

HOLATEE TRAIL & LURAY RD DRAINAGE PROJECT

TOWN OF SOUTHWEST RANCHES
FL 33330

CIVIL ENGINEERING PLANS 1/8/2025

LOCATION MAP



ELEVATIONS SHOWN HEREON ARE BASED ON THE
NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

Sheet List Table	
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C-07	ENGINEERING DETAILS

TOWN OF SOUTHWEST RANCHES
13400 GRIFFIN ROAD
SOUTHWEST RANCHES, FLORIDA 33330



HOLATEE TRAIL & LURAY RD
DRAINAGE PROJECT
TOWN OF SOUTHWEST RANCHES, FL 33330

COVER SHEET



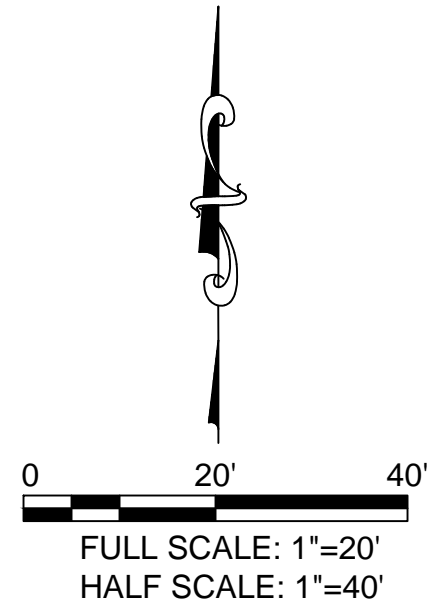
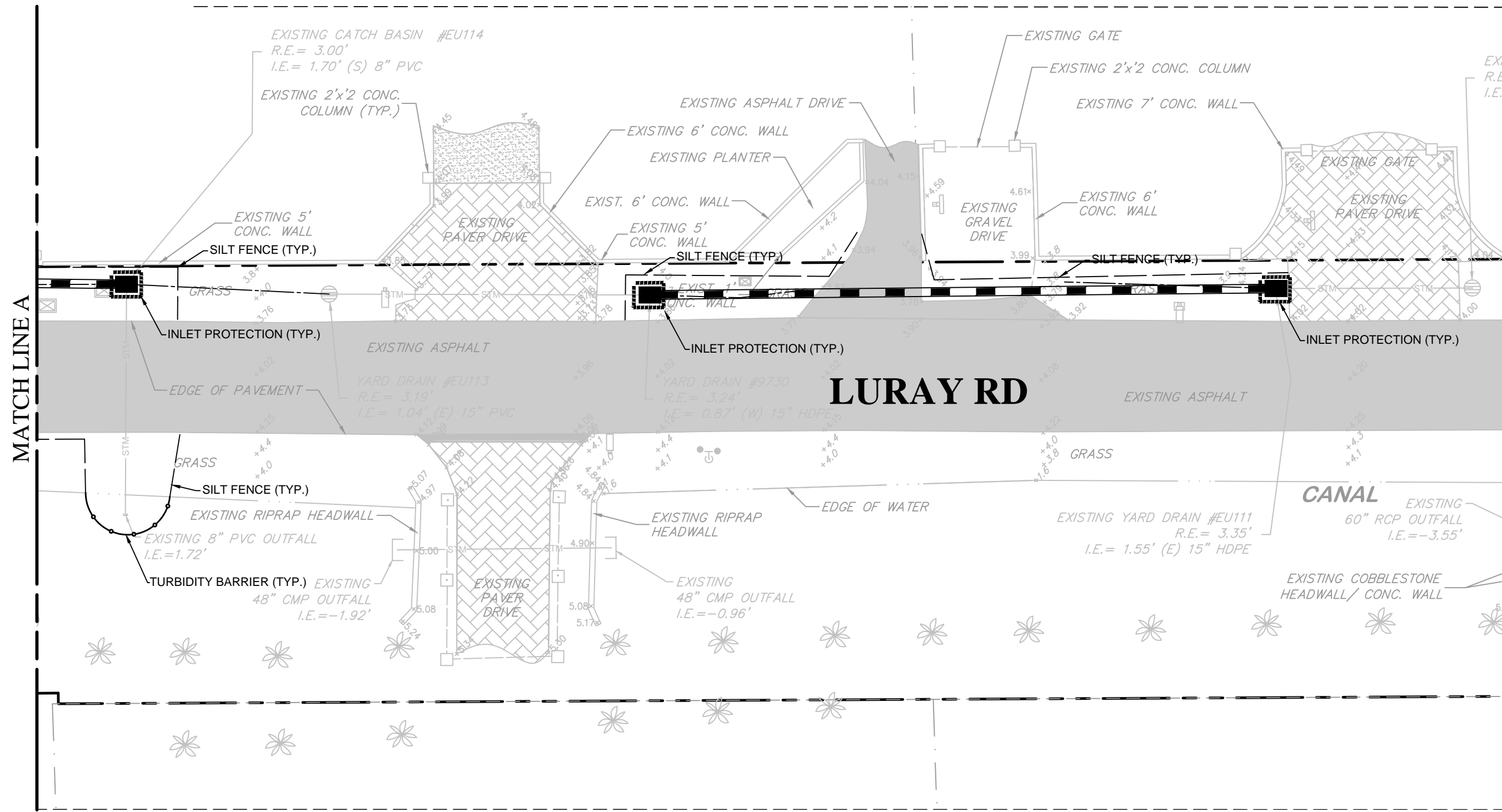
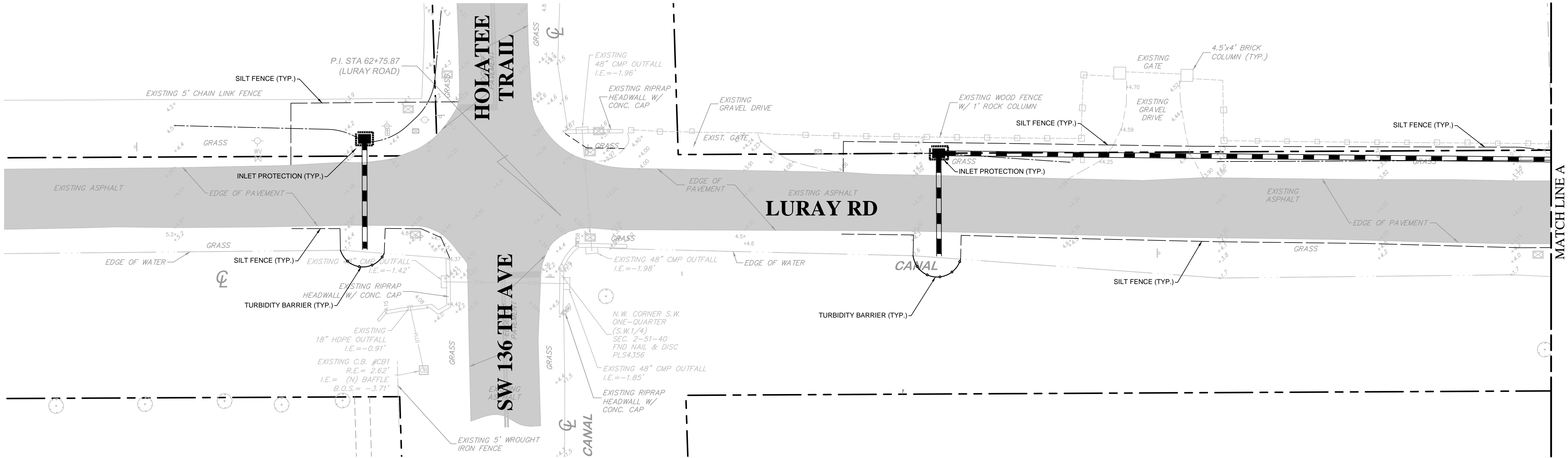
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C-01

C. REFLECTIVE PAVEMENT MARKERS SHALL BE CLASS B MARKERS MANUFACTURED IN ACCORDANCE WITH F.D.O.T. STANDARD SPECIFICATIONS 706 AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PROCEDURES.

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Legend

See Erosion Control Details

Symbol	Description
	I NLET PROTECTI ON
	SI LT FENCE
	TURBI DI TY BARRI ER

EROSION CONTROL

PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.

CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES, AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT AND DISPOSE OF SEDIMENTS IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.

CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.

CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.

UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.

NO EXCAVATED MATERIAL SHALL BE STOCKPILED IN SUCH A MANNER AS TO DIRECT RUNOFF DIRECTLY OFF THE PROJECT SITE OR INTO ANY ADJACENT WATER BODY OR STORMWATER COLLECTION FACILITY.

PERMANENT EROSION CONTROL

ALL AREAS WHICH HAVE BEEN DISTURBED BY CONSTRUCTION SHALL, AT A MINIMUM, BE SODDED.

STRIP SOD ONE FOOT WIDE OR GREATER SHALL BE PLACED ADJACENT TO ALL CURBS, WALKS AND PAVEMENT. IN AREAS WITH A SIDEWALK, THE ENTIRE AREA BETWEEN THE SIDEWALK AND THE BACK OF CURB AND/OR EDGE OF PAVEMENT SHALL BE SODDED.

ALL GRASSED AREAS WILL BE MAINTAINED TO ASSURE A GOOD STAND AND SUFFICIENT GROUND COVER TO MINIMIZE EROSION. IF AFTER 60 DAYS AN ADEQUATE GROUND COVER HAS NOT BEEN ESTABLISHED, THE AREA WILL BE REGRASSED.

HOLATEE TRAIL & LURAY RD
DRAINAGE PROJECT
TOWN OF SOUTHWEST RANCHES, FL 33330

EROSION CONTROL PLAN

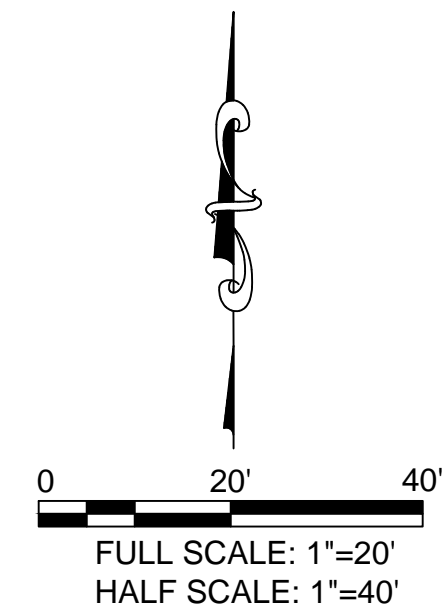
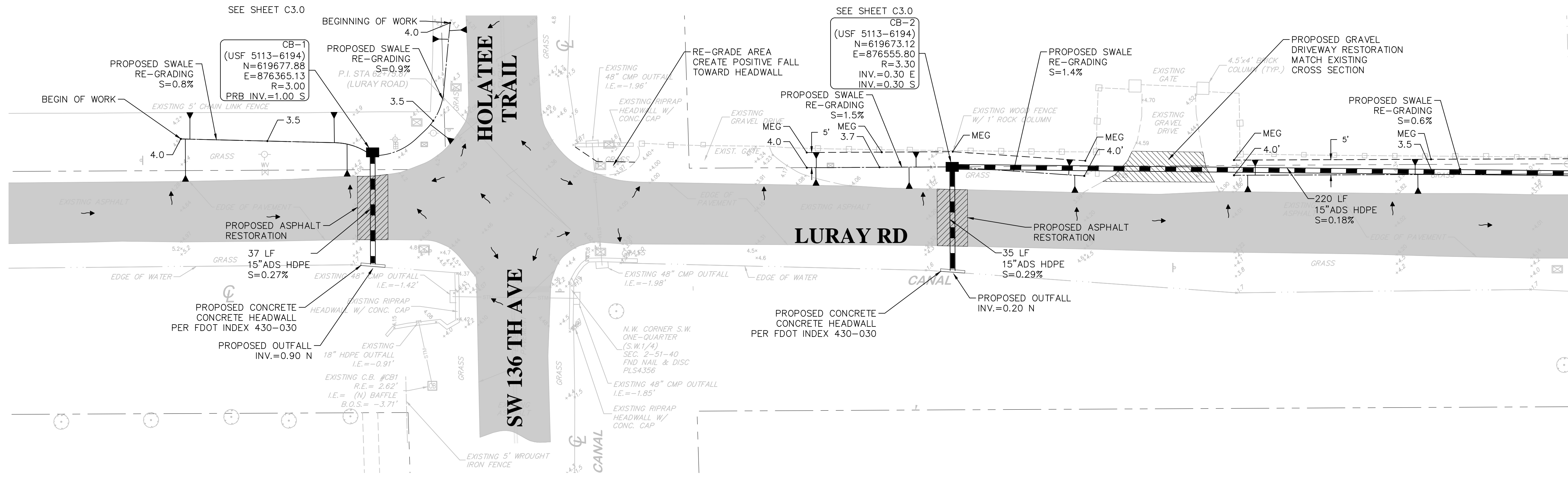


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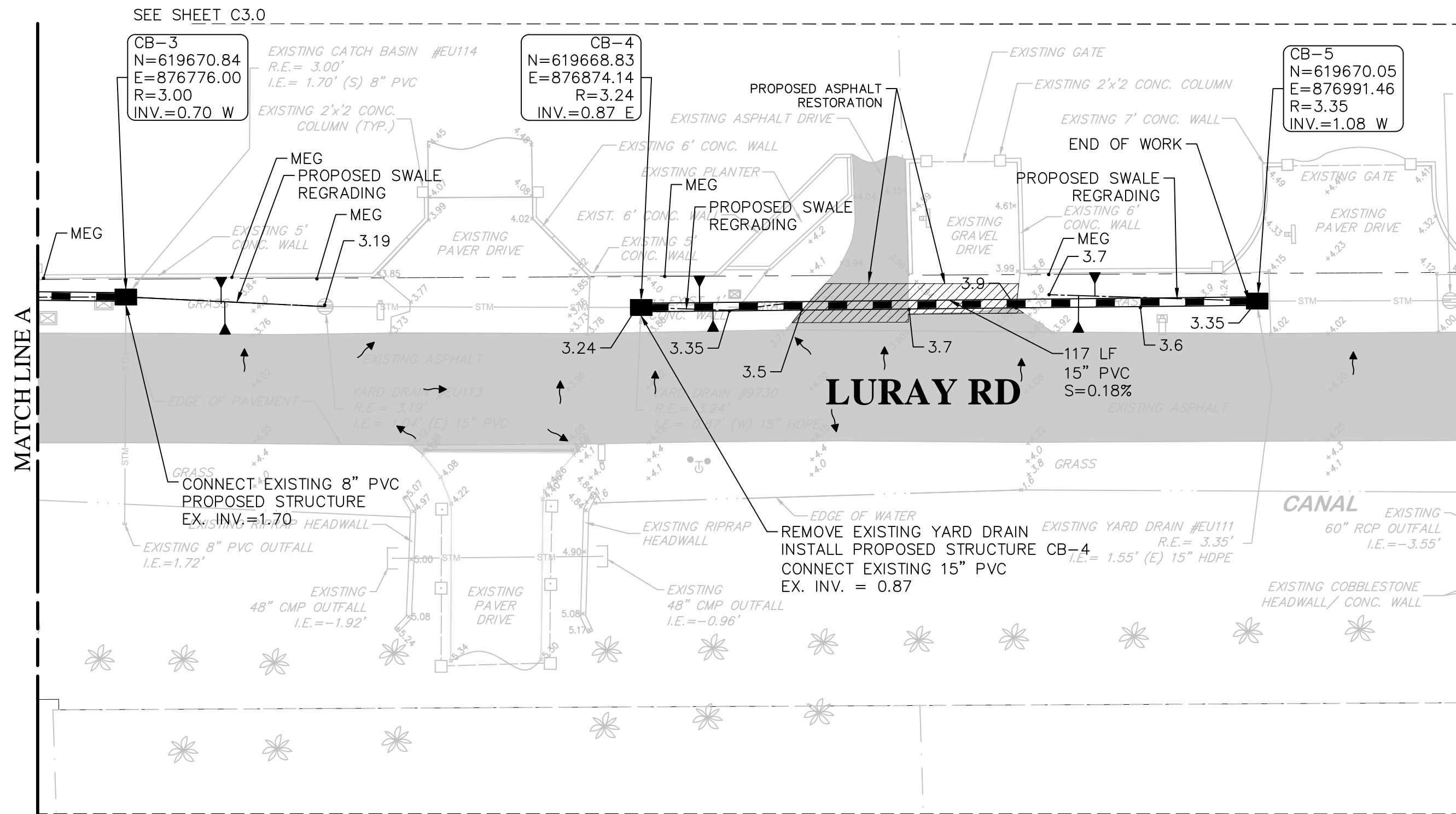
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DATE:	4/25/2025
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C-03

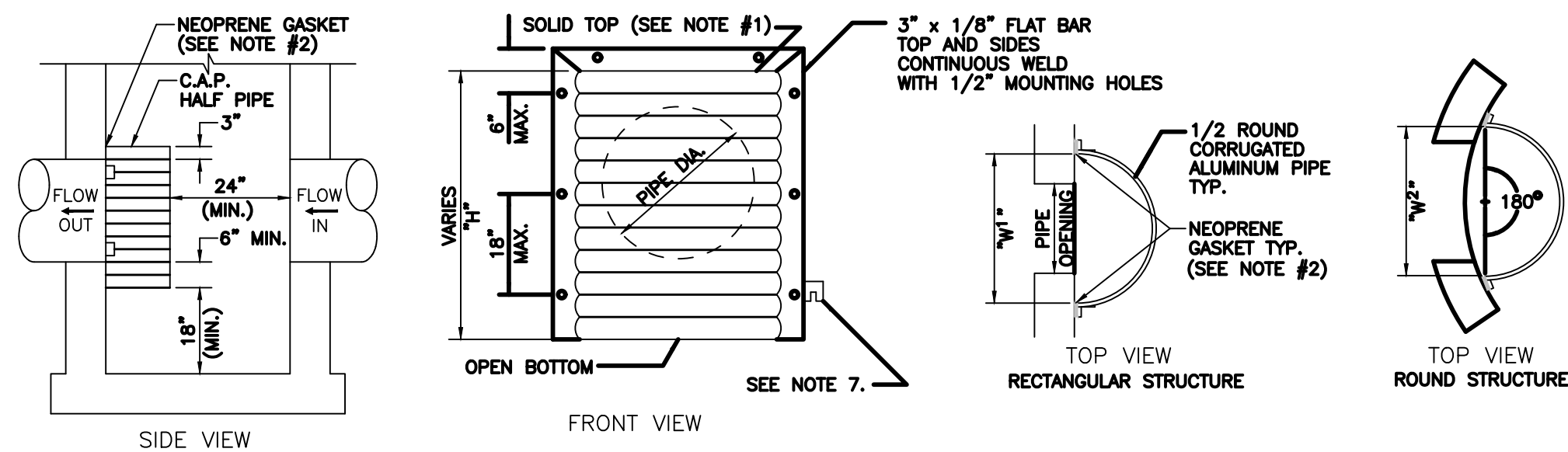
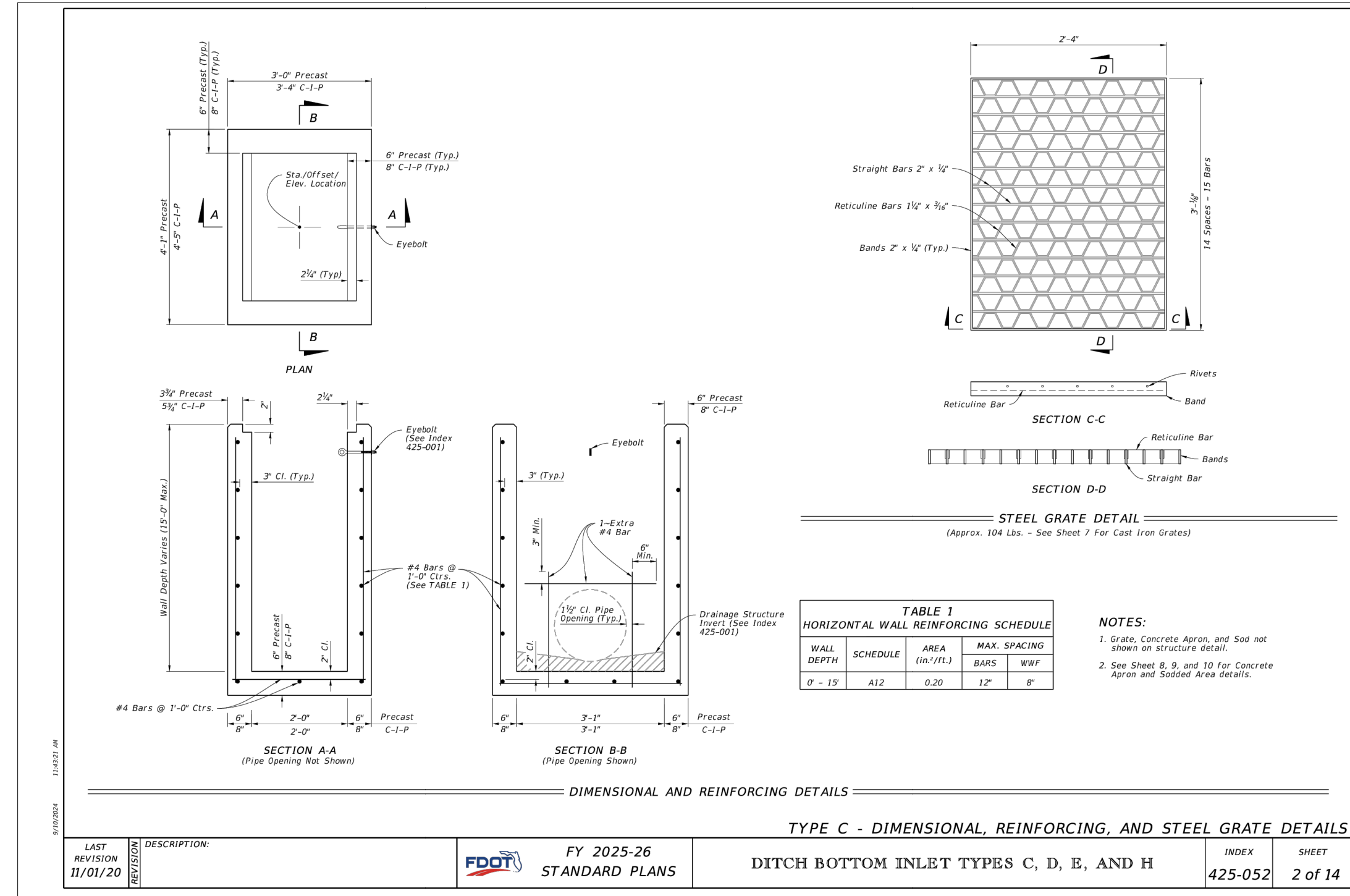
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Legend	
	RIGHT OF WAY (R.O.W.)
	SWALE CENTER LINE
	PROP. DRAINAGE PIPE
	EX. STORM PIPE
	PROP. CATCH BASIN (CB)
	PAVEMENT RESTORATION
	MEG
	FFE
	EX.
	PROP.
	→



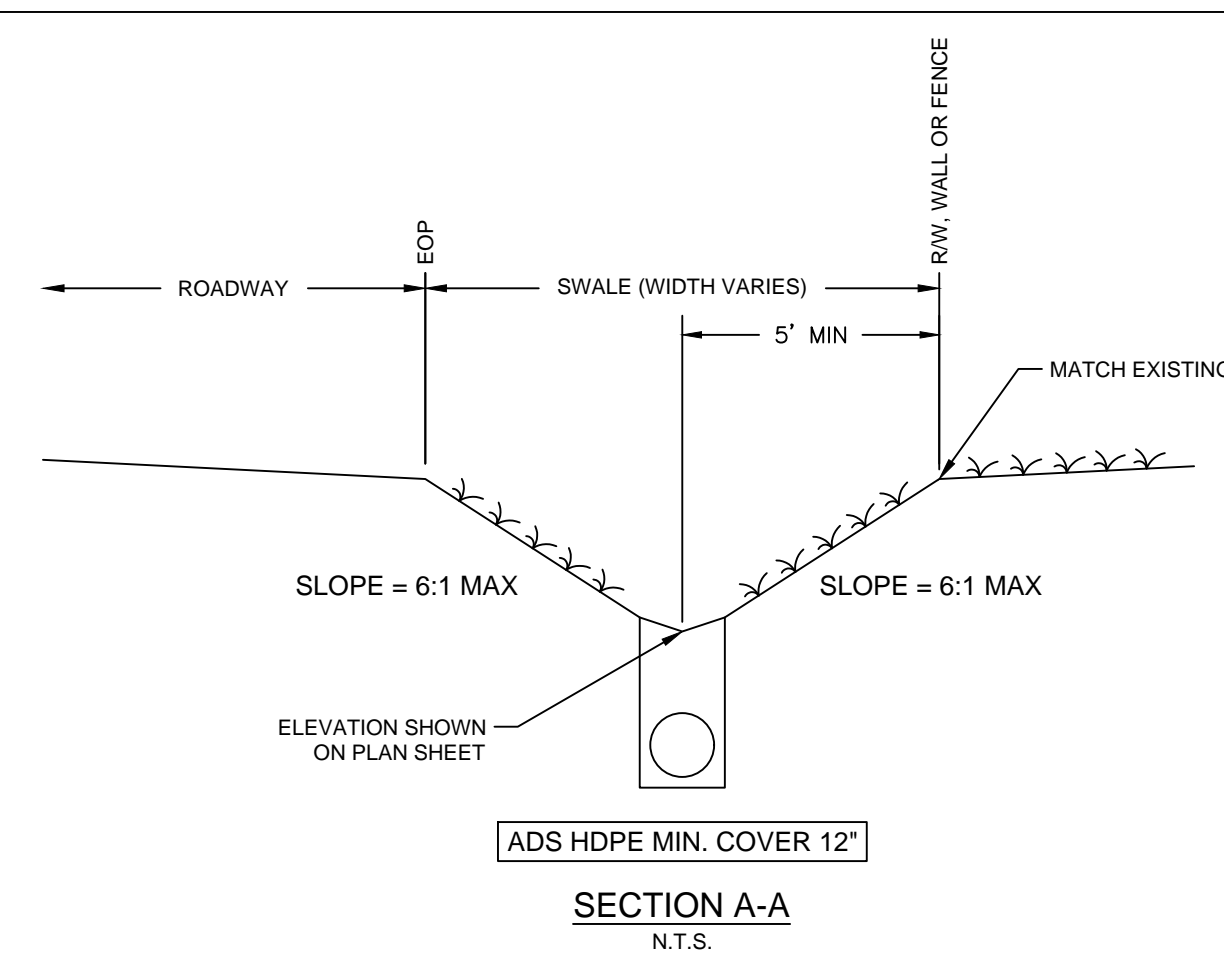
- GENERAL NOTES:
1. ALL SOIL DENSITY TESTING, SUBSURFACE INVESTIGATIONS AND ALL OTHER GEOTECHNICAL ACTIVITY ONSITE SHALL BE SUPERVISED AND CERTIFIED BY A PROFESSIONAL GEOTECHNICAL ENGINEER.
 2. CONTRACTOR(S) SHALL FIELD VERIFY EXISTING TOPOGRAPHY DATA, LOCATION OF EXISTING STRUCTURES AND ALL OTHER SITE CONDITIONS PRIOR TO BEGINNING OF CONSTRUCTION. CONTRACTOR(S) SHALL NOTIFY THE ENGINEER AND ARCHITECT OF ANY DISCREPANCIES.
 3. SIDEWALKS, CROSSWALKS AND PATHWAYS CROSS SLOPES SHALL NOT EXCEED 2%. SIDEWALK LONGITUDINAL SLOPES SHALL NOT EXCEED 5%. COURTYARD/ PAVILION AREAS SHALL NOT EXCEED 2% IN ANY DIRECTIONS.
 4. ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
 5. CONVERSION FROM NAVD88 DATUM TO NGVD29 DATUM = NAVD88+1.51
 6. DAMAGED SIDEWALK, CURB & GUTTER, OR PAVEMENT WITHIN APPROVED PERMIT LIMITS SHALL BE REMOVED AND REPLACED IN ACCORDANCE WITH TOWN OF SOUTHWEST RANCHES MINIMUM DESIGN & CONSTRUCTION STANDARDS.
 7. MAINTAIN 18" MINIMUM VERTICAL SEPARATION BETWEEN WATER MAIN AND ALL OTHER UTILITIES (E.G. STORM SEWER, SANITARY SEWER).
 8. PRIOR TO CONSTRUCTION, CONTRACTOR TO CLEAN OUT EXISTING DRAINAGE INLETS AND JET PIPE.
 9. CONTRACTOR TO PROVIDE MAINTENANCE OF TRAFFIC.
 10. ALL NON PAVEMENT AREAS DISTURBED SHALL BE SODDED TO ORIGINAL CONDITIONS.



PIPE DIA.	W ¹ (IN)	W ² (IN)	T (GAUGE)	H (IN)
15"	21"	21"	16	VARIES
18"	24"	24"	16	VARIES
21"	30"	30"	16	VARIES
24"	30"	36"	16	VARIES
30"	36"	42"	14	VARIES
36"	42"	48"	14	VARIES
42"	48"	54"	14	VARIES
48"	54"	60"	14	VARIES
54"	60"	66"	14	VARIES

1. RECTANGULAR STRUCTURE
2. ROUND STRUCTURE

- NOTES:
1. ALUMINUM SHEET OF SAME THICKNESS (GAUGE) AS PIPE SHALL BE WELDED TO CLOSE OPENING AT THE TOP.
 2. NEOPRENE ADHESIVE BACKED GASKET, OR APPROVED EQUAL (1" x 3") SHALL BE INSTALLED ON THE SIDES AND TOP OF ALL BAFFLES.
 3. POLLUTION RETARDANT BAFFLE TO BE FASTENED IN PLACE WITH 3/8"x4" STAINLESS STEEL 'RED HEADS', OR APPROVED EQUAL.
 4. ALL EXFILTRATION TRENCHES SHALL HAVE A POLLUTION RETARDANT BAFFLE AT EACH CONNECTION POINT TO A STRUCTURE (SEE EXFILTRATION TRENCH DETAIL). THE BOTTOM OF THE BAFFLE SHALL BE A MIN. OF 12" BELOW C.W.E.
 5. FIBERGLASS BAFFLES ARE NOT PERMITTED.
 6. MOUNTING BRACKETS MAY BE ADDED TO FLAT BARS TO EASE INSTALLATION IN ROUND STRUCTURES. SPACING TO MATCH HOLES IN FLAT BARS.
 7. FOR POLLUTION RETARDANT BASINS THE BOTTOM ELEVATION OF THE BAFFLE MUST BE A MINIMUM OF 2' BELOW THE CONTROL WATER ELEVATION.



TYPICAL SWALE SECTION

100% DESIGN DRAWINGS

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ENGINEERING PLAN



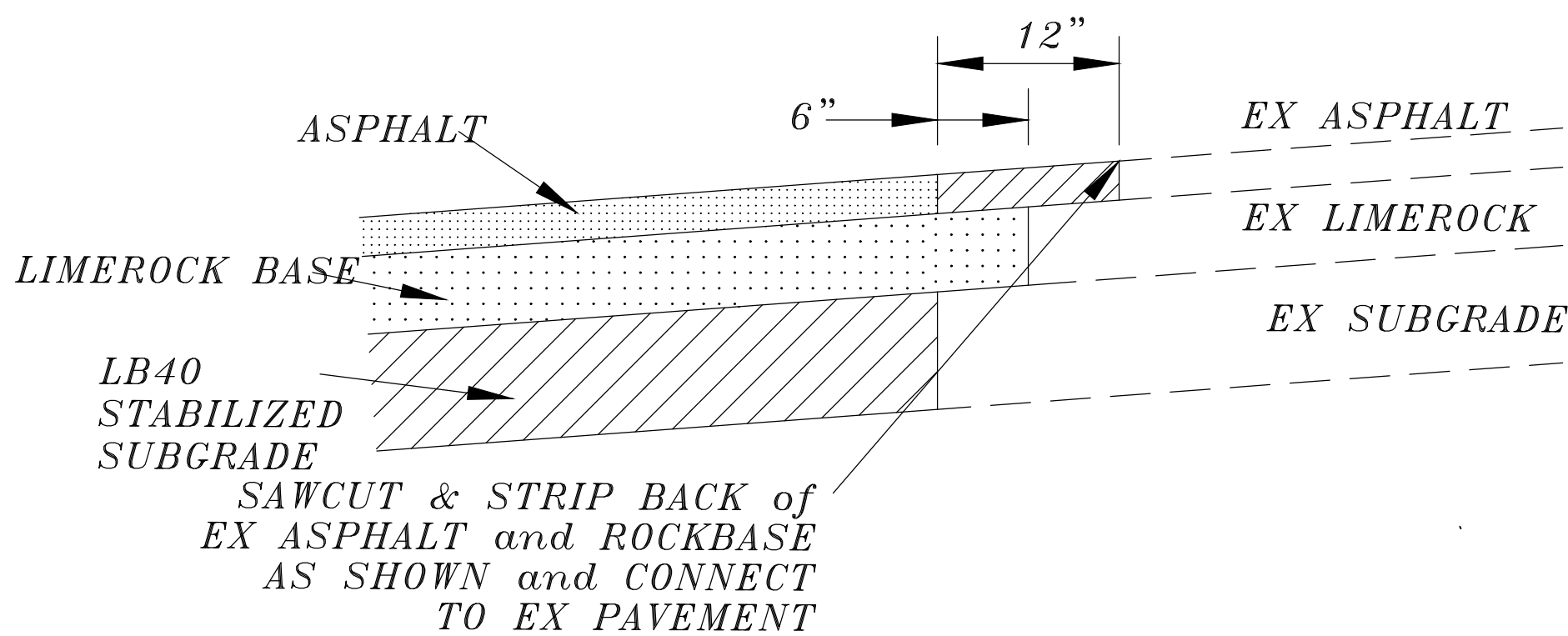
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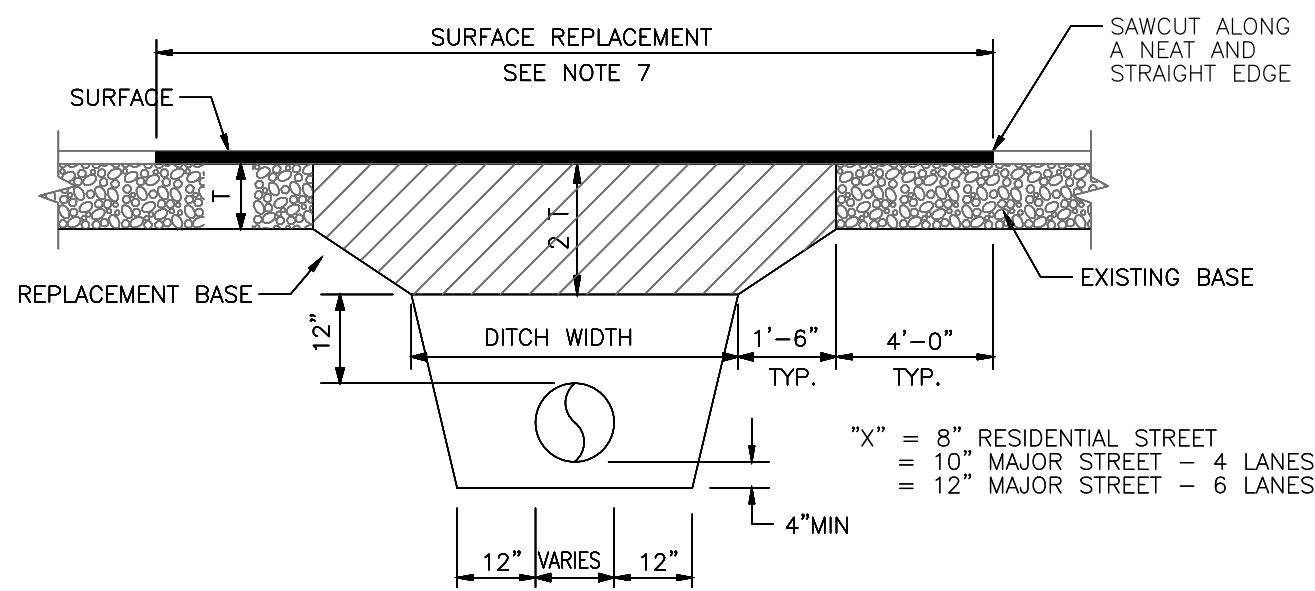
C-05

FILE NO. 241100

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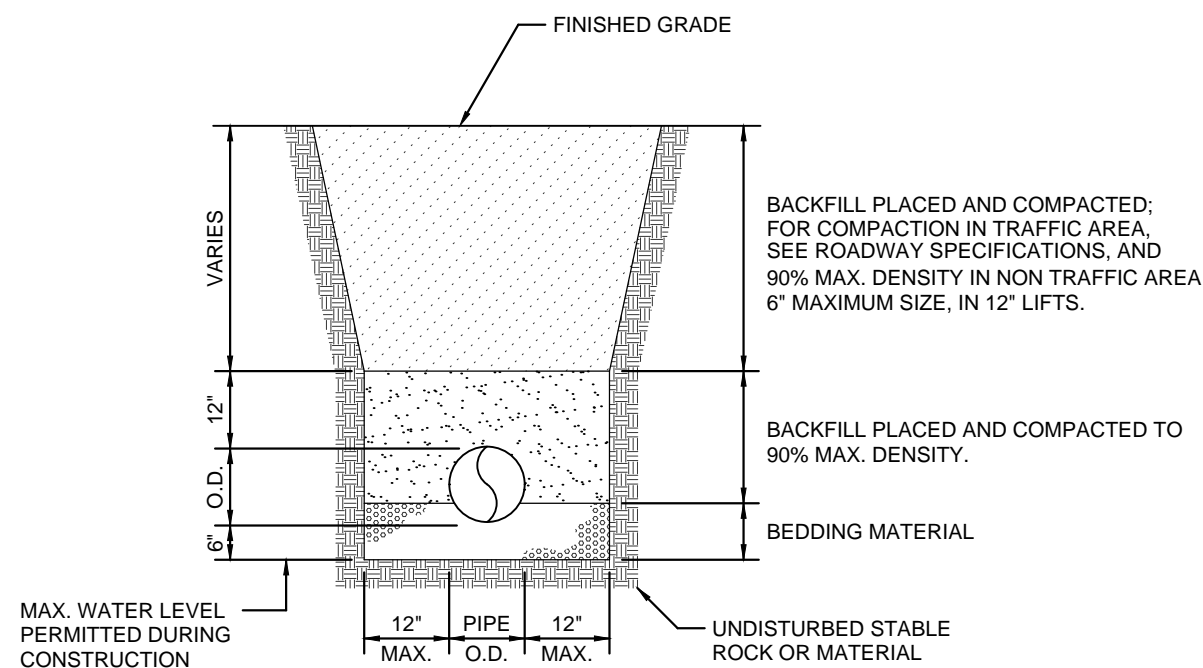


CONNECTION TO EX PVMT DETAIL
N.T.S.



- GENERAL NOTES :
1. REPLACED BASE MATERIAL OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE, BUT NOT LESS THAN "X" SCHEDULE.
 2. BASE MATERIAL SHALL BE PLACED IN 6 INCH MAXIMUM LAYERS AND EACH LAYER THOROUGHLY ROLLED OR TAMPED TO 98% OF MAXIMUM DENSITY, PER AASHTO T-180. BASE MATERIAL SHALL HAVE A MINIMUM LBR OF 100.
 3. ASPHALTIC CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.
 4. SURFACE TREATED PAVEMENT JOINTS SHALL BE LAPPED AND FEATHERED.
 5. SURFACE MATERIAL WILL BE CONSISTENT WITH THE EXISTING SURFACE.
 6. IF THE DITCH IS FILLED TEMPORARILY, IT SHALL BE COVERED WITH A 2 INCH ASPHALTIC CONCRETE PATCH TO KEEP THE FILL MATERIAL FROM RAVELING UNTIL PLACED WITH A PERMANENT PATCH.
 7. MINIMUM WIDTH OF PAVEMENT RESTORATION SHALL BE ONE LANE WIDTH.

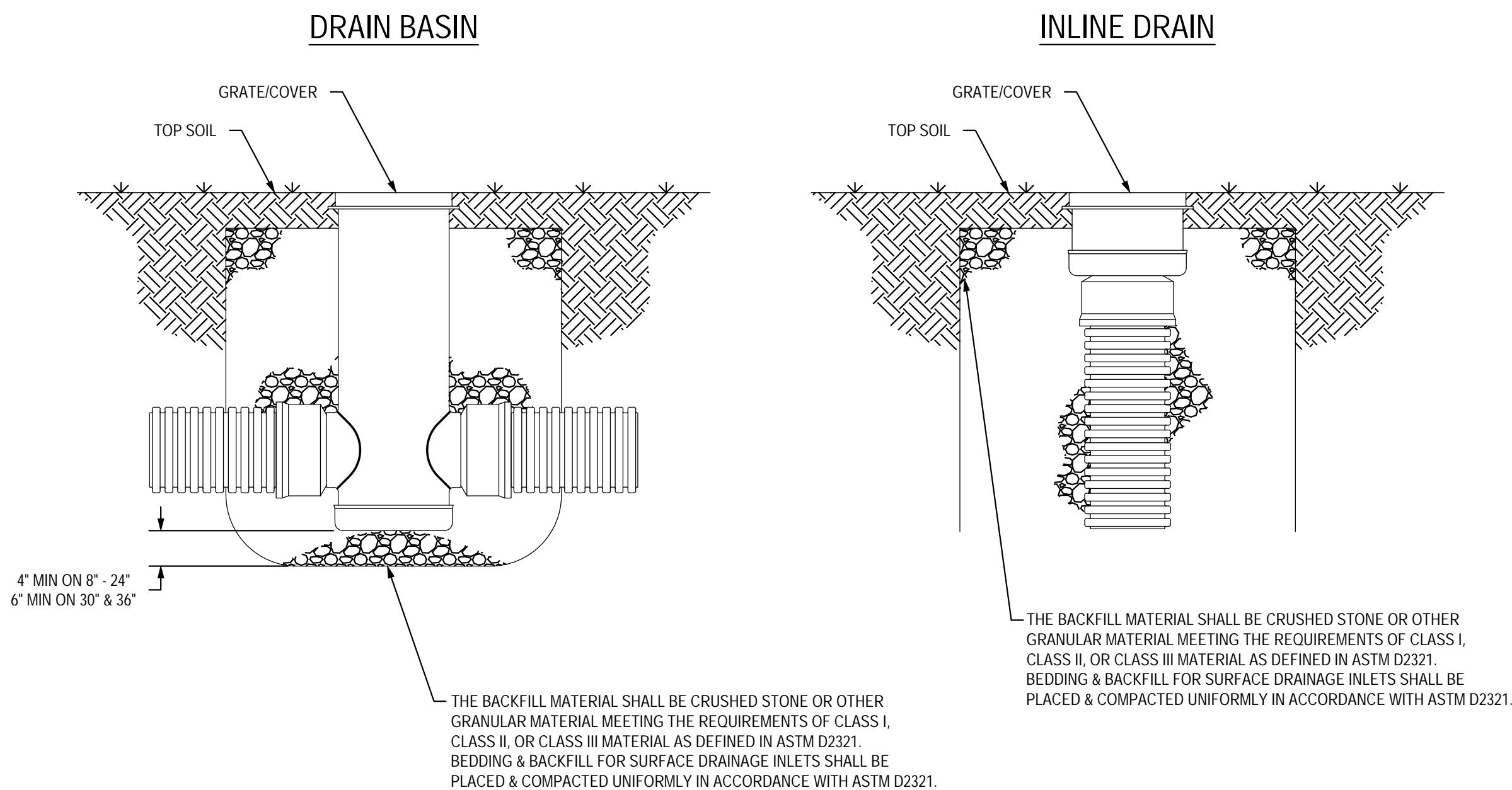
PAVEMENT RESTORATION
N.T.S.




- NOTES:
1. WHERE SOIL CONDITION CANNOT BE MAINTAINED AS SHOWN ABOVE, PROVIDE APPROVED MEANS OF CONSTRUCTION.
 2. WHERE REQUIRED SHEETING AND SHORING SHALL BE IN ACCORDANCE WITH THE LOCAL GOVERNMENTAL AGENCY.
 3. MUCK OR OTHER UNSUITABLE MATERIAL SHALL BE COMPLETELY REMOVED.
 4. WHEN THE PIPE IS LAID IN THE PREPARED TRENCH, TRUE TO LINE AND GRADE, THE PIPE BARREL SHALL RECEIVE CONTINUOUS UNIFORM SUPPORT. WHERE NECESSARY, COURSE SAND, PEA ROCK OR 3/4" LIMESTONE GRAVEL SHALL BE USED TO PROVIDE UNIFORM BEDDING.
 5. JOINTS MAY BE REQUIRED TO BE WRAPPED AT THE DISCRETION OF THE DISTRICT AND THE SITE CONDITIONS.
 6. BACKFILL MATERIAL SHALL BE NON-COHESIVE AND NON-PLASTIC SOIL THAT IS FREE OF ALL DEBRIS, LUMPS, WOOD, BROKEN PAVING OR ANY ORGANIC OR UNSUITABLE MATERIAL. BACKFILL MATERIAL PLACED WITHIN 12" OF THE PIPE SHALL CONTAIN NO ROCKS OR STONES LARGER THAN 3-1/2" INCHES IN DIAMETER. NO ROCKS OR STONES LARGER THAN 6" IN DIAMETER WILL BE PERMITTED IN THE REMAINING BACKFILL UNLESS OTHERWISE SPECIFIED.
 7. TRENCH BACKFILL SHALL BE COMPACTED TO NOT LESS THAN 90 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED BY AASHTO T-180. BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE TO THE STANDARD ENGINEERING DESIGN REQUIRED BY THE LOCAL GOVERNMENTAL AGENCY.

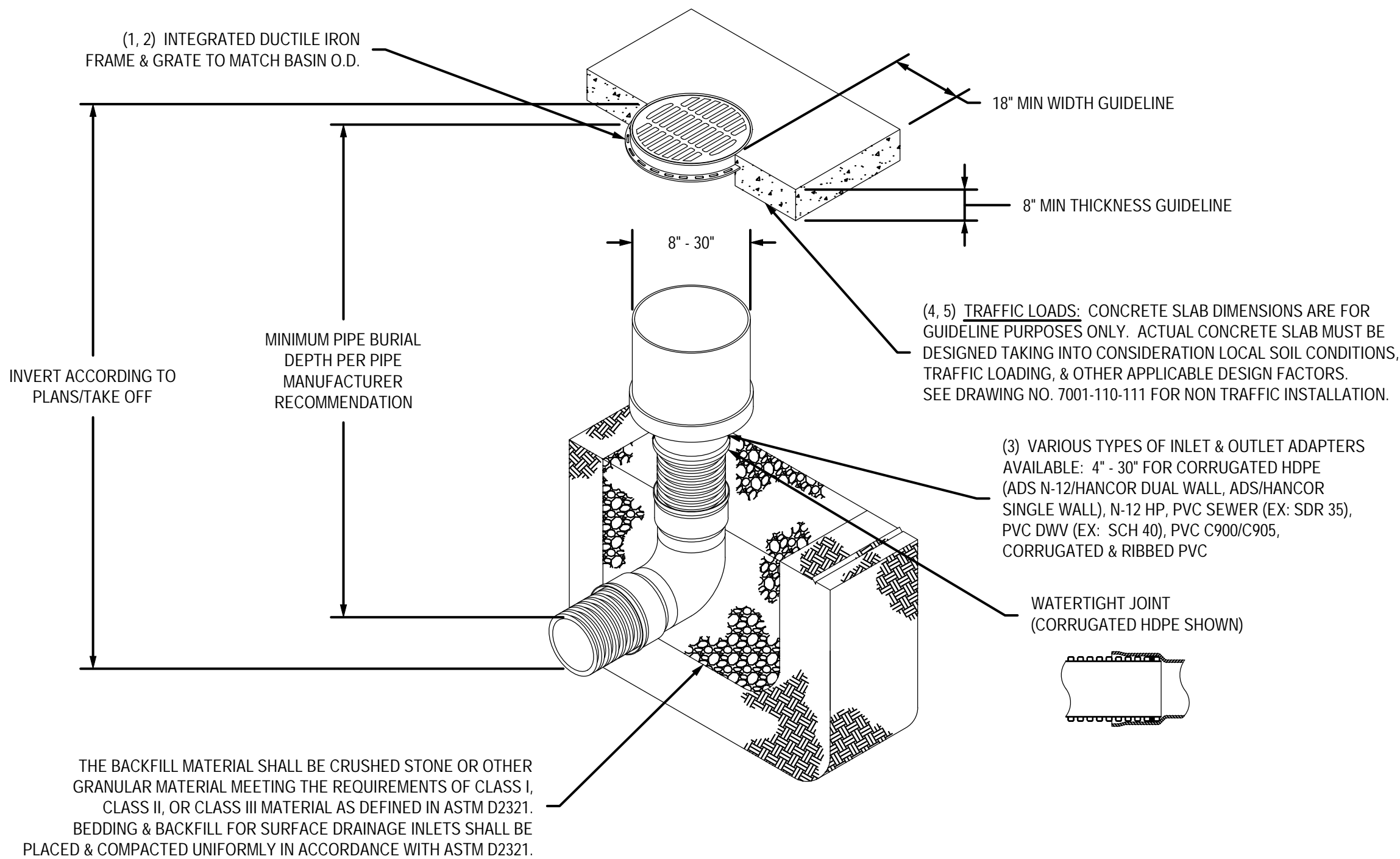
TRENCH EXCAVATION DETAIL
N.T.S.

NON TRAFFIC INSTALLATION




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DATE 9-30-99	PROJECT NO./NAME	REVISED BY NMH	DATE 03-11-16	
DWG SIZE A	SCALE 1:25	SHEET 1 OF 1	DWG NO. 7003-110-111	REV F

NYLOPLAST INLINE DRAIN WITH STANDARD GRATE



- 1 - 8" - 30" STANDARD GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
- 2 - 12" - 30" FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05. 8" & 10" STANDARD GRATES FIT DIRECTLY ONTO INLINE DRAINS SEE DRAWING NO. 7003-110-000 & 7003-110-001.
- 3 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 24").
- 4 - 12" - 30" STANDARD GRATES SHALL MEET H-20 LOAD RATING.
- 5 - 8" & 10" STANDARD GRATES ARE RATED FOR LIGHT DUTY APPLICATIONS ONLY; NO CONCRETE COLLAR NEEDED FOR LIGHT DUTY RATING.

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DATE 1-23-06	PROJECT NO./NAME	
REVISED BY NMH	DATE 03-15-16	TITLE INLINE DRAIN WITH STANDARD GRATE QUICK SPEC INSTALLATION DETAIL
DWG SIZE A	SCALE 1:40	SHEET 1 OF 1
DWG NO. 7003-110-022	REV J	

HOLATEE TRAIL & LURAY RD
DRAINAGE PROJECT
TOWN OF SOUTHWEST RANCHES, FL 33330

ENGINEERING DETAILS



SCALE:	AS SHOWN
DATE:	4/25/2025
DRAWN BY:	R.T.
CHECKED BY:	R.P.
DESIGNED BY:	R.P.

C-06

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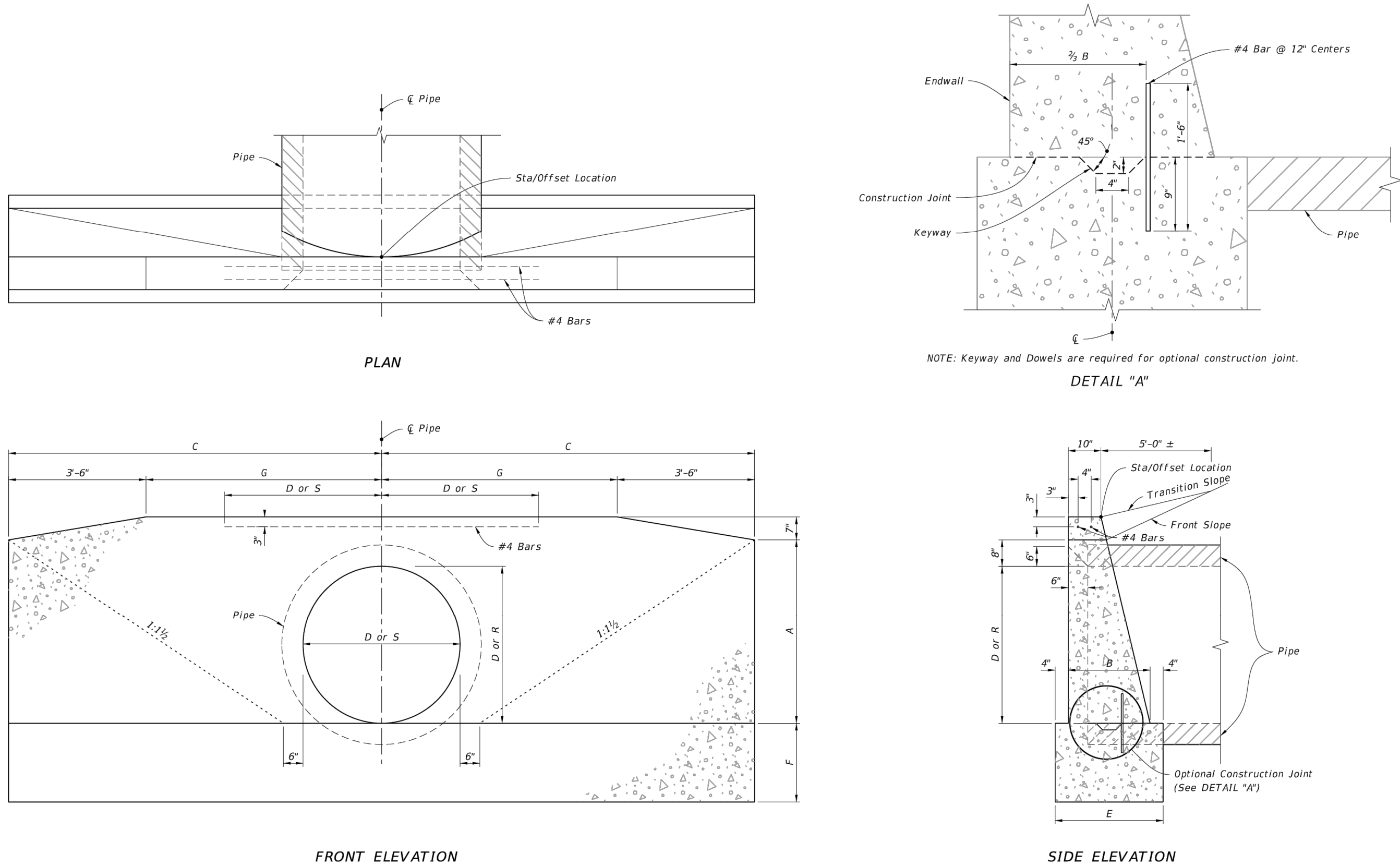
EXHIBIT J

GENERAL NOTES

The following general notes shall be placed on all paving and drainage plans submitted to the District.

- The following General Notes are required by Central Broward Water Control District. They are not meant to be all inclusive, and it is the Engineers' responsibility to add any notes which will inform the Owner and the Contractor of any additional requirement of Central Broward Water Control District.
- Limerock base course shall conform to the requirements of Section 911 of Florida Department of Transportation Standard Specifications, except the minimum percentage of carbonates of calcium and magnesium shall be sixty percent (60 %).
- Central Broward Water Control District will be called 24 hours prior to back-filling of drainage trench and prior to the placement of asphalt. Call (954) 432-5110.
- Any revisions to these plans must be approved by Central Broward Water Control District prior to construction.
- Bonds and Inspections:
 - Upon District Board of Commissioners approval of plans, but before construction can commence, the following items must be complied with:
 - Bond (cash or surety), in the District's favor, must be posted in the amount of 110 percent of the developer's engineer's (Engineer of Record) estimate of cost of construction of the paving and drainage works. (Subject to approval of the cost estimate by the District Engineers.)
 - All easements, deed restrictions, maintenance agreements, and deeds as required by the Board shall be presented to the District Manager and Attorney for approval before recordation. All costs of recording the applicable instrument will be borne by the Developer.

EXHIBIT J - PAGE 1 OF 3



CONCRETE ENDWALL DETAILS

STRAIGHT CONCRETE ENDWALLS
SINGLE AND MULTIPLE PIPE

INDEX
430-030

SHEET
2 of 4

EXHIBIT "J"

The following general notes shall be placed on all paving and drainage plans submitted to the District.

CBWCD GENERAL NOTES

- The following General Notes are required by Central Broward Water Control District. They are not meant to be all inclusive, and it is the Engineer of Records' responsibility to add any notes which will inform the Owner and the Contractor of any additional requirement of the Central Broward Water Control District.
- Any revisions to these plans must be approved by the Central Broward Water Control District prior to construction.
- Bonds: Upon District Board of Commissioners approval of plans, but before construction can commence, the following items must be complied with:
 - Bond (cash or surety), in the District's favor, must be posted in the amount of 110 percent of the developer's Engineer of Record's estimate of cost of construction of the paving and drainage works. (Subject to approval of the cost estimate by the District Secretary/Manager or District Engineer.)
 - Swales, lake/pond banks, slopes, canals, and other excavations shall be bonded separately from other drainage improvements and will be held by the District until successful completion. The amount of this separate bond will be determined by the District Board of Commissioners and by recommendation of the District Secretary/Manager.
 - The District's Bond Form is the only form approved for use, and it shall be a recorded instrument. Release or reduction from the recorded instrument shall be the responsibility of the applicant.
 - Bonds shall be provided by the principals of development only. Contractor or Sub-Contractor bonds are not acceptable.
 - Upon successful completion of construction, and acceptance of "As-Built/Record Drawings" by the District Board of Commissioners, a percentage of the performance bond as determined by the District may be released. The balance of bond shall remain in full force and effect for an additional twelve (12) months after final inspection and approval, unless supplemented by new bond forms in the required amounts and approved by

CBWCD - August 12, 2020

EXHIBIT "J" - CBWCD GENERAL NOTES

Page 1 of 3

Pipe		ROUND CONCRETE AND CORRUGATED METAL PIPE																				Dia D
		Dimensions																		Class II Concrete (CY)		
		Opening Area (SF)																		Number Of Pipe And Skew Angle Of Pipe (s)		
		Number Of Pipes																		Trips		
Dia D	1	2	3	4	A	B	C	E	F	G	Y	X	0°	15°	30°	45°	Single	Double	Triple	Quadruple		
Concrete	15"	1.23	2.46	3.69	4.92	1'-11"	1'-2"	4'-0"	1'-10"	1'-2"	0'-6"	2'-7"	2'-2"	2'-2"	2'-2"	2'-2"	2'-2"	1.23	1.50	1.60	1.65	
	18"	1.77	3.54	5.31	7.08	2'-2"	1'-3"	4'-6"	1'-11"	1'-3"	1'-0"	2'-10"	2'-10"	2'-11"	3'-3"	3'-4"	3'-8"	1.77	2.10	2.20	2.30	
	21"	2.41	4.82	7.23	9.64	2'-5"	1'-4"	5'-0"	2'-0"	1'-4"	1'-8"	3'-2"	3'-2"	3'-3"	3'-4"	3'-8"	4'-8"	2.41	2.88	2.84	2.91	
	24"	3.14	6.28	9.42	12.56	2'-8"	1'-4"	5'-6"	2'-0"	1'-4"	2'-0"	3'-5"	3'-5"	3'-6"	3'-11"	4'-10"	4'-10"	3.14	3.76	3.69	3.74	
	27"	3.98	7.96	11.94	15.92	2'-11"	1'-5"	6'-0"	2'-1"	1'-5"	2'-6"	3'-10"	3'-10"	4'-0"	4'-5"	5'-5"	5'-5"	3.98	4.82	4.73	4.84	
	30"	4.91	9.82	14.73	19.64	3'-2"	1'-6"	6'-6"	2'-2"	1'-6"	3'-0"	4'-2"	4'-2"	4'-3"	4'-11"	6'-0"	6'-0"	4.91	5.94	5.75	5.96	
	36"	7.07	14.14	21.21	28.28	3'-8"	1'-8"	7'-6"	2'-4"	1'-8"	4'-0"	5'-11"	5'-11"	5'-10"	7'-2"	8'-6"	8'-6"	7.07	8.54	8.25	8.56	
	42"	9.62	19.24	28.86	38.48	4'-2"	1'-10"	8'-6"	2'-6"	2'-0"	5'-0"	6'-0"	6'-0"	6'-11"	8'-6"	10'-0"	10'-0"	9.62	11.68	11.27	11.89	
	48"	12.57	25.14	37.71	50.28	4'-8"	2'-1"	9'-6"	2'-8"	2'-0"	6'-0"	6'-6"	6'-6"	7'-0"	9'-6"	11'-4"	11'-4"	12.57	15.14	14.51	15.33	
	54"	15.90	31.80	47.70	63.60	5'-2"	2'-6"	10'-6"	3'-2"	2'-8"	7'-0"	7'-8"	7'-8"	7'-11"	10'-10"	11'-7"	11'-7"	15.90	19.12	18.28	19.40	
Corrugated Metal	15"	1.23	2.46	3.69	4.92	1'-11"	1'-2"	4'-0"	1'-10"	1'-2"	0'-6"	2'-7"	2'-2"	2'-2"	2'-2"	2'-2"	2'-2"	1.24	1.62	1.68	1.68	
	18"	1.77	3.54	5.31	7.08	2'-2"	1'-3"	4'-6"	1'-11"	1'-3"	1'-0"	2'-10"	2'-10"	2'-11"	3'-3"	3'-4"	3'-8"	1.77	2.28	2.31	2.35	
	21"	2.41	4.82	7.23	9.64	2'-5"	1'-4"	5'-0"	2'-0"	1'-4"	1'-8"	3'-2"	3'-2"	3'-3"	3'-4"	3'-8"	4'-8"	2.42	2.94	2.93	3.01	
	24"	3.14	6.28	9.42	12.56	2'-8"	1'-4"	5'-6"	2'-0"	1'-4"	2'-0"	3'-5"	3'-5"	3'-6"	3'-11"	4'-10"	4'-10"	3.14	3.87	3.82	3.91	
	27"	3.98	7.96	11.94	15.92	2'-11"	1'-5"	6'-0"	2'-1"	1'-5"	2'-6"	3'-10"	3'-10"	4'-0"	4'-5"	5'-5"	5'-5"	3.99	4.91	4.86	5.00	
	30"	4.91	9.82	14.73	19.64	3'-2"	1'-6"	6'-6"	2'-2"	1'-6"	3'-0"	4'-2"	4'-2"	4'-3"	4'-11"	6'-0"	6'-0"	4.92	5.94	5.87	6.01	
	36"	7.07	14.14	21.21	28.28	3'-8"	1'-8"	7'-6"	2'-4"	1'-8"	4'-0"	5'-11"	5'-11"	5'-10"	7'-2"	8'-6"	8'-6"	7.09	8.57	8.46	8.73	
	42"	9.62	19.24	28.86	38.48	4'-2"	1'-10"	8'-6"	2'-6"	2'-0"	5'-0"	6'-0"	6'-0"	6'-11"	8'-6"	10'-0"	10'-0"	9.64	11.72	11.55	12.00	
	48"	12.57	25.14	37.71	50.28	4'-8"	2'-1"	9'-6"	2'-8"	2'-0"	6'-0"	6'-6"	6'-6"	7'-0"	9'-6"	11'-4"	11'-4"	12.59	15.32	15.08	15.63	
	54"	15.90	31.80	47.70	63.60	5'-2"	2'-6"	10'-6"	3'-2"	2'-8"	7'-0"	7'-8"	7'-8"	7'-11"	10'-10"	11'-7"	11'-7"	15.93	19.40	19.02	19.70	

ELLIPTICAL CONCRETE AND CORRUGATED METAL PIPE ARCH																																
Pipe	Rise	Span	Dimensions																				Rise	Span	Approx. Equiv. Round							
			Opening Area (SF)																Class II Concrete (CY)													
			Number of Piles																Number of Pipe and Skew Angle (Pile (s))													
			1	2	3	4	A	B	C	E	F	G	Y	X				Single	Double		Triple	Quadruple										
0°	15°	30°	45°	0°	15°	30°	45°	0°	15°	30°	45°	0°	15°	30°	45°	0°	15°	30°	45°													
Concrete	12"	18"	3.6	5.4	7.2	9.0	1'-8"	1'-2"	3'-8"	1'-10"	1'-2"	0'-5"	2'-10"	2'-11"	3'-3"	4'-0"	1.89	1.45	1.46	1.51	1.60	1.80	1.82	1.91	2.09	2.16	2.20	2.43	2.60	17"	18"	15"
	14"	21"	5.0	7.5	10.0	13.0	1'-10"	1'-3"	4'-2"	1'-11"	1'-3"	0'-5"	3'-5"	3'-6"	3'-11"	4'-10"	2.59	2.00	2.01	2.08	2.22	2.50	2.52	2.70	2.90	2.96	3.25	3.48	21"	21"	18"	
	16"	24"	6.6	9.9	13.2	16.5	2'-3"	1'-4"	5'-1"	2'-0"	1'-4"	1'-7"	4'-2"	4'-4"	4'-10"	5'-11"	3.09	2.55	2.57	2.65	2.82	3.22	3.27	3.43	3.77	3.88	4.35	4.19	4.70	19"	30"	24"
	18"	27"	8.4	12.6	16.8	20.4	2'-5"	1'-4"	5'-6"	2'-0"	1'-4"	1'-8"	4'-2"	4'-4"	4'-10"	5'-11"	3.69	3.05	3.07	3.16	3.36	3.88	3.94	4.15	4.54	4.63	5.15	4.95	5.50	30"	36"	30"
	20"	30"	10.2	15.3	20.4	24.0	2'-8"	1'-4"	6'-0"	2'-1"	1'-6"	2'-1"	4'-2"	4'-4"	4'-10"	5'-11"	4.24	3.50	3.52	3.62	3.84	4.40	4.47	4.69	5.12	5.19	5.75	5.50	6.00	36"	42"	36"
	22"	36"	12.0	18.0	24.0	28.8	3'-0"	1'-4"	6'-6"	2'-2"	1'-6"	2'-2"	4'-4"	4'-6"	4'-10"	5'-11"	4.76	3.95	3.97	4.08	4.32	4.92	4.99	5.23	5.69	5.75	6.30	6.00	6.50	42"	48"	42"
	24"	42"	13.8	20.7	27.6	31.2	3'-2"	1'-4"	7'-0"	2'-2"	1'-6"	2'-2"	4'-6"	4'-8"	4'-10"	5'-11"	5.24	4.37	4.39	4.50	4.76	5.38	5.45	5.70	6.18	6.24	6.80	6.50	7.00	48"	54"	48"
	26"	48"	15.6	23.4	31.2	34.8	3'-4"	1'-4"	7'-6"	2'-2"	1'-6"	2'-2"	4'-8"	5'-0"	4'-10"	5'-11"	5.69	4.75	4.77	4.88	5.16	5.80	5.87	6.12	6.60	6.66	7.15	6.80	7.30	54"	60"	54"
	28"	54"	17.4	26.1	34.8	38.4	3'-6"	1'-4"	8'-0"	2'-2"	1'-6"	2'-2"	5'-0"	5'-2"	4'-10"	5'-11"	6.13	5.15	5.17	5.28	5.58	6.23	6.30	6.55	7.04	7.10	7.60	7.20	7.70	60"	66"	60"
	30"	60"	19.2	28.8	38.4	42.0	3'-8"	1'-4"	8'-6"	2'-2"	1'-6"	2'-2"	5'-2"	5'-4"	4'-10"	5'-11"	6.53	5.50	5.52	5.63	5.94	6.60	6.67	6.92	7.42	7.48	7.95	7.50	8.00	66"	72"	66"
	32"	66"	21.0	31.5	42.0	45.6	4'-0"	1'-4"	9'-0"	2'-2"	1'-6"	2'-2"	5'-4"	5'-6"	4'-10"	5'-11"	6.86	5.75	5.77	5.88	6.20	6.88	6.95	7.20	7.70	7.76	8.20	7.80	8.30	72"	78"	72"
	34"	72"	22.8	34.2	45.6	49.2	4'-2"	1'-4"	9'-6"	2'-2"	1'-6"	2'-2"	5'-6"	5'-8"	4'-10"	5'-11"	7.20	6.05	6.07	6.18	6.52	7.22	7.29	7.54	8.04	8.10	8.50	8.10	8.60	78"	84"	78"
	36"	78"	24.6	36.9	49.2	52.8	4'-4"	1'-4"	10'-0"	2'-2"	1'-6"	2'-2"	5'-8"	6'-0"	4'-10"	5'-11"	7.52	6.35	6.37	6.48	6.84	7.56	7.63	7.88	8.38	8.44	8.80	8.40	8.90	84"	90"	84"
	38"	84"	26.4	39.6	52.8	56.4	4'-6"	1'-4"	10'-6"	2'-2"	1'-6"	2'-2"	6'-0"	6'-2"	4'-10"	5'-11"	7.84	6.65	6.67	6.78	7.16	7.88	7.95	8.20	8.70	8.76	9.10	8.70	9.20	90"	96"	90"
	40"	90"	28.2	42.3	56.4	60.0	4'-8"	1'-4"	11'-0"	2'-2"	1'-6"	2'-2"	6'-2"	6'-4"	4'-10"	5'-11"	8.16	6.95	6.97	7.08	7.48	8.20	8.27	8.52	9.02	9.08	9.40	9.00	9.50	96"	102"	96"
	42"	96"	30.0	45.0	60.0	64.8	5'-0"	1'-4"	11'-6"	2'-2"	1'-6"	2'-2"	6'-4"	6'-6"	4'-10"	5'-11"	8.46	7.25	7.27	7.38	7.80	8.52	8.59	8.84	9.34	9.40	9.70	9.30	9.80	102"	108"	102"
	44"	102"	31.8	47.7	62.4	67.2	5'-2"	1'-4"	12'-0"	2'-2"	1'-6"	2'-2"	6'-6"	6'-8"	4'-10"	5'-11"	8.76	7.55	7.57	7.68	8.08	8.80	8.87	9.12	9.62	9.68	10.00	9.60	10.10	108"	114"	108"
	46"	108"	33.6	50.4	64.8	69.6	5'-4"	1'-4"	12'-6"	2'-2"	1'-6"	2'-2"	6'-8"	7'-0"	4'-10"	5'-11"	9.06	7.85	7.87	7.98	8.28	9.00	9.07	9.32	9.82	9.88	10.20	9.80	10.30	114"	120"	114"
	48"	114"	35.4	53.1	67.2	72.0	5'-6"	1'-4"	13'-0"	2'-2"	1'-6"	2'-2"	7'-0"	7'-2"	4'-10"	5'-11"	9.36	8.15	8.17	8.28	8.48	9.20	9.27	9.52	10.02	10.08	10.40	10.00	10.50	120"	126"	120"
	50"	120"	37.2	55.8	69.6	74.4	5'-8"	1'-4"	13'-6"	2'-2"	1'-6"	2'-2"	7'-2"	7'-4"	4'-10"	5'-11"	9.66	8.45	8.47	8.58	8.78	9.50	9.57	9.82	10.32	10.38	10.70	10.30	10.80	126"	132"	126"
	52"	126"	39.0	58.5	72.0	76.8	6'-0"	1'-4"	14'-0"	2'-2"	1'-6"	2'-2"	7'-4"	7'-6"	4'-10"	5'-11"	9.96	8.75	8.77	8.88	9.08	9.80	9.87	10.12	10.62	10.68	11.00	10.60	11.10	132"	138"	132"
	54"	132"	40.8	61.2	74.4	79.2	6'-2"	1'-4"	14'-6"	2'-2"	1'-6"	2'-2"	7'-6"	7'-8"	4'-10"	5'-11"	10.26	9.05	9.07	9.18	9.38	10.10	10.17	10.42	10.92	10.98	11.30	10.90	11.40	138"	144"	138"
	56"	138"	42.6	63.9	76.8	81.6	6'-4"	1'-4"	15'-0"	2'-2"	1'-6"	2'-2"	7'-8"	8'-0"	4'-10"	5'-11"	10.56	9.35	9.37	9.48	9.68	10.40	10.47	10.72	11.22	11.28	11.60	11.20	11.70	144"	150"	144"
	58"	144"	44.4	66.6	79.2	84.0	6'-6"	1'-4"	15'-6"	2'-2"	1'-6"	2'-2"	8'-0"	8'-2"	4'-10"	5'-11"	10.86	9.65	9.67	9.78	9.98	10.70	10.77	11.02	11.52	11.58	11.90	11.50	12.00	150"	156"	150"
	60"	150"	46.2	69.3	81.6	86.4	6'-8"	1'-4"	16'-0"	2'-2"	1'-6"	2'-2"	8'-2"	8'-4"	4'-10"	5'-11"	11.16	9.95	9.97	10.08	10.28	11.00	11.07	11.32	11.82	11.88	12.20	11.80	12.30	156"	162"	156"
	62"	156"	48.0	72.0	84.0	88.8	7'-0"	1'-4"	16'-6"	2'-2"	1'-6"	2'-2"	8'-4"	8'-6"	4'-10"	5'-11"	11.46	10.25	10.27	10.38	10.58	11.30	11.37	11.62	12.12	12.18	12.50	12.10	12.60	162"	168"	162"
	64"	162"	49.8	74.7	86.4	91.2	7'-2"	1'-4"	17'-0"	2'-2"	1'-6"	2'-2"	8'-6"	8'-8"	4'-10"	5'-11"	11.76	10.55	10.57	10.68	10.88	11.60	11.67	11.92	12.42	12.48	12.80	12.40	12.90	168"	174"	168"
	66"	168"	51.6	77.4	88.8	93.6	7'-4"	1'-4"	17'-6"	2'-2"	1'-6"	2'-2"	8'-8"	9'-0"	4'-10"	5'-11"	12.06	10.85	10.87	10.98	11.18	11.90	11.97	12.22	12.72	12.78	13.10	12.70	13.20	174"	180"	174"
	68"	174"	53.4	80.1	91.2	96.0	7'-6"	1'-4"	18'-0"	2'-2"	1'-6"	2'-2"	9'-0"	9'-2"	4'-10"	5'-11"	12.36	11.15	11.17	11.28	11.48	12.20	12.27	12.52	13.02	13.08	13.40	13.00	13.50	180"	186"	180"
	70"	180"	55.2	82.8	93.6	98.4	7'-8"	1'-4"	18'-6"	2'-2"	1'-6"	2'-2"	9'-2"	9'-4"	4'-10"	5'-11"	12.66	11.45	11.47	11.58	11.78	12.50	12.57	12.82	13.32	13.38	13.70	13.30	13.80	186"	192"	186"
	72"	186"	57.0	85.5	96.0	100.8	8'-0"	1'-4"	19'-0"	2'-2"	1'-6"	2'-2"	9'-4"	9'-6"	4'-10"	5'-11"	12.96	11.75	11.77	11.88	12.08	12.80	12.87	13.12	13.62	13.68	13.95	13.55	14.05	192"	198"	192"
	74"	192"	58.8	88.2	98.4	103.2	8'-2"	1'-4"	19'-6"	2'-2"	1'-6"	2'-2"	9'-6"	9'-8"	4'-10"	5'-11"	13.26	12.05	12.07	12.18	12.38	13.10	13.17	13.42	13.92	13.98	14.25	13.85	14.35	198"	204"	198"
	76"	198"	60.6	90.9	100.8	105.6	8'-4"	1'-4"	20'-0"	2'-2"	1'-6"	2'-2"	9'-8"	10'-0"	4'-10"	5'-11"	13.56	12.35	12.37	12.48	12.68	13.40	13.47	13.72	14.22	14.28	14.55	14.15	14.65	204"	210"	204"
	78"	204"	62.4	93.6	103.2	108.0	8'-6"	1'-4"	20'-6"	2'-2"	1'-6"	2'-2"	10'-0"	10'-2"	4'-10"	5'-11"	13.86	12.65	12.67	12.78	12.98	13.70	13.77	14.02	14.52	14.58	14.85	14.45	14.95	210"	216"	210"
	80"	210"	64.2	96.3	105.6	110.4	8'-8"	1'-4"	21'-0"	2'-2"	1'-6"	2'-2"	10'-2"	10'-4"	4'-10"	5'-11"	14.16	12.95	12.97	13.08	13.28	14.00	14.07	14.32	14.82	14.88	15.15	14.75	15.25	216"	222"	216"
	82"	216"	66.0	99.0	108.0	112.8	9'-0"	1'-4"	21'-6"	2'-2"	1'-6"	2'-2"	10'-4"	10'-6"	4'-10"	5'-11"	14.46	13.25	13.27	13.38	13.58	14.30	14.37	14.62	15.12	15.18	15.45	15.05	15.55	222"	228"	222"
	84"	222"	67.8	101.7	110.4	115.2	9'-2"	1'-4"	22'-0"	2'-2"	1'-6"	2'-2"	10'-6"	10'-8"	4'-10"	5'-11"	14.76	13.55	13.57	13.68	13.88	14.60	14.67	14.92	15.42	15.48	15.75	15.35	15.85	228"	234"	228"
	86"	228"	69.6	104.4	112.8	117.6	9'-4"	1'-4"	22'-6"	2'-2"	1'-6"	2'-2"	10'-8"	11'-0"	4'-10"	5'-11"	15.06	13.85	13.87	13.98	14.18	14.90	14.97	15.22	15.72	15.78	16.05	15.65	16.15	234"	240"	234"
	88"	234"	71.4	107.1	115.2	120.0	9'-6"	1'-4"	23'-0"	2'-2"	1'-6"	2'-2"	11'-0"	11'-2"	4'-10"	5'-11"	15.36	14.15	14.17	14.28	14.48	15.20	15.27	15.52	16.02	16.08	16.35	15.95	16.45	240"	246"	240"
	90"	240"	73.2	109.8	117.6	122.4	9'-8"	1'-4"	23'-6"	2'-2"	1'-6"	2'-2"	11'-2"	11'-4"	4'-10"	5'-11"	15.66	14.45	14.47	14.58	14.78	15.50	15.57	15.82	16.32	16.38	16.65	16.25	16.75	246"	252"	246"
	92"	246"	75.0	112.5	120.0	124.8	10'-0"	1'-4"	24'-0"	2'-2"	1'-6"	2'-2"	11'-4"	11'-6"	4'-10"	5'-11"	15.96	14.75	14.77	14.88	15.08	15.80	15.87	16.12	16.62	16.68	16.95	16.55	17.05	252"	258"	252"
	94"	252"	76.8	115.2	122.4	127.2	10'-2"	1'-4"	24'-6"	2'-2"	1'-6"	2'-2"	11'-6"	11'-																		

NOTES:

1. Dimension X is calculated as: X = Y * SEC α.

2. Select tabular quantities using skew values as follows:

Skew to Pipe	Use Tabulated Value
0° to 5°	0°
6° to 15°	15°
16° to 30°	30°
31° or over	45°

CONCRETE AND METAL PIPE TABLES

STRAIGHT CONCRETE ENDWALLS
SINGLE AND MULTIPLE PIPE

INDEX
430-030

SHEET
3 of 4

HOLATEE TRAIL & LURAY RD
DRAINAGE PROJECT
TOWN OF SOUTHWEST RANCHES, FL 33330

ENGINEERING DETAILS



CIVIL ENGINEERING | CONSTRUCTION SERVICES | GEOMATICS
814 S. MILITARY TRAIL, DEERFIELD BEACH, FLORIDA 33442
PHONE: (854) 972-3559 FAX: (854) 972-4178

SCALE: AS SHOWN
DATE: 4/25/2025
DRAWN BY: R.T.
CHECKED BY: R.P.
DESIGNED BY: R.P.

C-07

100% DESIGN DRAWINGS