

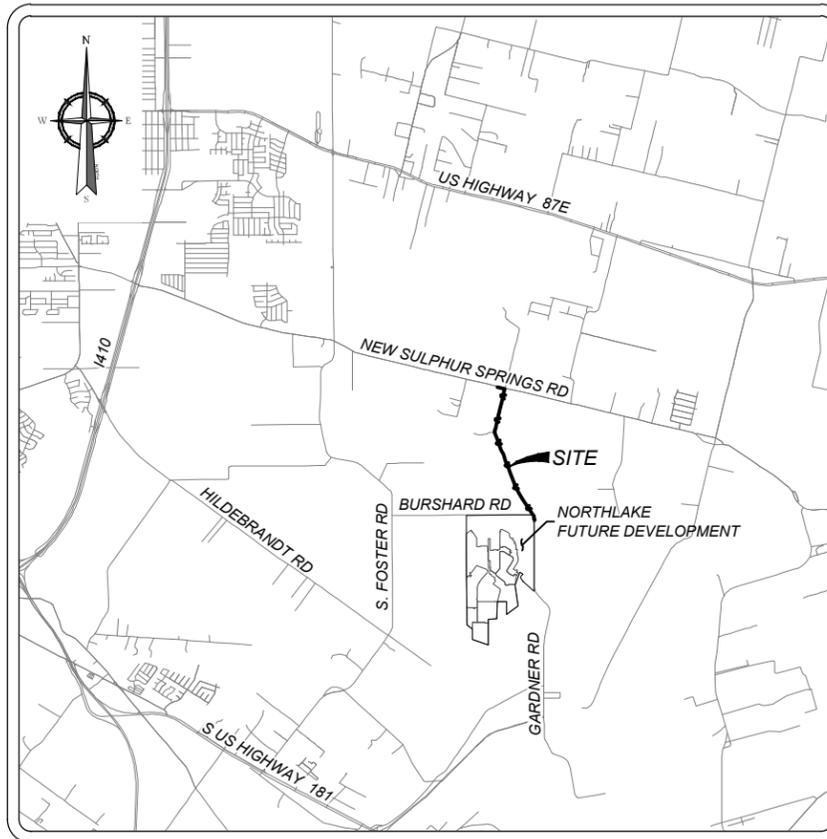
**GENERAL NOTES**

1. ALL VALVES SHALL REMAIN CLOSED UNTIL MAINS HAVE BEEN DISINFECTED, FLUSHED, AND RELEASED FOR PUBLIC USE BY THE ENGINEER.
2. EXISTING UTILITIES SHOWN ARE TAKEN FROM VARIOUS UTILITY COMPANY RECORDS. CONTRACTORS SHALL VERIFY THE EXACT LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO BEGINNING CONSTRUCTION. CONTRACTORS SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITIES AND DRAINAGE STRUCTURES DURING CONSTRUCTION.
3. ALL EXCAVATION SHALL BE UNCLASSIFIED REGARDLESS OF MATERIAL ENCOUNTERED.
4. BIDDERS ARE NOTIFIED TO MAKE SUBSURFACE INVESTIGATIONS AS THEY DEEM NECESSARY. NO ADDITIONAL PAYMENT WILL BE MADE FOR WATER, SAND, GRAVEL OR OTHER UNSTABLE CONDITIONS ENCOUNTERED IN EXCAVATIONS.
5. DETOUR OF TRAFFIC AROUND WORK ACTIVITIES, MAINTENANCE OF TRAFFIC CONTROL SIGNS, AND FLAGMEN ARE THE CONTRACTOR'S RESPONSIBILITY. NO SEPARATE PAYMENT WILL BE MADE.
6. THE CONTRACTOR SHALL PROTECT ALL OPEN EXCAVATIONS AND EQUIPMENT FROM CHILDREN, PEDESTRIANS, AND VEHICLES IN THE AREA.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RESTORATION OF ALL FENCES IN THE WORK AREA TO THEIR ORIGINAL CONDITION PRIOR TO COMPLETION OF THE CONTRACT. THIS SHALL APPLY TO ALL FENCES IN THE WORK AREA WHETHER THEY ARE SHOWN ON THE PLANS OR NOT.
8. CONTRACTOR SHALL PRESERVE ALL CONSTRUCTION STAKES, MARKS, ETC. ANY CONSTRUCTION STAKES, MARKS, ETC., DESTROYED OR REMOVED BY THE CONTRACTOR OR HIS EMPLOYEES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
9. THE CONTRACTOR SHALL CONFER WITH EACH INDIVIDUAL PROPERTY OWNER AS TO THE LOCATION OF EACH INDIVIDUAL METER BOX.
10. CONTRACTOR SHALL DISINFECT ALL NEW WATER MAINS BEFORE TYING INTO EXISTING WATER MAINS.
11. ALL VALVES SHALL BE PERMANENTLY MARKED BY THE USE OF A VALVE MARKER. NO SEPARATE PAY ITEM.
12. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS, SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
13. CONTRACTOR SHALL MAINTAIN FENCING FOR THE CONTAINMENT OF LIVESTOCK DURING CONSTRUCTION. ALL FENCES REMOVED FOR CONSTRUCTION SHALL BE REPLACED. ALL REQUIRED FENCING SHALL BE INCIDENTAL TO CONSTRUCTION AND NOT A SEPARATE PAY ITEM.
14. ALL DRIVEWAYS, INCLUDING DRAIN PIPES, CULVERTS AND HEADWALLS, DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR TO EQUAL OR BETTER THAN PRECONSTRUCTION CONDITION. ASPHALT DRIVES ARE NOT ALLOWED TO BE CUT WITHOUT OWNERS PERMISSION. INSTALLATION OF WATER MAINS CROSSING CONCRETE DRIVES WILL BE BORED. ALL DRAIN PIPE, CULVERT AND HEADWALL REPAIR SHALL BE INCIDENTAL TO CONSTRUCTION AND NOT A SEPARATE PAY ITEM. DRIVEWAY PAVEMENT REPAIR SHALL BE PAID FOR AS PER ITEM NO. 02950, "CUTTING AND PATCHING ASPHALT PAVEMENT, ASPHALT DRIVES, CONCRETE DRIVES, OR GRAVEL ROADS AND DRIVES". PAYMENT FOR BORES UNDER CONCRETE DRIVES DRIVES SHALL BE PAID FOR AS PER ITEM 02445 "BORING AND CASING PIPE UNDER HIGHWAYS, RAILROADS, OR OTHER AREAS".
15. LOCATIONS OF COMBINATION AIR VALVES WHERE SHOWN ON PLANS ARE APPROXIMATE. FINAL LOCATIONS TO BE ADJUSTED IN FIELD AT TIME OF CONSTRUCTION AT THE DIRECTION OF THE ENGINEER.
16. ALL WORK SHALL BE SCHEDULED TO TAKE PLACE ON MONDAY THROUGH FRIDAY, DURING NORMAL WORK HOURS. CONTRACTOR SHALL NOTIFY ECSUD 48 HOURS PRIOR TO SERVICE SHUT OFF AFFECTING CUSTOMERS. SERVICE SHALL NOT BE SHUT OFF FOR MORE THAN EIGHT (8) HOURS AT A TIME.
17. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO PROPERTY, INCLUDING, BUT NOT LIMITED TO, FENCES, PAVEMENT, DRIVEWAYS, LAWNS, CULVERTS, AND TREES, AT NO COST TO THE OWNER.
18. THE CONTRACTOR SHALL PROVIDE EROSION CONTROL AT ALL CULVERT, STREAM AND DRAINAGE SWALES CROSSINGS. EROSION CONTROL MEASURES SHALL INCLUDE AS A MINIMUM SILT FENCES. SILT FENCES SHALL BE INSTALLED PRIOR TO DISTURBANCE OF THE WORK AREAS AND SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION OF THE DISTURBED AREAS UPSTREAM. EROSION CONTROL SHALL BE COORDINATED WITH THE ENGINEER.
19. THE CONTRACTOR SHALL REMOVE AND REPLACE ANY MAILBOXES, TRAFFIC OR ROAD SIGNS ENCOUNTERED. NO SEPARATE PAY ITEM.
20. CONTRACTOR SHALL SUBMIT TO ENGINEER PROPOSED CONSTRUCTION SEQUENCE PRIOR TO BEGINNING CONSTRUCTION.
21. ALL FITTINGS ARE TO BE DUCTILE IRON, MECHANICAL JOINT TYPE, UNLESS OTHERWISE NOTED ON PLANS.
22. ALL THRUST BLOCKS SHALL BE INSPECTED BY OWNER AND/OR ENGINEER PRIOR TO BACKFILLING.
23. ALL EXISTING VALVES SHOWN ON PLANS TO BE ABANDONED, SHALL HAVE BOXES REMOVED AND SHALL BE BACKFILLED ACCORDING TO SPECIFICATIONS. NO SEPARATE PAY ITEM.
24. CONTRACTOR SHALL CONTAIN ALL CONSTRUCTION AND STAGING WITHIN EXISTING UTILITY EASEMENTS, UNLESS OTHER ARRANGEMENTS ARE MADE WITH OWNER AND/OR TXDOT.
25. WHERE THE NEW WATER MAIN SHOWN ON THE PLANS REQUIRES CROSSING AN EXISTING WATER MAIN OR OTHER UTILITY, THE CONTRACTOR SHALL VERTICALLY DEFLECT THE PROPOSED WATER MAIN. DEFLECTION SHALL BE IN ACCORDANCE WITH THE PIPE MANUFACTURE'S RECOMMENDATIONS. FITTINGS ARE NOT PERMISSIBLE, UNLESS OTHERWISE SHOWN ON THE PLANS. NO SEPARATE PAY ITEM.
26. WATER MAINS SHALL BE INSTALLED WITH 48" MINIMUM COVER OVER THE TOP OF THE PIPE AND A MAXIMUM DEPTH OF BURY OF 60", UNLESS OTHERWISE NOTED ON THE PLANS OR DIRECTED BY THE ENGINEER.
27. CONTRACTOR TO PROVIDE POSITIVE DRAINAGE AWAY FROM ALL CONCRETE FOUNDATIONS, VAULT BOXES AND OVERFLOW BOXES THROUGHOUT THE PROJECT SITE.
28. BUY AMERICAN STANDARDS SHALL BE ADHERED TO CONCERNING ALL STEEL OR IRON BASED MATERIALS.
29. ALL GATE VALVES SHALL "OPEN RIGHT".
30. AN AIR RELEASE VALVE SHALL BE INSTALLED AT THE HIGHEST ELEVATION POINT(S) OF THE WATER DISTRIBUTION SYSTEM LOCATED WITHIN A DEVELOPMENT. THE EXACT LOCATION SHALL BE COORDINATED IN THE FIELD AND VERIFIED AGAINST THE FINAL GRADING PLAN. INSTALLATION SHALL BE IN ACCORDANCE WITH THE ECSUD STANDARDS AND THE MANUFACTURER'S RECOMMENDATIONS. PROVIDE A VALVE BOX OR APPROVED ENCLOSURE FOR ACCESS AND MAINTENANCE.
31. A MINIMUM OF ONE (1) WATER SAMPLE STATION SHALL BE INSTALLED WITHIN A DEVELOPMENT TO ALLOW FOR ROUTINE WATER QUALITY MONITORING. THE SAMPLE STATION SHALL BE LOCATED NEAR THE SUBDIVISION ENTRANCE OFF A WATER MAIN IN A PUBLICLY ACCESSIBLE AREA, OR AT A REPRESENTATIVE LOCATION APPROVED BY ECSUD. THE STATION SHALL BE INSTALLED PER ECSUD STANDARDS, MANUFACTURER'S SPECIFICATIONS AND IN COMPLIANCE WITH ALL APPLICABLE HEALTH AND SAFETY REGULATIONS. COORDINATE FINAL LOCATION WITH ECSUD PRIOR TO INSTALLATION. ALL COMPONENTS SHALL BE SUITABLE FOR POTABLE WATER USE, AND THE STATION SHALL BE PROTECTED FROM FREEZING, TAMPERING, AND OTHER ENVIRONMENTAL FACTORS.
32. WHEN INSTALLING A CUT-IN TEE TO TIE INTO AN EXISTING WATER MAIN, MECHANICAL BELL JOINT RESTRAINTS SHALL BE PROVIDED ON ALL ADJACENT EXISTING PIPE JOINTS TO PREVENT SEPARATION DUE TO THRUST FORCES. RESTRAINTS SHALL BE INSTALLED ON A MINIMUM OF ONE FULL LENGTH OF PIPE ON EACH SIDE OF THE NEW TEE, OR AS REQUIRED BY ECSUD STANDARDS. ALL RESTRAINT DEVICES SHALL BE COMPATIBLE WITH THE EXISTING PIPE MATERIAL AND PRESSURE CLASS, AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. COORDINATE WITH ECSUD FOR FINAL APPROVAL OF RESTRAINT TYPE AND EXTENT.
33. ALL CONNECTIONS TO EXISTING WATER MAINS SHALL BE PERFORMED USING THE HIGH TEST HYPOCHLORITE (HTH) METHOD IN ACCORDANCE WITH AWWA C651 DISINFECTION PROCEDURES. THE HTH METHOD SHALL INVOLVE THE APPLICATION OF A CHLORINE SOLUTION DIRECTLY TO ALL INTERIOR SURFACES OF THE NEW, PIPE, AND APPURTENANCES IMMEDIATELY PRIOR TO INSTALLATION. THIS INCLUDES SWABBING OR SPRAYING WITH A MINIMUM 1% CHLORINE SOLUTION. NO OTHER DISINFECTION METHOD WILL BE ACCEPTED FOR TIE-INS. ALL WORK SHALL BE PERFORMED UNDER THE SUPERVISION OF ECSUD AND IN COMPLIANCE WITH THEIR STANDARDS. PROPER FLUSHING AND BACTERIOLOGICAL TESTING SHALL FOLLOW PRIOR TO PLACING THE MAIN INTO SERVICE.

# NORTHLAKE OFFSITE PHASE 2

BEXAR COUNTY, TEXAS

## WATER IMPROVEMENTS



### LOCATION MAP

SCALE: NOT-TO-SCALE

**OWNER/DEVELOPER:**  
**LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD**  
 100 NE LOOP 410, SUITE 1155  
 SAN ANTONIO, TEXAS 78216  
 (210) 403-6200

INDEX	
SHEET TITLE	SHEET NUMBER
COVER SHEET	1
SURVEY CONTROL PLANS	2
OVERALL PROJECT LAYOUT	3
DEMOLITION PLANS	4
TYPICAL SECTIONS	5
TRAFFIC CONTROL PLANS	6 - 10
GARDNER RD WATER LINE PLAN & PROFILE	12 - 29
WATER DETAILS	30 - 33
SWPPP	34 - 42
SWPPP DETAILS	43 - 44
OVERALL GARDNER RD DISTURBANCE EXHIBIT	EX. 0.0
WATER MAIN PVMT DISTURBANCE EXHIBIT	EX. 2.0 - EX. 2.1
GARDNER RD. PVMT REPAIR DETIALS	EX. 3.0



**Engineering & Design**

www.colliersengineering.com

Copyright © 2026, Colliers Engineering & Design. All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reprinted, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as




**PROTECT YOURSELF**  
 ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE.

Know what's below.  
 Call before you dig. STATE REQUIRED FILE NUMBER  
 FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

DRAWN BY	DATE	REV	DESCRIPTION

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT FOR BIDDING, CONSTRUCTION, OR PERMIT PURPOSES.

DIANA G. HERNANDEZ VIDEA, P.E.  
 TEXAS LICENSE # 155475

COLLIERS ENGINEERING & DESIGN  
 TBPE FIRM # 14909

03/02/2026

**WATER IMPROVEMENTS**

**FOR**

**NORTHLAKE OFFSITE**

**PHASE 2**

**GARDNER RD**

**BEXAR COUNTY**

**TEXAS**



HOUSTON  
 13501 Katy Freeway,  
 Suite 1350  
 Houston, TX 77079  
 Phone: 281.674.7560  
COLLIERS ENGINEERING & DESIGN, INC.  
 DOING BUSINESS AS MASER CONSULTING

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	Mar-26	XXX	XXX
PROJECT NUMBER:	DRAWING NAME:		
24012718A	C-CVER-PH02.DWG		

SHEET TITLE:

**COVER SHEET**

SHEET NUMBER:

1 OF 999







Engineering & Design

www.colliersengineering.com

Copyright © 2026, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reprinted, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as **MASER CONSULTING**

**811** PROTECT YOURSELF ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE

Know what's below. Call before you dig. STATE REQUIRED FILE NUMBER FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DESCRIPTION

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT FOR BIDDING, CONSTRUCTION, OR PERMIT PURPOSES.

STANFORD NGUYEN, P.E. TEXAS LICENSE #

COLLIERS ENGINEERING & DESIGN TBPE FIRM # 14909

03/02/2026

WATER IMPROVEMENTS FOR NORTHLAKE OFFSITE PHASE 2

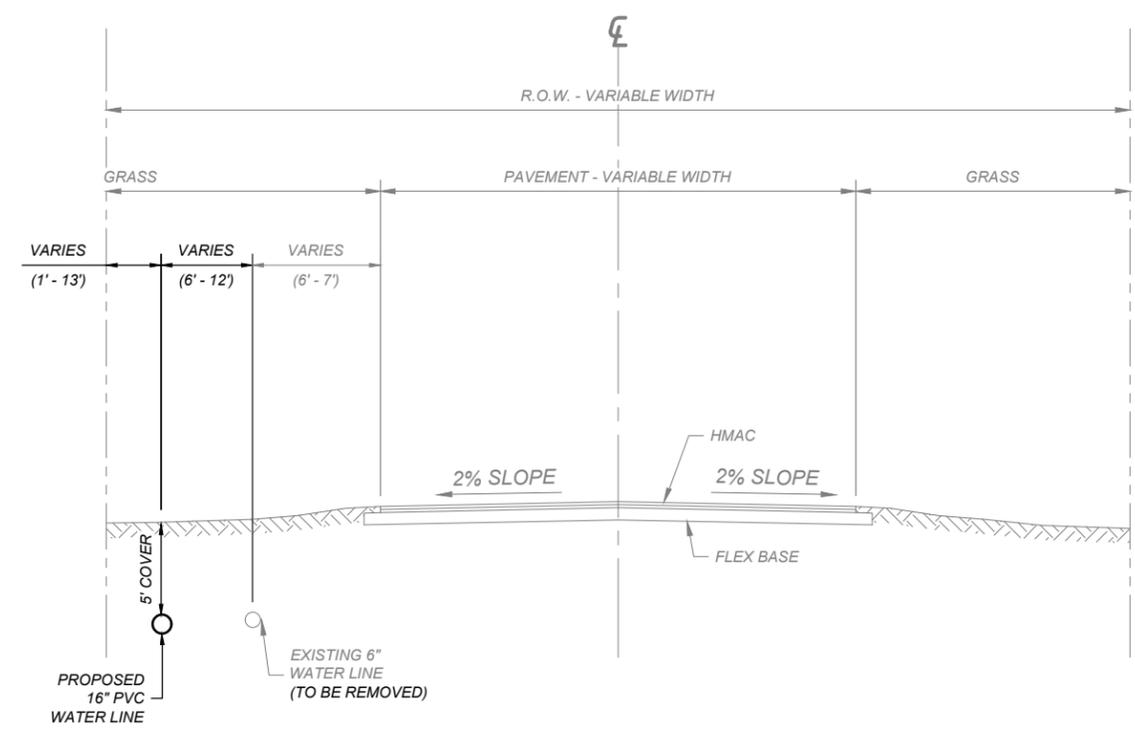
GARDNER RD BEXAR COUNTY TEXAS

HOUSTON 13501 Katy Freeway, Suite 1350 Houston, TX 77079 Phone: 281.674.7560 COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

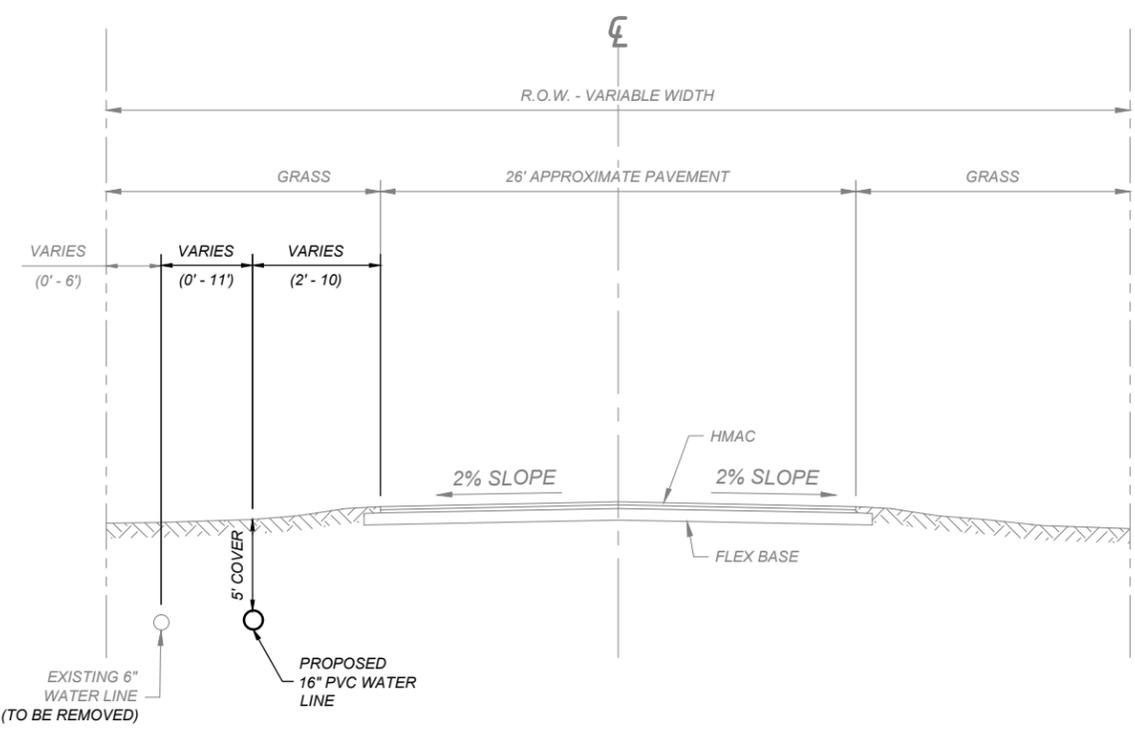
SCALE: AS SHOWN	DATE: Mar-26	DRAWN BY: XXX	CHECKED BY: XXX
PROJECT NUMBER: 24012718A	DRAWING NAME: C-TYPC-SECT-PH02.DWG		

SHEET TITLE: TYPICAL SECTIONS

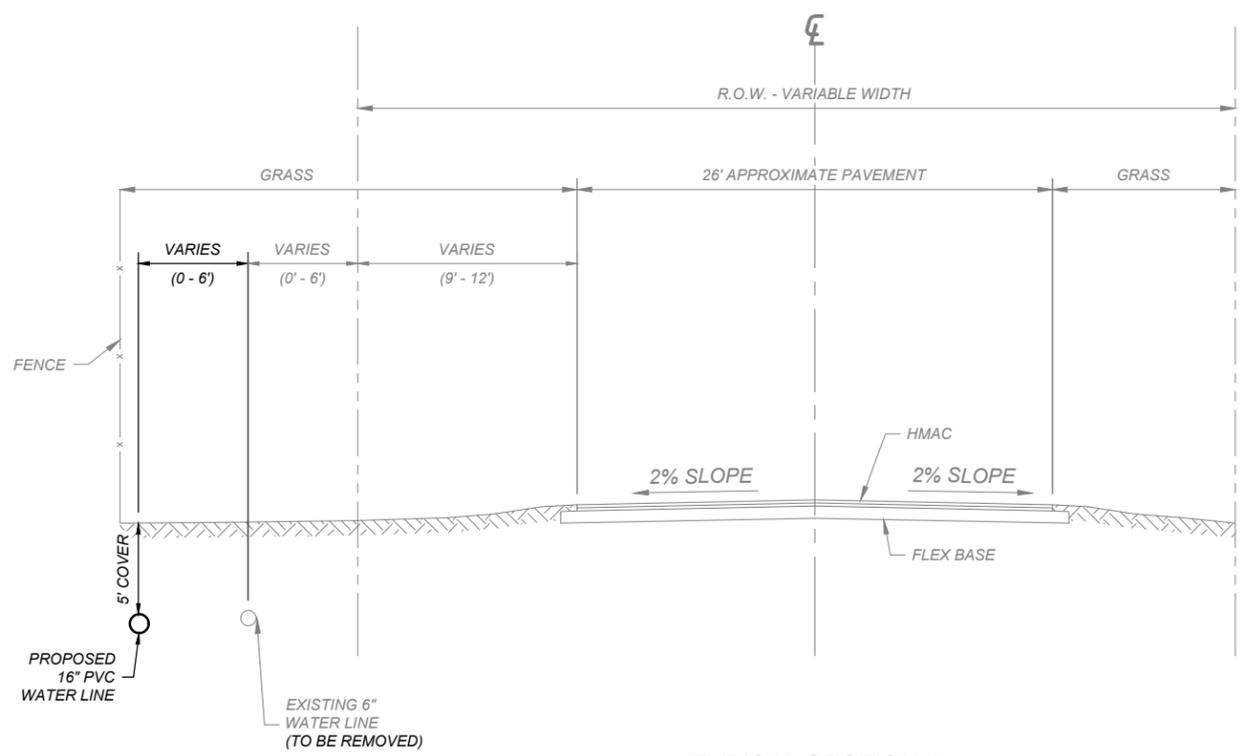
SHEET NUMBER: 5 OF 999



**TYPICAL SECTION 3**  
GARDNER RD: STA 14+55 TO STA. 17+89  
STA 25+28 TO STA. 78+15



**TYPICAL SECTION 4**  
GARDNER RD: STA 6+41 TO STA. 14+55  
STA 17+89 TO STA. 25+28

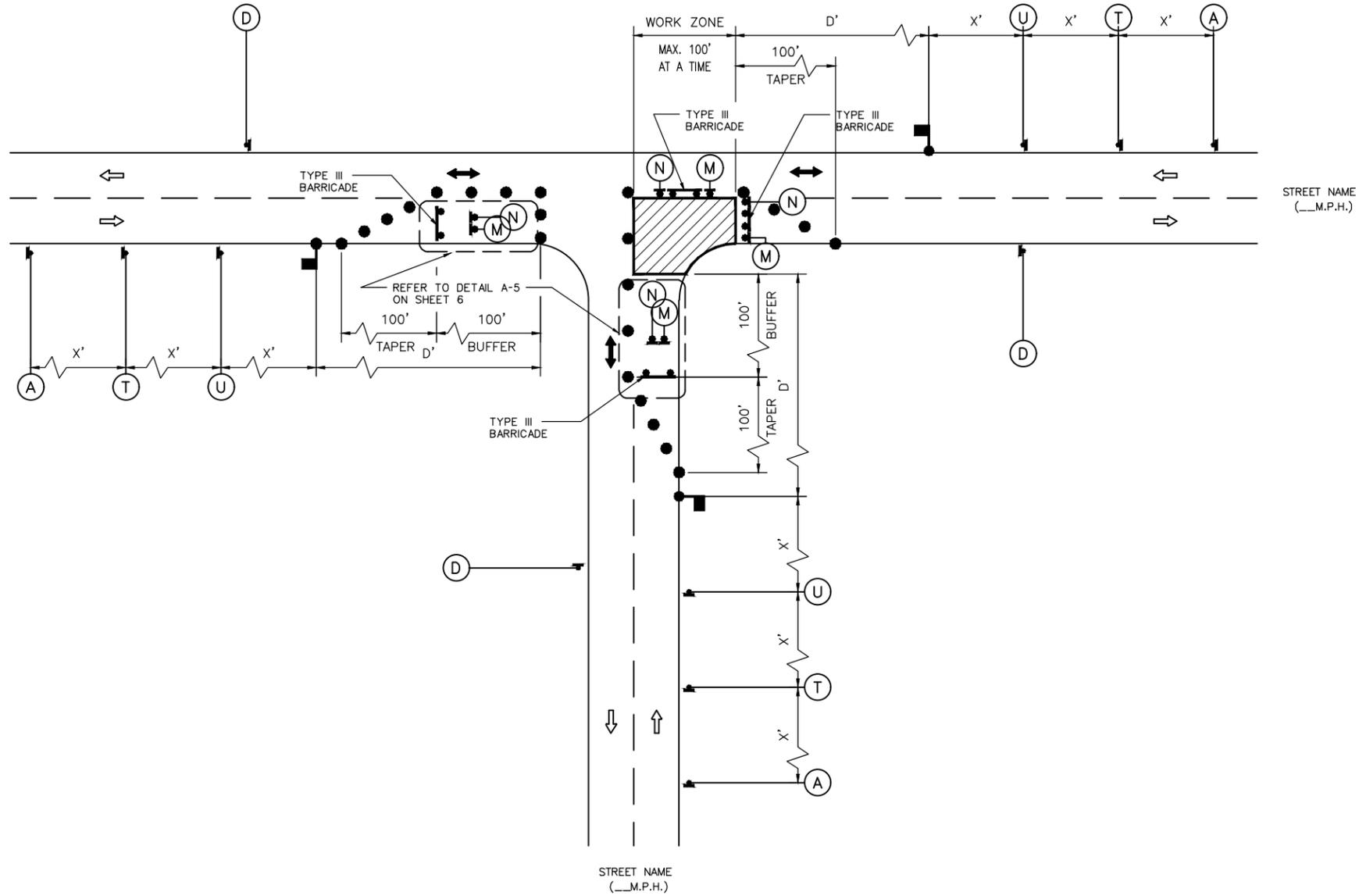
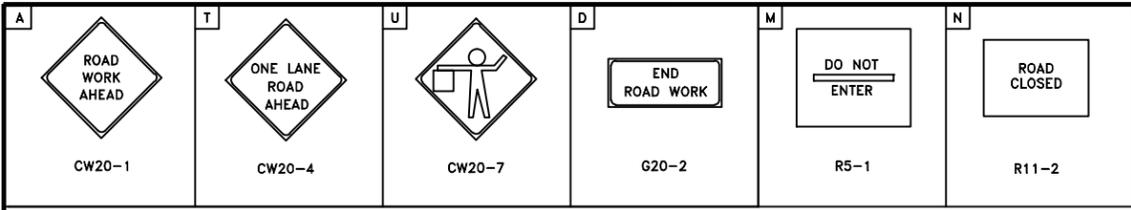


**TYPICAL SECTION 1**  
GARDNER RD: STA 4+46 TO STA. 6+41









**LEGEND:**

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

**NOTES:**

1. MINOR WORK AND DAYTIME OPERATIONS ONLY.
2. REFER TO PROJECT SPECIFIC TRAFFIC CONTROL PLANS FOR MAJOR OPERATIONS AND OVERNIGHT LANE CLOSURES.
3. FOR DIMENSIONS REFER TO SHEET 6.
4. INSTALL FLASHERS ON DRUMS WHERE REQUIRED AND APPROVED BY CITY TRAFFIC ENGINEER.
5. MAX. 100' WORK ZONE AT A TIME.

**Colliers**  
Engineering & Design  
www.colliersengineering.com  
Copyright © 2026, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reprinted, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as **MASER**  
**811** PROTECT YOURSELF  
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE.  
Know what's below. Call before you dig. STATE REQUIRED FILE NUMBER FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DESCRIPTION

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT FOR BIDDING, CONSTRUCTION, OR PERMIT PURPOSES.  
DIANA G. HERNANDEZ VIDEA, P.E.  
TEXAS LICENSE # 155475  
COLLIERS ENGINEERING & DESIGN  
TBPE FIRM # 14909  
03/02/2026

**WATER IMPROVEMENTS**  
FOR  
**NORTHLAKE OFFSITE**  
PHASE 2  
GARDNER RD  
BEXAR COUNTY  
TEXAS

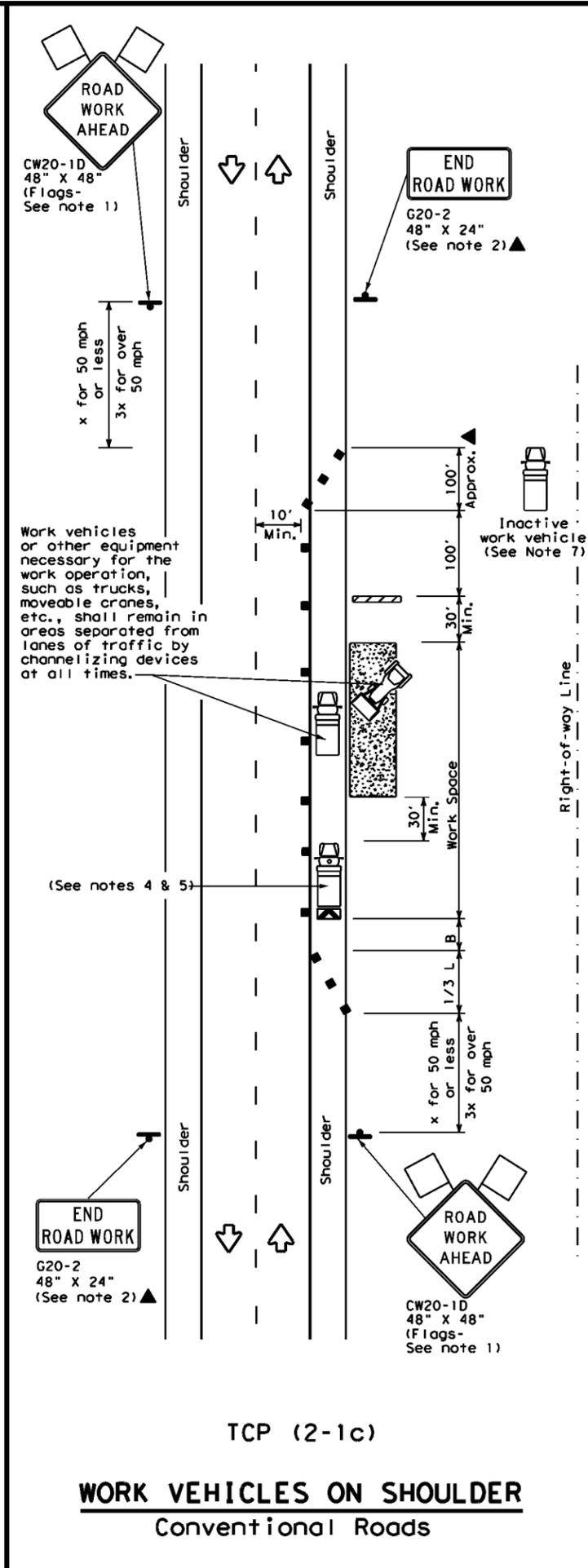
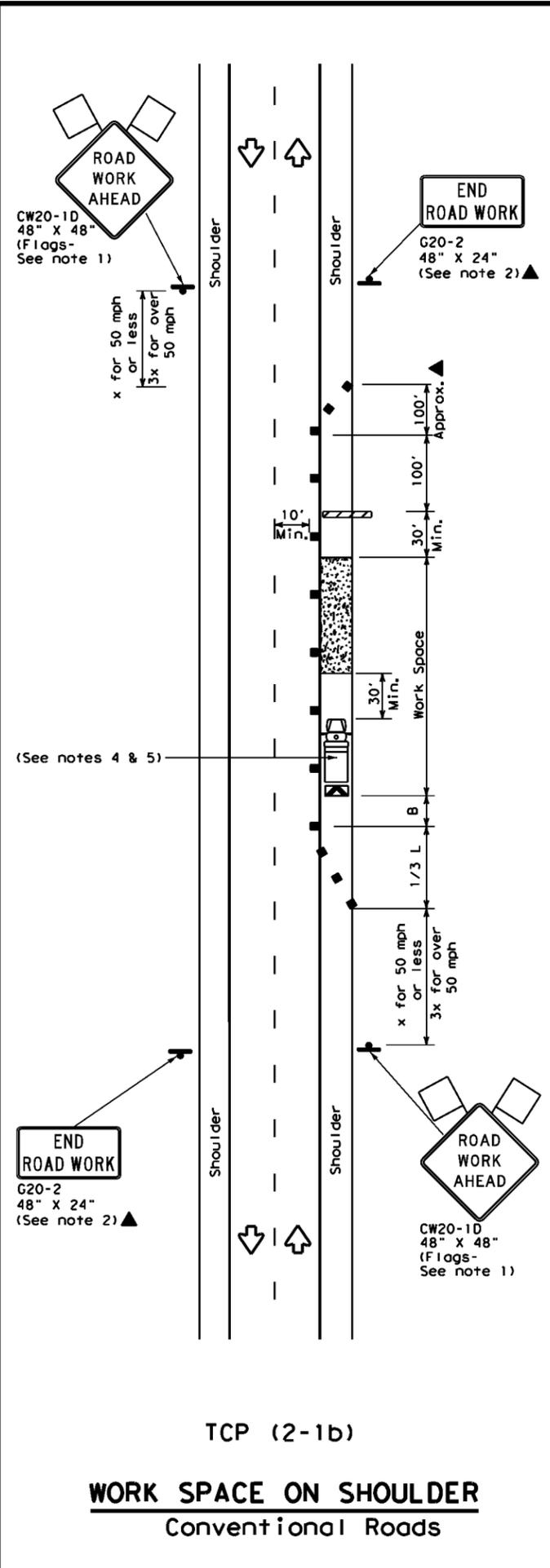
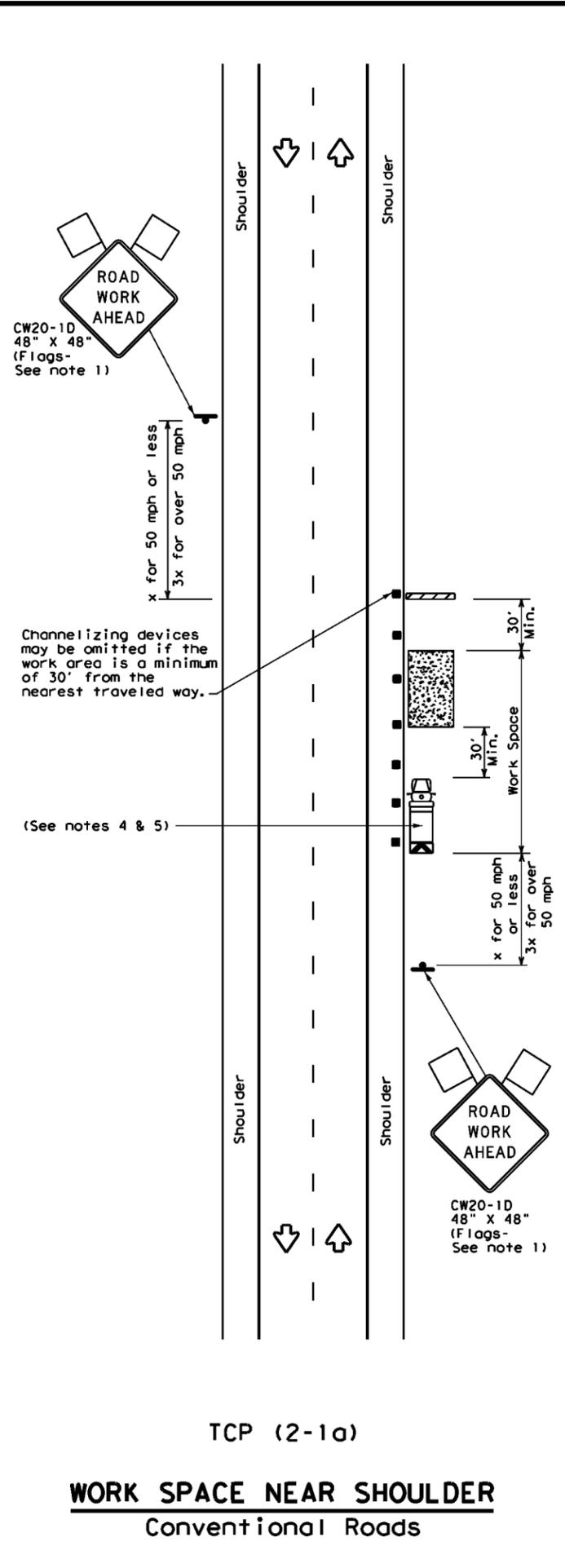
**Colliers** HOUSTON  
13501 Katy Freeway,  
Suite 1350  
Houston, TX 77079  
Phone: 281.674.7560  
Engineering & Design  
FIRM ID #14909  
COLLIERS ENGINEERING & DESIGN, INC.  
DOING BUSINESS AS MASER CONSULTING

SCALE: AS SHOWN	DATE: Mar-26	DRAWN BY: XXX	CHECKED BY: XXX
PROJECT NUMBER: 24012718A	DRAWING NAME: C-DTLS.DWG		

SHEET TITLE:  
**TCP TYPICAL CONSTRUCTION**  
ZONE AT A T-INTERSECTION  
PHASE 3 OF 3

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:



LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L = WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

\* Conventional Roads Only  
 \*\* Taper lengths have been rounded off.  
 L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓	✓

- GENERAL NOTES**
- Flags attached to signs where shown, are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
  - Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
  - Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
  - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
  - See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
  - Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
  - CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

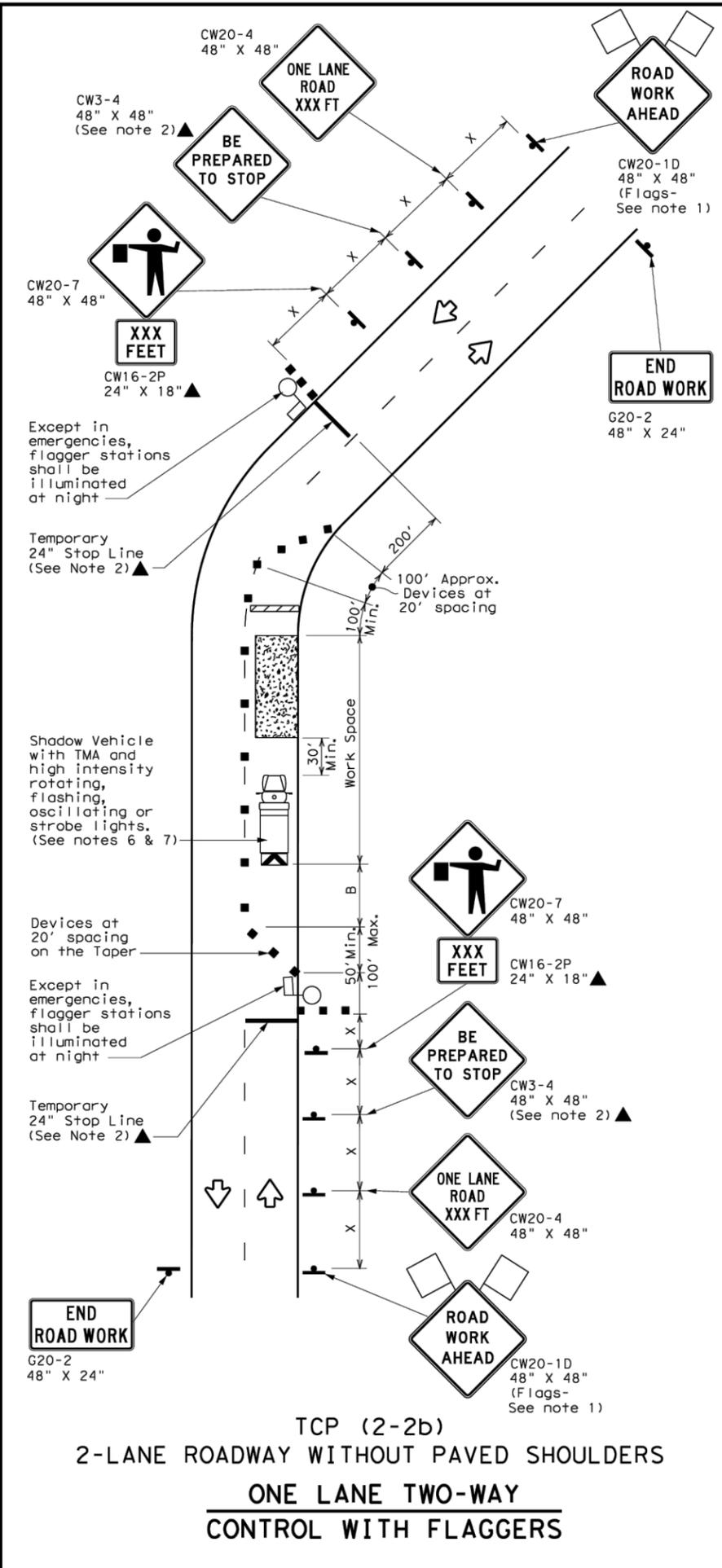
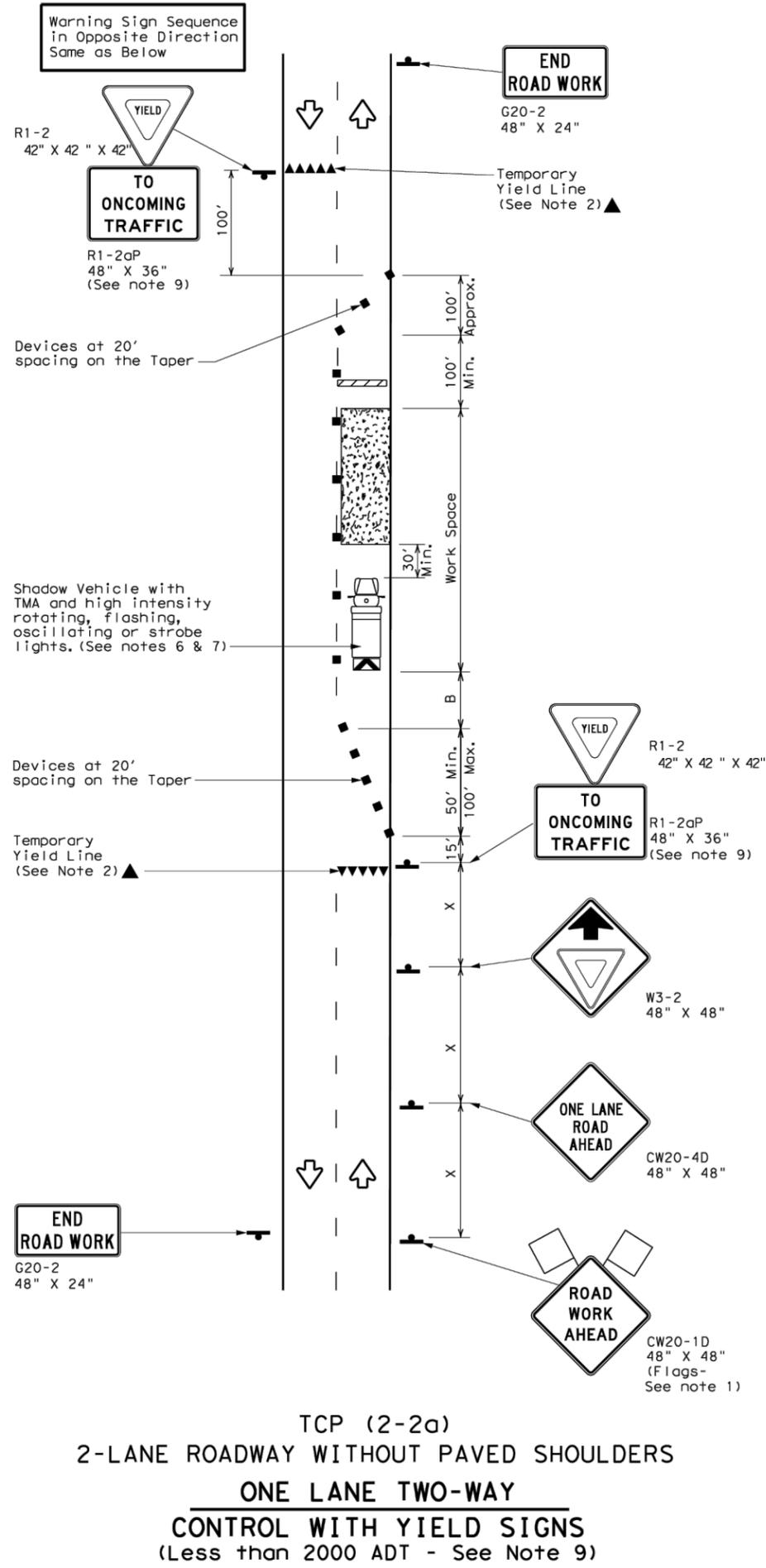
Texas Department of Transportation  
 Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN  
 CONVENTIONAL ROAD  
 SHOULDER WORK**

**TCP (2-1) - 18**

FILE: tcp2-1-18.dgn	DN:	CKI	DW:	CKI
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS				
2-94 4-98				
8-95 2-12				
1-97 2-18				
DIST	COUNTY	SHEET NO.		10

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



**LEGEND**

	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "x" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent			
30	L = WS <sup>2</sup> / 60	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L = WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

\* Conventional Roads Only  
 \*\* Taper lengths have been rounded off.  
 L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

**TYPICAL USAGE**

	MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
		✓	✓	✓	

**GENERAL NOTES**

- Flags attached to signs where shown, are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
  - The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
  - Flaggers should use two-way radios or other methods of communication to control traffic.
  - Length of work space should be based on the ability of flaggers to communicate.
  - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
  - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
- TCP (2-2a)**
- The R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work space should be no longer than one half city block. In rural areas, roadways with less than 2000 ADT, work space should be no longer than 400 feet.
  - The R1-2aP "YIELD TO ONCOMING TRAFFIC" sign shall be placed on a support at a 7 foot minimum mounting height.
- TCP (2-2b)**
- Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
  - If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
  - Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

**Texas Department of Transportation** Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN**  
**ONE-LANE TWO-WAY**  
**TRAFFIC CONTROL**

**TCP (2-2) - 18**

FILE:	tcp2-2-18.dgn	DN:	CK:	DW:	CK:
© TxDOT	December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS					
8-95	3-03				
1-97	2-12				
4-98	2-18				
DIST				COUNTY	SHEET NO.
					11

162









Engineering & Design

www.colliersengineering.com

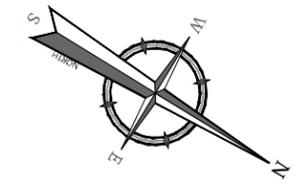
Copyright © 2026, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reprinted, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as **MASER** CONSULTANTS

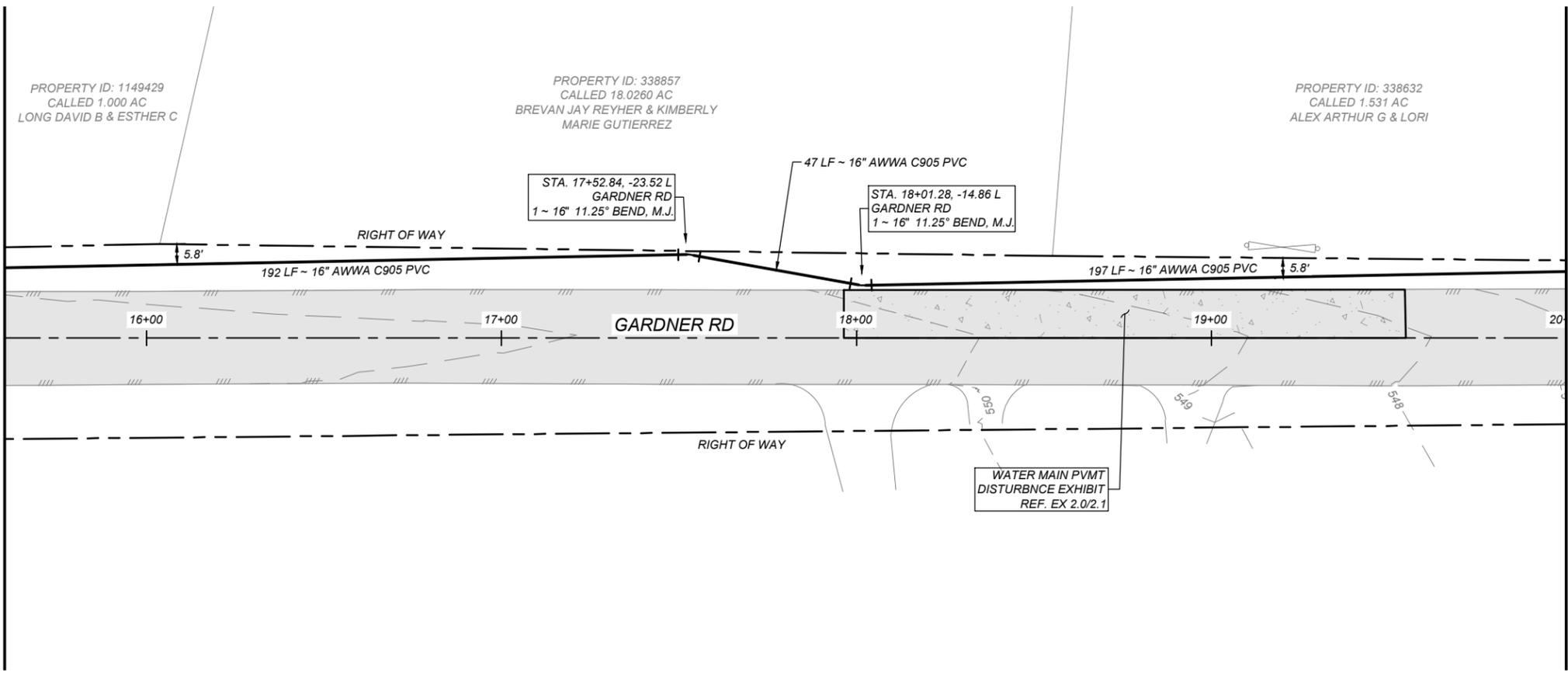


PROTECT YOURSELF  
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE

Call before you dig. STATE REQUIRED FILE NUMBER FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM



MATCH LINE STA. 15+60 (SEE SHEET 14)



MATCH LINE STA. 20+00 (SEE SHEET 16)

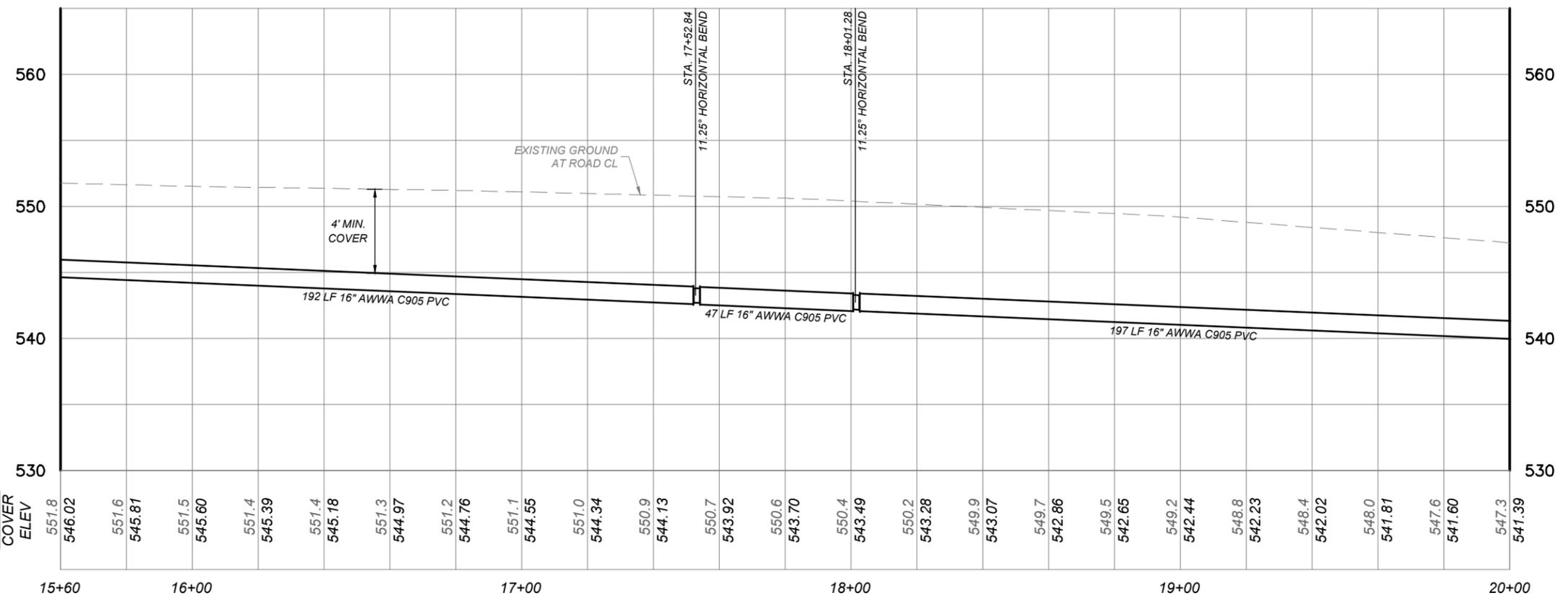
**NOTES**

- CONTRACTOR TO LOCATE AND REPLACE EXISTING 1" SERVICE TO PROPOSED 12" WATER MAIN FOR ALL PROPERTIES WITHIN THE PROJECT LIMITS
- EXISTING POWER POLE IS SUBJECT TO POLE BRACING CONTRACTOR SHOULD COORDINATE WITH THE UTILITY OWNER BEFORE INITIATING ANY EXCAVATION.

**LEGEND**

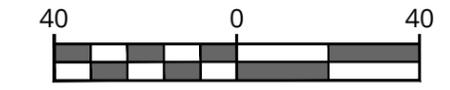
PROPOSED PAVEMENT DISTURBANCE	=	
PROPOSED WATER MAIN	=	
PHASE 1 WATER MAIN	=	
PROPOSED WATER MAIN FITTINGS	=	
PROPOSED RIGHT-OF-WAY (NORTHLAKE PHASE 7)	=	
EXISTING WATER MAIN	=	
EXISTING WATER FITTINGS	=	
EXISTING STORM SEWER	=	
EXISTING OVERHEAD UTILITY	=	
EXISTING ELECTRICAL ITEMS	=	
EXISTING GAS LINE	=	
EXISTING RIGHT-OF-WAY	=	
EXISTING FENCE	=	
EXISTING LOT LINE	=	
EXISTING EASTMENT	=	
EXISTING ASPHALT PVMT	=	
EXISTING CONTOUR	=	
EXISTING MISC ITEMS	=	

**GARDNER RD PROFILE**



**BENCHMARK:**  
ELEVATIONS HEREON ARE BASED ON BENCHMARK #

**BASIS OF BEARINGS:**  
BEARINGS ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD 83 (2011), U.S. SURVEY FEET.



SCALE : 1" = 40'  
SELECT LINEAR UNIT OF MEASURE

REV	DATE	DESCRIPTION

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT FOR BIDDING, CONSTRUCTION, OR PERMIT PURPOSES.  
  
STANFORD NGUYEN, P.E.  
TEXAS LICENSE #  
  
COLLIERS ENGINEERING & DESIGN  
TBPE FIRM # 14909  
  
03/02/2026

WATER IMPROVEMENTS  
FOR  
NORTHLAKE OFFSITE  
PHASE 2  
  
GARDNER RD  
BEXAR COUNTY  
TEXAS

HOUSTON  
13501 Katy Freeway,  
Suite 1350  
Houston, TX 77079  
Phone: 281.674.7560  
COLLIERS ENGINEERING & DESIGN, INC.  
DOING BUSINESS AS MASER CONSULTANTS  
Engineering & Design  
FIRM ID #14909

SCALE: AS SHOWN	DATE: Mar-26	DRAWN BY: XXX	CHECKED BY: XXX
PROJECT NUMBER: 24012718A	DRAWING NAME: C-WATR-WPPS-PH02.DWG		

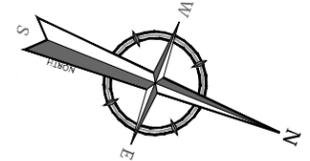
SHEET TITLE:  
WATER LINE PLAN & PROFILE  
GARDNER RD  
STA. 15+60 TO STA. 20+00

SHEET NUMBER:  
15 OF 999



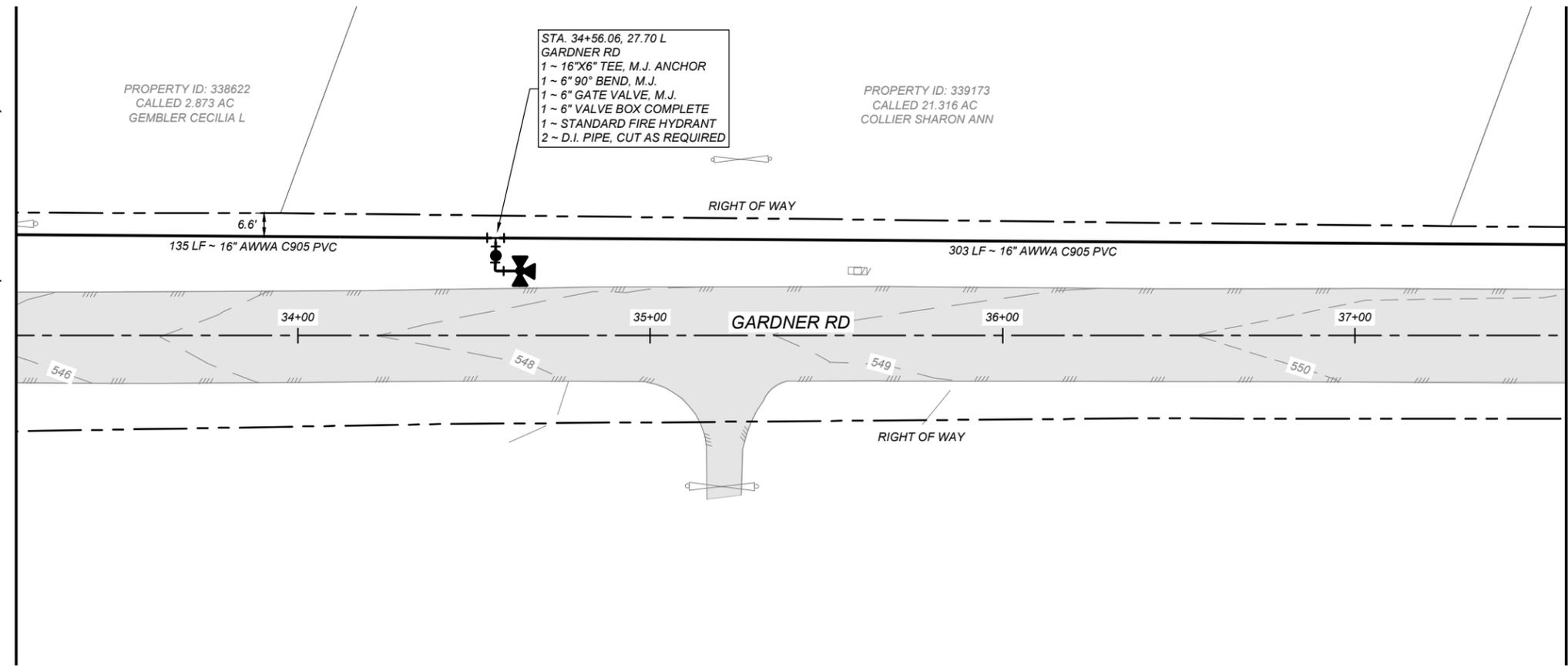






MATCH LINE STA. 33+20 (SEE SHEET 18)

MATCH LINE STA. 37+60 (SEE SHEET 20)



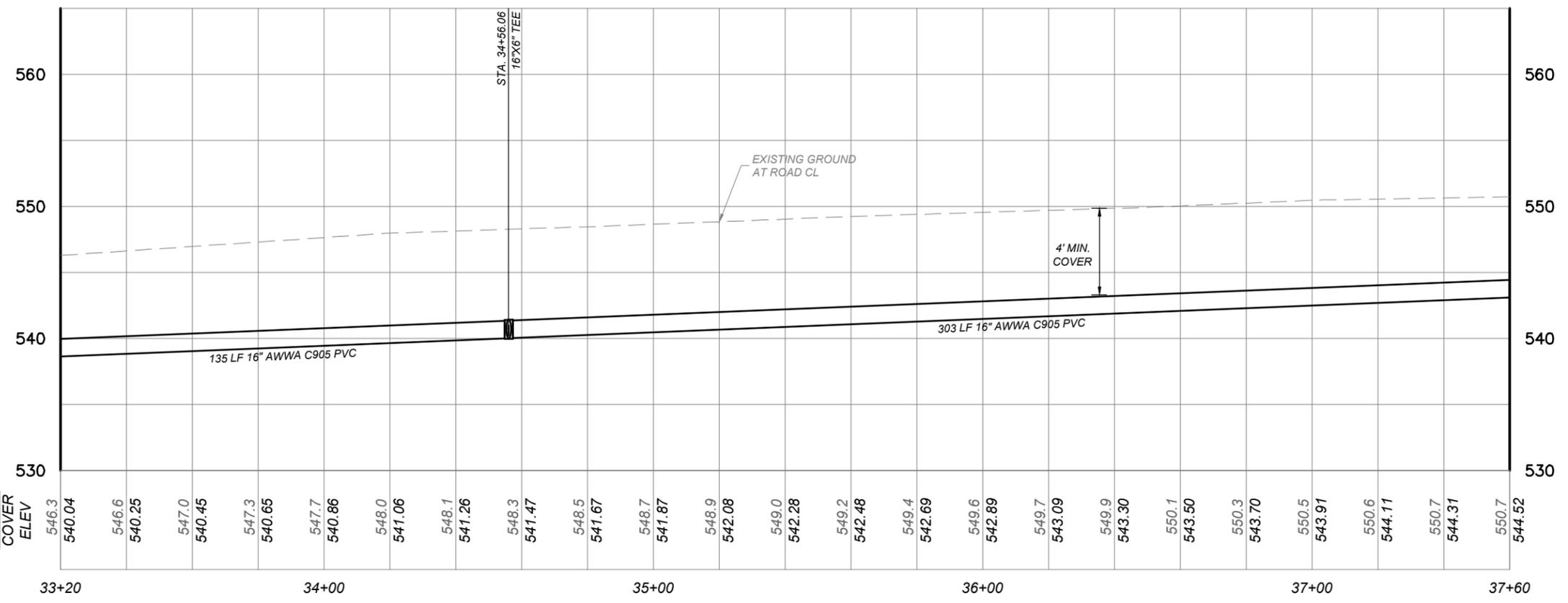
**NOTES**

- CONTRACTOR TO LOCATE AND REPLACE EXISTING 1" SERVICE TO PROPOSED 12" WATER MAIN FOR ALL PROPERTIES WITHIN THE PROJECT LIMITS
- EXISTING POWER POLE IS SUBJECT TO POLE BRACING CONTRACTOR SHOULD COORDINATE WITH THE UTILITY OWNER BEFORE INITIATING ANY EXCAVATION.

**LEGEND**

PROPOSED PAVEMENT	=	
DISTURBANCE	=	
PROPOSED WATER MAIN	=	
PHASE 1 WATER MAIN	=	
PROPOSED WATER MAIN FITTINGS	=	VALVE FIRE HYDRANT CAP REDUCER TEE HORIZ BEND
PROPOSED RIGHT-OF-WAY (NORTHLAKE PHASE 7)	=	
EXISTING WATER MAIN	=	
EXISTING WATER FITTINGS	=	
EXISTING STORM SEWER	=	
EXISTING OVERHEAD UTILITY	=	
EXISTING ELECTRICAL ITEMS	=	POWER POLE GUY WIRE METER
EXISTING GAS LINE	=	
EXISTING RIGHT-OF-WAY	=	
EXISTING FENCE	=	
EXISTING LOT LINE	=	
EXISTING EASTMENT	=	
EXISTING ASPHALT PVMT	=	
EXISTING CONTOUR	=	
EXISTING MISC ITEMS	=	SIGN POST MAILBOX GATE

**GARDNER RD PROFILE**



**BENCHMARK:**  
ELEVATIONS HEREON ARE BASED ON BENCHMARK #

**BASIS OF BEARINGS:**  
BEARINGS ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD 83 (2011), U.S. SURVEY FEET.



**SCALE: 1" = 40'**  
SELECT LINEAR UNIT OF MEASURE

REV	DATE	DESCRIPTION

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT FOR BIDDING, CONSTRUCTION, OR PERMIT PURPOSES.

STANFORD NGUYEN, P.E.  
TEXAS LICENSE #

COLLIERS ENGINEERING & DESIGN  
TBPE FIRM # 14909

03/02/2026

**WATER IMPROVEMENT'S FOR NORTHLAKE OFFSITE PHASE 2**

GARDNER RD  
BEXAR COUNTY  
TEXAS

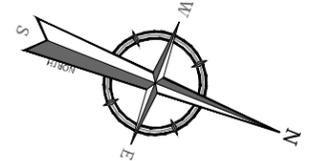
HOUSTON  
13501 Katy Freeway,  
Suite 1350  
Houston, TX 77079  
Phone: 281.674.7560  
COLLIERS ENGINEERING & DESIGN, INC.  
DOING BUSINESS AS MASER CONSULTING

SCALE: AS SHOWN	DATE: Mar-26	DRAWN BY: XXX	CHECKED BY: XXX
PROJECT NUMBER: 24012718A	DRAWING NAME: C-WATR-WPP5-PH02.DWG		

SHEET TITLE:  
**WATER LINE PLAN & PROFILE GARDNER RD STA. 33+20 TO STA. 37+60**

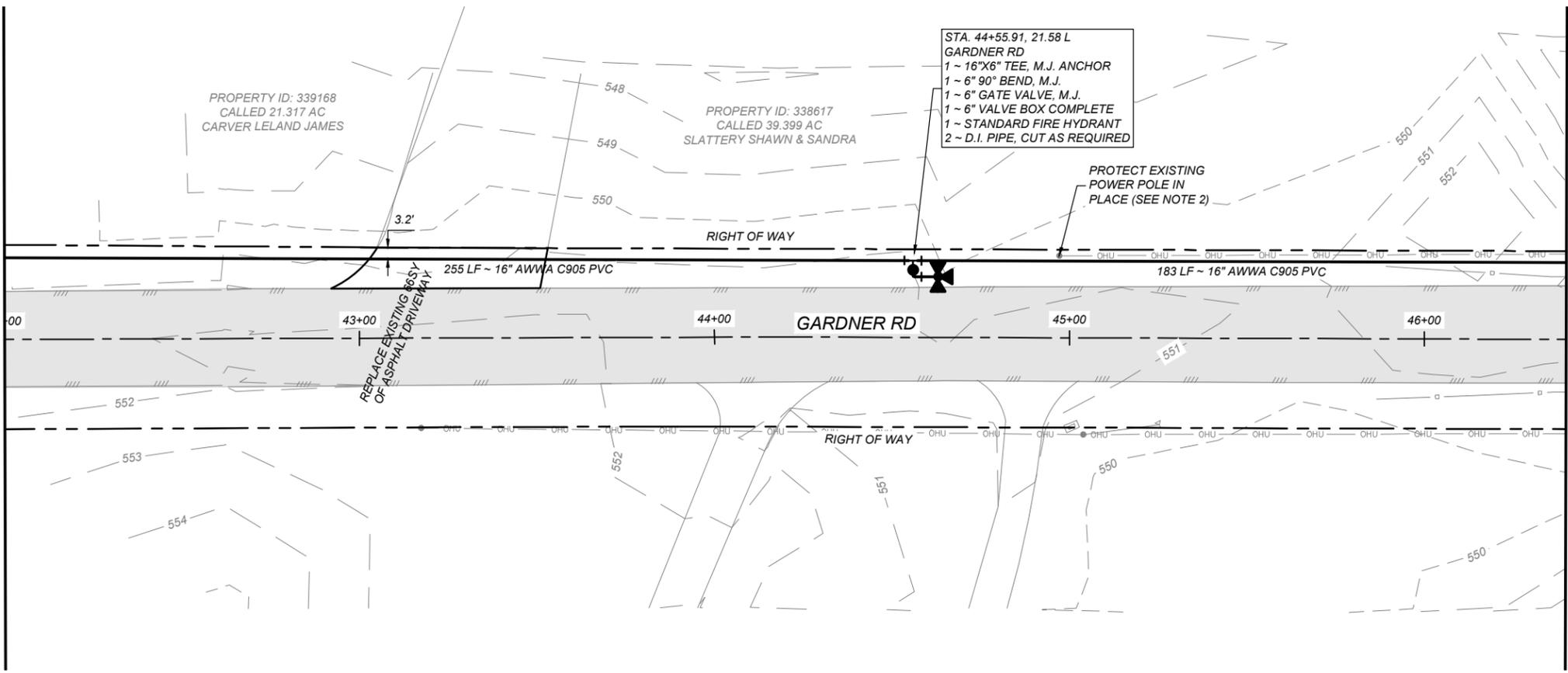
SHEET NUMBER:  
**19 OF 999**





MATCH LINE STA. 42+00 (SEE SHEET 20)

MATCH LINE STA. 46+40 (SEE SHEET 22)



STA. 44+55.91, 21.58 L  
GARDNER RD  
1 ~ 16"X6" TEE, M.J. ANCHOR  
1 ~ 6" 90° BEND, M.J.  
1 ~ 6" GATE VALVE, M.J.  
1 ~ 6" VALVE BOX COMPLETE  
1 ~ STANDARD FIRE HYDRANT  
2 ~ D.I. PIPE, CUT AS REQUIRED

PROTECT EXISTING POWER POLE IN PLACE (SEE NOTE 2)

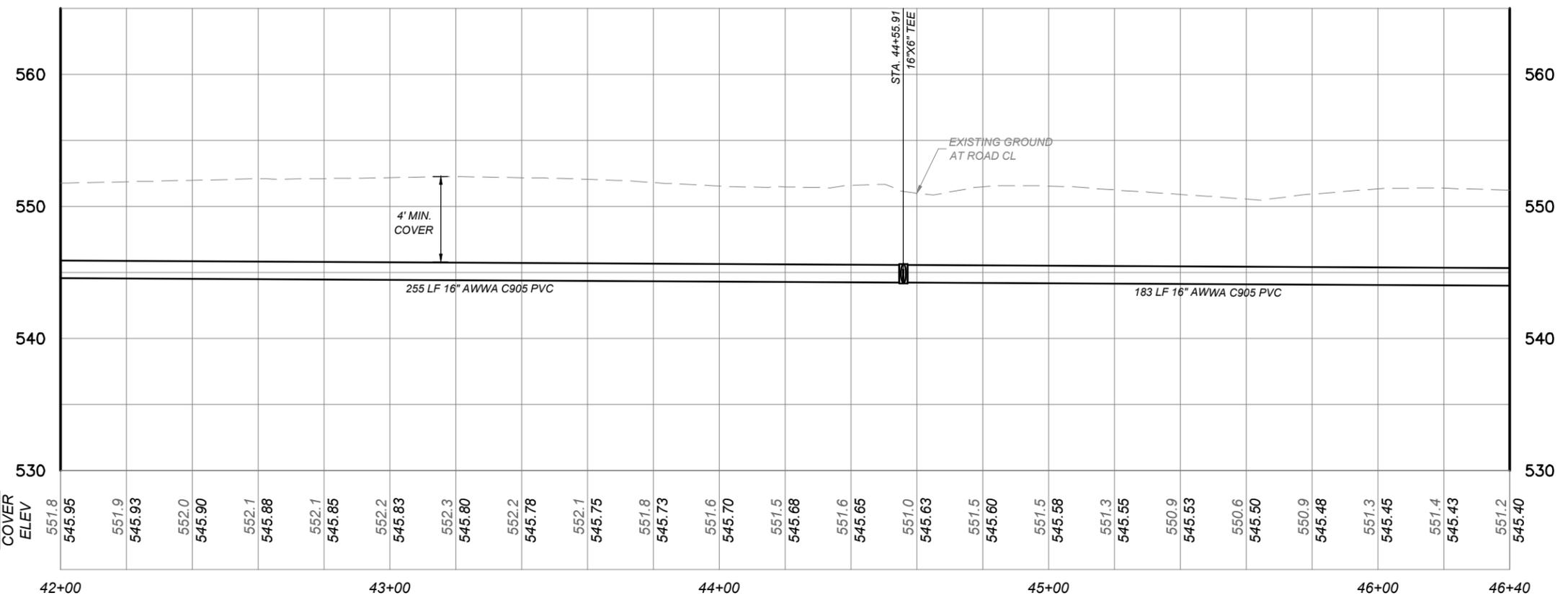
**NOTES**

- CONTRACTOR TO LOCATE AND REPLACE EXISTING 1" SERVICE TO PROPOSED 12" WATER MAIN FOR ALL PROPERTIES WITHIN THE PROJECT LIMITS
- EXISTING POWER POLE IS SUBJECT TO POLE BRACING CONTRACTOR SHOULD COORDINATE WITH THE UTILITY OWNER BEFORE INITIATING ANY EXCAVATION.

**LEGEND**

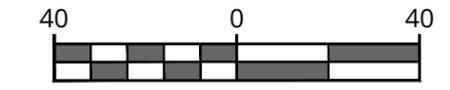
PROPOSED PAVEMENT DISTURBANCE	=	
PROPOSED WATER MAIN	=	
PHASE 1 WATER MAIN	=	
PROPOSED WATER MAIN FITTINGS	=	VALVE FIRE HYDRANT CAP REDUCER TEE HORIZ BEND
PROPOSED RIGHT-OF-WAY (NORTHLAKE PHASE 7)	=	
EXISTING WATER MAIN	=	
EXISTING WATER FITTINGS	=	
EXISTING STORM SEWER	=	
EXISTING OVERHEAD UTILITY	=	
EXISTING ELECTRICAL ITEMS	=	POWER POLE GUY WIRE METER
EXISTING GAS LINE	=	
EXISTING RIGHT-OF-WAY	=	
EXISTING FENCE	=	
EXISTING LOT LINE	=	
EXISTING EASTMENT	=	
EXISTING ASPHALT PVMT	=	
EXISTING CONTOUR	=	
EXISTING MISC ITEMS	=	SIGN POST MAILBOX METER GATE

**GARDNER RD PROFILE**



**BENCHMARK:**  
ELEVATIONS HEREON ARE BASED ON BENCHMARK #

**BASIS OF BEARINGS:**  
BEARINGS ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD 83 (2011), U.S. SURVEY FEET.



**SCALE : 1" = 40'**  
SELECT LINEAR UNIT OF MEASURE

REV	DATE	DESCRIPTION

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT FOR BIDDING, CONSTRUCTION, OR PERMIT PURPOSES.

STANFORD NGUYEN, P.E.  
TEXAS LICENSE #

COLLIERS ENGINEERING & DESIGN  
TBPE FIRM # 14909

03/02/2026

**WATER IMPROVEMENTS FOR NORTHLAKE OFFSITE PHASE 2**

GARDNER RD  
BEXAR COUNTY  
TEXAS

HOUSTON  
13501 Katy Freeway,  
Suite 1350  
Houston, TX 77079  
Phone: 281.674.7560  
COLLIERS ENGINEERING & DESIGN, INC.  
DOING BUSINESS AS MASER CONSULTING

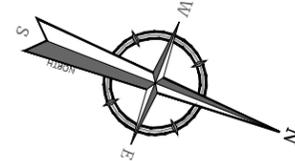
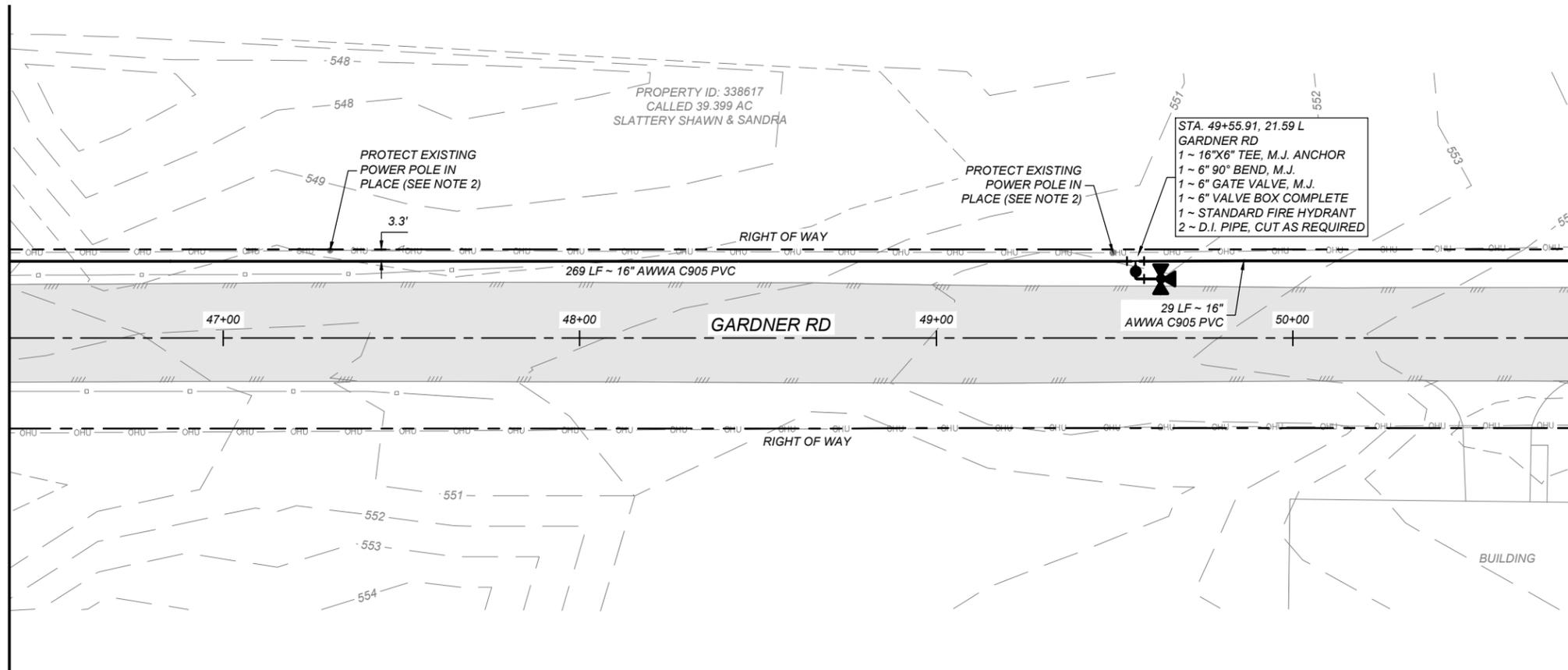
SCALE: AS SHOWN DATE: Mar-26 DRAWN BY: XXX CHECKED BY: XXX  
PROJECT NUMBER: 24012718A DRAWING NAME: C-WATR-WPP5-PH02.DWG

SHEET TITLE: WATER LINE PLAN & PROFILE GARDNER RD STA. 42+00 TO STA. 46+40

SHEET NUMBER: 21 OF 999

MATCH LINE STA. 46+40 (SEE SHEET 21)

MATCH LINE STA. 50+80 (SEE SHEET 23)



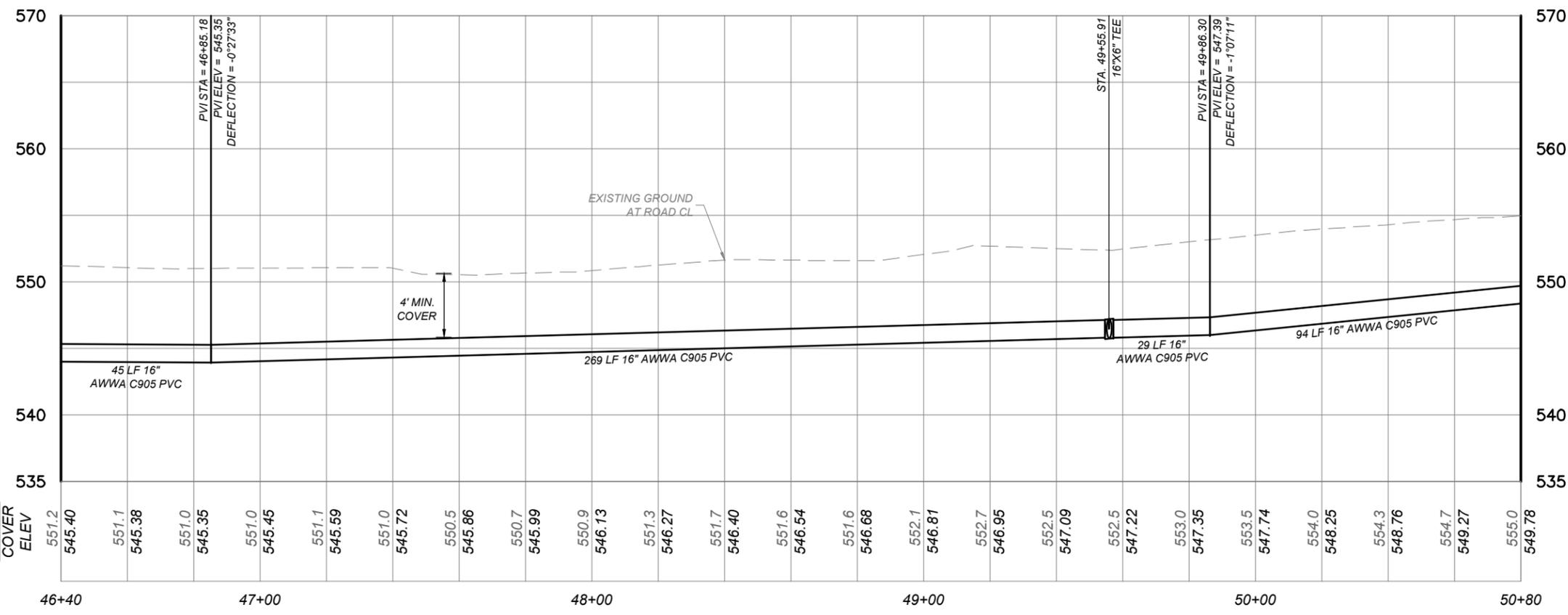
**NOTES**

- CONTRACTOR TO LOCATE AND REPLACE EXISTING 1" SERVICE TO PROPOSED 12" WATER MAIN FOR ALL PROPERTIES WITHIN THE PROJECT LIMITS
- EXISTING POWER POLE IS SUBJECT TO POLE BRACING CONTRACTOR SHOULD COORDINATE WITH THE UTILITY OWNER BEFORE INITIATING ANY EXCAVATION.

**LEGEND**

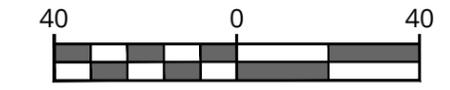
PROPOSED PAVEMENT	=	
DISTURBANCE	=	
PROPOSED WATER MAIN	=	
PHASE 1 WATER MAIN	=	
PROPOSED WATER MAIN FITTINGS	=	VALVE FIRE HYDRANT TEE HORIZ BEND
PROPOSED RIGHT-OF-WAY (NORTHLAKE PHASE 7)	=	
EXISTING WATER MAIN	=	
EXISTING WATER FITTINGS	=	
EXISTING STORM SEWER	=	
EXISTING OVERHEAD UTILITY	=	
EXISTING ELECTRICAL ITEMS	=	POWER POLE GUY WIRE METER
EXISTING GAS LINE	=	
EXISTING RIGHT-OF-WAY	=	
EXISTING FENCE	=	
EXISTING LOT LINE	=	
EXISTING EASTMENT	=	
EXISTING ASPHALT PVMT	=	
EXISTING CONTOUR	=	
EXISTING MISC ITEMS	=	SIGN POST MAILBOX GATE

**GARDNER RD PROFILE**



**BENCHMARK:**  
ELEVATIONS HEREON ARE BASED ON BENCHMARK #

**BASIS OF BEARINGS:**  
BEARINGS ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD 83 (2011), U.S. SURVEY FEET.



SCALE : 1" = 40'  
SELECT LINEAR UNIT OF MEASURE

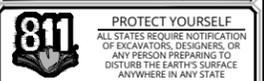


Engineering & Design

www.colliersengineering.com

Copyright © 2026, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reprinted, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as **MASER**



Call before you dig. STATE REQUIRED FILE NUMBER FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DESCRIPTION

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT FOR BIDDING, CONSTRUCTION, OR PERMIT PURPOSES.

STANFORD NGUYEN, P.E.  
TEXAS LICENSE #

COLLIERS ENGINEERING & DESIGN  
TBPE FIRM # 14909

03/02/2026

WATER IMPROVEMENTS  
FOR  
NORTHLAKE OFFSITE  
PHASE 2

GARDNER RD  
BEXAR COUNTY  
TEXAS

HOUSTON  
13501 Katy Freeway,  
Suite 1350  
Houston, TX 77079  
Phone: 281.674.7560  
COLLIERS ENGINEERING & DESIGN, INC.  
DOING BUSINESS AS MASER CONSULTING

SCALE: AS SHOWN DATE: Mar-26 DRAWN BY: XXX CHECKED BY: XXX  
PROJECT NUMBER: 24012718A DRAWING NAME: C-WATR-WPPS-PH02.DWG

SHEET TITLE: WATER LINE PLAN & PROFILE  
GARDNER RD  
STA. 46+40 TO STA. 50+80

SHEET NUMBER: 22 OF 999













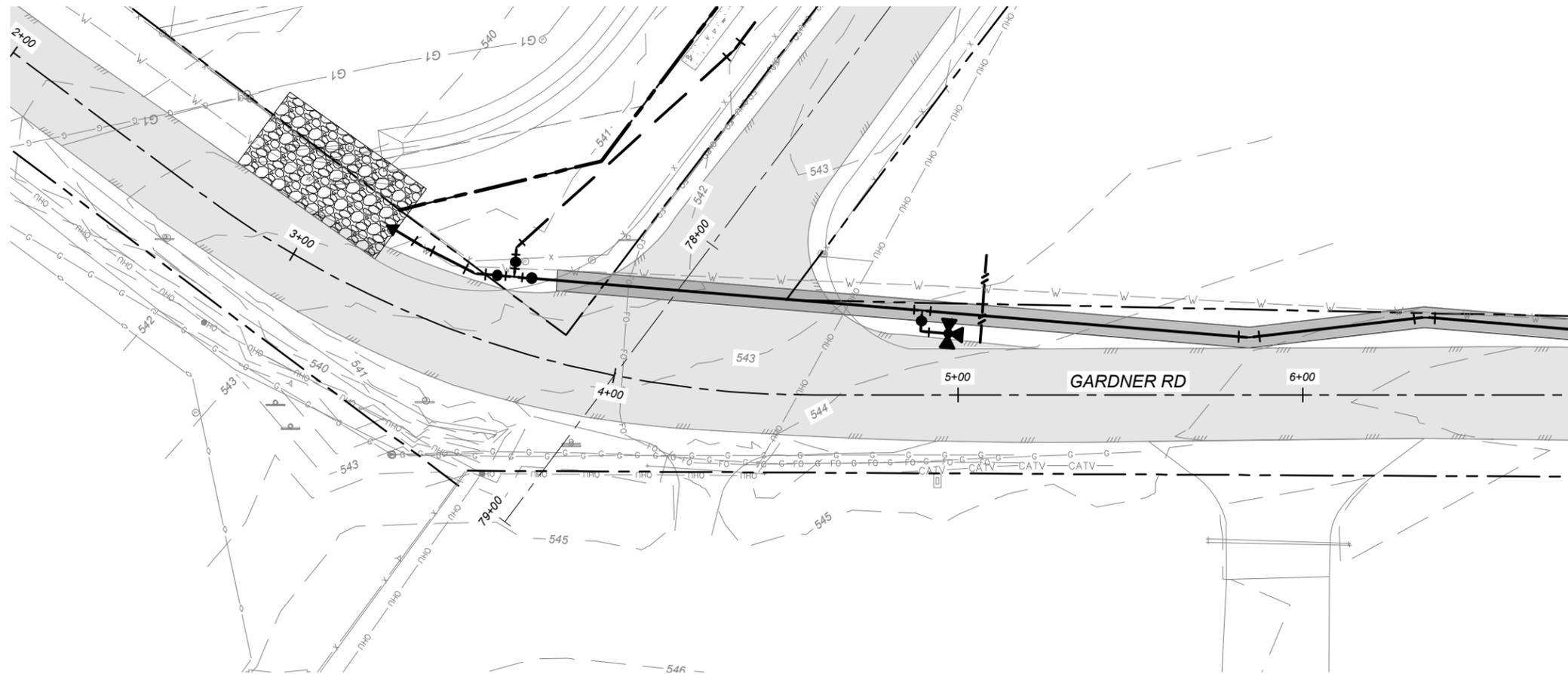




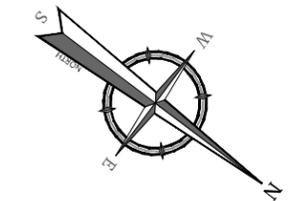








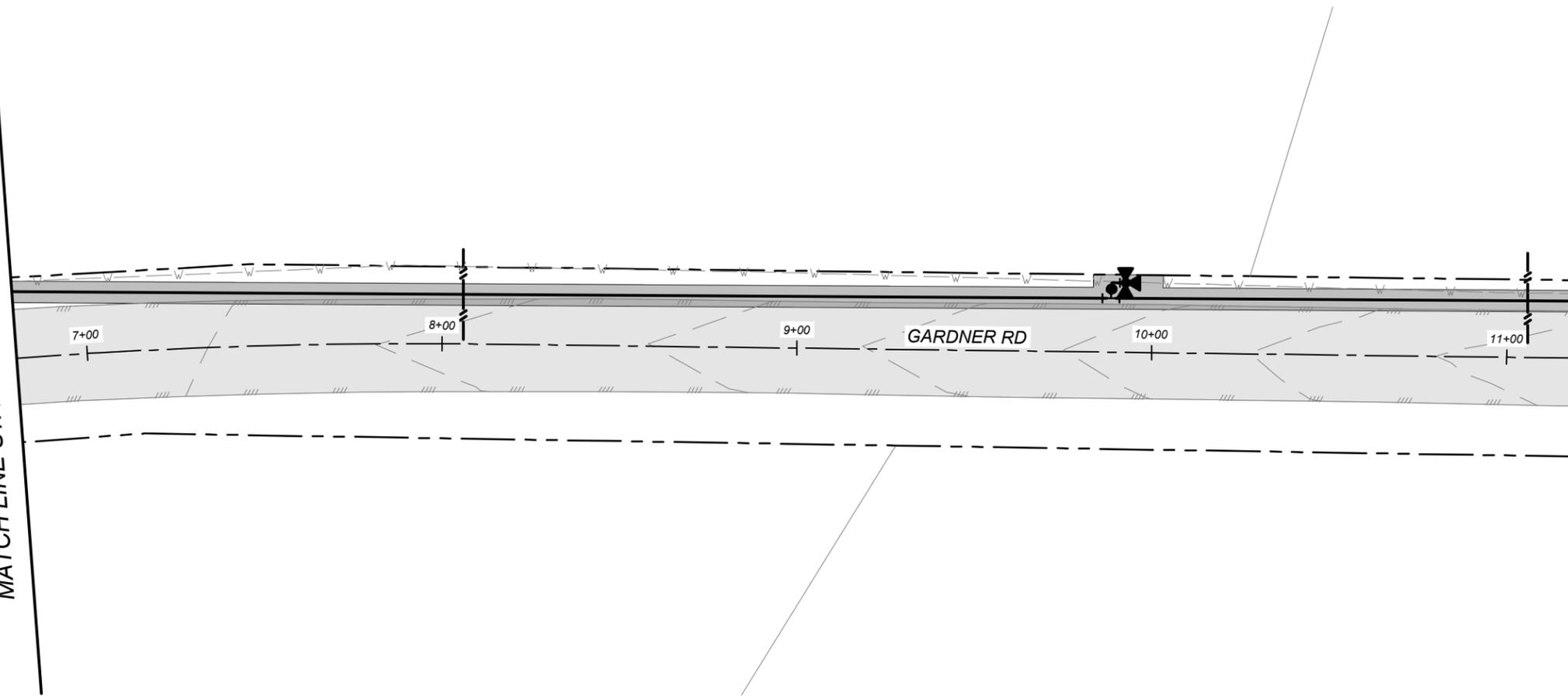
MATCH LINE STA. 6+80 (SEE SHEET 34)



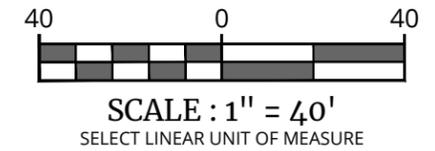
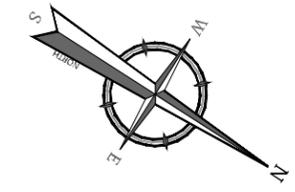
**LEGEND**

PROPOSED WATER MAIN	=	
EXISTING CONTOUR	=	
STABILIZED CONSTRUCTION EXIT/ENTRANCE	=	
DISTURBED AREA	=	
SILT FENCE	=	
ROCK FILTER DAM	=	

MATCH LINE STA. 6+80 (SEE THIS SHEET)



MATCH LINE STA. 11+20 (SEE SHEET 35)



Engineering & Design

www.colliersengineering.com

Copyright © 2026, Colliers Engineering & Design. All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reprinted, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as **MASER** CONSULTANTS

**811** PROTECT YOURSELF  
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE.  
Know what's below.  
Call before you dig. STATE REQUIRED FILE NUMBER FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT FOR BIDDING, CONSTRUCTION, OR PERMIT PURPOSES.

STANFORD NGUYEN, P.E.  
TEXAS LICENSE #

COLLIERS ENGINEERING & DESIGN  
TBPE FIRM # 14909

03/02/2026

WATER IMPROVEMENT'S  
FOR  
NORTHLAKE OFFSITE  
PHASE 2

GARDNER RD  
BEXAR COUNTY  
TEXAS

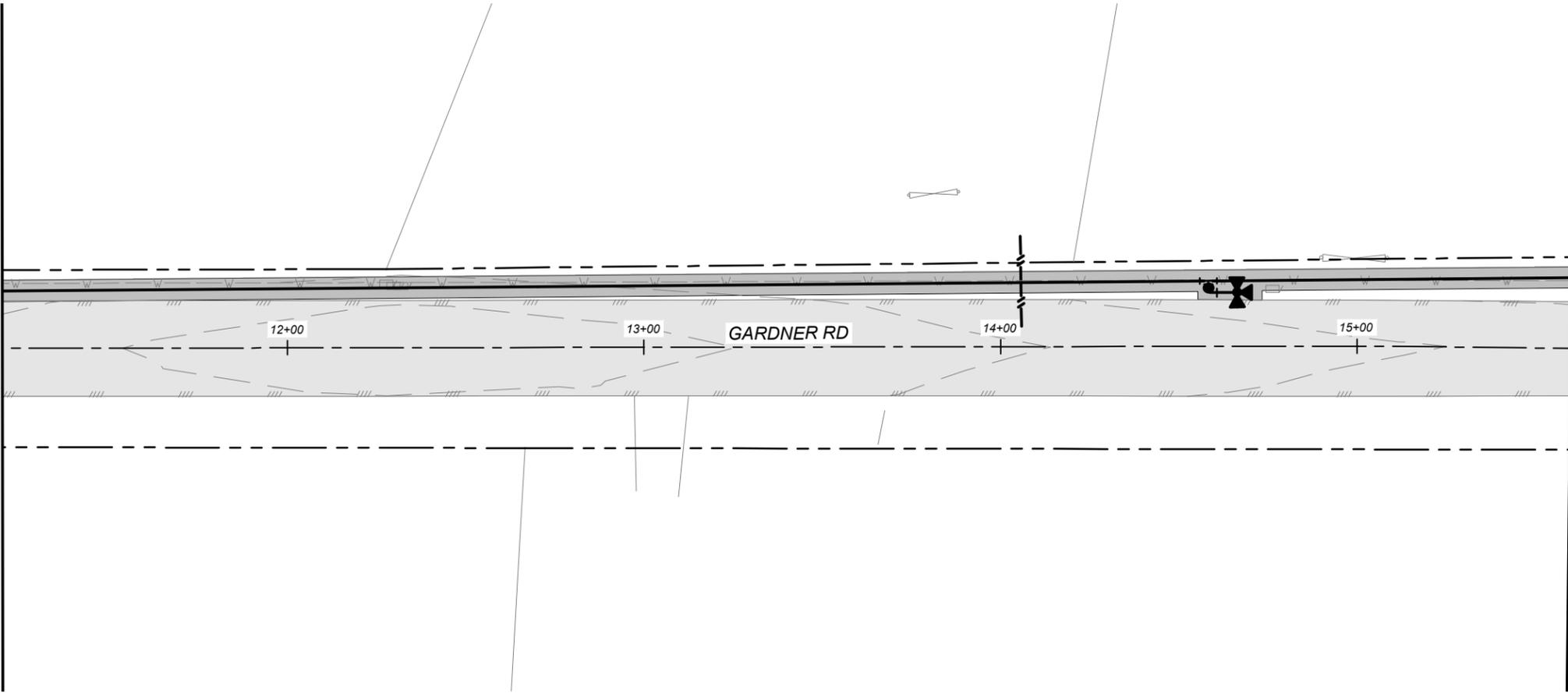
HOUSTON  
13501 Katy Freeway,  
Suite 1350  
Houston, TX 77079  
Phone: 281.674.7560  
COLLIERS ENGINEERING & DESIGN, INC.  
DOING BUSINESS AS MASER CONSULTANTS  
FIRM ID #14909

SCALE: AS SHOWN	DATE: Mar-26	DRAWN BY: XXX	CHECKED BY: XXX
PROJECT NUMBER: 24012718A	DRAWING NAME: C-SPPP-PH02.DWG		

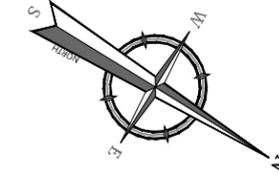
SHEET TITLE:  
GARDNER RD SWPPP  
START TO STA. 11+20

SHEET NUMBER:  
34 OF 999

MATCH LINE STA. 11+20 (SEE SHEET 34)



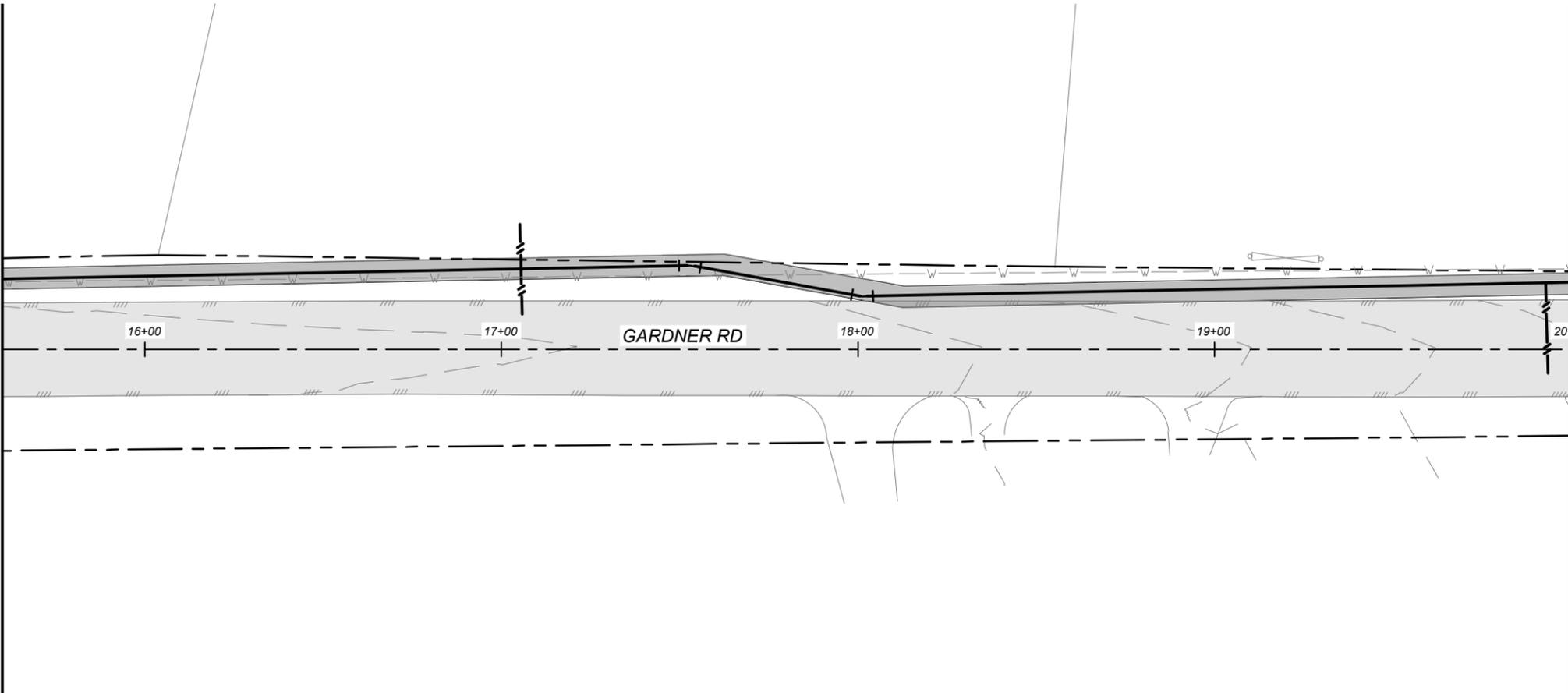
MATCH LINE STA. 15+60 (SEE THIS SHEET)



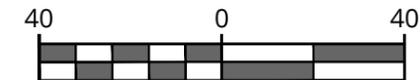
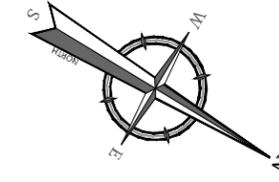
**LEGEND**

- PROPOSED WATER MAIN =
- EXISTING CONTOUR =
- STABILIZED CONSTRUCTION EXIT/ENTRANCE =
- DISTURBED AREA =
- SILT FENCE =
- ROCK FILTER DAM =

MATCH LINE STA. 15+60 (SEE THIS SHEET)



MATCH LINE STA. 20+00 (SEE SHEET 36)



SCALE : 1" = 40'  
SELECT LINEAR UNIT OF MEASURE



Engineering & Design

www.colliersengineering.com

Copyright © 2026, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reprinted, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as

**811** PROTECT YOURSELF  
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE.  
Know what's below.  
Call before you dig. STATE REQUIRED FILE NUMBER FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DESCRIPTION

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT FOR BIDDING, CONSTRUCTION, OR PERMIT PURPOSES.

STANFORD NGUYEN, P.E.  
TEXAS LICENSE #

COLLIERS ENGINEERING & DESIGN  
TBPE FIRM # 14909

03/02/2026

WATER IMPROVEMENTS  
FOR  
NORTHLAKE OFFSITE  
PHASE 2

GARDNER RD  
BEXAR COUNTY  
TEXAS

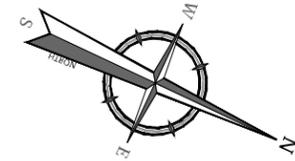
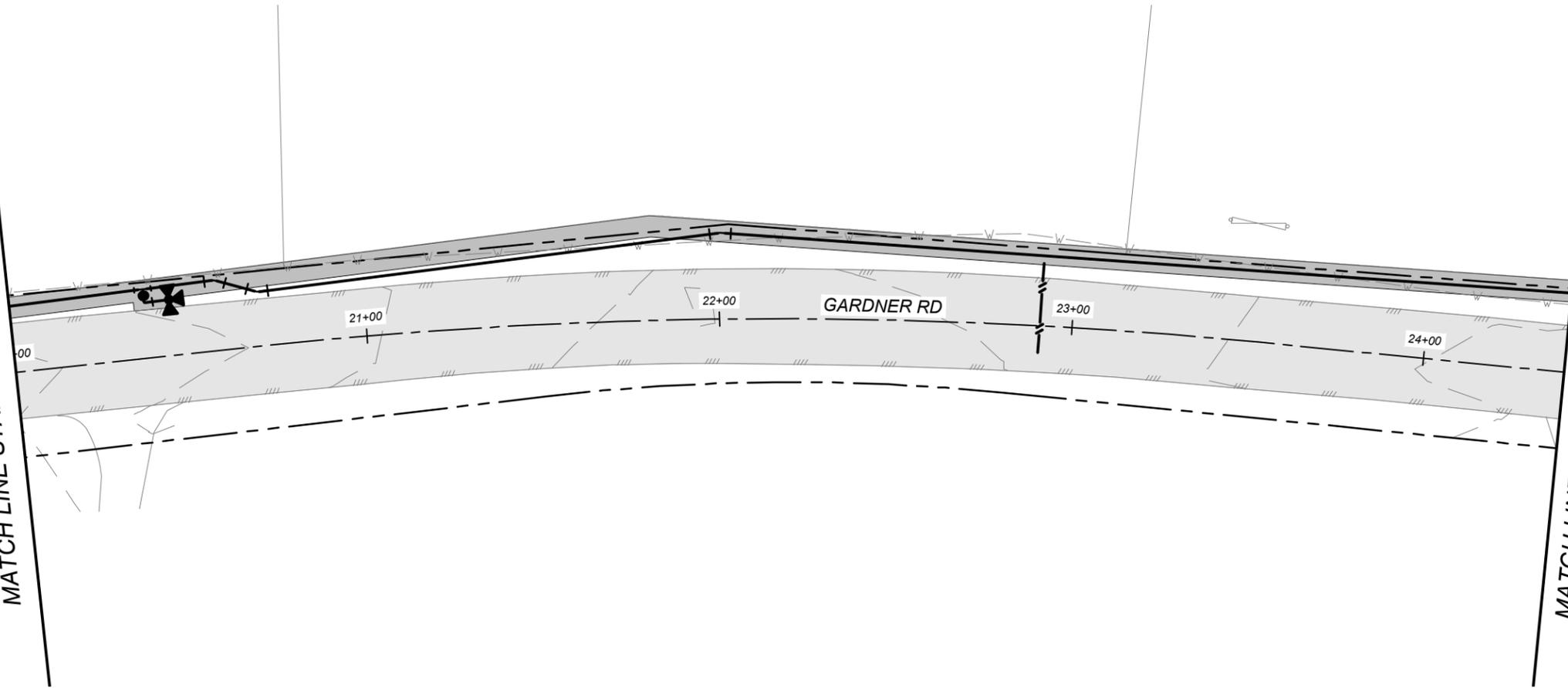
HOUSTON  
13501 Katy Freeway,  
Suite 1350  
Houston, TX 77079  
Phone: 281.674.7560  
COLLIERS ENGINEERING & DESIGN, INC.  
DOING BUSINESS AS MASER CONSULTING  
Engineering & Design  
FIRM ID #14909

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	Mar-26	XXX	XXX
PROJECT NUMBER:	DRAWING NAME:		
24012718A	C-SPPP-PH02.DWG		

SHEET TITLE:  
GARDNER RD SWPPP  
STA. 11+20 TO STA. 20+00

SHEET NUMBER:  
35 OF 999

MATCH LINE STA. 20+00 (SEE SHEET 35)

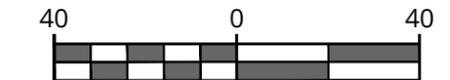
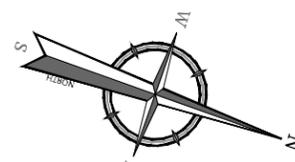
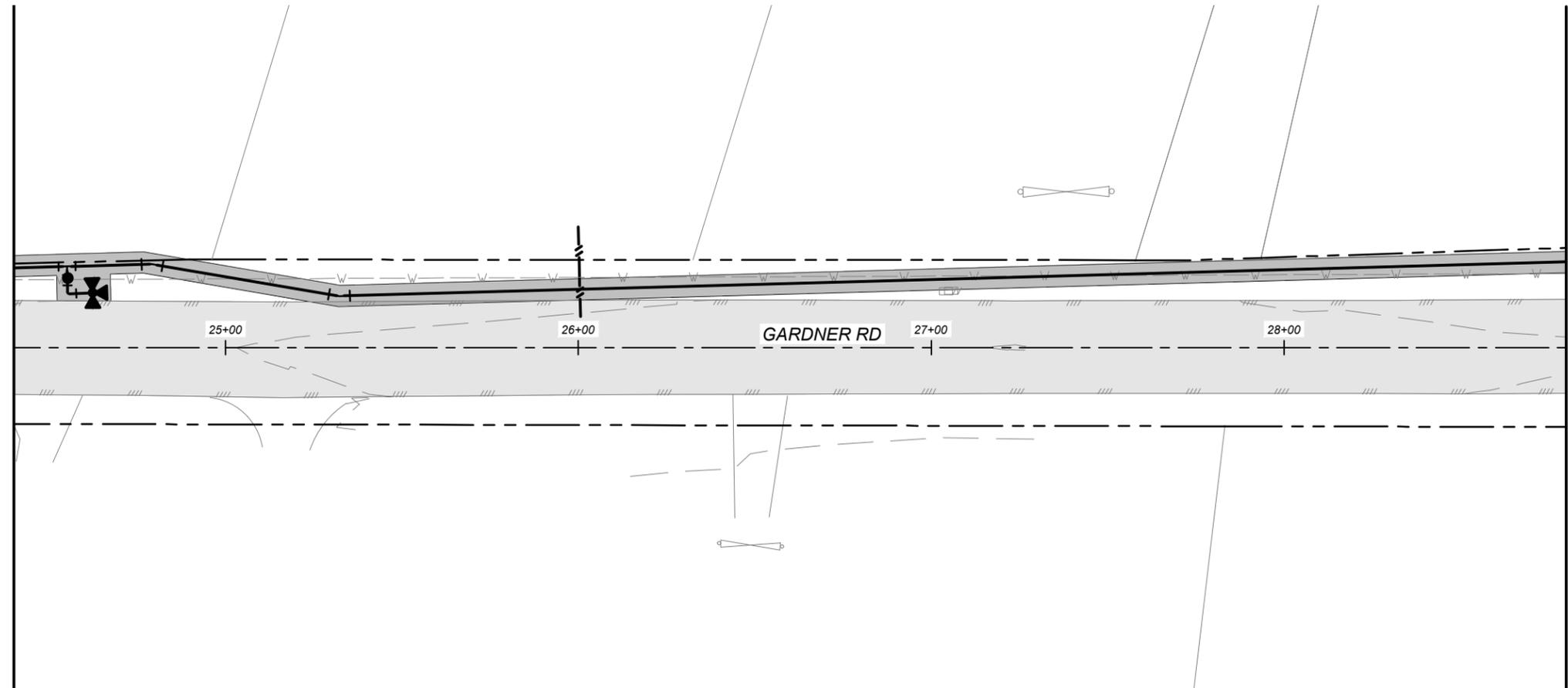


**LEGEND**

- PROPOSED WATER MAIN = ————
- EXISTING CONTOUR = - - - - -740-
- STABILIZED CONSTRUCTION EXIT/ENTRANCE = [Pattern]
- DISTURBED AREA = [Shaded Box]
- SILT FENCE = || — ||
- ROCK FILTER DAM = [Circle Pattern]

MATCH LINE STA. 24+40 (SEE THIS SHEET)

MATCH LINE STA. 24+40 (SEE THIS SHEET)



SCALE : 1" = 40'  
SELECT LINEAR UNIT OF MEASURE

MATCH LINE STA. 28+80 (SEE SHEET 37)



Engineering & Design

www.colliersengineering.com

Copyright © 2026, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reprinted, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as **MASER CONSULTING**

**811** PROTECT YOURSELF  
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE.  
Know what's below.  
Call before you dig. STATE REQUIRED FILE NUMBER FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT FOR BIDDING, CONSTRUCTION, OR PERMIT PURPOSES.

STANFORD NGUYEN, P.E.  
TEXAS LICENSE #

COLLIERS ENGINEERING & DESIGN  
TBPE FIRM # 14909

03/02/2026

WATER IMPROVEMENT'S  
FOR  
NORTHLAKE OFFSITE  
PHASE 2

GARDNER RD  
BEXAR COUNTY  
TEXAS

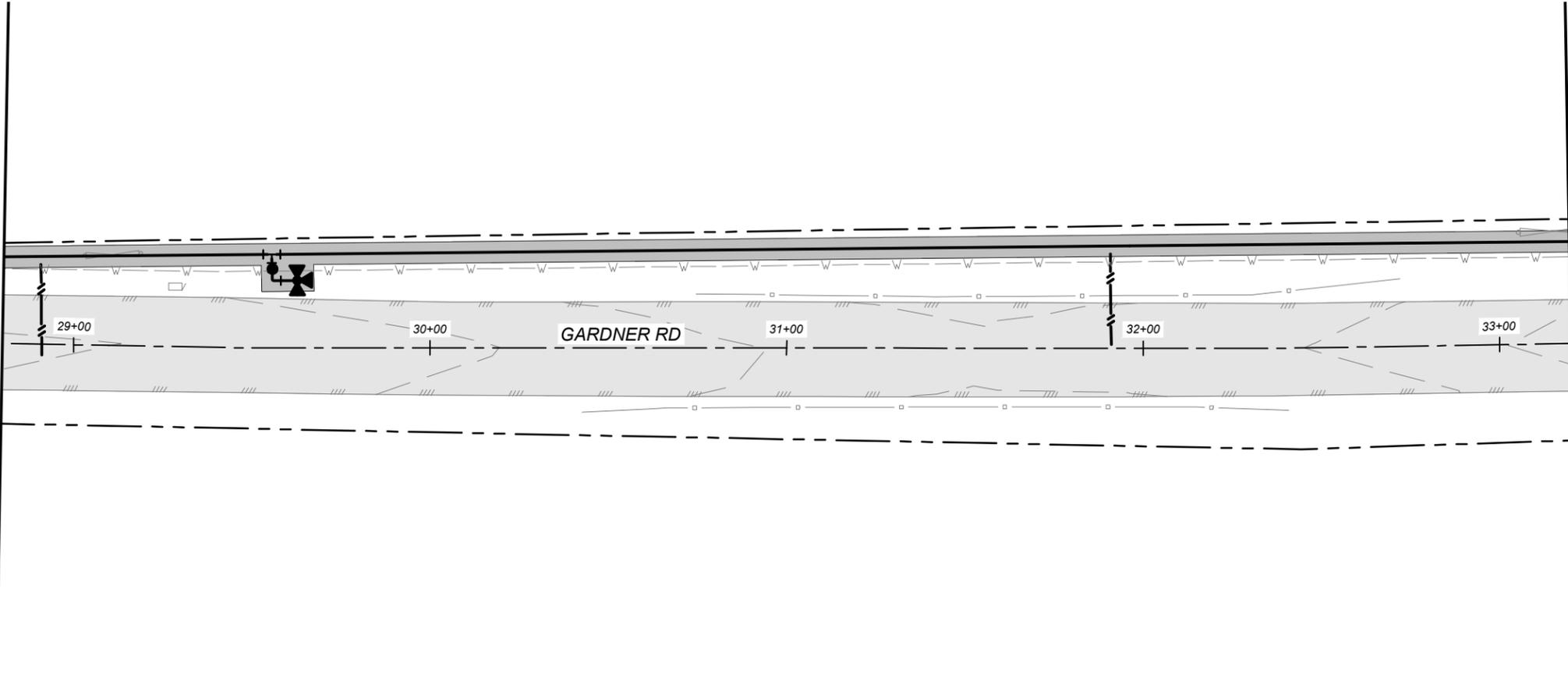
**Colliers** HOUSTON  
13501 Katy Freeway,  
Suite 1350  
Houston, TX 77079  
Phone: 281.674.7560  
Engineering & Design  
FIRM ID #14909  
COLLIERS ENGINEERING & DESIGN, INC.  
DOING BUSINESS AS MASER CONSULTING

SCALE: AS SHOWN	DATE: Mar-26	DRAWN BY: XXX	CHECKED BY: XXX
PROJECT NUMBER: 24012718A	DRAWING NAME: C-SPPP-PH02.DWG		

SHEET TITLE:  
GARDNER RD SWPPP  
STA. 20+00 TO STA. 28+80

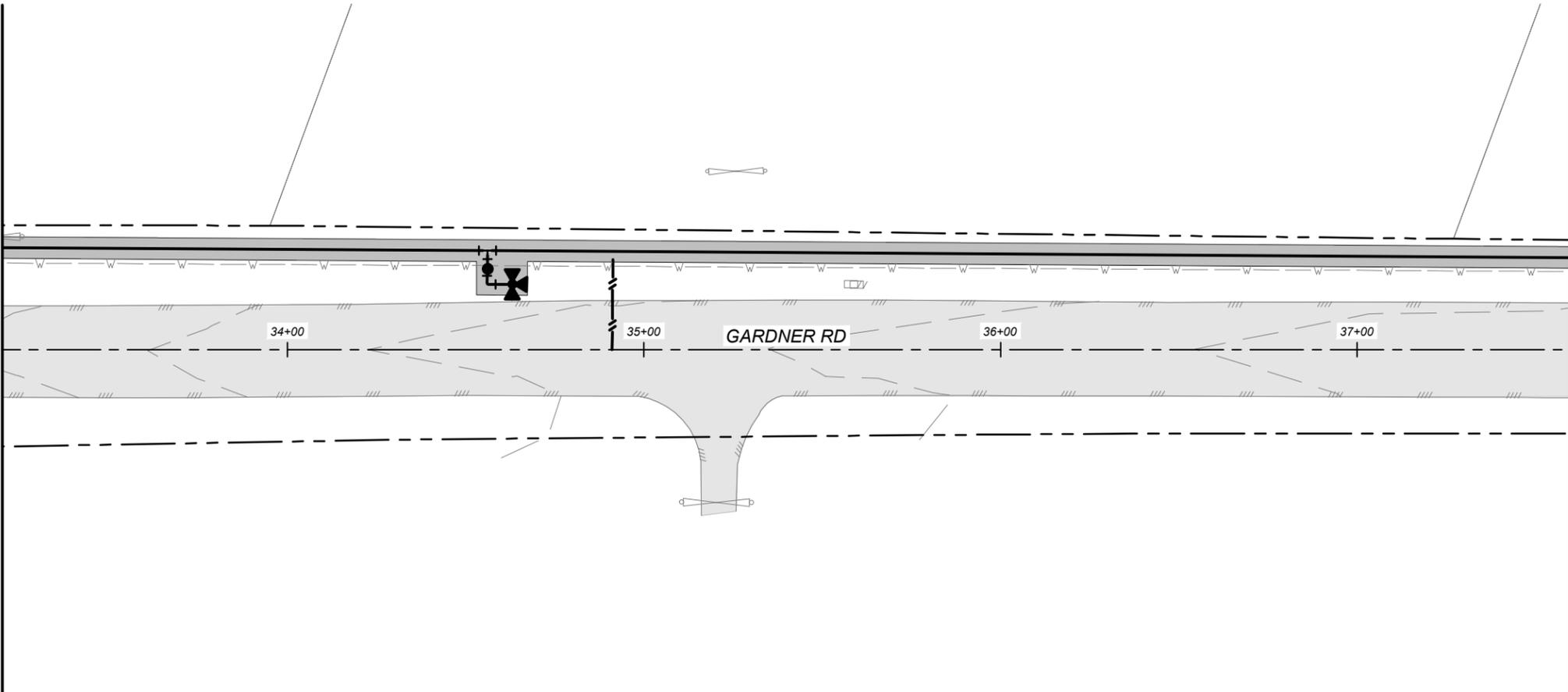
SHEET NUMBER:  
36 OF 999

MATCH LINE STA. 28+80 (SEE SHEET 36)

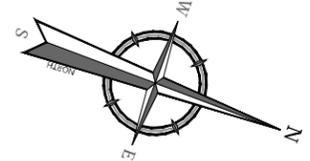


MATCH LINE STA. 33+20 (SEE THIS SHEET)

MATCH LINE STA. 33+20 (SEE THIS SHEET)

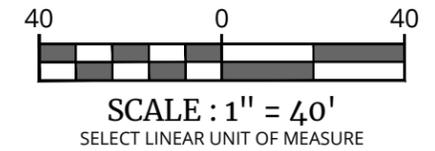
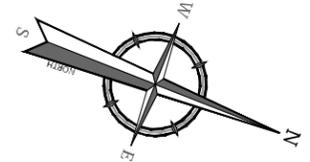


MATCH LINE STA. 37+60 (SEE SHEET 38)



**LEGEND**

PROPOSED WATER MAIN	=	— W —
EXISTING CONTOUR	=	- - - 740 - - -
STABILIZED CONSTRUCTION EXIT/ENTRANCE	=	[Patterned Box]
DISTURBED AREA	=	[Solid Grey Box]
SILT FENCE	=	—
ROCK FILTER DAM	=	[Circle Pattern]



**Colliers**

Engineering & Design

www.colliersengineering.com

Copyright © 2026, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reprinted, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as **MASER CONSULTING**

**811** PROTECT YOURSELF  
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE.  
 Know what's below.  
 Call before you dig. STATE REQUIRED FILE NUMBER FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DESCRIPTION

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT FOR BIDDING, CONSTRUCTION, OR PERMIT PURPOSES.

STANFORD NGUYEN, P.E.  
 TEXAS LICENSE #

COLLIERS ENGINEERING & DESIGN  
 TBPE FIRM # 14909

03/02/2026

WATER IMPROVEMENT'S  
 FOR  
 NORTHLAKE OFFSITE  
 PHASE 2

GARDNER RD  
 BEXAR COUNTY  
 TEXAS

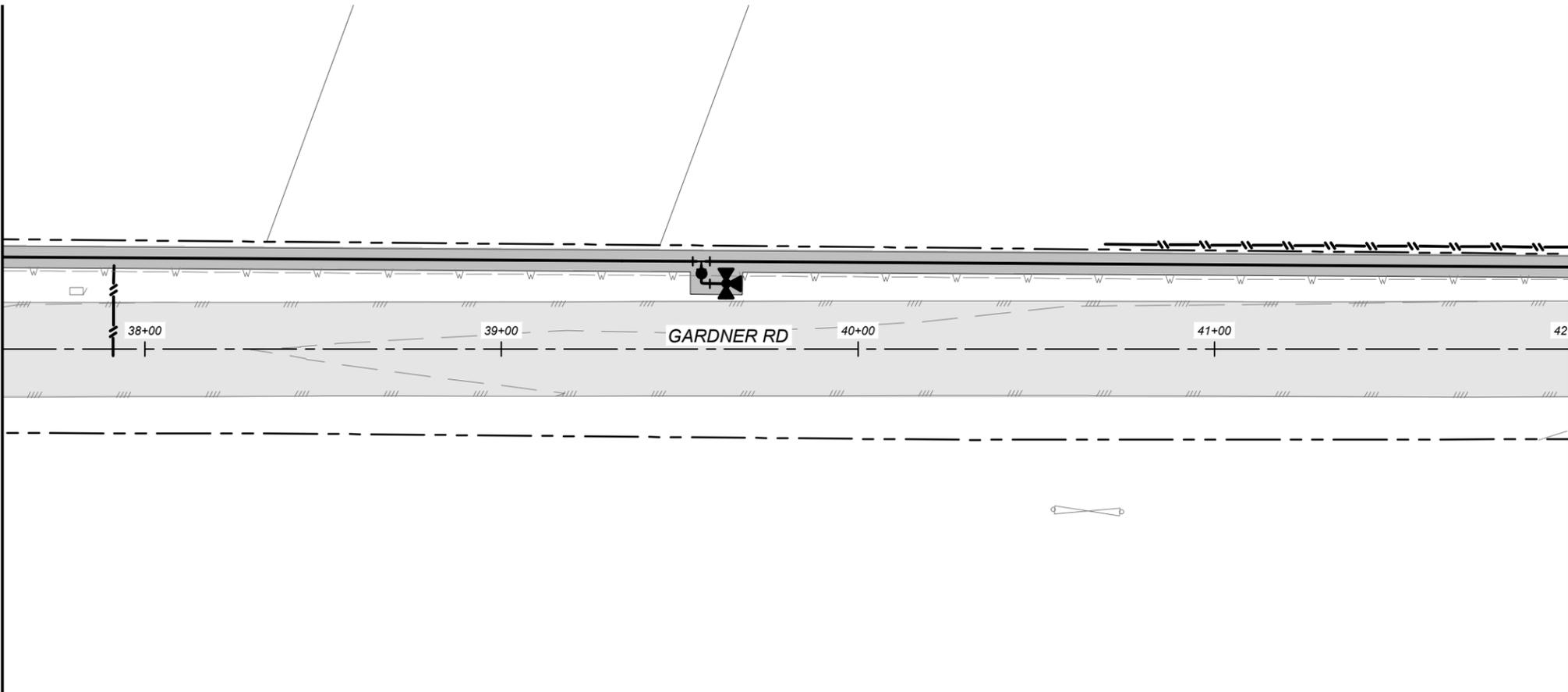
**Colliers** HOUSTON  
 13501 Katy Freeway,  
 Suite 1350  
 Houston, TX 77079  
 Phone: 281.674.7560  
 Engineering & Design  
 FIRM ID #14909  
COLLIERS ENGINEERING & DESIGN, INC.  
 DOING BUSINESS AS MASER CONSULTING

SCALE: AS SHOWN	DATE: Mar-26	DRAWN BY: XXX	CHECKED BY: XXX
PROJECT NUMBER: 24012718A	DRAWING NAME: C-SPPP-PH02.DWG		

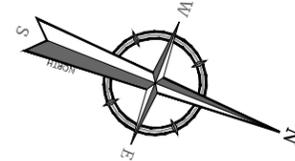
SHEET TITLE:  
 GARDNER RD SWPPP  
 STA. 28+80 TO STA. 37+60

SHEET NUMBER:  
 37 OF 999

MATCH LINE STA. 37+60 (SEE SHEET 37)



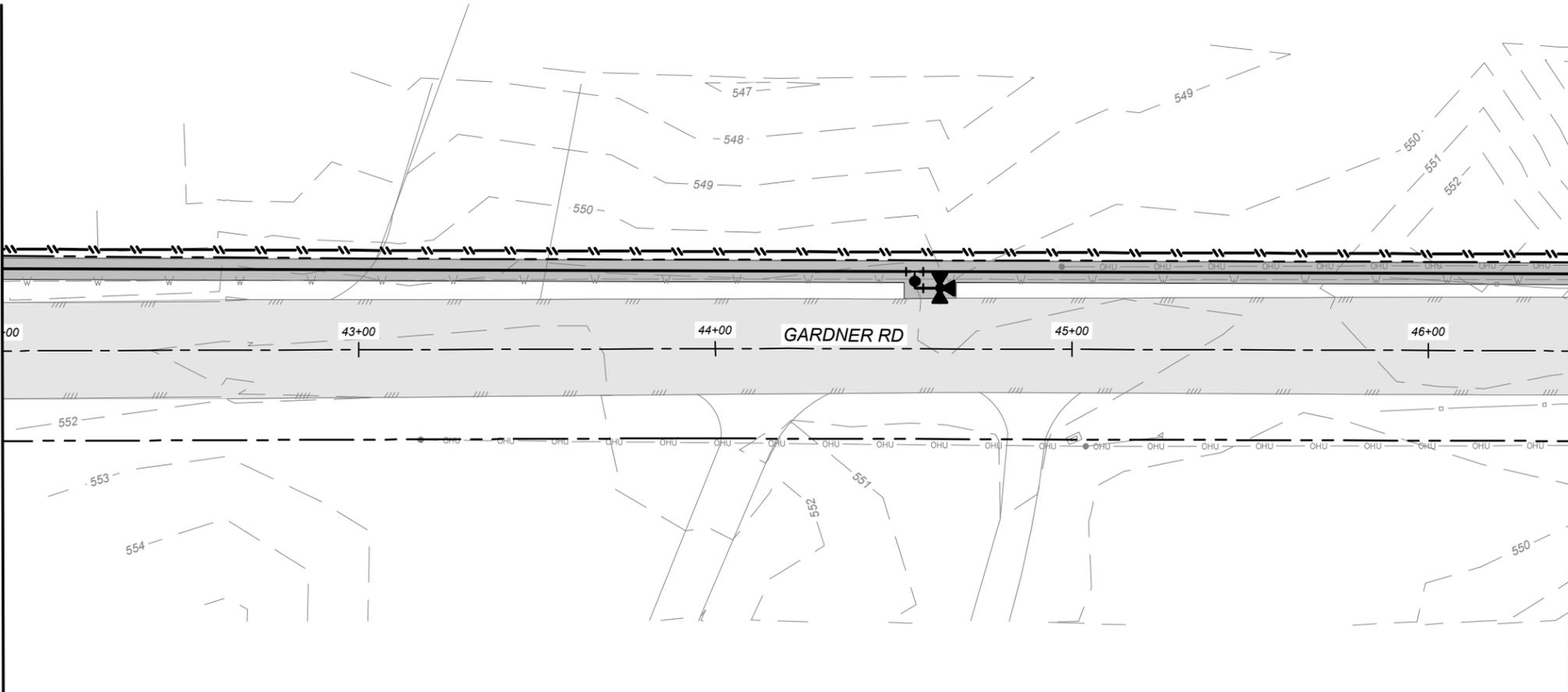
MATCH LINE STA. 42+00 (SEE THIS SHEET)



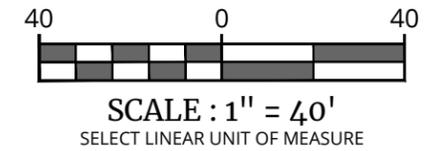
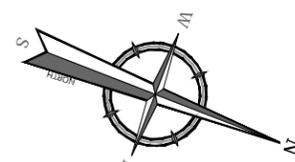
**LEGEND**

- PROPOSED WATER MAIN = ————
- EXISTING CONTOUR = - - - - -740-
- STABILIZED CONSTRUCTION EXIT/ENTRANCE = [Patterned Box]
- DISTURBED AREA = [Solid Grey Box]
- SILT FENCE = ————
- ROCK FILTER DAM = [Circle Pattern]

MATCH LINE STA. 42+00 (SEE THIS SHEET)



MATCH LINE STA. 46+40 (SEE SHEET 39)



**Colliers**

Engineering & Design

www.colliersengineering.com

Copyright © 2026, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reprinted, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as **MASER**

**811** PROTECT YOURSELF  
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE.  
Know what's below.  
Call before you dig. STATE REQUIRED FILE NUMBER FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT FOR BIDDING, CONSTRUCTION, OR PERMIT PURPOSES.

STANFORD NGUYEN, P.E.  
TEXAS LICENSE #

COLLIERS ENGINEERING & DESIGN  
TBPE FIRM # 14909

03/02/2026

WATER IMPROVEMENT'S  
FOR  
NORTHLAKE OFFSITE  
PHASE 2

GARDNER RD  
BEXAR COUNTY  
TEXAS

**Colliers** HOUSTON  
13501 Katy Freeway,  
Suite 1350  
Houston, TX 77079  
Phone: 281.674.7560  
Engineering & Design  
FIRM ID #14909

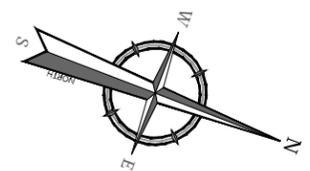
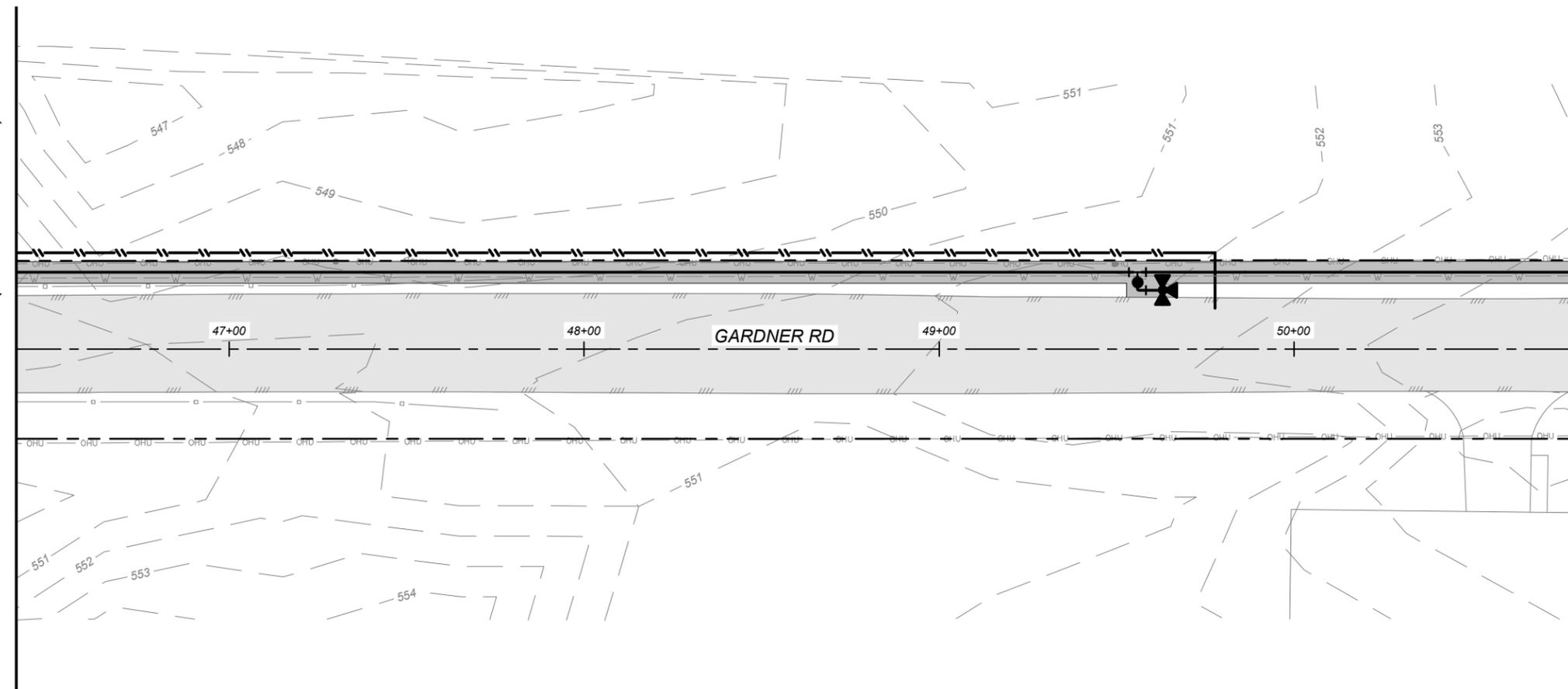
SCALE: AS SHOWN	DATE: Mar-26	DRAWN BY: XXX	CHECKED BY: XXX
PROJECT NUMBER: 24012718A	DRAWING NAME: C-SPPP-PH02.DWG		

SHEET TITLE:  
GARDNER RD SWPPP  
STA. 37+60 TO STA. 46+40

SHEET NUMBER:  
38 OF 999

MATCH LINE STA. 46+40 (SEE SHEET 38)

MATCH LINE STA. 50+80 (SEE THIS SHEET)

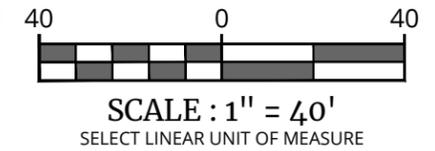
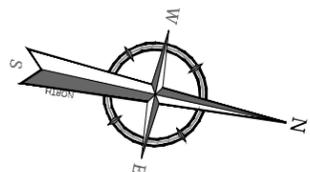
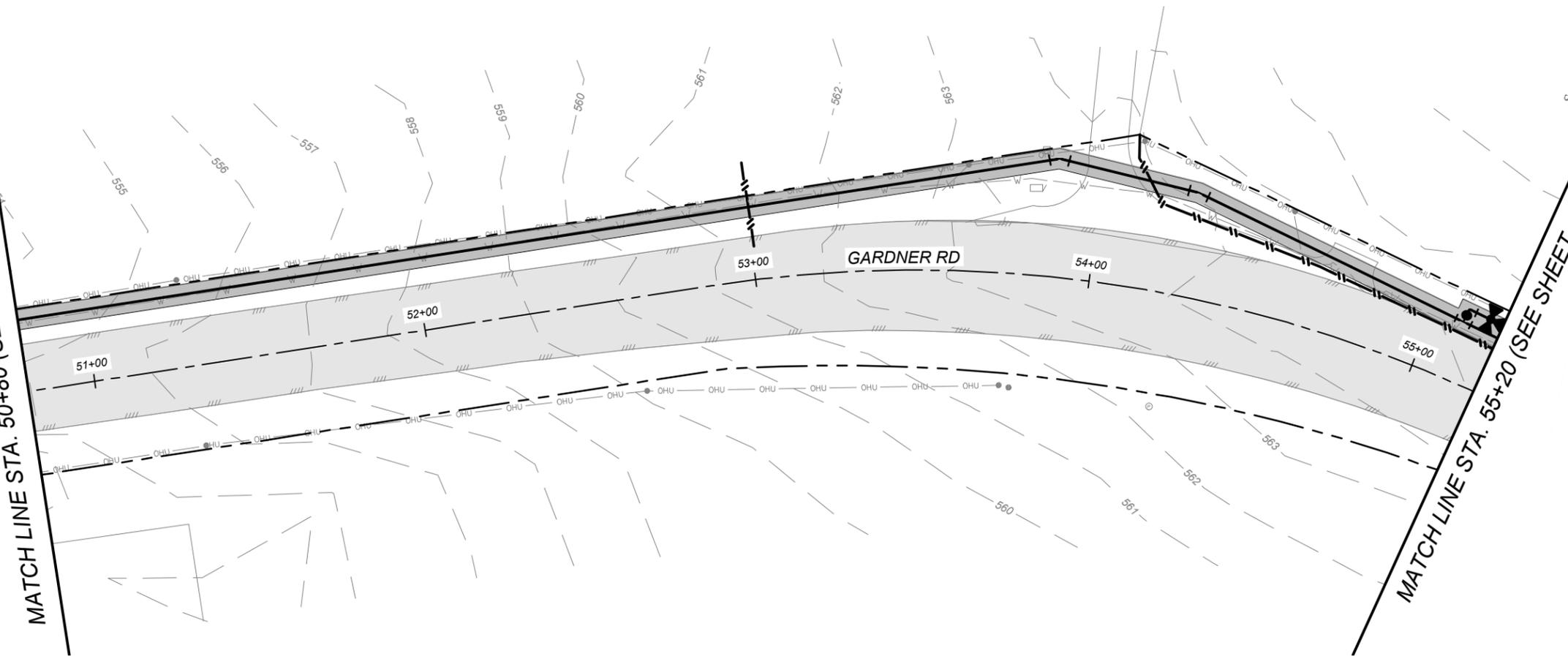


**LEGEND**

PROPOSED WATER MAIN	=	
EXISTING CONTOUR	=	
STABILIZED CONSTRUCTION EXIT/ENTRANCE	=	
DISTURBED AREA	=	
SILT FENCE	=	
ROCK FILTER DAM	=	

MATCH LINE STA. 50+80 (SEE THIS SHEET)

MATCH LINE STA. 55+20 (SEE SHEET 39)



Engineering & Design

www.colliersengineering.com

Copyright © 2026, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reprinted, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as **MASER** CONSULTANTS

**811** PROTECT YOURSELF  
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE.  
Know what's below. Call before you dig. STATE REQUIRED FILE NUMBER FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DESCRIPTION

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT FOR BIDDING, CONSTRUCTION, OR PERMIT PURPOSES.

STANFORD NGUYEN, P.E.  
TEXAS LICENSE #

COLLIERS ENGINEERING & DESIGN  
TBPE FIRM # 14909

03/02/2026

WATER IMPROVEMENT'S  
FOR  
NORTHLAKE OFFSITE  
PHASE 2

GARDNER RD  
BEXAR COUNTY  
TEXAS

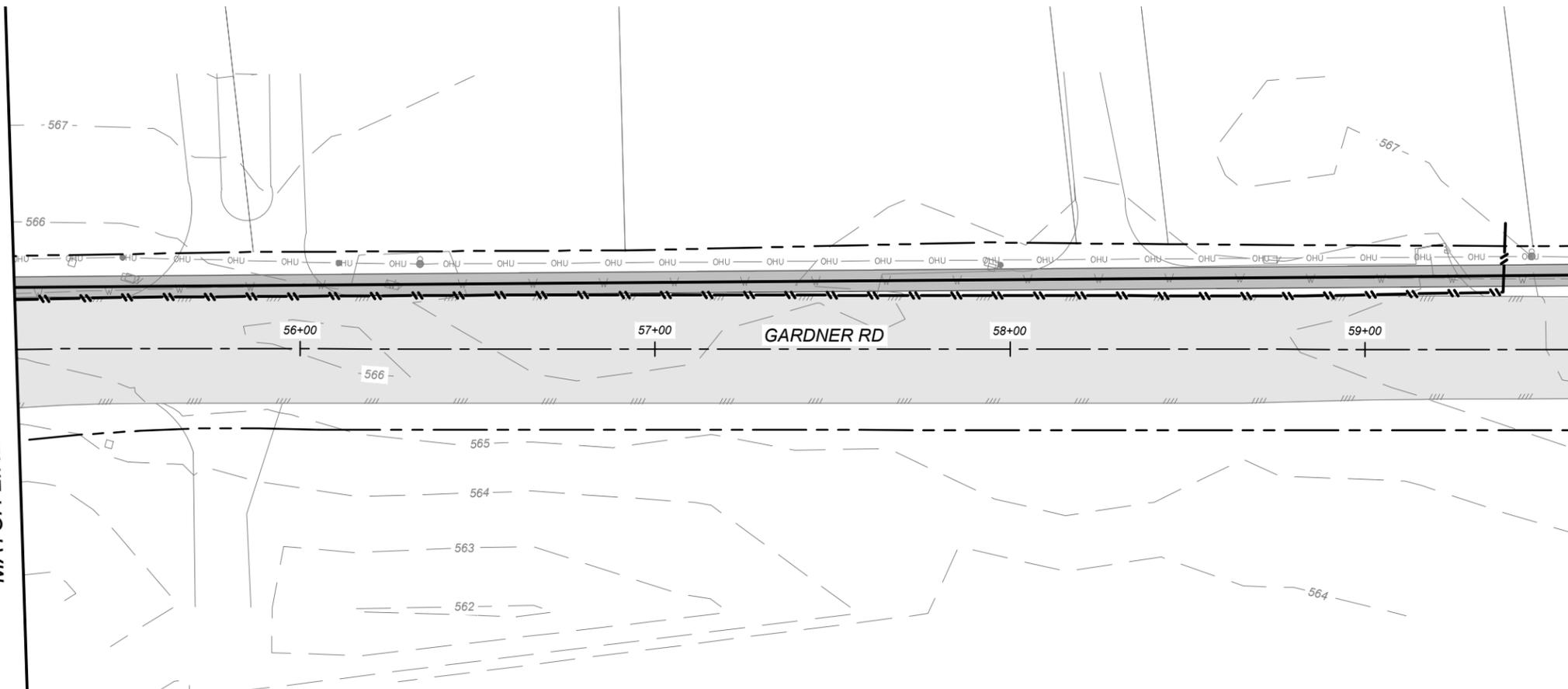
**Colliers** HOUSTON  
13501 Katy Freeway,  
Suite 1350  
Houston, TX 77079  
Phone: 281.674.7560  
COLLIERS ENGINEERING & DESIGN, INC.  
DOING BUSINESS AS MASER CONSULTANTS  
Engineering & Design  
FIRM ID #14909

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	Mar-26	XXX	XXX
PROJECT NUMBER:	DRAWING NAME:		
24012718A	C-SPPP-PH02.DWG		

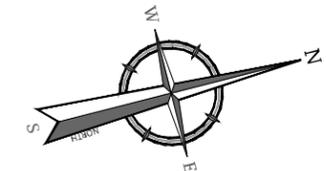
SHEET TITLE:  
GARDNER RD SWPPP  
STA. 46+40 TO STA. 55+20

SHEET NUMBER:  
39 OF 999

MATCH LINE STA. 55+20 (SEE SHEET 39)



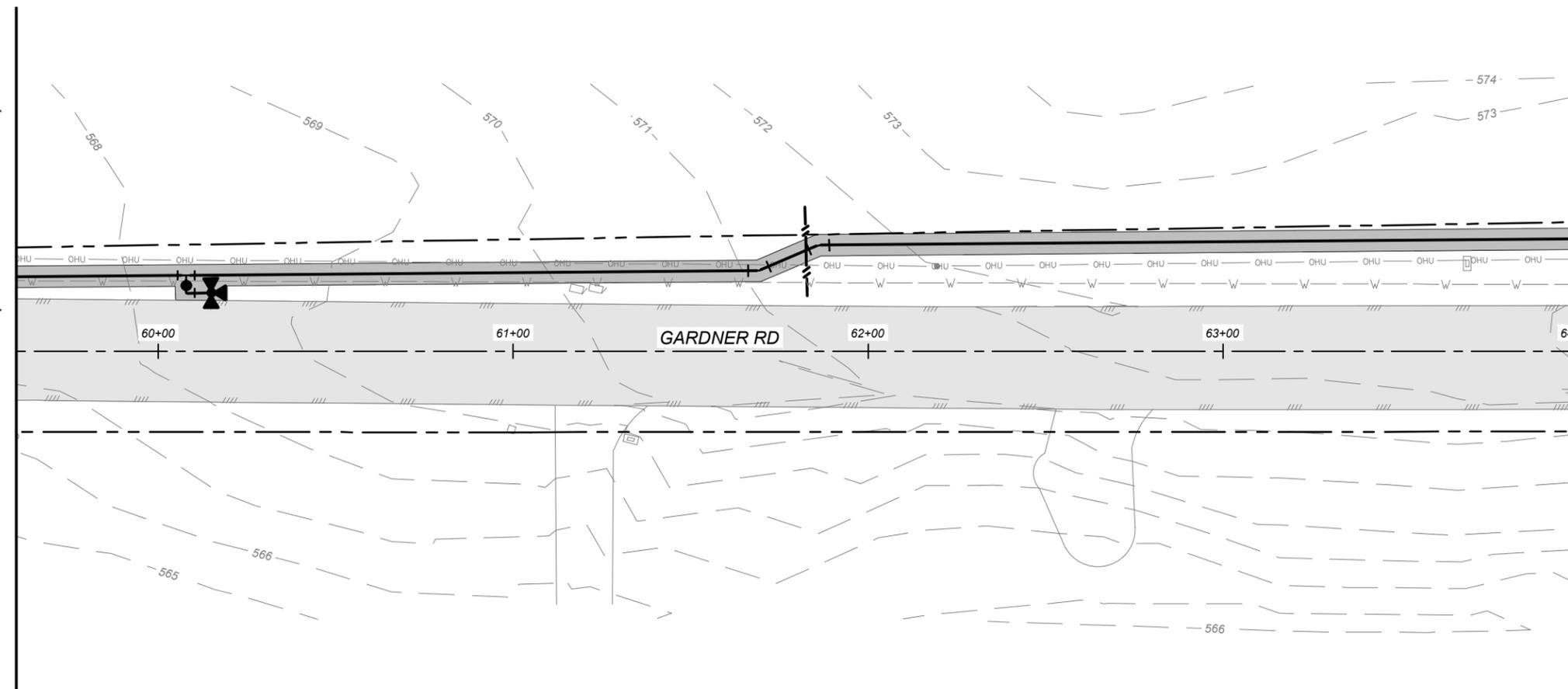
MATCH LINE STA. 59+60 (SEE THIS SHEET)



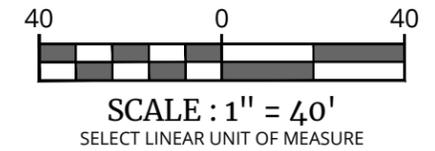
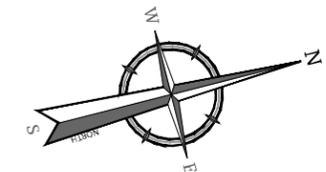
**LEGEND**

PROPOSED WATER MAIN	=	
EXISTING CONTOUR	=	
STABILIZED CONSTRUCTION EXIT/ENTRANCE	=	
DISTURBED AREA	=	
SILT FENCE	=	
ROCK FILTER DAM	=	

MATCH LINE STA. 59+60 (SEE THIS SHEET)



MATCH LINE STA. 64+00 (SEE SHEET 41)



Engineering & Design

www.colliersengineering.com

Copyright © 2026, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reprinted, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as **MASER CONSULTING**

**811** PROTECT YOURSELF  
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE.  
Know what's below.  
Call before you dig. STATE REQUIRED FILE NUMBER FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT FOR BIDDING, CONSTRUCTION, OR PERMIT PURPOSES.

STANFORD NGUYEN, P.E.  
TEXAS LICENSE #

COLLIERS ENGINEERING & DESIGN  
TBPE FIRM # 14909

03/02/2026

WATER IMPROVEMENTS  
FOR  
NORTHLAKE OFFSITE  
PHASE 2

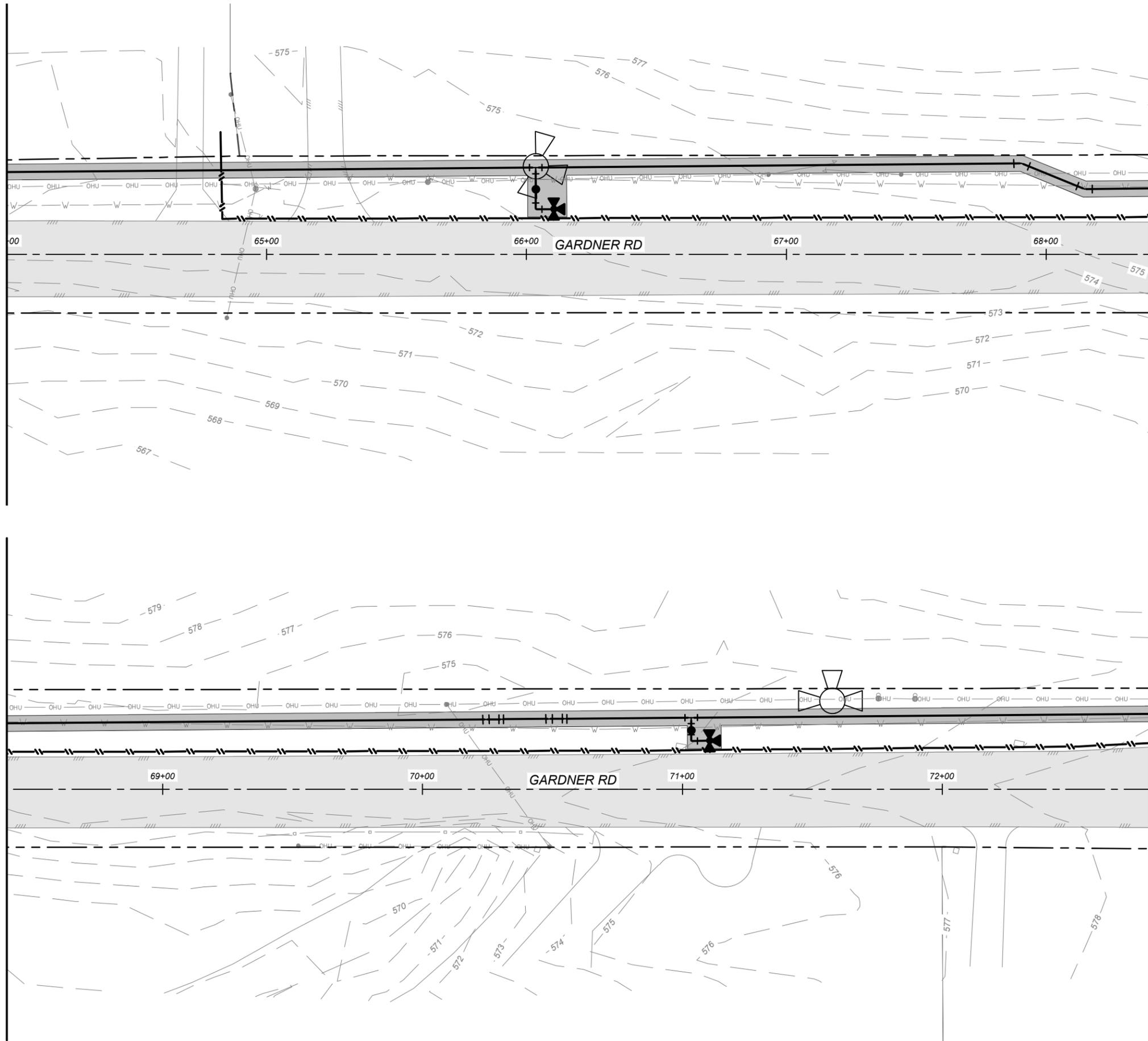
GARDNER RD  
BEXAR COUNTY  
TEXAS

HOUSTON  
13501 Katy Freeway,  
Suite 1350  
Houston, TX 77079  
Phone: 281.674.7560  
COLLIERS ENGINEERING & DESIGN, INC.  
DOING BUSINESS AS MASER CONSULTING  
FIRM ID #14909

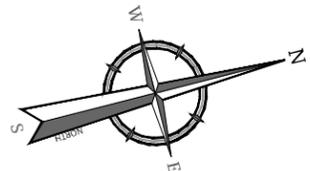
SCALE: AS SHOWN	DATE: Mar-26	DRAWN BY: XXX	CHECKED BY: XXX
PROJECT NUMBER: 24012718A	DRAWING NAME: C-SPPP-PH02.DWG		

SHEET TITLE:  
GARDNER RD SWPPP  
STA. 55+20 TO STA. 64+00

SHEET NUMBER:  
40 OF 999

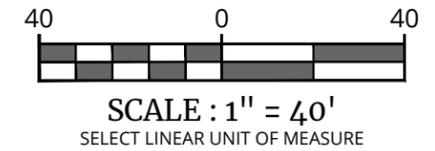
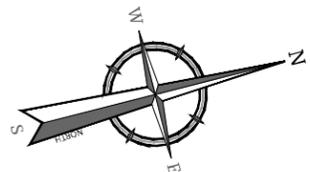


MATCH LINE STA. 68+40 (SEE THIS SHEET)



**LEGEND**

PROPOSED WATER MAIN	=	
EXISTING CONTOUR	=	
STABILIZED CONSTRUCTION EXIT/ENTRANCE	=	
DISTURBED AREA	=	
SILT FENCE	=	
ROCK FILTER DAM	=	



Engineering & Design

www.colliersengineering.com

Copyright © 2026, Colliers Engineering & Design. All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reprinted, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

---

Doing Business as

---

PROTECT YOURSELF

ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE.

Know what's below. Call before you dig. STATE REQUIRED FILE NUMBER FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

---

REV	DATE	DRAWN BY	DESCRIPTION

---

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT FOR BIDDING, CONSTRUCTION, OR PERMIT PURPOSES.

STANFORD NGUYEN, P.E.  
TEXAS LICENSE #

COLLIERS ENGINEERING & DESIGN  
TBPE FIRM # 14909

03/02/2026

---

**WATER IMPROVEMENTS  
FOR  
NORTHLAKE OFFSITE  
PHASE 2**

**GARDNER RD  
BEXAR COUNTY  
TEXAS**

---

HOUSTON  
13501 Katy Freeway,  
Suite 1350  
Houston, TX 77079  
Phone: 281.674.7560  
FIRM ID #14909

COLLIERS ENGINEERING & DESIGN, INC.  
DOING BUSINESS AS MASER CONSULTING

---

SCALE: AS SHOWN	DATE: Mar-26	DRAWN BY: XXX	CHECKED BY: XXX
PROJECT NUMBER: 24012718A	DRAWING NAME: C-SPPP-PH02.DWG		

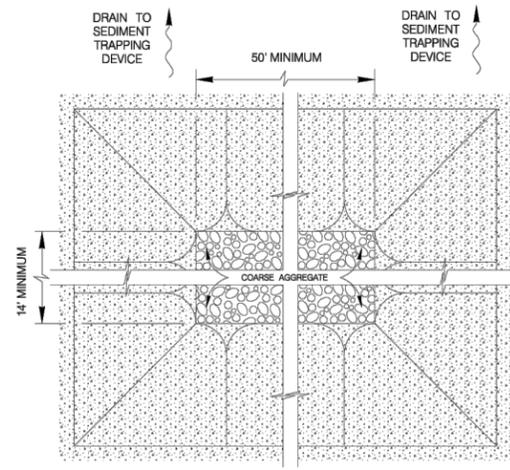
---

SHEET TITLE:  
**GARDNER RD SWPPP  
STA. 64+00 TO STA. 72+80**

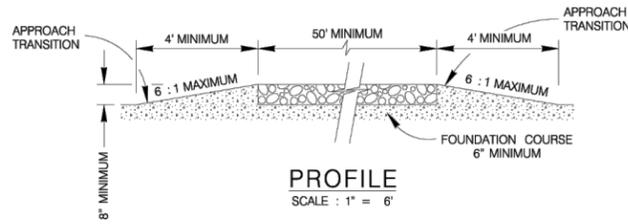
---

SHEET NUMBER:  
**41 OF 999**





**PLAN**  
SCALE : 1" = 6'

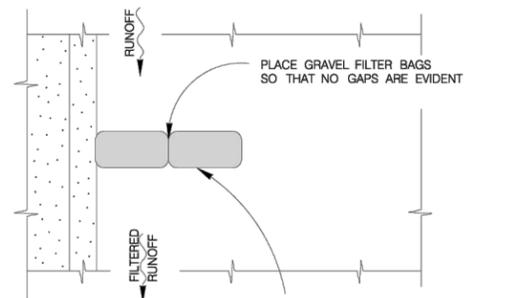


**PROFILE**  
SCALE : 1" = 6'

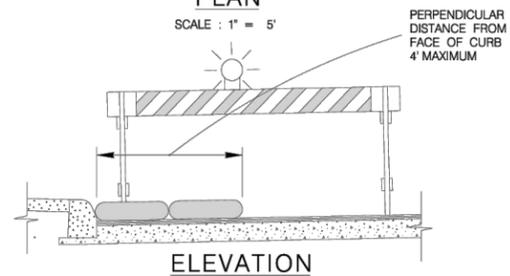
GENERAL NOTES

1. THE LENGTH OF THE TYPE 1 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE COARSE AGGREGATE SHOULD BE OPEN GRADED WITH A SIZE OF 4" TO 8".
3. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6 : 1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
4. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT SHALL BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

**CONSTRUCTION EXIT - TYPE 1**



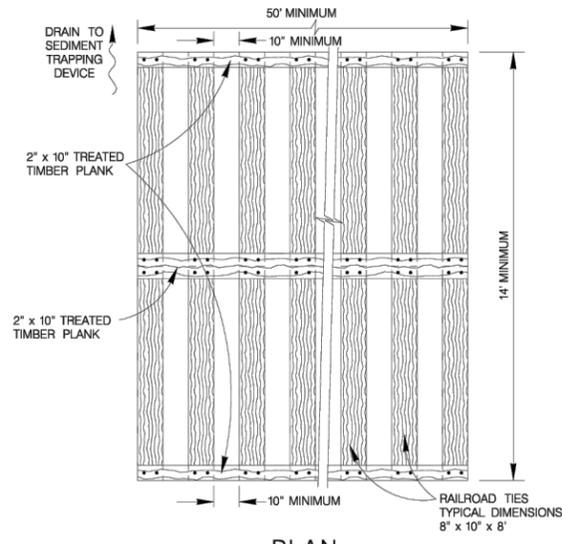
**PLAN**  
SCALE : 1" = 5'



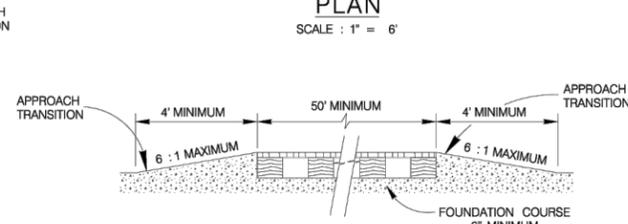
**ELEVATION**  
SCALE : 1" = 5'

NOTE: STRADDLE GRAVEL FILTER BAGS WITH TYPE 1 BARRICADES MOUNTED WITH TYPE "A" FLASHING WARNING LIGHT. SEE BARRICADE CONSTRUCTION SIGN DETAILS. PLACE FLASHING LIGHTS AWAY FROM GUTTER, FLUSH WITH OUTSIDE EDGE OF BAG CONFIGURATION.

**GRAVEL FILTER BAGS**



**PLAN**  
SCALE : 1" = 6'

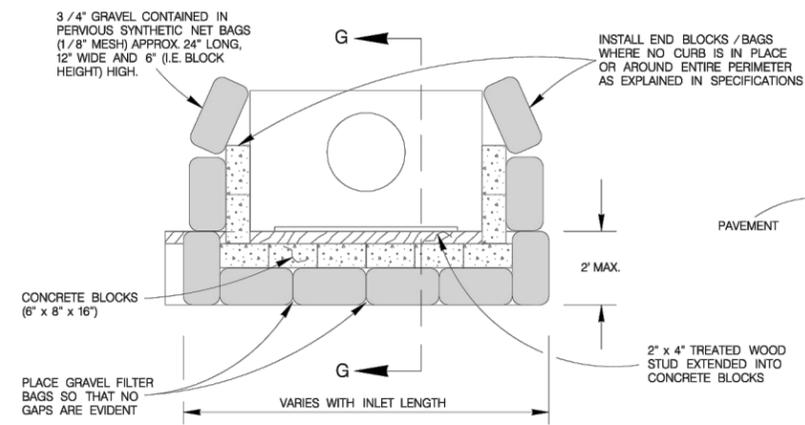


**PROFILE**  
SCALE : 1" = 6'

GENERAL NOTES

1. THE LENGTH OF THE TYPE 2 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE TREATED TIMBER PLANKS SHALL BE ATTACHED TO THE RAILROAD TIES WITH 1/2" x 6" MIN. LAG BOLTS. OTHER FASTENERS MAY BE USED AS APPROVED BY THE ENGINEER.
3. THE TREATED TIMBER PLANKS SHALL BE #2 GRADE MIN, AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6 : 1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
6. THE CONSTRUCTION EXIT SHOULD BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
7. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

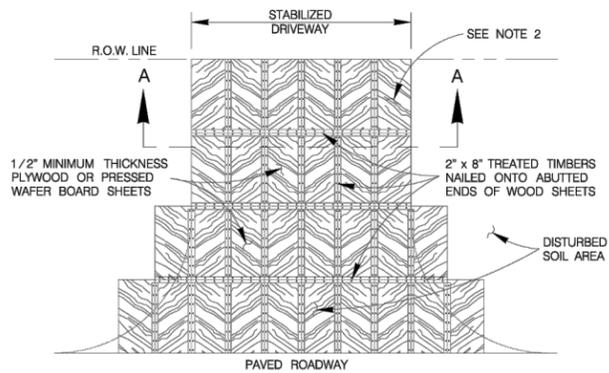
**CONSTRUCTION EXIT - TYPE 2**



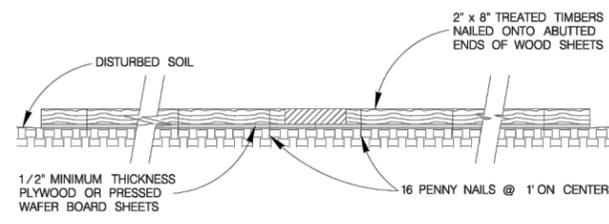
**PLAN**  
SCALE : 1" = 5'

NOTE: GRAVEL FILTERS CAN BE USED ON PAVEMENT OR BARE GROUND.

**CURB INLET GRAVEL FILTER**



**PLAN**  
SCALE : 1" = 20'

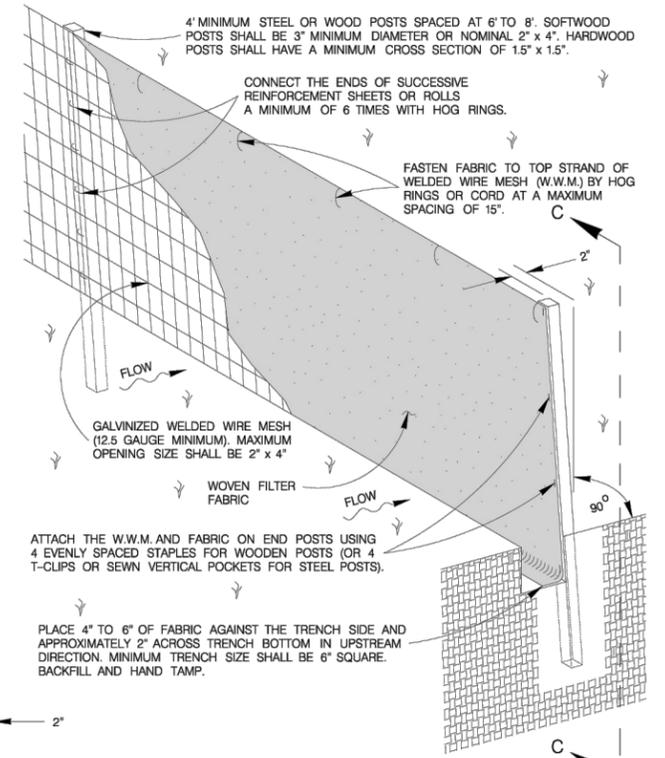


**SECTION A-A**  
SCALE : 1" = 2'

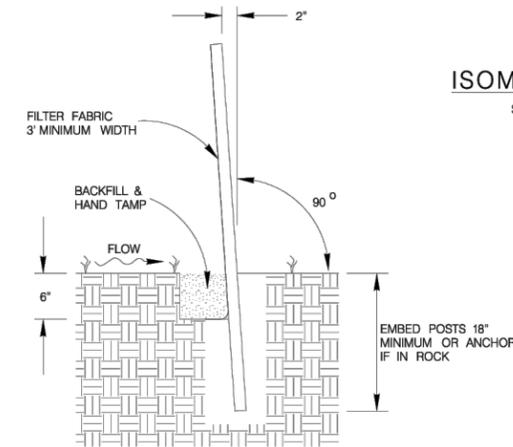
GENERAL NOTES

1. THE LENGTH OF THE TYPE 3 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
2. THE TYPE 3 CONSTRUCTION EXIT MAY BE CONSTRUCTED FROM OPEN GRADED CRUSHED STONE WITH A SIZE OF 2 TO 4 INCHES SPREAD A MINIMUM OF 4 INCHES THICK TO THE LIMITS SHOWN ON THE PLANS.
3. THE TREATED TIMBER PLANKS SHALL BE #2 GRADE MIN, AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

**CONSTRUCTION EXIT - TYPE 3**



**ISOMETRIC VIEW**  
SCALE : 1" = 2'



**SECTION C-C**  
SCALE : 1" = 2'

**SEDIMENT CONTROL FENCE USAGE GUIDELINES**

A SEDIMENT CONTROL FENCE MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUN-OFF. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED.

SEDIMENT CONTROL FENCE SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 100 GPM / FT SQUARED. SEDIMENT CONTROL FENCE IS NOT RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA LARGER THAN 2 ACRES.

**GENERAL NOTES**

1. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

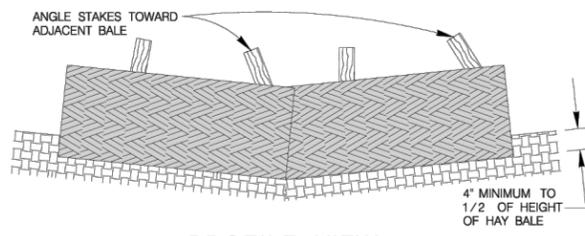
**TEMPORARY SEDIMENT CONTROL FENCE**

JANUARY 2005

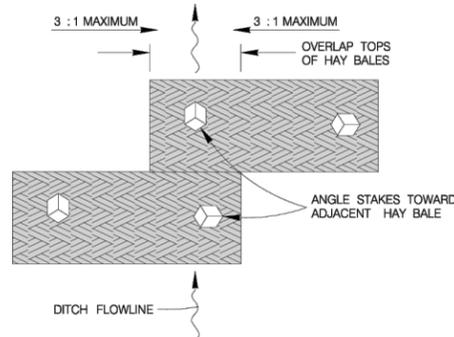
CITY OF SAN ANTONIO  
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

**TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 1**

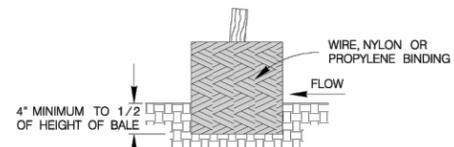
% SUBMITTAL PROJECT NO.:	DATE:
DRWN. BY: V. VASQUEZ	DGN. BY:
CHKD. BY:	SHEET NO. OF



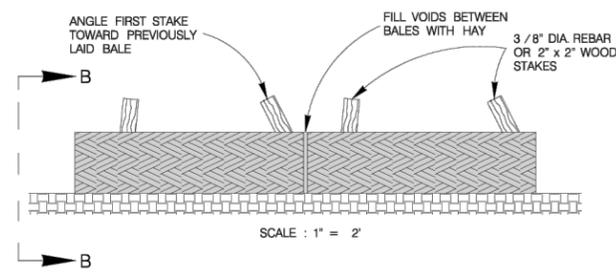
**PROFILE VIEW**  
SCALE : 1" = 2'



**PLAN VIEW**  
SCALE : 1" = 2'



**SECTION B-B**  
SCALE : 1" = 2'



**BALED HAY USAGE GUIDELINES**

A BALED HAY INSTALLATION MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUNOFF. A TWO YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED. THE INSTALLATION SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 5 GPM /FT SQUARED OF CROSS SECTIONAL AREA. BALED HAY MAY BE USED AT THE FOLLOWING LOCATIONS:

1. WHERE THE RUNOFF APPROACHING THE BALED HAY FLOWS OVER DISTURBED SOIL FOR LESS THAN 100'. IF THE SLOPE OF THE DISTURBED SOIL EXCEEDS 10 %, THE LENGTH OF SLOPE UPSTREAM OF THE BALED HAY SHOULD BE LESS THAN 50'.
2. WHERE THE INSTALLATION WILL BE REQUIRED FOR LESS THAN 3 MONTHS.
3. WHERE THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 1/2 ACRE.

FOR BALED HAY INSTALLATIONS IN SMALL DITCHES, THE FOLLOWING ADDITIONAL CONDI-TIONAL CONSIDERATIONS APPLY:

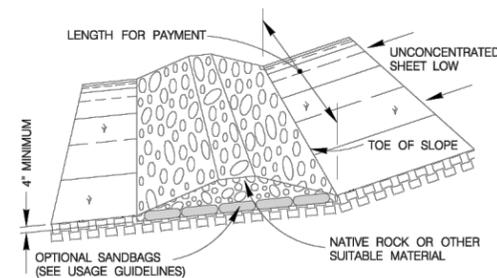
1. THE DITCH SIDESLOPES SHOULD BE GRADED AS FLAT AS POSSIBLE TO MAXIMIZE THE DRAINAGE FLOW RATE THRU THE HAY.
2. THE DITCH SHOULD BE GRADED LARGE ENOUGH TO CONTAIN THE OVERLAPPING DRAINAGE WHEN SEDIMENT HAS FILLED TO THE TOP OF THE BALED HAY.

BALES SHOULD BE REPLACED USUALLY EVERY 2 MONTHS OR MORE OFTEN DURING WET WEATHER WHEN LOSS OF STRUCTURAL INTERGRITY IS ACCELERATED.

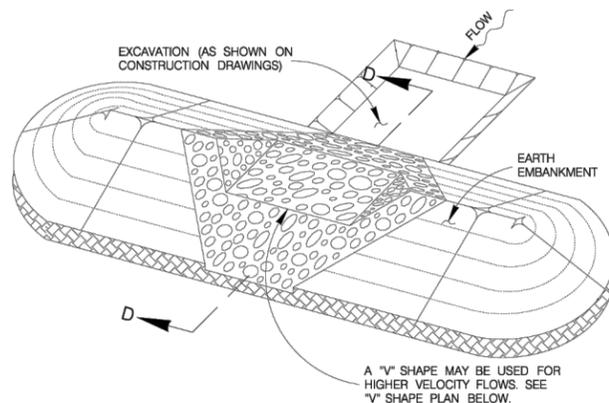
**GENERAL NOTES**

1. HAY BALES SHALL BE A MINIMUM OF 30" IN LENGTH AND WEIGH A MINIMUM OF 50 LBS.
2. HAY BALES SHALL BE BOUND BY EITHER WIRE OR NYLON OR POLYPROPYLENE STRING. THE BALES SHALL BE COMPOSED ENTIRELY OF VEGETABLE MATTER.
3. HAY BALES SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4" AND, WHERE POSSIBLE, ONE-HALF THE HEIGHT OF THE BALE.
4. HAY BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES. THE BALES SHALL BE PLACED WITH BINDINGS PARALLEL TO THE GROUND.
5. HAY BALES SHALL BE SECURELY ANCHORED IN PLACE WITH 3/8" DIA REBAR OR 2" x 2" WOOD STAKES DRIVEN THROUGH THE BALES. THE FIRST STAKE SHALL BE ANGLED TO-WARDS THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

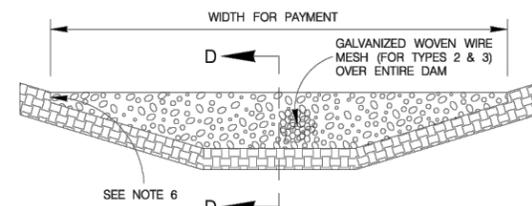
**BALED HAY FOR EROSION CONTROL**



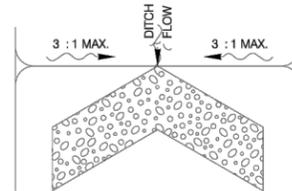
**TYPE 1 FILTER DAM AT TOE OF SLOPE**  
SCALE : 1" = 10'



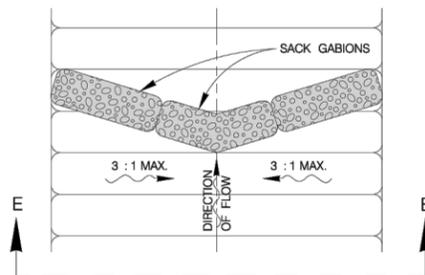
**TYPE 1 & 2 FILTER DAM AT SEDIMENT TRAP**  
SCALE : 1" = 10'



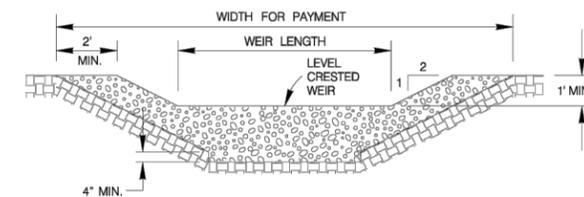
**TYPE 1, 2 & 3 FILTER DAM AT CHANNEL SECTIONS**  
SCALE : 1" = 6'



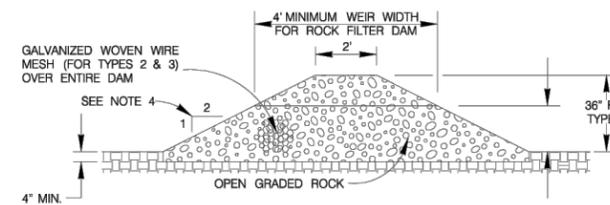
**"V" SHAPE PLAN VIEW**  
NOT TO SCALE



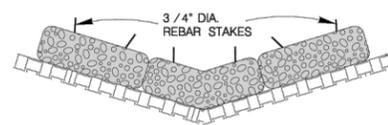
**PLAN VIEW**  
SCALE : 1" = 10'



**PROFILE OF TYPE 1 & 2 FILTER DAM AT SEDIMENT TRAP**  
SCALE : 1" = 6'

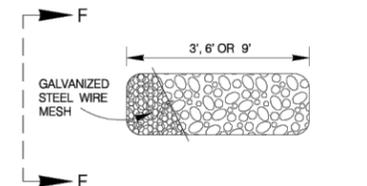


**SECTION D-D**  
SCALE : 1" = 6'

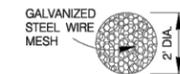


**SECTION E-E**  
SCALE : 1" = 10'

**TYPE 4 FILTER DAM AT DITCHES & SMALLER CHANNELS PLAN VIEW**



**TYPE 4 SACK GABION DETAIL**  
SCALE : 1" = 6'



**SECTION F-F**  
SCALE : 1" = 6'

**ROCK FILTER DAM USAGE GUIDELINES**

ROCK FILTER DAMS SHOULD BE CONSTRUCTED DOWNSTREAM FROM DISTURBED AREAS TO INTERCEPT SEDIMENT FROM OVERLOAD RUNOFF AND /OR CONCENTRATED FLOW. THE DAMS SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 60 GPM /FT SQUARED OF CROSS SECTIONAL AREA. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE.

**TYPE 1 (18" HIGH WITH NO WIRE MESH):**

TYPE 1 MAY BE USED AT THE TOE OF SLOPES, AROUND INLETS, IN SMALL DITCHES AND AT DIKE OR SWALE OUTLETS. THIS TYPE OF DAM IS RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA OF 5 ACRES OR LESS. TYPE 1 MAY NOT BE USED IN CONCENTRATED HIGH VELOCITY FLOWS (APPROXIMATELY 8 FT./SEC. OR MORE) IN WHICH AGGREGATE WASH OUT MAY OCCUR. SANDBAGS MAY BE USED AT THE EMBEDDED FOUNDATION (4" DEEP MIN.) FOR BETTER FILTERING EFFICIENCY OF LOW FLOWS IF CALLED FOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

**TYPE 2 (18" HIGH WITH WIRE MESH):**

TYPE 2 MAY BE USED IN DITCHES AND AT DIKE OR SWALE OUTLETS.

**TYPE 3 (36" HIGH WITH WIRE MESH):**

TYPE 3 MAY BE USED IN STREAM FLOW AND SHOULD BE SECURED TO THE STREAM BED.

**TYPE 4 (SACK GABIONS):**

TYPE 4 MAY BE USED IN DITCHES AND SMALLER CHANNELS TO FORM AN EROSION CONTROL DAM.

**GENERAL NOTES**

1. IF SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER, FILTER DAMS SHOULD BE PLACED NEAR THE TOE OF SLOPES WHERE EROSION IS ANTICIPATED, UPSTREAM AND /OR DOWNSTREAM AT DRAINAGE STRUCTURES, AND IN ROADWAY DITCHES AND CHANNELS TO COLLECT SEDIMENT.
2. MATERIALS (AGGREGATE, WIRE MESH, SANDBAGS, ETC.) SHALL BE AS INDICATED BY THE SPECIFICATION FOR ROCK FILTER DAMS FOR EROSION AND SEDIMENTATION CONTROL.
3. THE ROCK FILTER DAM DIMENSIONS SHALL BE AS INDICATED ON THE STORM WATER POLLUTION PREVENTION PLANS.
4. SIDE SLOPES SHOULD BE 2 : 1 OR FLATTER. DAMS WITHIN THE SAFETY ZONE SHALL HAVE SIDE SLOPES OF 6 : 1 OR FLATTER.
5. MAINTAIN A MINIMUM OF 1' BETWEEN TOP OF ROCK FILTER DAM WEIR AND TOP OF EMBANKMENT FOR FILTER DAMS AT SEDIMENT TRAPS.
6. FILTER DAMS SHOULD BE EMBEDDED A MINIMUM OF 4" INTO THE EXISTING GROUND.
7. THE SEDIMENT TRAP FOR PONDING OF SEDIMENT LADEN RUNOFF SHALL BE OF THE DIMENSIONS SHOWN ON THE PLANS.
8. ROCK FILTER DAM TYPES 2 & 3 SHALL BE SECURED WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1" DIAMETER HEXAGONAL OPENINGS. THE AGGREGATE SHALL BE PLACED ON THE MESH TO THE HEIGHT AND SLOPES SPECIFIED. THE MESH SHALL BE FOLDED AT THE UPSTREAM SIDE OVER THE AGGREGATE AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS. IN STREAM USE, THE MESH SHOULD BE SECURED OR STAKED TO THE STREAM BED PRIOR TO AGGREGATE PLACEMENT.
9. SACK GABIONS SHOULD BE STAKED DOWN WITH 3/4" DIA REBAR STAKES.
10. FLOW OUTLET SHOULD BE ONTO A STABILIZED AREA (VEGETATION, ROCK, ETC.).
11. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

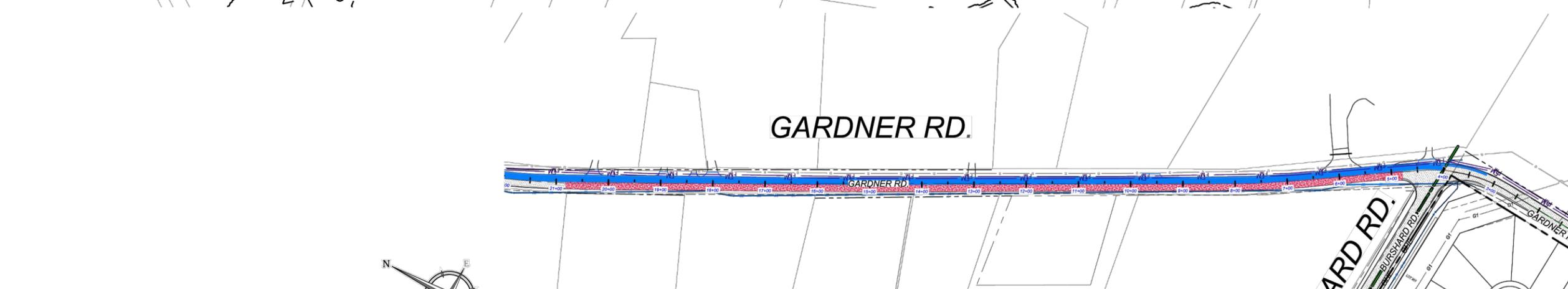
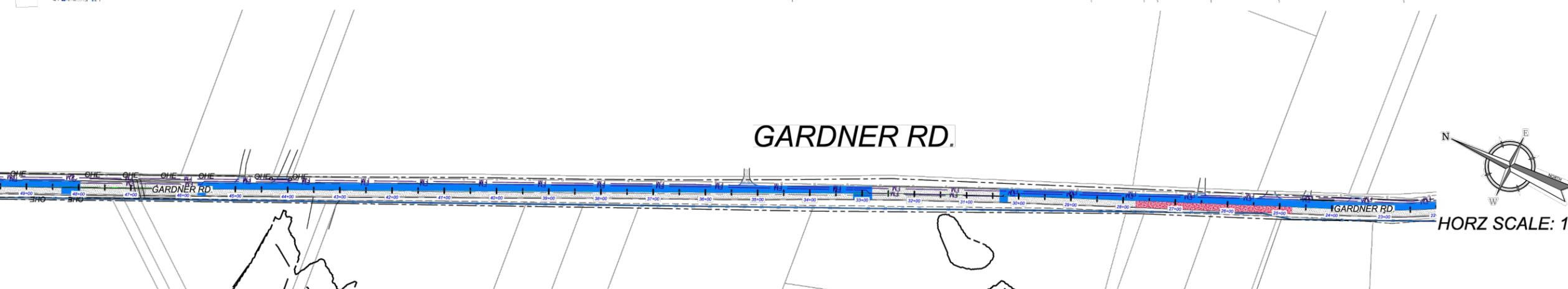
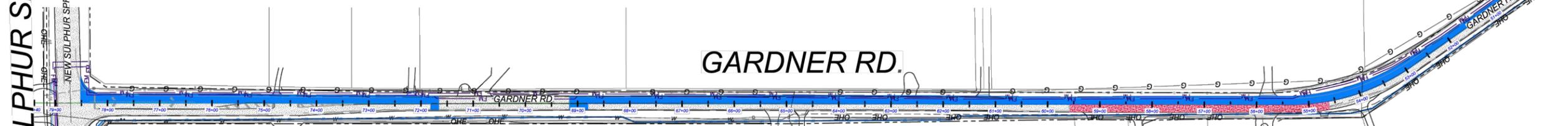
JANUARY 2005

CITY OF SAN ANTONIO  
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

**TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 2**

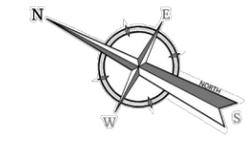
**ROCK FILTER DAMS**

NEW SULPHUR SPRINGS RD

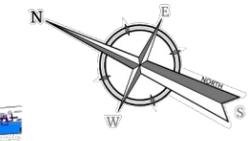


**LEGEND**

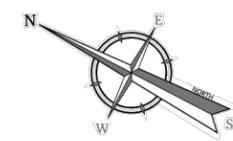
-  = NORTHBOUND ROAD SECTION REPAIR PER BEXAR COUNTY STREET CUT REPAIR DETAIL (SEE DETAIL "A" ON EX.3.0)  
CONSTRUCTION TO BE COMPLETE WITH LIFT STATION AND FORCEMAIN ROW PERMIT (GARDNER RD (1150 BURSHARD RD) - PENDING APP #)
-  = SOUTHBOUND ROAD SECTION REPAIR PER BEXAR COUNTY STREET CUT REPAIR DETAIL (SEE DETAIL "B" ON EX. 3.0)  
CONSTRUCTION TO BE COMPLETE WITH GARDNER RD WATER MAIN UPSIZING (ROW APP-25-6969)
-  = NORTHLAKE - 12" DUAL FORCE MAIN
-  = NORTHLAKE - 16" WATER MAIN UPSIZING



HORZ SCALE: 1"=100'



HORZ SCALE: 1"=100'



HORZ SCALE: 1"=100'

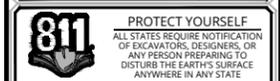


Engineering & Design

www.colliersengineering.com

Copyright © 2024, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reprinted, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Formerly Known as **KFW**



Call before you dig. STATE REQUIRED FILE NUMBER FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DESCRIPTION

NORTHLAKE PHASE 1  
PLAT# 24-11800261

BEXAR COUNTY  
TEXAS

**Colliers** NEW BRAUNFELS (KFW)  
162 West Mill Street  
New Braunfels, TX 78130  
Phone: 830.220.6042  
COLLIERS ENGINEERING & DESIGN, INC.  
Engineering & Design  
FIRM ID #14909

SCALE: AS SHOWN	DATE: JULY 2024	DRAWN BY: -	CHECKED BY: -
PROJECT NUMBER: 214-65-02	DRAWING NAME: C-EXHB.DWG		

SHEET TITLE:  
OVERALL GARDNER RD  
DISTURBANCE EXHIBIT

SHEET NUMBER:  
EX0B.0 999

**TRENCH EXCAVATION SAFETY PROTECTION**

CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGNER/GEOTECHNICAL SAFETY EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTORS TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

**COMPACTION NOTE:**

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE SAWS INSPECTOR/TEST ADMINISTRATOR, PER EACH 12 INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. PERMITS AND/OR WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

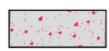
**DRY UTILITY CONDUIT NOTE:**

CONDUIT LOCATIONS SHOWN ON PLAN ARE FOR GEOGRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE. CONTRACTOR TO INSTALL PROPOSED CONDUITS IN ACCORDANCE WITH DRY UTILITY SURVEYOR'S SPECIFICATIONS. CONTRACTOR TO VERIFY THE CONDUIT LOCATIONS AND SIZES BASED ON THE DRY UTILITY SURVEYOR'S PLAN.

**CAUTION!!**

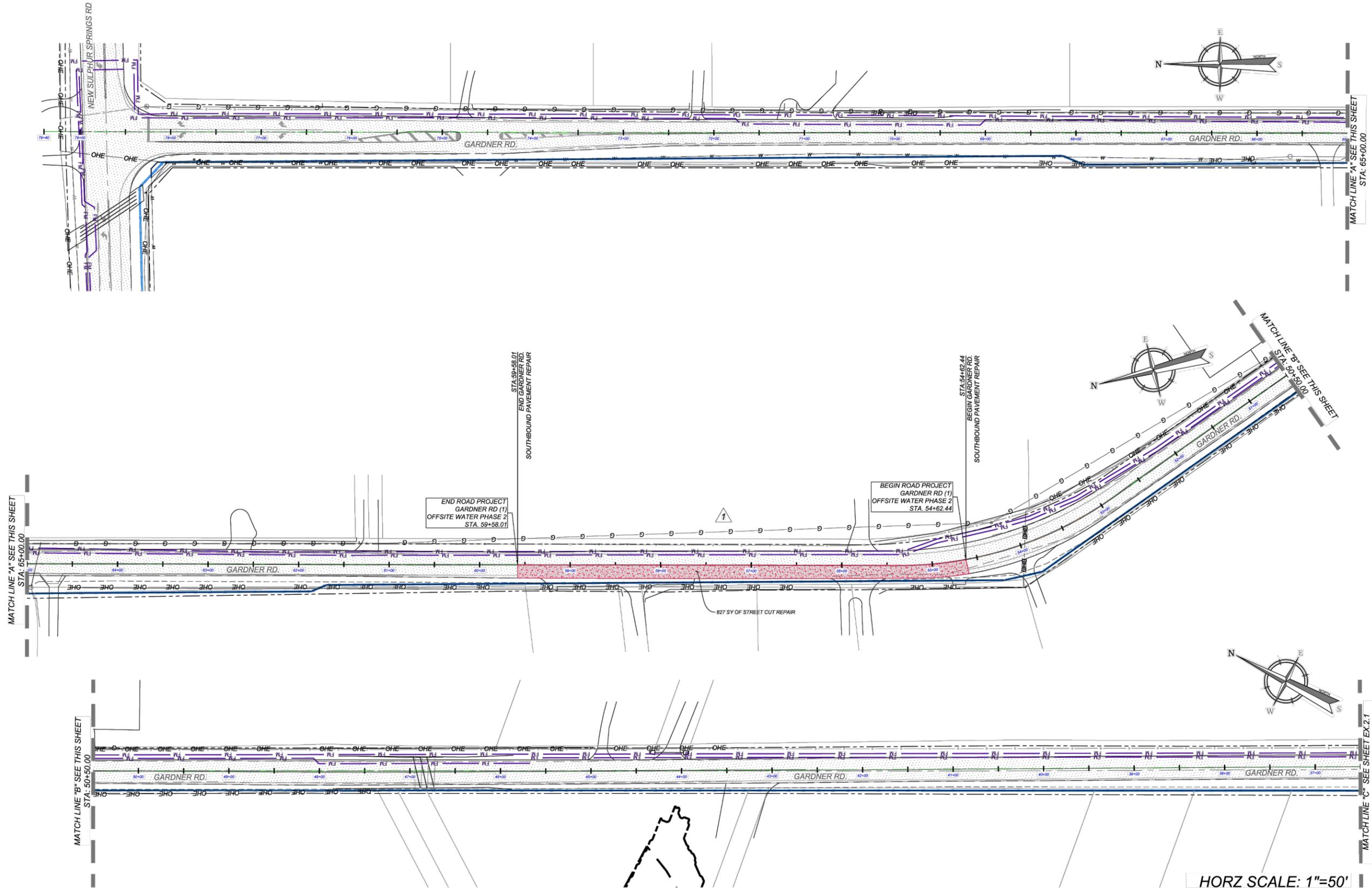
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCT BANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

**LEGEND**

-  = SOUTHBOUND ROAD SECTION REPAIR PER BEXAR COUNTY STREET CUT REPAIR DETAIL (SEE DETAIL "B" ON EX. 3.0)
-  = CONSTRUCTION TO BE COMPLETE WITH GARDNER RD WATER MAIN UPSIZING (ROW APP-25-6969)
-  = NORTHLAKE - 12" DUAL FORCE MAIN
-  = NORTHLAKE - 16" WATER MAIN UPSIZING

**KEY NOTE LEGEND**

-  = CONTRACTOR TO MILL/OVERLAY HALF WIDTH OF GARDNER ROAD IN ACCORDANCE WITH BEXAR COUNTY STREET CUT REPAIR DETAIL AND GARDNER RD. TYPICAL STREET SECTION (SEE DETAIL "B" ON EX. 3.0)





**Engineering & Design**

www.colliersengineering.com

Copyright © 2024, Colliers Engineering & Design. All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, revised, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Formerly Known as **KFW**

**811** PROTECT YOURSELF  
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE.  
Know what's below.  
Call before you dig. STATE REQUIRED FILE NUMBER FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

**NORTHLAKE PHASE 1**  
PLAT# 24-11800261

BEXAR COUNTY  
TEXAS

**Colliers** NEW BRAUNFELS (KFW)  
162 West Mill Street  
New Braunfels, TX 78130  
Phone: 830.220.6042  
COLLIERS ENGINEERING & DESIGN, INC.

Engineering & Design  
FIRM ID #14909

SCALE: AS SHOWN	DATE: JULY 2024	DRAWN BY:	CHECKED BY:
PROJECT NUMBER: 214-65-02	DRAWING NAME: C-EXHB.DWG		

SHEET TITLE: **WATER MAIN PVMT DISTURBANCE EXHIBIT**

SHEET NUMBER: **EX02.0 999**



