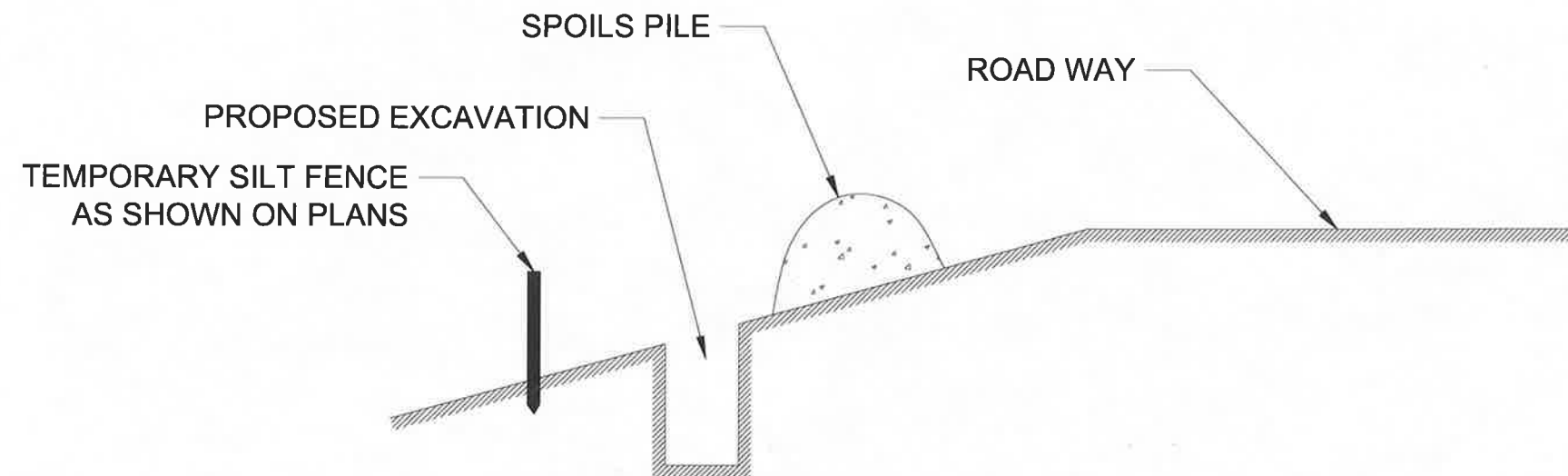


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			DRAWN _____ E. WOODWARD	ATTENTION LINE IS 2 INCHES AT FULL SIZE (IF NOT, SCALE ACCORDINGLY)	STRATMOOR HILLS WATER DISTRICT	FORSGREN <i>Associates Inc.</i> 58 EVERNESS DRIVE EAST #112, ENGLEWOOD, CO 80112 PH. 720.232.6644	CENTRALIZED TREATMENT RAW WATERLINE		PROJECT NO: 04-18-0103
			DESIGNED _____ E. WOODWARD						SHEET NO: D-02
NO. REVISIONS _____ BY _____ DATE _____			APPROVED _____ M. WARESAK						DATE: _____ PAGE NO: _____ AUG. 2020 9 OF 10
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**NOTE: SILT FENCE TO BE
REMOVED AFTER VEGETATION
HAS BEEN RE-ESTABLISHED**

TYPICAL EROSION CONTROL
(Not to scale)



Job: Stratmoore Hills Raw Water Line
Client: Stratmoore Hills
Project Location: US Hwy 85 & Glenarm Drive

Drawn By: NMM

Sheet Number:

C-101

STRATMOOR HILLS WATER DISTRICT

CENTRALIZED TREATMENT RAW WATERLINE EL PASO COUNTY, COLORADO

FA PROJECT NO. 04-18-0103
AUGUST, 2020



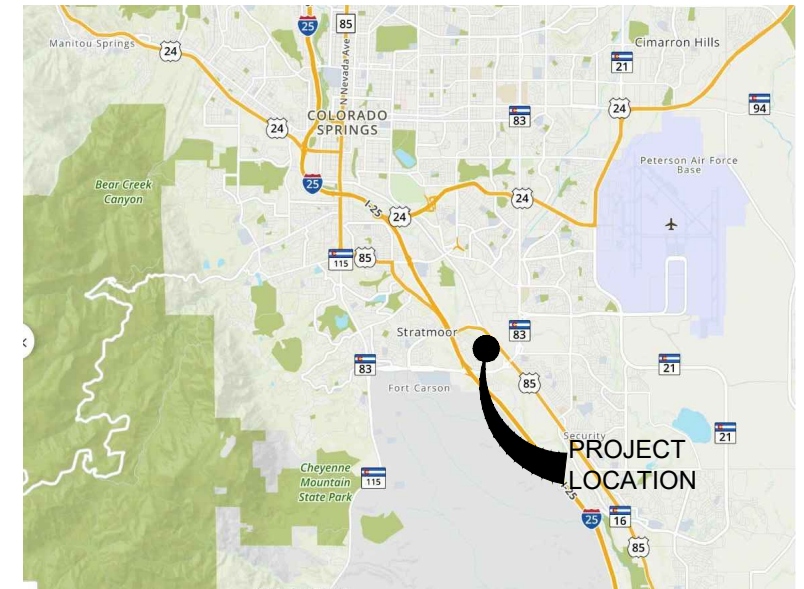
PROJECT LOCATION MAP

N.T.S.



DRAWING INDEX

PAGE NO.	SHEET NO.	DRAWING NAME
1	G-01	COVER SHEET
2	G-02	GENERAL NOTES AND LEGEND
3	C-01	RAW WATERLINE - PLAN AND PROFILE STA 0+00 TO STA 6+00
4	C-02	RAW WATERLINE - PLAN AND PROFILE STA 6+00 TO STA 12+00
5	C-03	RAW WATERLINE - PLAN AND PROFILE STA 12+00 TO STA 18+00
6	C-04	RAW WATERLINE - PLAN AND PROFILE STA 18+00 TO STA 24+00
7	C-05	RAW WATERLINE - PLAN AND PROFILE STA 24+00 TO STA 28+00
8	D-01	GENERAL DETAILS 1
9	D-02	GENERAL DETAILS 2



VICINITY MAP

N.T.S.



OWNER INFO:
STRATMOOR HILLS WATER DISTRICT
1811 B STREET
COLORADO SPRINGS, CO 80906
(719)-576-0311

ENGINEER:
FORSGREN ASSOCIATES, INC.
56 INVERNESS DRIVE EAST, STE 112
ENGLEWOOD, CO 80112
(720)-214-5884

CALL UTILITY NOTIFICATION
CENTER OF COLORADO
1-800-922-1987
CALL 2-BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE, OR EXCAVATE
FOR THE MARKING OF UNDERGROUND
MEMBER UTILITIES.



THE LOCATIONS OF EXISTING ABOVE GROUND AND UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL ABOVE GROUND AND UNDERGROUND UTILITIES.

FORSGREN
Associates Inc.
56 Inverness Drive East, Ste. 112, Englewood, CO 80112
PH: 720.214.5884

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LEGEND

ANNOTATION

CIVIL ABBREVIATIONS

MATCH LINE	— — — —
CENTER LINE	=====
CONTROL LINE	=====
PROPERTY OR R/W LINE	— — — —
EASEMENT LINE	- - - - -
STREET MONUMENT LINE	=====
WIRE FENCE	— □ —
CHAIN LINK FENCE	=====
BARBED WIRE FENCE	— X —
CONTOUR LINE	4250 [EL=4354.66]
SPOT ELEVATION	
BANK SLOPES	
CANAL	
OPEN DITCH	— UE —
UNDERGROUND ELECTRIC	
OVERHEAD ELECTRIC	(E) (E)
ELECTRIC BOX	
ELECTRIC MANHOLE	
ELECTRIC METER	
GAS LINE	— NG —
GAS VALVE	
GAS METER	
IRRIGATION LINE	— IRR —
SANITARY SEWER LINE	— SS —
SANITARY SEWER CLEANOUT	
SANITARY SEWER MANHOLE	(S)
SECONDARY WATER LINE	— SW —
SECONDARY WATER VALVE	
SECONDARY WATER VAULT	
STORM DRAIN LINE	— SD —
STORM DRAIN CATCH BASIN	
STORM DRAIN INLET(S)	
STORM DRAIN COMBO BOX	
STORM DRAIN MANHOLE	(D)
STORM DRAIN CLEANOUT BOX	
STORM DRAIN VAULT	
CULVERT	SD
TELEPHONE CABLE	— COMM —
TELEPHONE BOX	(T)
TELEPHONE MANHOLE	(T)
TELEPHONE POST	
WATER LINE	— PW —
FIRE HYDRANT	
FIRE RISER	
WATER VALVE	
WATER AIR RELEASE VALVE	
WATER METER	
UTILITY POLE & ANCHOR	
POWER POLE	
STREET LIGHT	
LIGHT	
ASPHALT PAVING	
CURB & GUTTER	
SIDEWALK	
RAILROAD TRACKS	
GUARD RAIL	
SIGN	
STRUCTURE	
LANDSCAPING (TREES ETC.)	
SECTION CORNER	
MONUMENT	
BENCH MARK	

REVISION TRIANGLE	← REVISION NO. 1
DETAIL CALLOUT	1 C-001 DETAIL # SHEET NO.
KEYNOTE CALLOUT	1 KEYNOTE REFERENCE
PIPE CALLOUT	SS 18" PVC SYSTEM MATERIAL SIZE
SECTION CALLOUT	A G-001 DESIGNATION SHEET NO.
DETAIL NAME	4' MANHOLE SCALE: 1/2"=1'-0"
SECTION NAME	TYPICAL ROAD SCALE: 1"=1"
VIEW NAME	PLAN VIEW VIEW DESCRIPTION SCALE: 1"=1"
GENERAL CALLOUT	GENERAL NOTE
PROPOSED CALLOUT	CONSTRUCTION NOTE

ALT	ALTERNATE
APPROX	APPROXIMATELY
BDRY	BOUNDARY
BM	BENCH MARK
BOT	BOTTOM
BRG	BEARING
BSMT	BASEMENT
BTWN	BETWEEN
CALC	CALCULATED
CB	CATCH BASIN
CCW	COUNTERCLOCKWISE
CEN	CENTER
CFS	CUBIC FEET PER SECOND
CL or CL	CENTERLINE/CONTROL LINE
CIP	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
CPP	CORRUGATED PLASTIC PIPE
CU	CUBIC
CW	CLOCKWISE
°	DEGREE
DET	DETAIL
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DWG	DRAWING
ELEV	ELEVATION
ELEC	ELECTRIC/ELECTRICAL
EXC	EXCAVATION
EQUIP	EQUIPMENT
EXIST	EXISTING
FD	FOUND
FG	FINISH GRADE
FL OR FL	FLOW LINE
FPS	FEET PER SECOND
FT	FEET

GRD	GROUND
HDWL	HEADWALL
HORIZ	HORIZONTAL
HWY	HIGHWAY
HYD	HYDRANT
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
INV	INVERT
L	LENGTH
LF	LINEAR FEET
LIN	LINEAR/LINEAL
LT	LEFT
MATL	MATERIAL
MAX	MAXIMUM
MKR	MARKER
MH	MANHOLE
MI	MILE
MISC	MISCELLANEOUS
MON	MONUMENT
N	NORTH
N/A	NO ACCESS or NOT APPLICABLE
NTS	NOT TO SCALE
No	NUMBER
OBLIT	OBLITERATE
OD	OUTSIDE DIAMETER
O-O	OUTSIDE TO OUTSIDE
ORIG	ORIGINAL
PVMT	PAVEMENT
PC	POINT OF CURVATURE
PE	POLYETHELENE
PERF	PERFORATED
PROJ	PROJECT
PROP	PROPERTY
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE

QTY	QUANTITY
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REF	REFERENCE
REINF	REINFORCED
REQD	REQUIRED
REV	REVISION
S	SOUTH
SAN	SANITARY
SCHED	SCHEDULE
SD	STORM DRAIN
SPECS	SPECIFICATIONS
SQ	SQUARE
SS	SANITARY SEWER
ST	STREET
STL	STEEL
STA	STATION
STD	STANDARD
TEMP	TEMPORARY
TEL	TELEPHONE/TELEGRAM
TP	TELEPHONE POLE
TYP	TYPICAL
UBC	UNIFORM BUILDING CODES
UG	UNDERGROUND
UT	UNDERGROUND TELEPHONE
VB	VALVE BOX
VERT	VERTICAL
VOL	VOLUME
W	WEST/WATER
WM	WATER METER
WV	WATER VALVE
XING	CROSSING
W/	WITH
W/O	WITHOUT
Δ	DELTA
%	PERCENT

GENERAL CONSTRUCTION NOTES

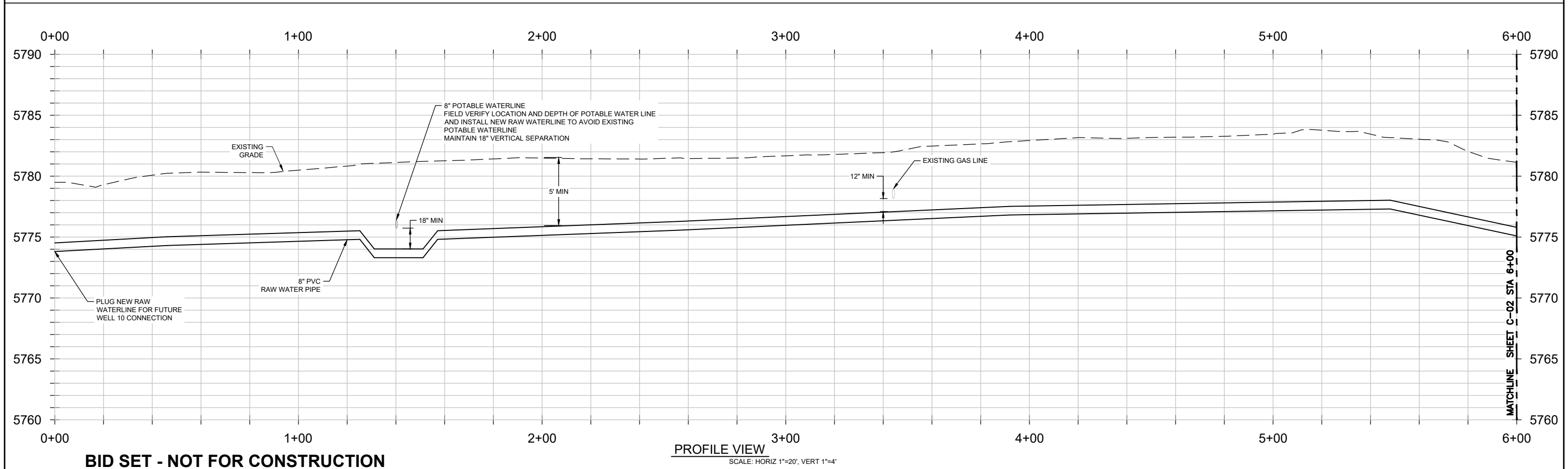
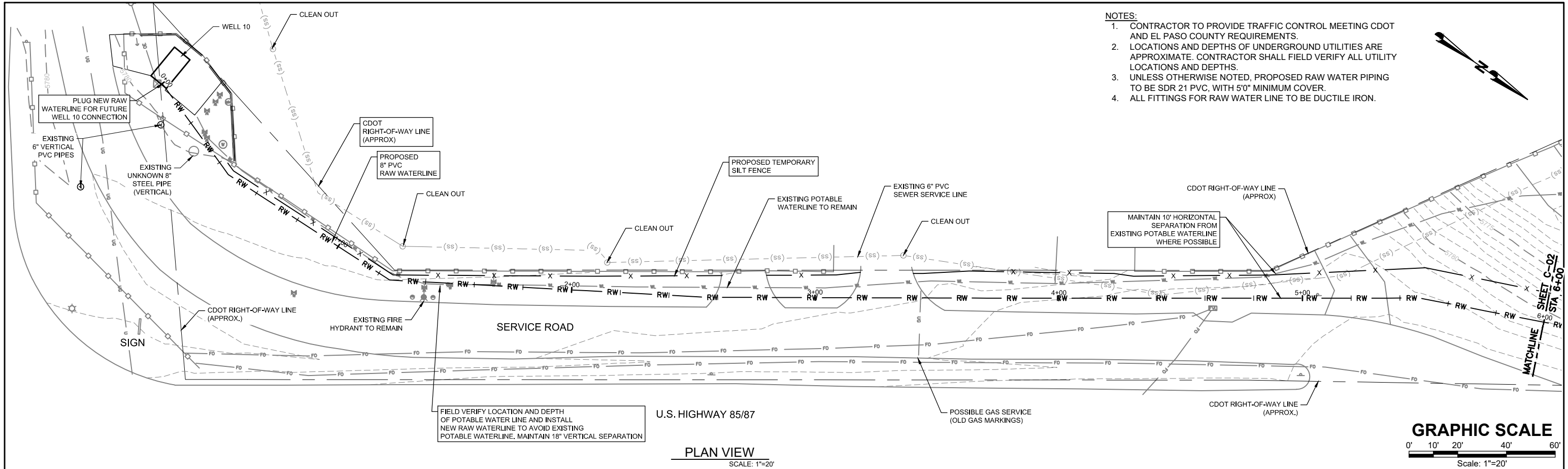
- SPECIFICATIONS FOR THE IMPROVEMENTS AS SHOWN ON THESE PLANS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE COLORADO "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION," LATEST EDITION AS AMENDED, EXCEPT AS MODIFIED BY THESE PLANS AND TECHNICAL SPECIFICATIONS.
- THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES AND GOVERNMENTAL REGULATIONS. BEFORE WORK MAY BEGIN, CONTRACTOR SHALL SECURE ALL APPROPRIATE PERMITS AT CONTRACTOR'S EXPENSE.
- A COPY OF THE CONTRACT DOCUMENTS AND THE PROJECT PLANS SHALL BE KEPT AT THE JOB SITE BY THE CONTRACTOR AT ALL TIMES DURING CONSTRUCTION ACTIVITIES.
- THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE DRAWINGS HAVE BEEN OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS AND FROM INFORMATION PROVIDED BY THE VARIOUS UTILITIES. LOCATIONS ARE APPROXIMATE. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE DEPICTED LOCATION AND THE EXISTENCE OR NONEXISTENCE OF UTILITY LINES.
- PRIOR TO CONSTRUCTION IN ANY AREA, THE CONTRACTOR SHALL VERIFY, BY WHATEVER MEANS NECESSARY, THE HORIZONTAL AND VERTICAL LOCATION OF EXISTING UTILITIES, GRADES AND OBSTRUCTIONS. SHOULD A CONFLICT BE VERIFIED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER SO THE CONFLICT MAY BE RESOLVED. THE OWNER OR ENGINEER SHALL NOT BE RESPONSIBLE FOR DELAY OR ADDITIONAL COST RESULTING FROM CONTRACTORS FAILURE TO FOLLOW THIS PROCEDURE.
- IN THE EVENT THAT GROUND WATER OR OTHER UNSTABLE AND UNUSUAL CONDITIONS ARE ENCOUNTERED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY FOR INSPECTION AND RECOMMENDATION FOR EXCAVATION, DRAINS, GRAVEL FILL, ADDITIONAL REINFORCING, ETC.
- DRIVEWAY ACCESS SHALL BE MAINTAINED BY THE CONTRACTOR DURING ALL HOURS OF THE DAY, AND ALL BUSINESSES SHALL HAVE 24 HOUR ACCESS EXCEPT IN EMERGENCIES.
- THE CONTRACTOR SHALL NOT ALLOW HIS CONSTRUCTION, STORAGE, OR PARKING OF EQUIPMENT OR VEHICLES TO ENCROACH ON PRIVATE PROPERTY EXCEPT WHERE PERMANENT OR TEMPORARY EASEMENTS HAVE BEEN GRANTED. IN ANY CASE, THE CONTRACTOR SHALL OBSERVE THE FOLLOWING CONDITIONS:
 - THE CONSTRUCTION AREA SHALL BE KEPT TO THE MINIMUM WIDTH REQUIRED FOR THE OPERATION.
 - EXISTING VEGETATION WILL REMAIN IN UNDISTURBED AREAS.
 - NO TREES OVER 4 INCH DIAMETER SHALL BE REMOVED.
 - ALL DISTURBED, UNPAVED AREAS SHALL BE MULCHED, AND RESEEDED WITH NATIVE GRASSES.
 - ANY DAMAGE DONE TO STRUCTURES, PAVING, GRAVEL, FENCES, UTILITY POLES, CULVERTS, ETC. SHALL BE PROMPTLY REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER
- CONSTRUCTION ACCESS TO AREAS OUTSIDE OF THE LIMITS OF CONSTRUCTION SHALL BE AGREED UPON AND APPROVED BY THE LANDOWNER AT THE SOLE COST AND EXPENSE OF THE CONTRACTOR
- CONTRACTOR IS RESPONSIBLE FOR REPAIR AND RECLAMATION OF ALL DISTURBED AREAS AT THE PROJECT SITE RESULTING FROM CONSTRUCTION EQUIPMENT AND STORAGE. FINAL RECLAMATION SHALL BE PERFORMED TO THE COMPLETE SATISFACTION OF THE OWNER.
- CHANGES SHALL NOT BE MADE TO THESE PLANS WITHOUT THE SPECIFIC APPROVAL OF THE OWNER AND THE ENGINEER. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION METHODS OR TECHNIQUES OR FOR THE PROSECUTION OF THE WORK AS SHOWN ON THESE PLANS. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTORS, OR OTHER PERSONS PERFORMING ANY OF THE WORK OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- SEDIMENT (MUD AND DIRT) TRANSPORTED ONTO A PUBLIC ROAD, REGARDLESS OF THE SIZE OF THE SITE, SHALL BE CLEANED IMMEDIATELY BY THE CONTRACTOR.
- CONCRETE WASH WATER SHALL NOT BE DISCHARGED TO OR ALLOWED TO RUNOFF TO STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
- FORSGREN ASSOCIATES IS NOT RESPONSIBLE FOR SAFETY IN, ON OR CONCERNING THE PROJECT SITE, NOR FOR COMPLIANCE BY THE APPROPRIATE PARTY WITH ANY REGULATIONS RELATED THERETO.

BID SET - NOT FOR CONSTRUCTION

				DRAWN E. WOODWARD	ATTENTION LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" SCALE ACCORDINGLY)	STRATMOOR HILLS WATER DISTRICT	FORSGREN Associates Inc. 58 INVERNESS DRIVE EAST #112, ENGLEWOOD, CO 80112 PH: 720.232.6644	CENTRALIZED TREATMENT RAW WATERLINE		PROJECT NO: 04-18-0103
				DESIGNED E. WOODWARD						SHEET NO: G-02
				APPROVED M. WARESAK				GENERAL NOTES AND LEGEND		DATE: AUG, 2020
				QA QA BY						PAGE NO: 2 OF 9

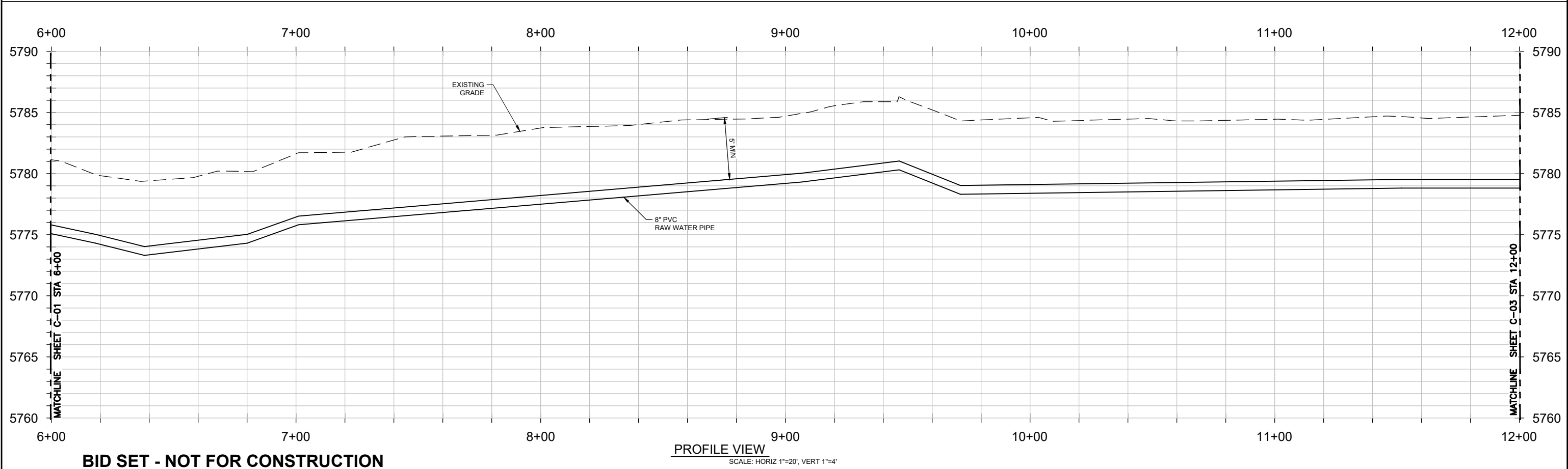
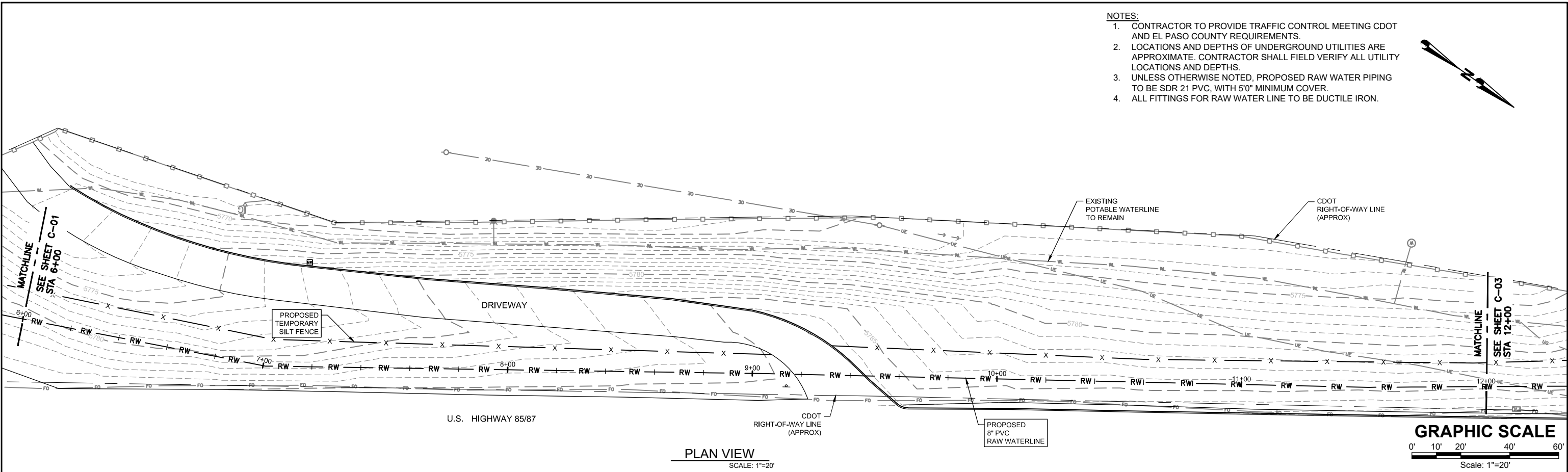
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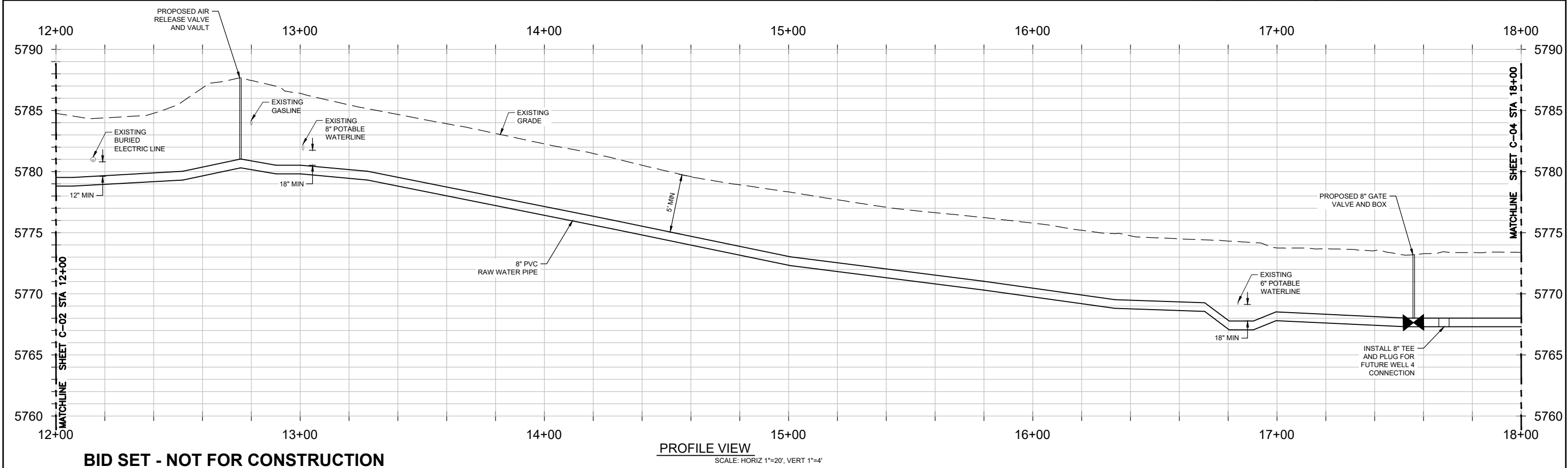
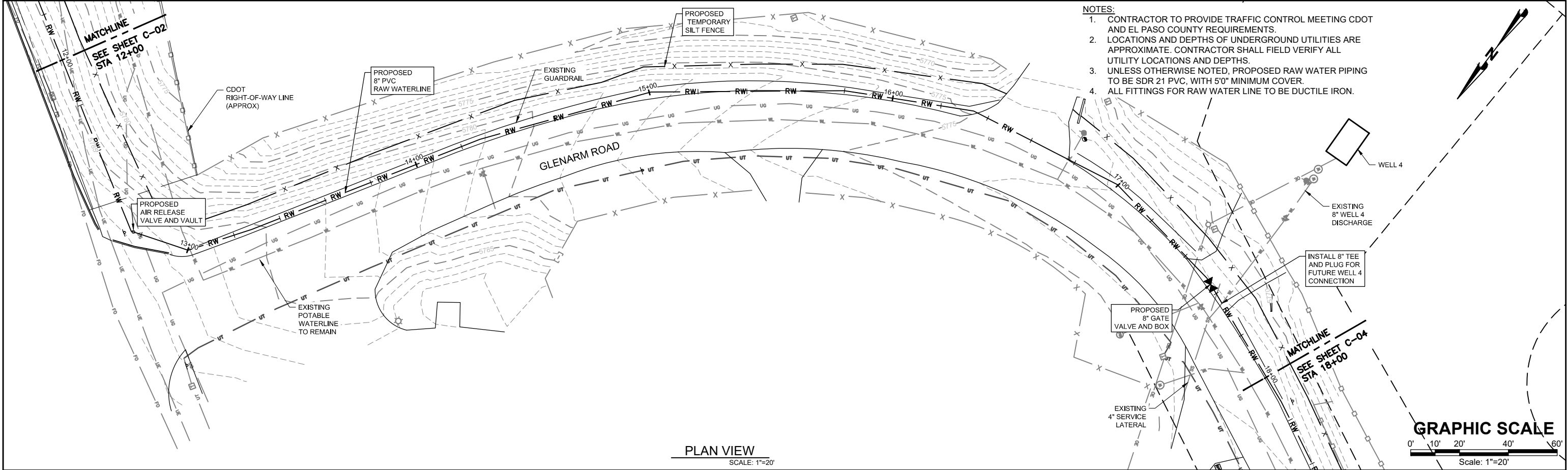


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										PLAN AND PROFILE 1 OF 5 STA 0+00 TO STA 6+00		SHEET NO: C-01	
												DATE: AUG, 2020	
												PAGE NO: 3 OF 9	

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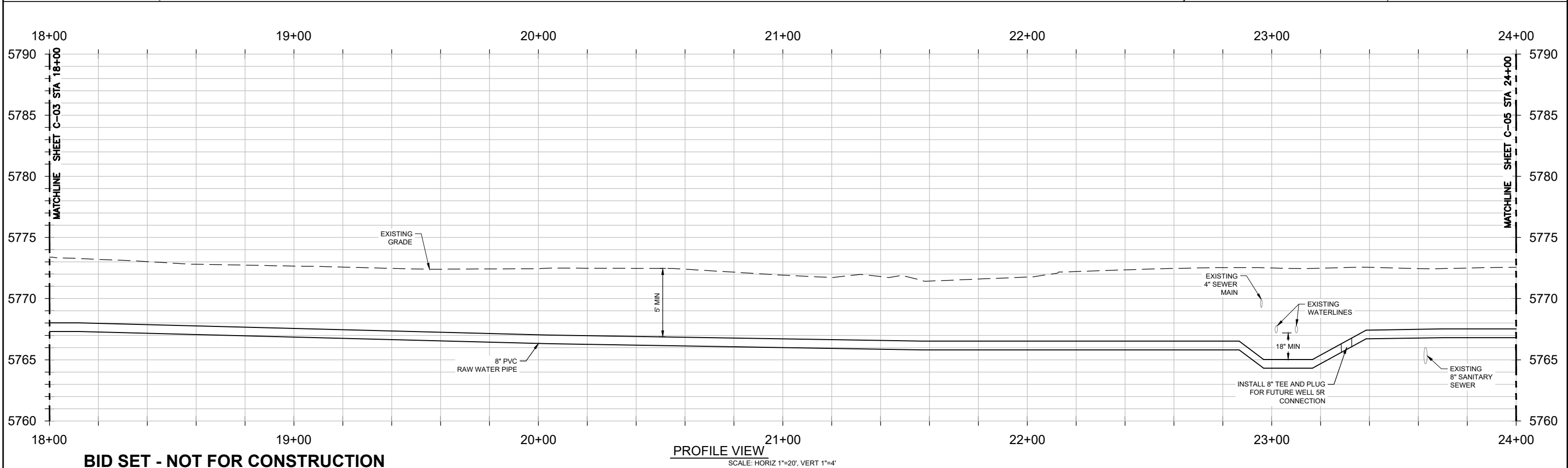
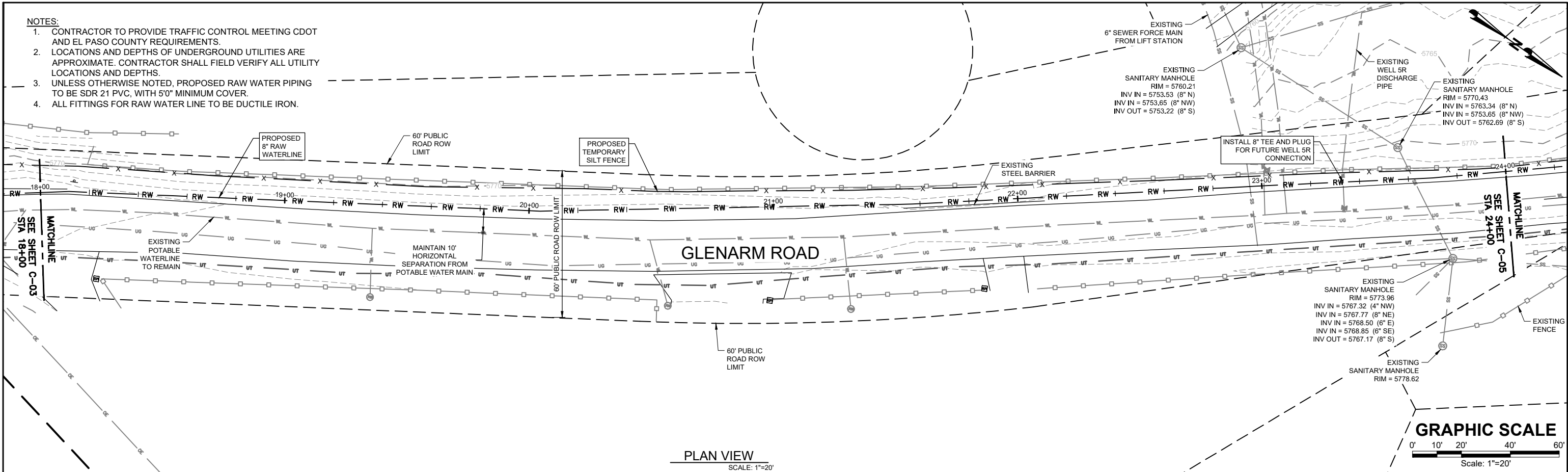
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				DRAWN E. WOODWARD	ATTENTION LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" SCALE ACCORDINGLY)	STRATMOOR HILLS WATER DISTRICT	FORSGREN Associates Inc. 56 INVERNESS DRIVE EAST #112, ENGLEWOOD, CO 80112 PH: 720.232.6644	CENTRALIZED TREATMENT RAW WATERLINE		PROJECT NO: 04-18-0103
				DESIGNED E. WOODWARD				PLAN AND PROFILE 3 OF 5		SHEET NO: C-03
				APPROVED M. WARESAK				STA 12+00 TO STA 18+00		DATE: AUG, 2020
				QA						PAGE NO: 5 OF 9

P:\Clients\Stratmoor Hills WSDs\04-18-0103 - Centralized Treatment\CAD\SHEET\WATERLINE PLAN AND PROFILE\C-04 PLAN AND PROFILE 4 OF 5.dwg - 8/13/2020 2:25 PM

- NOTES:
1. CONTRACTOR TO PROVIDE TRAFFIC CONTROL MEETING CDOT AND EL PASO COUNTY REQUIREMENTS.
 2. LOCATIONS AND DEPTHS OF UNDERGROUND UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY ALL UTILITY LOCATIONS AND DEPTHS.
 3. UNLESS OTHERWISE NOTED, PROPOSED RAW WATER PIPING TO BE SDR 21 PVC, WITH 5'0" MINIMUM COVER.
 4. ALL FITTINGS FOR RAW WATER LINE TO BE DUCTILE IRON.



BID SET - NOT FOR CONSTRUCTION

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The diagram illustrates a flow section of a nozzle. It shows a converging duct that terminates in a nozzle exit. The inlet area of the duct is labeled A_x , and the nozzle exit area is labeled C_x . A horizontal arrow labeled B indicates the direction of flow from the inlet towards the nozzle exit.

A diagram of a rectangular pyramid. The top horizontal edges are labeled C_x and C_y . The vertical height is labeled B . The bottom horizontal edges are labeled A_x and A_y . The pyramid's surface is covered with small dots.

The diagram shows a horizontal pipe on the left with a valve in the center. To the right of the valve is a vertical section of the pipe. A piston is located in this vertical section. The piston is represented by a horizontal bar with a central dot. The vertical section is labeled with S_b at the top and S_h at the bottom. The piston is at a height y from the bottom. The total height of the vertical section is H . The distance from the top of the vertical section to the piston is A_y . The distance from the piston to the bottom is T_y . The total height of the vertical section is $A_y + T_y = H$. The horizontal pipe has a pressure T indicated by an arrow pointing to the right. The vertical section is filled with a fluid, and the piston is in contact with the fluid. The piston is also in contact with the walls of the vertical section.

- S_B = SOIL BEARING CAPACITY
A_X = CONCRETE THRUST REACTION BLOCK WIDTH
A_Y = CONCRETE THRUST REACTION BLOCK HEIGHT
T = THRUST
H_t = DEPTH TO BOTTOM OF THE CONCRETE THRUST REACTION BLOCK
A_Y ≤ 1/2 H_t

1. A SITE SPECIFIC DESIGN SHALL BE REQUIRED FOR CONNECTIONS OR FITTING SIZE COMBINATIONS NOT SHOWN ABOVE.
2. THE CONCRETE THRUST REACTION BLOCK SHALL BEAR AGAINST UNDISTURBED SOIL.
3. THE CONCRETE THRUST REACTION BLOCK SHALL BE INSTALLED WITH A 45° ANGLE FROM THE FITTING TO THE UNDISTURBED SOIL AS SHOWN IN THE DRAWING ABOVE.
4. REFER TO DETAIL DRAWING **A4.2** FOR STANDARD CONCRETE THRUST REACTION BLOCK DIMENSIONS AND VOLUMES.
5. DUCTILE IRON FITTINGS AND PIPE SHALL BE WRAPPED IN POLYETHYLENE TUBING WHERE ADJACENT TO CONCRETE.



DATED 03/20/1

The diagram illustrates a pipe assembly with an unrestrained bell on the left, followed by two sets of bell harness restraints, and a mechanical joint bend on the right. A dimension line labeled 'L' indicates the distance from the center of the unrestrained bell to the center of the mechanical joint bend.

- 
- Colorado Springs Utilities
It's how we're all connected

RESTRAINED PIPE LENGTH (FEET) CHANICAL JOINT RESTRAINTS

DATED 03/2014



DRAWN BY E. WOODWARD

DESIGNED E. WOODWARD

APPROVED M. WARESAK

QA	QA BY
----	-------

ATTENTION
 LINE IS 2 INCHES
 AT FULL SIZE
 (IF NOT 2" - SCALE ACCORDINGLY)

STRATMOOR HILLS WATER DISTRICT

FORSGREN
Associates Inc.
56 INVERNESS DRIVE EAST #112, ENGLEWOOD, CO 80112
PH: 720.232.6644

CENTRALIZED TREATMENT RAW WATERLINE

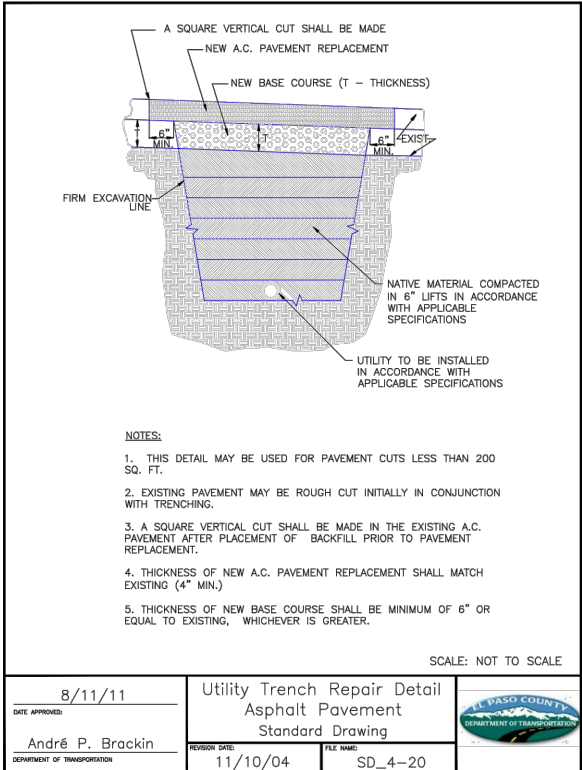
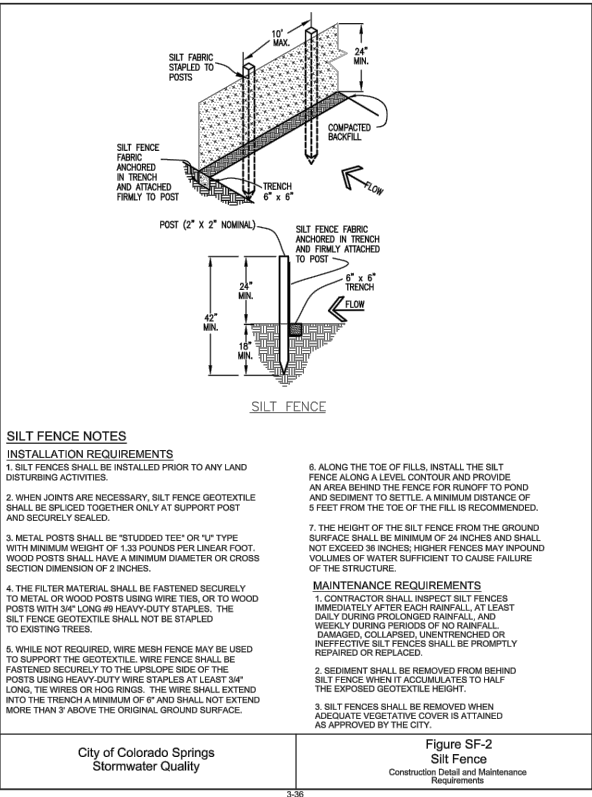
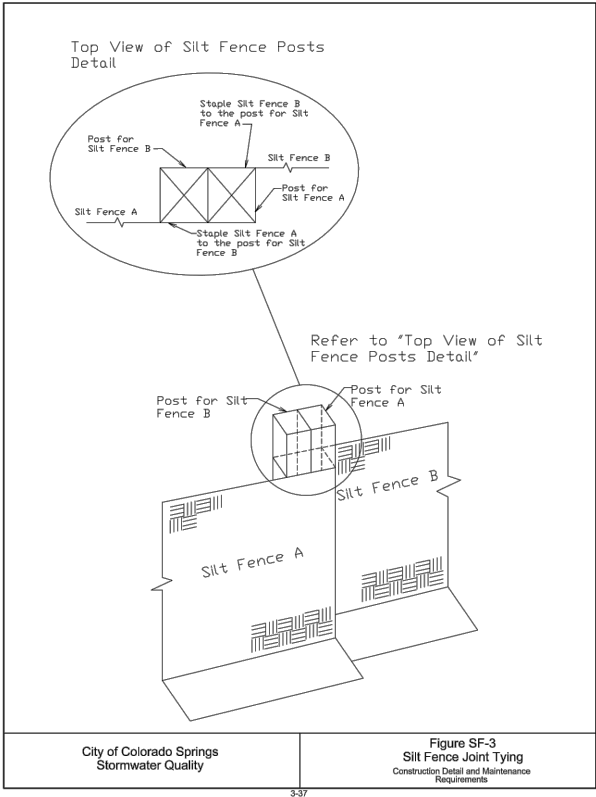
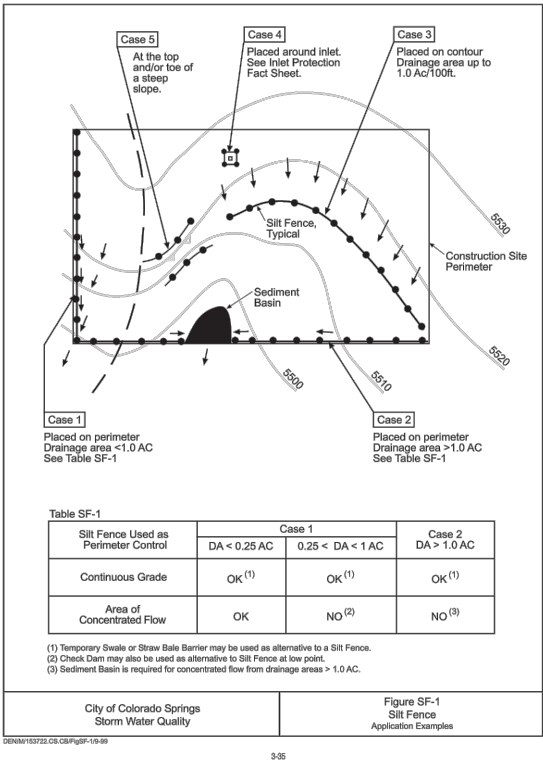
GENERAL DETAILS 1

PROJECT NO:

04-18-0103

SHEET NO:
D-01

DATE:	PAGE NO:
AUG. 2020	8 OF 9



BID SET - NOT FOR CONSTRUCTION

				DRAWN <u>E. WOODWARD</u>	ATTENTION LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" SCALE ACCORDINGLY)	STRATMOOR HILLS WATER DISTRICT	FORSGREN <i>Associates Inc.</i> 56 INVERNESS DRIVE EAST #112, ENGLEWOOD, CO 80112 PH: 720.232.6644	CENTRALIZED TREATMENT RAW WATERLINE		PROJECT NO: 04-18-0103
				DESIGNED <u>E. WOODWARD</u>						SHEET NO: D-02
				APPROVED <u>M. WARESAK</u>						DATE: AUG, 2020
				QA <u>QA BY</u>				GENERAL DETAILS 2		PAGE NO: 9 OF 9