

COPY

Agenda 2023-04-27

Subsection 6Bii

Billy's Trail Culvert Placement

Topical Review Material
Delivered Herein Under Separate Cover

SITE DEVELOPMENT PLAN

BILLY'S TRAIL RE-ALIGNMENT

FROM FIVE OAKS DRIVE TO THE OXBOW COURT CUL-DE-SAC

HARMONY (ST. CLOUD), FLORIDA

PD _____

HARMONY Community Development District

CDD BOARD OF SUPERVISORS

Teresa Kramer Chairman, Seat 5
 Daniel Leet Vice Chairman, Seat 1
 Joelynn Phillips Assistant Secretary, Seat 2
 Kerul Kassel Assistant Secretary, Seat 3
 Lucas Chokanis Assistant Secretary, Seat 4

CDD REPRESENTATIVES

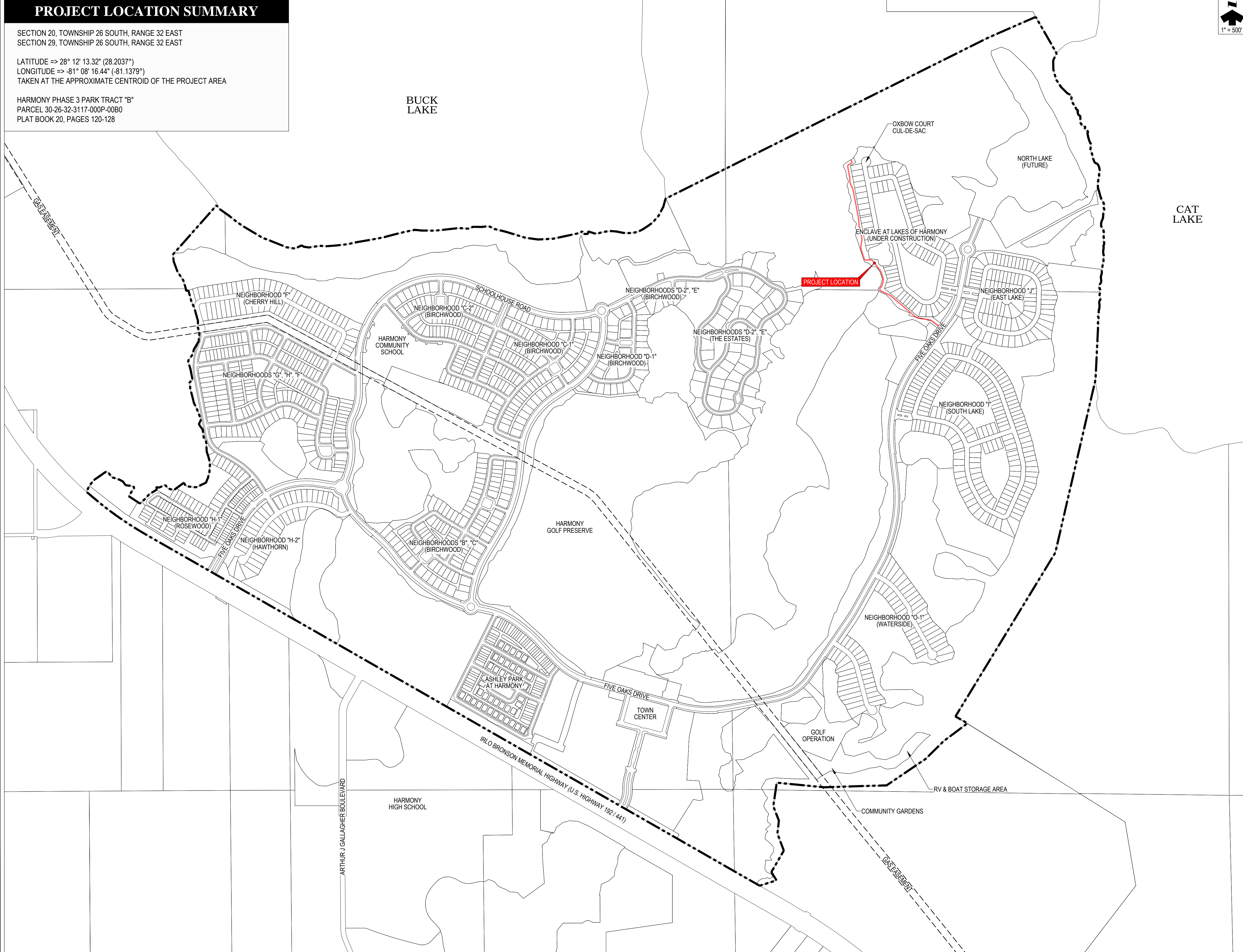
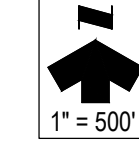
Angel Montagna (InfraMark) District Manager
 David Hamstra (Pegasus Engineering) District Engineer
 Micahel Eckert (Kutak Rock, LLP) District Legal Counsel
 Brett Perez Area Field Director

PROJECT LOCATION SUMMARY

SECTION 20, TOWNSHIP 26 SOUTH, RANGE 32 EAST
 SECTION 29, TOWNSHIP 26 SOUTH, RANGE 32 EAST

LATITUDE => 28° 12' 13.32" (28.2037°)
 LONGITUDE => -81° 08' 16.44" (-81.1379°)
 TAKEN AT THE APPROXIMATE CENTROID OF THE PROJECT AREA

HARMONY PHASE 3 PARK TRACT "B"
 PARCEL 30-26-32-3117-000P-00B0
 PLAT BOOK 20, PAGES 120-128



DRAWING INDEX	
SHEET	DRAWING TITLE
C01	COVER SHEET
C02	HARMONY PHASE 3 PLAT
C03 - C04	SITE PLAN
C05	SITE PLAN DETAILS
C06 - C07	MISCELLANEOUS DETAILS

PLANS SUBMITTAL AND REVISION SUMMARY		
NO.	DATE	DESCRIPTION

- NOTES**
1. GOVERNING SPECIFICATIONS: STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS (LATEST EDITION) AND SUPPLEMENTS THERETO IF NOTED IN THE BID DOCUMENTS FOR THIS PROJECT.
 2. ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN CHANGED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.
 - 11" x 17" DRAWINGS - NOT TO SCALE
 - 12" x 18" DRAWINGS - HALF SIZE
 - 24" x 36" DRAWINGS - TO SCALE
 3. ELEVATION INFORMATION SHOWN WITHIN THESE PLANS IS REFERENCED TO THE NAVD88 VERTICAL DATUM.
 4. DATUM SHIFT FOR THIS PROJECT (SEE PROJECT LOCATION SUMMARY THIS SHEET) WILL BE APPLIED AS A CONSTANT VALUE FOR CONVERTING ELEVATIONS BETWEEN THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) AND THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29).

COMPUTED DATUM SHIFTS

 - NAVD88 + 1.333' = NGVD29
 - NGVD29 - 1.333' = NAVD88

CERTIFICATION BY THE ENGINEER OF RECORD

State of Florida Board of Professional Engineers
 Certificate of Authorization No. 27770

PEGASUS ENGINEERING, LLC
 310 WEST STATE ROAD 434, SUITE 309
 WINTER SPRINGS, FLORIDA 32708
 PHONE: 407-992-9160
 FAX: 407-358-5155

PRELIMINARY

DAVID W. HAMSTRA
 FLORIDA P.E. NUMBER 38652

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY DAVID W. HAMSTRA, P.E. ON APRIL __, 2023 USING A DIGITAL SIGNATURE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

THIS CERTIFICATION EXCLUDES CERTAIN INFORMATION THAT WAS PREPARED "BY OTHERS" AND MAY BE INCLUDED IN THE PLANS FOR THE CONTRACTOR'S CONVENIENCE, INCLUDING BUT NOT LIMITED TO THE TOPOGRAPHIC SURVEYS, MANUFACTURER DETAILS, FDOT DETAILS OBTAINED FROM THE DESIGN STANDARDS, AND STANDARD DETAILS PROVIDED BY THE CITY OF ST. CLOUD OR OSCEOLA COUNTY.

BILLY'S TRAIL RE-ALIGNMENT FROM FIVE OAKS BOULEVARD TO THE OXBOW COURT CUL-DE-SAC

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SCALE AS SHOWN

REV.	DATE	DESCRIPTION



BILLY'S TRAIL RE-ALIGNMENT
 FROM FIVE OAKS DRIVE TO THE OXBOW COURT CUL-DE-SAC
 HARMONY PHASE 3 PARK TRACT B
 HARMONY PHASE 3 PLAT



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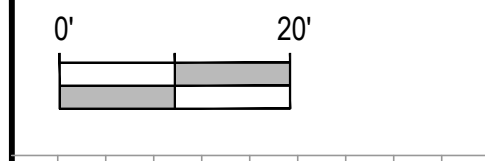
SHEET C02 OF C

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OXBOW COURT



REV.	DATE	DESCRIPTION



BILLY'S TRAIL RE-ALIGNMENT
FROM FIVE OAKS DRIVE TO THE OXBOW COURT CUL-DE-SAC
HARMONY PHASE 3 PARK TRACT B
SITE PLAN - FROM STA. 0+00 TO STA. 12+40

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State of Florida Board of Professional Engineers
Certificate of Authorization No. 27770

JOB No.: MSC-22055
DESIGNED BY: GAT
DRAWN BY: CAD
APPROVED BY: DWH
DATE: APRIL 2023

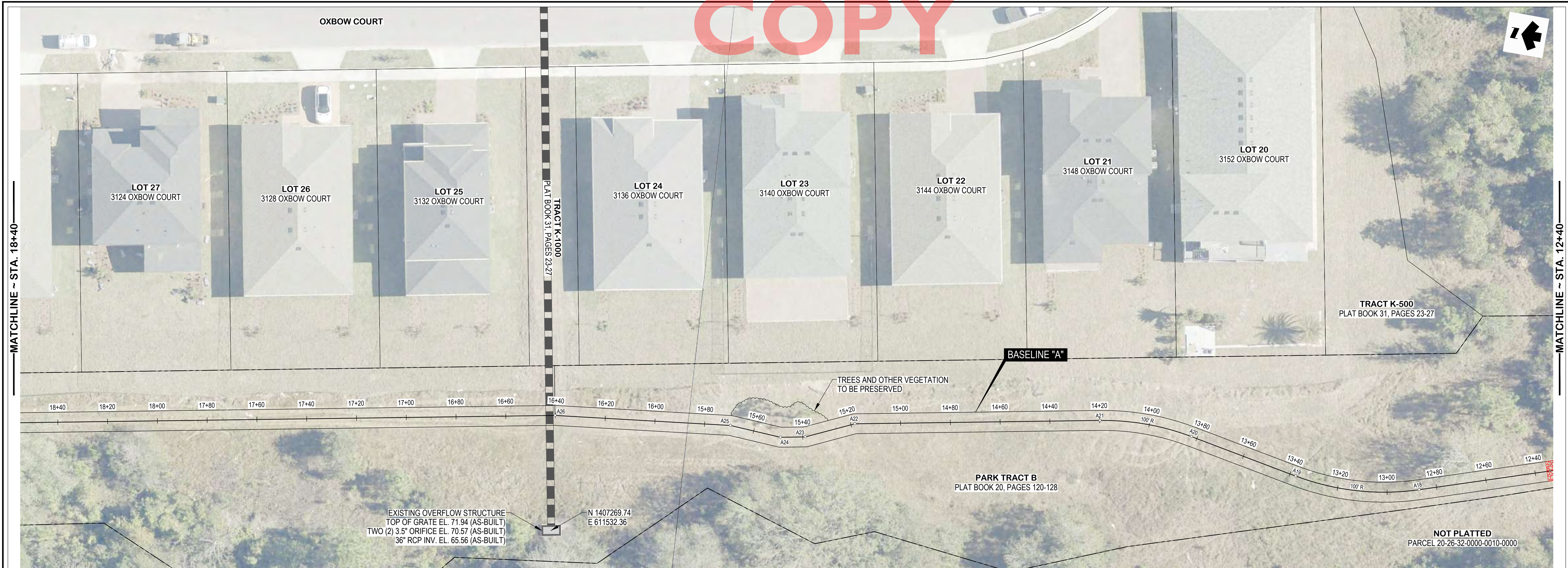
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REGISTRATION No. 38652
DATE: April 12, 2023

MAPPING SOURCES
AERIAL IMAGES DATED 01 / 06 / 2023
PICTOMETRY - EAGLEVIEW TECHNOLOGY CORP.
ROADS AND PARCELS
OSCEOLA COUNTY PROPERTY APPRAISER

COPY



0' 20'

REV.	DATE	DESCRIPTION



BILLY'S TRAIL RE-ALIGNMENT
 FROM FIVE OAKS DRIVE TO THE OXBOW COURT CUL-DE-SAC
 HARMONY PHASE 3 PARK TRACT B

SITE PLAN -
 FROM STA. 12+40 TO STA. 23+00

Pegasus ENGINEERING
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JOB No.:	MSC-22055
DESIGNED BY:	GAT
DRAWN BY:	CAD
APPROVED BY:	DWH
DATE:	APRIL 2023

SHEET C04 OF C

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 PICTOMETRY - EAGLEVIEW TECHNOLOGY CORP.
 ROADS AND PARCELS
 OSCEOLA COUNTY PROPERTY APPRAISER



BILLY'S TRAIL SIGNAGE



EXISTING CONCRETE DRIVEWAY AT FIVE OAKS DRIVE



VIEW OF THE RE-ALIGNMENT CORRIDOR LOOKING NORTH FROM 3216 / 3220 OXBOW COURT



VIEW OF THE RE-ALIGNMENT CORRIDOR LOOKING NORTH FROM 3168 OXBOW COURT



VIEW OF THE RE-ALIGNMENT CORRIDOR LOOKING SOUTH TOWARDS 3168 OXBOW COURT



EXISTING LOW POINT AND OVERFLOW FOR CONSERVATION TRACT 4 LOOKING NORTH ALONG THE RE-ALIGNMENT CORRIDOR



EXISTING LOW POINT AND OVERFLOW FOR CONSERVATION TRACT 4 LOOKING SOUTHEAST



EXISTING OVERFLOW STRUCTURE AND CONCRETE APRON



EXISTING OVERFLOW STRUCTURE, CONCRETE APRON AND CIRCULAR ORIFICES



BILLY'S TRAIL AND WATER MAIN EASEMENT LOOKING NORTH FROM PARK TRACT B

COORDINATE GEOMETRY

POINT	DESCRIPTION	NORTHING	EASTING	STATION
A01	BASELINE "A"	X	X	X+XX.X
A02	BASELINE "A"	X	X	X+XX.X
A03	BASELINE "A"	X	X	X+XX.X
A04	BASELINE "A"	X	X	X+XX.X
A06	BASELINE "A"	X	X	X+XX.X
A07	BASELINE "A"	X	X	X+XX.X
A08	BASELINE "A"	X	X	X+XX.X
A09	BASELINE "A"	X	X	X+XX.X
A10	BASELINE "A"	X	X	X+XX.X
A11	BASELINE "A"	X	X	X+XX.X
A12	BASELINE "A"	X	X	X+XX.X
A13	BASELINE "A"	X	X	X+XX.X
A14	BASELINE "A"	X	X	X+XX.X
A15	BASELINE "A"	X	X	X+XX.X
A16	BASELINE "A"	X	X	X+XX.X
A17	BASELINE "A"	X	X	X+XX.X
A18	BASELINE "A"	X	X	X+XX.X
A19	BASELINE "A"	X	X	X+XX.X
A20	BASELINE "A"	X	X	X+XX.X
A21	BASELINE "A"	X	X	X+XX.X
A22	BASELINE "A"	X	X	X+XX.X
A23	BASELINE "A"	X	X	X+XX.X
A24	BASELINE "A"	X	X	X+XX.X
A25	BASELINE "A"	X	X	X+XX.X
A26	BASELINE "A"	X	X	X+XX.X
A27	BASELINE "A"	X	X	X+XX.X
A28	BASELINE "A"	X	X	X+XX.X
A29	BASELINE "A"	X	X	X+XX.X
A30	BASELINE "A"	X	X	X+XX.X
A31	BASELINE "A"	X	X	X+XX.X
A32	BASELINE "A"	X	X	X+XX.X
A33	BASELINE "A"	X	X	X+XX.X
A34	BASELINE "A"	X	X	X+XX.X
A35	BASELINE "A"	X	X	X+XX.X
A36	BASELINE "A"	X	X	X+XX.X
A37	BASELINE "A"	X	X	X+XX.X

<< TO BE COMPLETED >>

PROPOSED FENCE MODIFICATIONS
SCALE AS SHOWN

REV.	DATE	DESCRIPTION



BILLY'S TRAIL RE-ALIGNMENT
 FROM FIVE OAKS DRIVE TO THE OXBOW COURT CUL-DE-SAC
 HARMONY PHASE 3 PARK TRACT B
SITE PLAN DETAILS

Pegasus
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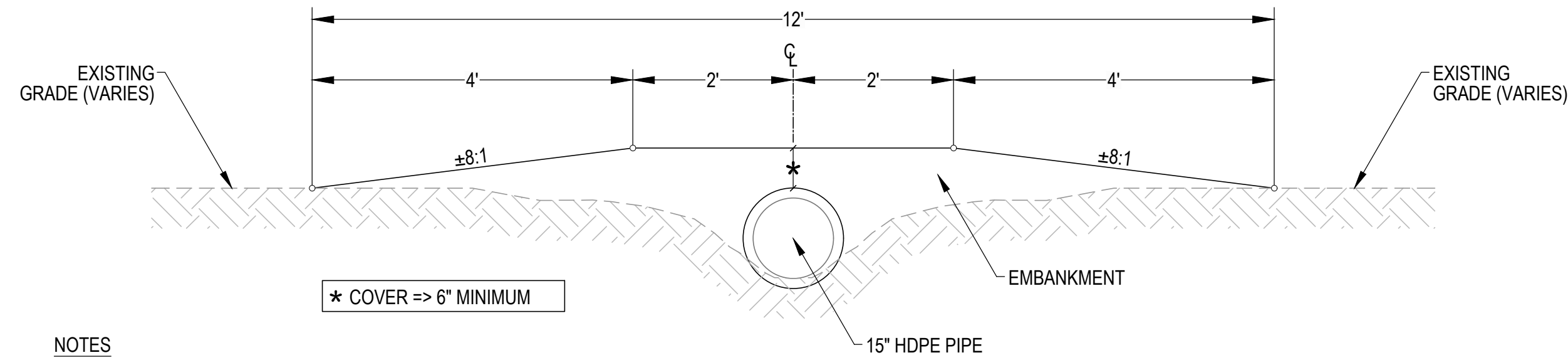
JOB No.:	MSC-22055
DESIGNED BY:	GAT
DRAWN BY:	CAD
APPROVED BY:	DWH
DATE:	APRIL 2023

SHEET C05 OF C__

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 REGISTRATION No. 38652
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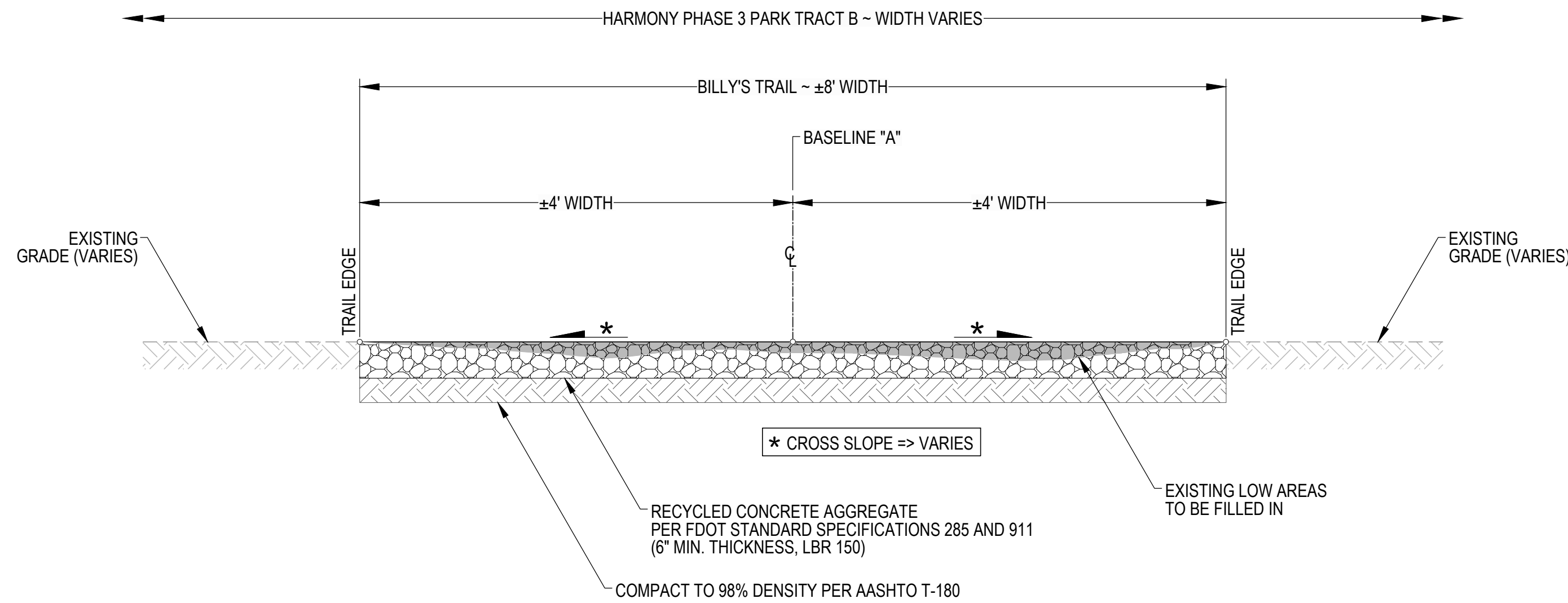
NOTES

- EMBANKMENT SHALL BE SELECT GRANULAR FILL MATERIAL COMPACTED TO MIN. 95% STANDARD DENSITY.
- HDPE PIPE SHALL BE ADS N-12 SOIL TIGHT (ST), ADS WATER TIGHT (WT), OR APPROVED EQUIVALENT WITH SMOOTH AND NON-PERFORATED INTERIOR.

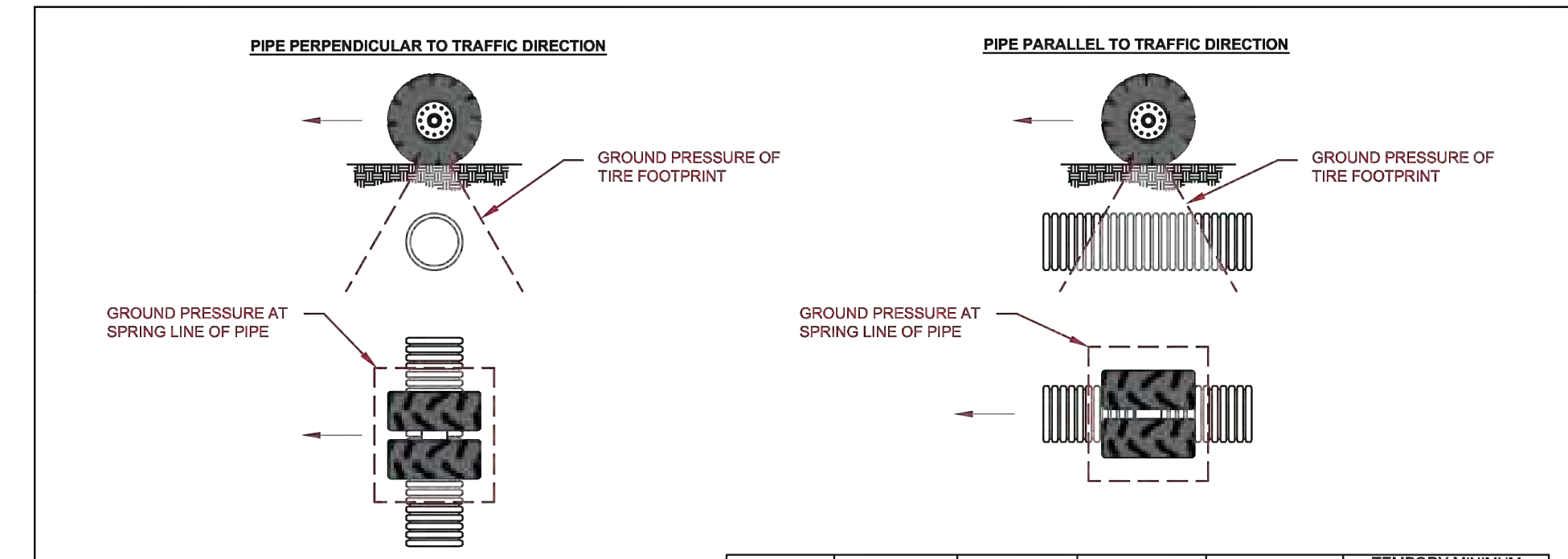
TRAIL CULVERT #1
NOT TO SCALE

<< TO BE COMPLETED >>

TRAIL CULVERT #2
NOT TO SCALE



TRAIL STABILIZATION
NOT TO SCALE



NOTES

- MINIMUM COVER HEIGHTS ARE BASED ON LIVE LOADING CALCULATIONS PER AASHTO LRFD SECTION 12. VEHICLE LOADS ARE BASED UPON DRIVING OVER THE PIPE WHILE NOT PERFORMING OPERATIONAL TASKS.
- COVER HEIGHTS DO NOT TAKE INTO CONSIDERATION POTENTIAL RUTTING OF DRIVE SURFACE. BACKFILL MATERIAL IS ASSUMED FULLY COMPACTED TO SURFACE.
- IF MINIMUM COVER CANNOT BE ACHIEVED, IT IS RECOMMENDED TO PERFORM PERIODIC DEFLECTION EVALUATIONS TO ENSURE PIPE ROUNDNESS. THE USE OF STEEL PLATES, MOUNDING, OR TEMPORARY FILL MAY BE REQUIRED TO DISTRIBUTE VEHICLE LOADINGS.
- CONTACT YOUR LOCAL ADS REPRESENTATIVE WHEN VEHICLES ENCOUNTERED IN THE FIELD EXCEED THE MAXIMUM LOADINGS INCLUDED IN THE TABLE. VEHICLES LISTED IN THE TABLE ARE FOR REFERENCE AND COMPARISON PURPOSES.
- REFER TO STANDARD STD-101 & STD-101B FOR RECOMMENDED INSTALLATION PRACTICES.

VEHICLE	VEHICLE DESCRIPTION	MINIMUM TIRE	SINGLE AXLE LOAD lbs.	PIPE DIAMETER	TEMPORARY MINIMUM COVER HEIGHTS CLASS I (ft)	TEMPORARY MINIMUM COVER HEIGHTS CLASS II (ft)
FORD F150	PICKUP TRUCK (GVWR)	P275/55R20	7,450 (3379kg)	12"-48" (300mm-1200mm)	3"	3"
CHEVY 3500	UTILITY TRUCK (GVWR)	235/80-17	13,200 (5987kg)	12"-48" (300mm-1200mm)	6"	6"
CAT C578B	DRUM ROLLER	84" SMOOTH DRUM ROLLER	29,626 (13438kg)	12"-48" (300mm-1200mm)	9"	9"
CAT 637G	SCRAPER	37.25-35	102,145 (46332kg)	12"-60" (300mm-1500mm)	12"	15"
KOMATSU WA800-3	MEDIUM LOADER	45/65-45	158,270 (71790kg)	12"-60" (300mm-1500mm)	15"	19"
CAT 993K	LARGE LOADER	50/65-51	276,808 (125568kg)	12"-15" (300mm-375mm)	21"	24"
CAT 789D	MINING TRUCK	37.00-R57	479,050 (217203kg)	12"-18" (300mm-450mm)	27"	30"
				18"-60" (450mm-1500mm)	30"	33"

*COVER OVER 60" (1500mm) PIPE SHOULD BE NO LESS THAN 6" (152mm)

REV.	DESCRIPTION	BY	DATE
1	CMF		2/19/2016
2	NTS		1/11/2016
3	1 OF 1		

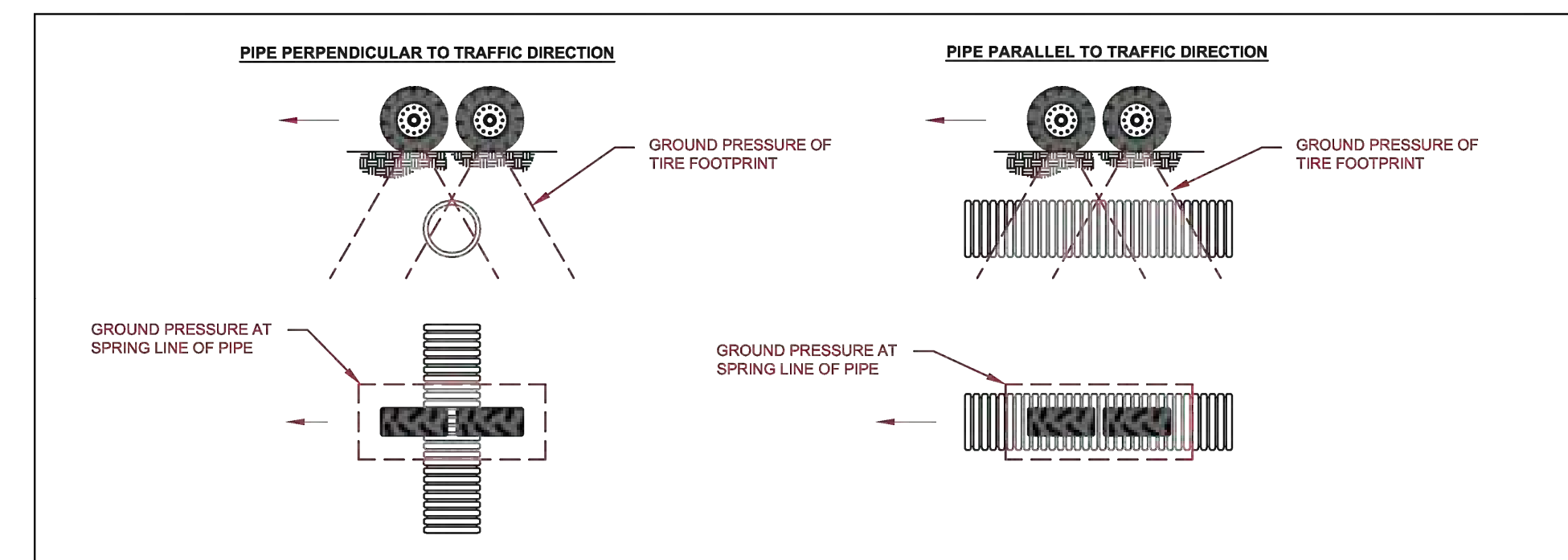
ADVANCED DRAINAGE SYSTEMS, INC. ("ADS") HAS PREPARED THIS DETAIL BASED ON INFORMATION PROVIDED TO ADS. THIS DRAWING IS INTENDED TO DEPICT THE COMPONENTS AS REQUESTED. ADS HAS NOT PERFORMED ANY ENGINEERING OR DESIGN SERVICES FOR THIS PROJECT. NOR HAS ADS INDEPENDENTLY VERIFIED THE INFORMATION SUPPLIED. THE INSTALLATION DETAILS PROVIDED HEREIN ARE GENERAL RECOMMENDATIONS AND ARE NOT SPECIFIC FOR THIS PROJECT. THE DESIGN ENGINEER SHALL REVIEW THESE DETAILS PRIOR TO CONSTRUCTION. IT IS THE DESIGN ENGINEER'S RESPONSIBILITY TO ENSURE THE DETAILS PROVIDED HEREIN MEET OR EXCEEDS THE APPLICABLE NATIONAL, STATE, OR LOCAL REQUIREMENTS AND TO ENSURE THAT THE DETAILS PROVIDED HEREIN ARE ACCEPTABLE FOR THIS PROJECT.

SINGLE AXLE VEHICLE TEMPORARY MINIMUM COVER (HDPE)

ADS
Advanced Drainage Systems, Inc.

4640 TRULEMAN BLVD
HILLIARD, OHIO 43026

DRAWING NUMBER: STD-111A



NOTES

- MINIMUM COVER HEIGHTS ARE BASED ON LIVE LOADING CALCULATIONS PER AASHTO LRFD SECTION 12. VEHICLE LOADS ARE BASED UPON DRIVING OVER THE PIPE WHILE NOT PERFORMING OPERATIONAL TASKS.
- COVER HEIGHTS DO NOT TAKE INTO CONSIDERATION POTENTIAL RUTTING OF DRIVE SURFACE. BACKFILL MATERIAL IS ASSUMED FULLY COMPACTED TO SURFACE.
- IF MINIMUM COVER CANNOT BE ACHIEVED, IT IS RECOMMENDED TO PERFORM PERIODIC DEFLECTION EVALUATIONS TO ENSURE PIPE ROUNDNESS. THE USE OF STEEL PLATES, MOUNDING, OR TEMPORARY FILL MAY BE REQUIRED TO DISTRIBUTE VEHICLE LOADINGS.
- CONTACT YOUR LOCAL ADS REPRESENTATIVE WHEN VEHICLES ENCOUNTERED IN THE FIELD EXCEED THE MAXIMUM LOADINGS INCLUDED IN THE TABLE. VEHICLES LISTED IN THE TABLE ARE FOR REFERENCE AND COMPARISON PURPOSES.
- REFER TO STANDARD STD-101 & STD-101B FOR RECOMMENDED INSTALLATION PRACTICES.

VEHICLE	VEHICLE DESCRIPTION	MINIMUM TIRE	TANDEM AXLE LOAD lbs.	PIPE DIAMETER	TEMPORARY MINIMUM COVER HEIGHTS CLASS I (ft)	TEMPORARY MINIMUM COVER HEIGHTS CLASS II (ft)
BOBCAT 8850	SKID-STEER	14-17.5	10,237 (4643kg)	12"-48" (300mm-1200mm)	3"	3"
ECONOLINE MOD/ITE	6-TON TRAILER (GVWR)	235R80-16	13,800 (6200kg)	12"-48" (300mm-1200mm)	6"	6"
KOMASTU GD655-6	GRADER	17.5-R25	30,468 (13820kg)	12"-48" (300mm-1200mm)	9"	9"
CAT 16M3	GRADER	23.5-R25	58,753 (26520kg)	12"-60" (300mm-1500mm)	12"	15"
CAT 730C	ARTICULATED TRUCK	23.5-R-25	74,338 (33810kg)	12"-60" (300mm-1500mm)	15"	19"
KOMATSU HM400-5	ARTICULATED TRUCK	29.5-R-25	115,288 (52294kg)	12"-15" (300mm-375mm)	18"	21"
				18"-60" (450mm-1500mm)	21"	24"

*COVER OVER 60" (1500mm) PIPE SHOULD BE NO LESS THAN 6" (152mm)

REV.	DESCRIPTION	BY	DATE
1	CMF		2/19/2016
2	NTS		1/11/2016
3	1 OF 1		

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TANDEM AXLE VEHICLE TEMPORARY MINIMUM COVER (HDPE)

ADS
Advanced Drainage Systems, Inc.

4640 TRULEMAN BLVD
HILLIARD, OHIO 43026

DRAWING NUMBER: STD-111B

THIS DETAIL APPLIES TO HDPE

STORM PIPE BACKFILLING / INSTALLTION DETAIL

REV.	DATE	DESCRIPTION

HARMONY FLORIDA
90% PLANS

BILLY'S TRAIL RE-ALIGNMENT
FROM FIVE OAKS DRIVE TO THE OXBOW COURT CUL-DE-SAC
HARMONY PHASE 3 PARK TRACT B

MISCELLANEOUS DETAILS

Pegasus ENGINEERING

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SHEET C06 OF C_

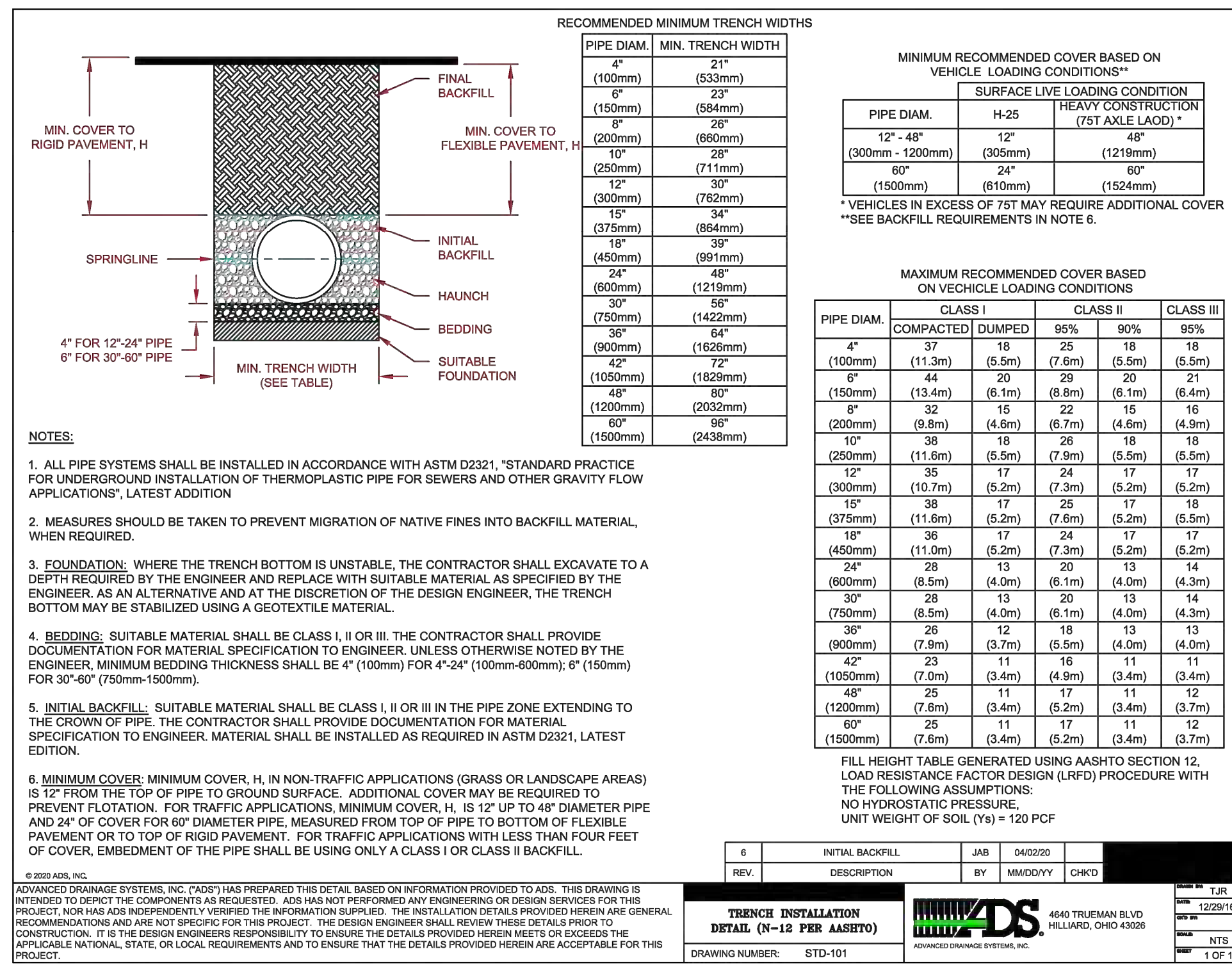
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PRELIMINARY

DAVID W. HAMSTRA, P.E.
REGISTRATION No. 38652

DATE: April 12, 2023

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- NOTES:**
- ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION
 - MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
 - FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
 - BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm), 6" (150mm) FOR 30"-60" (750mm-1500mm).
 - INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING TO THE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
 - MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT. FOR TRAFFIC APPLICATIONS WITH LESS THAN FOUR FEET OF COVER, EMBEDMENT OF THE PIPE SHALL BE USING ONLY A CLASS I OR CLASS II BACKFILL.

PIPE DIAM.	MIN. TRENCH WIDTH
4" (100mm)	21" (533mm)
6" (150mm)	23" (584mm)
8" (200mm)	25" (635mm)
10" (250mm)	27" (686mm)
12" (300mm)	29" (737mm)
15" (375mm)	34" (864mm)
18" (450mm)	37" (937mm)
24" (600mm)	48" (1219mm)
30" (750mm)	64" (1626mm)
36" (900mm)	72" (1829mm)
42" (1050mm)	80" (2032mm)
48" (1200mm)	96" (2438mm)

PIPE DIAM.	SURFACE LIVE LOADING CONDITION (75T AXLE LOAD)		
	H-25	HEAVY CONSTRUCTION	48"
12" - 48" (300mm - 1200mm)	12" (305mm)	12" (305mm)	48" (1219mm)
60" (1500mm)	6" (152mm)	6" (152mm)	48" (1219mm)

PIPE DIAM.	CLASS I			CLASS II			CLASS III		
	COMPACTED	DUMPED	95%	90%	85%	95%	90%	85%	
4" (100mm)	37	18	25	18	18	18	18	18	
6" (150mm)	44	20	29	20	21	21	21	21	
8" (200mm)	52	15	22	15	16	16	16	16	
10" (250mm)	60	14	20	14	15	15	15	15	
12" (300mm)	68	13	18	13	14	14	14	14	
15" (375mm)	76	12	16	12	13	13	13	13	
18" (450mm)	84	11	14	11	12	12	12	12	
24" (600mm)	92	10	12	10	11	11	11	11	
30" (750mm)	100	9	10	9	10	10	10	10	
36" (900mm)	108	8	9	8	9	9	9	9	
42" (1050mm)	116	7	8	7	8	8	8	8	
48" (1200mm)	124	6	7	6	7	7	7	7	
60" (1500mm)	140	5	6	5	6	6	6	6	

REV	DESCRIPTION	BY	DATE	CHKD
1	INITIAL BACKFILL	JAB	04/03/20	
2	TRENCH INSTALLATION DETAIL (8-1/2 PER AASHTO)	MMD/DTY	04/03/20	

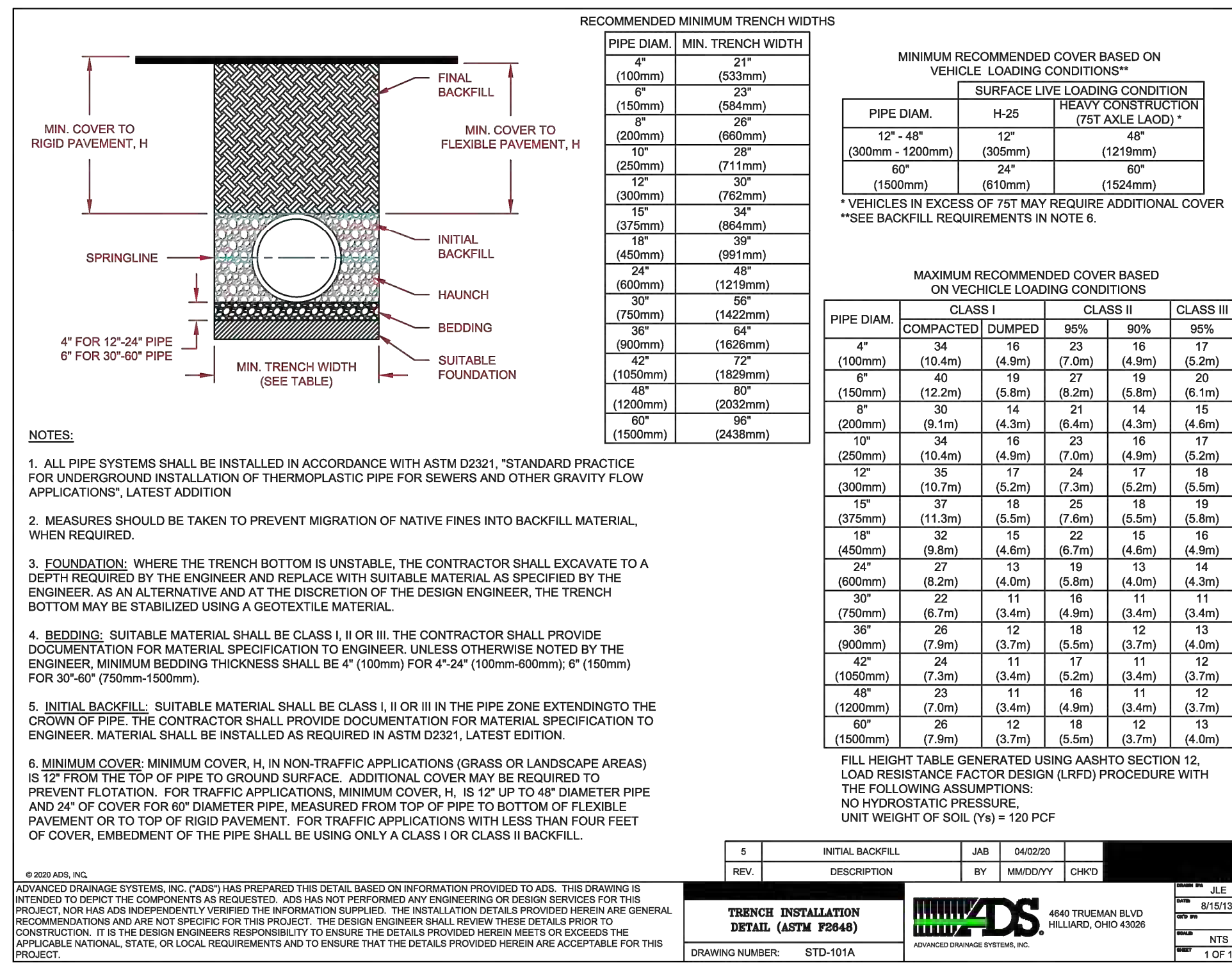
ADVANCED DRAINAGE SYSTEMS, INC. (ADS) HAS PREPARED THIS DETAIL BASED ON INFORMATION PROVIDED TO ADS. THIS DRAWING IS INTENDED TO DEPICT THE COMPONENTS AS REQUESTED. ADS HAS NOT PERFORMED ANY ENGINEERING OR DESIGN SERVICES FOR THIS PROJECT. NOR HAS ADS INDEPENDENTLY VERIFIED THE INFORMATION SUPPLIED. THE INSTALLATION DETAILS PROVIDED HEREIN ARE GENERAL RECOMMENDATIONS AND ARE NOT SPECIFIC FOR THIS PROJECT. THE DESIGN ENGINEER SHALL REVIEW THESE DETAILS PRIOR TO CONSTRUCTION. IT IS THE DESIGN ENGINEER'S RESPONSIBILITY TO ENSURE THE DETAILS PROVIDED HEREIN MEET OR EXCEEDS THE APPLICABLE NATIONAL, STATE, OR LOCAL REQUIREMENTS AND TO ENSURE THAT THE DETAILS PROVIDED HEREIN ARE ACCEPTABLE FOR THIS PROJECT.

ADSS ADS, INC. 4640 TRELEMAN BLVD HELLAND, OHIO 43084
 TRENCH INSTALLATION DETAIL (8-1/2 PER AASHTO)
 DRAWING NUMBER: STD-101

AASHTO

THIS DETAIL APPLIES TO HDPE

STORM PIPE BACKFILLING / INSTALLTION DETAIL



- NOTES:**
- ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION
 - MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
 - FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
 - BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm), 6" (150mm) FOR 30"-60" (750mm-1500mm).
 - INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING TO THE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
 - MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT. FOR TRAFFIC APPLICATIONS WITH LESS THAN FOUR FEET OF COVER, EMBEDMENT OF THE PIPE SHALL BE USING ONLY A CLASS I OR CLASS II BACKFILL.

PIPE DIAM.	MIN. TRENCH WIDTH
4" (100mm)	21" (533mm)
6" (150mm)	23" (584mm)
8" (200mm)	25" (635mm)
10" (250mm)	27" (686mm)
12" (300mm)	29" (737mm)
15" (375mm)	34" (864mm)
18" (450mm)	37" (937mm)
24" (600mm)	48" (1219mm)
30" (750mm)	64" (1626mm)
36" (900mm)	72" (1829mm)
42" (1050mm)	80" (2032mm)
48" (1200mm)	96" (2438mm)

PIPE DIAM.	SURFACE LIVE LOADING CONDITION (75T AXLE LOAD)		
	H-25	HEAVY CONSTRUCTION	48"
12" - 48" (300mm - 1200mm)	12" (305mm)	12" (305mm)	48" (1219mm)
60" (1500mm)	6" (152mm)	6" (152mm)	48" (1219mm)

PIPE DIAM.	CLASS I			CLASS II			CLASS III		
	COMPACTED	DUMPED	95%	90%	85%	95%	90%	85%	
4" (100mm)	34	16	23	16	17	17	17	17	
6" (150mm)	40	18	27	18	20	20	20	20	
8" (200mm)	48	14	21	14	15	15	15	15	
10" (250mm)	56	13	19	13	14	14	14	14	
12" (300mm)	64	12	17	12	13	13	13	13	
15" (375mm)	72	11	16	11	12	12	12	12	
18" (450mm)	80	10	14	10	11	11	11	11	
24" (600mm)	88	9	12	9	10	10	10	10	
30" (750mm)	96	8	11	8	9	9	9	9	
36" (900mm)	104	7	10	7	8	8	8	8	
42" (1050mm)	112	6	9	6	7	7	7	7	
48" (1200mm)	120	5	8	5	6	6	6	6	
60" (1500mm)	136	4	7	4	5	5	5	5	

REV	DESCRIPTION	BY	DATE	CHKD
1	INITIAL BACKFILL	JAB	04/03/20	
2	TRENCH INSTALLATION DETAIL (ASTM D2321)	MMD/DTY	04/03/20	

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ADSS ADS, INC. 4640 TRELEMAN BLVD HELLAND, OHIO 43084
 TRENCH INSTALLATION DETAIL (ASTM D2321)
 DRAWING NUMBER: STD-101A

ASTM

THIS DETAIL APPLIES TO HDPE

STORM PIPE BACKFILLING / INSTALLTION DETAIL

MATERIAL CLASSIFICATION	DESCRIPTION	PERCENTAGE FINING (AASHTO #10)	ATTENDANCE LIMITS					COEFFICIENTS
			LL	PL	CH	FL	FC	
1	CLASS I SAND	5	65	15	15	15	15	15
2	CLASS II SAND	10	60	15	15	15	15	15
3	CLASS III SAND	15	55	15	15	15	15	15
4	CLASS IV SAND	20	50	15	15	15	15	15
5	CLASS V SAND	25	45	15	15	15	15	15
6	CLASS VI SAND	30	40	15	15	15	15	15
7	CLASS VII SAND	35	35	15	15	15	15	15
8	CLASS VIII SAND	40	30	15	15	15	15	15
9	CLASS IX SAND	45	25	15	15	15	15	15
10	CLASS X SAND	50	20	15	15	15	15	15
11	CLASS XI SAND	55	15	15	15	15	15	15
12	CLASS XII SAND	60	10	15	15	15	15	15
13	CLASS XIII SAND	65	5	15	15	15	15	15
14	CLASS XIV SAND	70	0	15	15	15	15	15
15	CLASS XV SAND	75	0	15	15	15	15	15

REV	DESCRIPTION	BY	DATE	CHKD
1	INITIAL BACKFILL	JAB	04/03/20	
2	CLASSES OF EMBEDMENT AND BACKFILL MATERIALS	MMD/DTY	04/03/20	

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ADSS ADS, INC. 4640 TRELEMAN BLVD HELLAND, OHIO 43084
 CLASSES OF EMBEDMENT AND BACKFILL MATERIALS
 DRAWING NUMBER: STD-109

THIS DETAIL APPLIES TO HDPE

STORM PIPE BACKFILL MATERIAL DETAIL

REV.	DATE	DESCRIPTION

HARMONY FLORIDA
 90% PLANS

BILLY'S TRAIL RE-ALIGNMENT
 FROM FIVE OAKS DRIVE TO THE OXBOW COURT CUL-DE-SAC
 HARMONY PHASE 3 PARK TRACT B

MISCELLANEOUS DETAILS

Pegasus ENGINEERING
 Pegasus Engineering, LLC
 301 West SR 434, Suite 309
 Winter Springs, Florida 32708

Office 407-992-9160
 Fax 407-368-5155

State of Florida Board of Professional Engineers
 Certificate of Authorization No. 21770

JOB No.: MSC-22055
 DESIGNED BY: GAT
 DRAWN BY: CAD
 APPROVED BY: DWH
 DATE: APRIL 2023

SHEET 007 OF C_

NOT A FINAL PLAN UNLESS
 SIGNED AND SEALED

PRELIMINARY
 DAVID W. HAMSTRA, P.E.
 REGISTRATION No. 38652
 DATE: April 12, 2023