

P.O. H Bento Ph (50

NEW FACILITY FOR:	DRAW
BUTLER CENTER	G1.0
CITY OF BRYANT, AR	V1.0
CIII OF DRIANI, AR	D1.0
	C1.0
	C1.1
Prepared by:	C2.0
GarNat Engineering, LLC	C3.0
Designing our client's success www.garnatengineering.com	C3.1
Box 116 3825 Mt Carmel Road	C3.2
ton, AR 72018 Bryant, AR 72022	C4.0
501) 408-4650 Fx (888) 900-3068	L1.0
BENTON CARROLL BOONE MARION BAXTER FULTON CLAY	L1.1
WASHINGTON MADISON WASHINGTON MEWTON SEARCY STONE WISSISSIPPI	ARDO
CRAWFORD JOHNSON POPE VAN BUREN CLEBURNE JACKSON POINSETT	CG-1
SCOTT VELL SCOTT ORIGINAL CONCERNMENT OF THE ST. FRANCIS	DR-1
POLK NON IOMER I ARKANSAS PHILLIPS	FPC-9
SEVIER HEMPSTEAD UITLE RIVER UITLE RIVER	FPC-9E
MILLER LAFAYETTE COLUMBIA UNION ASHLEY	PCC-1
ARKANSAS	PCP-1
ARKANSAS Venner *** Williams REGISTERED GarNat	TEC-1
PROFESSIONAL ENGINEER No. 2174 No. 2174	TEC-4
03-06-2023	WR-2

WING INDEX:

GENERAL NOTES

BUTLER CENTER SUBDIVISION - FINAL PLAT

SITE DEMO PLAN

SITE PLAN

SITE DETAILS

UTILITY PLAN

GRADING & DRAINAGE PLAN

DRAINAGE PROFILE & OUTLET STRUCTURE DETAILS

OFFSITE DRAINAGE AND BMP

EROSION CONTROL PLAN

LANDSCAPE PLAN

LANDSCAPING NOTES & DETAILS

OT STANDARD DRAWINGS:

CURBING DETAILS

DETAILS OF DRIVEWAYS & ISLANDS

DETAILS OF DROP INLETS & JUNCTION BOXES

DETAILS OF DROP INLETS (TYPE C)

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

TEMPORARY EROSION CONTROL DEVICES

TEMPORARY EROSION CONTROL DEVICES

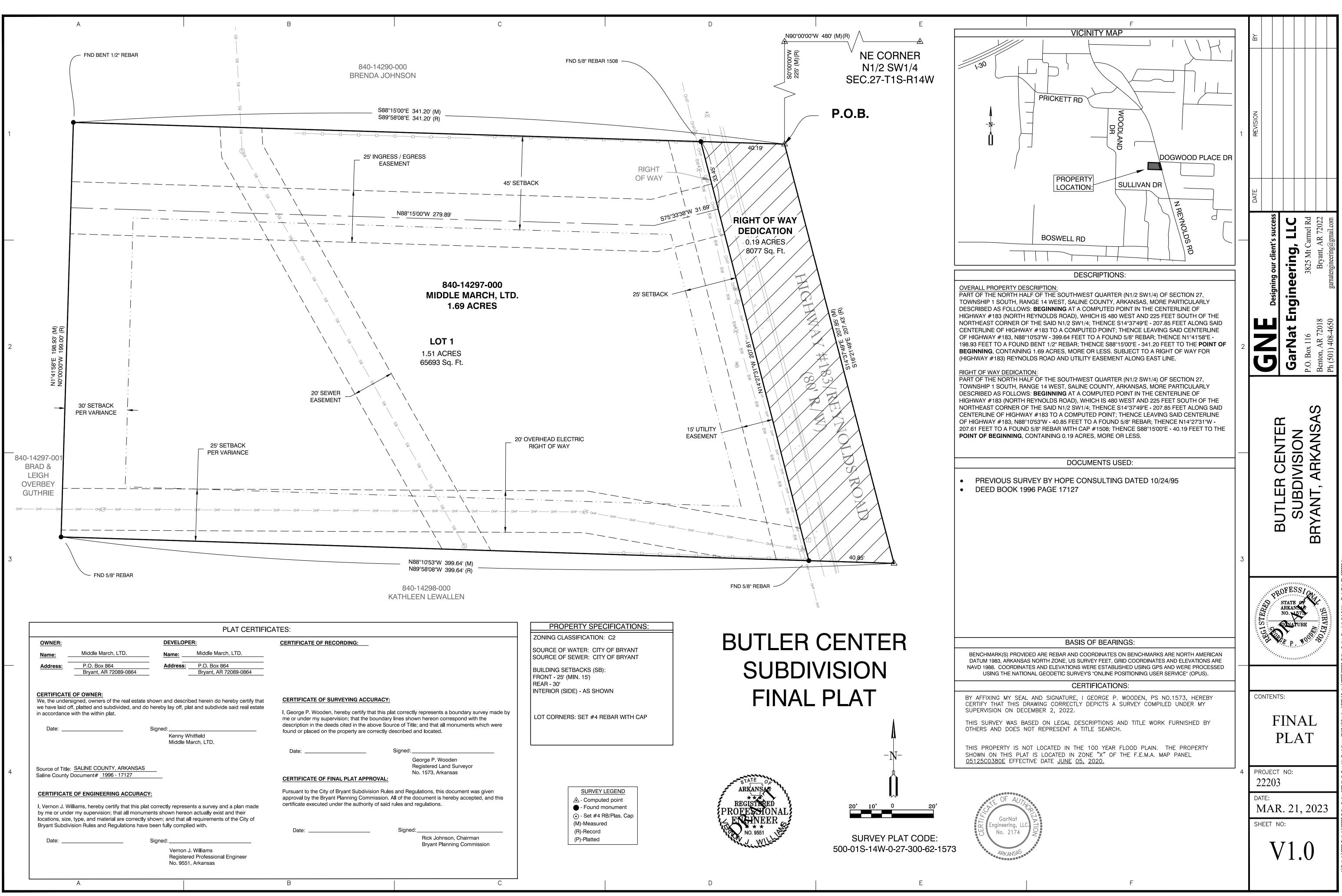
WHEELCHAIR RAMPS ALTERATIONS ONLY

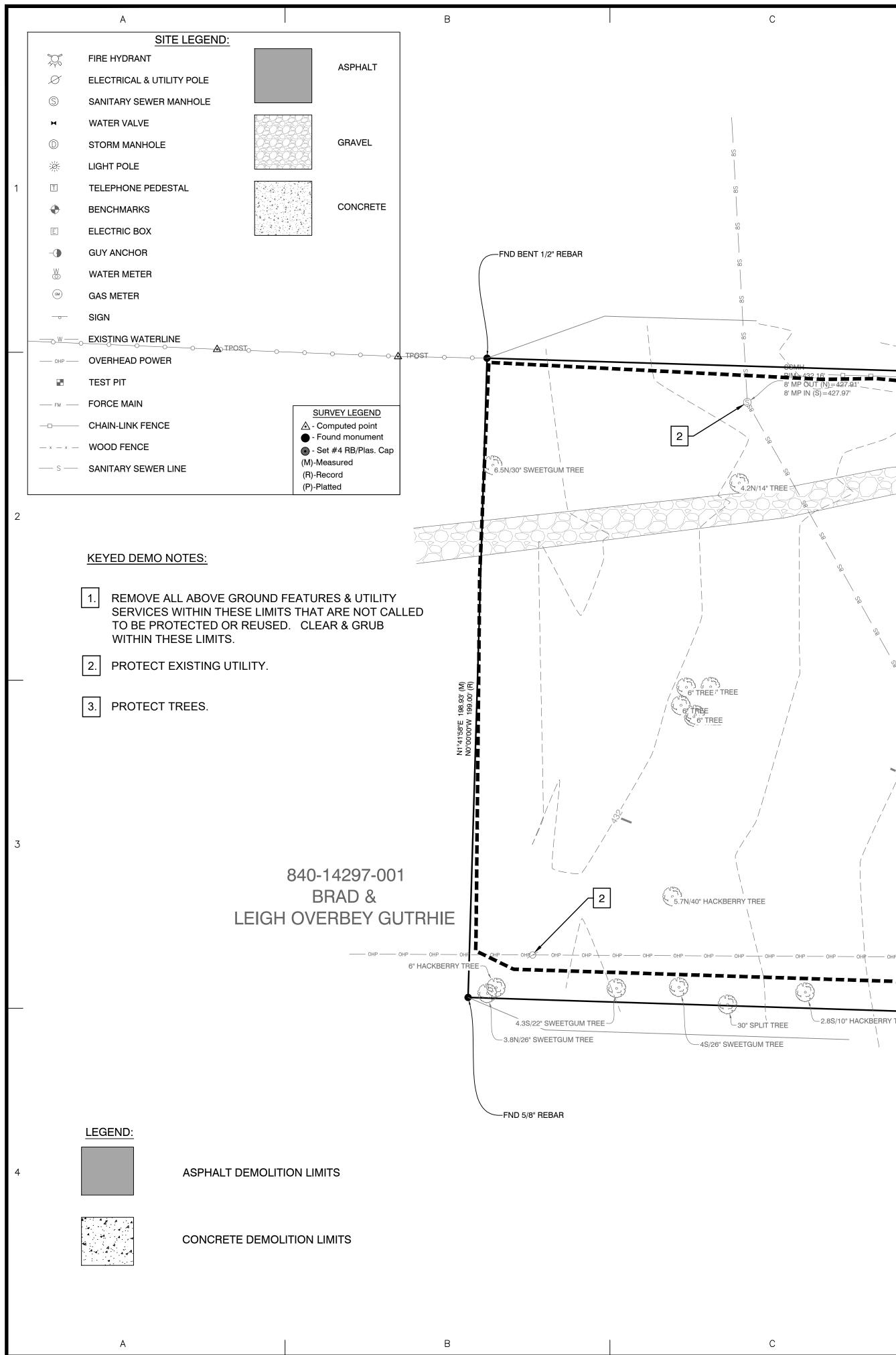
		A B
	1. SA	FETY
	1.1.	JOBSITE SAFETY IS THE SOLE AND EXCLUSIVE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
	1.2.	THIS RESPONSIBILITY COVERS THEIR OWN WORK FORCE, ALL SUBCONTRACTORS, VISITING PERSONNEL, OFFICIALS, AND THE GENERAL PUBLIC WHICH MAY HAVE ACCESS TO THE JOBSITE.
	1.3.	THE CONTRACTOR SHALL EXERCISE COMPLETE CONTROL OVER WHO HAS ACCESS TO THE JOBSITE TO ENSURE JOBSITE SAFETY.
	1.4.	THE CONTRACTOR SHALL CONFORM TO ALL SECURITY AND SAFETY REQUIREMENTS OF THE OWNER.
	1.5.	ANY SAFETY OR OTHER TRAINING REQUIRED BY THE OWNER FOR THE WORK FORCE MUST BE PROVIDED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.
_	2. PE	RMITS
	2.1.	CONTRACTOR SHALL SECURE ALL REQUIRED PERMITS AS REQUIRED BY REGULATING AUTHORITIES OR BY THE OWNER. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE TERMS AND CONDITIONS ASSOCIATED WITH EACH REQUIRED PERMIT, AS WELL AS ADHERING TO THE RULES AND REGULATIONS OF EACH REGULATING AUTHORITY
	3. CC	ONTRACT DOCUMENTS
	3.1.	ALL WORK SHALL CONFORM TO THE PLANS, THESE NOTES, AND SPECIFICATIONS IN ALL RESPECTS AND SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.
2	4. INE	DEMNITY
	4.1.	BY ACCEPTING THE CONTRACT FOR THIS WORK, THE CONTRACTOR, AT THEIR OWN EXPENSE AND RISK, HEREBY RELEASES AND AGREES TO INDEMNIFY, DEFEND AND HOLD HARMLESS THE OWNER, GARNAT ENGINEERING, THEIR OFFICERS, AGENTS, EMPLOYEES, CONSULTANTS, AND REPRESENTATIVES FOR DAMAGE TO THE PROPERTY OR INJURY TO, OR DEATH, OF ANY PERSONS, FROM ANY AND ALL CLAIMS, DEMANDS, ACTIONS OF ANY KIND WHATSOEVER ARISING OUT OF AND IN CONNECTION WITH THE AGREEMENT OR PROSECUTION OF WORK UNDER IT, WHETHER SUCH CLAIMS, DEMANDS, ACTIONS, OR LIABILITY ARE CAUSED BY THE CONTRACTOR, IT'S AGENTS, EMPLOYEES, SUBCONTRACTORS, PRODUCTS INSTALLED ON THE PROJECT OR CAUSED BY ANY OTHER PARTY.
	WITH TH	ONSTRUCTION PROCEDURES, MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE HE CURRENT EDITIONS OF THE FOLLOWING STANDARDS UNLESS OTHERWISE MODIFIED ON AWINGS OR IN THESE NOTES OR SPECIFICATIONS.
	5.1.	STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION - ARKANSAS HIGHWAY AND TRANSPORTATION DEPARTMENT
	5.2.	INTERNATIONAL BUILDING CODE
3	5.3.	ACI 315 MANUAL OF STANDARD PRACTICES FOR DETAILING REINFORCED CONCRETE STRUCTURES
	5.4.	CRSI RECOMMENDED PRACTICE FOR PLACING REINFORCING STEEL.
	5.5.	CITY OF BRYANT STANDARD SPECIFICATIONS.
	5.6.	LATEST EDITIONS OF AWWA, ASTM, ADH, AND TEN STATES STANDARDS.
	6. SIT	ſE
	6.1.	CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTION OF ALL PROPERTY CORNERS.
	6.2.	CONTRACTOR IS NOT TO PERFORM WORK BEYOND THE DESIGNATED WORK LIMITS WITHOUT FIRST OBTAINING WRITTEN AUTHORIZATION FROM THE PROJECT ENGINEER OR OWNER.
	6.3.	CONTRACTOR IS RESPONSIBLE FOR REPAIRING THE DAMAGE DONE TO ANY EXISTING ITEM DURING CONSTRUCTION SUCH AS BUT NOT LIMITED TO: DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURB, ETC. REPAIRS SHALL BE EQUAL TO, OR BETTER THAN EXISTING CONDITIONS.
4	6.4.	CONTRACTOR TO REMOVE OR RELOCATE, WHEN APPLICABLE, ALL ITEMS, SHOWN TO BE REMOVED OR RELOCATED AND NOT SHOWN WITHIN CONSTRUCTION LIMITS AND WHERE REQUIRED TO ALLOW FOR NEW CONSTRUCTION AS SHOWN.
	6.5.	CONTRACTOR TO ADJUST ALL EXISTING AND PROPOSED MANHOLES, VALVE BOXES, ETC. TO FINISH GRADE, WHERE REQUIRED.
	7. ST	RUCTURES
	7.1.	ALL STORM STRUCTURES SHALL HAVE A SMOOTH UNIFORM POURED MORTAR INVERT IN

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	C D	E	F	
- 0			THE CONTRACTOR IS TO MEET ALL ENVIRONMENTAL REQUIREMENTS OF THE OWNER AND ANY REGULATORY AGENCY HAVING AUTHORITY OVER THIS SITE.	
7.2.	BEDDING FOR STORM STRUCTURES SHALL CONSIST OF A MINIMUM OF 6-INCHES OF COMPACTED #57 STONE ON TOP OF COMPACTED SUBGRADE.		THE CONTRACTOR IS TO UTILIZE BEST MANAGEMENT PRACTICES (BMP'S) FOR CONTROL OF EROSION DURING ALL CONSTRUCTION PHASES OF THIS PROJECT.	
7.3.	AREAS EXPOSED BY EXCAVATION OR STRIPPING AND ON WHICH SUBGRADE PREPARATIONS ARE TO BE PERFORMED SHALL BE SCARIFIED TO MINIMUM DEPTH OF 0'-8" AND COMPACTED TO MINIMUM OF 95% OPTIMUM DENSITY. ANY AREAS THAT FAIL COMPACTION ARE TO BE STABLIZED AS DIRECTED BY THE ENGINEER.	12.3.	MININUM BMP'S REQUIRED FOR THE PROJECT ARE LISTED ON SHEET THESE PLANS. CONTRACTOR SHALL PROVIDE THESE BMP'S AND ANY OTHERS REQUIRED FOR THE PROJECT.	L REVISION 1
	RIOR TO PLACING FILL IN LOW AREAS, SUCH AS PREVIOUSLY EXISTING CREEKS, PONDS, OR PERFORM FOLLOWING PROCEDURES:		CONTRACTOR SHALL KEEP WORK AREA CLEAN AND FREE OF ACCUMULATED TRASH AND DEBRIS. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING MEASURES TO AVOID TRACKING OF MUD, DIRT, ROCKS, AND DEBRIS ONTO AREAS OUTSIDE THE	
8.1.	DRAIN WATER OUT BY GRAVITY WITH DITCH HAVING FLOW LINE LOWER THAN LOWEST ELEVATION IN LOW AREA. IF DRAINAGE CANNOT BE PERFORMED BY GRAVITY DITCH, USE ADEQUATE PUMP TO OBTAIN THE SAME RESULTS.		AVOID TRACKING OF MUD, DIRT, ROCKS, AND DEBRIS ONTO AREAS OUTSIDE THE PROJECT AREA. CONTRACTOR SHALL CLEAN PAVEMENTS WHEN NECESSARY OR AS OTHERWISE DIRECTED, AND SHALL CONTROL DUST BY SWEEPING AND WATERING AS NEEDED. DE-TRACKING MAY BE REQUIRED AT ALL ENTRANCES.	DATE
8.2.	AFTER DRAINAGE OF LOW AREA IS COMPLETE, REMOVE MULCH, MUD DEBRIS, AND OTHER UNSUITABLE MATERIAL BY USING ACCEPTABLE EQUIPMENT AND METHODS THAT		L SITE CONDITIONS	LC LC 2022
• UT	WILL KEEP NATURAL SOILS UNDERLYING LOW AREA DRY AND UNDISTURBED.		ALL DISTURBED AREAS NOT RECEIVING PAVEMENT OR LANDSCAPING SHALL HAVE VEGETATION ESTABLISHED AT TIME OF FINAL INSPECTION.	ent's su g, Ll It Carme ing@gma
9. UTI 9.1.	AN ATTEMPT HAS BEEN MADE TO APPROXIMATELY LOCATE UTILITIES ON THE		ALL UNSURFACED AREAS DISTURBED BY GRADING OPERATIONS SHALL RECEIVE 4 INCHES OF TOPSOIL. CONTRACTOR SHALL APPLY STABILIZATION FABRIC TO ALL SLOPE	ng our cli Serin Bryan atengineerin
	DRAWINGS.		2H:1V OR STEEPER UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.	Designing Ginee ₃
9.2.	UTILITIES SHOWN ON THE DRAWINGS WERE LOCATED BY VISUAL OBSERVATION, AND BY TRANSCRIBING FROM RECORD MAPS AND PLANS.		ALL CUT OR FILL SLOPES SHALL BE 3H:1V OR FLATTER UNLESS OTHERWISE NOTED.	
9.3.	NO EXCAVATIONS WERE MADE TO CONFIRM SUB-SURFACE UTILITIES. NEITHER THE SURVEYOR NOR PROJECT ENGINEER GUARANTEES THAT ALL UTILITIES HAVE BEEN		NATURAL AND PAVED AREAS	C C C C C C C C C C C C C C C C C C C
9.4.	SHOWN, OR THAT THOSE SHOWN ARE FULLY ACCURATE.		UPON PARTIAL OR FINAL COMPLETION OF GRADING WORK, SPREAD TOPSOIL, SEED, FERTILIZER, AND MULCH IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND THE STORM WATER POLLUTION PREVENTION PLAN.	P.O. Box Benton, Ph (501)
	OF EXISTING UTILITIES THAT ARE DAMAGED AS A RESULT OF WORK OF THIS PROJECT.			
9.5.	CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING AND PROPERLY DISCONNECTING, ABANDONING, RELOCATING, AND/OR ADJUSTING ALL AFFECTED UTILITIES WITHIN THE PROJECT AREA.		FFIC CONTROL	
9.6.	ALL UTILITY WORK SHALL BE COORDINATED AND EXECUTED IN ACCORDANCE WITH THE OWNER AND/OR GOVERNING UTILITY COMPANY CODES, SPECIFICATIONS, STANDARDS, AND REQUIREMENTS.		OF TRAFFIC PLANS. SUBCONSULTANT WHO SPECIALIZES IN MAINTENANCE OF TRAFFIC PLANS. SUBCONSULTANT SHALL PREPARE A MAINTENANCE OF TRAFFIC PLAN FOR THE PROJECT THAT COMPLIES WITH THE REQUIREMENTS OF MUTCD AND ALL APPLICABLE AUTHORITIES HAVING JURISDICTION OVER ROAD RIGHT-OF-WAY. CONTRACTOR SHALL SUBMIT MAINTENANCE OF TRAFFIC PLAN TO ENGINEER FOR APPROVAL PRIOR TO BEGINNING WORK.	ITY FOR: ENTER 'ANT, AR
9.7.	DESIGN AND ALIGNMENT OF UNDERGROUND TELEPHONE, TV CABLE, GAS AND ELECTRIC SERVICES SHALL BE PROVIDED BY THE INDIVIDUAL UTILITIES AND ARE NOT NECESSARILY SHOWN WITH THESE PLANS. CONTRACTOR SHALL PROVIDE CONDUITS SIZED TO ACCOMMODATE UTILITY ROUTING WITH PULL STRINGS WHERE NECESSARY.			EW FACILI 3UTLER C Y OF BRY
9.8.	CONTRACTOR TO PROVIDE ALL NECESSARY APPURTENANCES NECESSARY FOR COMPLETE UTILITY SERVICES WHICH ARE NOT PROVIDED BY THE UTILITY COMPANY.			z 5
9.9.	WATER AND SEWER RELOCATIONS SHOWN SHALL COMPLY WITH THE CITY OF BRYANT'S STANDARD WATER AND SEWER SPECIFICATIONS AND DETAILS. SERVICE LINE WORK SHALL BE COMPLETED BY A LICENSED PLUMBER AND COMPLY WITH ARKANSAS PLUMBING CODE.			3
10. DIS	SPOSAL OF DEBRIS, WASTE OR SPOIL			ARKANSAS.
10.1.	BURNING OF DEBRIS AND WASTE IS NOT ALLOWED. CONTRACTOR MAY BE REQUIRED TO PROPERLY HAUL AWAY AND DISPOSE OF ANY WASTE MATERIAL REMOVED FROM THE SITE.			REGISTERED PROFESSIONAL C ENGINEER
10.2.	ANY WASTE OR SPOIL MATERIAL WHICH IS EXCAVATED FROM THE JOB SITE IS TO BE DISPOSED OF AS DIRECTED BY THE ENGINEER OR OWNER.			VI WILL
10.3.	REMOVAL AND DISPOSAL OF EXCAVATED WASTE MATERIAL IS CONSIDERED SUBSIDIARY TO ALL OTHER ITEMS IN THE PROJECT, AND WILL NOT BE PAID FOR SEPARATELY.			03-06-2023 CONTENTS:
10.4.	CONTRACTOR SHALL FOLLOW ALL LOCAL, STATE AND FEDERAL REGULATIONS IN DISPOSING OF DEMOLISHED MATERIAL REMOVED FROM THIS SITE.			GENERAL SIGNAL
10.5.	CONTRACTOR SHALL REMOVE FROM SITE AND DISPOSE OF MATERIAL ENCOUNTERED IN GRADING OPERATIONS THAT, IN OPINION OF THE ENGINEER, IS UNSUITABLE OR UNDESIRABLE FOR BACKFILLING OR SUBGRADE PURPOSES. DISPOSE OF IN A MANNER SATISFACTORY TO ENGINEER. BACKFILL UNDERCUT AREAS WITH LAYERS OF SUITABLE MATERIAL AND COMPACT AS SPECIFIED HEREIN.			4 PROJECT NO:
11. SU	IBSTITUTIONS			22203
11.1.	SUBSTITUTIONS ARE NOT ALLOWED WITHOUT PRIOR APPROVAL FROM THE PROJECT ENGINEER.			FEB 2023
12. EN'	IVIRONMENTAL			
				G1.0





840-14290-000 **BRENDA JOHNSON** FND 5/8" REBAR 1508-S88°15'00"E 341.20' (M) S89%58'08"E 341.20' (R) 8' MP IN (S)=427.97 RIGHT 6S/32" PINE TREE OF WAY 4.2N/14" TREE 6.1S/38" PINE TREE 8.2S/38" PINE TREE 2 12" PEAR TREE 16"&12" TREE َنَّ 3.5N/18 SPLIT MAGNOLIA TREE 3.4N/20" HACKBERRY TREE 840-14297-000 MIDDLE MARCH, LTD. 1.69 ACRES 60.3 ์ 4N/24" HACKBERRY TREI 2 MIMOSA TREE 5N/26" CEDAR TREE 4N/12" WATER OAK TREE 32 S88°10'53"E 358.79' (M) 2.8S/16" TREE 2.8S/10" HACKBERRY TREE N88°10'53"W 399.64' (M) N89°58'08"W 399.64' (R) -30" SPLIT TREE

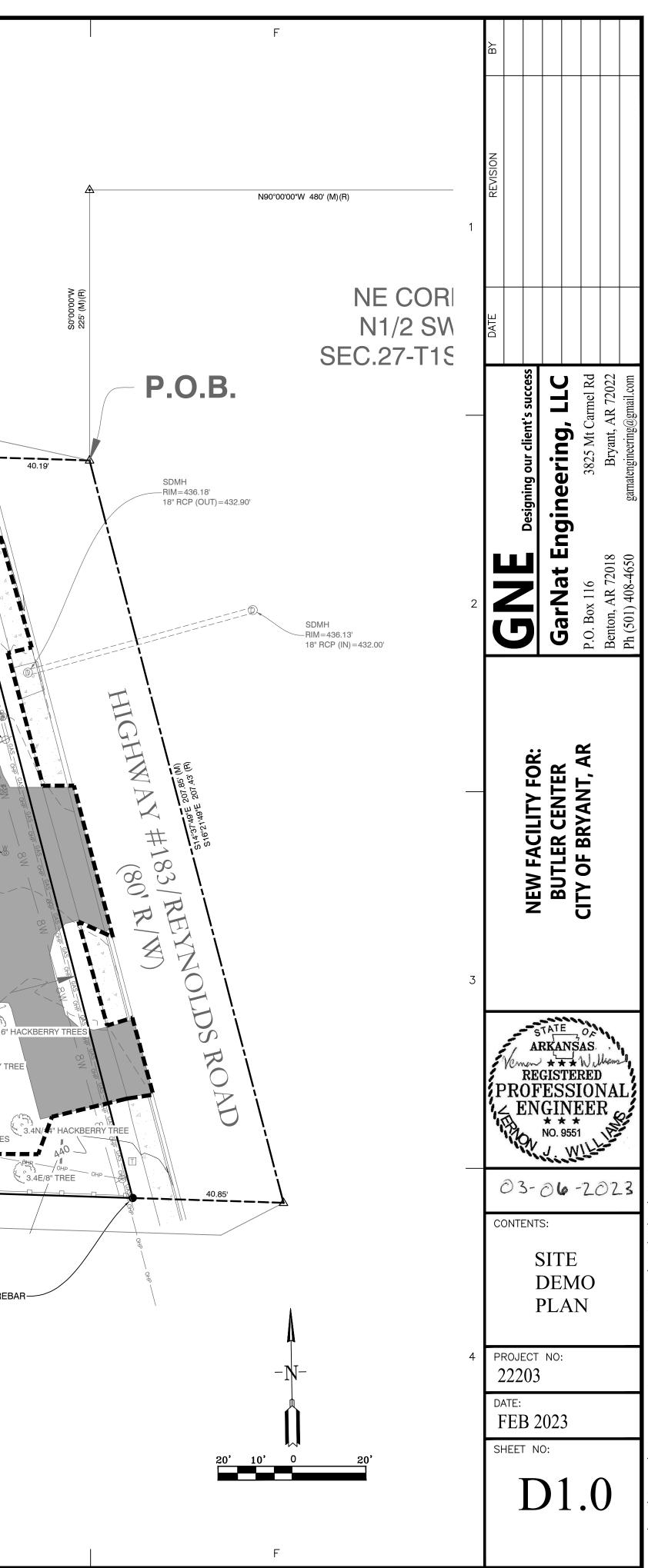
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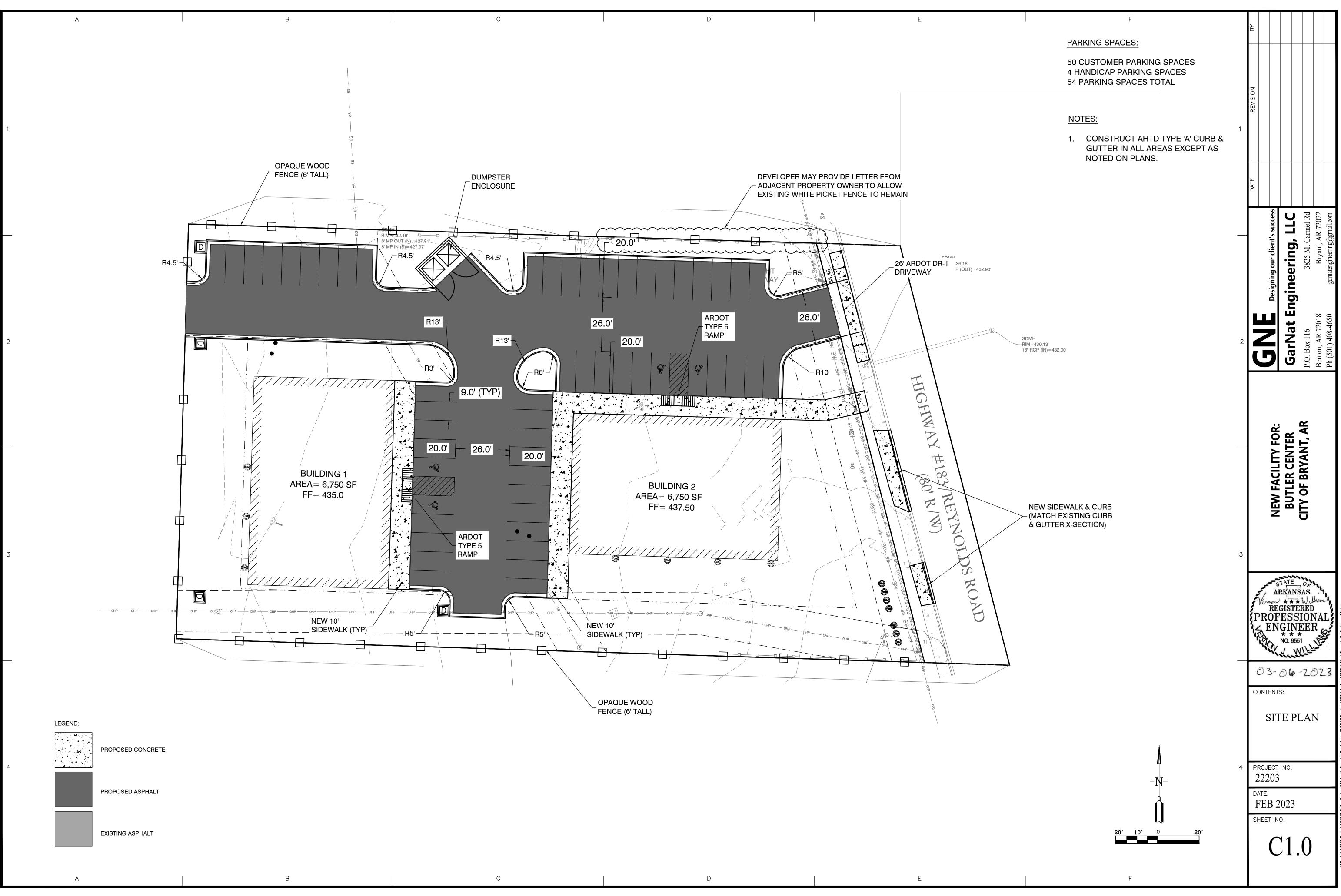
FND 5/8" REBAR-

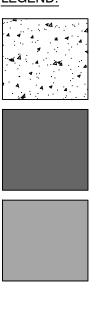
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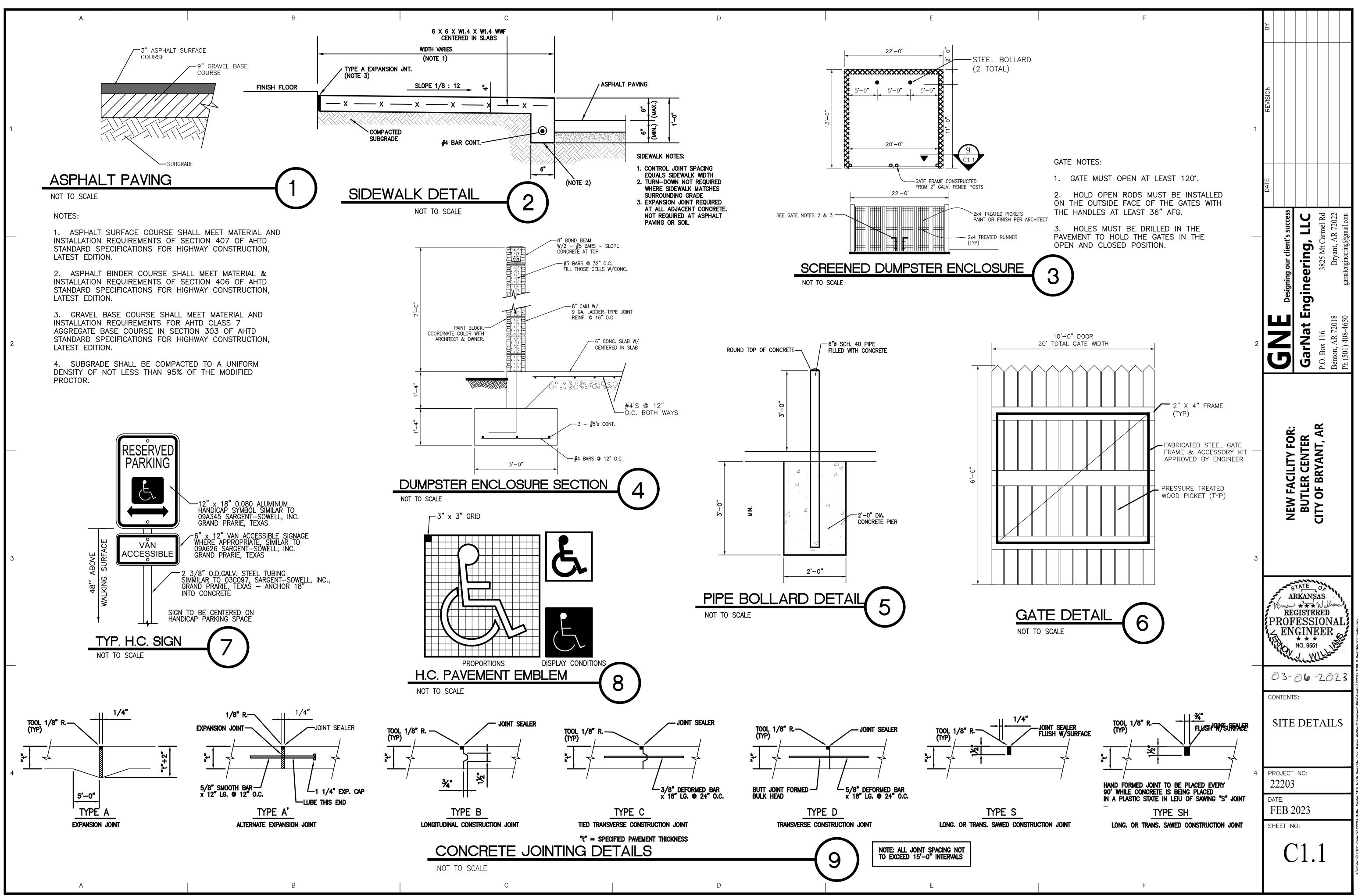
840-14298-000 KATHLEEN LEWALLEN

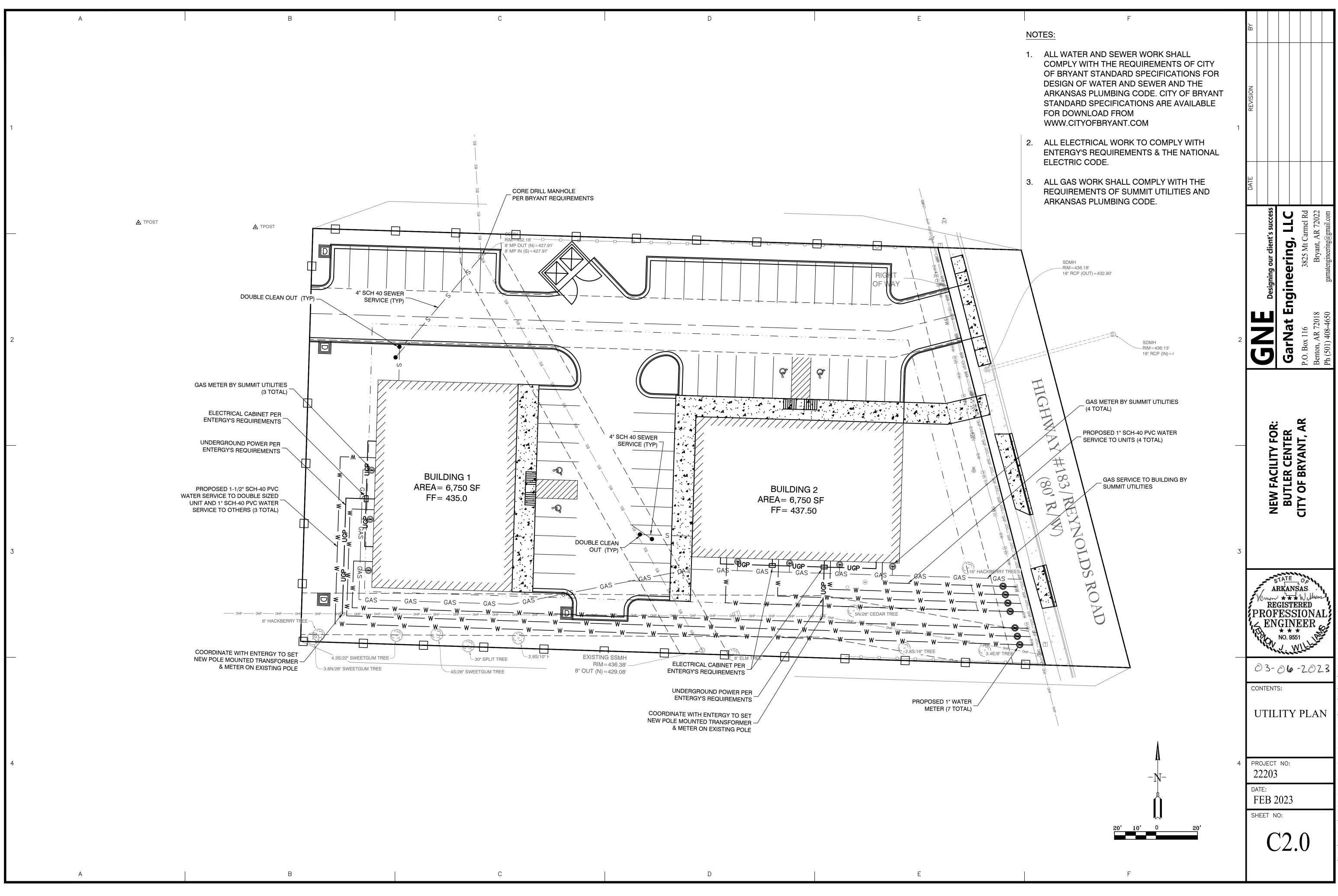
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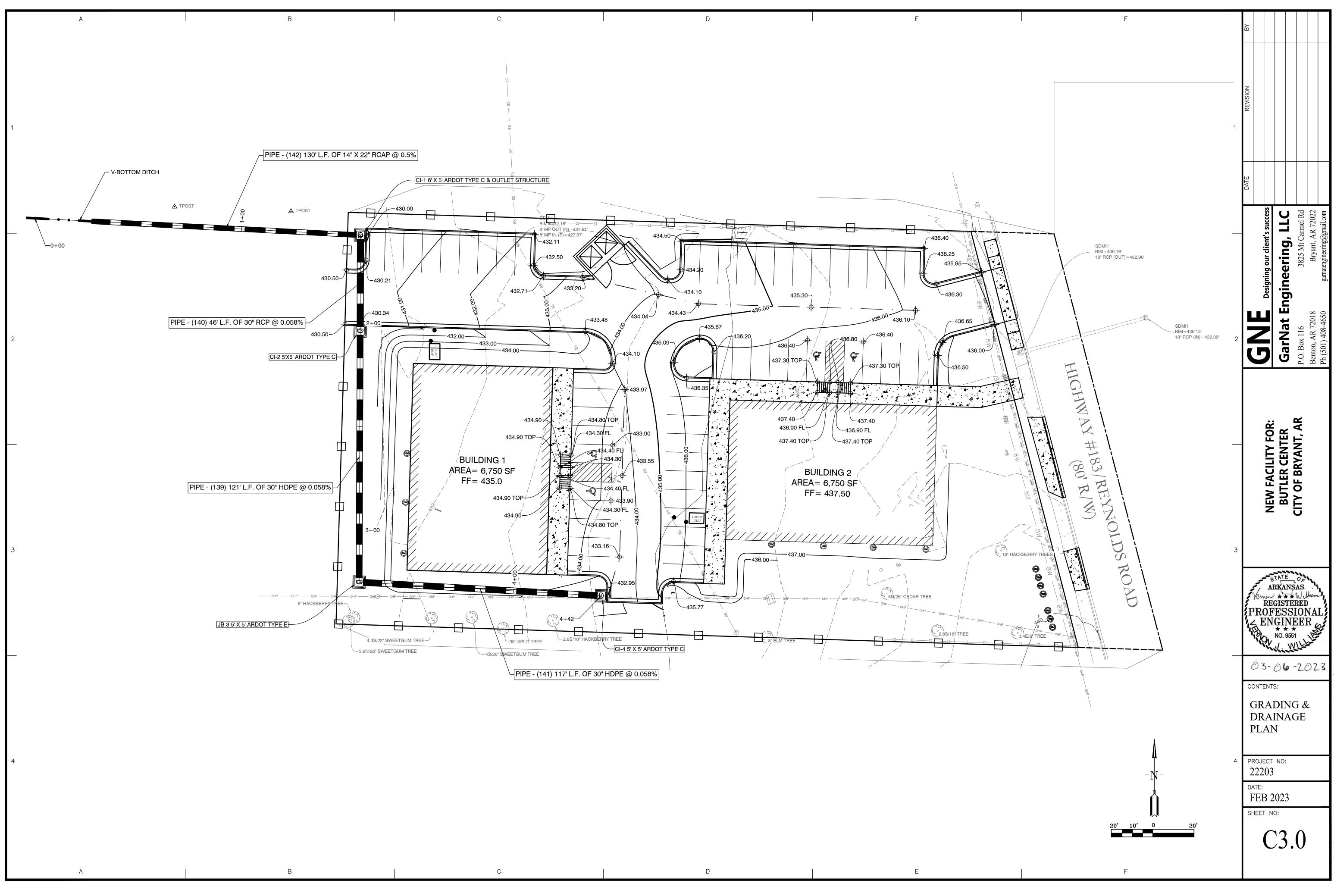


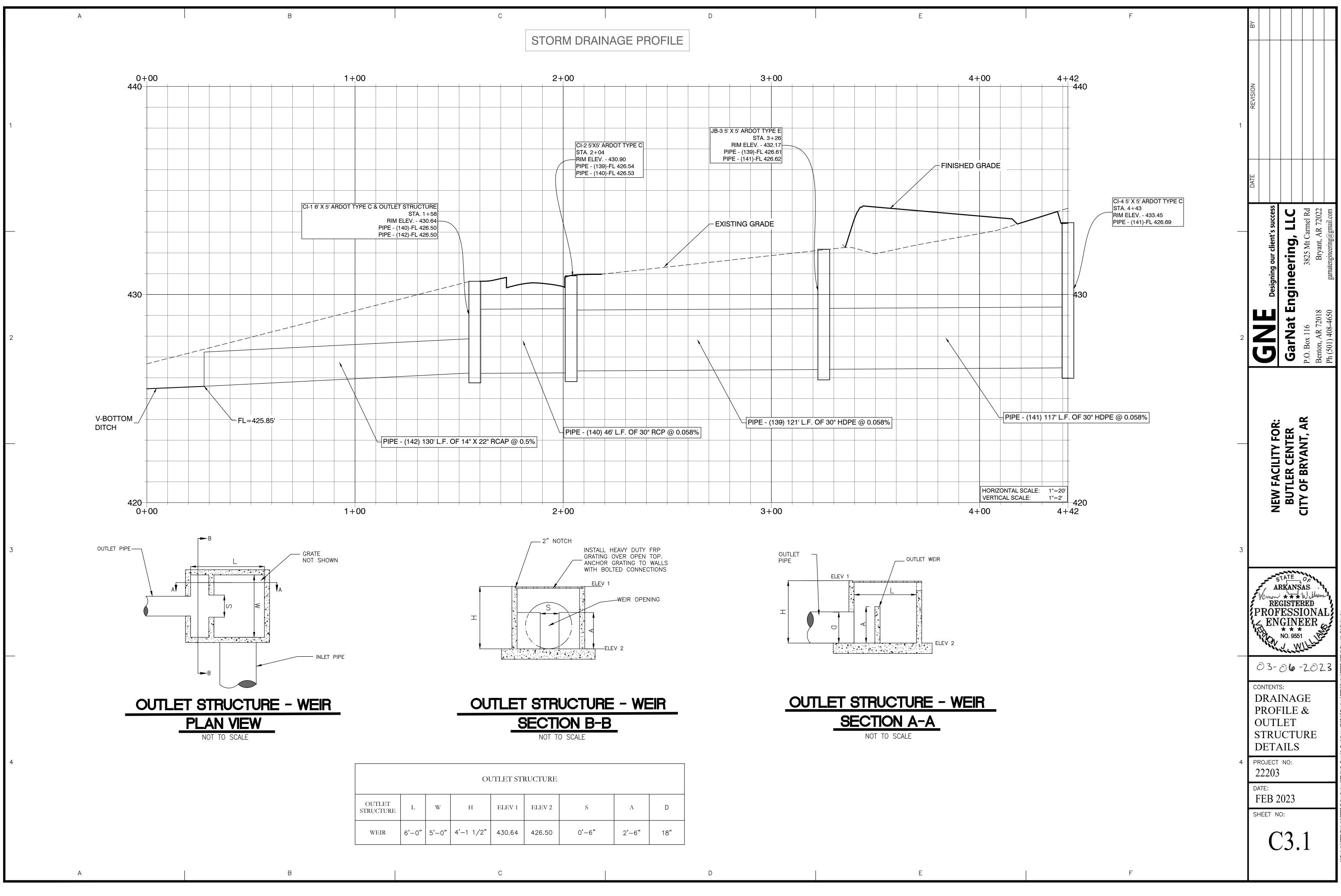










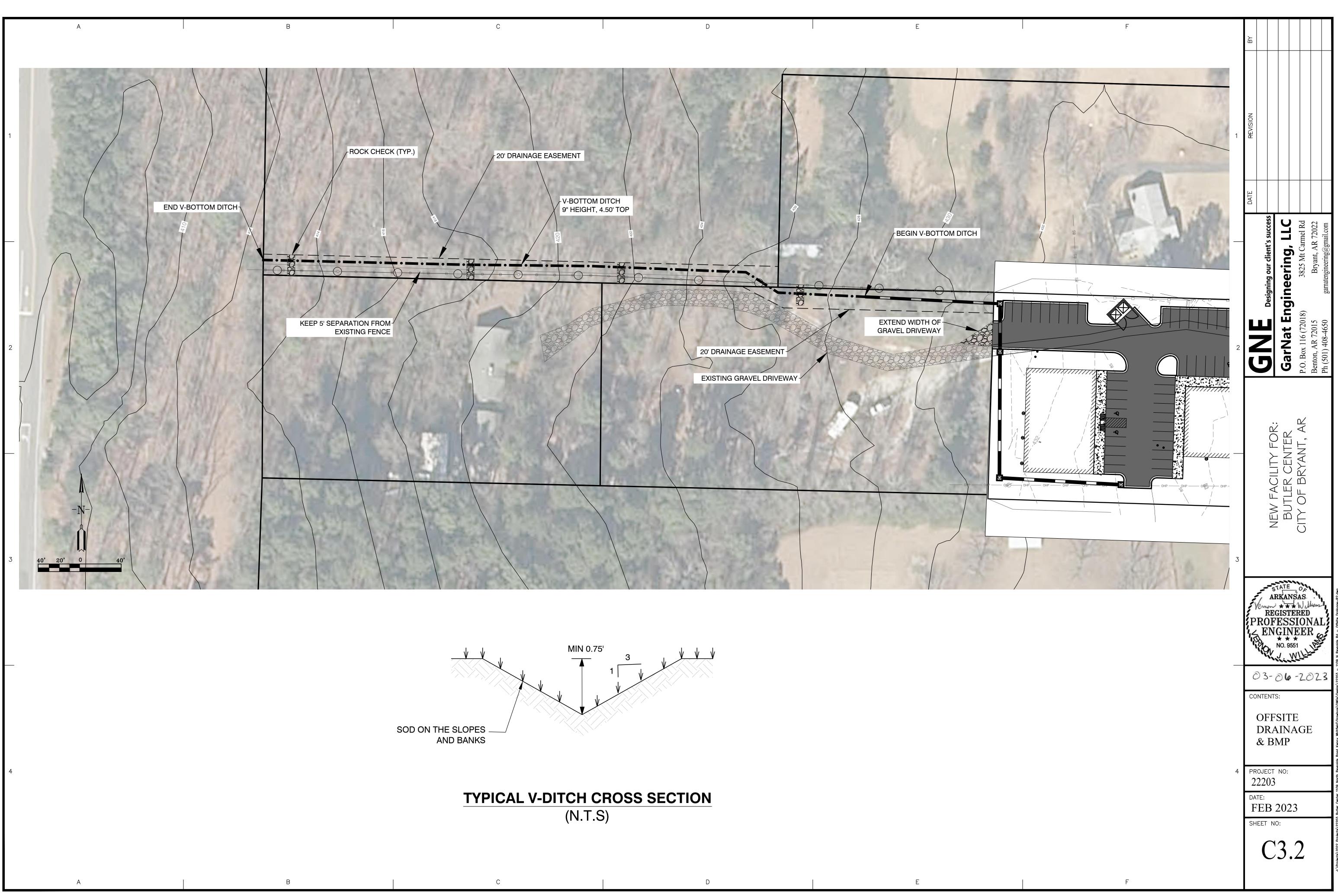


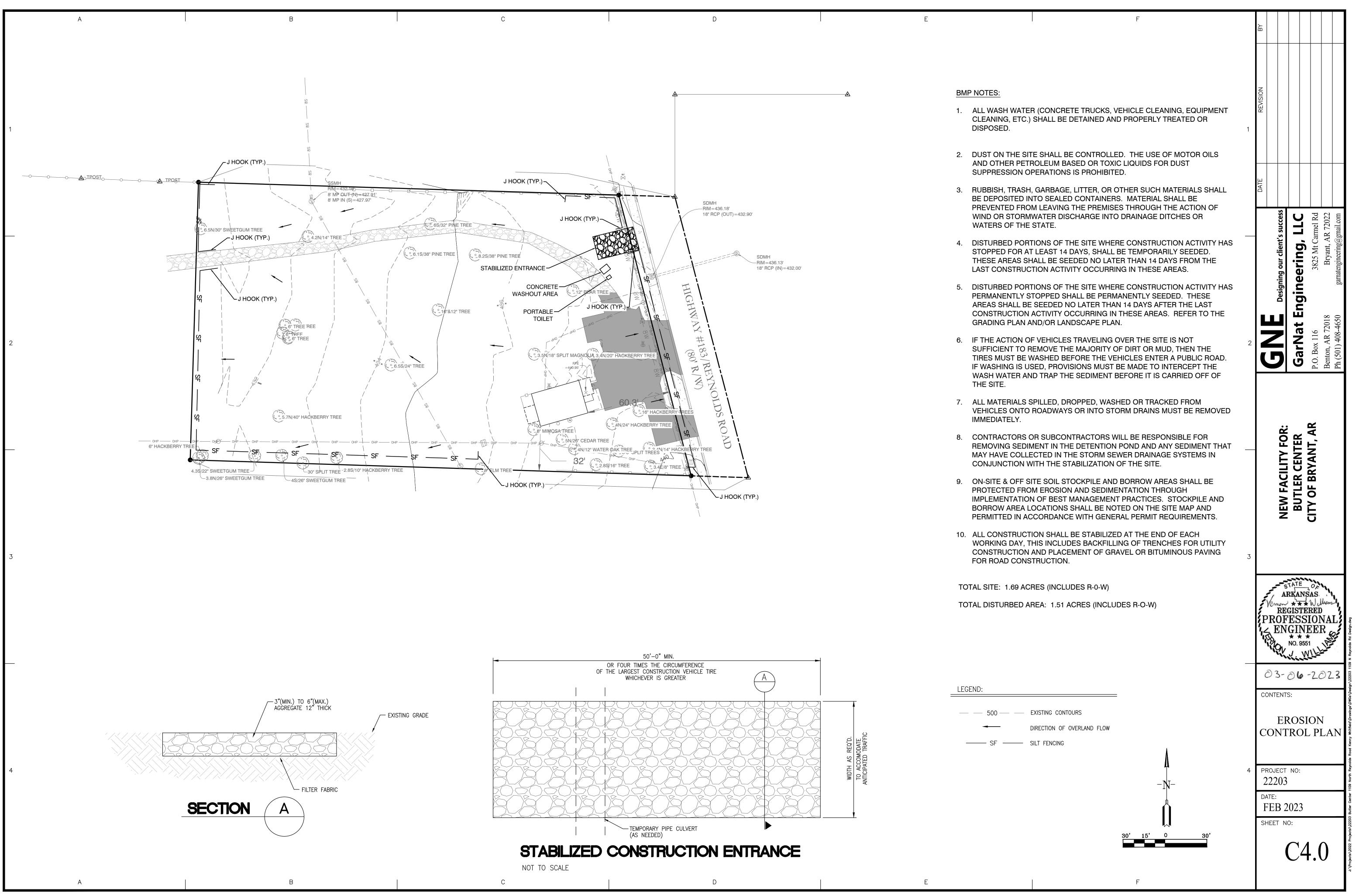


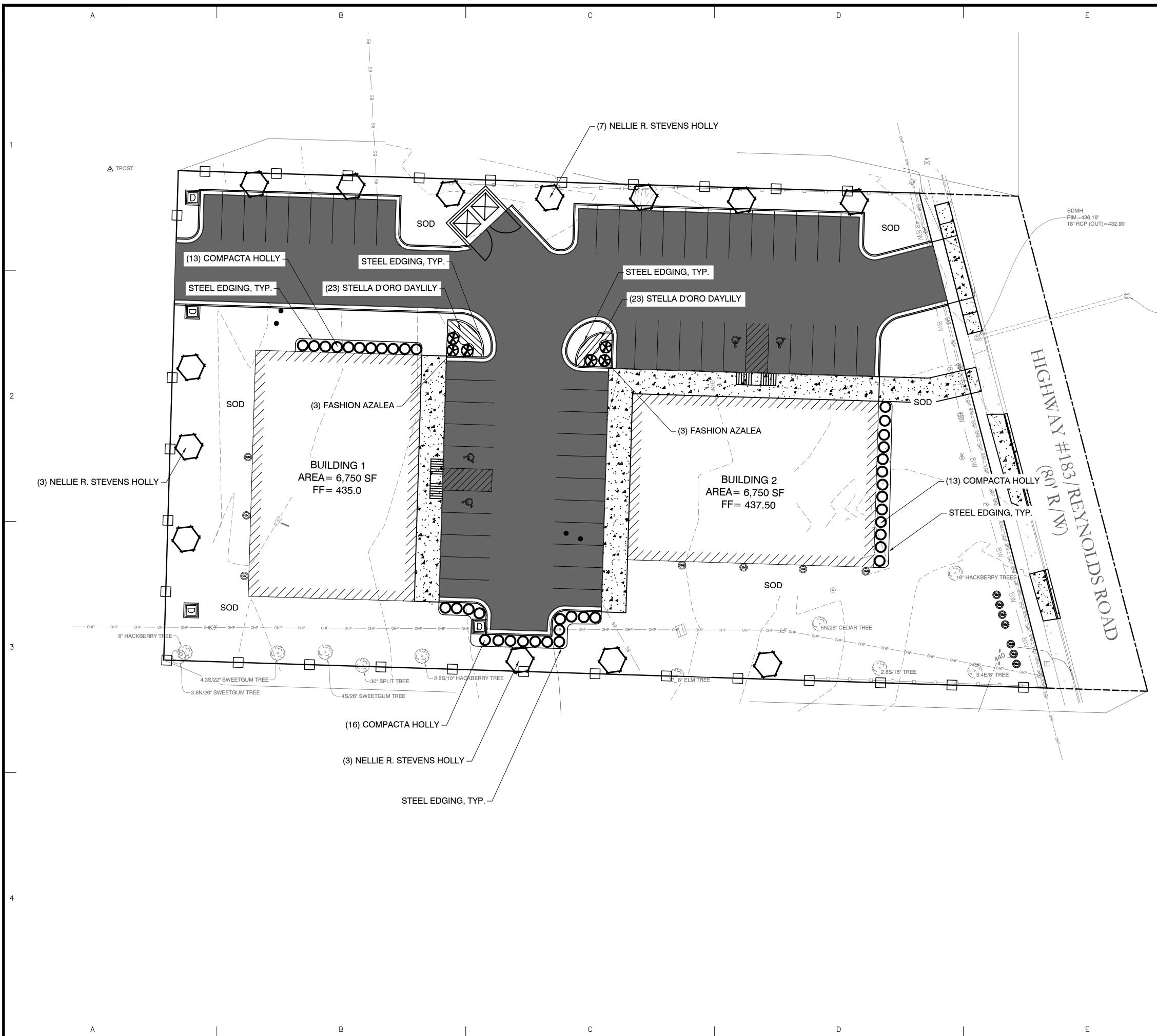
OUTLET STRUCTURE - WEIR			
SECTION B-B			
NOT TO SCALE			

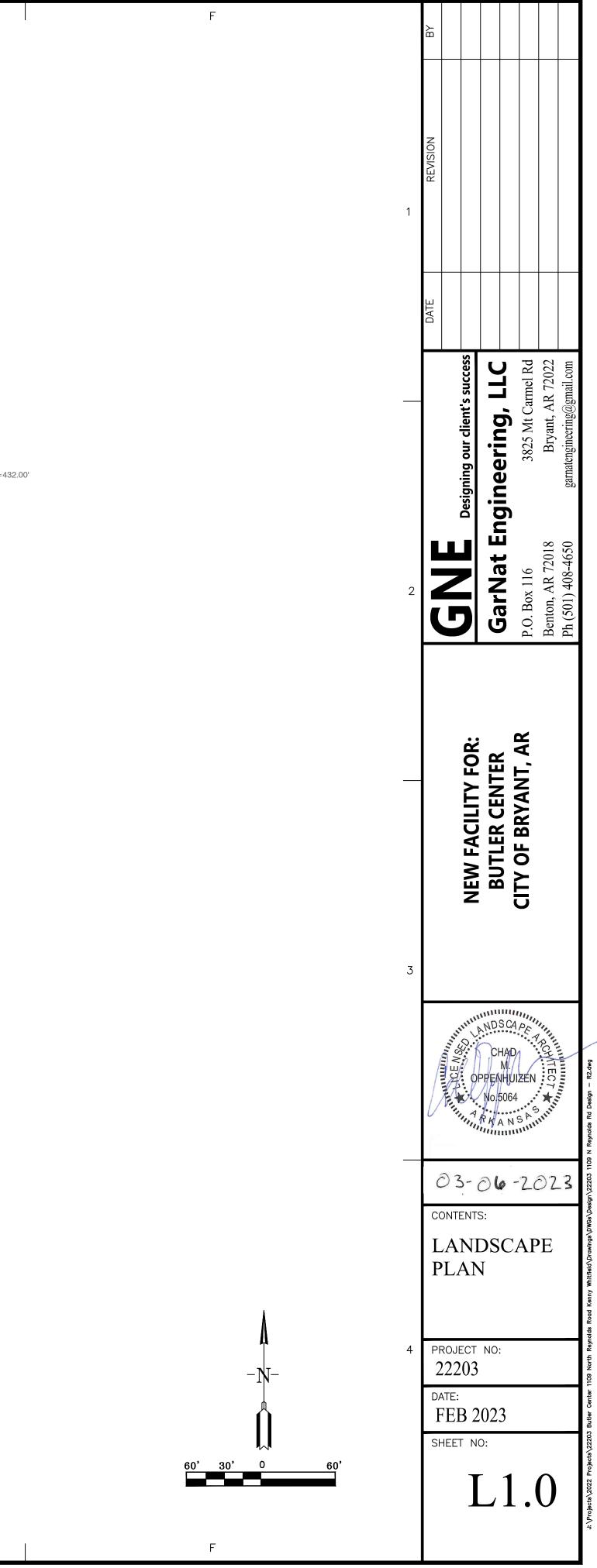
OU	JTLET STI	RUCTURE			
Н	ELEV 1	ELEV 2	S	А	D
'—1 1/2"	430.64	426.50	0'-6"	2'-6"	18"

OUTLET STRUCTURE - WEIR
SECTION A-A
NOT TO SCALE

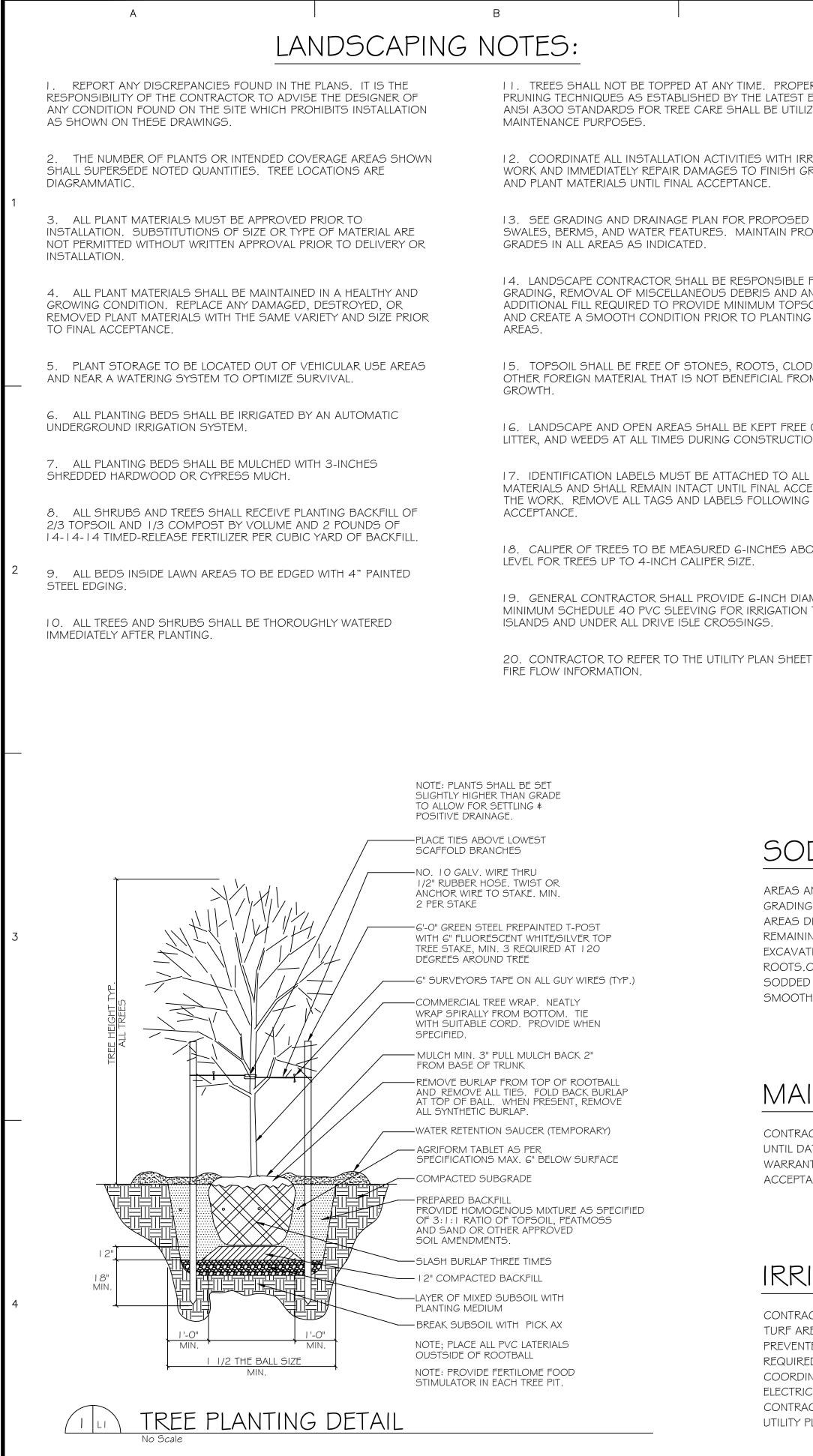






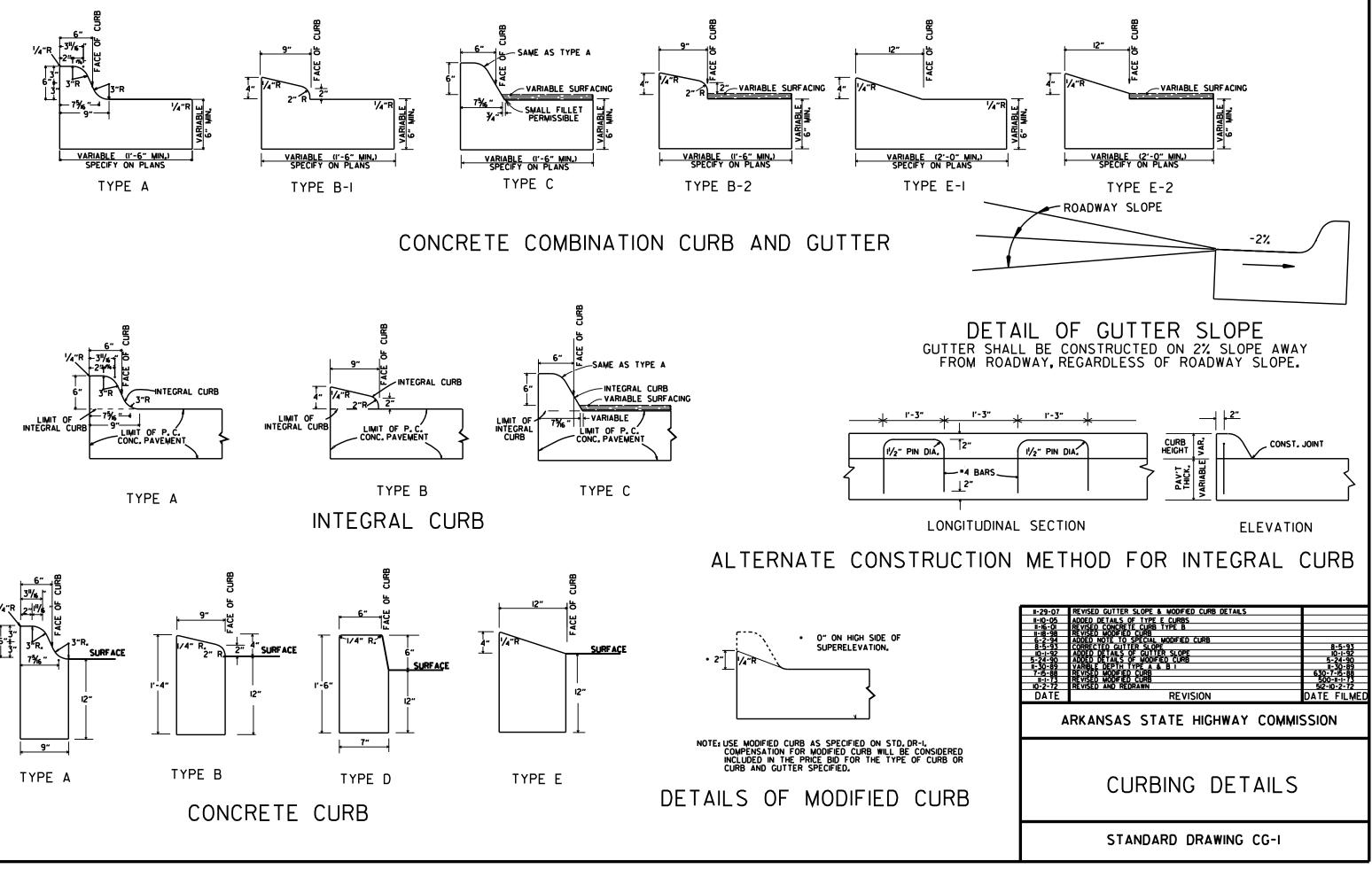


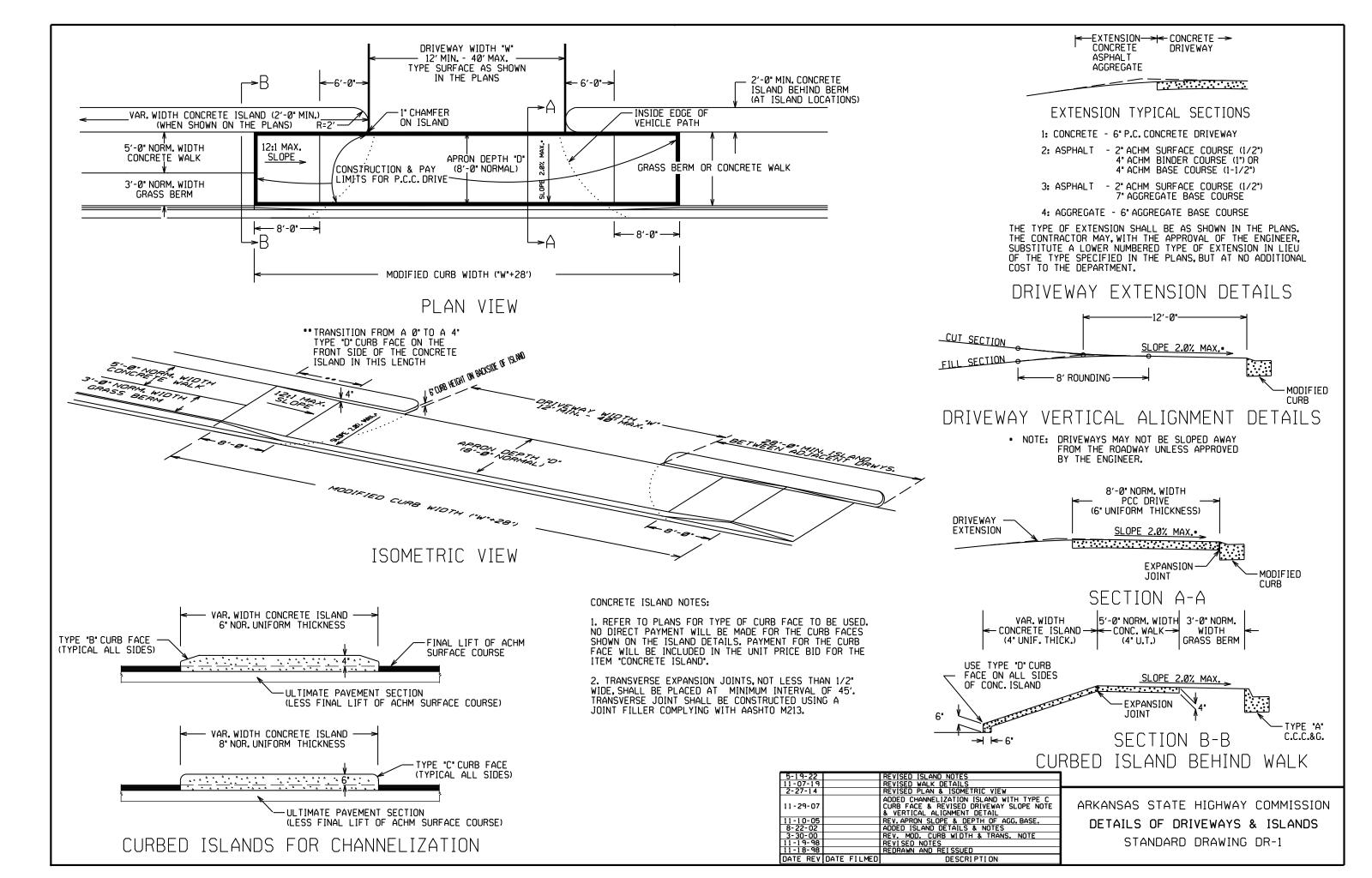
SDMH -RIM=436.13 18" RCP (IN)=432.00'

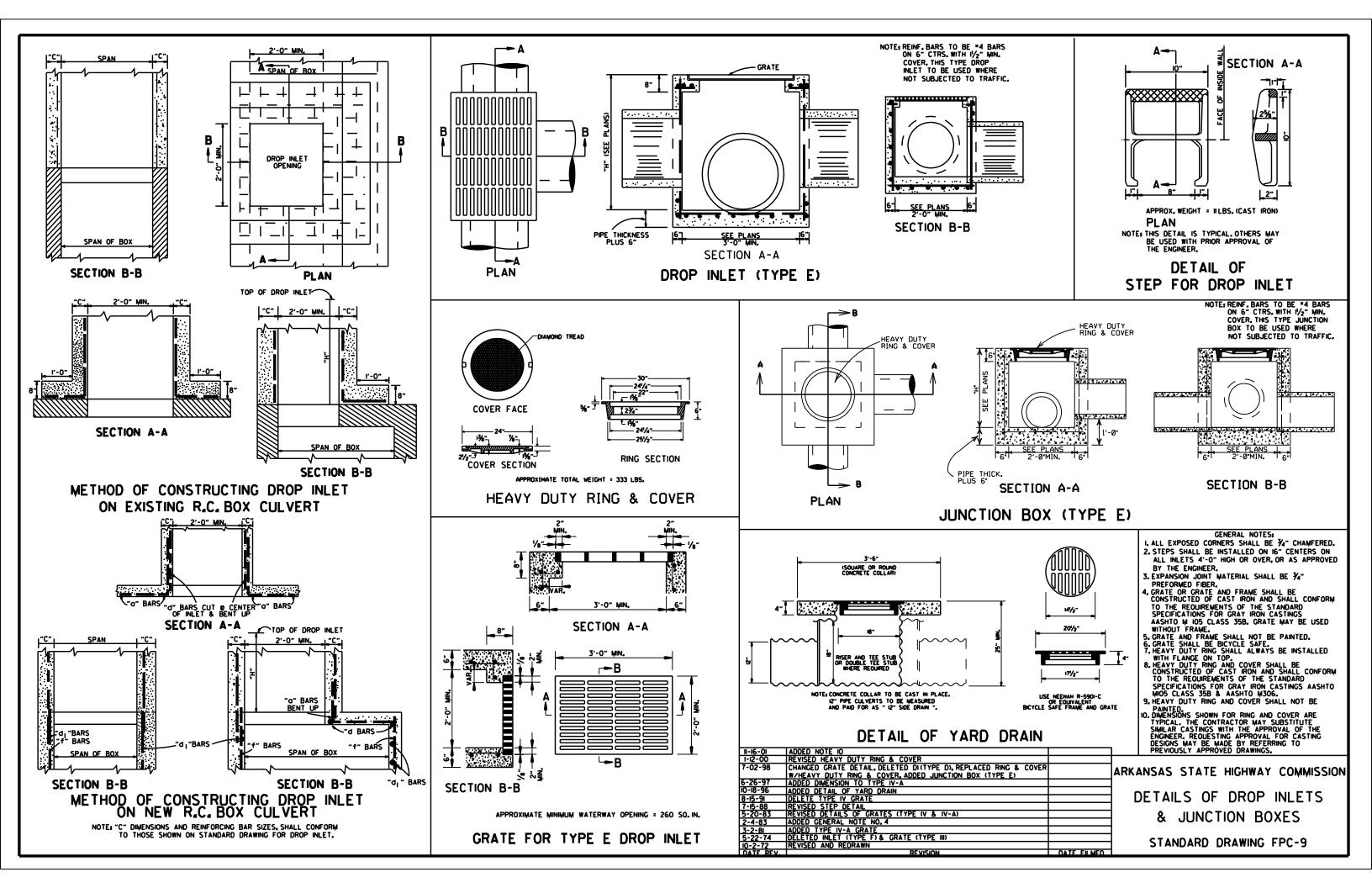


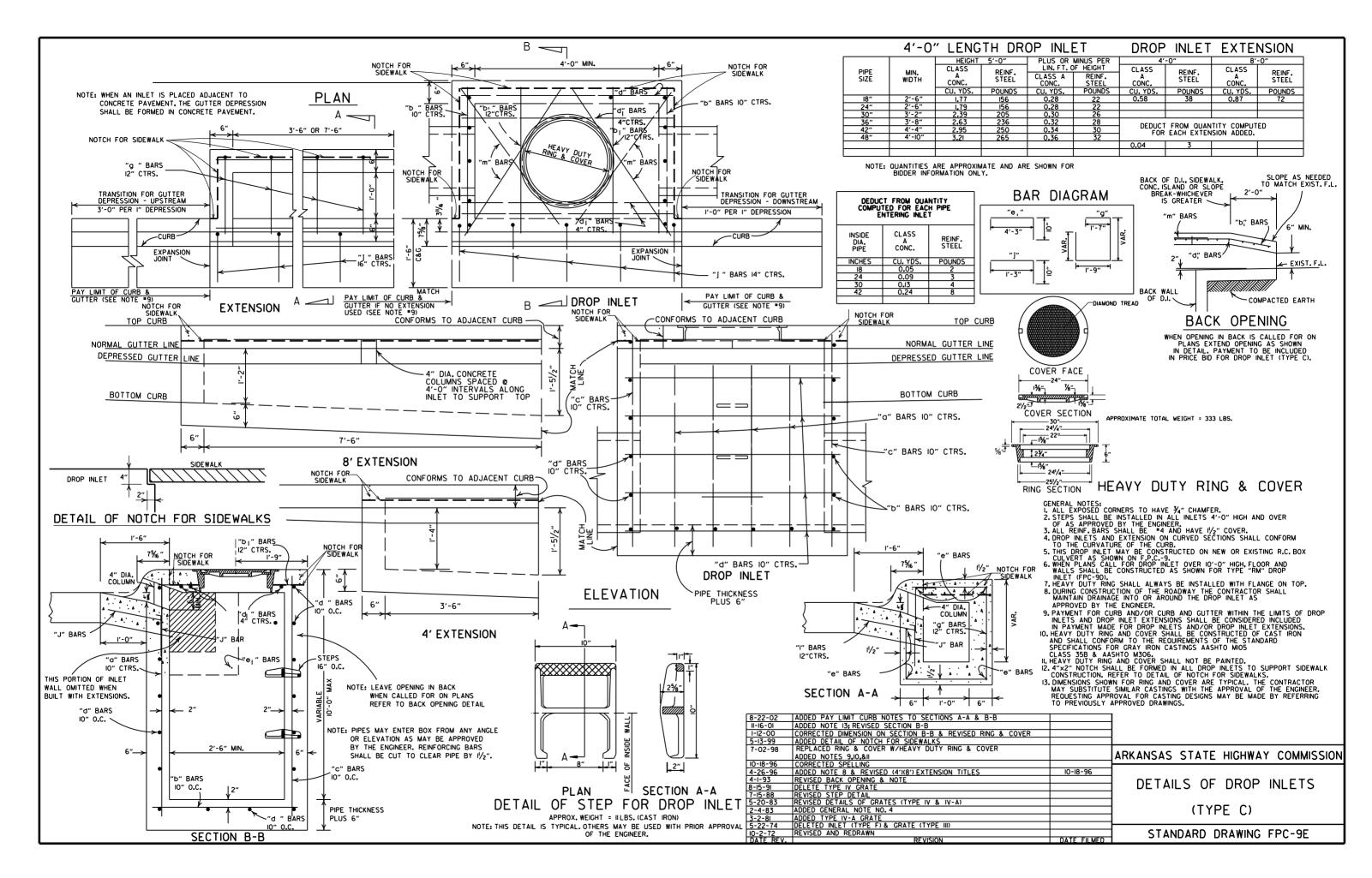
C I D	LEGEND:		E I		F	BY	
PER TREE T EDITION OF LIZED FOR			<u>S:</u>				
IRRIGATION GRADES, SOD,	\bigtriangledown	Quantity 13	Common Name/Botanical Name Nellie R. Stevens Holly Ilex x 'Nellie R. Stevens'	Size 10/15 gallon, 3-4' tall	Remarks Specimen with positive upright form and symmetrical. Well branched canopies.	LEVISION 1	
D SLOPES, ROPER FINISH E FOR FINE	0	40	Compacta Holly Ilex crentata 'Compacta'	3 gallon	Full well branched shrub with uniform shape.		
ANY GOIL DEPTHS G IN ALL	$\langle \! \rangle$	6	Fashion Azalea Rhododendron 'Fashion'	3 gallon	Full well branched shrub with uniform shape.	DATE	D22
DS, AND ANY OM PLANT		46	Stella D'Oro Daylily Hemerocallis x Stella D'oro	1 gallon	Plant 18" o.c.	client's succe	Mt Carmel ant, AR 720
E OF TRASH, ION. L PLANT CEPTANCE OF G FINAL			Bermuda Tifway 419 Cynodon Dactylon var. Tifway 419	Sod	Solid sod, all areas indicated with close knit joints	Designing our	ngineerir ³⁸²⁵ ^{Bry}
OVE GROUND							Nat E x 116 AR 72018
AMETER I TO ALL CURB						ש	P.O. Bo Benton,
DDING OF DISTURBED AREAS AND LIMITS OF SODDING ARE INDICATED BASED ON ANTICIPATED DISTURBANCE BY G OPERATIONS. CONTRACTOR TO PROVIDE ADDITIONAL SODDING IN ANY OTHER DISTURBED BY WORK UNDER THIS CONTRACT. EXCAVATE AND REMOVE ANY ING TURF AND SOIL TO A 4-INCH MINIMUM DEPTH WITHIN NEW SOD AREAS. HAND						JITY FOR-	BUTLER CENTE IY OF BRYANT
TION REQUIRED WITHIN DRIP LINES OF TREE AREAS TO AVOID DAMAGE TO EXISTING							
ATION REQUIRED WITHIN DRIP LINES OF TREE AREAS TO AVOID DAMAGE TO EXISTING .CONTRACTOR TO INSTALL MINIMUM OF 3" OF TOPSOIL TO ALL AREAS TO BE D OR SEEDED. FINE GRADE THE TOPSOIL TO ENSURE POSITIVE DRAINAGE AND A TH SURFACE FOR SOD INSTALLATION.			±		— 18" MIN. FOR PLANTS UP TO 4'-0" HIGH — GROUND LINE TO BE SAME AS AT THE NURSERY	C. C. N. C.	NDSCA PARANA CHAD M PPENHUIZEN No 5064
CONTRACTOR TO INSTALL MINIMUM OF 3" OF TOPSOIL TO ALL AREAS TO BE D OR SEEDED. FINE GRADE THE TOPSOIL TO ENSURE POSITIVE DRAINAGE AND A			BIN GIN		4'-0" HIGH — GROUND LINE TO BE SAME AS	CONTENT LAN	O O O O O O O O O O
CONTRACTOR TO INSTALL MINIMUM OF 3" OF TOPSOIL TO ALL AREAS TO BE O OR SEEDED. FINE GRADE THE TOPSOIL TO ENSURE POSITIVE DRAINAGE AND A H SURFACE FOR SOD INSTALLATION. INTENANCE AND WARRANTY ACTOR TO PROVIDE FULL MAINTENANCE OF INSTALLED LANDSCAPE AND IRRIGATION ATE OF FINAL ACCEPTANCE. ADDITIONALLY, CONTRACTOR TO PROVIDE ONE YEAR NTY FOR ALL LANDSCAPE AND IRRIGATION WORK FROM THE DATE OF FINAL			HE LANGE		4'-O" HIGH GROUND LINE TO BE SAME AS AT THE NURSERY PROVIDE MIN. 2" DEPTH OF HARDWOOD MULCH AND AS REQUIRED BY ORDINANCE. WHEN PRESENT, REMOVE BURLAP FROM TOP 1/3 OF ROOTBALL AND REMOVE TIES	CONTENT LANI	DSCAPING DSCAPING DTES & ETAILS











REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV.	SP	AN	RI	SE	
DIA.	AASHTO M 206	ARDOT NOMINAL	AASHTO M 206	ARDOT NOMINAL	
INCHES		INCHES			
15 18 21 24 30 36 42 48 54 60 72 84 90 96 108 120 132	18 22 26 281/2 361/4 43% 511/6 581/2 65 73 88 102 115 122 138 154 168%	18 22 26 29 36 44 51 59 65 73 88 102 115 122 138 154 169	11 13½ 15½ 26% 31% 40 45 54 40 45 54 62 72 77½ 87% 96%	11 14 16 23 27 31 36 40 45 54 62 77 77 87 97 107	

MORE THAN + 2 PERCENT FROM THE VALUES SPECIFIED BY AASHTO M206

MINIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

	CLASS OF PIPE			
	CLASS	III	CLASS IV	CLASS V
INSTALLATION TYPE	TYPE 1 OR 2 TYPE 3		ALL	ALL
PIPE ID (IN.)		FEE	T	
12-15	2	2.5	2	1
18-24	2.5	3	2	1
27-33	3	4	2	1
36-42	3.5	5	2	1
48	4.5	5.5	2	1
54-60	5	7	2	1
66-78	6	8	2	1
84-108	7.5	8	2	1

NOTE: FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM OF 12" OF PAVEMENT AND/OR BASE.

MINIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

	CLASS	OF PIPE	
INSTALLATION TYPE	CLASS III	CLASS IV	
	FEET		
TYPE 2 OR TYPE 3	2.5	1.5	

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

NOTE: FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM OF 12" OF PAVEMENT AND/OR BASE.

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL

ł	PIPE	DIME	NSIUNS	>
	EQUIV.	AASHT	D M 207]
	DIA.	SPAN	RISE	1
	INCHES	INC	HES]
	18	23	14	1
	24	30	19	
	27	34	22	
	30	38	24	
	33	42	27	
	36	45	29	
	39	49	32	
	42	53	34	
	48	60	38	
	54	68	43	
	60	76	48	
	66	83	53	
	72	91	58	
	78	98	63	
	84	106	68	
	THE MEA	SURED S	PAN AND R	ISE

SHALL NOT VARY MORE THAN 2 PERCENT FROM THE VALUES SPECIFIED BY AASHTO M207.

CONSTRUCTION SEQUENCE

I. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT. 2. INSTALL PIPE TO GRADE. 3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE. 4. PLACE AND COMPACT THE HAUNCH AREA UP TO THE MIDDLE OF THE PIPE. 5. COMPLETE BACKFILL ACCORDING TO SUBSECTION 606.03.(f)(I).

NOTE: HAUNCH AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF CONCRETE PIPF.

- LEGEND -

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR HAUNCH AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 5 OR CLASS 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL*
TYPE 3	AASHTO CLASSIFICATION A-1 THRU A-6 SOIL OR TYPE 1 OR 2 INSTALLATION MATERIAL

* SM-3 WILL NOT BE ALLOWED.

** MATERIALS SHALL NOT INCLUDE ORGANIC MATERIALS OR STONES LARGER THAN 3 INCHES.

MAXIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

	C	LASS OF PIP	Έ	
INSTALLATION TYPE	CLASS III	CLASS IV	CLASS V	
TIFE	FEET			
TYPE 1	21	32	50	
TYPE 2	16	25	39	
TYPE 3	12	20	30	

NOTE: IF FILL HEIGHT EXCEEDS 50 FEET, A SPECIAL DESIGN CONCRETE PIPE WILL BE REQUIRED USING TYPE 1 INSTALLATION.

MAXIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

	CLASS	OF PIPE	
INSTALLATION TYPE	CLASS III	CLASS IV	
TTFE	FEET		
TYPE 2	13	21	
TYPE 3	10	16	

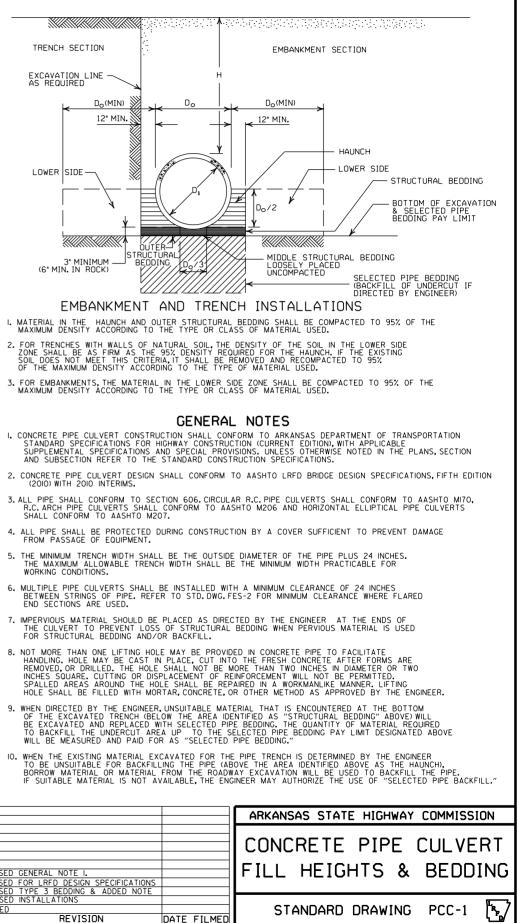
NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

TRENCH SECTION EXCAVATION LINE AS REQUIRED $D_{O}(MIN)$ 12" MIN. LOWER SIDE -3" MINIMUM (6" MIN. IN ROCK)

- (2010) WITH 2010 INTERIMS.

- WORKING CONDITIONS.
- END SECTIONS ARE USED.

	REVISED GENERAL NOTE I.
	REVISED FOR LRFD DESIGN SPECIFICATIONS
	REVISED TYPE 3 BEDDING & ADDED NOTE
3-30-00	REVISED INSTALLATIONS
11-06-97	ISSUED
DATE	REVISION



INSTALLATION TYPE	•• MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	•SELECTED MATERIALS (CLASS SM-I, SM-2 OR SM-4)

AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.

SM3 WILL NOT BE ALLOWED.

STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF HDPE PIPE.

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

	TRENCH WIDTH (FEET)		
PIPE DIAMETER	"H" < 10'-0"	"H" >OR= 10'-0"	
18"	4'-6"	4'-6"	
24"	5'-0"	6'-0"	
30″	5'-6"	7'-6"	
36"	6'-0"	9'-0"	
42"	7'-0"	10'-6"	
48″	8'-0"	12'-0"	

MINIMUM COVER FOR CONSTRUCTION LOADS

 PIPE
 18.0-50.0
 50.0-75.0
 75.0-110.0
 10.0-175.0

 DIAMETER
 (KIPS)
 (KIPS)
 (KIPS)
 (KIPS)

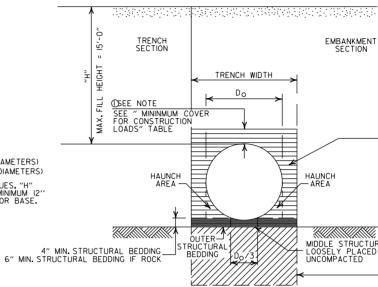
 36" OR LESS
 2'-0"
 2'-6"
 3'-0"
 3'-0"

 42" OR GREATER
 3'-0"
 3'-0"
 3'-6"
 4'-0"

MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS

MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.

(NOTE: 18" MIN. (18" - 30" DIAMETERS) 24" MIN. (36" - 48" DIAMETERS) MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

I. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

CONSTRUCTION SEQUENCE

I. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.

- 2. INSTALL PIPE TO GRADE.
- 3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
- 4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.

PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

I. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).

- 2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
- 3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
- 4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
- 5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEODING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
- 6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE, IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
- 7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
- 8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
- 9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.) B = OUTSIDE DIAMETER OF PIPE MAX. = MAXIMUM MIN. = MINIMUM

=	STRUCTURAL	BACKFILL	MATERIAL
=	UNDISTURBED	SOIL	

			ARKANSAS STATE HIGHWAY COMMISSION
			PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)
2-27-14	REVISED GENERAL NOTE I.		
12-15-11 11-17-10	REVISED GENERAL NOTES & MINIMUM COVER NOTE ISSUED		STANDARD DRAWING PCP-1
DATE	REVISION	DATE FILMED	

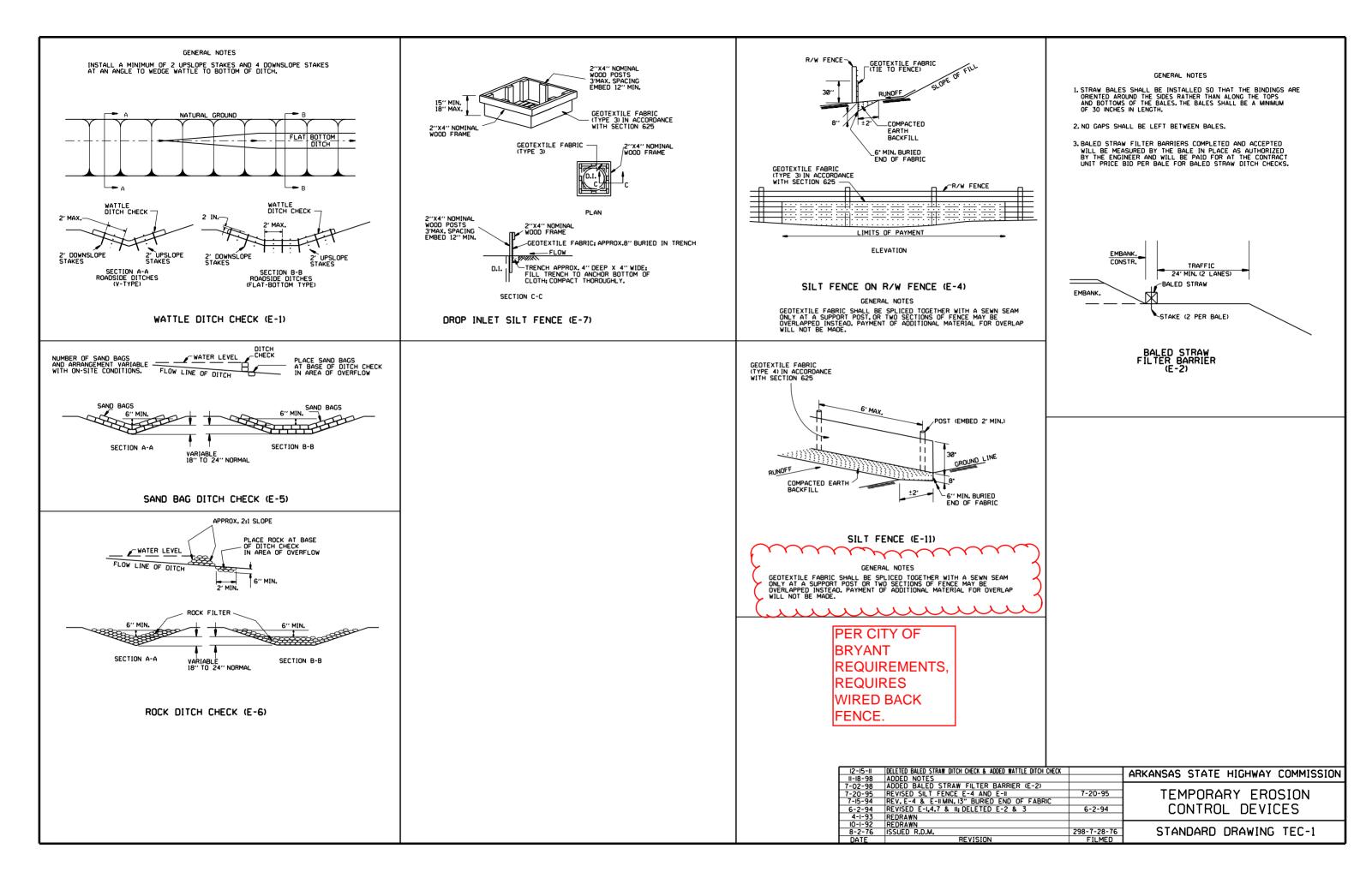
MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

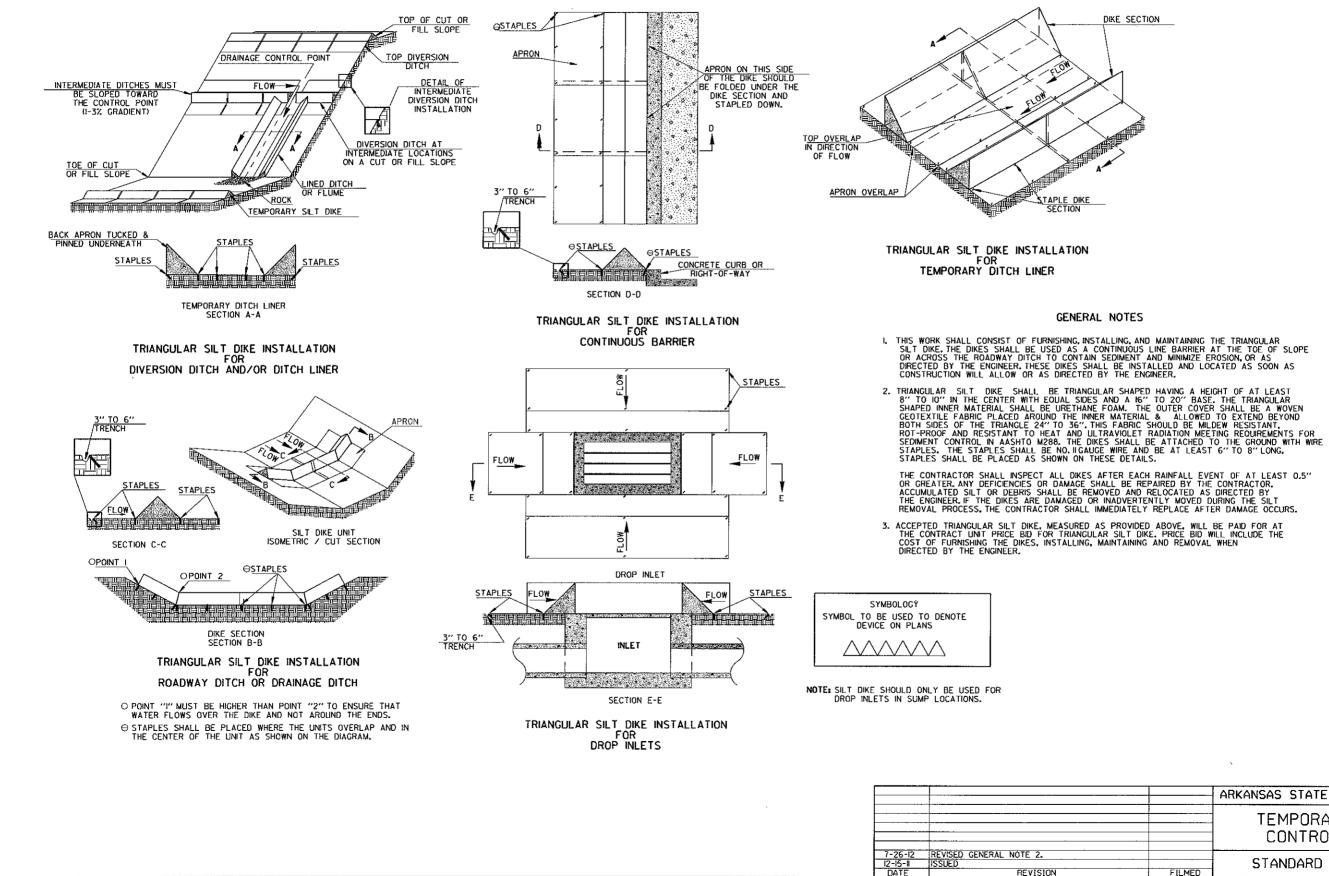
PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	l'-6"
24"	2'-0"
30"	2'-6"
36″	3'-0"
42″	3'-6"
48"	4'-0"

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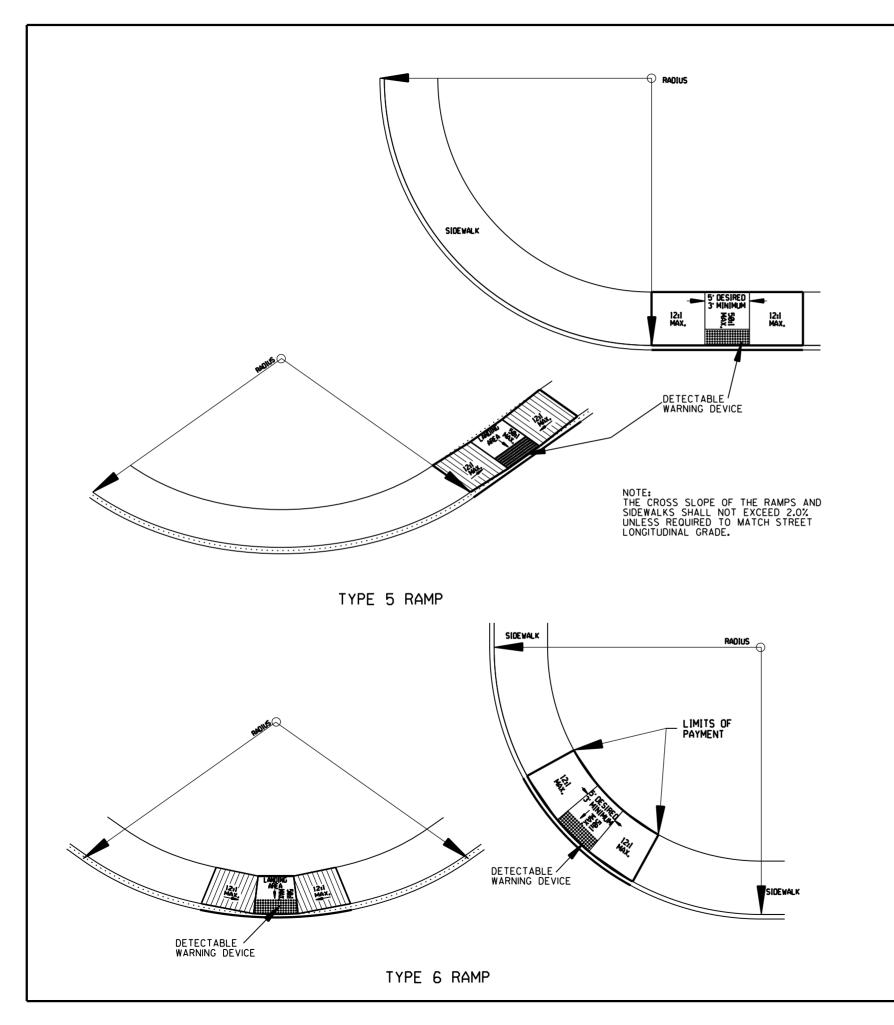
	BOTTOM OF EXCAVATION & SELECTED PIPE BEDDING PAY LIMIT
TURAL BEDDING CED	
	SELECTED PIPE BEDDING (BACKFILL OF UNDERCUT IF DIRECTED BY ENGINEER)

- STRUCTURAL BACKFILL





	ARKANSAS STATE HIGHWAY COMMISSION
	TEMPORARY EROSION CONTROL DEVICES
FILMED	STANDARD DRAWING TEC-4



GENERAL NOTES:

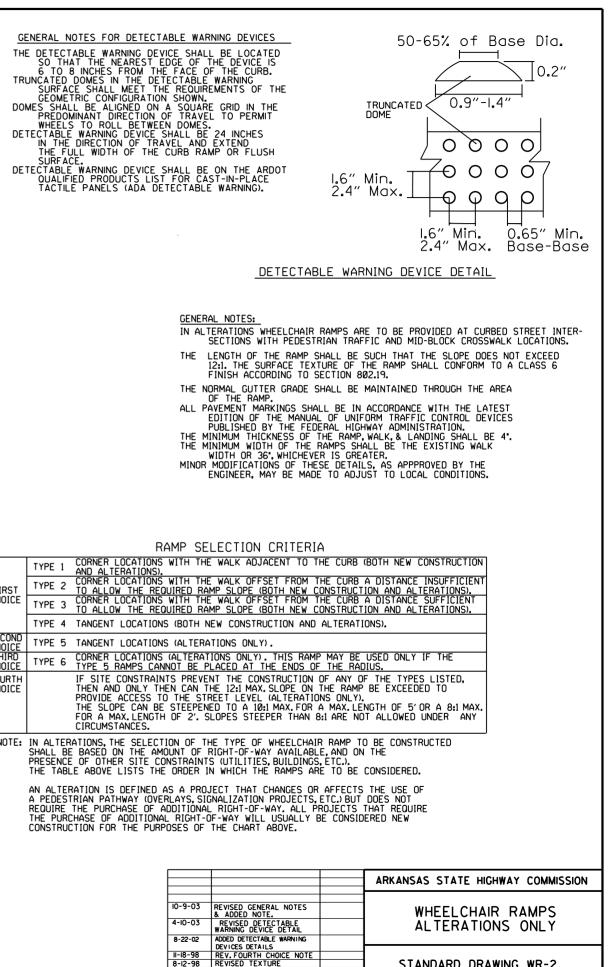
RAMP SELECTION CRITERIA

	TYPE 1	CORNER LOCATIONS WITH THE WALK ADJA AND ALTERATIONS).
FIRST CHOICE	TYPE 2	CORNER LOCATIONS WITH THE WALK OFFS TO ALLOW THE REQUIRED RAMP SLOPE (E
	TYPE 3	CORNER LOCATIONS WITH THE WALK OFFS TO ALLOW THE REQUIRED RAMP SLOPE (E
	TYPE 4	TANGENT LOCATIONS (BOTH NEW CONSTRU
SECOND CHOICE	TYPE 5	TANGENT LOCATIONS (ALTERATIONS ONLY
THIRD CHOICE	TYPE 6	CORNER LOCATIONS (ALTERATIONS ONLY), TYPE 5 RAMPS CANNOT BE PLACED AT T
FOURTH CHOICE		IF SITE CONSTRAINTS PREVENT THE CON THEN AND ONLY THEN CAN THE 12:1 MAX. PROVIDE ACCESS TO THE STREET LEVEL THE SLOPE CAN BE STEEPENED TO A 10: FOR A MAX.LENGTH OF 2'. SLOPES STEE CIRCUMSTANCES.

NOTE: IN ALTERATIONS, THE SELECTION OF THE TYPE OF WHEELCHAIR RAMP TO BE CONSTRUCTED SHALL BE BASED ON THE AMOUNT OF RIGHT-OF-WAY AVAILABLE, AND ON THE PRESENCE OF OTHER SITE CONSTRAINTS (UTILITIES, BUILDINGS, ETC.). THE TABLE ABOVE LISTS THE ORDER IN WHICH THE RAMPS ARE TO BE CONSIDERED.

AN ALTERATION IS DEFINED AS A PROJECT THAT CHANGES OR AFFECTS THE USE OF A PEDESTRIAN PATHWAY (OVERLAYS, SIGNALIZATION PROJECTS, ETC.) BUT DOES NOT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY. ALL PROJECTS THAT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY WILL USUALLY BE CONSIDERED NEW CONSTRUCTION FOR THE PURPOSES OF THE CHART ABOVE.

10-9-03	REVISED GENERA & ADDED NOTE.
4-10-03	REVISED DETEC
8-22-02	ADDED DETECTABLE DEVICES DETAILS
11-18-98	REV. FOURTH CH
8-12-98	REVISED TEXTUR
7-02-98	ISSUED
DATE	REVISION



STANDARD DRAWING WR-2