURB INLET SEDIMENT PROTECTION

SCALE: NTS



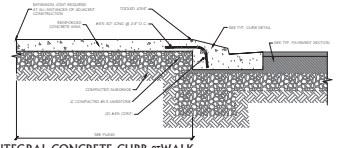
TYP. JOINT DETAILS

SCALE: 1" = 1'-0"



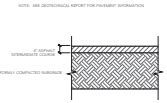
INTEGRAL CONCRETE CURB &WALK OUTSIDE PARKING AREA DETAIL

SCALE: 1" = 1'-0"



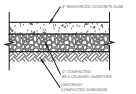
INTEGRAL CONCRETE CURB &WALK INSIDE PARKING AREA DETAIL

SCALE: 1" = 1'-0"



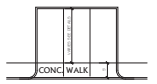
WALKING PATH ASPHALT PAVEMENT

SCALE: 1" = 1'-0"



TYP. CONCRETE SIDEWALK

SCALE: 1" = 1'-0"

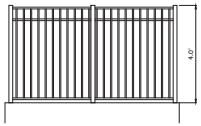


TYP. PARKING DETAIL

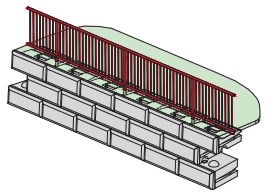
SCALE: NTS

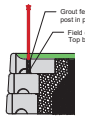
BARRICADE FENCE DETAIL

N.T.S.

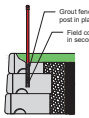


Fence or Pedestrian Guard Connection Options



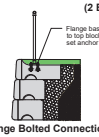


Grouted Connection (1 Block)

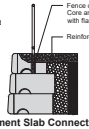


Grouted Connection (2 Blocks)

These generic pedestrian guard and fence details show a few potential options for their installation on the top of a Redi-Rock retaining wall. It is the design engineer's responsibility to fully design and detail the connection of the guard posts to the retaining wall blocks and assure acceptable resistance to the applied forces. Redi-Rock blocks are plain concrete, without steel reinforcement.



Flange Bolted Connection



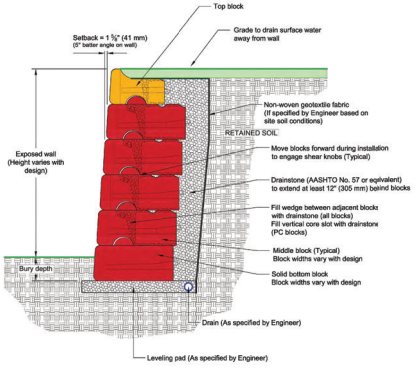
Moment Slab Connection

This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

DRAWN BY:	JRJ	TITLE:	Fence or Pedestrian Guard Connection Options
APPROVED BY:	JRJ		
DATE:	06-22-2015	FILE:	5 Fence or Pedestrian Guard Connection Options 062215.dwg
SHEET:	1 of 1		

REDI-ROCK
10481 US 31 SOUTH, CHARLEVOIX, MI 49720
(866) 222-6400 ext 3010 • engineering@redi-rock.com
www.redi-rock.com

Typical Gravity Wall Section



This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site.

DRAWN BY:	JRJ	TITLE:	Typical Gravity Wall Detail
APPROVED BY:	JRJ		
DATE:	17MAR2016	FILE:	1 Typical Gravity Wall Detail 031716.dwg
SHEET:	1 of 1		

REDI-ROCK
10481 US 31 SOUTH, CHARLEVOIX, MI 49720
(866) 222-6400 ext 3010 • engineering@redi-rock.com
www.redi-rock.com

RETAINING WALL TEXTURE

1

HREZO
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Engineering Certification
Engineering Consulting
Full Engineering Services
Full Architectural Services
Construction Management
Surveying Services
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Greendale, Indiana 47025
T 812.537.4700
Office@HrezoEngineering.com
MADISON
448 Meadow Lane
Madison, Indiana 47250
T 812.273.2644
Contact@HrezoEngineering.com

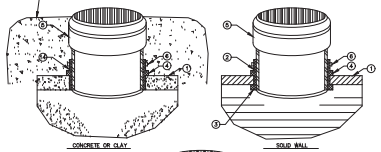
REVISION	DATE
1. PDS REVISIONS FROM 7-24-24	7-25-24

PROJECT: THE HAVEN AT LIBERTY GROVE
CLIENT: MADISON PIKE PARTNERS, LLC
OWNER: ANR LOGISTICS LLC; 289 MADISON PIKE, FT. MITCHELL, KENTUCKY 41017
A RLINGHAUS BUILDERS INC; 142 BARNWOOD, KENTUCKY 41017

DATE:	SEE RELEASE DATES
DRAWN BY:	JCE
CHECKED BY:	RJH
PROJECT:	ENG 2311

DETAIL SHEET

C-5.1



NOTE:
AIR TIGHT SEAL IS ACCOMPLISHED WHEN PVC HUB (No. 6) IS DRIVEN INTO RUBBER SLEEVE (No. 2) CAUSING THE RUBBER SLEEVE TO COMPRESS BETWEEN PIPE WALL (No. 1) AND PVC HUB (No. 5).

TO BE INSTALLED AT THE 10 & 2 O'CLOCK POSITIONS ONLY.

FIGURE 1 — MAINLINE PIPE WALL WHERE BRANCH LINE IS CONNECTED.

FIGURE 2 — COMPLETE RUBBER SLEEVE CONSISTING OF ASTM C-448 SPECIFICATIONS.

FIGURE 3 — RUBBER SEGMENT WHICH IS MOLDED INTO THE RUBBER SLEEVE. THIS PREVENTS SNAP OUT ON THE INSIDE OF THE DRILLED HOLE (PLASTIC PIPE ONLY) AND HELPS HOLD THE FITTING IN PLACE, NOT CREATING THE SEAL.

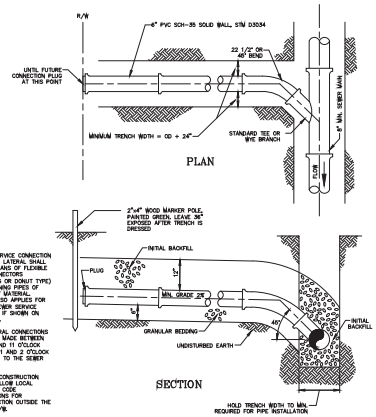
FIGURE 4 — RUBBER SEGMENT WHICH IS MOLDED INTO THE RUBBER SLEEVE. THIS PREVENTS THE RUBBER SLEEVE FROM GOING THROUGH THE DRILLED HOLE WHEN PVC HUB IS BEING DRIVEN INTO THE RUBBER SLEEVE.

FIGURE 5 — SDR-26 PVC HUB (ASTM D-3034) WHICH IS DRIVEN INTO THE CENTER OF THE RUBBER SLEEVE AFTER THE RUBBER SLEEVE IS IN THE HOLE.

FIGURE 6 — STAINLESS STEEL BANDS, PUT ON ABOVE FIGURE 4 IS AN ADDED PRECAUTION.

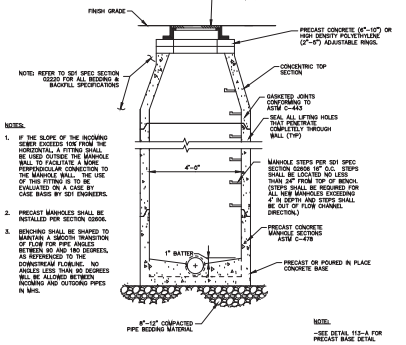
NOTE: PIPE PENETRATIONS SHALL BE CORE DRILLED.

INSERTA TEE CONNECTION DETAILS
N.T.S.



NOTE:
1. SEWER SERVICE CONNECTION TO SEWER LATERAL SHALL BE BY MEANS OF FLEXIBLE PIPE CONNECTORS (COUPLING OR DONUT TYPE) OR BY THE USE OF A DIFFERENT MATERIAL. DETAIL ALSO APPLIES FOR ALL 4" SEWER SERVICE LATERALS IF SHOWN ON DRAWINGS.
2. ALL LATERAL CONNECTIONS SHALL BE MADE BETWEEN THE 10 AND 11 O'CLOCK AND THE 1 AND 2 O'CLOCK POSITIONS TO THE SEWER MAIN.
3. LATERAL CONSTRUCTION SHALL FOLLOW LOCAL PLUMBING CODE REGULATIONS FOR CONSTRUCTION OUTSIDE THE PUBLIC R/W.
4. LATERAL INSTALLATIONS SHALL FOLLOW ALL BEDDING AND BACKFILL REQUIREMENTS OF SDI STANDARD SPECIFICATIONS, SECTION 02320.

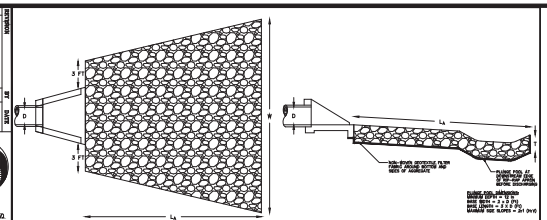
SEWER LATERAL INSTALLATION
N.T.S.



NOTES:
1. IF THE SLOPE OF THE INCOMING SEWER EXCEEDS 10% FROM THE HORIZONTAL, A FITTING SHALL BE USED OUTSIDE THE MANHOLE WALL TO FACILITATE A MORE PERPENDICULAR CONNECTION TO THE MANHOLE. THE USE OF THIS FITTING IS TO BE EVALUATED ON A CASE BY CASE BASIS BY SDI ENGINEERS.
2. PRECAST MANHOLES SHALL BE INSTALLED PER SECTION 02806.
3. BENDING SHALL BE SHAPED TO MAINTAIN A SMOOTH TRANSITION OF FLOW FOR PIPE ANGLES BETWEEN 90 AND 180 DEGREES, AS REFERENCED TO THE DOWNSTREAM FLOWLINE. NO ANGLES LESS THAN 90 DEGREES WILL BE ALLOWED BETWEEN INCOMING AND OUTGOING PIPES IN MHS.

NOTE:
-SEE DETAIL 113-A FOR PRECAST BASE DETAIL.
-ANTI-FLOTATION FLANGES MAY BE REQUIRED IN AREAS WHERE THE MANHOLE IS SUBJECT TO GROUND WATER PER SDI SPEC 02806.

STANDARD MANHOLE
N.T.S.

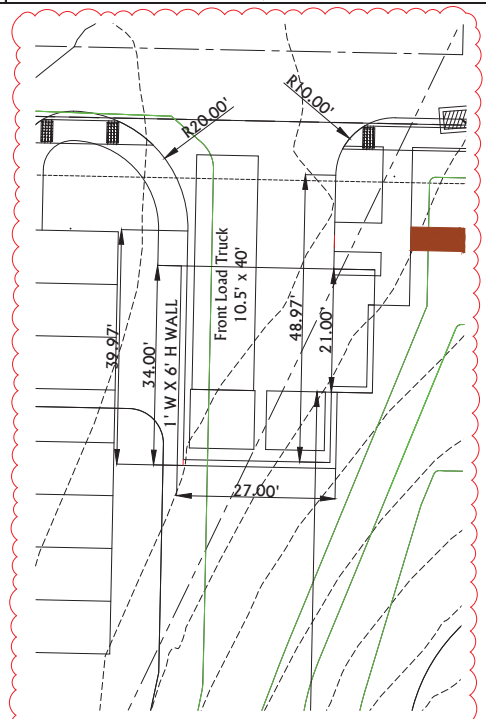


NOTES:
1. FLOW RATES LISTED IN THE TABLE SHALL BE BASED ON THE 10-YEAR 24-HOUR DESIGN STORM PEAK FLOW RATE.
2. OUTLET EROSION PROTECTION IN THE FORM OF A RIP-RAP APRON SHALL REMAIN STRAIGHT THROUGHOUT ITS ENTIRE LENGTH.
3. ENSURE THAT RIP-RAP CONSISTS OF A WELL-GRADED MIXTURE OF STONES, SIZED SO THAT THE MEDIAN STONE SIZE AND LARGER SUFFICIENT SMALLER SIZES TO FILL THE VOIDS BETWEEN THE STONES. RIP-RAP SHALL BE ANGULAR IN SHAPE, NOT ROUNDED.
4. THE DIAMETER OF THE LARGEST STONE SIZE SHALL BE NO GREATER THAN 1.5 TIMES THE D_{50} SIZE.
5. THE MINIMUM THICKNESS OF RIP-RAP SHALL BE 2.0 TIMES THE D_{50}.
6. A NON-WOVEN GEOTEXTILE FILTER FABRIC SHALL BE INSTALLED AROUND THE BOTTOM AND SIDES OF THE RIP-RAP TO PREVENT EROSION.

Rip-Rap Apron Dimensions

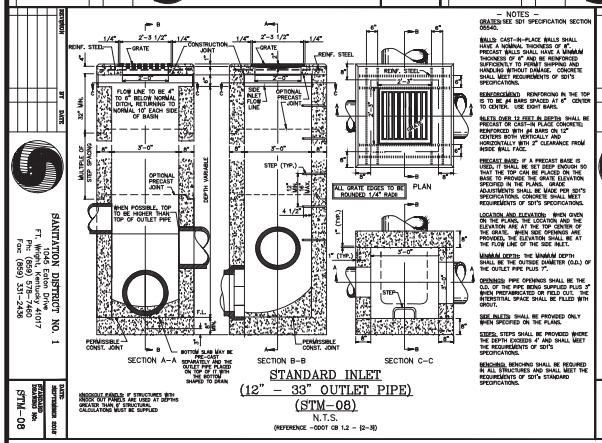
S. Pipe Diameter (in)	Largest Volume			Intermediate Volume to Interpolate From							Highest Value		
	Q (cfs)	L₄ (ft)	Dia (in)	Q (cfs)	L₄ (ft)	Dia (in)	Q (cfs)	L₄ (ft)	Dia (in)	Q (cfs)	L₄ (ft)	Dia (in)
12	4.8	7	8	5	10	8	6	13	8	7	16	8
15	6.5	7	8	8	10	8	9	13	8	10	16	8
18	10	7	8	12	10	8	13	13	8	14	16	8
21	15	11	8	16	15	8	17	19	8	18	23	8
24	21	11	8	25	15	8	26	19	8	29	23	8
27	27	14	8	30	24	8.5	32	28	9	34	32	9
30	35	14	8	40	24	8.5	45	28	9	50	32	9
36	50	23	8	60	32	13	70	40	15	80	48	17
42	65	23	8.5	75	32	13	85	40	15	95	48	17
48	85	23	9.5	100	32	13	140	40	19	180	48	23
54	120	28	10	170	37	14	220	46	19	270	54	23

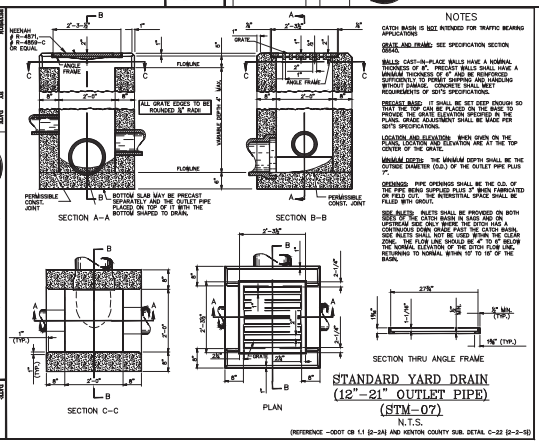
OUTLET EROSION PROTECTION (STM-21)
N.T.S.



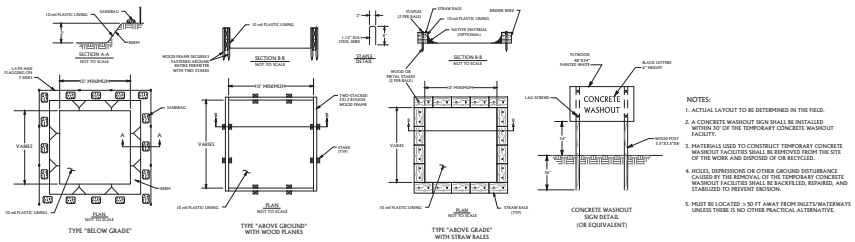
DUMPSTER ENCLOSURE
SCALE: 1" = 1'

*DUMPSTER WALL WILL BE MASONRY MATERIAL TO MATCH BUILDING CONSTRUCTION





CONCRETE WASH OUT



NOTES:
1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.
2. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 20' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF OR RECYCLED.
4. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED, REPAIRED, AND STABILIZED TO PREVENT EROSION.
5. MUST BE LOCATED >50 FT AWAY FROM INLETS/WATERWAYS UNLESS THERE IS NO OTHER PRACTICAL ALTERNATIVE.

SANITATION DISTRICT NO. 1
1045 Eaton Drive
FT. Wright, Kentucky 41017
Ph: (859) 578-7460
Fax: (859) 331-2436

REVISION	BY	DATE

DATED: MARCH 2010
STANDARD DRAWING NO. 102
STM-08

SANITATION DISTRICT NO. 1
1045 Eaton Drive
FT. Wright, Kentucky 41017
Ph: (859) 578-7460
Fax: (859) 331-2436

REVISION	BY	DATE

DATED: SEPTEMBER 2018
STANDARD DRAWING NO. 120
STM-07

SANITATION DISTRICT NO. 1
1045 Eaton Drive
FT. Wright, Kentucky 41017
Ph: (859) 578-7460
Fax: (859) 331-2436

REVISION	BY	DATE

DATED: AUGUST 2008
STANDARD DRAWING NO. 113
STM-21

SANITATION DISTRICT NO. 1
1045 Eaton Drive
FT. Wright, Kentucky 41017
Ph: (859) 578-7460
Fax: (859) 331-2436

REVISION	BY	DATE

DATED: MAY 2019
STANDARD DRAWING NO.
STM-21

HREZO
Engineering, Inc.
Engineering Certification
Engineering Consulting
Full Engineering Services
Full Architectural Services
Construction Management
Surveying Services
GREENDALE
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Office@HrezoEngineering.com
MADISON
448 Meadow Lane
Madison, Indiana 47250
T 812.273.2644
Contact@HrezoEngineering.com

REVISION	DATE
1. PDS REVISIONS FROM 7-24-24	7-25-24

PROJECT: THE HAVEN AT LIBERTY GROVE
CLIENT: MADISON PIKE PARTNERS, LLC
ANR LOGISTICS LLC, 289 MADISON PIKE, FT. MITCHELL, KENTUCKY 41017
ARLINGHAUS BUILDERS INC. 142 BARNWOOD, KENTUCKY 41017

DATE: SEE RELEASE DATES
DRAWN BY: JCE
CHECKED BY: RJH
PROJECT: ENG 2311

DETAIL SHEET

C-5.2

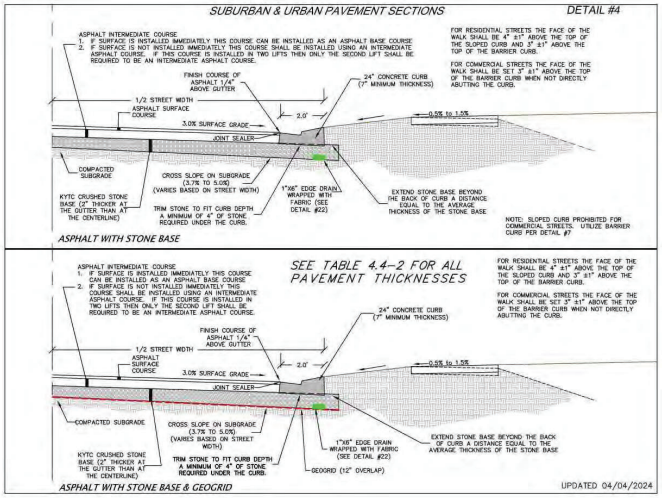


Table 4.4-1: Required Subdivision Street Thicknesses

Street Classification With Number of Lots Served[5]	Concrete	Concrete Over 4" Crushed Stone Base	Full-Depth Asphalt		Asphalt Over Crushed Stone Base (CSB)			Asphalt Over Crushed Stone Base (CSB) + Geogrid[6]		
			Surface	Base[1]	Surface	Base	CSB[1]	Surface	Base	CSB[1]
Residential Local ≤199 Lots	7"[2]	NA	1.25"	8"	1.5"	5"	7"[4]	1.5"	3"	7"[4]
Residential Subcollector 200 – 500 Lots	8"[2]	NA	1.25"	8.75"	1.5"	6"	7"[4]	1.5"	4"	7"[4]
Residential Collector 501 – 1,000 Lots	9"[2]	NA	1.25"	10.5"	1.5"	7.75"	7"[4]	1.5"	5.75"	7"[4]
Light Commerical ≤1 Million ESALS	Not Permitted	8.5"[3]	Not Permitted	Not Permitted	1.5"	8"	7"[4]	1.5"	6"	7"[4]
Heavy Comercial/Industrial ≤3.5 Million ESALS	Not Permitted	10"[3]	Not Permitted	Not Permitted	1.5"	9.5"	7"[4]	1.5"	7.5"	7"[4]
Arterial	Per KYTC Specifications									

[1] Average thickness. Varies from 1 inch less at centerline to 1 inch gnater at gutter apron

[2] Plain Concrete, tooled skewed transverse Contraction Joints without dowels (see Figure A.1-N: Detail #12 and Figure A.1-O: Detail #13).

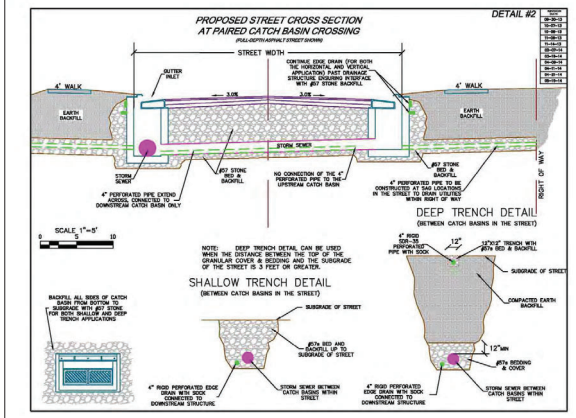
[3] Plain Concrete, with doweled and sawed (non-skewed) transverse Contraction Joints (see Figure A.1-M: Detail #11).

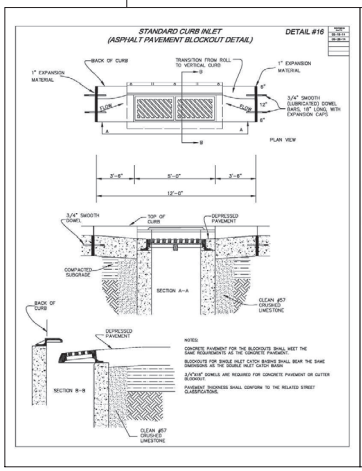
[4] When the required thickness of aggregate base is no more than 8 inches for Crushed Stone Base (CSB) and the Geotechnical engineer is satisfied that acceptable compaction can be achieved, place the material in one lift.

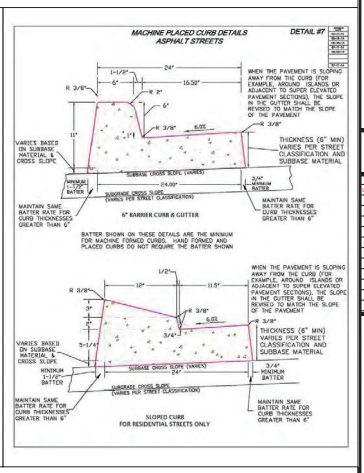
[5] Number of lots served for a particular Street is defined as the number of lots which that Street serves as the sole access or, where a number of Lots are served by more than one access, it is an approximation of the number of lots served that is equivalent to one access.

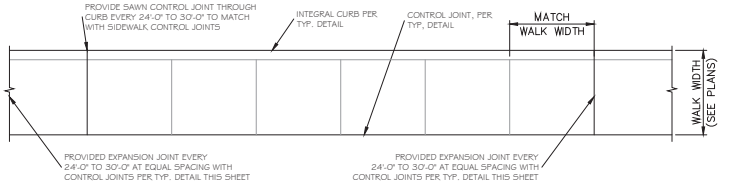
- Example 1: A particular section Street serves as the sole access to less than 200 Lots. That Street would then be a Local Street.
- Example 2: An area of existing and future residential development of 450 Lots is served by more than one access Street. Only those Streets that will carry traffic and ESAL loading higher than a Subdivision Street that provides sole access to more than 200 Lots will be classified as a subcollector Street.

[6] Geogrid shall be Tensar TX5 triaxial geogrid.





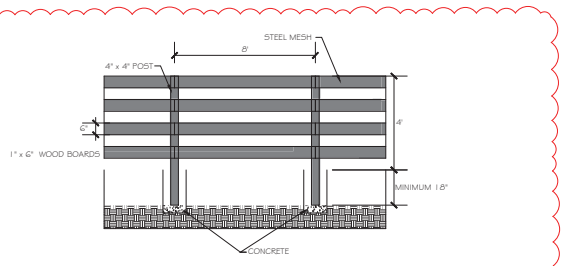




NOTES:
1. CONSTRUCTION JOINTS TO BE LOCATED @ CONTROL JOINTS ONLY. PROVIDE CONTINUOUS KEY.
2. SPACING OF CONTROL JOINTS SHALL NOT EXCEED 6'-0". SPACING SHALL EQUALLY SPACED THOUGHOUT RUN.

TYP. SIDEWALK JOINT DETAIL

SCALE 3/16"=1'-0"



FOUR BOARD WOOD FENCE DETAIL

SCALE: NTS

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Contact@HrezoEngineering.c

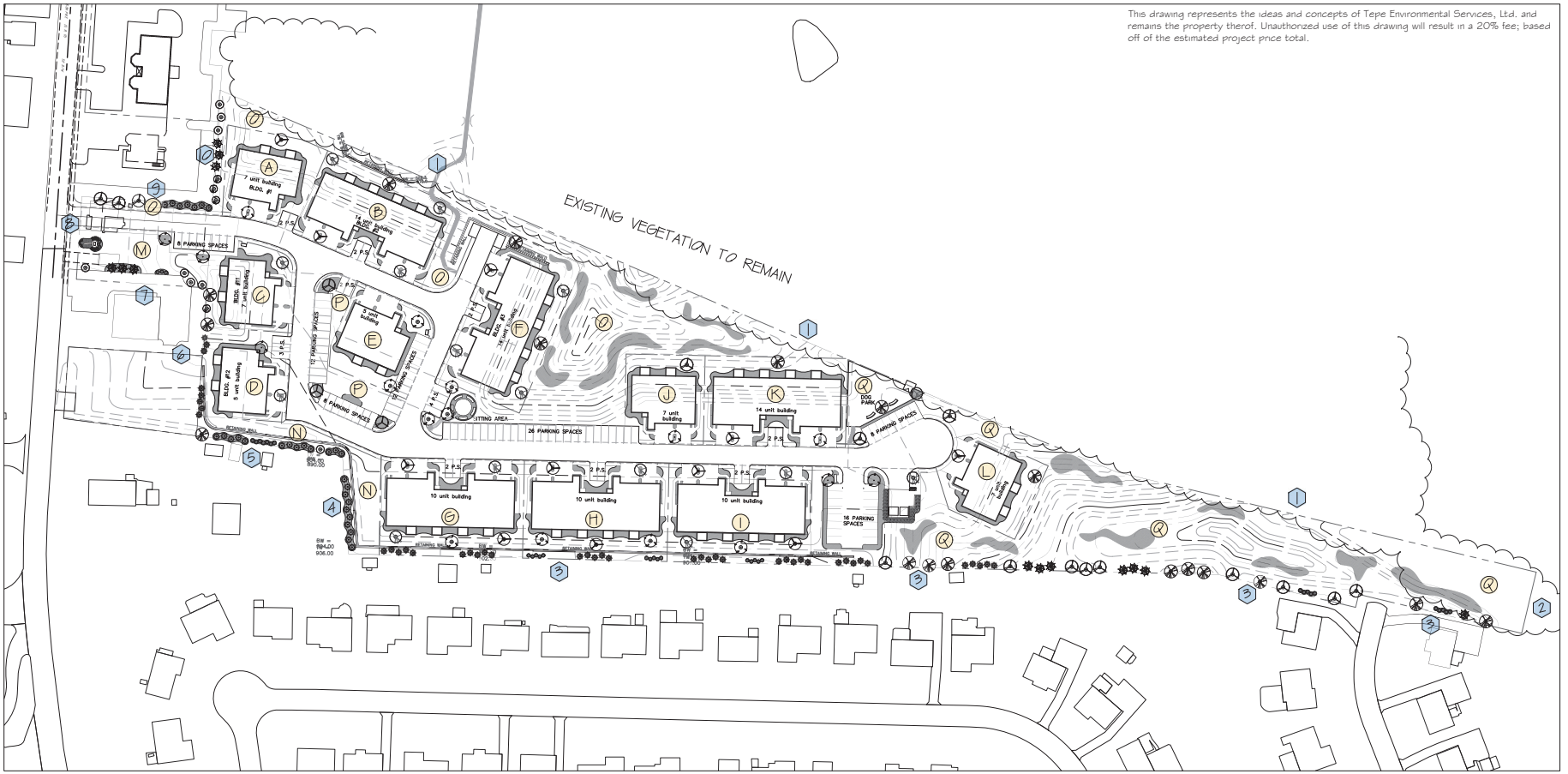
REVISION	DATE
POS REVISIONS FROM 7-24-24	7-25-24

PROJECT: THE HAVEN AT LIBERTY GROVE
CLIENT: MADISON PIKE PARTNERS, LLC
BUILDER: ANR LOGISTCS LLC, 289 MADISON PIKE, FT. MITCHELL, KENTUCKY 41017
ARLINGHAUS BUILDERS INC. 142 BARNWOOD, KENTUCKY 41017

DATE: SEE RELEASE DAT
DRAWN BY:
CHECKED BY:
PROJECT: ENG 2

DETAIL SHEET

C-5.3



PERIMETER LANDSCAPE CALCULATIONS

PROPERTY LINE	LENGTH	PLANTS REQUIRED	PLANTS PROVIDED
1	1,679 lin. ft.	335.8 trees 671.8 lg. shrubs	Existing woodlands to remain
2	74 lin. ft.	1.48 trees 2.96 shrubs	Existing woodlands to remain
3	1,422 lin. ft.	284.4 trees 568.8 shrubs	29 lg./ev. trees 60 lg. shrubs
4	118 lin. ft.	2.36 trees 4.72 shrubs	+ 0 trees 10 lg. shrubs
5	176 lin. ft.	3.52 trees 7.04 shrubs	+ 2 lg./ev. trees 20 lg. shrubs
6	177 lin. ft.	3.54 trees 7.08 shrubs	4 lg./ev. trees 8 lg. shrubs
7	156 lin. ft.	3.12 trees 6.24 shrubs	3 lg. trees 7 lg. shrubs
8	99 lin. ft.	No trees/shrubs required	No trees/shrubs provided
9	156 lin. ft.	3.12 trees 6.24 shrubs	3 evergreen trees 7 lg. shrubs
10	138 lin. ft.	2.76 trees 5.52 shrubs	3 evergreen trees 6 lg. shrubs

* NOTE: In areas against a gravity retaining wall, trees cannot be installed without causing damage to the geogrid and wall systems. In this case, we propose the installation of the number of large shrubs equal to two times the number of trees required (in addition to all required shrubs), in keeping with the spirit and intent of the required plantings. This condition only exists on property line 4. For property line 5, sufficient space does not exist due to the retaining wall, so as many plants as possible have been provided.

INTERIOR LANDSCAPE CALCULATIONS

	LOT	SIZE	TREES REQUIRED	TREES PROVIDED	SQFT. REQUIRED	SQFT. PROVIDED
RESIDENTIAL LOTS	A	11,795 sq. ft.	1 lg. + 1 other	2 lg.	1,125 sq. ft.	1,186 sq. ft.
	B	17,938 sq. ft.	1 lg. + 2 others	5 lg.	1,793 sq. ft.	1,787 sq. ft.
	C	10,506 sq. ft.	1 lg. + 1 other	2 lg.	1,050 sq. ft.	1,320 sq. ft.
	D	9,248 sq. ft.	1 lg. + 1 other	2 lg.	924 sq. ft.	1,137 sq. ft.
	E	11,415 sq. ft.	1 lg. + 1 other	3 lg.	1,134 sq. ft.	1,123 sq. ft.
	F	20,981 sq. ft.	1 lg. + 2 others	6 lg.	2,095 sq. ft.	2,142 sq. ft.
	G	13,802 sq. ft.	1 lg. + 2 others	5 lg.	1,380 sq. ft.	1,987 sq. ft.
	H	20,056 sq. ft.	1 lg. + 2 others	5 lg.	2,005 sq. ft.	2,050 sq. ft.
	I	19,536 sq. ft.	1 lg. + 2 others	5 lg.	1,938 sq. ft.	2,050 sq. ft.
	J	9,387 sq. ft.	1 lg. + 1 other	2 lg.	938 sq. ft.	1,122 sq. ft.
	K	15,076 sq. ft.	1 lg. + 2 others	3 lg.	1,507 sq. ft.	1,856 sq. ft.
	L	10,418 sq. ft.	1 lg. + 1 other	2 lg.	1,041 sq. ft.	1,122 sq. ft.
OPEN SPACE	M	57,864 sq. ft.	1 lg. + 1 other	5 lg. + 4 sm.	580 sq. ft.	580 sq. ft.
	N	10,978 sq. ft.	1 lg. + 1 other	2 lg.	1,097 sq. ft.	1,780 sq. ft.
	O	58,623 sq. ft.	2 lg. + 4 others	9 lg. + 6 sm.	5,860 sq. ft.	6,578 sq. ft.
	P	8,532 sq. ft.	1 lg. + 1 other	3 lg.	853 sq. ft.	921 sq. ft.
	Q	91,227 sq. ft.	9 lg. + 6 other	91 lg.	9,122 sq. ft.	10,167 sq. ft.

PREPARATION AND PLANTING NOTES

- LOCATE ALL UNDERGROUND UTILITIES PRIOR TO STARTING WORK. THROUGH THE OHIO UTILITIES PROTECT SERVICE.
- PROTECT STRUCTURES, UTILITIES, SIDEWALKS, PAVEMENTS, AND OTHER FACILITIES, AND LAWNS AND EXISTING EXTERIOR PLANTS FROM DAMAGE CAUSED BY PLANTING OPERATIONS.
- ALL PLANTING BEDS ARE TO BE PREPARED AS FOLLOWS :
  - LOOSEN SUB-GRADE TO A DEPTH OF 4 - 6". REMOVE STONES LARGER THAN 1" IN ANY DIMENSION AND STICKS, ROOTS & RUBBISH
  - SPREAD COMPOST AT A DEPTH OF 4 - 6" AND TILL INTO THE LOOSENED SUB GRADE, MIXING THOROUGHLY.
  - EDGE ALL LANDSCAPE BEDS & INDIVIDUAL TREE RINGS 9 - 6" DEEP
- IT IS THE CONTRACTORS OPTION WHETHER OR NOT TO STAKE A TREE, BUT IT IS ALSO THE CONTRACTORS RESPONSIBILITY TO ENSURE PLANTS REMAIN IN AN UPRIGHT POSITION UNTIL THE END OF THE WARRANTY PERIOD.
- ALL PLANTING BEDS AND INDIVIDUAL TREES AND SHRUBS ARE TO BE MULCHED AT A DEPTH OF 3 - 5". APPLY PRE-EMERGENT HERBICIDE BEFORE MULCHING PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
- FOR ALL PLANT MATERIALS, PRUNE TO REMOVE DEAD OR INJURED BRANCHES ONLY, UNLESS OTHERWISE DIRECTED BY LANDSCAPE ARCHITECT.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO:
  - KEEP ADJACENT PAVING AND CONSTRUCTION CLEAN, AND MAINTAIN WORK AREA IN AN ORDERLY CONDITION, FOR DURATION OF PROJECT.
  - PROTECT EXTERIOR PLANTS FROM DAMAGE DUE TO LANDSCAPE OPERATIONS, OPERATIONS BY OTHER CONTRACTORS AND TRADES, AND OTHERS. MAINTAIN PROTECTION DURING INSTALLATION.
  - REMOVE SURPLUS SOIL AND WASTE MATERIAL, INCLUDING EXCESS SUBSOIL, UNSUITABLE SOIL, TRASH, AND DEBRIS, AND LEGALLY DISPOSE OF THEM OFF OWNER'S PROPERTY.

SHADED ZONES INDICATE PROPOSED LANDSCAPE AREAS

Skyline Honeylocust
Red/White Oaks
Green Vase Zelkova
Dogwood
Spring Grove Arborvitae
Red/Sugar Maples
New Horizon Elm
Norway Spruce
Sweetbay Magnolia
Leatherleaf Viburnum

Scale: 1" = 60' - 0"
0 30' 60' 120'
North


SKYLINE HONEYLOCUST


RED MAPLE


SUGAR MAPLE


RED OAK


WHITE OAK


NEW HORIZON ELM


GREEN VASE ZELKOVA


NORWAY SPRUCE


DOGWOOD


SWEETBAY MAGNOLIA


SPRING GROVE ARBORVITAE


LEATHERLEAF VIBURNUM

Tepe Environmental Services, Ltd.

Client:
Madison Pike Partners, LLC
5 Tower Drive
Newport, KY 41071

THE HAVEN AT LIBERTY GROVE
LANDSCAPE IMPROVEMENT PROJECT

Tepe Environmental Services, Ltd.
7021 Cleves Warsaw Road
Cincinnati, OH 45233
(513) 941-4500 tepeservices.com

Issue Date:
29 JANUARY 2024

Revisions:
20 MARCH 2024

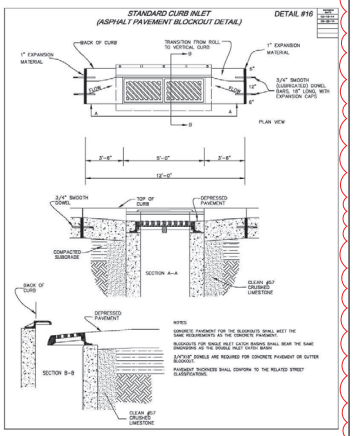
Sheet Title:
LANDSCAPE PLAN

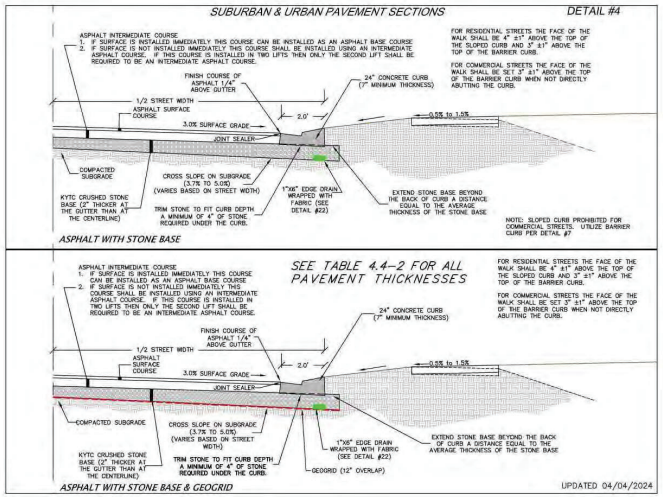
Designer:
KAYLA KNIGGA

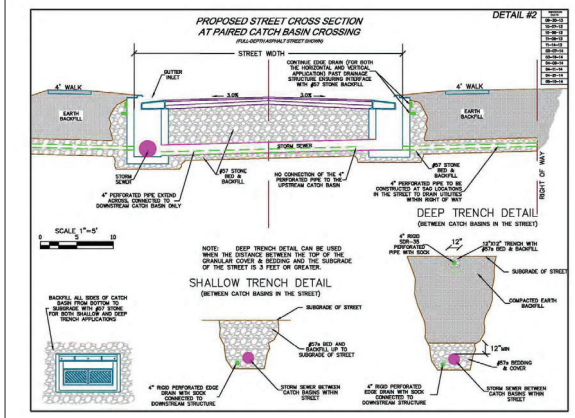
Project Number:
24015

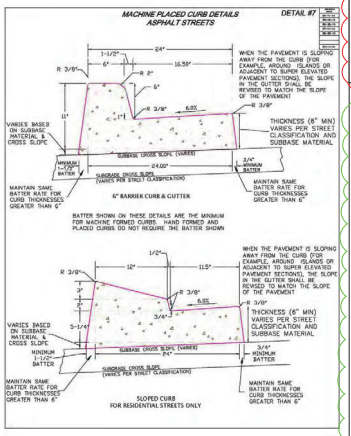
Scale:
1" = 60'-0"

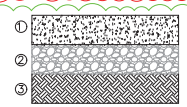
Sheet:
L100

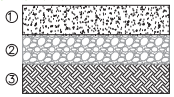












① SECTION 500, 10" PLAIN PORTLAND CEMENT CONCRETE
② PAVEMENT
③ SECTION 302, 4: DENSE GRADED AGGREGATE
SECTION 200, SUB–GRADE COMPACTION, REF. SOILS REPORT

NOTE:
CONCRETE PAVING SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:

1. 4000 PSI COMPRESSIVE STRENGTH, 600 PSI FLEXURAL STRENGTH.
2. 5–7% ENTRAINED AIR WITH APPROVED WATER–REDUCING AND RETARDING ADMIXTURES.
3. CONSTRUCTION JOINTS SHALL BE SPECIFIED BY CONTRACTOR AS A PART OF THE CONTRACT BID.
4. CONCRETE PAVING SHALL HAVE A LIGHT BROOM FINISH
5. CURING COMPOUND SHALL BE APPLIED.

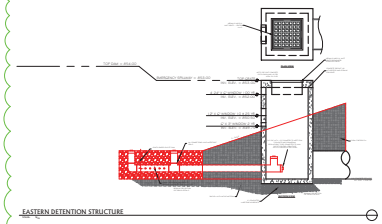
HEAVY CONCRETE PAVING SECTION
NOT TO SCALE

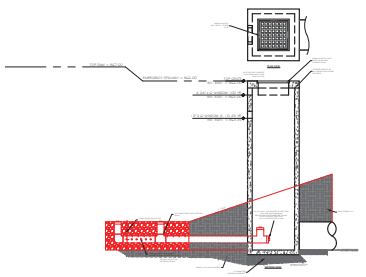
① SECTION 500, 8–1/4" PLAIN PORTLAND CEMENT CONCRETE
② PAVEMENT
③ SECTION 302, 4: DENSE GRADED AGGREGATE
SECTION 200, SUB–GRADE COMPACTION, REF. SOILS REPORT

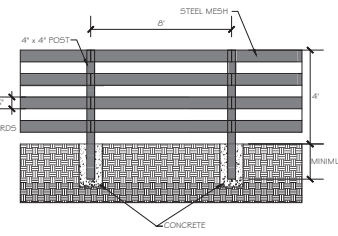
NOTE:
CONCRETE PAVING SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:

1. 4000 PSI COMPRESSIVE STRENGTH, 600 PSI FLEXURAL STRENGTH.
2. 5–7% ENTRAINED AIR WITH APPROVED WATER–REDUCING AND RETARDING ADMIXTURES.
3. CONSTRUCTION JOINTS SHALL BE SPECIFIED BY CONTRACTOR AS A PART OF THE CONTRACT BID.
4. CONCRETE PAVING SHALL HAVE A LIGHT BROOM FINISH
5. CURING COMPOUND SHALL BE APPLIED.

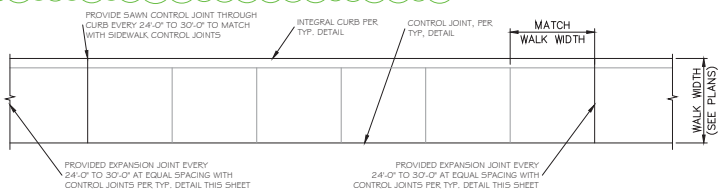
LIGHT CONCRETE PAVING SECTION
NOT TO SCALE





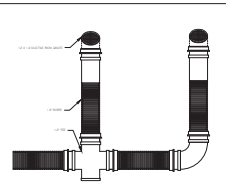


FOUR BOARD WOOD FENCE DETAIL
SCALE: NTS

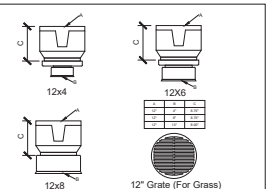


NOTES:
1. CONSTRUCTION JOINTS TO BE LOCATED @ CONTROL JOINTS ONLY. PROVIDE CONTINUOUS KEY.
2. SPACING OF CONTROL JOINTS SHALL NOT EXCEED 6'-0". SPACING SHALL EQUALLY SPACED THOUGHOUT RUN.

TYP. SIDEWALK JOINT DETAIL
SCALE: 3/16" = 1'-0"



12" INLINE PIPE YARD BOX
SCALE: NTS



12" INLINE DRAIN
SCALE: NTS

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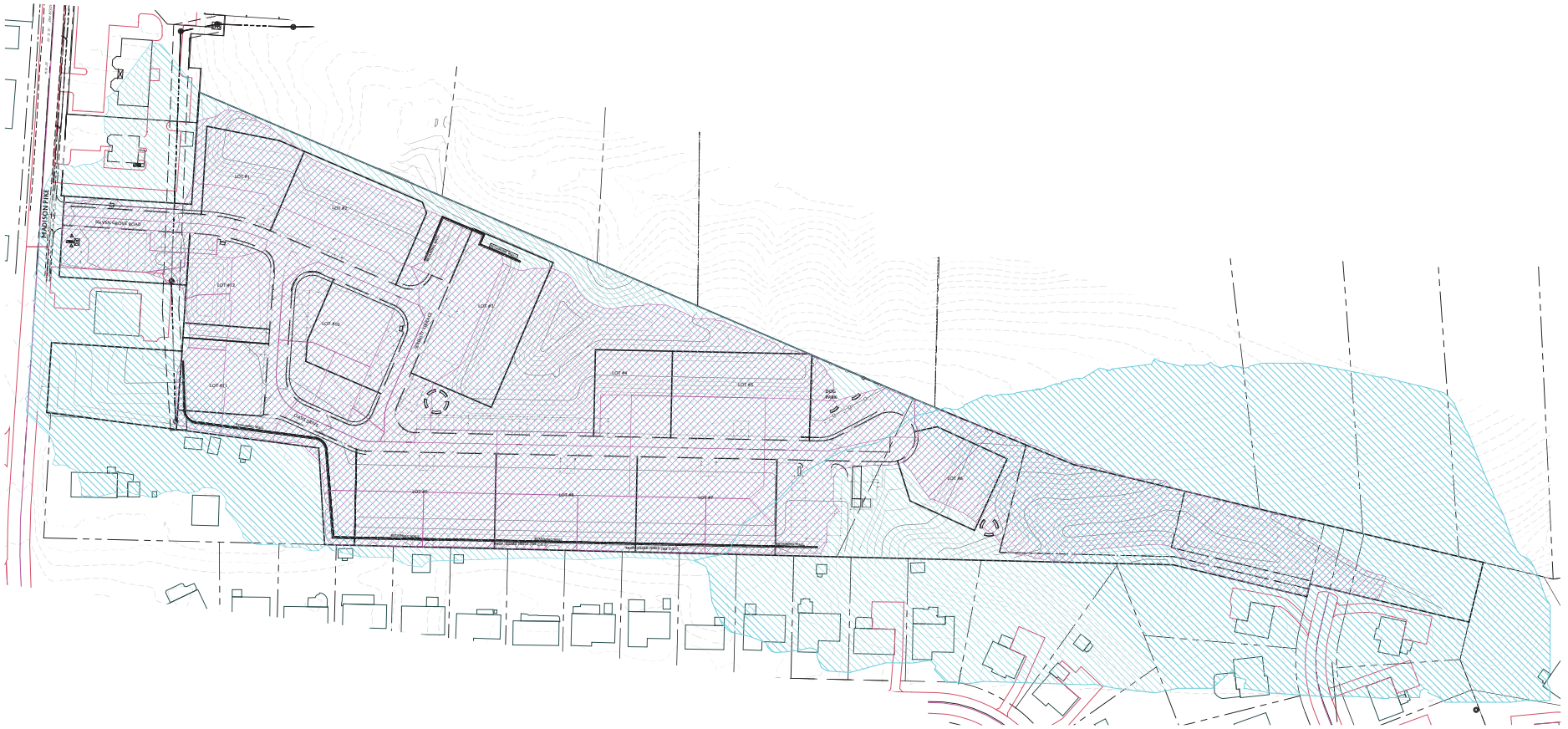
REVISION	DATE
PDS REVISIONS FROM 7-24-24	7-25-24
PDS REVISIONS FROM 7-24-24	7-31-24

PROJECT: THE HAVEN AT LIBERTY GROVE
CLIENT: MADISON PIKE PARTNERS, LLC
OWNER: ANR LOGISTICS LLC; 289 MADISON PIKE, FT. MITCHELL, KENTUCKY 41017
ARLINGHAUS BUILDERS INC; 142 BARNWOOD, KENTUCKY 41017

DATE:	SEE RELEASE DATES
DRAWN BY:	JCE
CHECKED BY:	RJH
PROJECT:	ENG 2311

DETAIL SHEET

C-5.3



LEGEND

- POST CONSTRUCTION DETAINED DRAINAGE
- PRE CONSTRUCTION DRAINAGE BASIN

N

DRAINAGE MAP

SCALE: 1" = 60'

0' 60' 120' 180'

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REVISION	DATE
1. PDS REVISIONS FROM 7-24-24	7-25-24

PROJECT: THE HAVEN AT LIBERTY GROVE
CLIENT: MADISON PIKE PARTNERS, LLC
CONTACT: ANR LOGISTICS LLC: 289 MADISON PIKE, FT. MITCHELL, KENTUCKY 41017
ARLINGHAUS BUILDERS INC.: 142 RARNWOOD, KENTUCKY 41017

DATE:	SEE RELEASE DATES
DRAWN BY:	JCE
CHECKED BY:	RJH
PROJECT:	ENG 2311

DRAINAGE MAP

C-6.1

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Engineering Certification • Engineering Consulting • Construction Management
Full Engineering Services • Full Architectural Services • Full Surveying Services

July 29, 2024

Storm Water Calculations
Condominium Development at The Haven at Liberty Grove
Kenton County, Kentucky

Drainage Areas

Pre-Development
The pre-development watershed area for this site includes two water sheds, one that drains to the northwestern boundary and one that drains to the eastern boundary. The northwest watershed is approximately 7.43 acres, and the eastern watershed is approximately 2.26 acres. The watersheds converge at a creek offsite. Pre-Development conditions were analyzed and a weighted coefficient was calculated using the Sanitation District No. 1 Strom Water Rules and Regulations.

Post Development
The post development watershed area includes improvements of the development site, such as grading, buildings, and underground utilities. Open channel ditches as well as catch basins will be used to collect runoff from the improvements. There are two watersheds for the post development site draining to the similar locations as the pre development site. The post-development drainage area is increased for the eastern watershed (3.08 acres) and decreased for the north-western watershed (4.92 acres) increase. Post-Development conditions were analyzed and a weighted coefficient was calculated using the Sanitation District No. 1 Strom Water Rules and Regulations. The following charts shows calculated runoffs and provided detention to make Pre-Development conditions be the same or less than the Post Developments

Runoff

Pre-Development Runoff
The pre-development watershed area for the eastern watershed includes 2.26 acres of the development. The Rational Method is used to determine peak runoff going into the watershed. According to Section 506, Table 4 of the SD1 Rules and Regulations, a runoff coefficient is found. The land in this area is undisturbed giving a general runoff coefficient of 0.40 This is calculated through Hydrology Studio

Total Predeveloped Drainage Area: 2.26 Ac.
Runoff Coefficient: 0.40
Time of Concentration: 25 minutes

The pre-development watershed area for the northwestern watershed includes 7.34 acres of the development. The Rational Method is used to determine peak runoff going into the watershed. According to Section 506, Table 4 of the SD1 Rules and Regulations, a runoff coefficient is found. This is calculated through Hydrology Studio

Total Predeveloped Drainage Area: 7.34 Ac.
Runoff Coefficient: 0.40
Time of Concentration: 25 minutes

Using Section 503, Table 3 of the SD1 Rules and Regulations, The Pre-Development conditions are as follows where:

$$I = B/(T_c+D)^E$$

Storm Frequency	B	D	E
3-month	35.0000	9.00	0.8950
2-Year	41.5018	7.62	0.8000
5-Year	54.0284	8.85	0.8110
10-Year	65.6903	9.80	0.8240
25-Year	43.9684	6.33	0.7020
50-Year	40.0295	5.23	0.6590
100-Year	34.3934	3.78	0.6050

Q-Critical:
According to Section 709 of the SD1 Rules and Regulations, the 2-Year Frequency storm event shall be equal to or less than Q-Critical. This is approximated as 0.4 cfs per acre of disturbance within the pre-developed drainage area plus the 2-year peak from the remaining undisturbed pre-developed drainage area to each outlet/discharge leaving the project site.

Peak Runoff (East)

Q_2 = Q-Critical = .4(2.26) = 0.904 cfs
Q_{10} = 3.586 cfs
Q_{25} = 3.984 cfs
Q_{50} = 4.306 cfs
Q_{100} = 4.582 cfs

Peak Runoff (Northwest)

Q_2 = Q-Critical = .4(7.34) = 2.94 cfs
Q_{10} = 11.65 cfs
Q_{25} = 12.94 cfs
Q_{50} = 13.99 cfs
Q_{100} = 14.88 cfs

Post Development Runoff:
The post-development uncontained flow leaving the storm system is 1.59 acres of the watershed. This runoff is apart of our site basin but is not contained in our detention system. The Post Development conditions are as follows, using similar guidelines from the pre-development conditions as this area is graded but doesn't have impervious services.

Runoff Coefficient. = 0.45
Drainage area = 1.59 acres
Time of Concentration = 25 min. (Estimated Time of Concentration)

Q_2 = 1.828 cfs
Q_{10} = 2.523 cfs
Q_{25} = 2.803 cfs
Q_{50} = 3.030 cfs
Q_{100} = 3.224 cfs

The estimated post development watershed area to the Eastern Detention Pond includes 3.08 acres of improvement area. Open channel ditches, as well as catch basins will be used to collect runoff from the improvements. This will provide natural infiltration and help extend the time of concentration. This runoff will be directed to storm basins and outfall headwalls. The Post Development conditions are as follows, using the Modified Rational Method from the pre-development conditions.

Runoff Coefficient. = 0.81 (Multi-Family Residential)
Drainage area = 3.08 acres
Time of Concentration = 11 min. (Estimated Time of Concentration)

The estimated post development watershed area to the Eastern Detention Pond includes 3.08 acres of improvement area. Open channel ditches, as well as catch basins will be used to collect runoff from the improvements. This will provide natural infiltration and help extend the time of concentration. This runoff will be directed to storm basins and outfall headwalls. The Post Development conditions are as follows, using the Modified Rational Method from the pre-development conditions.

Runoff Coefficient. = 0.81 (Multi-Family Residential)
Drainage area = 4.92 acres
Time of Concentration = 13 min. (Estimated Time of Concentration)

The Peak Runoff rates to Detention pond are listed below. This was determined via Hydrology Studio, based on the numbers from the Pre-Development Run-off and Post Development conditions.

Q_2 = 10.71 cfs
Q_{10} = 14.75 cfs
Q_{25} = 16.35 cfs
Q_{50} = 14.71 cfs
Q_{100} = 15.74 cfs

Storage Requirements
The storage requirement was calculated using the NRCS Rainfalls and volumes were maximized to keep the runoff rate less than or equal to the pre-development rate. The detention pond design will provide more than the required storage. Detailed below is the stage storage for the proposed detention pond:

Eastern Pond

Stage (ft)	Elevation (ft)	Contour Area (sq. ft.)	Incr. Storage (cu. ft.)	Total Storage (cu. ft.)
0.00	848.00	1902	0.000	0.000
2.00	850.00	5362	7264	7264
4.00	852.00	9095	14456	21721
5.00	853.00	11,124	10109	31830
6.00	854.00	13,183	12153	43983

Western Pond

Stage (ft)	Elevation (ft)	Contour Area (sq. ft.)	Incr. Storage (cu. ft.)	Total Storage (cu. ft.)
0.00	858.00	221	0.000	0.000
2.00	860.00	948	1168	1168
4.00	862.00	2154	3101	4269
6.00	864.00	4053	6206	10476
8.00	866.00	6487	10540	21016
9.00	867.00	7945	7216	28232

The 100 year storm event will be able to be held in the pond as designed. A safety factor is built in to allow for the possibility of a clogged inlet. The outlet structure will have a grated opening in the top and the dam is an additional 1'-0" above the structure.

Detention Structure:

The Detention Structure was designed in order to keep the post-development release rates less than the pre-development release rates. In this case, the target release rate should be the pre-developed conditions subtracted from the uncontained post-developed condtions.

Best Management Practices:

For the best management practices, the estimated percentage of impervious surfaces post-development is equal to approximately 75%, and the site will be considered a new development of the area. The Calculations are as follows:

Rv = .009 * 75 +0.05 = 0.725
VWq (NW pond) = Rv * .8 in * 4.92 ac * 3630 = 10359 ft^3
VWq (E pond) = Rv * .8 in * 4.92 ac * 3630 = 6484 ft^3

A Drawdown time for the VWq is approximated at 36 to 48 hours.

A 6-in perforated will be used to filter sediment and the storm water will be released into the NW detention structure using a 1.25" Orifice. This will release the WQv at a rate of 0.14 cfs with a Drawdown time of 36 hrs.

A 6-in perforated will be used to filter sediment and the storm water will be released into the NW detention structure using a 1.25" Orifice. This will release the WQv at a rate of 0.07 cfs with a Drawdown time of 43 hrs.

Final Design:

Using the Best Management Practices described, the final structure was designed. A proposed Outlet structure was designed using the Hydrology Studio Program and is illustrated in C-5.3. The following is a summary of the resulting total release rates after the post-release conditions are established

Q Total Release:

Q_2 = 3.41 cfs
Q_{10} = 5.34 cfs
Q_{25} = 6.98 cfs
Q_{50} = 9.29 cfs
Q_{100} = 10.11 cfs

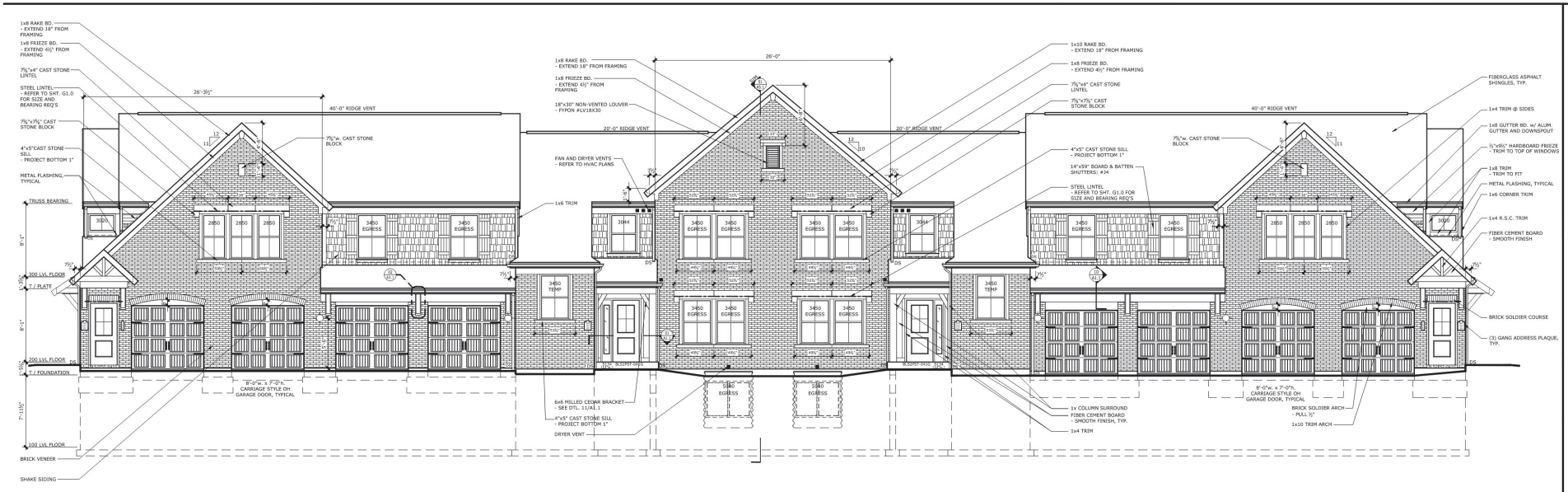
Discharge from Detention Basin
The discharge rate will be controlled by the size of the orifices in the outlet structure and is a multi-stage release design. This design will allow for low flows to pass through and for sediments to settle during larger events. See plan details for outlet structure design. The downstream outlet from this pond is the south corner of the flowing to an existing waterbody

The proposed outlet pipe from the NW outlet structure in the pond will be a 47.51’ of 24” Concrete pipe laid at 8.42% grade and will discharge less than the pre-development runoff per design grades. The proposed outlet pipe from the E outlet structure in the pond will be a 47.86’ of 24” Concrete pipe laid at 12.06% grade and will discharge less than the pre-development runoff per design grades. The detention pond design will include a storage volume of more than the computed required storage and will be constructed of earth. Rip-Rap rock liner will be used from the outlet headwall to slow velocities and help filter sediments.

Pipe Hydraulics: See Additional Sheet

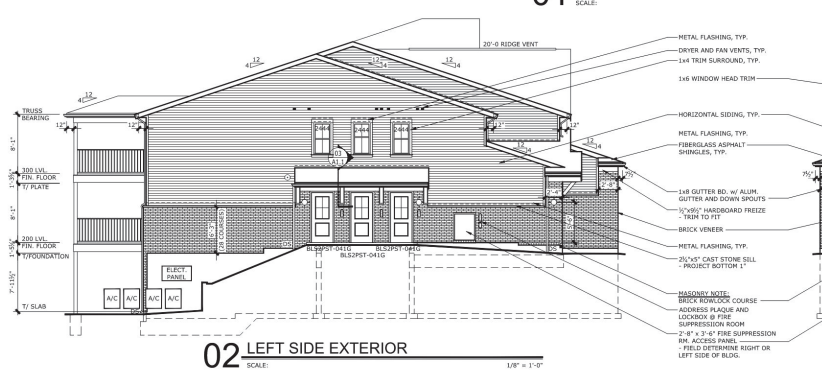
Sincerely,

Robert J. Hrezo, P.E.
Hrezo Engineering, Inc.



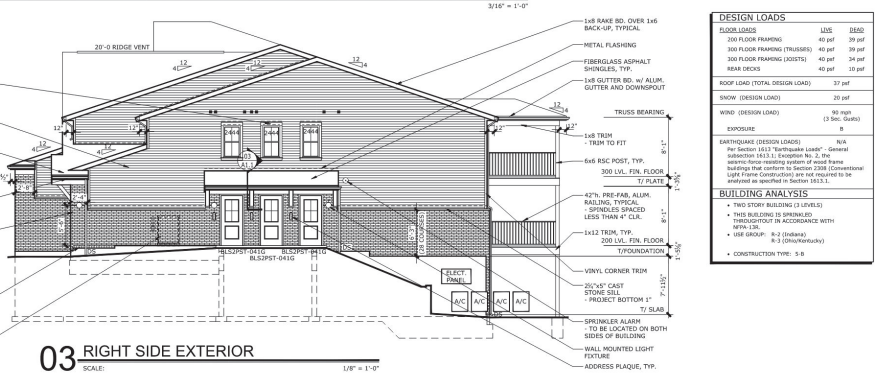
01 FRONT EXTERIOR

SCALE: 3/16" = 1'-0"



02 LEFT SIDE EXTERIOR

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



03 RIGHT SIDE EXTERIOR

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

DESIGN LOADS

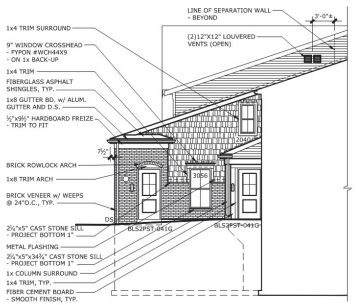
FLOOR LOADS	LIVE	DEAD
200 FLOOR FRAMING	40 psf	39 psf
300 FLOOR FRAMING (TRUSSES)	40 psf	39 psf
300 FLOOR FRAMING (JOISTS)	40 psf	34 psf
REAR DECKS	40 psf	10 psf
ROOF LOAD (TOTAL DESIGN LOAD)	37 psf	
SNOW (DESIGN LOAD)	20 psf	
WIND (DESIGN LOAD)	90 mph (3 Sec. Gusts)	
EXPOSURE	B	

EARTHQUAKE (DESIGN LOADS) N/A

Per Section 1613 "Earthquake Loads" - General subsection 1613.1: Exception No. 2, the seismic-force-resisting system of wood frame buildings that conform to Section 2308 (Conventional Light Frame Construction) are not required to be analyzed as specified in Section 1613.1.

BUILDING ANALYSIS

- TWO STORY BUILDING (3 LEVELS)
- THIS BUILDING IS SPRINKLED THROUGHTOUT IN ACCORDANCE WITH NFPA-13R.
- USE GROUP: R-2 (Indiana) R-3 (Ohio/Kentucky)
- CONSTRUCTION TYPE: 5-B



(HOMES 303/103 MIRRORED)

05 ENTRY ELEVATION - HOMES 302/102

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

04 REAR EXTERIOR

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

MASTER BY: JMC
DATE: 12/1/15
REVISED BY: ----
DATE: ----

JOB INFO:
DATE: ----
PROJECT COORDINATOR: ----
PHONE No: ----
TEAM MANAGER: ----
PHONE No: ----

FISCHER ATTACHED HOMES II, LLC.
3964 OLYMPIC BOULEVARD, SUITE 180
ERLANGER, KY 41018
(859) 341-4709

FIELD SPEC HOTLINE: (859) 344-7100
FISCHER HOMES, INC.

DEPT/ ENTERY	----	----
REVISION:	----	----
REVISION:	----	----
CONSTRUCTION	----	----
REVISION:	----	----

BUILDING TYPE:
I 4 HOME GALLERY II

BUILDING # ----

IN

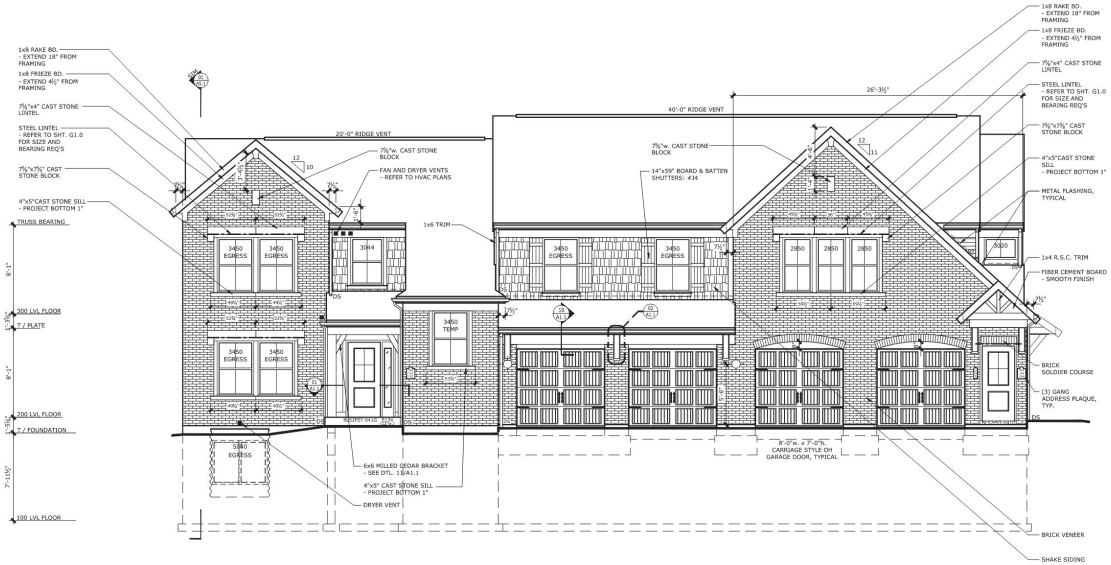
FISCHER HOMES

Sheet No.
A1.0

Job No.

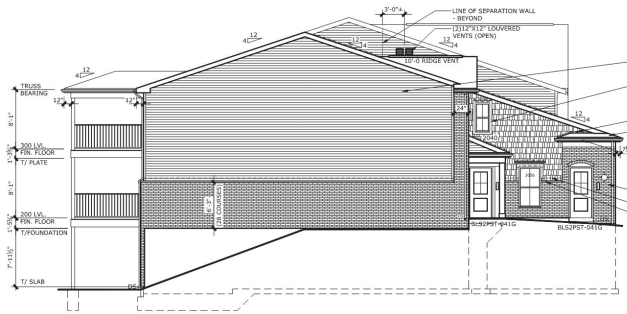
PLOT DATE: 11/29/2017 11:51 AM

REASON FOR PLOT: ----



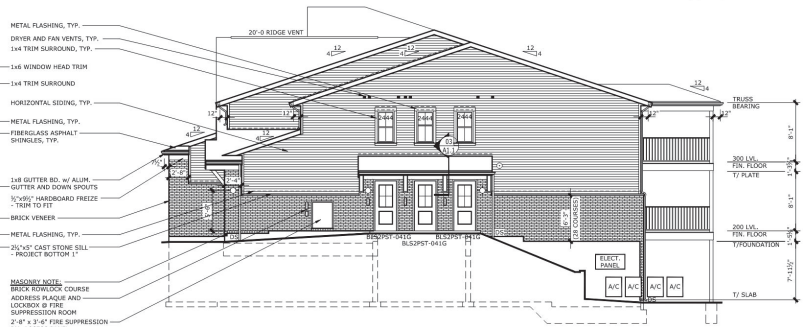
01 FRONT EXTERIOR

SCALE: 3/16" = 1'-0"



02 LEFT SIDE EXTERIOR

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



03 RIGHT SIDE EXTERIOR

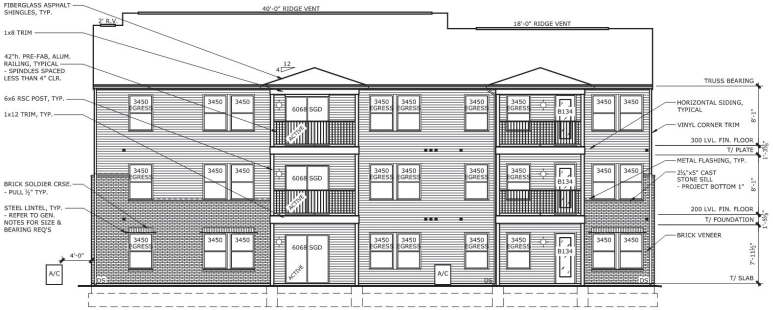
SCALE: 1/8" = 1'-0"

DESIGN LOADS		
FLOOR LOADS	LIVE	DEAD
200 FLOOR FRAMING	40 psf	39 psf
300 FLOOR FRAMING (TRUSSES)	40 psf	39 psf
300 FLOOR FRAMING (JOISTS)	40 psf	34 psf
REAR DECKS	40 psf	10 psf
ROOF LOAD (TOTAL DESIGN LOAD)		37 psf
SNOW (DESIGN LOAD)		20 psf
WIND (DESIGN LOAD)		90 mph (3 Sec. Gusts)
EXPOSURE		B
EARTHQUAKE (DESIGN LOADS)		N/A

Per Section 1613 "Earthquake Loads" - General subsection 1613.1; Exception No. 2, the seismic-force-resisting system of wood frame buildings that conform to Section 2308 (Conventional Light Frame Construction) are not required to be analyzed as specified in Section 1613.1.

BUILDING ANALYSIS

- TWO STORY BUILDING (3 LEVELS)
- THIS BUILDING IS SPRINKLED THROUGHTOUT IN ACCORDANCE WITH NFPA-13R
- USE GROUP: R-2 (Indiana) R-3 (Ohio/Kentucky)
- CONSTRUCTION TYPE: 5-B



04 REAR EXTERIOR

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

PLOT DATE: 11/29/2017 1:00 PM

REASON FOR PLOT: ----

FISCHER ATTACHED HOMES II, LLC.
3964 OLYMPIC BOULEVARD, SUITE 180
ERLANGER, KY 41018
(859) 341-4709

FIELD SPEC HOTLINE: (859) 344-7100

MASTER BY: JMF
DATE: 12/1/15
REVISED BY: ----
DATE: ----

JOB INFO:
DATE: ----
PROJECT COORDINATOR: ----
PHONE No: ----

TEAM MANAGER: ----
PHONE No: ----

DRFT. REVIEW	----
REVISION	----
REVISION	----
REVISION	----
CONSTRUCTION	----
REVISION	----

BUILDING TYPE:
7' HOME GALLERY II

BUILDING # ----

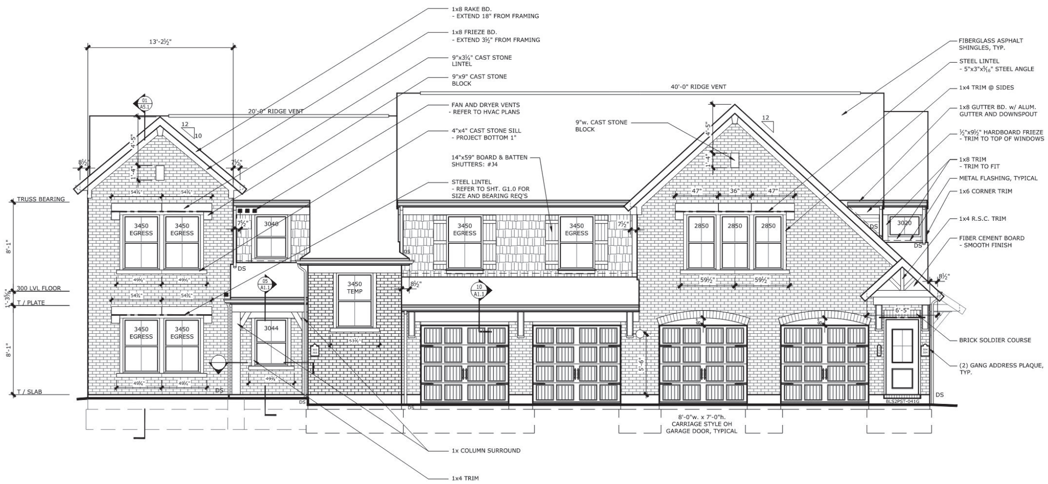
IN

---- ----
---- ----
---- ----

FISCHER HOMES

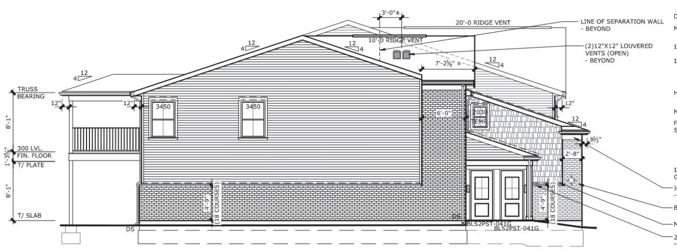
Sheet No.
A1.0

Job No.



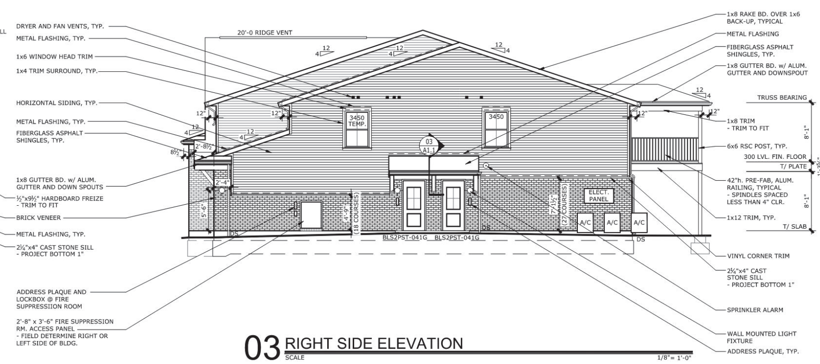
01 FRONT ELEVATION

SCALE 3/16" = 1'-0"



02 LEFT SIDE ELEVATION

SCALE 1/8" = 1'-0"



03 RIGHT SIDE ELEVATION

SCALE 1/8" = 1'-0"

04 REAR ELEVATION

SCALE 1/8" = 1'-0"

PLOT DATE: 6/13/2022 3:18 PM

REASON FOR PLOT: #

JOB INFO:
DATE:
ARCH. SPECIALIST:

3940 OLYMPIC BLVD
ERLANGER, KY 41018
PH: (859) 341-4709
FIELD SPEC HOTLINE: (859) 341-4709
fieldspecchange@fischerhomes.com
SAPPHIRE TRADE SUPPORT
sapphiretradepartners@fischerhomes.com

MASTER BY: JMP
DATE: 04/2020
REVISED BY: ----
DATE: ----

OFFICE REVIEW: ---- REVISION: ----
PERMIT: ---- REVISION: ----
SIGN-OFF: ---- REVISION: ----
CONSTRUCTION: ----

Attached

HOME TYPE: 5 HOME GALLERY - SLAB
PLAN: G-05-77 - GALLERY ARTS & CRAFTS

HOMESITE NO. ---- IN

FISCHER HOMES

Sheet No.
A1.0

Job No.
