

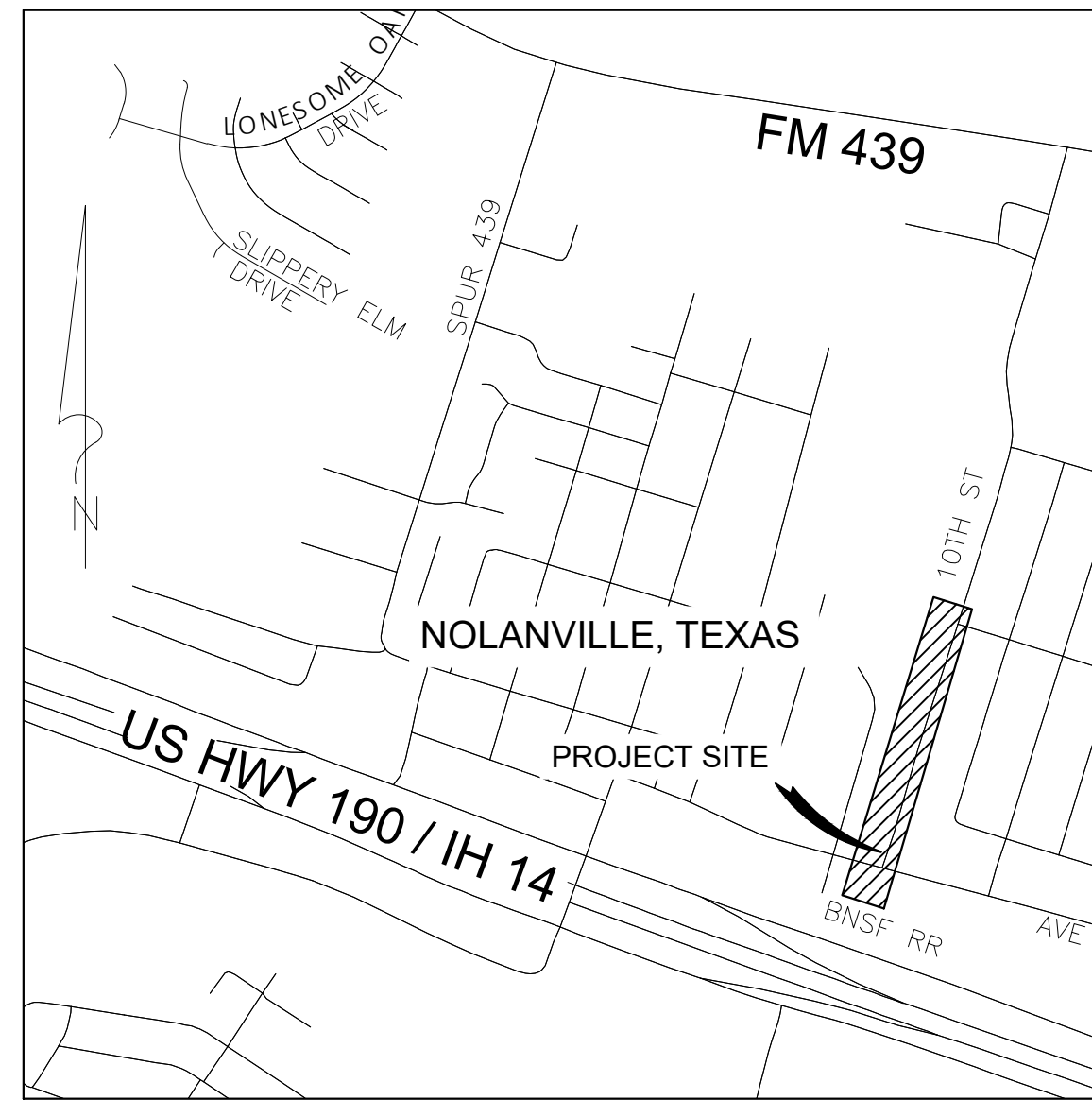
CONSTRUCTION PLANS AVE. "H" CHANNEL IMPROVEMENTS NOLANVILLE GRANT PROGRAM CITY OF NOLANVILLE, TEXAS



CITY OF NOLANVILLE
APPROVED FOR CONSTRUCTION

BY: _____
TERESA CHANDLER, INTERIM CITY MANAGER

DATE: _____



SHEET LIST TABLE	
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CITY OF NOLANVILLE
FLOOD PLAIN ADMINISTRATOR

BY: _____
KPA ENGINEERS : JOHN SIMCIK PE, CFM

DATE: _____

MAYOR AND CITY COUNCIL

ANDY WILLIAMS	MAYOR
JAMES LYNN BULBERRY	MAYOR PRO TEM & COUNCILMEMBER SEAT NO. 5
KARISHMA TALBOTT	COUNCILMEMBER SEAT NO. 1
JUANITA SIMS	COUNCILMEMBER SEAT NO. 2
TANARA GRISHAM	COUNCILMEMBER SEAT NO. 3
MIKAYLA MONDRAGON	COUNCILMEMBER SEAT NO. 4

SUBMITTED FOR APPROVAL

BY: 
JOHN HART BANDAS, PE



DATE: DEC. 15, 2025



BANDAS ENGINEERING LLC

CIVIL ENGINEERING FIRM# F-3782

12238 ANTILLES LANE
CONROE, TEXAS 77304

(254) 760-9116
john.bandas@bandasengineering.com



FOR REVIEW






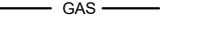



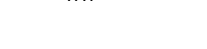











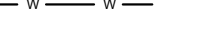

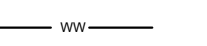






GENERAL NOTES:

1. PROJECT DESCRIPTION
 - A. THESE NOTES ARE INTENDED TO PROVIDE A CONVENIENT SUMMARY OF PROJECT REQUIREMENTS, BUT DO NOT LIMIT ANY REQUIREMENTS IMPOSED ELSEWHERE IN THE CONTRACT DOCUMENTS.
 - B. CONTRACT DOCUMENTS CONSIST OF PLANS, BID PROPOSAL, OWNER'S CONTRACT DOCUMENTS, TXDOT, AND CITY OF NOLANVILLE DESIGN MANUAL AND STANDARD DETAILS INCORPORATED BY REFERENCE.
 - C. THE PROJECT CONSISTS OF THE THE CONSTRUCTION OF CHANNEL AND EROSION CONTROL IMPROVEMENTS AS DESCRIBED IN THE CONTRACT DOCUMENTS.
 - D. THE CITY OF NOLANVILLE SUBDIVISION ORDINANCE, CITY OF NOLANVILLE ZONING ORDINANCE, BELL COUNTY WCID #3 REGULATIONS, AND THE CORPS OF ENGINEERS (FORT WORTH DISTRICT) WOUS DETERMINATION ARE THE GOVERNING DOCUMENTS FOR THE PROJECT.
 - E. ALL FEDERAL, STATE, COUNTY, AND CITY LAWS, RULES, REGULATIONS, AND ORDINANCES MUST BE OBSERVED IN THE PERFORMANCE OF THIS PROJECT.
 - F. THE CONTRACTOR SHALL ASSUME THE DUTIES OF "SITE OPERATOR" FOR THE COMPLIANCE WITH TCEQ STORMWATER POLLUTION PREVENTION REGULATIONS FOR THE TERM OF THIS CONTRACT. THE SITE IS IN EXCESS OF FIVE ACRES. THE ENGINEER SHALL PROVIDE THE STORMWATER POLLUTION PREVENTION PLA. THE CONTRACTOR SHALL PROVIDE THE OWNER, ENGINEER, AND CITY A COPY OF THE NOI AND NOT.
2. PROPOSALS AND AWARD OF CONTRACT
 - A. THE OWNER WILL SOLICIT BIDS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS AND PROPOSAL DOCUMENTS.
 - B. THE OWNER RESERVES ALL RIGHTS TO WAIVE FORMALITIES AS HE CHOOSES, AND TO REJECT ANY OR ALL BIDS.
 - C. THE OWNER WILL AWARD THE CONTRACT TO THE LOWEST RESPONSIVE BIDDER.
 - D. PRIOR TO FINAL AWARD AND PROSECUTION OF WORK, THE CONTRACTOR MUST PROVIDE PROOF OF INSURANCE, SURETY BONDS, ETC. WHICH MEETS THE REQUIREMENTS OF THE CITY OF NOLANVILLE, TEXAS.
3. PROSECUTION OF WORK
 - A. 180 CALENDAR DAYS ARE ALLOTTED BY THE CONTRACT FOR THE SUBSTANTIAL COMPLETION OF THE WORK DESCRIBED HEREIN. LIQUIDATED DAMAGES FOR EXCEEDING THE ALLOTTED TIME FOR PERFORMANCE OF THIS WORK IS \$100.00 PER DIEM.
 - B. THE CONTRACTOR SHALL, WITHIN 10 DAYS OF AWARD OF CONTRACT AND RECEIPT OF NOTICE TO PROCEED, COMMENCE WORK ON THIS PROJECT.
 - C. PRIOR TO COMMENCEMENT OF WORK THE CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES, COMMUNICATION LINES, AND ELECTRICAL LINES IN THE PROJECT AREA.
 - D. THE CONTRACTOR SHALL WORK ACCORDING TO THE SEQUENCE PRESCRIBED.
 - E. THE CONTRACTOR SHALL PROVIDE A "BAR CHART SCHEDULE" FOR HIS WORK.
 - F. THE CONTRACTOR SHALL WORK DILIGENTLY AND CONTINUOUSLY TO COMPLETE THE WORK AS OUTLINED IN THE "BAR CHART SCHEDULE".
 - G. THE CONTRACTOR SHALL COOPERATE WITH OTHER PROJECT PARTICIPANTS TO PERFORM HIS WORK IN A TIMELY AND COOPERATIVE MANNER.
4. ACCESS TO SITE
 - A. THE CONTRACTOR SHALL HAVE ACCESS TO THE SITE MONDAY THROUGH SATURDAY DURING DAYLIGHT HOURS.
 - B. THE CONTRACTOR SHALL ACCESS THE SITE THROUGH STABILIZED CONSTRUCTION ENTRANCES AS PROVIDED FOR BY THE SWPPP, OR EXTRA ONES PLACED BY THE CONTRACTOR AT LOCATIONS APPROVED BY THE ENGINEER.
 - C. THE CONTRACTOR SHALL USE THE DESIGNATED STORAGE AREA FOR MATERIAL STORAGE, EMPLOYEE PARKING, AND MACHINERY PARKING. A TEMPORARY DRAINAGE PIPE MAY BE INSTALLED TO PROVIDE ACCESS.
 - D. THE CONTRACTOR SHALL CONTINUOUSLY MAINTAIN THE CLEANLINESS OF ALL PAVED SURFACES ON ADJACENT PUBLIC ROADS.
 - E. THE CONTRACTOR SHALL AT NO TIME OBSTRUCT, HINDER, OR ENDANGER THE FLOW OF TRAFFIC ON ADJACENT PUBLIC ROADS, WHETHER VEHICULAR OR PEDESTRIAN, WITH HIS WORK.
5. BARRICADES, AND TRAFFIC HANDLING
 - A. THE CONTRACTOR SHALL PROVIDE BARRICADES TO SEPARATE THE WORK AREA FROM THE AREAS USED FOR PARKING, VEHICULAR TRAFFIC, AND PEDESTRIAN TRAFFIC.
 - B. THE CONTRACTOR SHALL PROVIDE FLAGMEN AS NECESSARY TO DIRECT TRAFFIC.
6. COMPLIANCE WITH LAWS AND REGULATIONS
 - A. THE CONTRACTOR SHALL PROVIDE EQUIPMENT, TRUCKS, AND TOOLS, WHICH COMPLY WITH OSHA SAFETY REGULATIONS, AND SUPPLY CERTIFICATION IF REQUESTED BY THE ENGINEER.
 - B. OSHA SAFETY REGULATIONS CONCERNING SAFETY OF WORKMEN, TRENCHING AND EXCAVATIONS SHALL BE OBSERVED.
 - C. THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL EXCESS AND WASTE MATERIAL IN APPROPRIATELY LICENSED FACILITIES.
7. MEASUREMENT AND PAYMENT
 - A. MONTHLY PROGRESS PAYMENTS SHALL BE MADE LESS 10% RETAINAGE.
 - B. THE CONTRACTOR SHALL SUBMIT A BILL TO THE ENGINEER FOR APPROVAL ON THE FIRST OF EACH MONTH, BASED ON THE CONTRACT DOCUMENTS AND PROPOSAL.
 - C. THE ENGINEER WILL APPROVE OR AMEND THE BILL AND FORWARD IT TO THE OWNER FOR PAYMENT.
 - D. RETAINAGE SHALL BE PAID UPON COMPLETION AND FINAL CLEANUP OF IMPROVEMENTS, AND STAGING AREA, TO THE SATISFACTION AND APPROVAL OF THE ENGINEER, THE OWNER AND THE CITY OF NOLANVILLE, TEXAS.
8. NEITHER THE CITY OF NOLANVILLE NOR BELL COUNTY WCID #3 WILL BE RESPONSIBLE FOR DAMAGES TO WATER AND WASTEWATER SERVICES THAT OCCUR PRIOR TO THE ISSUANCE OF CERTIFICATES OF OCCUPANCY. REPAIR OF DAMAGES WILL BE THE RESPONSIBILITY OF THE CONTRACTOR PERFORMING WORK ON SITE.

CONSTRUCTION NOTES:

- 1.) LAYOUT OF WORK, TESTING OF MATERIALS
 - A. THE CONTRACTOR SHALL PROVIDE CONSTRUCTION OFF-SET STAKES FORFOR ALL ITEMS OF CONSTRUCTION. THE CONTRACTOR SHALL BE FINANCIALLY RESPONSIBLE FOR THE REPLACEMENT OF LOST OR DESTROYED CONSTRUCTION STAKES OR LOT PINS.
 - B. THE CONTRACTOR SHALL CONTACT THE ENGINEER WHEN LOT PINS ARE LOST OR DESTROYED.
 - C. THE CONTRACTOR SHALL REPLACE CONSTRUCTION STAKES OR CALL THE RPLS TO RESTORE LOT PINS AT THE EXPENSE OF THE CONTRACTOR.
 - D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AGGREGATE PLANT PRODUCTION TESTING AND SUBMITTAL TESTING OF MATERIALS, (INCLUDING ASTM D-698 PROCTORS OF SUBGRADE SOILS AND LIMESTONE BASE MATERIAL, EARTH MATERIALS FOR TRENCH BACKFILL AND EMBANKMENT), CONCRETE DESIGN, ETC.
 - E. THE CITY OF NOLANVILLE WILL PROVIDE FIELD-TESTING AND INSPECTION EXCEPT FOR RE-TESTS WHICH WILL BE AT THE EXPENSE OF THE CONTRACTOR.
 - F. THE CONTRACTOR SHALL BLUETOP ALL SUBGRADE SURFACES, PAD SURFACES, BASE SURFACES, CHANNELS, LEVEES, ETC.
- 2.) THE CONTRACTOR SHALL INSTALL EROSION CONTROL BMP'S PER THE EROSION CONTROL PLAN PRIOR TO COMMENCING GROUND-DISTURBING ACTIVITIES ON THE PROJECT.
- 3.) CLEARING AND GRUBBING
 - A. THE CONTRACTOR SHALL STRIP AND STOCKPILE THE TOP 4" OF TOPSOIL FROM THE EXCAVATED AREAS FOR USE IN FINISHING THE PROJECT.
 - B. UNUSED TOPSOIL SHALL BE SPREAD OR STOCKPILED AS DIRECTED BY THE ENGINEER AT THE END OF THE JOB.
- 4.) DEMOLITION
 - A. DEMOLITION WILL BE ACCOMPLISHED USING HYDRAULIC OR AIR TOOLS. DROP BALLS ARE PROHIBITED.
 - B. ALL RUBBLE AND TRASH SHALL BE REMOVED FROM THE SITE WEEKLYAND DISPOSED OF PROPERLY.
- 5.) UNCLASSIFIED EXCAVATION AND FILL
 - A. ALL EXCAVATION SHALL BE UNCLASSIFIED, AND NO EXTRA PAY WILL BE GRANTED FOR THE REMOVAL OF UNSUITABLE MATERIAL, OR FOR ROCK EXCAVATION.
 - B. ANY UNSUITABLE MATERIAL ENCOUNTERED (SILT, CLAY MIXED WITH ORGANIC MATERIALS, OR MUD) WILL BE REMOVED AT NO EXTRA COST AND REPLACED WITH SUITABLE DRY MATERIAL.
 - C. FILL (EMBANKMENT) SHALL BE PLACED ACCORDING TO TXDOT ITEM 132 (1993 SPECIFICATIONS).IN HORIZONTAL LIFTS NOT TO EXCEED 6" COMPACTED THICKNESS, AND COMPACTED TO 95% OF ASTM D-698 MAXIMUM DRY DENSITY.
 - D. THE SWALE, WHERE NON-TOPSOIL MATERIAL IS ENCOUNTERED, SHALL BE UNDER-EXCAVATED TO A DEPTH TO ALLOW REPLACEMENT OF 4" OF TOPSOIL, AND THE FINISHED GRADE SHALL BE THE TOP OF THE TOPSOIL.
 - E. THE CONCRETE APRON AND SLOPE PAVING AREA SHALL BE EXCAVATED NEATLY TO SUB-GRADE ELEVATION A MINIMUM OF 2' OUTSIDE THE EDGE OF THE PROPOSED FLATWORK.
 - F. THE CONCRETE APRON AND SLOPE PAVING SUB-GRADE SHALL BE COMPACTED TO 95% OF ASTM D-698 MAXIMUM DRY DENSITY.
 - G. THE SUBGRADE SHALL BE BLUETOPPED AND ACCURATELY GRADED TO THE LINES AND GRADES SHOWN IN THE PLANS.
- 6.) CONCRETE ITEMS
 - A..CONCRETE ITEMS SHALL BE CONSTRUCTED ACCORDING TO CITY OF NOLANVILLE STANDARDS.
 - B. AS SOON AS THE CONCRETE REACHES SUFFICIENT STRENGTH, THE FORMS WILL BE STRIPPED AND THE BACK-FILL AND GRADING SHALL BE COMPLETED.
 - C. THE FORMS AND STEEL WILL BE STORED IN THE STORAGE AREA, AND WRECKED FORMS WILL BE REMOVED TO STORAGE AREA BEFORE THE END OF EACH WORKDAY.
- 7.) SEEDING AND FERTILIZING
 - A. AFTER IMPROVEMENTS ARE COMPLETE AND BACKFILL AND CLEANUP HAS BEEN ACCOMPLISHED THE CONTRACTOR SHALL PREPARE ALL NON-PAVED AREAS IN THE GRADING LIMITS FOR SEEDING AND FERTILIZING.
 - B. PREPARATION SHALL CONSIST OF BROADCASTING 10-20-10 COMMERCIAL GRADE FERTILIZER AT A RATE OF 50 LBS. PER 5000 SQUARE FEET, AND DISKING OR RAKING AS APPROPRIATE TO MIX IT INTO THE SOIL.
 - C. TO KEEP FROM BURNING THE GRASS SEED, THE CONTRACTOR SHALL WATER THE FERTILIZED AREAS WITH A WATER TRUCK, OR WAIT FOR A 1" OF RAIN TO SOAK AND DIFFUSE THE FERTILIZER PRIOR TO SEEDING.
 - D. A SEED MIXTURE CONSISTING OF 66% RYE GRASS, AND 34% COMMON BERMUDA SHALL BE BROADCAST ON PREPARED AREAS AT A RATE OF 60 LBS. PER ACRE.
 - E. THE SEEDED AREAS SHALL BE RAKED OR DRAGGED AS APPROPRIATE SO THE SEED IS COVERED WITH 1/8" OF TOPSOIL.
 - F. THE CONTRACTOR SHALL WATER SEEDED AREAS AS REQUIRED TO PRODUCE A HEALTHY STAND OF GRASS.
 - G. HYDROMULCH APPLICATION IS PERMISSIBLE IF THE FERTILIZER AND SEED CONTENT ARE SAME AS ABOVE.
- 8.)WATER, SANITATION, CLEANUP, AND FINAL CLEANUP
 - A. THE CONTRACTOR WILL SUPPLY ALL WATER FOR CONSTRUCTION AT HIS OWN EXPENSE.
 - B. THE CONTRACTOR SHALL KEEP CLEAN ALL AREAS AFFECTED BY HIS WORK.
 - C. THE CONTRACTOR SHALL PROVIDE TRASH BARRELS IN THE WORK AREA.
 - D. THE CONTRACTOR SHALL PROVIDE AN ENCLOSED LATRINE (PORTA-POTTY) FOR USE BY HIS WORKMEN. THE LATRINE SHALL BE CLEANED AND SANITIZED ON A REGULAR BASIS.
 - E. THE CONTRACTOR SHALL PROVIDE POTABLE WATER FOR HIS WORKMEN.
 - F. ALL TRASH, FORMS, SCRAP, TEMPORARY FACILITIES, AND RESIDUE OF CONSTRUCTION SHALL BE COMPLETELY CLEANED UP AND REMOVED FROM OWNER'S PROPERTY PRIOR TO FINAL PAYMENT.

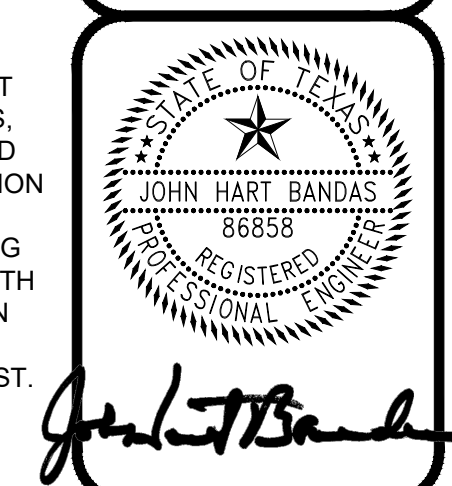
LEGEND

	POWER POLE		TELEPHONE POLE
	IRON ROD FOUND		IRON ROD SET
	EX. GAS METER		EX. GAS LINE
	EX. WATER METER		EX. WATER LINE
	EX. WATER VALVE		EX. WASTEWATER LINE
	GUY WIRE		FENCE
	TREE		EX. FIRE HYDRANT
	EX. CONTOUR		BUSH
	PROP. CONCRETE DRIVE		NEW CURB & GUTTER
	PROP. 4' SIDEWALK		EX. CURB AND GUTTER
	PROP. WATER SERVICE, SINGLE		PROP. WATER
	PROP. WATER SERVICE, DOUBLE		PROP. WASTEWATER
	PROP. CONTOUR		PROP. U/G FIBER OPTIC LINE
	PROP. FIRE HYDRANT		PROP. U/G PHONE SVC. LINE
	PROP. WASTEWATER MANHOLE		PROP. WATER VALVE

WORK WITHIN JURISDICTIONAL WATERS:

1. JURISDICTIONAL WATERS ARE THE AREA OF THE CHANNEL BELOW "NORMAL HIGH WATER MARK" OR "NHWM".
2. THESE COMPRISE THE "WATERS OF THE US" OR "WOUS".
3. WORK IN JURISDICTIONAL AREAS SHALL BE UNDER NATIONWIDE PERMITS AS INDICATED ON THE PLAN WITH THE EXCEPTION OF AREAS THAT ARE SUBJECT TO "ONE-STEP EXCAVATION".
4. ONE-STEP EXCAVATION IS A PRACTICE WHERE A CHANNEL OR A PORTION OF A CHANNEL IS EXCAVATED TO NEAT GRADE WITH A TRACK EXCAVATOR OR A GRADALL. NO FILL IS ALLOWED TO ADJUST OVER-EXCAVATED AREAS TO GRADE. ONCE THE GRADE IS CUT, NO MACHINERY IS ALLOWED IN THE BOTTOM OF THE DITCH OR CHANNEL FOR FINE GRADING. FINE GRADING AND SOWING OF SEED OR SPRIGGING MUST BE ACCOMPLISHED BY HAND.

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John Hart Bandas

DATE:	2-Apr-24
DRAWN BY:	JHB
DESIGNED BY:	JHB
CHECKED BY:	JHB
PROJECT #:	24-001

SHT. #	2
OF	7

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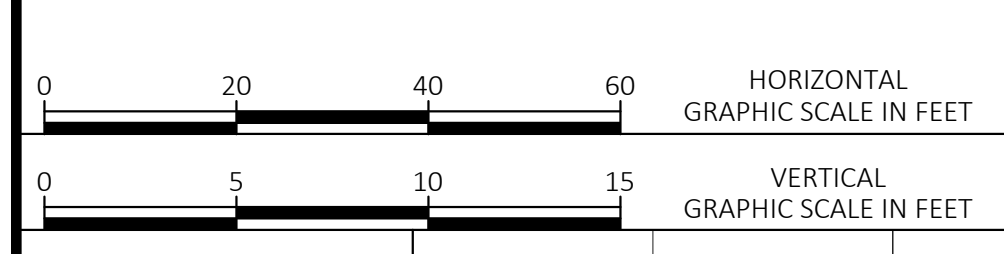
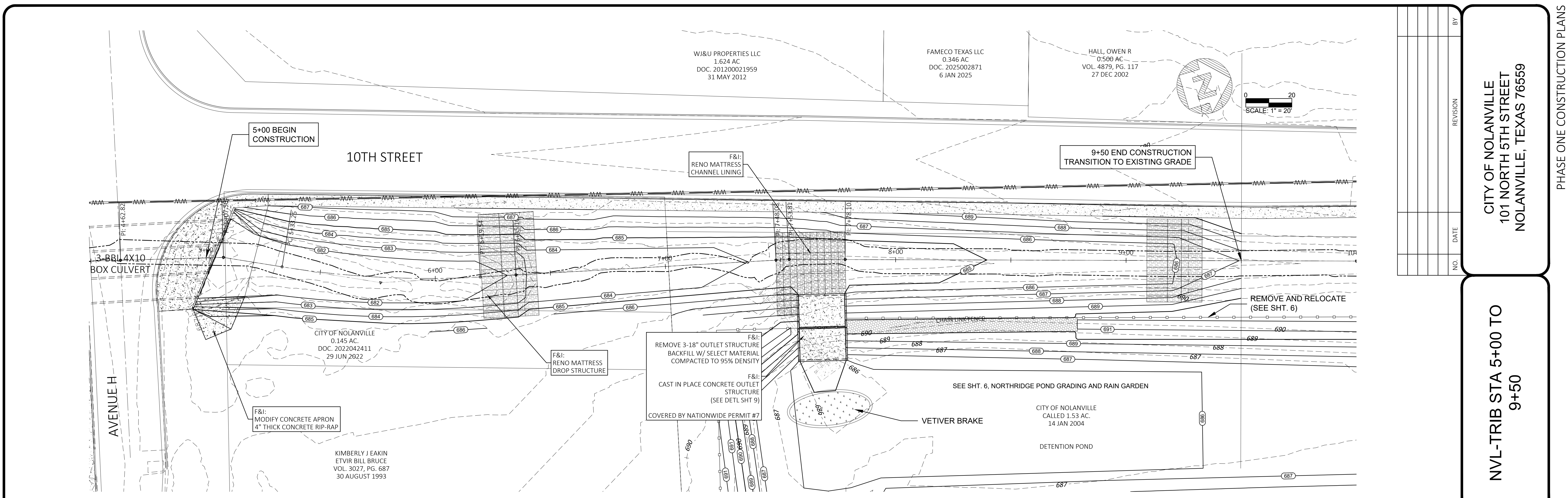
NO.	DATE	REVISION	BY

CITY OF NOLANVILLE
101 NORTH 5TH STREET
NOLANVILLE, TEXAS 76559

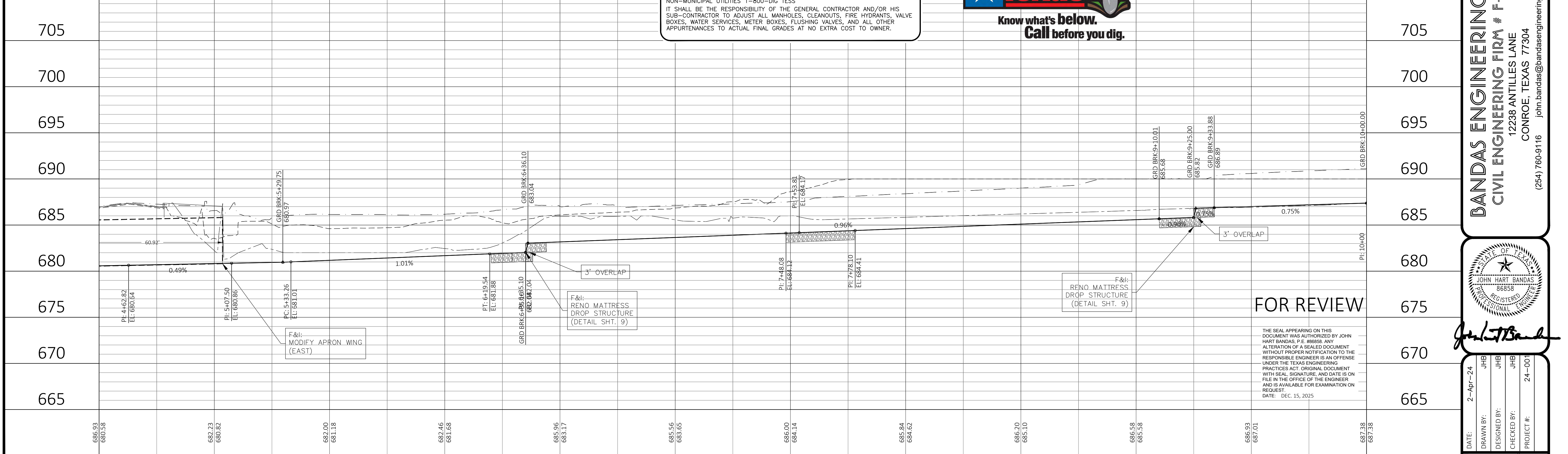
PHASE ONE NOTES & ABBREVIATIONS

BANDAS ENGINEERING LLC
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PHASE ONE CONSTRUCTION PLANS



IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES, BOTH ABOVE AND BELOW GROUND PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL REPAIR ALL DAMAGED UTILITIES TO EQUAL OR BETTER CONDITION AND TO THE SATISFACTION OF THE UTILITY OWNER.
 TELEPHONE NUMBERS:
 BELL COUNTY WCID NO. 3 (254) 698-6885 (UTILITY PROVIDER FOR NOLANVILLE)
 OWEN HALL - SUPERINTENDENT
 CITY OF NOLANVILLE (254) 698-6335
 NON-MUNICIPAL UTILITIES 1-800-DIG TESS
 IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND/OR HIS SUB-CONTRACTOR TO ADJUST ALL MANHOLES, CLEANOUTS, FIRE HYDRANTS, VALVE BOXES, WATER SERVICES, METER BOXES, FLUSHING VALVES, AND ALL OTHER APPURTENANCES TO ACTUAL FINAL GRADES AT NO EXTRA COST TO OWNER.



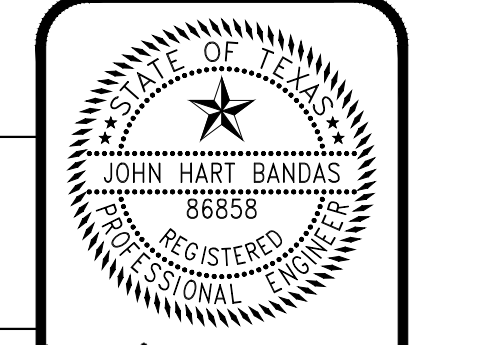
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CITY OF NOLANVILLE
 101 NORTH 5TH STREET
 NOLANVILLE, TEXAS 76559

NVL-TRIB STA 5+00 TO 9+50

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DATE: 2-Apr-24
 DRAWN BY: JHB
 DESIGNED BY: JHB
 CHECKED BY: JHB
 PROJECT #: 24-001

SHT. # 3
 OF 7

Drawing: D:\DWG\PROJ\RECOLLECT\004\001\NVL-TRIB-CD-CP-Phase-Overview-Trib-500-950.dwg
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PHASE ONE CONSTRUCTION PLANS



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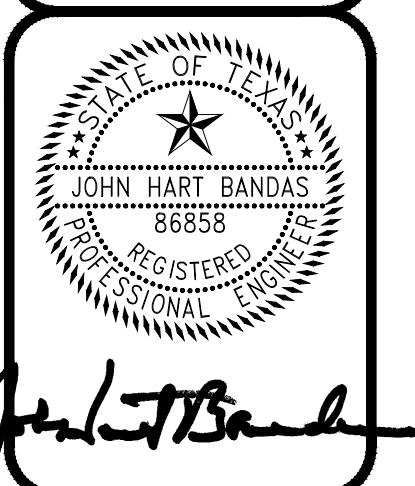
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CITY OF NOLANVILLE
 101 NORTH 5TH STREET
 NOLANVILLE, TEXAS 76559

PHASE ONE CONSTRUCTION PLANS

NOLANVILLE TRIBUTARY
 CROSS-SECTIONS

BANDAS ENGINEERING LLC
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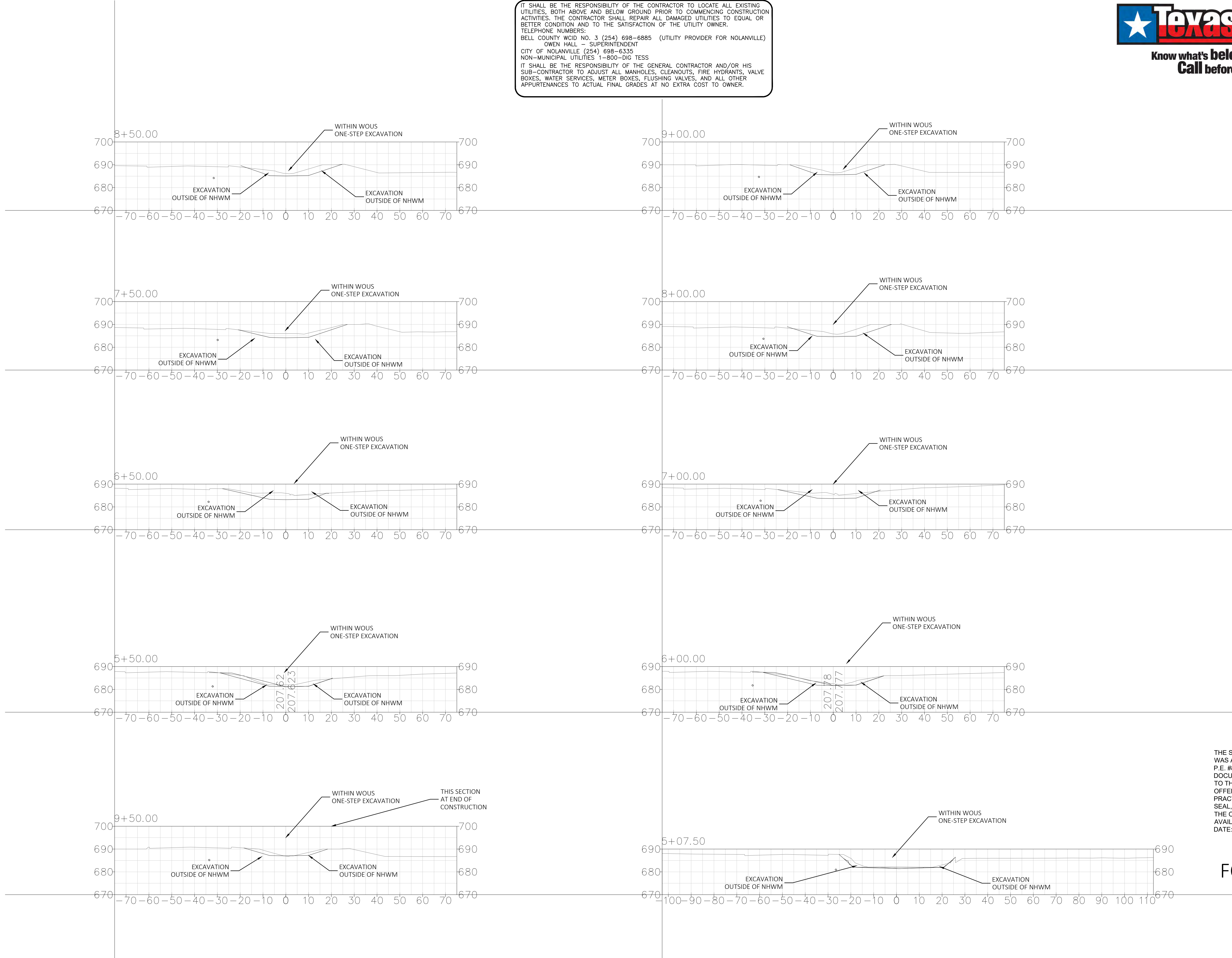


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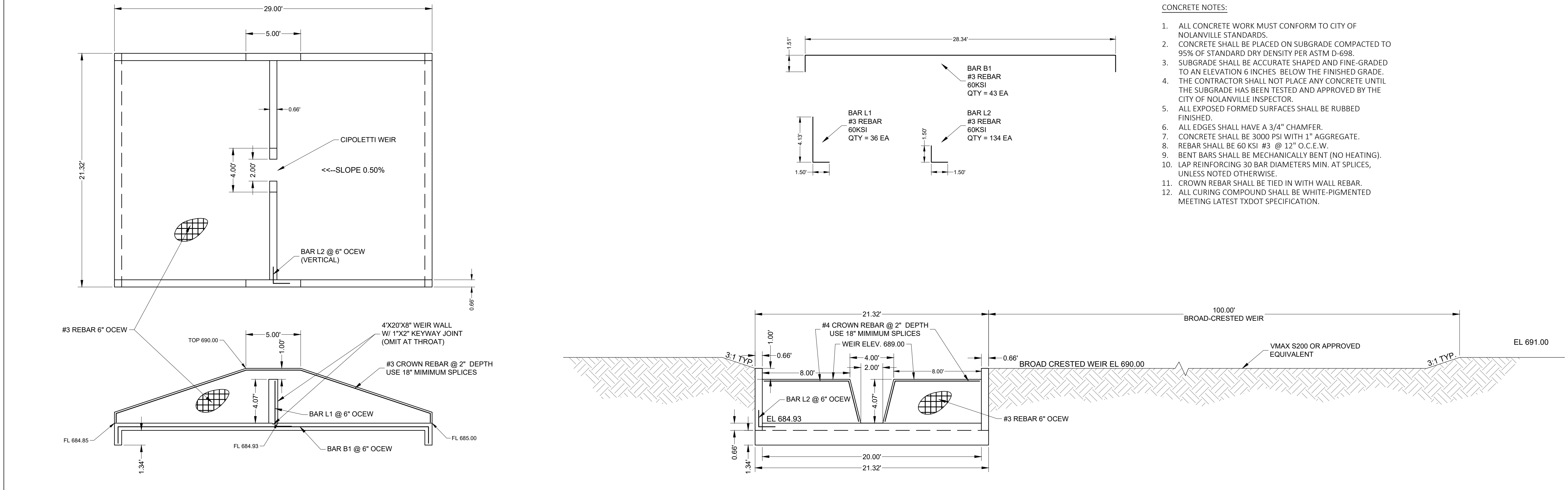
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SHT. #
 4
 OF 7



NOLAN RIDGE POND OUTLET DETAIL
SCALE: 1" = 5.0'



- CONCRETE NOTES:**
1. ALL CONCRETE WORK MUST CONFORM TO CITY OF NOLANVILLE STANDARDS.
 2. CONCRETE SHALL BE PLACED ON SUBGRADE COMPACTED TO 95% OF STANDARD DRY DENSITY PER ASTM D-698.
 3. SUBGRADE SHALL BE ACCURATE SHAPED AND FINE-GRADED TO AN ELEVATION 6 INCHES BELOW THE FINISHED GRADE. THE CONTRACTOR SHALL NOT PLACE ANY CONCRETE UNTIL THE SUBGRADE HAS BEEN TESTED AND APPROVED BY THE CITY OF NOLANVILLE INSPECTOR.
 4. ALL EXPOSED FORMED SURFACES SHALL BE RUBBED FINISHED.
 5. ALL EDGES SHALL HAVE A 3/4" CHAMFER.
 6. CONCRETE SHALL BE 3000 PSI WITH 1" AGGREGATE.
 7. REBAR SHALL BE 60 KSI #3 @ 12" O.C.E.W.
 8. BENT BARS SHALL BE MECHANICALLY BENT (NO HEATING).
 9. LAP REINFORCING 30 BAR DIAMETERS MIN. AT SPLICES, UNLESS NOTED OTHERWISE.
 10. CROWN REBAR SHALL BE TIED IN WITH WALL REBAR.
 11. ALL CURING COMPOUND SHALL BE WHITE-PIGMENTED MEETING LATEST TXDOT SPECIFICATION.

MACCAFERRI GABION MAT DETAIL

MACCAFERRI

TECHNICAL DATA SHEET
Rev. 02, Issue Date 06.30.2013

GABION MAT
GALVANIZED & PVC COATED

Product Description
The gabion mat is a structure manufactured from 8x10 hexagonal double twisted wire mesh type as per ASTM A975 (Fig. 2). They are filled with stones and closed using side at the project site to form flexible, permeable, monolithic structures such as channel linings and scour aprons for erosion control projects.

The wire mesh used is heavily zinc coated soft temper steel. A PVC coating is applied to provide added protection for use in polluted environments where soils or water are acidic, in salt or fresh water, or wherever the risk of corrosion is present. The PVC coating has a nominal thickness of 0.02 in. (0.50 mm). The standard specifications of mesh wire are shown in Table 1.

The gabion mats are divided into cells by means of diaphragms. Typically, cells are 3 ft (0.9 m) wide by 4 ft (1.2 m) long (Fig. 1). In order to reinforce the structure, all edges are selvaged with a wire of greater diameter (Table 3). Cells 3 ft (0.9 m) wide by 3 ft (0.9 m) long can be manufactured as per requirements. Dimensions, tolerances and sizes of PVC coated gabion mats are shown in Table 2.

Wire
All tests on wire must be performed prior to manufacturing the mesh. All wire should comply with ASTM A975, style 3 coating, galvanized and PVC coated steel wire. Wire used for the manufacture of gabion mats and the lacing wire, shall have a minimum tensile strength of 75,000 psi (518 MPa) as per ASTM A641/A641, soft temper steel.

Woven Wire Mesh Type 8x10
The mesh and wire characteristics shall be in accordance with ASTM A975 Table 1, Mesh type 8x10 and PVC coated. The nominal mesh opening, D = 3.25 in. (83 mm) as per Fig. 2. The minimum mesh properties for strength and flexibility should be in accordance with the following:

- Mesh Tensile Strength shall be a minimum of 3425 lbf (50.0 kN/m) when tested in accordance with ASTM A975 section 13.1.1.
- Punch Test resistance shall be a minimum of 5300 lb (23.6 kN) when tested in accordance with ASTM A975 section 13.1.4.
- Connector to Selvedges shall be 1200 lbf (17.5 kN/m) when tested in accordance with ASTM A975.

P.V.C. (Polyvinyl Chloride) Coating
The technical characteristics and the resistance of the PVC to aging should meet the relevant standards. The main values for the PVC material are as follows:

- The initial property of the PVC coating shall be in compliance with ASTM A975 section 6.2.
- Prior to UV and abrasion degradation, the PVC polymer coating shall have a projected minimum durability of 60 years when tested in accordance with UL 746B Polymer Material—Long Term Property Evaluation for heat aging test.

Table 1—Sizes for gabion mats

Cell Length (ft)	Cell Width (ft)	Height (ft)	# of Cells
99 (30)	6 (1.8)	1 (0.3)	22
99 (30)	6 (1.8)	1.5 (0.45)	33
99 (30)	6 (1.8)	1.5 (0.45)	33
60 (18)	6 (1.8)	1 (0.3)	14
60 (18)	6 (1.8)	1 (0.3)	21
60 (18)	6 (1.8)	1.5 (0.45)	14
60 (18)	6 (1.8)	1.5 (0.45)	21

Table 2—Standard mesh wire

Type	D in. (mm)	Tolerance	Internal Wire Dia in. (mm)	External Wire Dia in. (mm)
8x10/2H+PVC	3.25 (83)	±10%	0.108 (2.70)	0.148 (3.70)

Table 3—Standard wire diameters

PVC Mesh Diameter # in. (mm)	Lacing Wire Mesh Wire # in. (mm)	Selvedge Wire # in. (mm)
0.087 (2.20)	0.108 (2.70)	0.134 (3.40)
Wire Tolerance (± in. (mm))	0.004 (0.10)	0.004 (0.10)
Minimum Quantity Zinc coat (g/m ²)	0.70 (24)	0.80 (24)
Wire + PVC Diameter in. (mm)	0.127 (3.20)	0.148 (3.70)

Quantity Request
When requesting a quotation, please specify:

- number of units
- size of units (length x width x height, see Fig. 1).
- type of mesh,
- type of coating.

EXAMPLE: No. 100 gabion mats, 96ftx1, Mesh type 8x10, Wire diam. 0.108 in. (2.70 mm), Galvanized + PVC coated.

Figure 1
Diagram showing the layout of a gabion mat with dimensions: Length, Width, Height, and Diaphragms.

Figure 2
Diagram showing the mesh opening with dimension D.

Figure 3
Diagram showing the lacing wire and rings with dimensions: Lacing wire, Rings, and Make in. (10 mm).

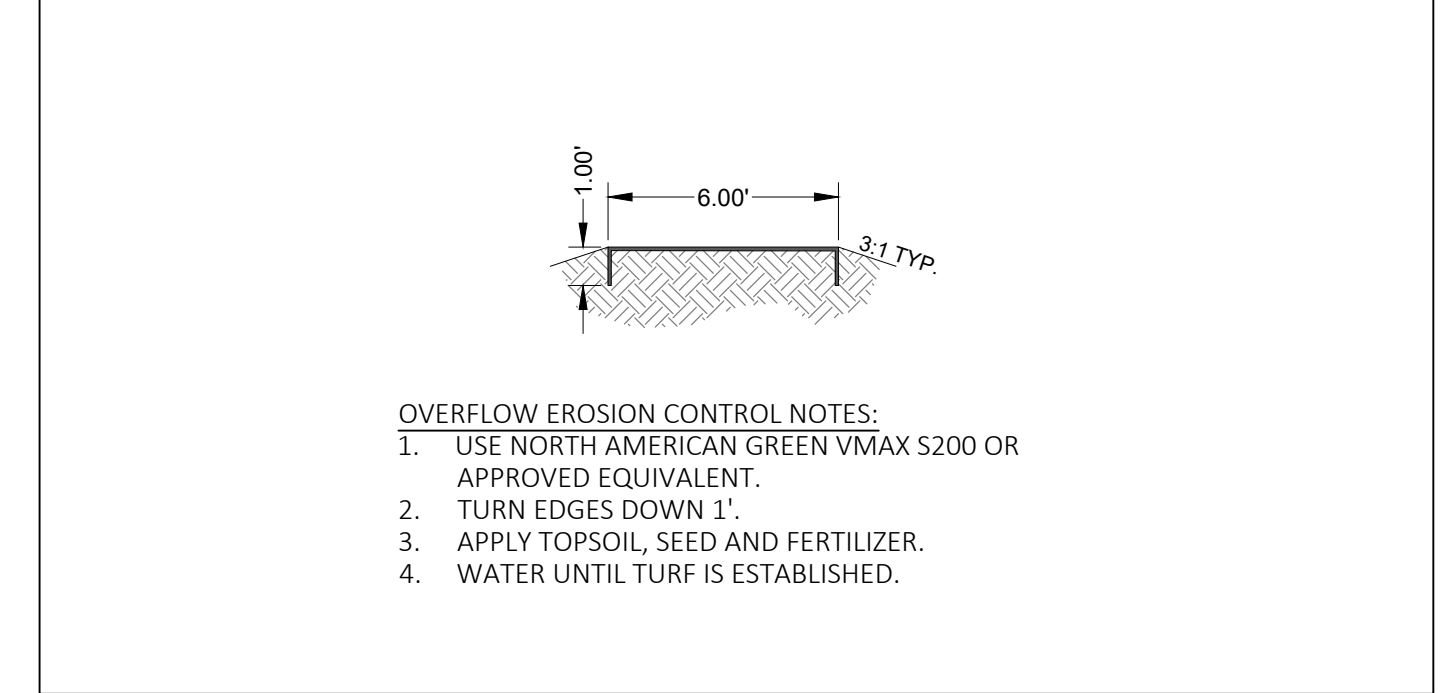
Figure 4
Diagram showing the assembly and installation of the gabion mat with dimensions: Open (1.75 in. (44 mm)), Closed, and Nominal overlap of 1 in. (25 mm) after closure.

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- GABION NOTES:**
1. GABION MATS SHALL BE PLACED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION AND TO THE SATISFACTION OF THE CITY OF NOLANVILLE INSPECTOR.
 2. GABIONS SHALL BE PLACED ON SUBGRADE COMPACTED TO 95% OF STANDARD DRY DENSITY PER ASTM D-698.
 3. SUBGRADE SHALL BE ACCURATE SHAPED AND FINE-GRADED TO AN ELEVATION 1 FOOT BELOW THE FINISHED GRADE. THE CONTRACTOR SHALL NOT PLACE ANY GABION MATS UNTIL THE SUBGRADE HAS BEEN TESTED AND APPROVED BY THE CITY OF NOLANVILLE INSPECTOR.
 4. PRIOR TO PLACING GABION MATS THE SUBGRADE SHALL BE COVERED WITH MIRAFI 180N(NW) 8-OZ. NONWOVEN FABRIC IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION FOR OVERLAP AND ANCHORING.
 5. GABION MATS MAY BE PLACED IN EITHER A LONGITUDINAL OR TRANSVERSE ORIENTATION AS SPECIFIED ON SHT. 9.
 6. GABION MATS SHALL BE BACKFILLED TO FLUSH ON ALL SIDES, AND CARE MUST BE TAKEN TO INSURE THE DRAINAGE FLOWLINE IS SET TO GRADE ACROSS THE EXTENTS OF THE MAT.
 7. GABION MAT FILL SHALL BE TEXAS CRUSHED STONE PRODUCT #005 (3"X5" HARD ROCK) OR APPROVED EQUIVALENT.



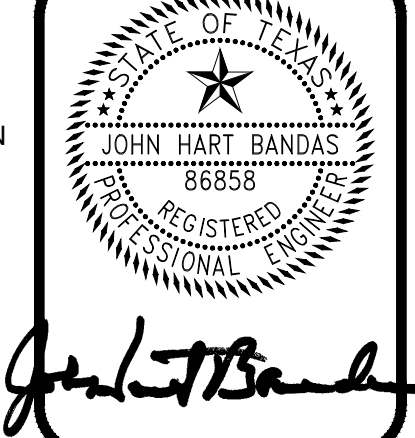
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY JOHN HART BANDAS, P.E. #86858. ANY ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICES ACT. ORIGINAL DOCUMENT WITH SEAL, SIGNATURE, AND DATE IS ON FILE IN THE OFFICE OF THE ENGINEER AND IS AVAILABLE FOR EXAMINATION ON REQUEST. DATE: DEC. 15, 2025

FOR REVIEW

CITY OF NOLANVILLE
101 NORTH 5TH STREET
NOLANVILLE, TEXAS 76659

NORTH RIDGE DETENTION
OUTLET STRUCTURE

BANDAS ENGINEERING LLC
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CONROE, TEXAS 77304
john.bandas@bandasengineering.com
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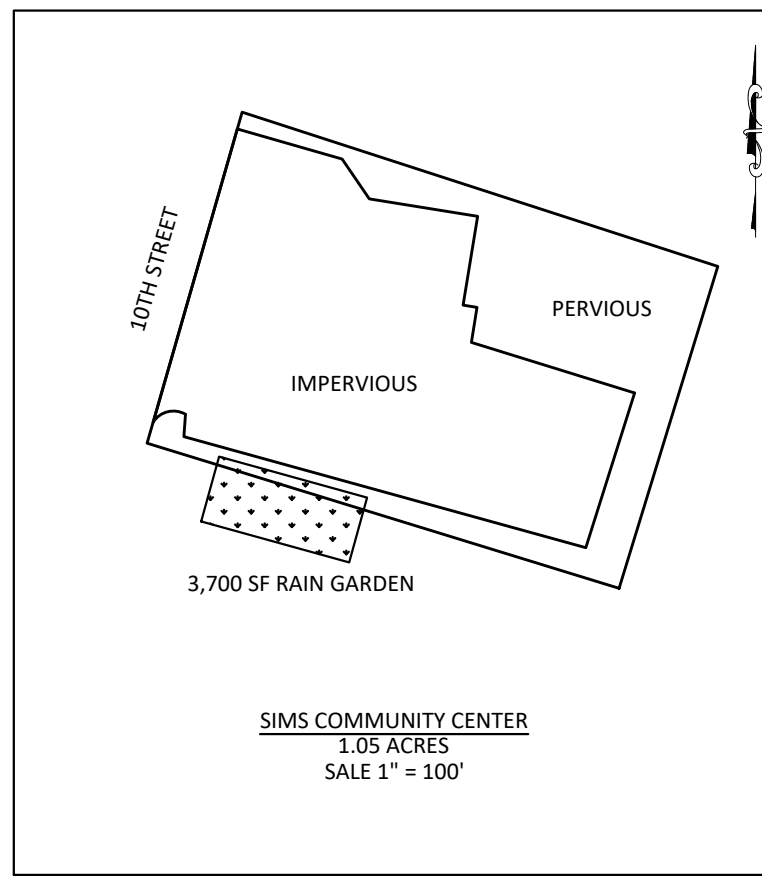
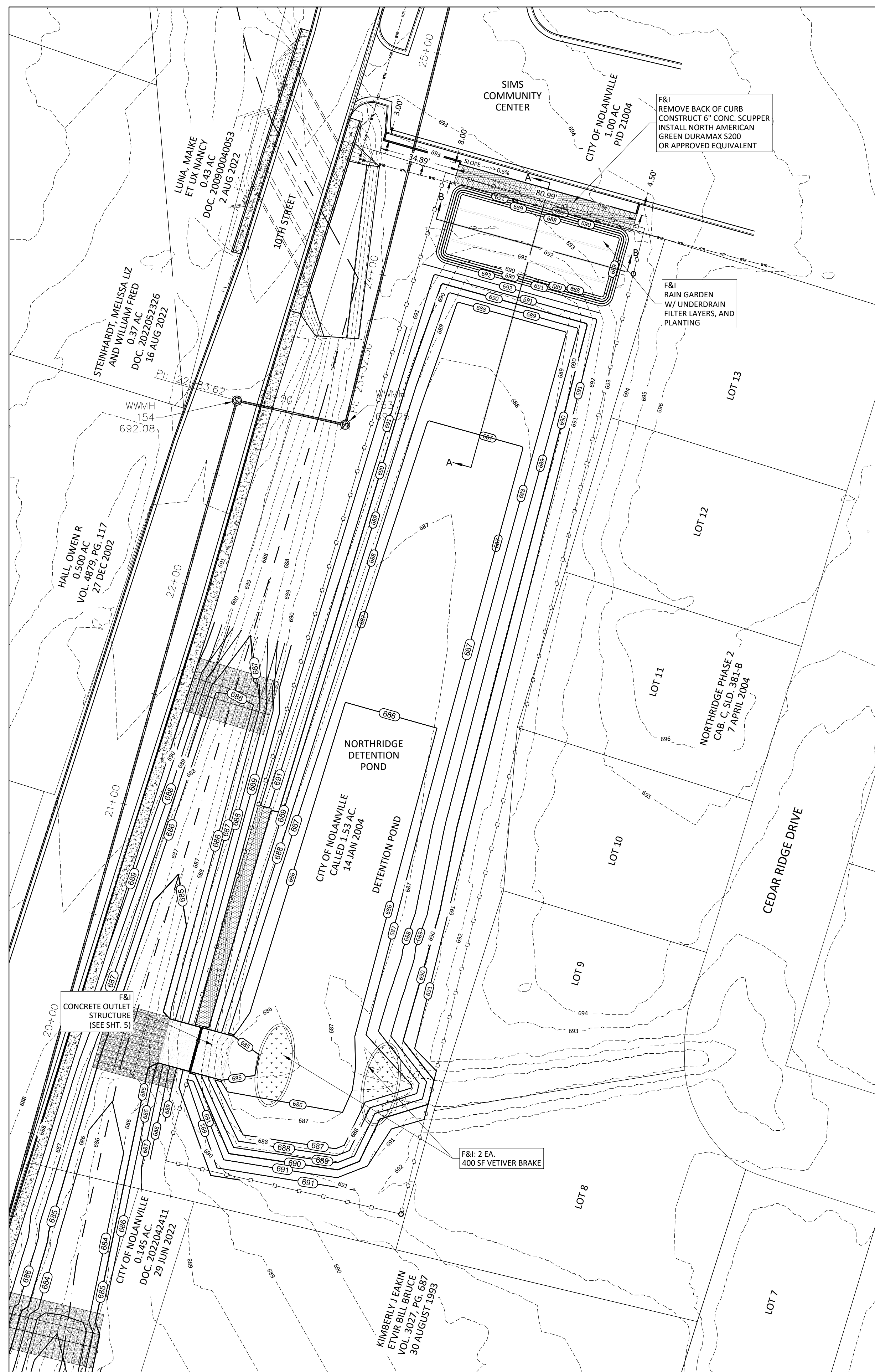


DATE:	2-Apr-24
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DESIGNED BY:	JHB
CHECKED BY:	JHB
PROJECT #:	24-001
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OF	7

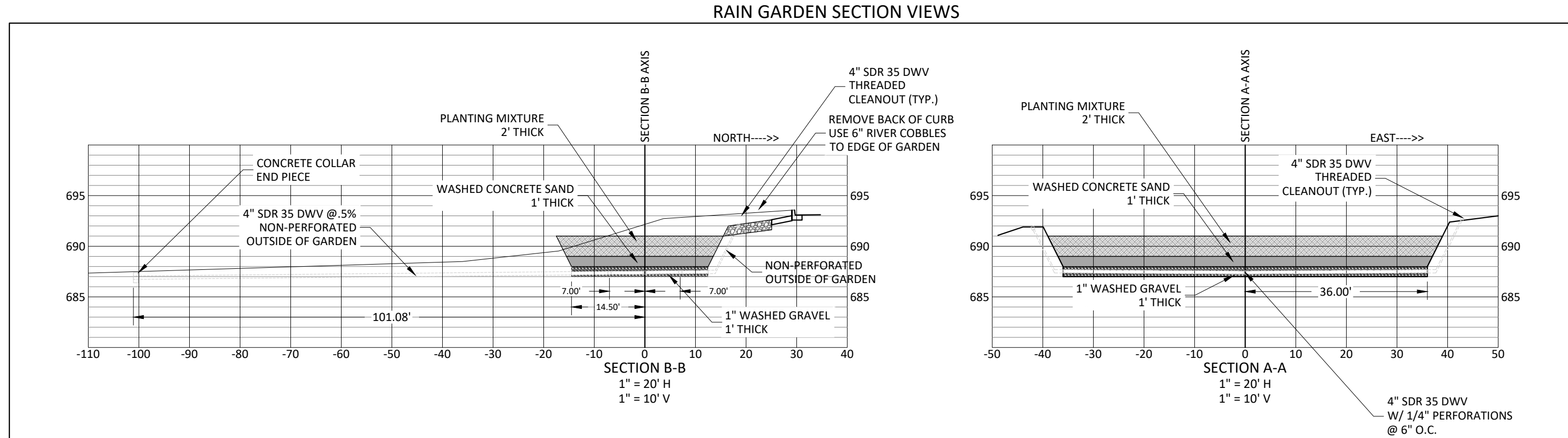


IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES, BOTH ABOVE AND BELOW GROUND PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL REPAIR ALL DAMAGED UTILITIES TO EQUAL OR BETTER CONDITION AND TO THE SATISFACTION OF THE UTILITY OWNER. TELEPHONE NUMBERS: BELL COUNTY WCID NO. 3 (254) 698-6885 (UTILITY PROVIDER FOR NOLANVILLE) OWEN HALL - SUPERINTENDENT CITY OF NOLANVILLE (254) 698-6335 NON-MUNICIPAL UTILITIES 1-800-DIG TESS IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND/OR HIS SUB-CONTRACTOR TO ADJUST ALL MANHOLES, CLEANOUTS, FIRE HYDRANTS, VALVE BOXES, WATER SERVICES, METER BOXES, FLUSHING VALVES, AND ALL OTHER APPURTENANCES TO ACTUAL FINAL GRADES AT NO EXTRA COST TO OWNER.

PHASE ONE CONSTRUCTION PLANS



RAIN GARDEN CALCULATION			
COMPOSITE C-VALUE			
CONT. AREA	SF	C	CA
TOTAL	45,891		
IMPERVIOUS	29,597	0.98	29,005
PERVIOUS	16,294	0.30	4,888
		CA SUM	33,893
		DA (ACRES)	1.05
		COMP C-VALUE	0.74
RATIONAL W/ 2*Tc DESCENDING LIMB			
Tc =	5	MIN	
I2 =	4.2	IN/HR	
Q2 =	3.26	CFS	
VOL2 =	1,468	CF	(54 CY)
SIZING CALCULATIONS			
TCOT AREA CALC = IMP/8	3,700	SF	
TCOT DEPTH = (VOL2/AREA)*4	2	FT	
TOTAL VOLUME	7,400	CF	
TOTAL VOLUME	275	CY	



- PLANT LISTS**
- MEDIUM SOIL - FULL SUN**
 COMMON IRONWEED (VERNONIA FASCICULATA)
 CULVER'S-ROOT (VERONICASTRUM VIRGINICUM)
 CUP-PLANT (SILPHIUM PERFOOLIATUM)
 DOWNY PHLOX (PHLOX PILOSA)
 FOX SEDGE (CAREX VULPINOIDEA)
 GREAT BLUE LOBELIA (LOBELIA SIPHILITICA)
 INDIAN GRASS (SORGHASTRUM NUTANS)
 MUSKINGUM SEDGE (CAREX MUSKINGUMENSIS)
 NEW ENGLAND ASTER (SYMPHYOTRICHUM NOVAE-ANGLIAE)
 OHIO GOLDENROD (SOLIDAGO OHIOENSIS)
 PRAIRIE AVENS (GEUM TRIFLORUM)
 SMOOTH PHLOX (PHLOX GLABERRIMA)
 SWAMP MILKWEED (ASCLEPIAS INCARNATA)
 SWEET BLACK-EYED SUSAN (RUDBECKIA SUBTOMENTOSA)
 WHITE WILD INDIGO (BAPTISA ALBA)
 WILD BERGAMOT (MONARDA FISTULOSA)
 WILD SENNA (CASSIA HEBECARPA)
- MOIST SOIL - FULL SUN**
 BIG BLUESTEM (ANDROPOGON GERARDII)
 BLACK-EYED SUSAN (RUDBECKIA HIRTA)
 BLUE FLAG IRIS (IRIS VERSICOLOR)
 BLUE VERVAIN (VERBENA HASTATA)
 PORCUPINE SEDGE (CAREX COMOSA)
 BROWN-EYED SUSAN (RUDBECKIA TRILOBA)
 CORD GRASS (SPARTINA PECTINATE)
 CULVER'S-ROOT (VERONICASTRUM VIRGINICUM)
 CUP-PLANT (SILPHIUM PERFOOLIATUM)
 DARK GREEN BULRUSH (SCIRPUS ATROVIRENS)
 FOX SEDGE (CAREX VULPINOIDEA)
 GOLDEN ALEXANDERS (ZIZIA AUREA)
 GREAT BLUE LOBELIA (LOBELIA SIPHILITICA)
 INDIAN GRASS (SORGHASTRUM NUTANS)
 INDIAN PLANTAIN (AMOGLOSSUM ATRIPLICIFOLIUM)
 COMMON IRONWEED (VERNONIA FASCICULATA)
 MARSH BLAZING-STAR (LIATRIS SPICATA)
 NODDING WILD RYE (ELYMUS CANADENSIS)
 OHIO GOLDENROD (SOLIDAGO OHIOENSIS)
 OX-EYE SUNFLOWER (HELIOPSIS HELIANTHOIDES)
 PERFOLIATE BONESET (EUPATORIUM PERFOOLIATUM)
 PORCUPINE SEDGE (CAREX COMOSA)
 PRAIRIE SEDGE (CAREX HYSTERICINA)
 PRAIRIE BLAZING-STAR (LIATRIS PYCNOSTACHYA)
 PRAIRIE DOCK (SILPHIUM TERRESTRIS)
 ROSINWEED (SILPHIUM INTEGRIFOLIUM)
 SHOWY TICK TREFOIL (DESMODIUM CANADENSE)
 SPONGY SEDGE (CAREX STIPATA)
 SPOTTED JOE-PYE-WEED (EUTROCHIUM MACULATUM)
 STIFF GOLDENROD (OLIGONEURON RIGIDUM)
 SWAMP MILKWEED (ASCLEPIAS INCARNATA)
 SWITCH GRASS (PANICUM VIRGATUM)
 VIRGINIA WILD RYE (ELYMUS VIRGINICUS)
 WILD BERGAMOT (MONARDA FISTULOSA)
 WILD BLUE IRIS (IRIS SHREVEI)
 WILD SENNA (CASSIA HEBECARPA)
 YELLOW CONEFLOWER (RATIBIDA PINNATA)
 YELLOW SNEEZEWEEED (HELENIUM AUTUMNALE)

- RAIN GARDEN NOTES:**
- RAIN GARDEN SOIL SHALL CONSIST OF 50% SAND, 25% COMPOST (OR SHREDDED HARDWOOD MULCH) AND 25% TOPSOIL (MAX. 10% CLAY).
 - SAND SHALL BE WASHED CONCRETE SAND FROM RIVER GRAVEL.
 - 1" WASHED CONCRETE ROCK SHALL BE FROM RIVER GRAVEL.
 - PLANTINGS SHALL BE FROM APPROVED LIST.
 - DRAIN PIPING SHALL BE SDR 35 PVC DWV, SOLVENT WELD.
 - USE TEXAS CREPE MYRTLES FOR TREES (MINIMUM OF FOUR) PLANTED NEAR THE EDGES.

VETIVER NOTES:
 VETIVER IS AVAILABLE FROM MOSQUITO HAWK FARM
 ANAHUAC, TEXAS
 WARREN SULLIVAN, PROPRIETOR
 PHONE: 1-785 550-8297



FOR REVIEW

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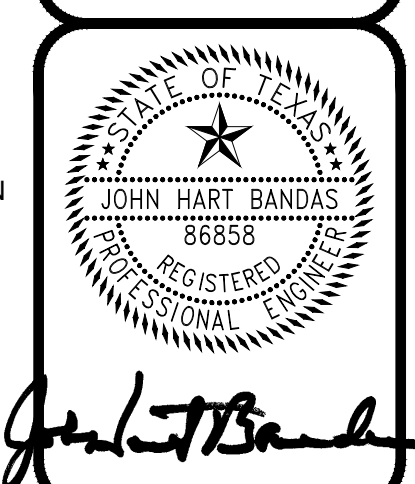
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 OWEN HALL - SUPERINTENDENT
 CITY OF NOLANVILLE (254) 698-6335
 NON-MUNICIPAL UTILITIES 1-800-DIG TESS

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CITY OF NOLANVILLE
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POND GRADING
 AND RAIN GARDEN

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PHASE ONE CONSTRUCTION PLANS

