CONSTRUCTION PLANS
FOR
RED RIVER DRIVE DRAINAGE AND EROSION CONTROL

PREPARED FOR

CITY OF SIDNEY
SIDNEY, MONTANA

LOCATION MAP
NOT TO SCALE

SITE MAP
NOT TO SCALE

WR24-04-050
07/25/2024

INDEX OF DRAWINGS

SEQUENCE NUMBER	SHEET NUMBER	SHEET(S) TITLE
1	G-1	COVER SHEET
2	V-1	SURVEY CONTROL
3	D-1	DETAIL SHEET
4	C-1	GRADING PLAN
5	C-2	ANNOTATED SITE PHOTOS

THIS PLAN SET CONTAINS 5 SHEETS

QUALITY REVIEW :

JULY 25, 2024

BY: JORDAN MAYER, PE
INTERSTATE ENGINEERING, INC.
PROJECT ENGINEER

APPROVED :

JULY 25, 2024

BY: TEAGUEAN KNUDSEN, PE
INTERSTATE ENGINEERING, INC.
PROJECT ENGINEER

MONTANA
7/25/2024
TEAGUEAN M KNUDSEN
No. 84435 PE
LICENSED PROFESSIONAL ENGINEER

811 Know what's below. Call before you dig.

CITY OFFICIALS

MAYOR: RICK NORBY	CLERK/TREASURER: JESSICA CHAMBERLIN	
PWD: JEFF HINTZ		
COUNCIL: KEN KOFFLER	COUNCIL: JOE STEVENSON	COUNCIL: KYSA RASMUSSEN
COUNCIL: KALI GODFREY	COUNCIL: FRANK DIFONZO	COUNCIL: TAMI CHRISTENSEN

REV NO	DATE	BY	DESCRIPTION

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SECTION G
1
SHEET NO.

X:\2024\WR\04\WR24-04-050-Sidney_Red_River_Dr\20_CADD_WR2404050\080_Sheets\COVER-(WR24-04-050).dwg 7/25/2024

COORDINATE SYSTEM & DATUM

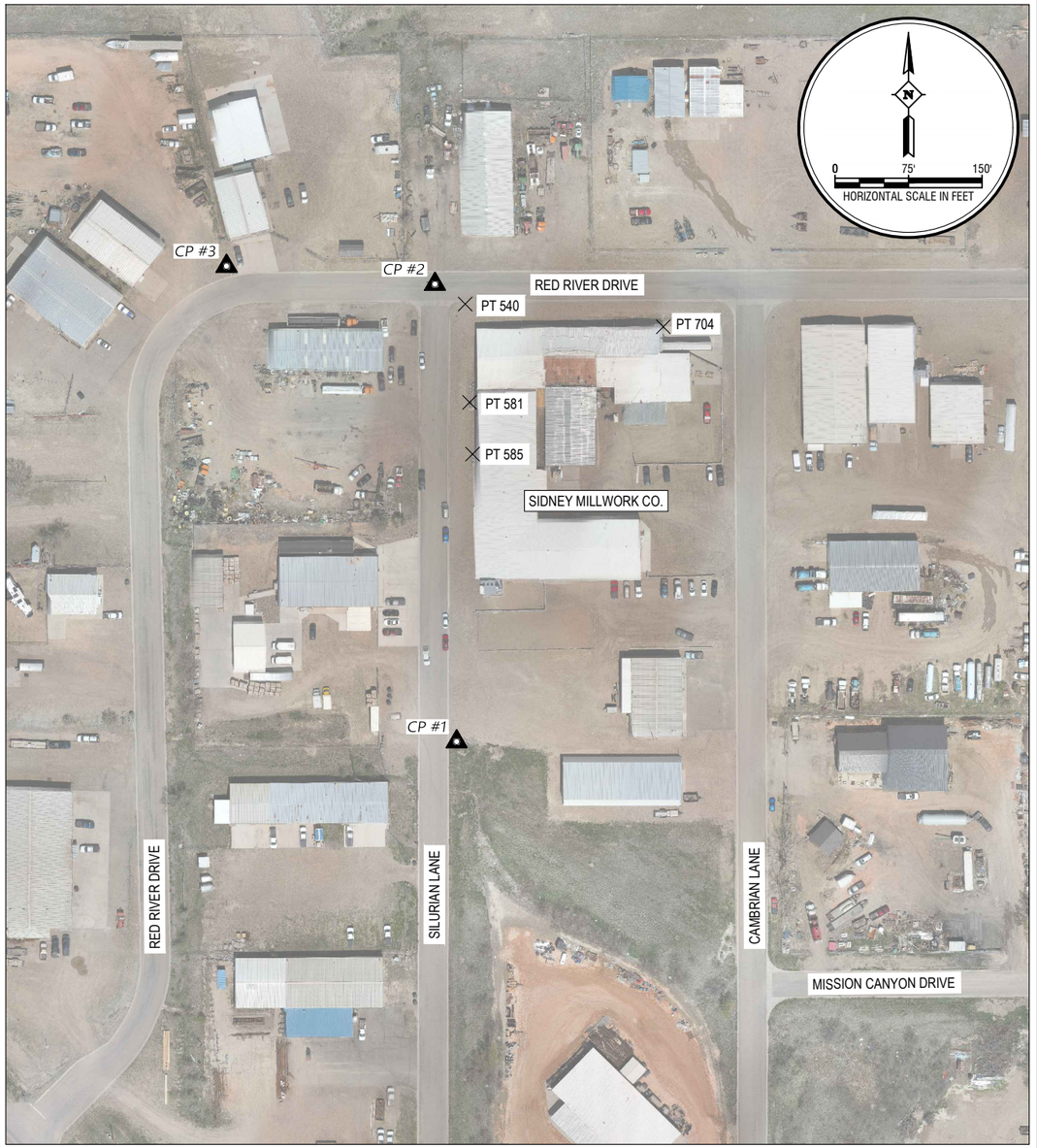
COORDINATE SYSTEM GROUP	RMTCRS
ZONE	INTERSTATE OBLIQUE MERCATOR
EPSG	5703
HORIZONTAL DATUM	NAD 1983 (CONUS)
VERTICAL DATUM	GEOID 18 (CONUS)
COORDINATE VALUE	GRID
FOOT DEFINITION	INTERNATIONAL FOOT

RESERVED

POINT TABLE

POINT #	NORTHING	EASTING	ELEVATION	TYPE	DESCRIPTION
CP #1	985525.5121	767278.8288	2093.78	PCR	OPC
CP #2	985992.1708	767256.7655	2110.86	BM	MAG NAIL
CP #3	986010.5787	767044.0306	2115.64	BM	TEMP NAIL
PT #704	985948.735	767489.650	2102.06	INFO	BUILDING CORNER (FF ELEV)
PT #540	985971.862	767287.555	2110.67	INFO	EXST. TOP BACK OF CURB
PT #581	985871.533	767292.017	2103.63	INFO	CONC. PAD CORNER
PT #585	985818.827	767295.072	2102.34	INFO	CONC. PAD CORNER

SURVEY CONTROL



LEGEND

EXST	ABBR	SET	DESCRIPTION
## ◉	CP	## ▲	SURVEY CONTROL POINT
×	PT		INFORMATIONAL POINT

REV NO	DATE	BY	DESCRIPTION

RED RIVER DRIVE DRAINAGE AND EROSION CONTROL
CITY OF SIDNEY
SIDNEY, MONTANA

SURVEY CONTROL

PROJECT NO.: WR24-04-050
SURVEYED BY: PT
DESIGNED BY: TJL
DRAWN BY: WJS
CHECKED BY: TK
DATE: 07/25/2024

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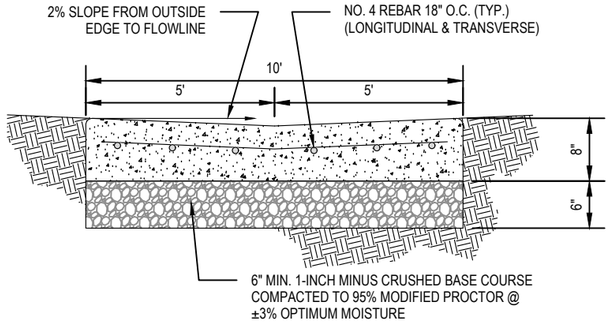
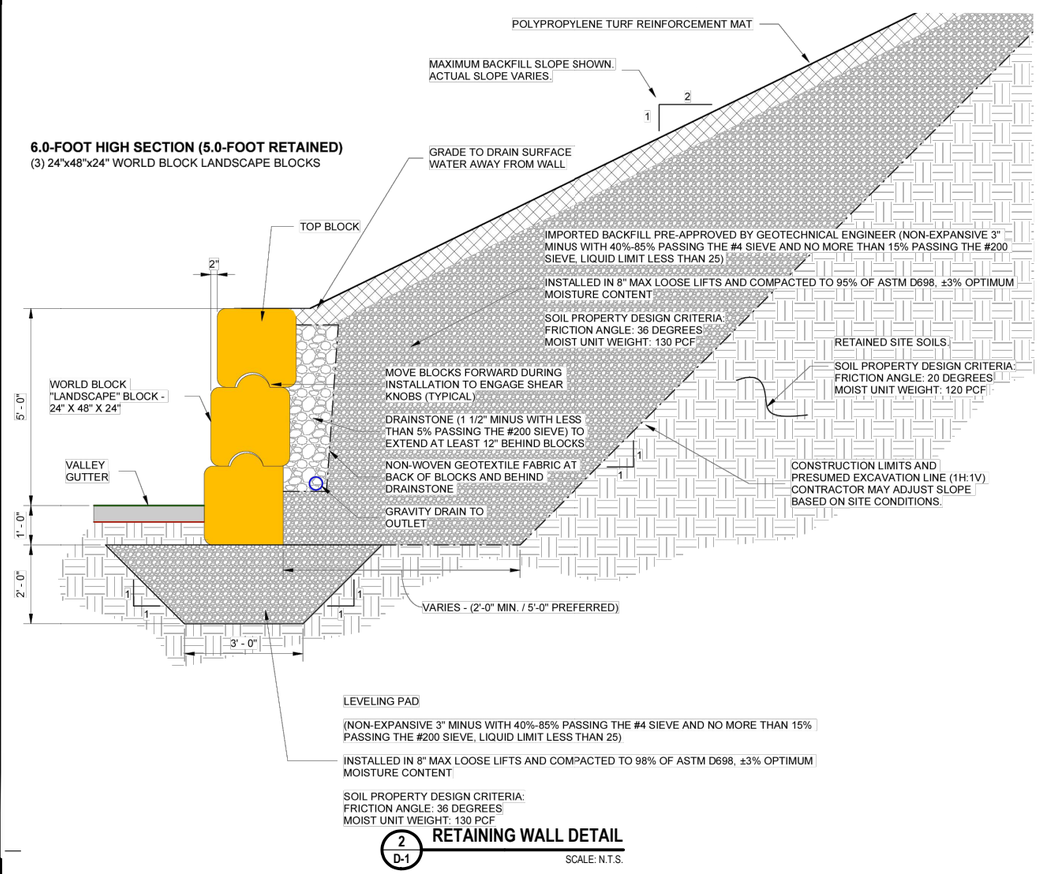
SECTION V

SHEET NO. 1



NOTES:
1. DOWELS AND REBAR SHALL BE PLACED WITH MINIMUM 2-1/2" OF COVER.
2. TESTING REQUIREMENTS FOR CONCRETE VALLEY GUTTER AND CRUSHED BASE COURSE SHALL BE AS FOLLOWS:
   - 2.1. CONCRETE: 1 TEST PER 50 CY; 1 TESTS TOTAL
   - 2.2. CRUSHED BASE COURSE: 1 TEST PER 500 SF; 2 TESTS TOTAL
   - 2.3. TESTING PROCEDURES PER MPWSS (7TH EDITION)

1 / D-1 VALLEY GUTTER DETAIL
SCALE: N.T.S.



2 / D-1 RETAINING WALL DETAIL
SCALE: N.T.S.

PREPARATION

A. FILL SOIL
1. THE CONTRACTOR SHALL VERIFY THAT ANY FILL SOIL INSTALLED IN THE FOUNDATION AND RETAINED SOIL ZONES OF THE RETAINING WALL SATISFIES THE SPECIFICATION OF THE RETAINING WALL DESIGN ENGINEER AS SHOWN ON THE CONSTRUCTION DRAWINGS.

B. EXCAVATION
1. THE CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES REQUIRED FOR CONSTRUCTION OF THE PRECAST MODULAR BLOCK RETAINING WALL AS SHOWN ON THE CONSTRUCTION DRAWINGS. THE CONTRACTOR SHALL MINIMIZE OVER-EXCAVATION. EXCAVATION SUPPORT, IF REQUIRED, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. OVER-EXCAVATED SOIL SHALL BE REPLACED WITH COMPACTED FILL IN CONFORMANCE WITH THE SPECIFICATIONS OF THE RETAINING WALL DESIGN ENGINEER AND THE PROJECT SPECIFICATIONS.
3. EMBANKMENT EXCAVATIONS SHALL BE BENCH CUT OR SLOPED AS DIRECTED BY THE GEOTECHNICAL ENGINEER AND INSPECTED BY THE GEOTECHNICAL ENGINEER FOR COMPLIANCE.

C. FOUNDATION PREPARATION
1. PRIOR TO CONSTRUCTION OF THE PRECAST MODULAR BLOCK RETAINING WALL, THE LEVELING PAD AREA AND UNDERCUT ZONE (IF APPLICABLE) SHALL BE CLEARED AND GRUBBED. ALL TOPSOIL, BRUSH, FROZEN SOIL AND ORGANIC MATERIAL SHALL BE REMOVED. ADDITIONAL FOUNDATION SOILS FOUND TO BE UNSATISFACTORY BEYOND THE SPECIFIED UNDERCUT LIMITS SHALL BE UNDERCUT AND REPLACED WITH APPROVED FILL AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE CONTRACTOR SHALL ENSURE THAT THE UNDERCUT LIMITS ARE CONSISTENT WITH THE REQUIREMENTS OF THE GEOTECHNICAL ENGINEER AND THAT ALL SOIL FILL MATERIAL IS PROPERLY COMPACTED ACCORDING TO PROJECT SPECIFICATIONS. THE CONTRACTOR SHALL DOCUMENT THE VOLUME OF UNDERCUT AND REPLACEMENT.
2. FOLLOWING EXCAVATION FOR THE LEVELING PAD AND UNDERCUT ZONE (IF APPLICABLE), THE GEOTECHNICAL ENGINEER SHALL EVALUATE THE IN-SITU SOIL IN THE FOUNDATION AND RETAINED SOIL ZONES.
   a. THE GEOTECHNICAL ENGINEER SHALL VERIFY THAT THE SHEAR STRENGTH OF THE IN-SITU SOIL ASSUMED BY THE RETAINING WALL DESIGN ENGINEER IS APPROPRIATE. THE GEOTECHNICAL ENGINEER SHALL IMMEDIATELY STOP WORK AND NOTIFY THE OWNER IF THE IN-SITU SHEAR STRENGTH IS FOUND TO BE INCONSISTENT WITH THE RETAINING WALL DESIGN ASSUMPTIONS.
   b. THE GEOTECHNICAL ENGINEER SHALL VERIFY THAT THE FOUNDATION SOIL EXHIBITS SUFFICIENT ULTIMATE BEARING CAPACITY TO SATISFY THE REQUIREMENTS INDICATED ON THE RETAINING WALL CONSTRUCTION SHOP DRAWINGS.

D. LEVELING PAD
1. THE LEVELING PAD SHALL BE CONSTRUCTED TO PROVIDE A LEVEL, HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF PRECAST MODULAR BLOCK UNITS. THE LEVELING PAD SHALL BE PLACED IN THE DIMENSIONS SHOWN ON THE RETAINING WALL CONSTRUCTION DRAWINGS AND EXTEND TO THE LIMITS INDICATED.
2. CRUSHED STONE LEVELING PAD. CRUSHED STONE SHALL BE PLACED IN UNIFORM MAXIMUM LOOSE LIFTS OF 8 INCHES. THE CRUSHED STONE SHALL BE COMPACTED BY A MINIMUM OF 3 PASSES OF A VIBRATORY COMPACTOR CAPABLE OF EXERTING 2,000 LB OF CENTRIFUGAL FORCE. COMPACTION SHALL REACH THE PERCENTAGE SPECIFIED IN THE CONSTRUCTION DRAWINGS AND TESTED PER ASTM D698 AND A MINIMUM OF 1 TEST PER 50 LF OF RETAINING WALL.
3. UNREINFORCED CONCRETE LEVELING PAD. THE CONCRETE SHALL BE PLACED IN THE SAME DIMENSIONS AS THOSE REQUIRED FOR THE CRUSHED STONE LEVELING PAD. THE CONTRACTOR SHALL ERECT PROPER FORMS AS REQUIRED TO ENSURE THE ACCURATE PLACEMENT OF THE CONCRETE LEVELING PAD ACCORDING TO THE RETAINING WALL CONSTRUCTION DRAWINGS.

DRAINSTONE

A. DRAINAGE AGGREGATE SHALL BE A DURABLE CRUSHED STONE CONFORMING TO NO. 57 SIZE PER ASTM C33 WITH THE FOLLOWING PARTICLE-SIZE DISTRIBUTION REQUIREMENTS PER ASTM D422:

US STANDARD SIEVE SIZE	% PASSING
1-1/2"	100
1"	95-100
1/2"	25-60
NO. 4	0-10
NO. 8	0-5
NO. 200	0-5

GENERAL

A. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA SAFETY STANDARDS, STATE AND LOCAL BUILDING CODES AND MANUFACTURER'S REQUIREMENTS.
B. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UNDERGROUND UTILITIES. ANY NEW UTILITIES PROPOSED FOR INSTALLATION IN THE VICINITY OF THE RETAINING WALL, SHALL BE INSTALLED CONCURRENT WITH RETAINING WALL CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE THE WORK OF SUBCONTRACTORS AFFECTED BY THIS REQUIREMENT.
C. NEW UTILITIES INSTALLED BELOW THE RETAINING WALL SHALL BE BACKFILLED AND COMPACTED TO A MINIMUM OF 98% MAXIMUM DRY DENSITY PER ASTM D698 STANDARD PROCTOR.
D. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT SAFE EXCAVATIONS AND EMBANKMENTS ARE MAINTAINED THROUGHOUT THE COURSE OF THE PROJECT.
E. ALL WORK SHALL BE OBSERVED BY THE OWNER OR THE RESIDENT PROJECT REPRESENTATIVE AS DIRECTED BY THE OWNER.
F. INSTALL BLOCK UNITS PER MANUFACTURE'S REQUIREMENTS, DETAILS, SPECIFICATIONS AND RECOMMENDATIONS.

DRAINAGE PIPE

A. DRAINAGE PIPE
1. DRAINAGE COLLECTION PIPE SHALL BE A 4 INCH DIAMETER, 3-HOLE PERFORATED, HDPE PIPE WITH A MINIMUM PIPE STIFFNESS OF 22 PSI PER ASTM D2412.
2. THE DRAINAGE PIPE SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM D1248 FOR HDPE PIPE AND FITTINGS.

B. PREAPPROVED DRAINAGE PIPE PRODUCTS
1. ADS 3000 TRIPLE WALL PIPE AS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS.

IMPORTED BACKFILL REQUIREMENTS

A. INSTALL CLEAN MATERIAL.
B. GRADATION
1. SOURCE GRADATION MUST BE PROVIDED TO GEOTECHNICAL ENGINEER FOR REVIEW PRIOR TO INSTALLATION.
   NON-EXPANSIVE 3" MINUS
   NO. 4 SIEVE: 40%-85%
   NO. 200 SIEVE: 0-15%
   LIQUID LIMIT LESS THAN 25
C. SITE EXCAVATED SOILS: ACCEPTABLE WHEN SPECIFIED REQUIREMENTS CAN BE MET.
D. DO NOT USE UNSUITABLE SOILS, INCLUDING HIGH-PLASTIC CLAYS OR ORGANIC SOILS, FOR BACKFILL OR IN REINFORCED SOIL MASS.
E. PLACE AND COMPACT REINFORCED BACKFILL IN MAXIMUM 8-INCH LOOSE LIFTS.
F. DECREASE LIFT THICKNESS TO ACHIEVE REQUIRED DENSITY, IF NECESSARY.
G. COMPACT REINFORCED BACKFILL TO 95 PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D 698.
H. ENSURE MOISTURE CONTENT OF REINFORCED BACKFILL BEFORE AND DURING COMPACTION IS UNIFORMLY DISTRIBUTED THROUGHOUT EACH LAYER AND IS WITHIN PLUS 3 PERCENT, MINUS 3 PERCENT OF OPTIMUM MOISTURE CONTENT.
I. CONSTRUCTION EQUIPMENT:
1. ALLOW ONLY LIGHTWEIGHT HAND-OPERATED EQUIPMENT WITHIN 3 FEET FROM SOIL SIDE OF CONCRETE LANDSCAPE BLOCKS.
2. AVOID SUDDEN BRAKING AND SHARP TURNING WITH RUBBER-TIRED EQUIPMENT.
3. SLOPE LAST LIFT OF REINFORCED BACKFILL AWAY FROM CONCRETE LANDSCAPE BLOCKS TO DIRECT RUNOFF AWAY FROM RETAINING WALL FACE, AT END OF EACH DAY'S OPERATION.

J. DO NOT ALLOW SURFACE RUNOFF FROM ADJACENT AREAS TO ENTER RETAINING WALL FILL ZONE.

REV NO	DATE	BY	DESCRIPTION

RED RIVER DRIVE DRAINAGE AND EROSION CONTROL
CITY OF SIDNEY
SIDNEY, MONTANA

DETAIL SHEET

DRAWN BY: WJS
CHECKED BY: TK
SURVEYED BY: PT
DESIGNED BY: TJL
PROJECT NO: WR24-04-050
DATE: 07/25/2024

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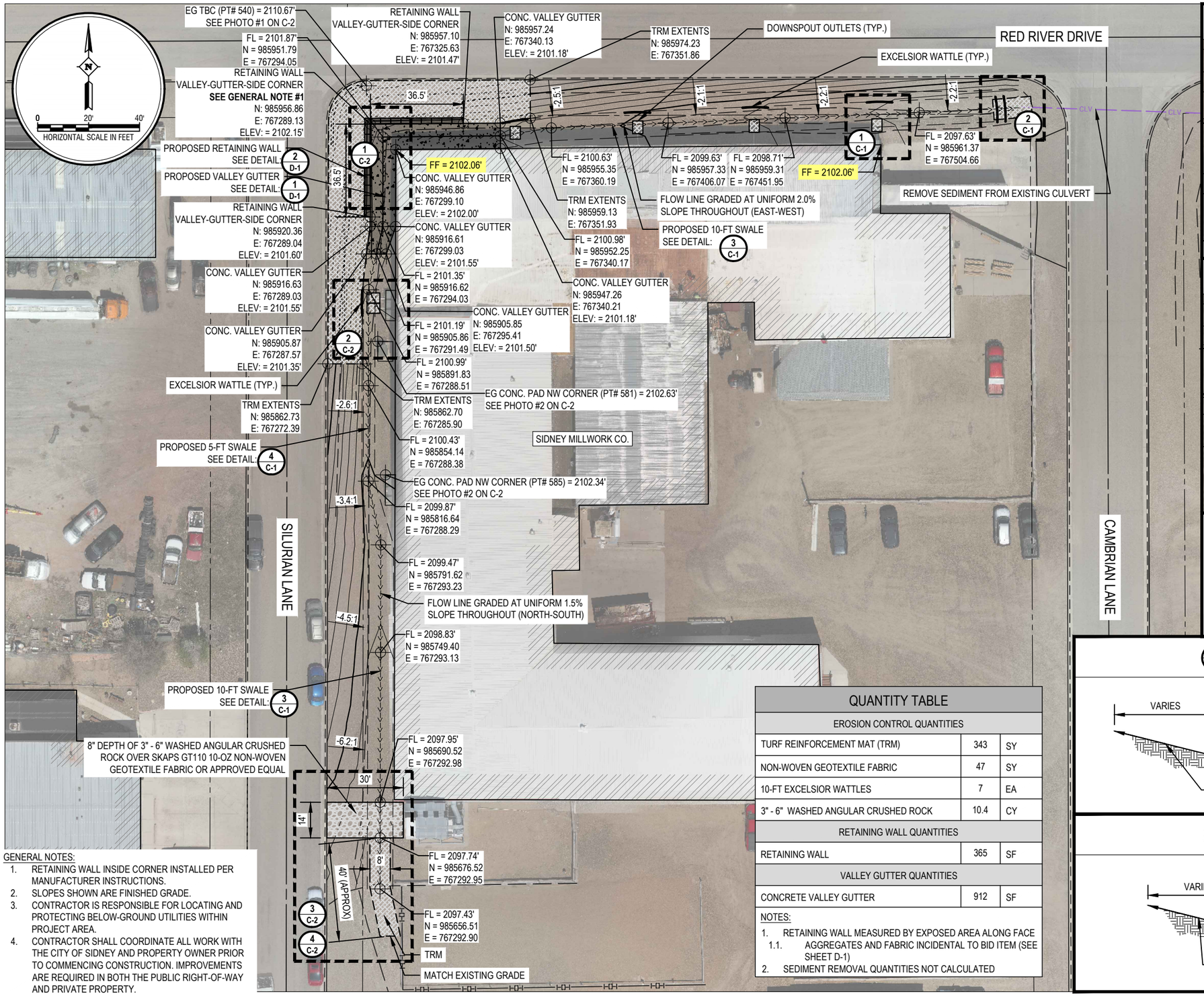
SECTION
D

1
SHEET NO.



GENERAL NOTES:

1. RETAINING WALL INSIDE CORNER INSTALLED PER MANUFACTURER INSTRUCTIONS.
2. SLOPES SHOWN ARE FINISHED GRADE.
3. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING BELOW-GROUND UTILITIES WITHIN PROJECT AREA.
4. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF SIDNEY AND PROPERTY OWNER PRIOR TO COMMENCING CONSTRUCTION. IMPROVEMENTS ARE REQUIRED IN BOTH THE PUBLIC RIGHT-OF-WAY AND PRIVATE PROPERTY.

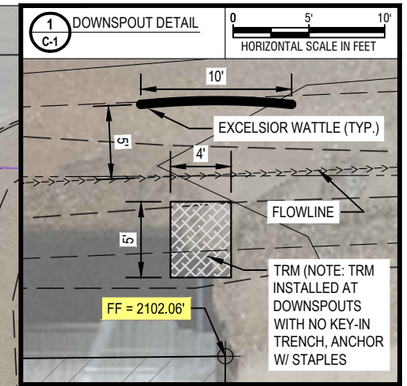
QUANTITY TABLE

EROSION CONTROL QUANTITIES		
TURF REINFORCEMENT MAT (TRM)	343	SY
NON-WOVEN GEOTEXTILE FABRIC	47	SY
10-FT EXCELSIOR WATTLES	7	EA
3" - 6" WASHED ANGULAR CRUSHED ROCK	10.4	CY
RETAINING WALL QUANTITIES		
RETAINING WALL	365	SF
VALLEY GUTTER QUANTITIES		
CONCRETE VALLEY GUTTER	912	SF

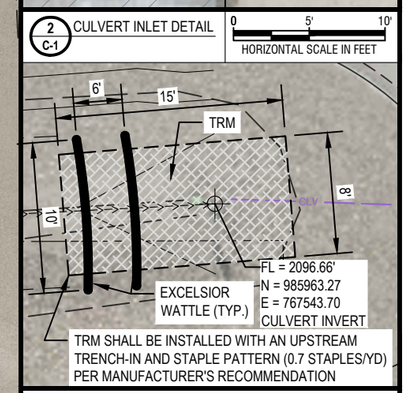
NOTES:

1. RETAINING WALL MEASURED BY EXPOSED AREA ALONG FACE
   1.1. AGGREGATES AND FABRIC INCIDENTAL TO BID ITEM (SEE SHEET D-1)
2. SEDIMENT REMOVAL QUANTITIES NOT CALCULATED

1 C-1 DOWNSPOUT DETAIL



2 C-1 CULVERT INLET DETAIL

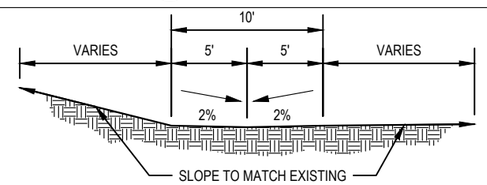


LEGEND

FF	FINISH FLOOR
FL	FLOW LINE
N	NORTHING
E	EASTING
TRM	TURF REINFORCEMENT MAT ECP-3, OR APPROVED EQUAL

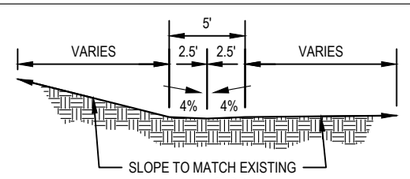
3 C-1 10-FT SWALE DETAIL

SCALE: N.T.S.



4 C-1 5-FT SWALE DETAIL

SCALE: N.T.S.



REV NO	DATE	BY	DESCRIPTION

RED RIVER DRIVE DRAINAGE AND EROSION CONTROL
CITY OF SIDNEY
SIDNEY, MONTANA

GRADING PLAN

PROJECT NO: WR24-04-050
DATE: 07/25/2024
SURVEYED BY: PT
DESIGNED BY: TJL
DRAWN BY: W.S
CHECKED BY: TK

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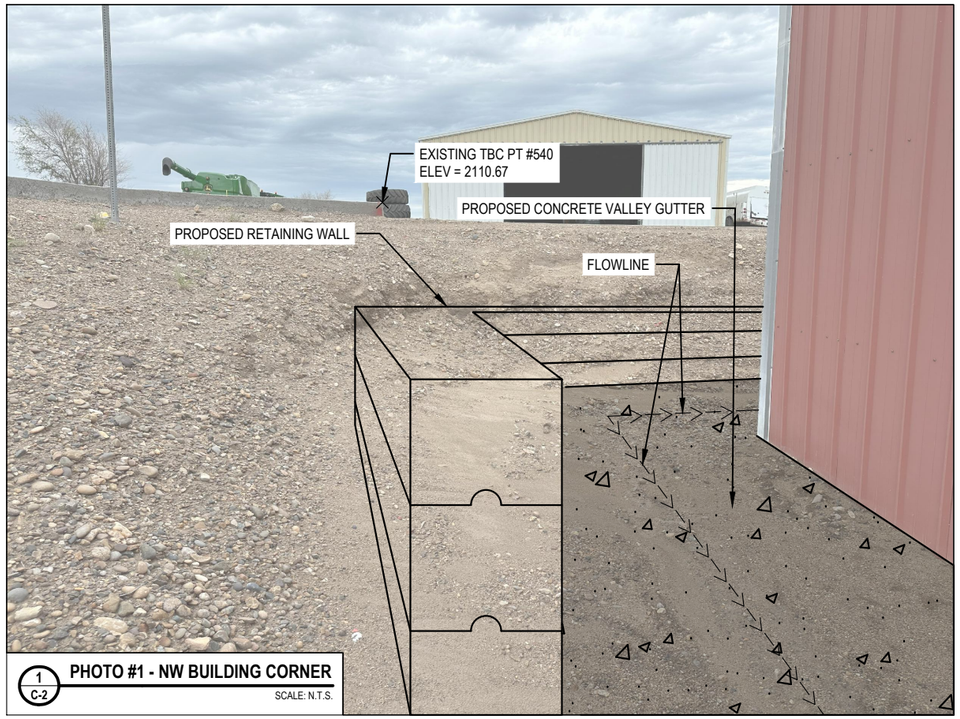
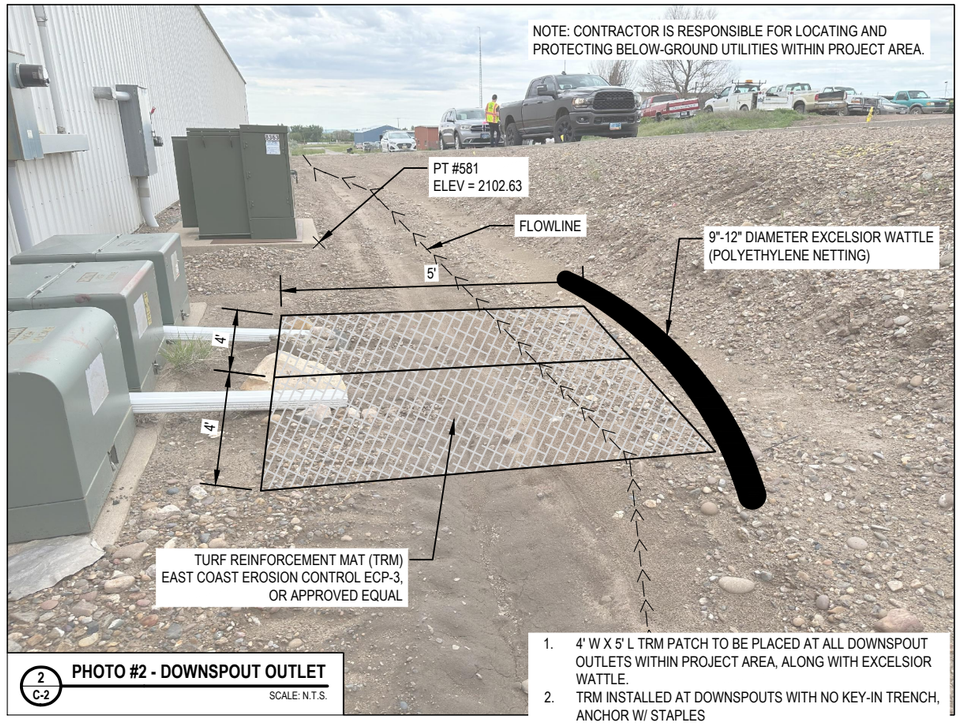
SECTION C

SHEET NO. 1

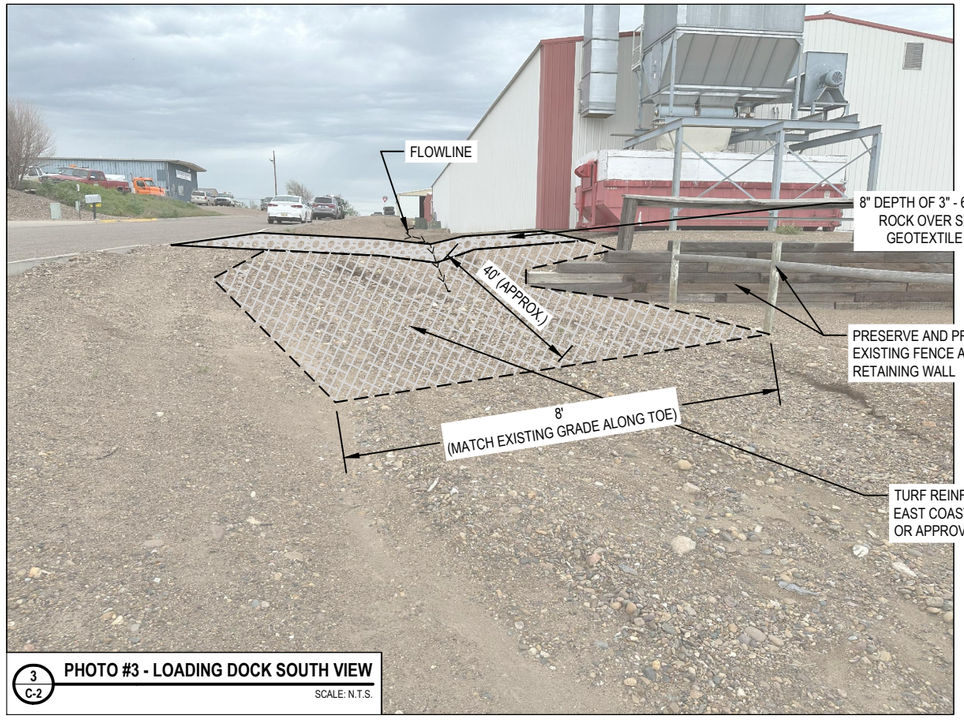
X:\2024\WR\04\WR24-04-050-Sidney_Red_River_Dr\20_CADD_WR2404050\080_Sheets\GRADING_PLAN-(WR24-04-050).dwg 7/25/2024



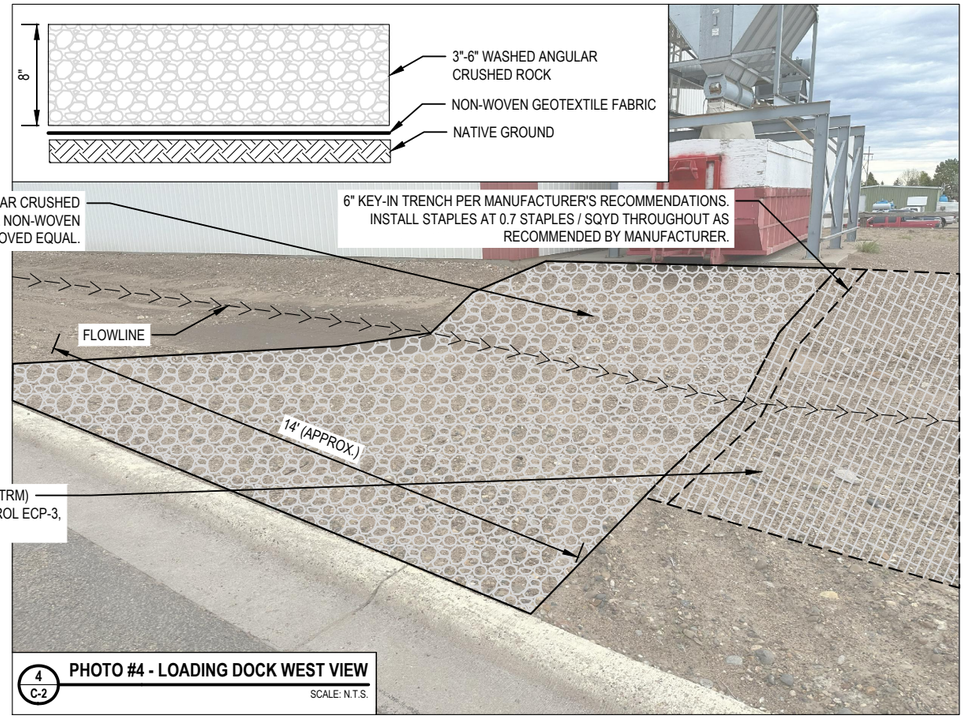
1 C-2 **PHOTO #1 - NW BUILDING CORNER**
SCALE: N.T.S.



2 C-2 **PHOTO #2 - DOWNSPOUT OUTLET**
SCALE: N.T.S.



3 C-2 **PHOTO #3 - LOADING DOCK SOUTH VIEW**
SCALE: N.T.S.



4 C-2 **PHOTO #4 - LOADING DOCK WEST VIEW**
SCALE: N.T.S.

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RED RIVER DRIVE DRAINAGE AND EROSION CONTROL
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SIDNEY, MONTANA

ANNOTATED SITE PHOTOS

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SECTION C
2
SHEET NO.