

STATE OF NEBASKA)
)
 Gosper COUNTY)

ENGINEER'S CERTIFICATE

I certify that the site survey and the design of the Elwood Dam Seepage Mitigation Project represented on these drawings were made under my direction and consist of 30 sheets.

I further certify that this dam was designed to meet the requirements of a Significant hazard structure.

Allan T. MacDougall, P.E.


ENGINEER

STATE OF NEBASKA)
)
 Gosper COUNTY)

APPLICANT'S CERTIFICATE

I certify that these drawings were made with my full knowledge and consent.

 August 1 , 20 22


APPLICANT

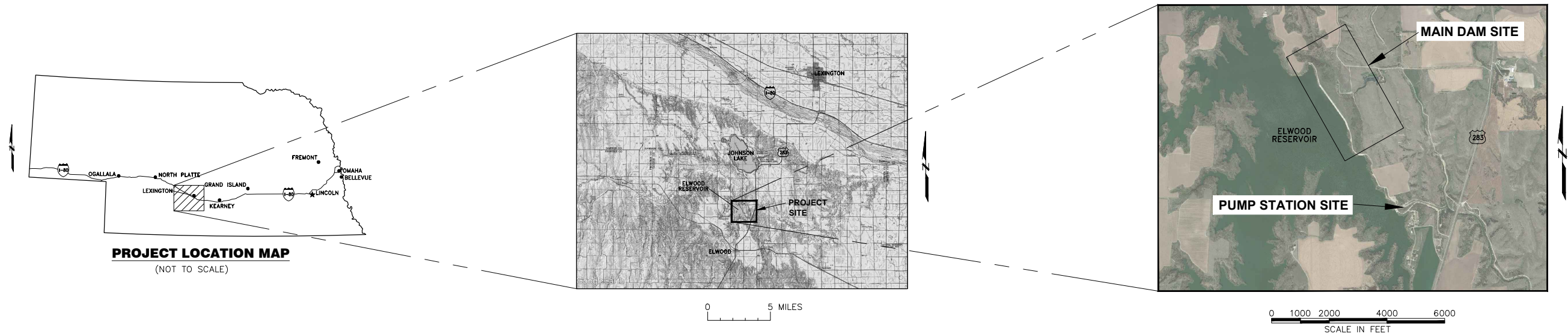
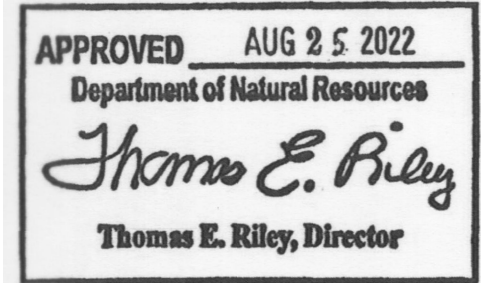
Signed by: Devin Brundage
(print name)

Central Nebraska Public Power and
Irrigation District

Received
August 04, 2022
Department of
Natural Resources

20885

CONSTRUCTION DRAWINGS FOR THE
ELWOOD DAM
SEEPAGE MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA



PREPARED FOR



PREPARED BY



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20885

DWG NO.

1

SHEET NO.

1 of 30

GENERAL NOTES:

- 1) CONSTRUCTION IS SUBJECT TO THE SAFETY OF DAMS & RESERVOIRS ACT & TITLE 458 - RULES FOR SAFETY OF DAMS & RESERVOIRS. SUBSTANTIVE CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS REQUIRE APPROVAL OF THE STATE OF NEBRASKA, DEPARTMENT OF NATURAL RESOURCES.
- 2) THE VERTICAL DATUM FOR THE PROJECT IS THE NATIONAL GEODETIC VERTICAL DATUM (NGVD) OF 1929. TO CONVERT FROM NGVD29 TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988: NGVD29 + 0.988 FEET = NAVD88.
- 3) LOCATION AND NATURE OF EXISTING UTILITIES SHOWN ON THE DRAWINGS ARE APPROXIMATE. CONTRACTOR SHALL FIELD LOCATE ALL UTILITIES, WHETHER SHOWN ON THE DRAWINGS OR NOT, PRIOR TO EXCAVATION. CONTRACTOR SHALL PROTECT ALL UTILITIES IN PLACE UNLESS DESIGNATED FOR REMOVAL OR REPLACEMENT.
- 4) UNLESS SHOWN OR SPECIFIED OTHERWISE, PAYLINES FOR UNIT PRICE PAY ITEMS ARE BASED ON THE DESIGN LINES (NEAT LINES) SHOWN ON THE DRAWINGS.
- 5) GROUND SURFACE TOPOGRAPHY WAS DEVELOPED FROM THE FOLLOWING SOURCES:
- a. TOPOGRAPHIC SURVEY PERFORMED BY OLSSON AND ASSOCIATES ON MAY 10, 2021.
 - b. PROJECT VICINITY CONTOURS DEVELOPED FROM THE USGS, NATIONAL ELEVATION DATASET, 1/9 ARC-SECOND (2011) AND IS APPROXIMATE.
- 6) LOCATION AND ELEVATION OF EXISTING FACILITIES MAY VARY FROM WHAT IS SHOWN. CONTRACTOR SHALL FIELD VERIFY PERTINENT DIMENSIONS PRIOR TO CONSTRUCTION. PROTECT AND PRESERVE EXISTING FACILITIES NOT DESIGNATED FOR REMOVAL.
- 7) THE PROJECT IS LOCATED IN SECTIONS 19, 29, 30 AND 32 OF TOWNSHIP 8N, RANGE 22W OF THE 6TH PRINCIPAL MERIDIAN.

LEGEND

DETAIL

A
03

DETAIL TITLE. THE LETTER "A" REFERS TO THE DETAIL DESIGNATION. THE NUMBER "03" REFERS TO THE DRAWING NUMBER WHERE THE DETAIL IS CALLED OUT.

SECTION
STA 0+00

1
03

SECTION TITLE. THE NUMBER "1" REFERS TO THE SECTION DESIGNATION. THE NUMBER "03" REFERS TO THE DRAWING NUMBER WHERE THE SECTION IS CALLED OUT.

SECTION LOCATION. THE NUMBER "1" REFERS TO THE SECTION DESIGNATION. THE NUMBER "03" REFERS TO THE DRAWING NUMBER WHERE THE SECTION IS SHOWN.

DETAIL LOCATION. THE LETTER "A" REFERS TO THE DETAIL DESIGNATION. THE NUMBER "03" REFERS TO THE DRAWING NUMBER WHERE THE DETAIL IS SHOWN.

APPROXIMATE TREE AND SHRUB LIMITS

INDIVIDUAL SHRUB OR TREE

SIGN

ELECTRIC BOX / TRANSFORMER

UTILITY POLE

CONTROL POINT

BOREHOLE/PIEZOMETER

HISTORICAL MONUMENT

EXISTING INDEX TOPOGRAPHIC CONTOUR WITH ELEVATION IN FEET

EXISTING INTERMEDIATE TOPOGRAPHIC CONTOUR

BARBED WIRE FENCE

EARTHFILL SLOPE

LIMIT OF SITE DISTURBANCE (PROJECT LIMITS)

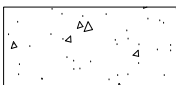
BURIED WATER LINE



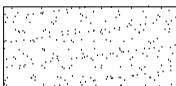
RIPRAP



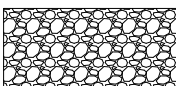
EARTH



STRUCTURAL
CONCRETE



FILTER
SAND



DRAIN
GRAVEL

PROPERTY BOUNDARY

CENTERLINE

EXISTING STORM DRAIN

EXISTING BURIED CABLE TV

EXISTING BURIED ELECTRIC

BOTTOM OF EXCAVATION

EXISTING GROUND LINE

ABBREVIATIONS

AB = ANCHOR BOLT
ABT = ABOUT
ACP = ASBESTOS CONCRETE PIPE
ADDL = ADDITIONAL
AL = ALUMINUM
ALT = ALTERNATE
APPROX = APPROXIMATE
BF = BOTTOM FACE
BLDG = BUILDING
BM = BENCHMARK
BOC = BOTTOM OF CONCRETE
BOH = BOTTOM OF HOLE
BOT = BOTTOM
BR = BOTTOM ROW
BRG = BEARING
BTWN = BETWEEN
CFS = CUBIC FEET PER SECOND
CJ = CONSTRUCTION JOINT
CL = CENTERLINE
CLR = CLEAR
CMP = CORRUGATED METAL PIPE
CMU = CONCRETE MASONRY UNIT
CONC = CONCRETE
CONN = CONNECTION
CONT = CONTINUOUS
CP = CONTROL POINT
CTJ = CONTRACTION JOINT
CTR = CENTER
DEM = DIGITAL ELEVATION MODEL
DIA = DIAMETER
DIA = DIAGONAL
DWG, DWGS = DRAWING OR DRAWINGS
DWL = DOWEL
DWLS = DOWELS
E = EAST OR EASTING
EA = EACH
EC = EACH CORNER
ECP = EMBANKMENT CONTROL POINT
EF = EACH FACE
EJ = EXPANSION JOINT
EL, ELEV = ELEVATION
EQ = EQUAL
ER = EACH ROW
ES = EACH SIDE
EW = EACH WAY
EXST = EXISTING
EXT = EXTENSION
EXP = EXPANSION
F = FAHRENHEIT
FB = FLAT BAR
FD = FLOOR DRAIN
FDN = FOUNDATION
FF = FAR FACE, FINISHED FLOOR
FIN = FINISH
FLG = FLANGE

FO = FACE OF OR FIBER OPTIC
FR = FAR ROW
FS = FAR SIDE
FT = FEET OR FOOT
FES = FLARED END SECTION
FTG = FOOTING
GALV = GALVANIZED
GR = GRADE
H = HORIZONTAL
H.A.S. = HEADED ANCHOR STUD
HDPE = HIGH DENSITY POLYETHYLENE
HGT = HEIGHT
HK = HOOK
HORZ = HORIZONTAL
HR = HANDRAIL
HS = HIGH STRENGTH
HSS = HOLLOW STRUCTURAL SECTION
HWY = HIGHWAY
HYD = HYDRAULIC
ID = INSIDE DIAMETER
IE = INVERT ELEVATION
I.F. = INSIDE FACE
INV = INVERT
JT = JOINT
LG = LONG
LP = LOW POINT
LPBO = LOW POINT BLOW-OFF
MAX = MAXIMUM
MIN = MINIMUM
MH = MANHOLE
MFR = MANUFACTURER
MW = MONITORING WELL
NAD = NORTH AMERICAN DATUM
NAVD = NORTH AMERICAN VERTICAL DATUM
N = NORTH OR NORTHING
NF = NEAR FACE
NGS = NATIONAL GEODETIC SURVEY
NGVD = NATIONAL GEODETIC VERTICAL DATUM
NHWL = NORMAL HIGH WATER LEVEL
NMOSE = NEW MEXICO OFFICE OF THE STATE ENGINEER
NO. = NUMBER
NR = NEAR ROW
NTS = NOT TO SCALE
NWS = NORMAL WATER SURFACE
OC = ON CENTER
OD = OUTSIDE DIAMETER
O.F. = OUTSIDE FACE
OH = OVERHEAD
OPNG = OPENING
OPP = OPPOSITE
O.R. = OUTSIDE ROW
PC = POINT OF CURVATURE

PD = PLAIN DOWELS
PE = POLYETHYLENE
PEN. = PENETRATION
PI = POINT OF INTERSECTION
PJF = PREFORMED JOINT FILER
PL, PL = PLATE
PMF = PROBABLE MAXIMUM FLOOD
PT = POINT OF TANGENCY
PVC = POLYVINYL CHLORIDE
PVI = POINT OF VERTICAL INTERSECTION
R = RADIUS
RB = ROOF BEAM
RCP = REINFORCED CONCRETE PIPE
REINF. = REINFORCEMENT
REQ'D = REQUIRED
ROW = RIGHT OF WAY
S = SLOPE
SC = SOIL-CEMENT
SCH = SCHEDULE
SHT = SHEET
SIM = SIMILAR
SPC, SPCS = SPACE OR SPACES
SPY = SPILLWAY
SS = STAINLESS STEEL
STA = STATION
STL = STEEL
SQ = SQUARE
SYM = SYMMETRICAL
T&B = TOP & BOTTOM
TCJ = TOOLED CONSTRUCTION JOINT
TF = TOP FACE
THK = THICK
TL = TOP LAYER
T.O. = TOP OF
TOC = TOP OF CONCRETE
TOW = TOP OF WALL
TR = TOP ROW
TW = TAILWATER
TYP = TYPICAL
UCP = UTILITY CARRIER PIPE
UDP = UNDERDRAIN PIPE
UNC = UNIFIED NATIONAL COARSE THREAD
UNO = UNLESS NOTED OTHERWISE
USGS = UNITED STATES GEOLOGICAL SURVEY
V, VERT = VERTICAL
WS = WATER SURFACE
WSA = WATERSTOP
WWF = WELDED WIRE FABRIC



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RJH PROJECT 20114

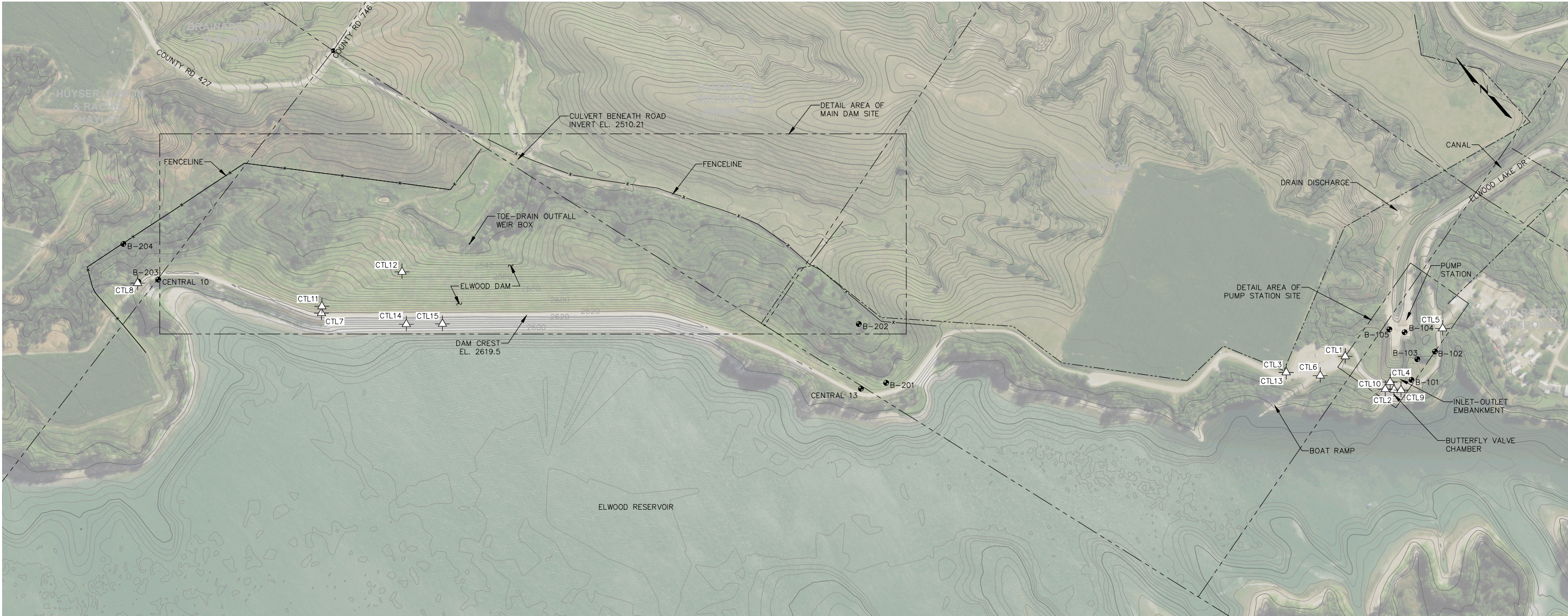
ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

LEGEND,
ABBREVEATIONS,
GENERAL NOTES AND
DRAWING LIST

DWG. NO.
2
SHEET NO.
2 of 30

20885

P:\2014 - ELWOOD DAM SEEPAGE AND ALTERNATIVES STUDY\CAD\SHEET FILES\EXISTING CONDITIONS AND SURVEY CONTROL.DWG
7/18/2022



POINT TABLE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
CTL1	288975.84	1683431.96	2627.03	5/8" REBAR
CTL2	288682.01	1683435.16	2620.96	BRASS CAP
CTL3	289171.19	1683198.43	2630.11	5/8" REBAR
CTL4	288719.33	1683455.29	2620.85	5/8" REBAR
CTL5	288658.03	1683823.55	2619.90	5/8" REBAR
CTL6	289023.24	1683282.23	2629.55	TBM
CTL7	293277.49	1680691.66	2619.58	5/8" REBAR
CTL8	294113.04	1680289.97	2619.22	5/8" REBAR
CTL9	288652.55	1683453.44	2618.56	1/2" REBAR 10227
CTL10	288719.14	1683411.94	2618.79	1/2" REBAR 10228
CTL11	293295.08	1680720.61	2608.24	FOUND 3/4" BAR 31 11786
CTL12	293066.08	1681089.10	2552.86	FOUND 3/4" BAR 29 11813
CTL13	289171.14	1683198.55	2630.05	CHECK CPT 3 20641
CTL14	292899.50	1680888.16	2607.98	FOUND 1" REBAR 25140
CTL15	292753.10	1680992.41	2608.20	FOUND 1" REBAR 25145



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ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

EXISTING CONDITIONS
AND SURVEY CONTROL

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3
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7/16/2022



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ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

STAGING AND STOCKPILE
AREAS; ACCESS - PUMP
STATION

DWG. NO.
4
SHEET NO.
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- NOTE:
- DEMOLISH/DECOMMISSION OPEN STANDPIPE PIEZOMETERS B-101 THROUGH B-105.



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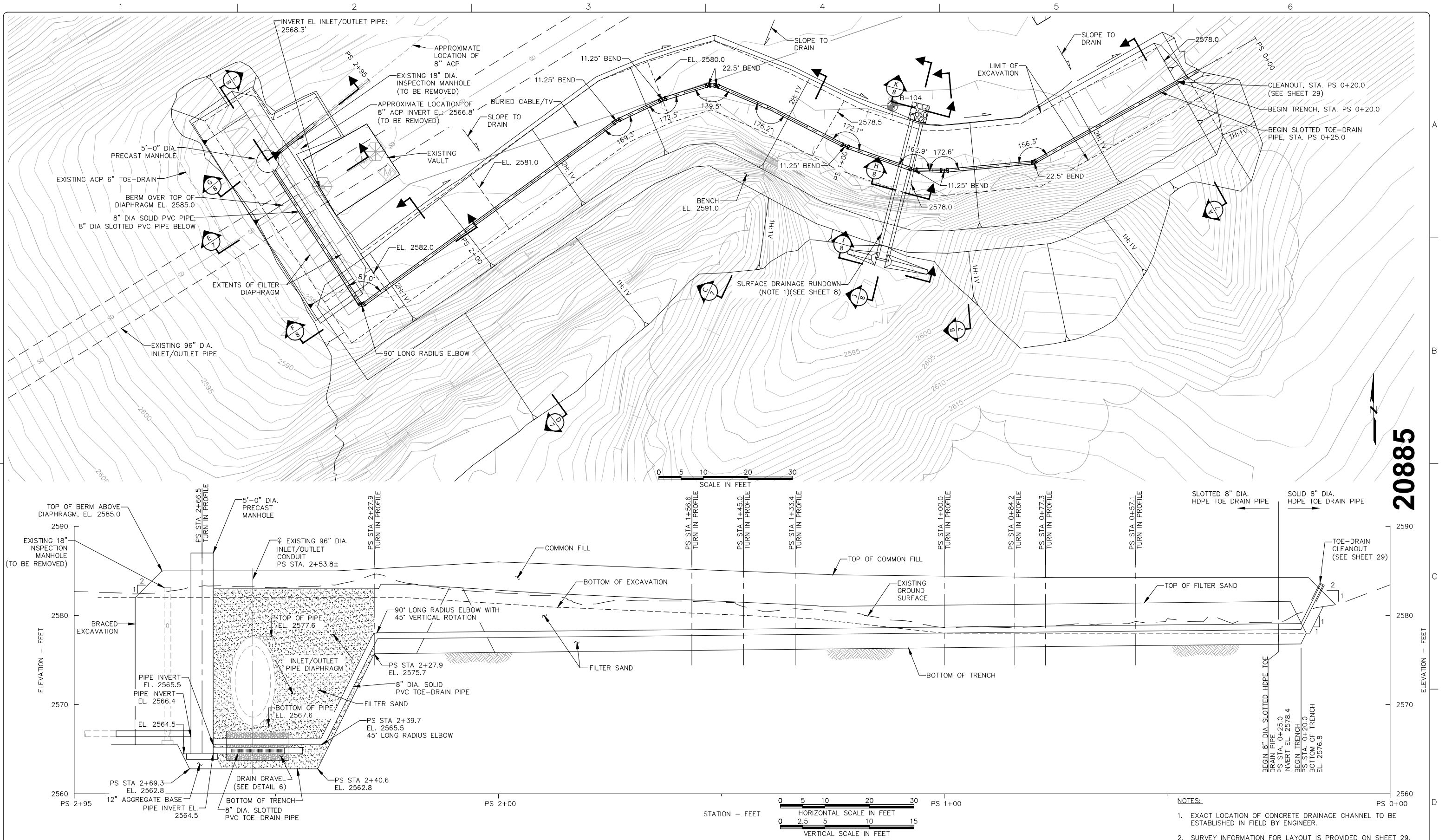
RJH PROJECT 20114

ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

PUMP STATION - EXISTING
CONDITIONS

DWG. NO.
5
SHEET NO.
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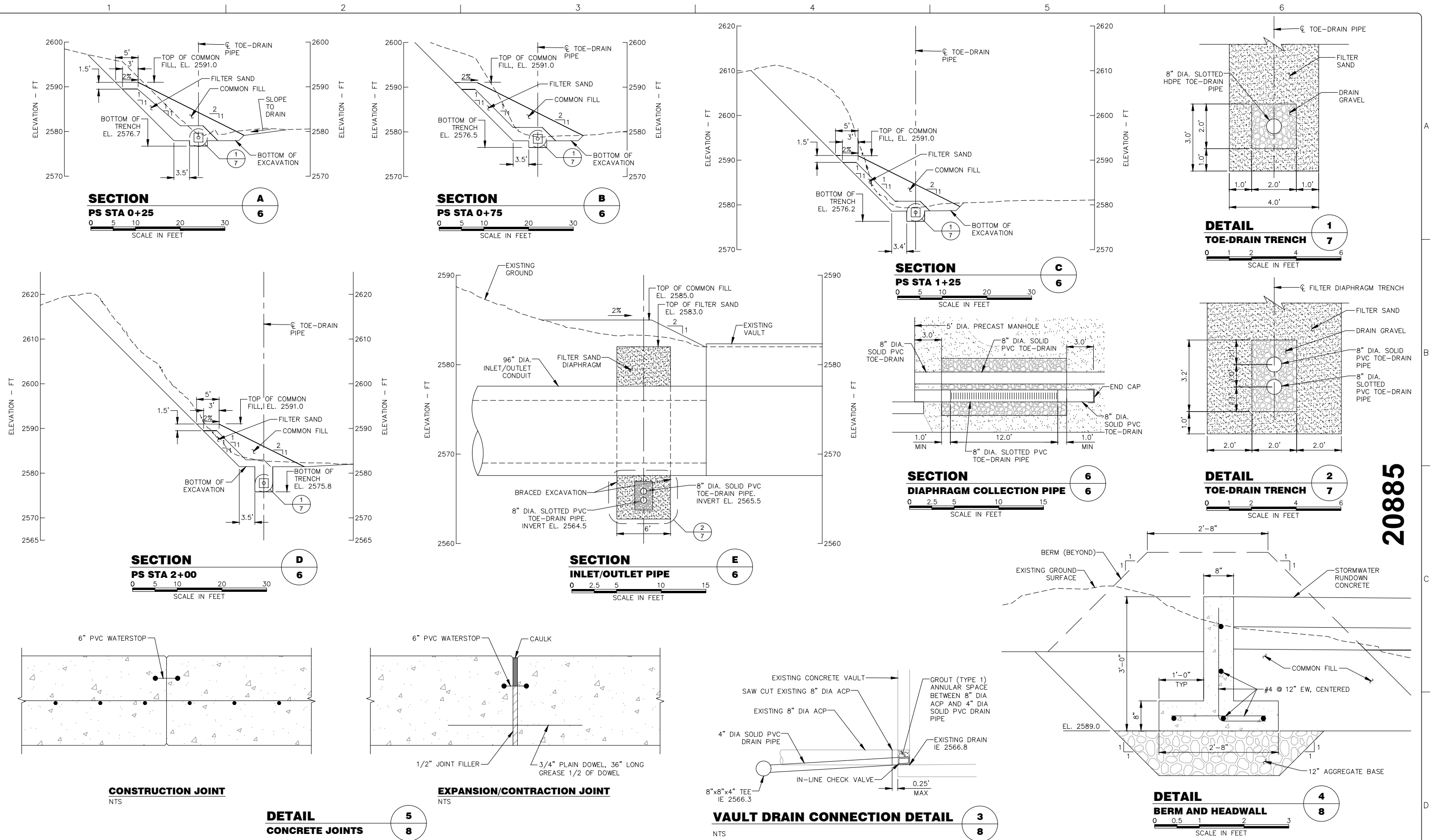
RJH PROJECT 20114

ELWOOD DAM SEEPAGE MITIGATION PROJECT GOSPER COUNTY, NEBRASKA

PUMP STATION ALIGNMENT - PLAN AND PROFILE

DWG. NO. 6
SHEET NO. 6 of 30

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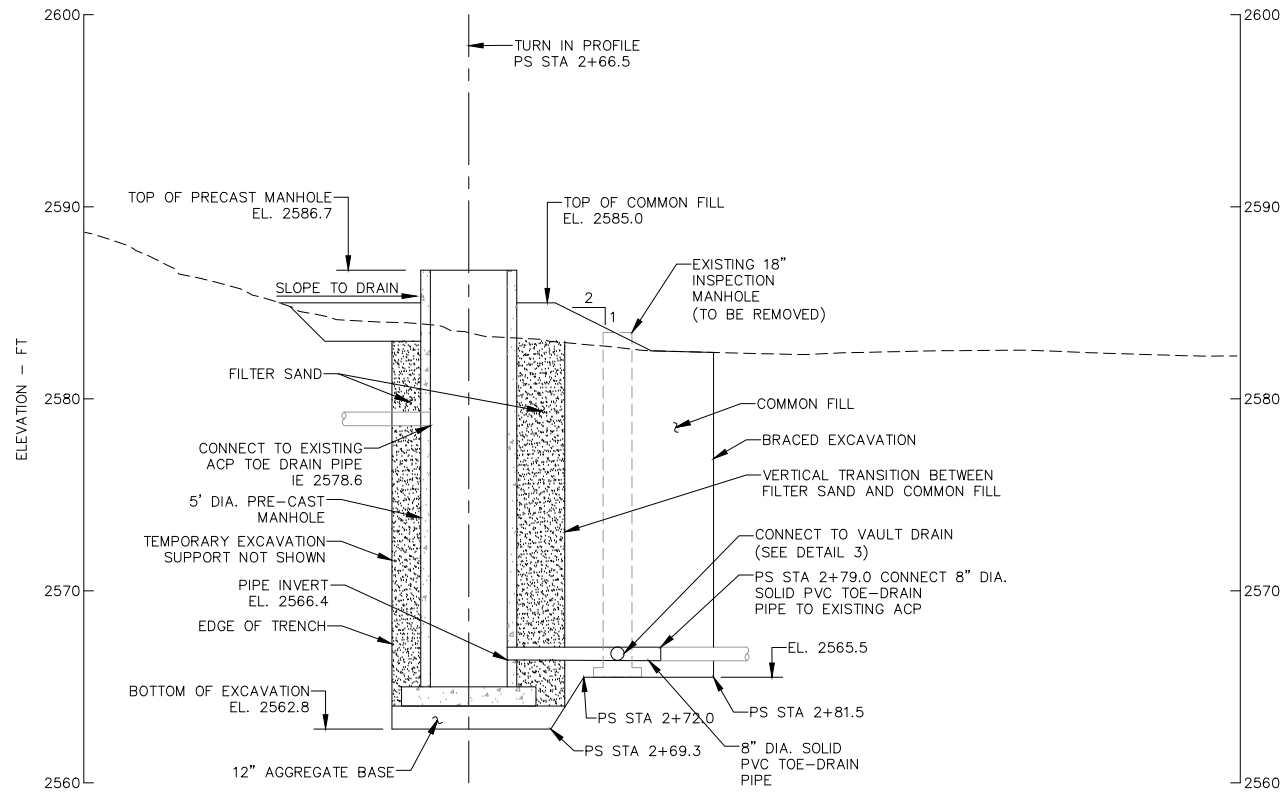
RJH PROJECT 20114

ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

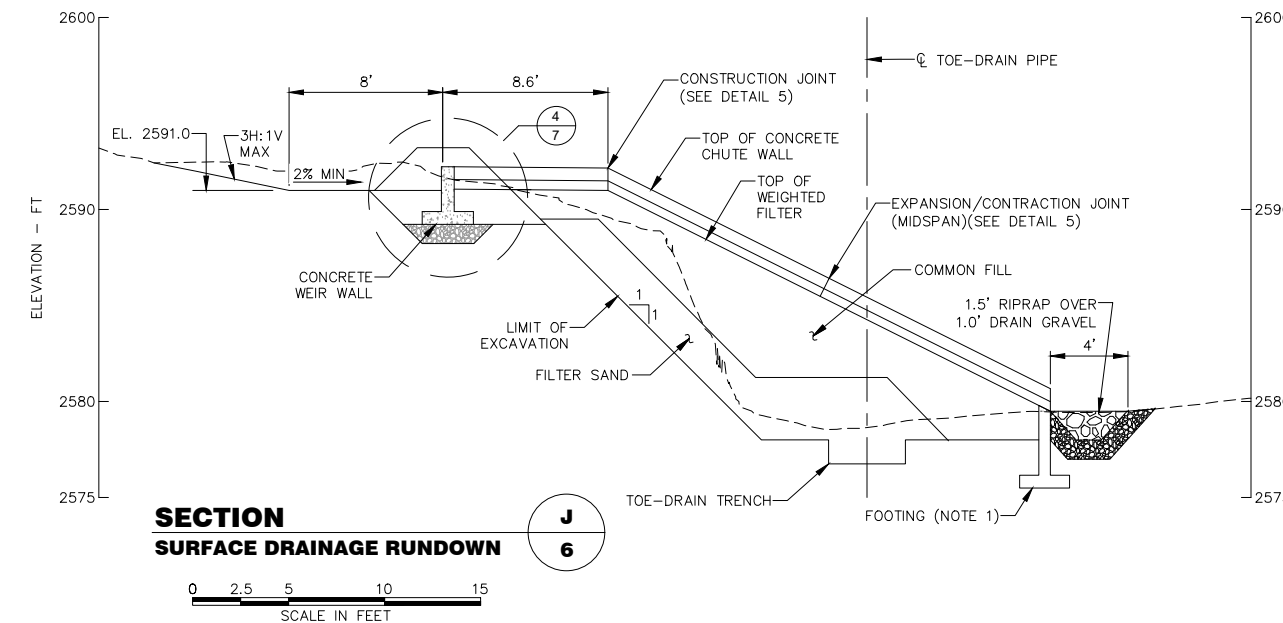
PUMP STATION
ALIGNMENT - SECTIONS
AND DETAILS (1 OF 2)

DWG. NO.
7
SHEET NO.
7 of 30

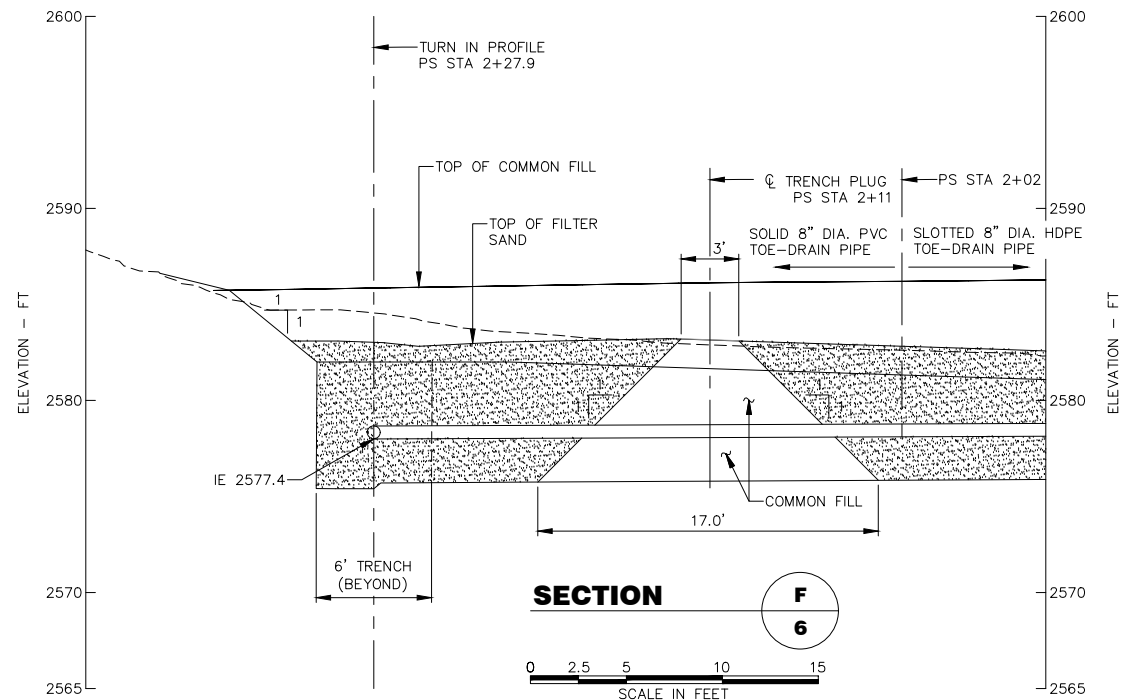
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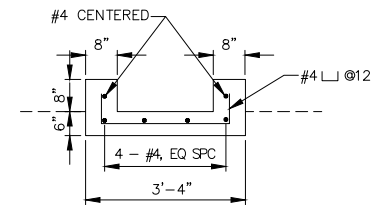
SECTION G
CONNECTION TO EXISTING OUTFALL
0 2.5 5 10 15
SCALE IN FEET



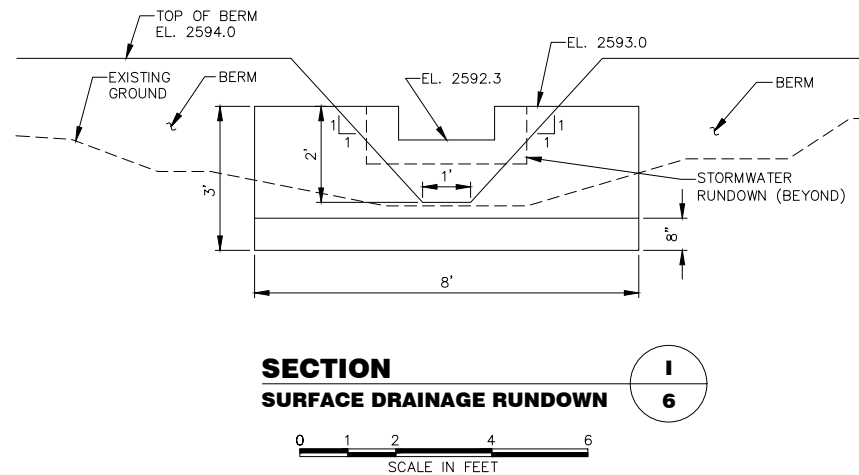
SECTION J
SURFACE DRAINAGE RUNDOWN
0 2.5 5 10 15
SCALE IN FEET



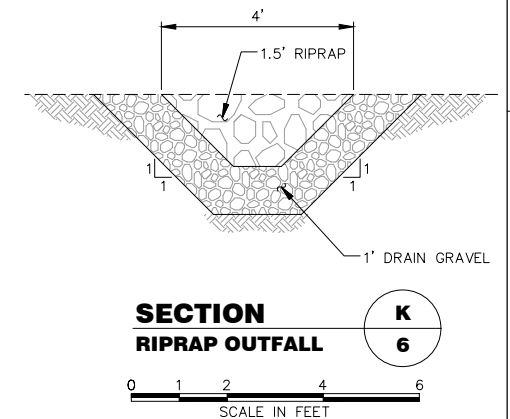
SECTION F
6
0 2.5 5 10 15
SCALE IN FEET



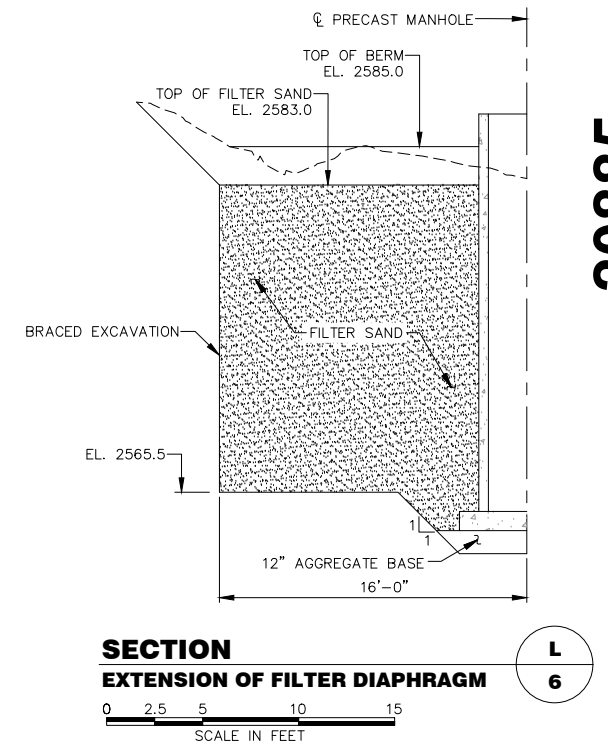
SECTION H
STORMWATER RUNDOWN
0 1 2 4 6
SCALE IN FEET



SECTION I
SURFACE DRAINAGE RUNDOWN
0 1 2 4 6
SCALE IN FEET



SECTION K
RIPRAP OUTFALL
0 1 2 4 6
SCALE IN FEET



SECTION L
EXTENSION OF FILTER DIAPHRAGM
0 2.5 5 10 15
SCALE IN FEET

NOTE:
1. FORM WITH SAME DIMENSIONS AND REINFORCEMENT AS SHOWN IN DETAIL 4.
INCLUDE AGGREGATE AS SHOWN IN DETAIL 4.



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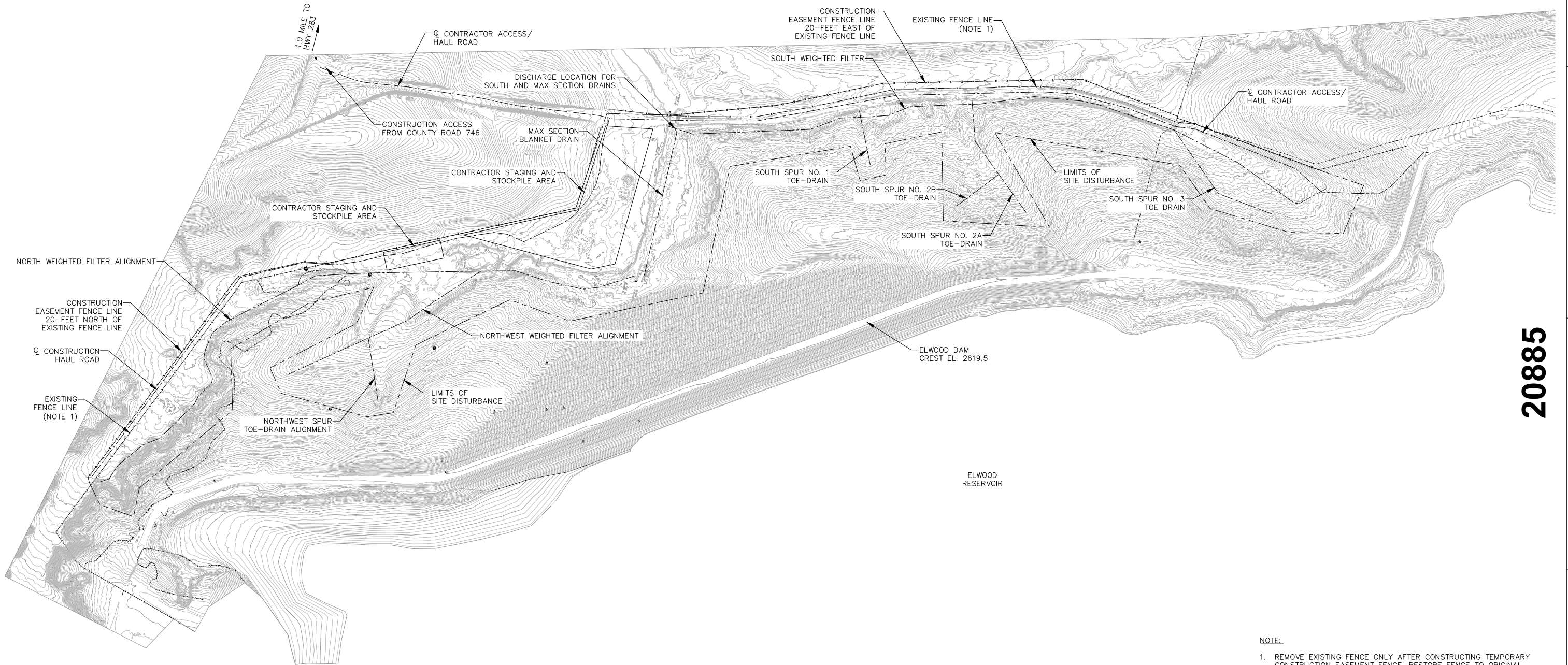
RJH PROJECT 20114

ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

PUMP STATION
ALIGNMENT - SECTIONS
AND DETAILS (2 OF 2)

DWG. NO.
8
SHEET NO.
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- NOTE:
1. REMOVE EXISTING FENCE ONLY AFTER CONSTRUCTING TEMPORARY CONSTRUCTION EASEMENT FENCE. RESTORE FENCE TO ORIGINAL CONDITION AT THE END OF CONSTRUCTION.



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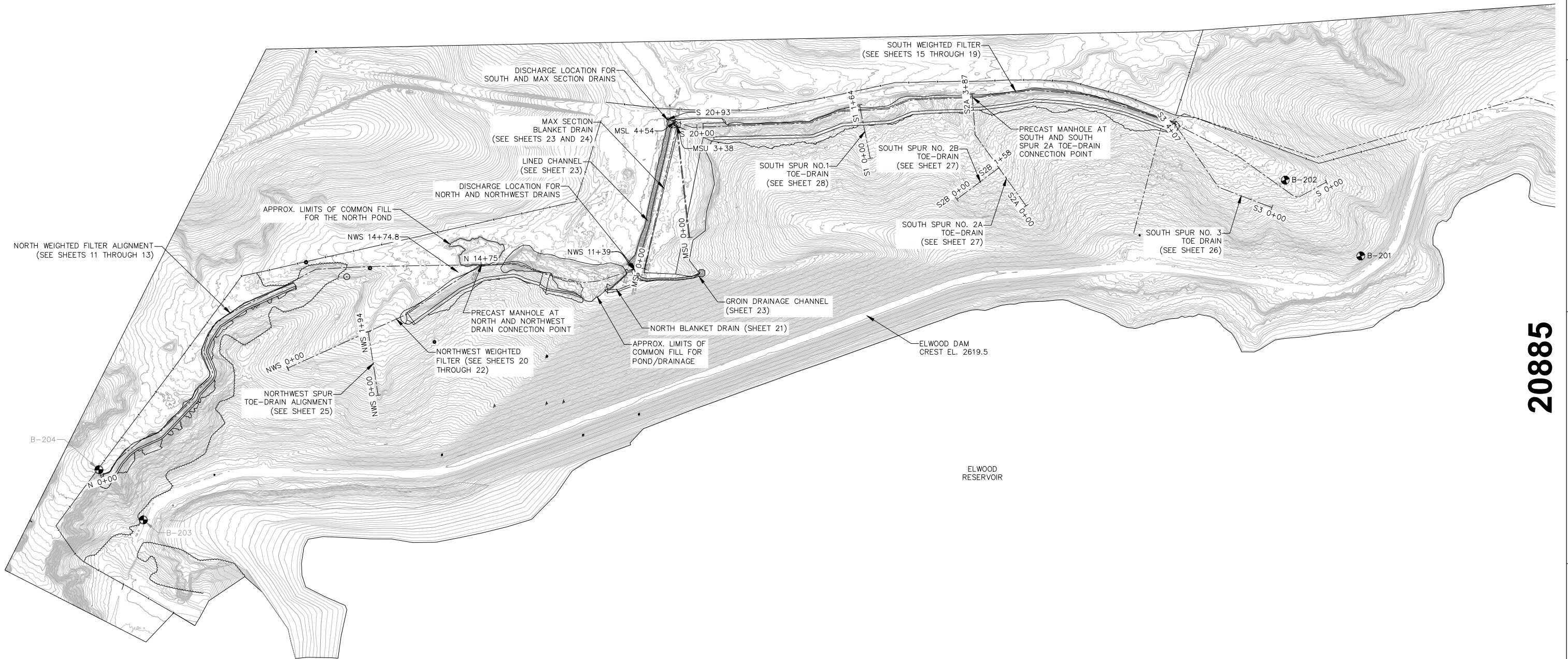
RJH PROJECT 20114

ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

STAGING AND STOCKPILE
AREAS; ACCESS - MAIN DAM

DWG. NO.
9
SHEET NO.
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NOTE:
1. DEMOLISH/DECOMMISSION OPEN STANDPIPE PIEZOMETERS B-202 AND B-204.



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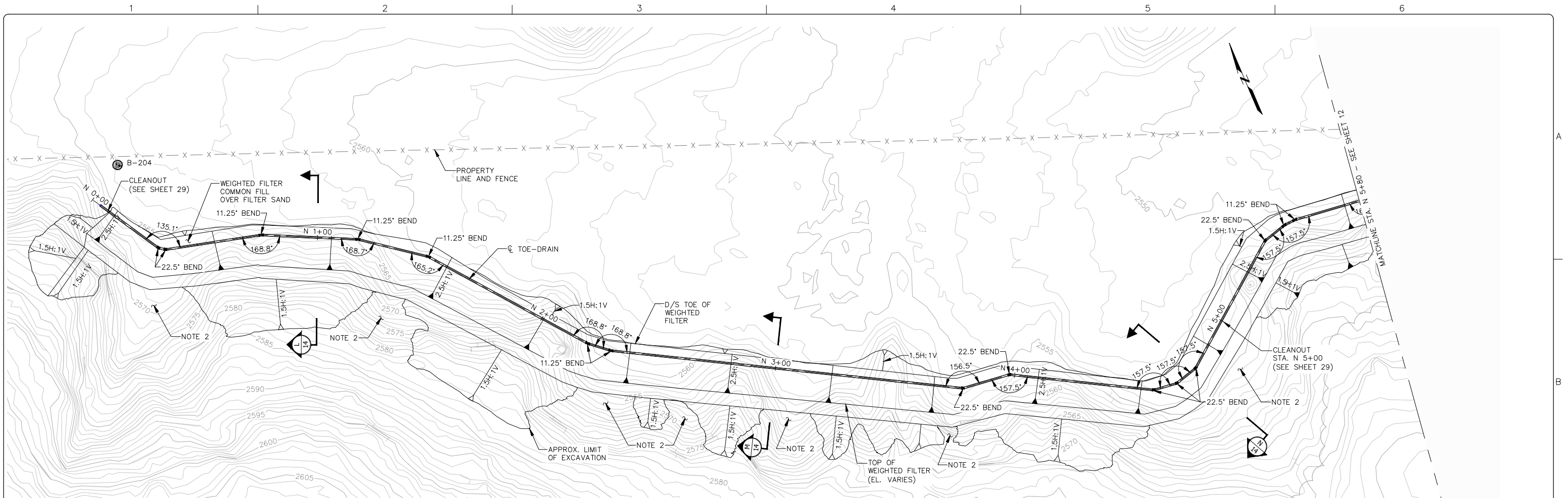
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ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

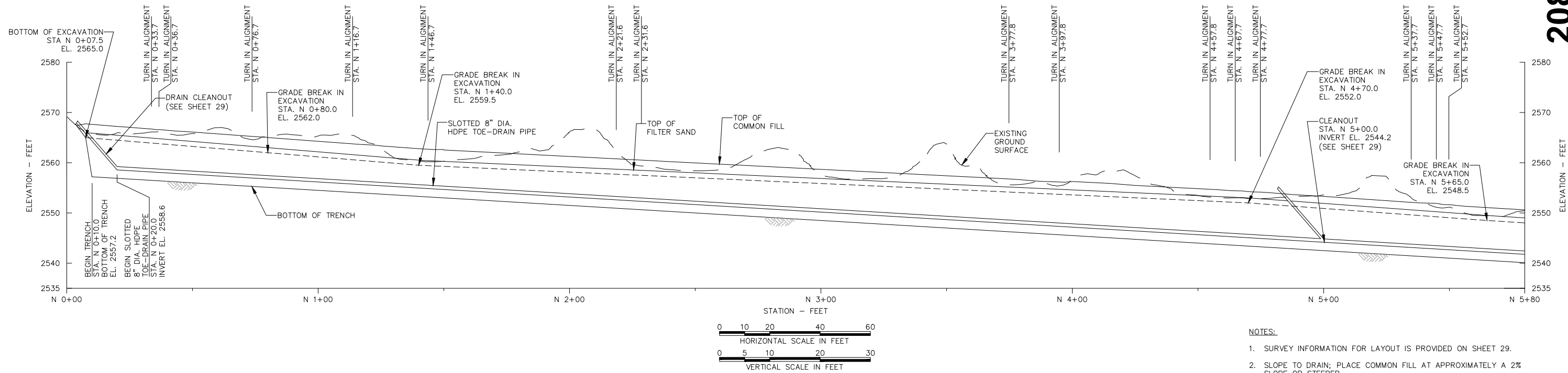
MAIN DAM - PLAN OF
MODIFICATIONS

DWG. NO.
10
SHEET NO.
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P:\2014 - ELWOOD DAM SEEPAGE AND ALTERNATIVES STUDY\CAD\Sheet Files\MAIN DAM - NORTH TOE DRAIN.DWG 7/18/2022



0 10 20 40 60
SCALE IN FEET



- NOTES:
1. SURVEY INFORMATION FOR LAYOUT IS PROVIDED ON SHEET 29.
 2. SLOPE TO DRAIN; PLACE COMMON FILL AT APPROXIMATELY A 2% SLOPE OR STEEPER.



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NO.	DATE	ISSUE/REVISION	DES	DRN	CHK
					APP



RJH PROJECT 20114

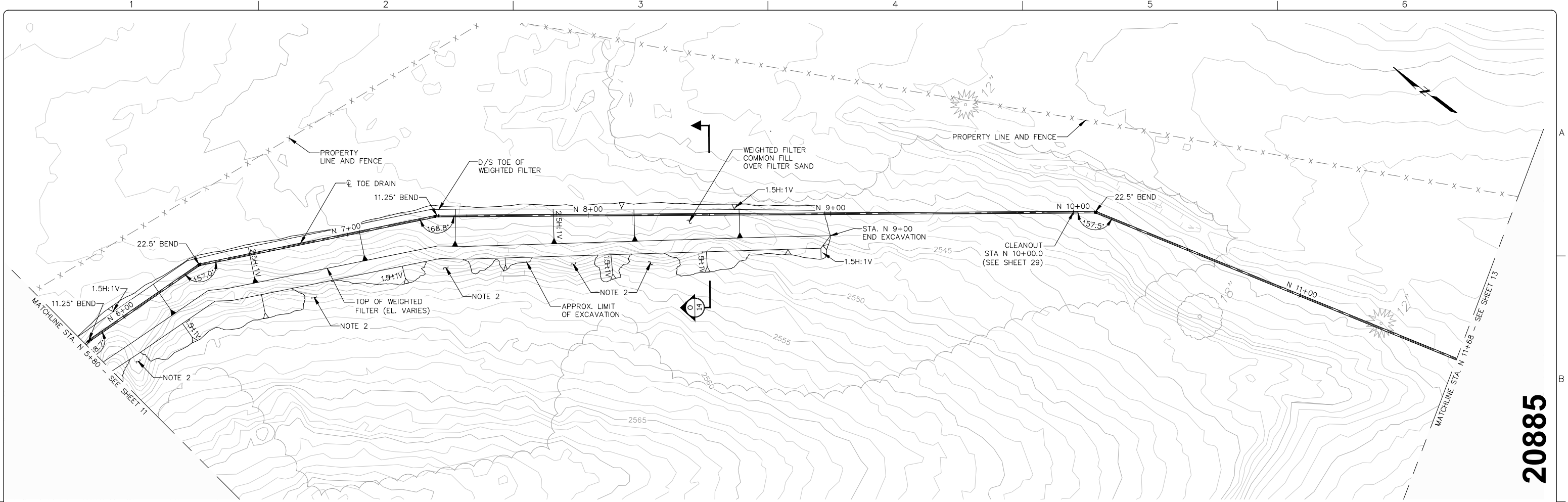
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MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

MAIN DAM - NORTH
WEIGHTED FILTER (1 OF 3)

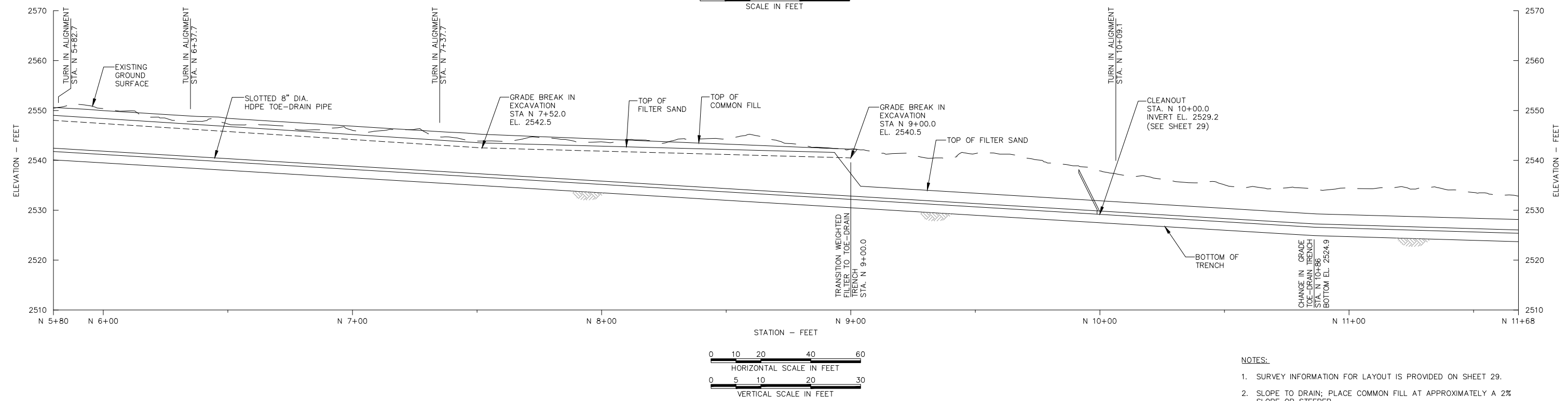
DWG. NO.
11
SHEET NO.
11 of 30

20885

P:\2014 - ELWOOD DAM SEEPAGE AND ALTERNATIVES STUDY\CAD\SHEET FILES\MAIN DAM - NORTH TOE DRAIN.DWG 7/18/2022



20885



- NOTES:
1. SURVEY INFORMATION FOR LAYOUT IS PROVIDED ON SHEET 29.
 2. SLOPE TO DRAIN; PLACE COMMON FILL AT APPROXIMATELY A 2% SLOPE OR STEEPER.



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NO.	DATE	ISSUE/REVISION	DES	DRN	CHK	APP	



RJH PROJECT 20114

ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

MAIN DAM - NORTH
WEIGHTED FILTER (2 OF 3)

DWG. NO.
12
SHEET NO.
12 of 30

P:\2014 - ELWOOD DAM SEEPAGE AND ALTERNATIVES STUDY\CAD\Sheet Files\MAIN DAM - NORTH TOE DRAIN.DWG 7/18/2022



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	07/2022	ISSUED FOR BID	EJS	KLH	EJS	ATM
NO.	DATE	ISSUE/REVISION	DES	DRN	CHK	APP

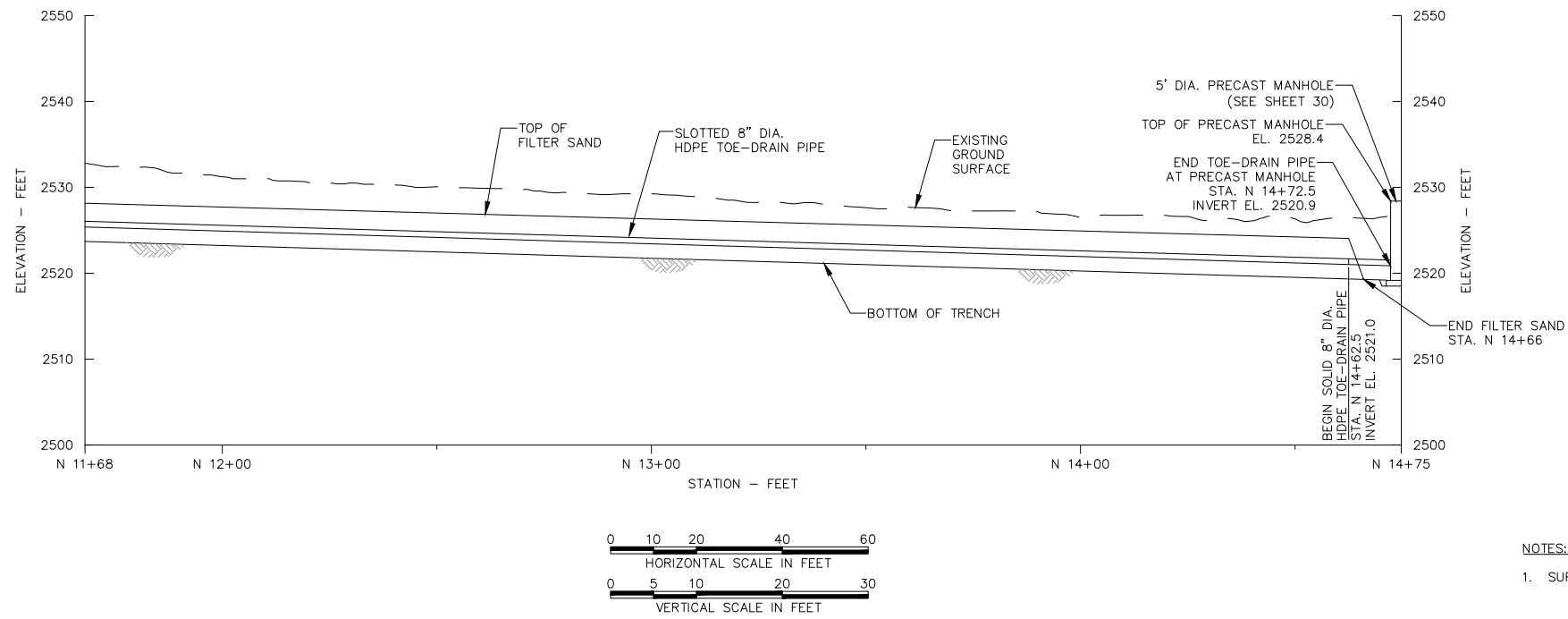


RJH PROJECT 20114

ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

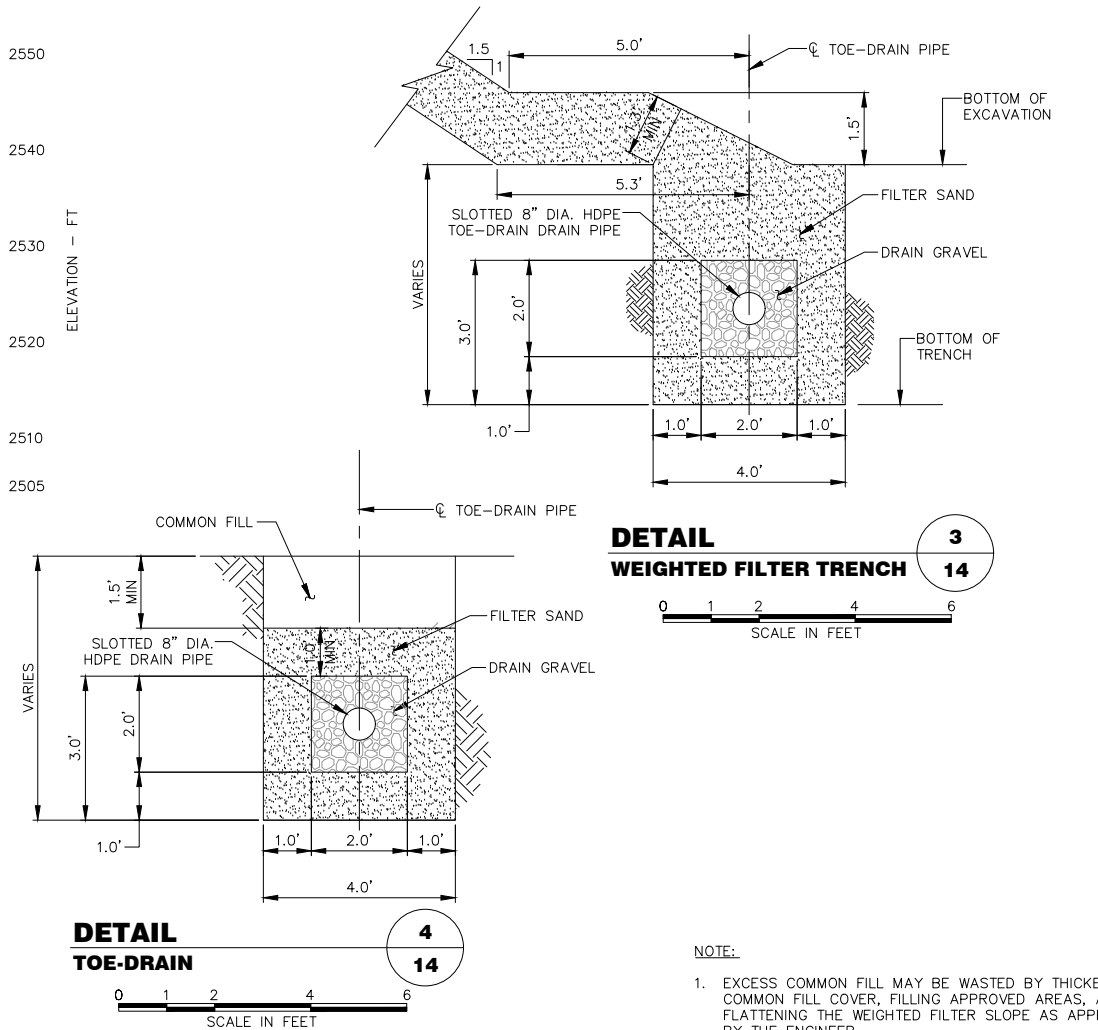
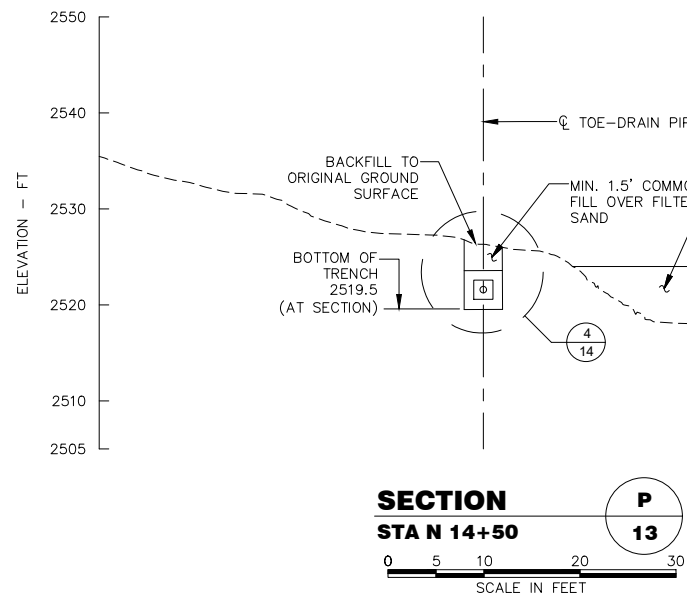
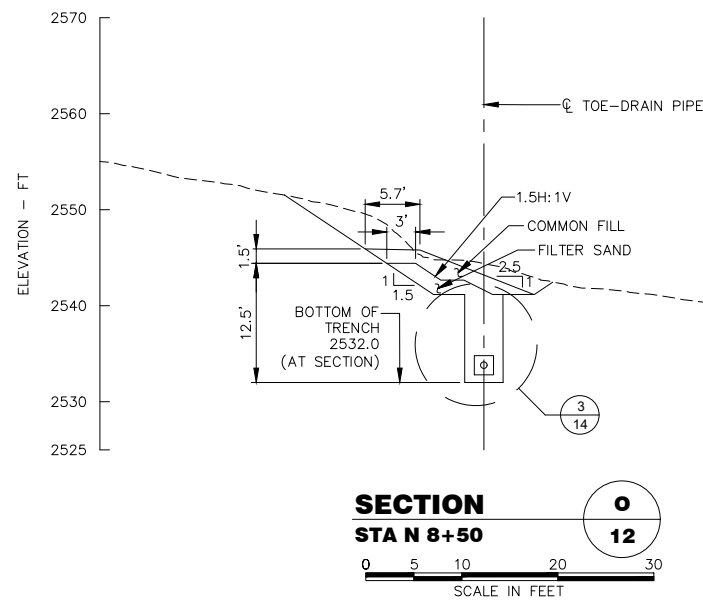
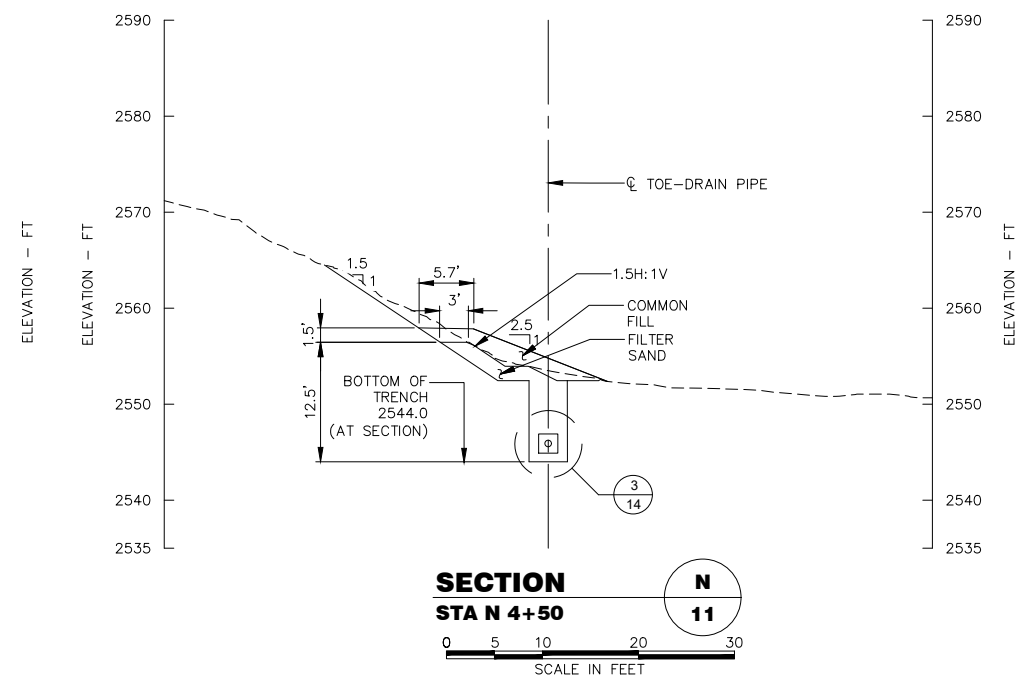
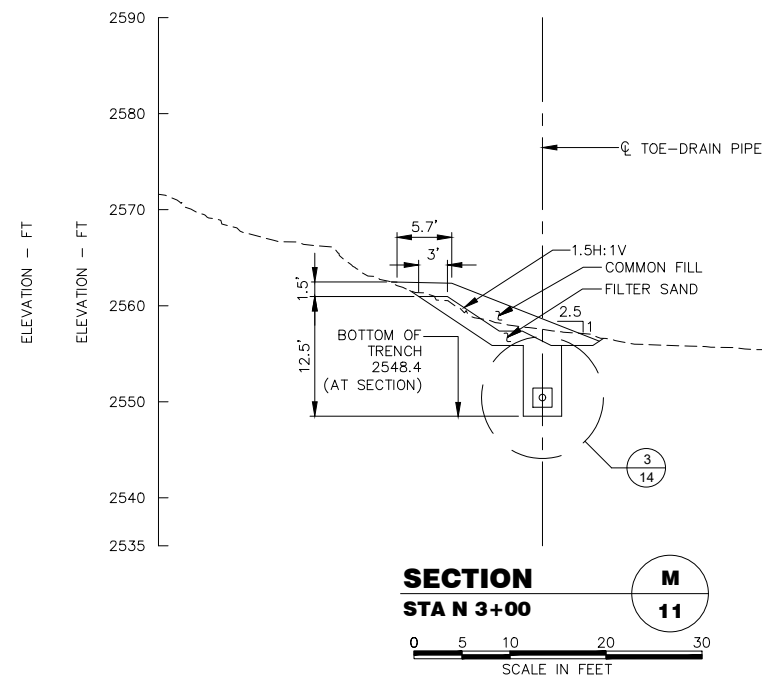
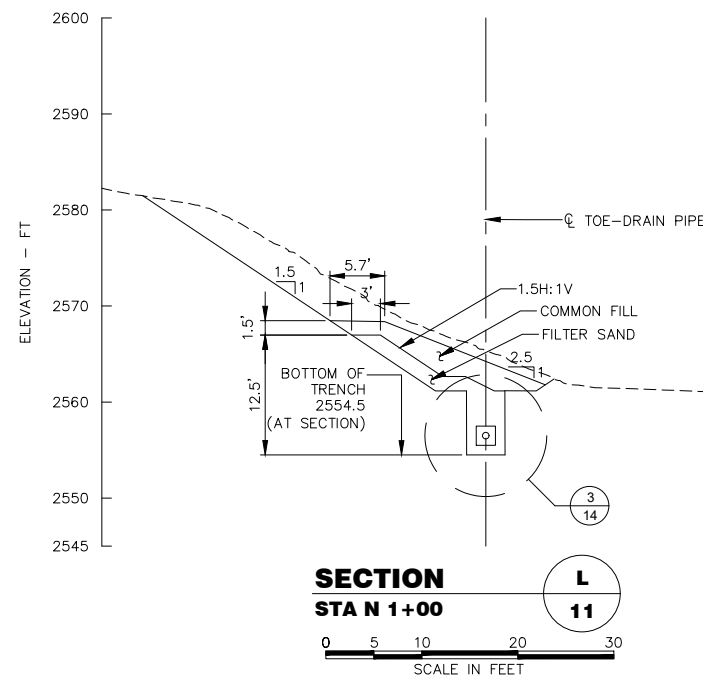
MAIN DAM - NORTH
WEIGHTED FILTER (3 OF 3)

DWG. NO.
13
SHEET NO.
13 of 30



- NOTES:
1. SURVEY INFORMATION FOR LAYOUT IS PROVIDED ON SHEET 29.

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NOTE:

1. EXCESS COMMON FILL MAY BE WASTED BY THICKENING COMMON FILL COVER, FILLING APPROVED AREAS, AND FLATTENING THE WEIGHTED FILTER SLOPE AS APPROVED BY THE ENGINEER.



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RJH PROJECT 20114

ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

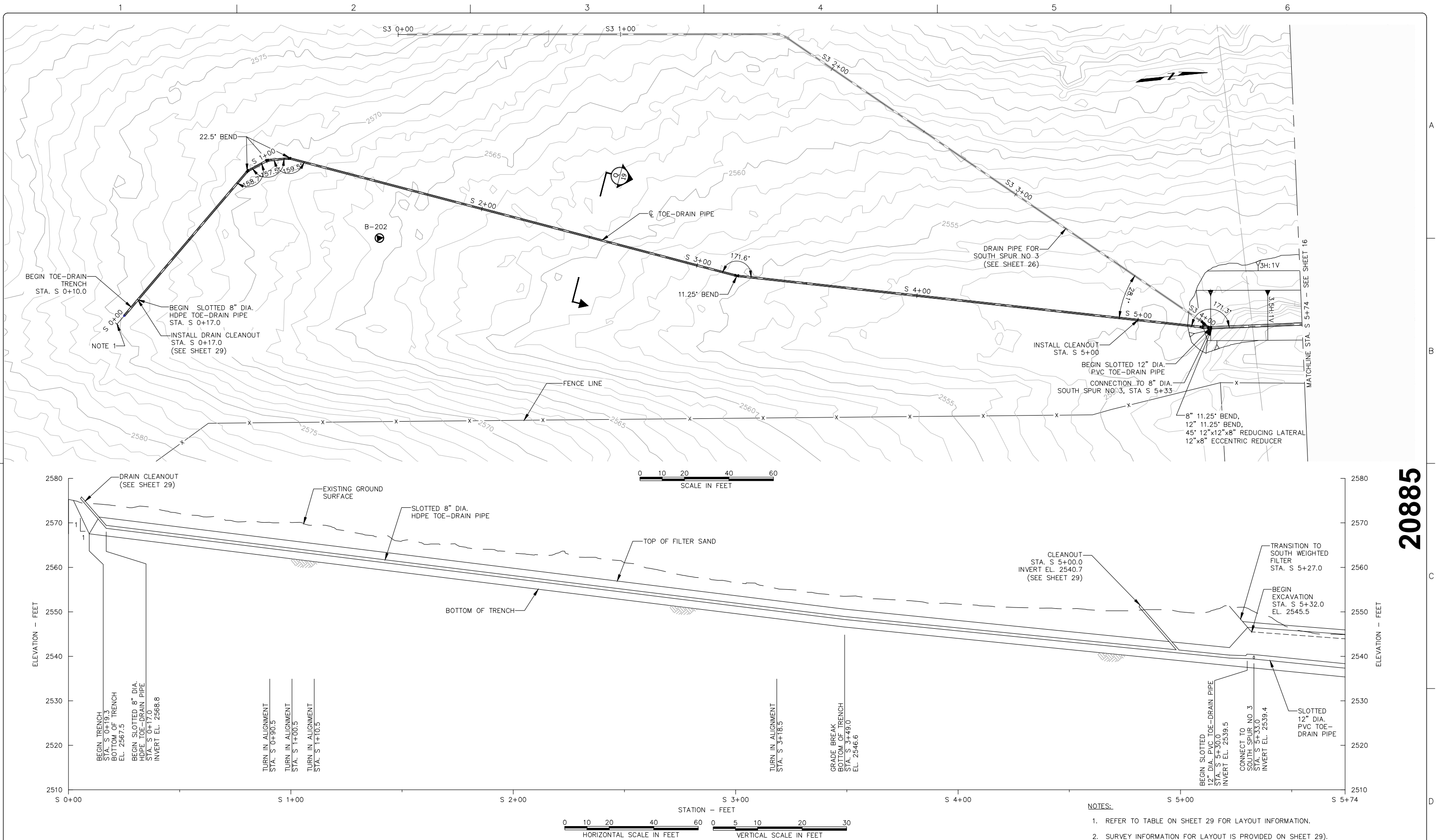
MAIN DAM - NORTH WEIGHTED FILTER SECTIONS

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14 of 30

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RJH PROJECT 20114

ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

MAIN DAM - SOUTH
WEIGHTED FILTER
(1 OF 4)

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15
SHEET NO.
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- NOTES:
- REFER TO TABLE ON SHEET 29 FOR LAYOUT INFORMATION.
 - SURVEY INFORMATION FOR LAYOUT IS PROVIDED ON SHEET 29).

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NO.	DATE	ISSUE/REVISION	DES	DRN	CHK	APP
	07/2022	ISSUED FOR BID	EJS	KLH	EJS	ATM

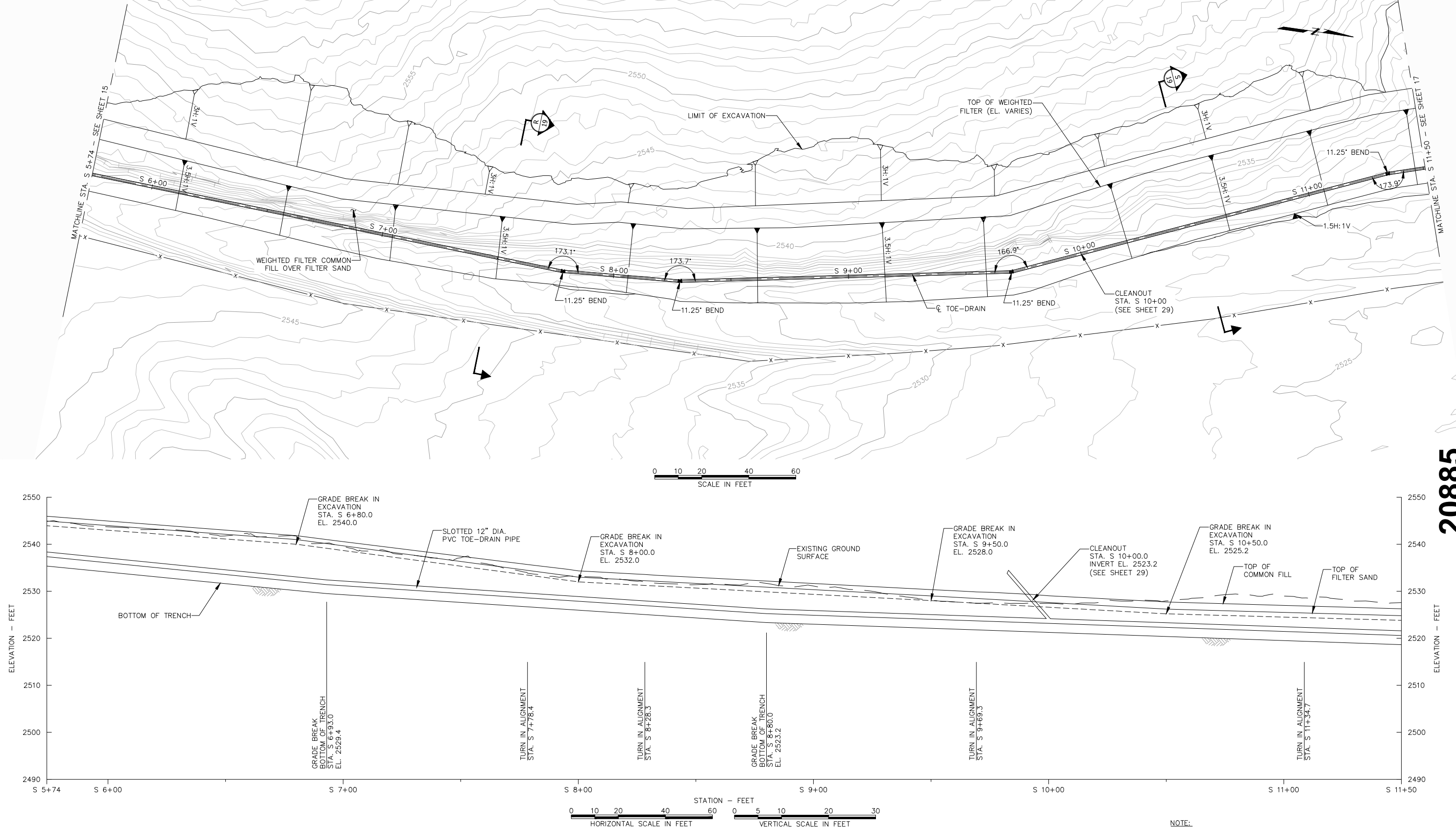


RJH PROJECT 20114

ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

MAIN DAM - SOUTH
WEIGHTED FILTER
(2 OF 4)

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SHEET NO.
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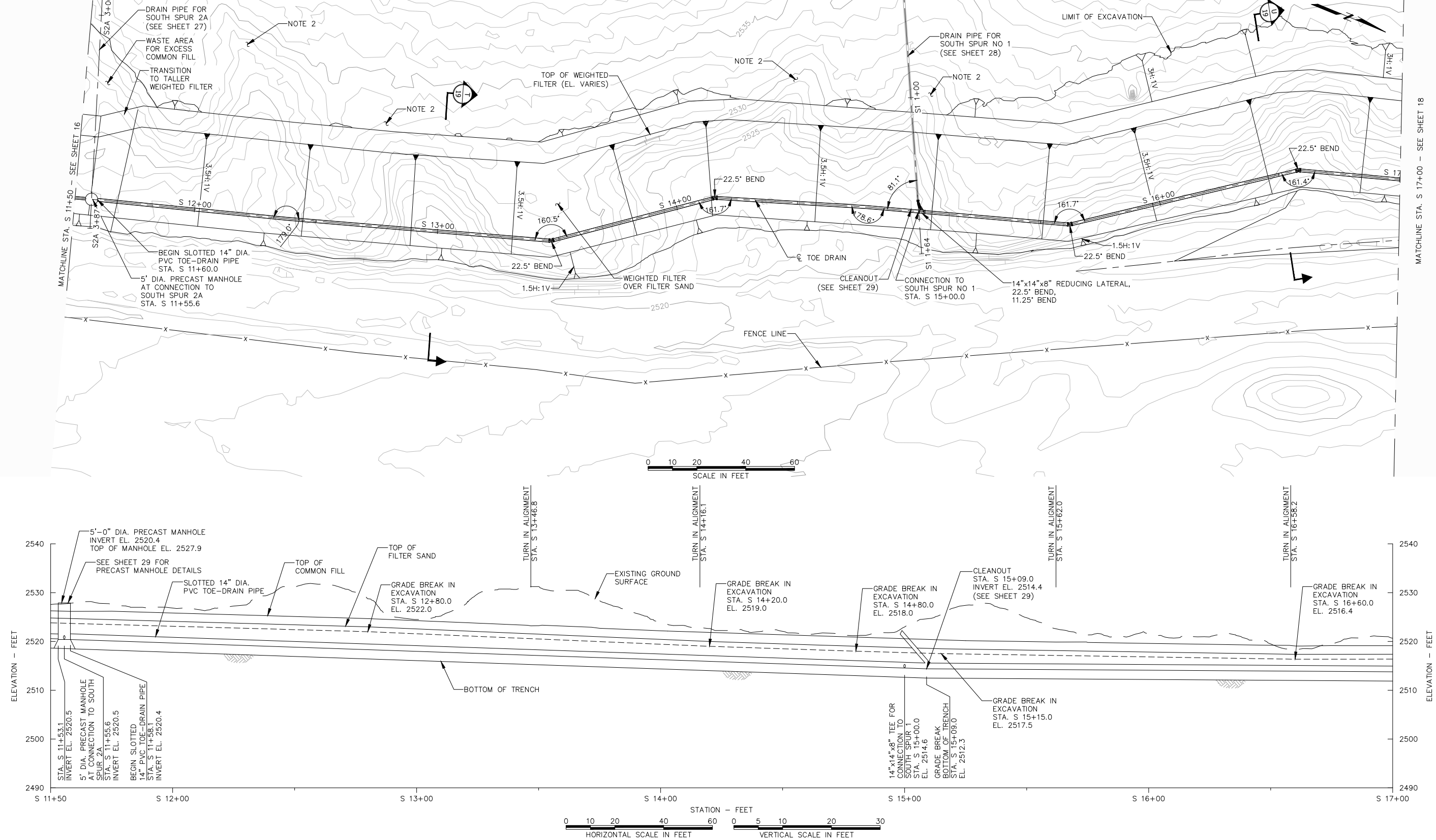
RJH PROJECT 20114

ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

MAIN DAM - SOUTH
WEIGHTED FILTER
(3 OF 4)

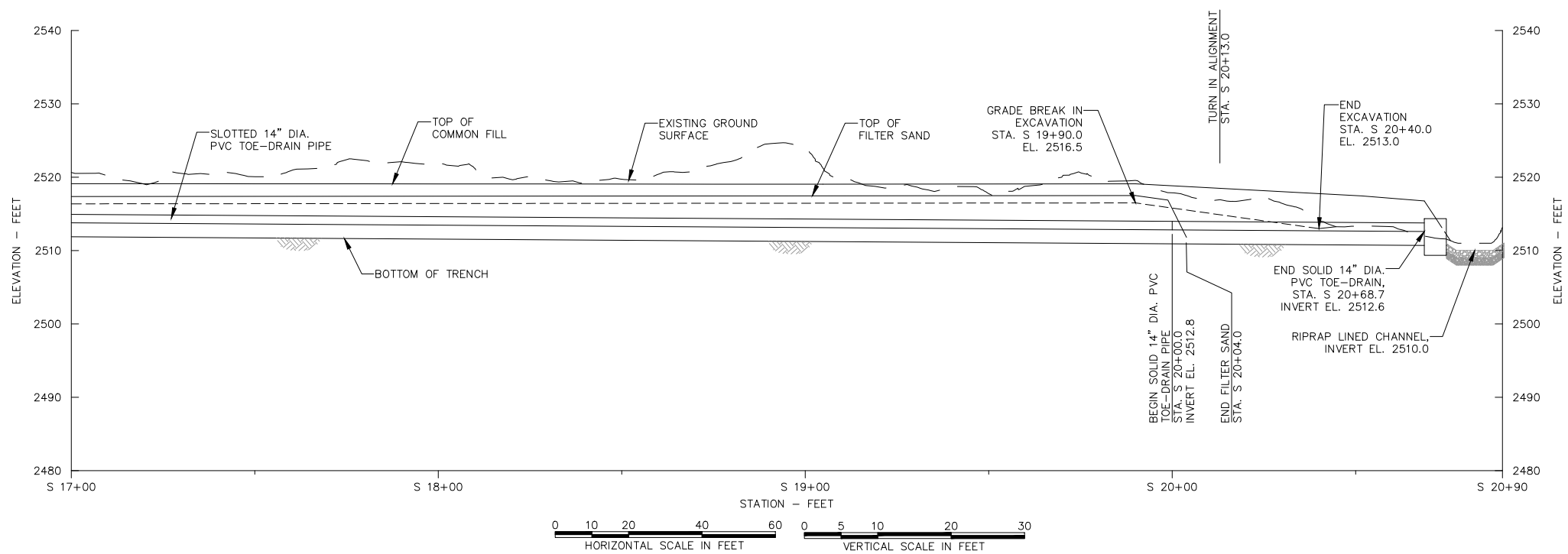
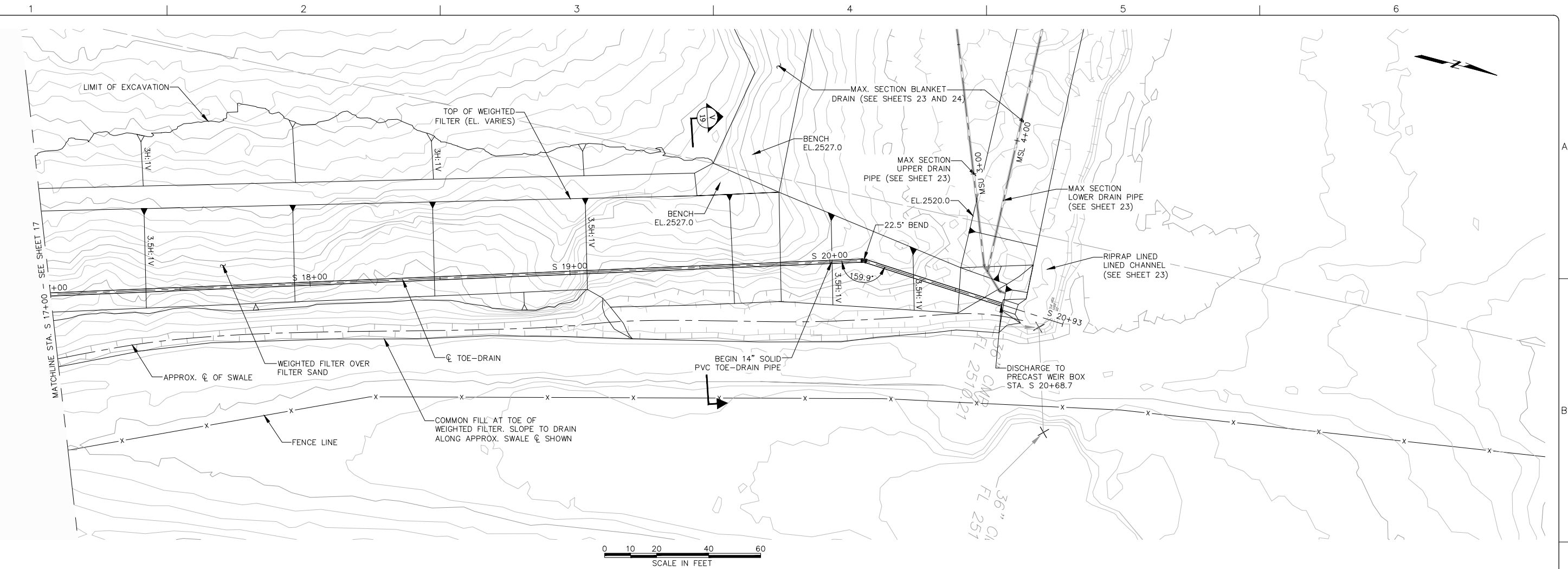
DWG. NO.
17
SHEET NO.
17 of 30

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- NOTES:
- SURVEY INFORMATION FOR LAYOUT IS PROVIDED ON SHEET 29.
 - SLOPE TO DRAIN; PLACE COMMON FILL AT APPROXIMATELY A 2% SLOPE OR STEEPER.

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NO.	DATE	ISSUE/REVISION	DES	DRN	CHK	APP
	07/2022	ISSUED FOR BID	EJS	KLH	EJS	ATM



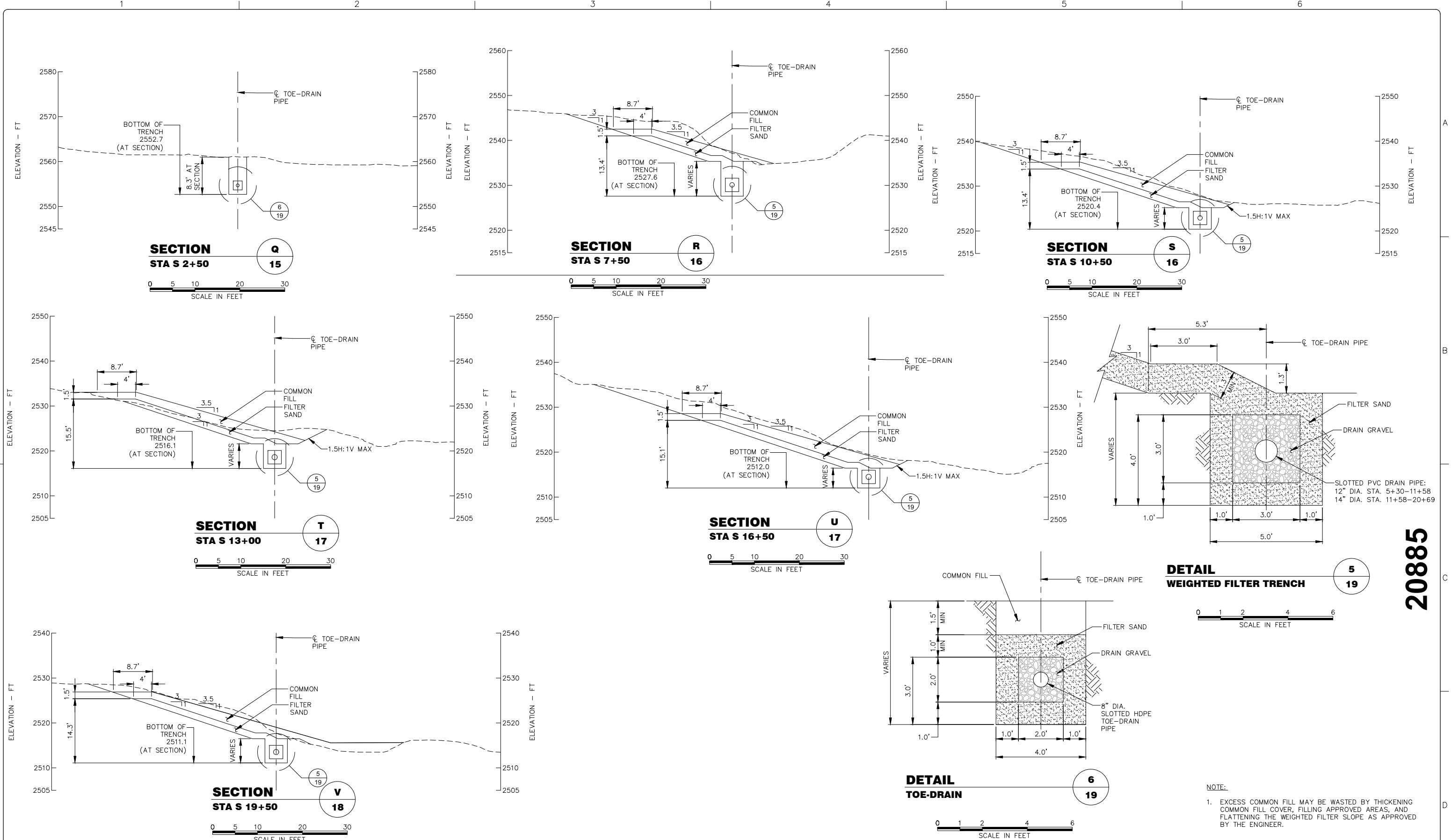
RJH PROJECT 20114

ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

MAIN DAM - SOUTH
WEIGHTED FILTER
(4 OF 4)

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SHEET NO.
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	07/2022	ISSUED FOR BID	EJS	KLH	EJS	ATM
NO.	DATE	ISSUE/REVISION	DES	DRN	CHK	APP



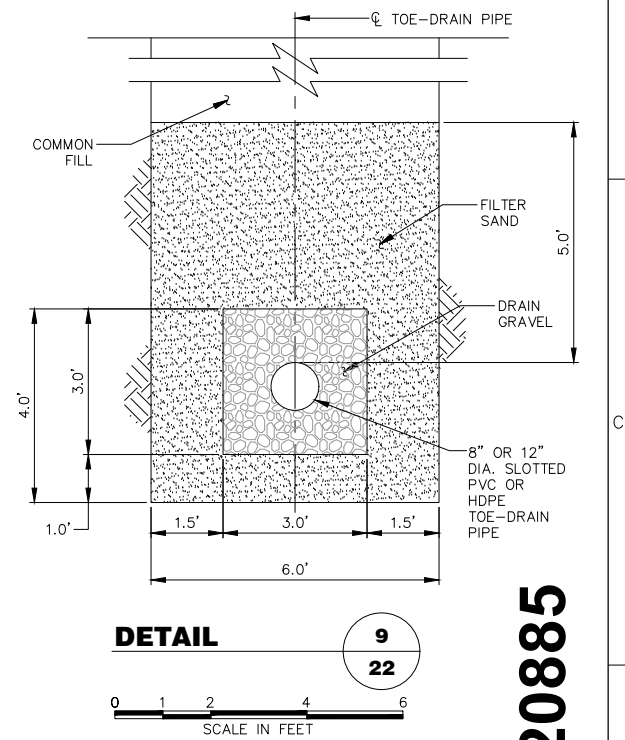
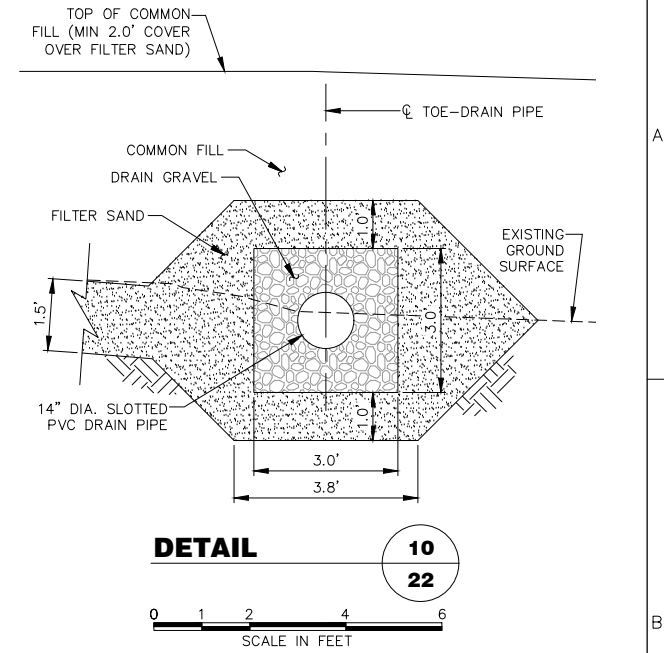
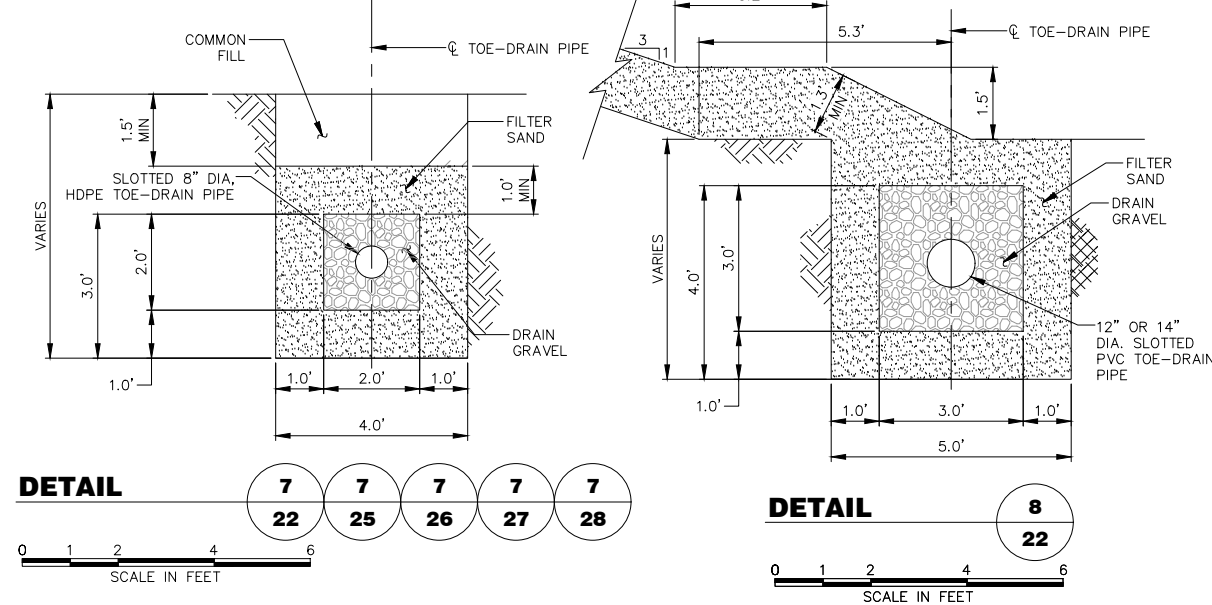
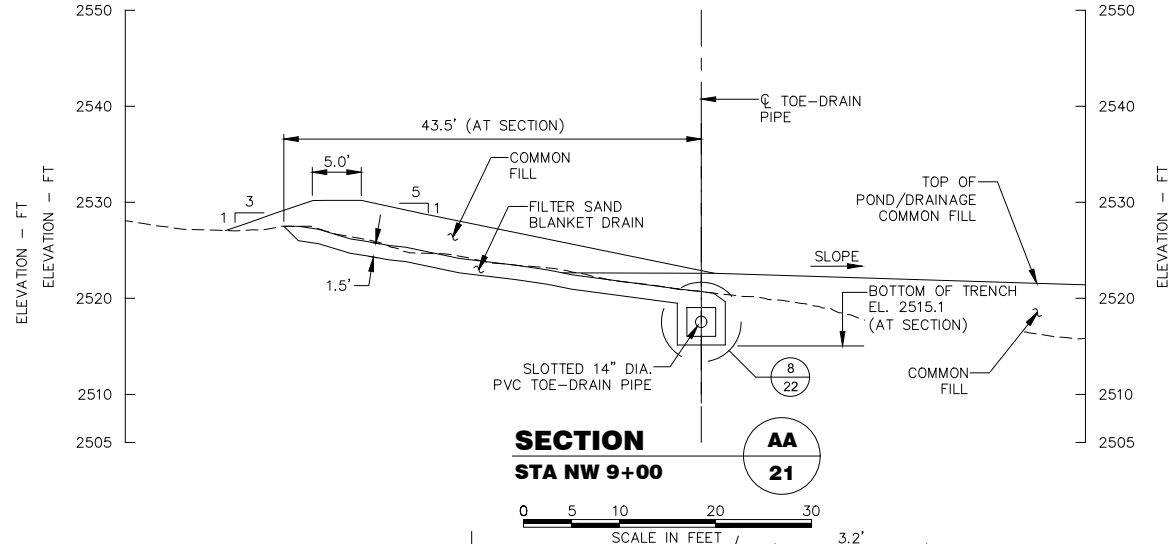
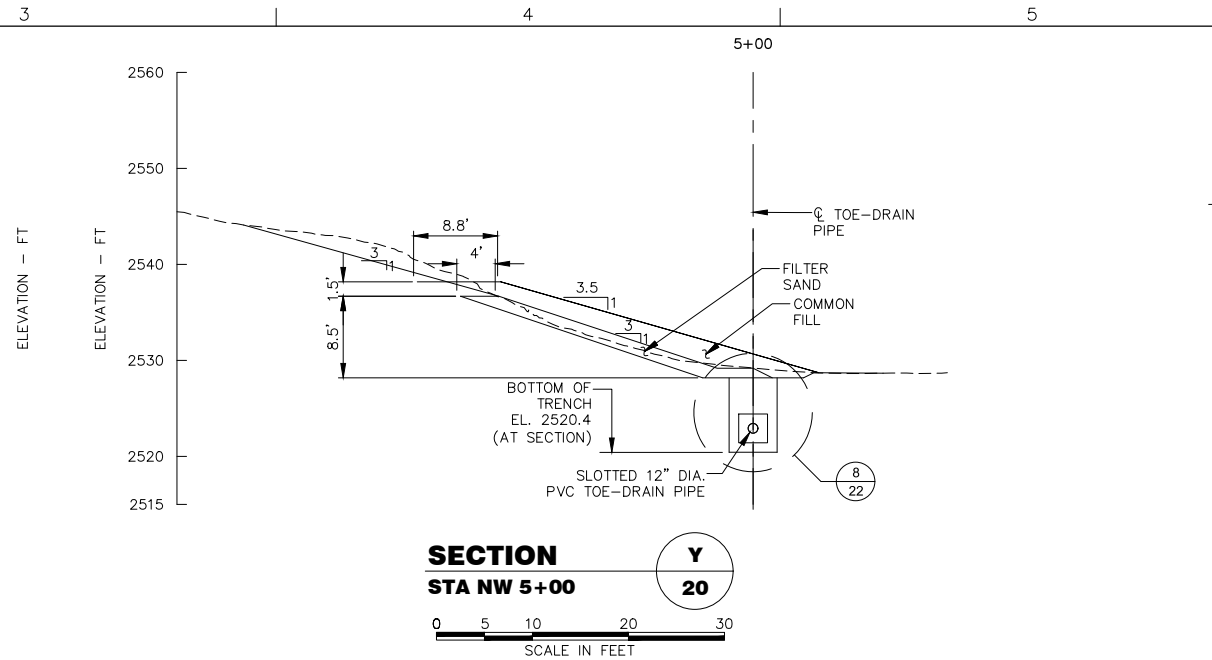
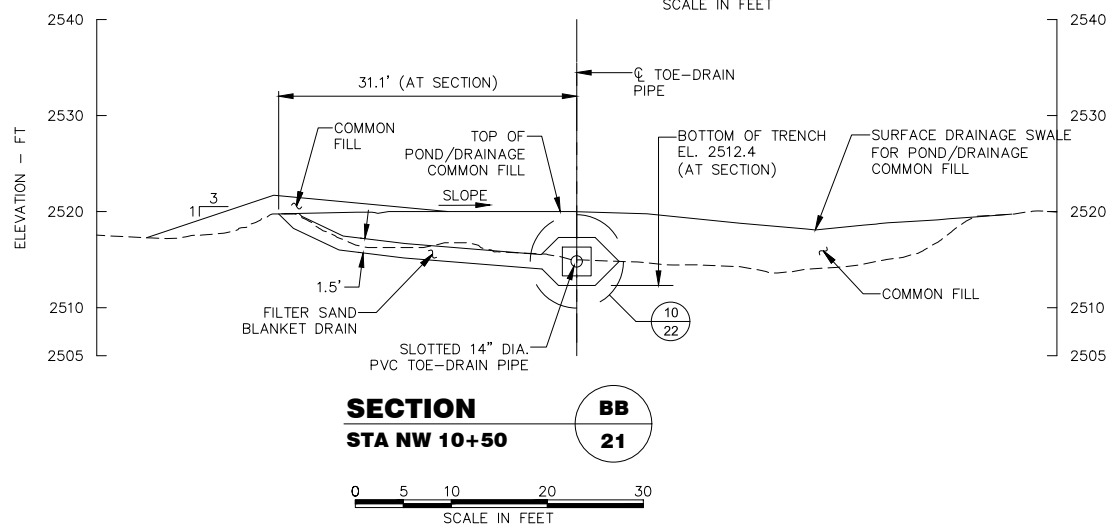
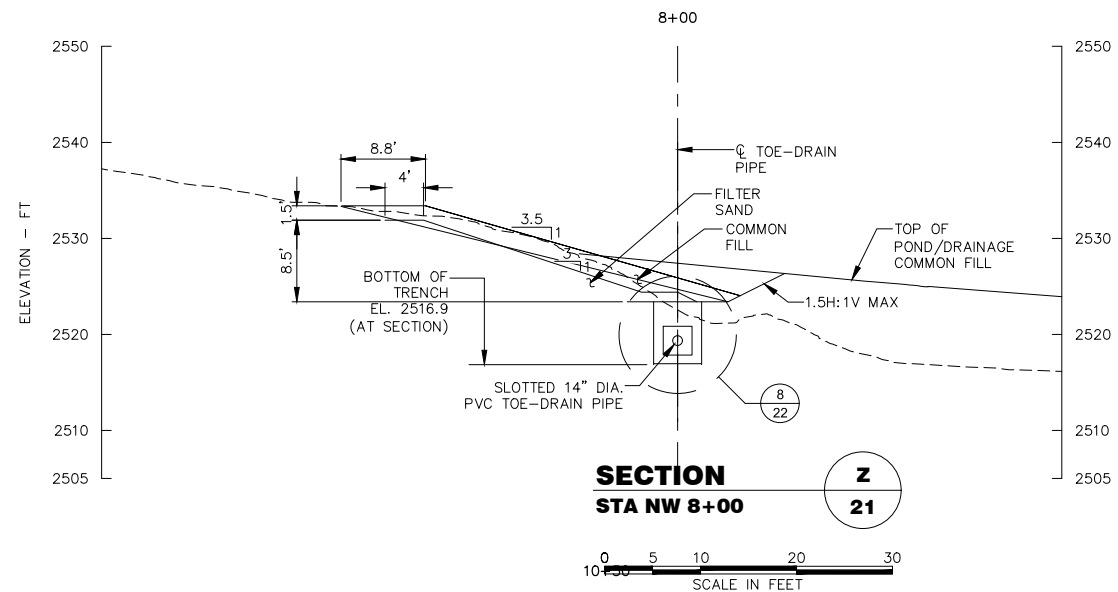
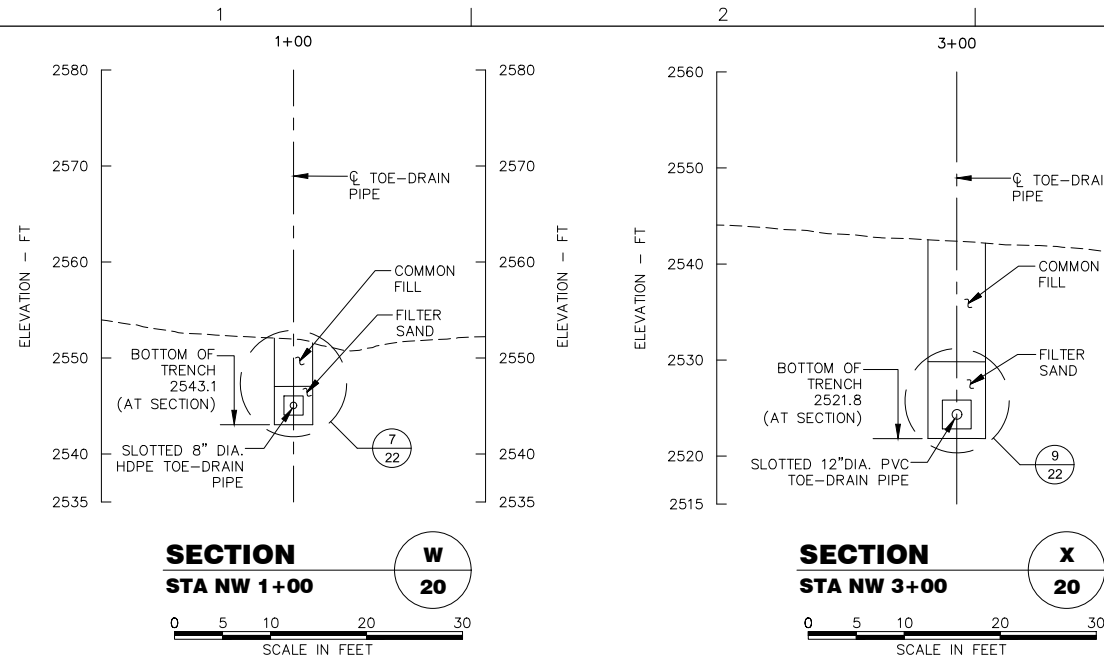
RJH PROJECT 20114

ELWOOD DAM SEEPAGE MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

MAIN DAM - SOUTH
WEIGHTED FILTER -
SECTIONS AND
DETAILS

DWG. NO.
19
SHEET NO.
19 of 30

P:\2014 - ELWOOD DAM SEEPAGE AND ALTERNATIVES STUDY\CAD\MODEL FILES\CORRIDORS\NORTHWEST ALIGNMENT.DWG 7/19/2022



NOTE:
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NO.	DATE	ISSUE/REVISION	DES	DRN	CHK	APP
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RJH PROJECT 20114

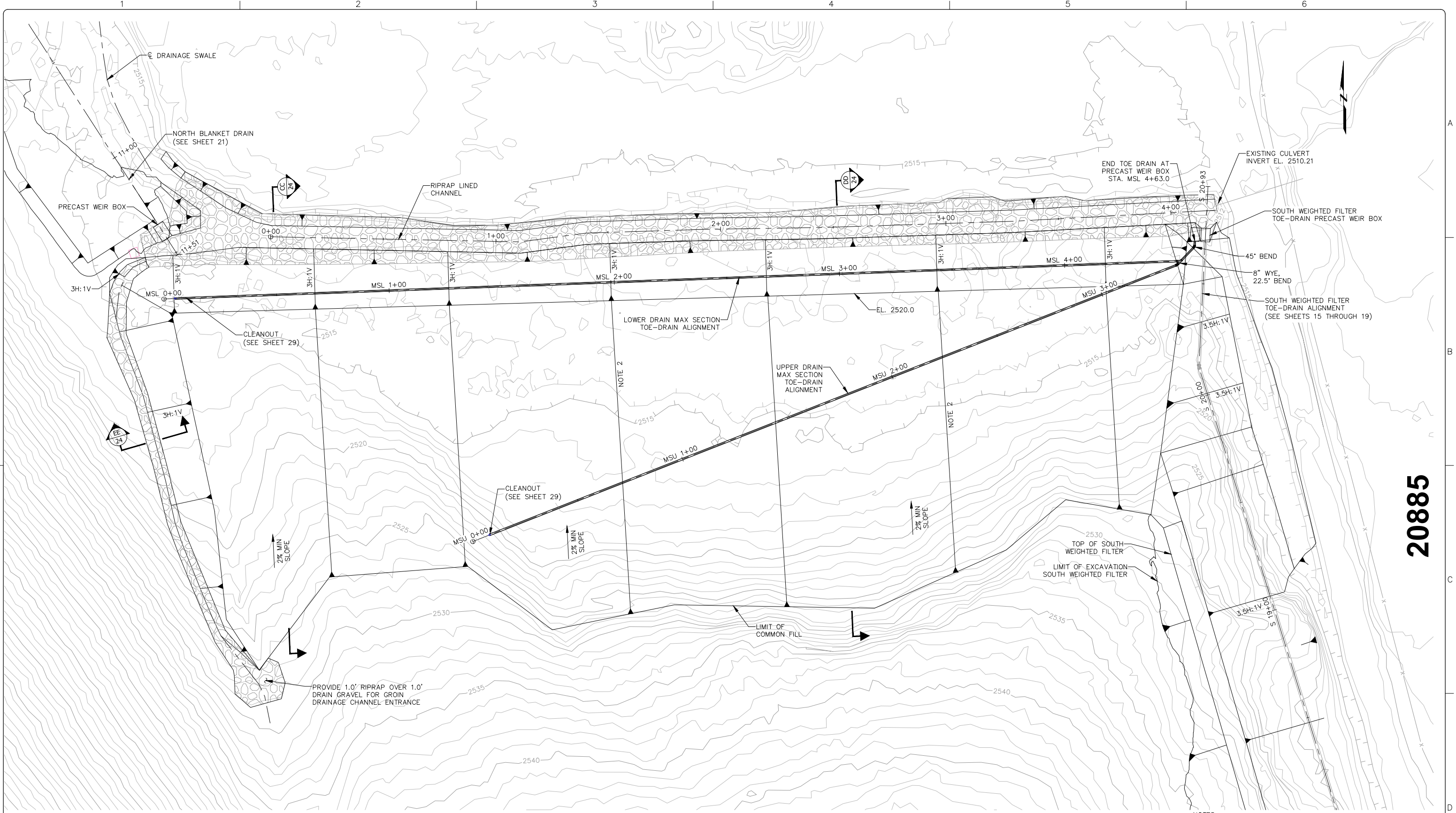
ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

MAIN DAM - NORTHWEST
WEIGHTED FILTER -
SECTIONS

DWG. NO.
22
SHEET NO.
22 of 30

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P:\2014 - ELWOOD DAM SEEPAGE AND ALTERNATIVES STUDY\CAD\Sheet Files\MAIN DAM - MAX SECTION FILTER.DWG 7/18/2022



20885

- NOTES:
1. SURVEY INFORMATION FOR LAYOUT IS PROVIDED ON SHEET 29.
 2. SEE SECTION FOR SLOPE.



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RJH PROJECT 20114

ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

MAIN DAM - MAX SECTION
FILTER PLAN

DWG. NO.
23
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23 of 30

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	07/2022	ISSUED FOR BID	EJS	KLH	EJS
			ATM		
NO.	DATE	ISSUE/REVISION	DES	DRN	CHK
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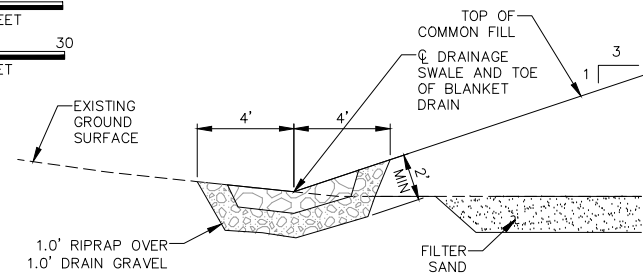
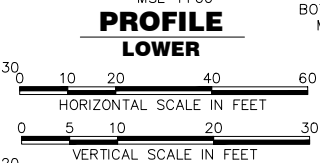
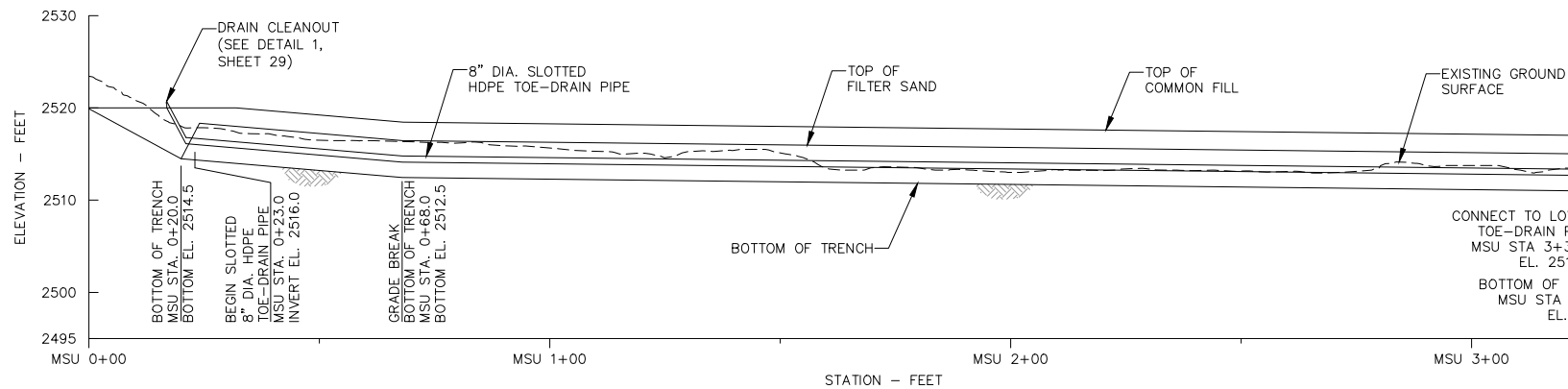
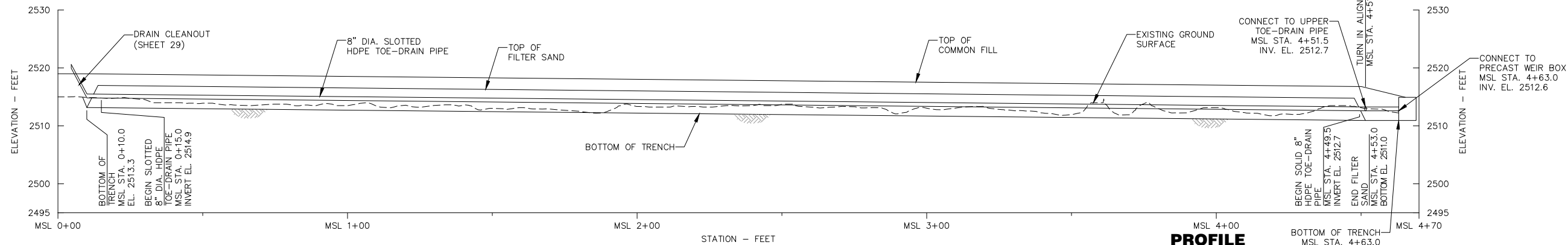


RJH PROJECT 20114

ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

MAIN DAM - MAX SECTION -
SECTIONS

DWG. NO.
24
SHEET NO.
24 of 30

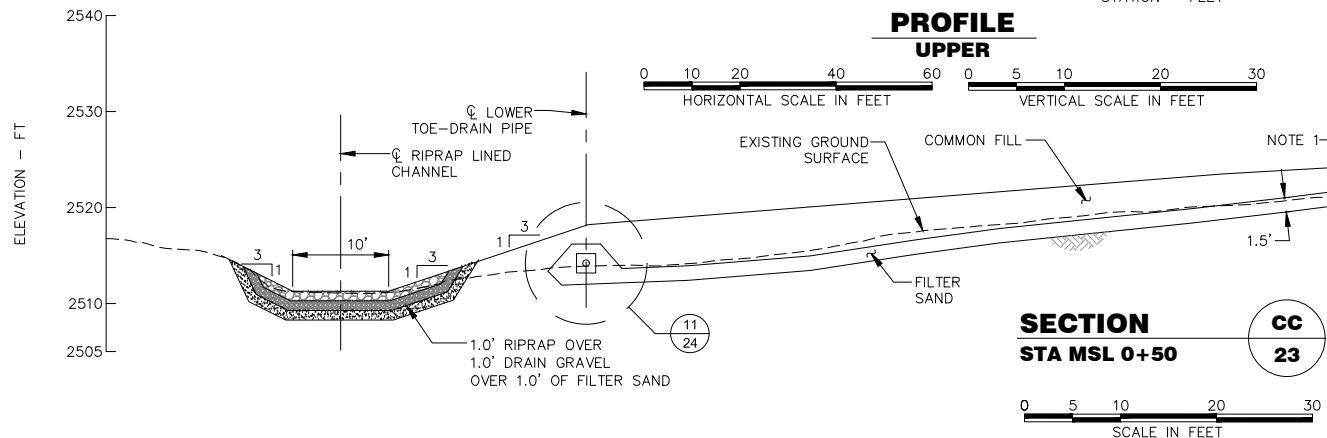


**SECTION
GROIN DRAINAGE CHANNEL**

**EE
23**

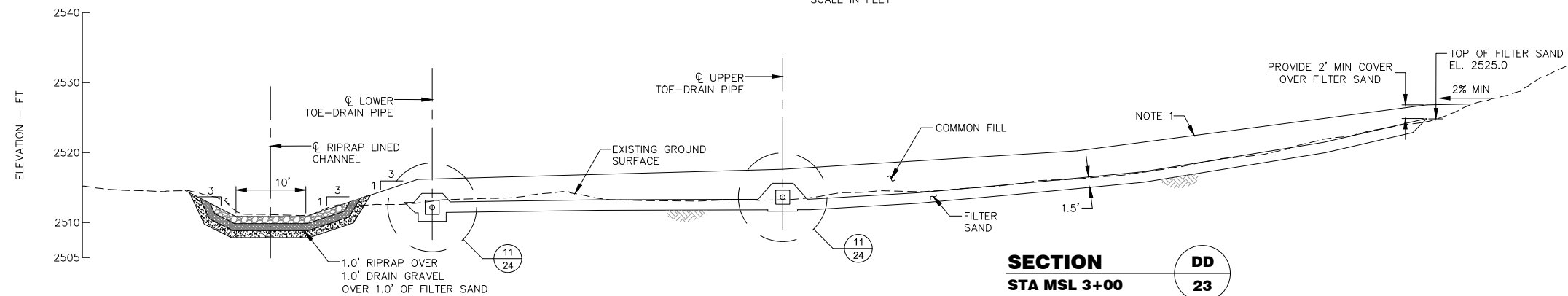


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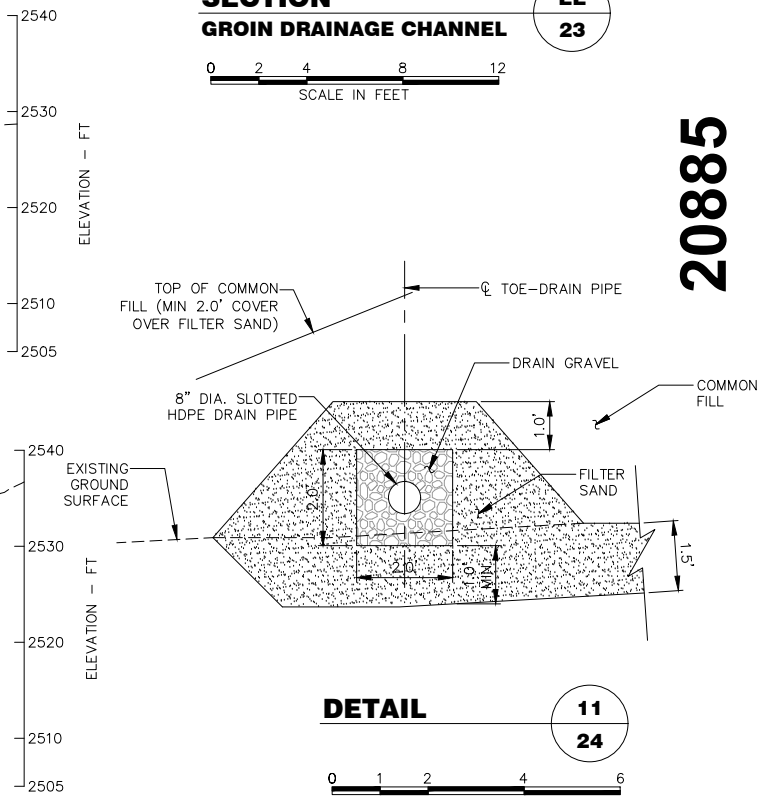
**SECTION
STA MSL 0+50**

**CC
23**



**SECTION
STA MSL 3+00**

**DD
23**



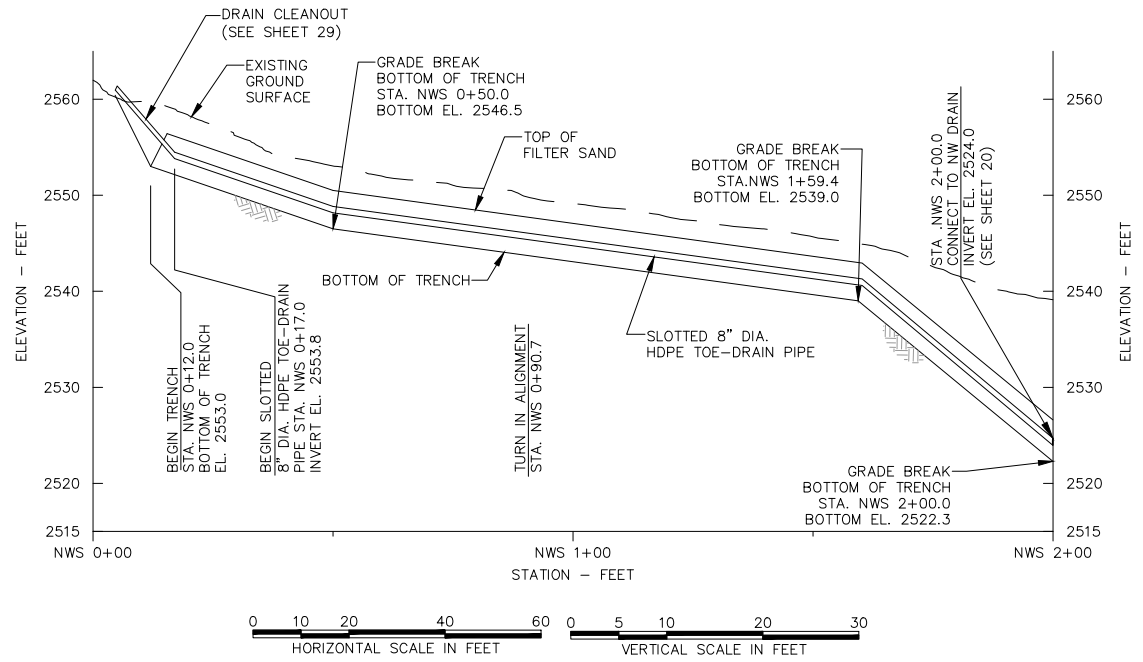
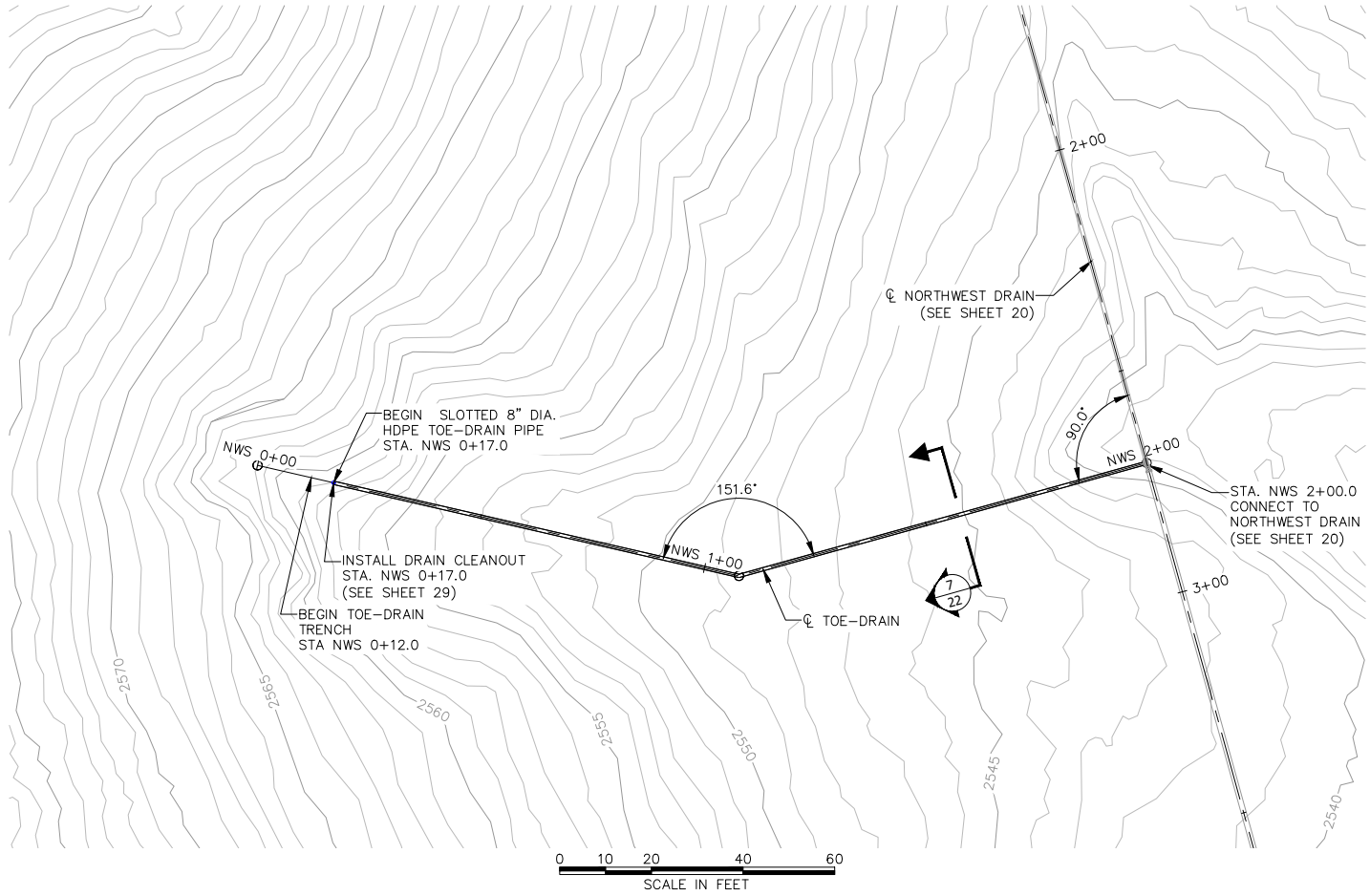
**DETAIL
11
24**

**11
24**



NOTE:
1. MINIMUM FILL LIMIT. MAINTAIN MINIMUM 2 FEET OF COVER OVER THE FILTER SAND AND SLOPE TO DRAIN. MAXIMUM SLOPE 5H:1V.

P:\2014 - ELWOOD DAM SEEPAGE AND ALTERNATIVES STUDY\CAD\Sheet Files\North Spur A.DWG 7/18/2022



NOTE:
1. SURVEY INFORMATION FOR LAYOUT IS PROVIDED ON SHEET 29.



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NO.	DATE	ISSUE/REVISION	DES	DRN	CHK	APP



RJH PROJECT 20114

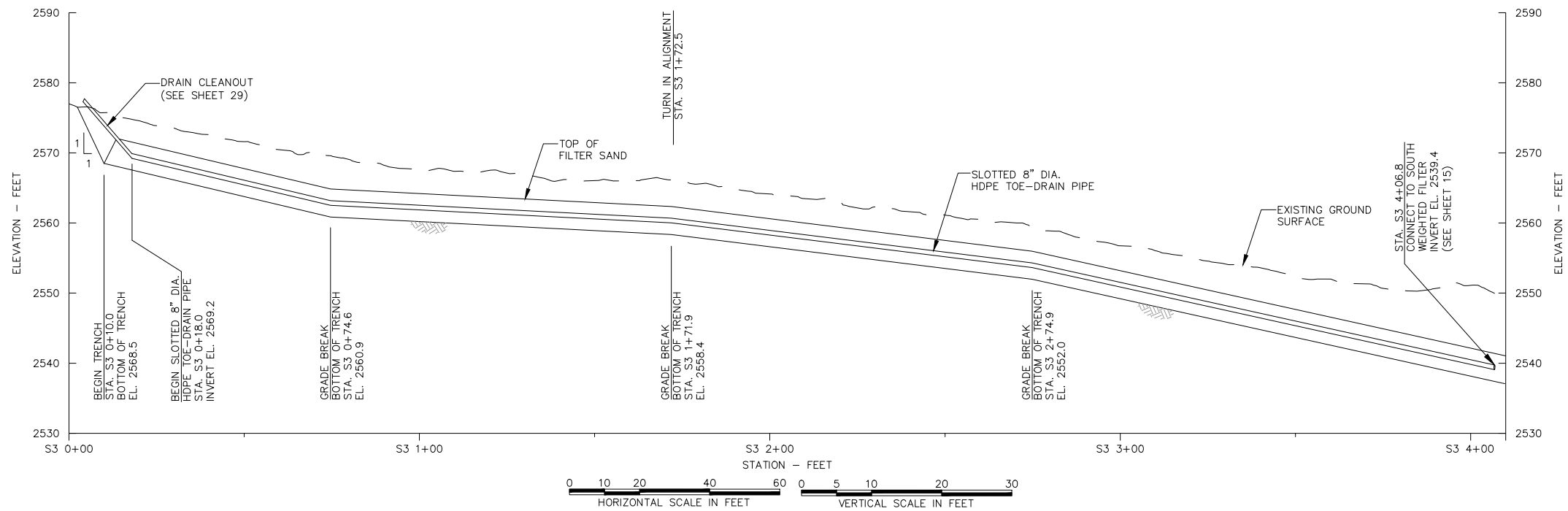
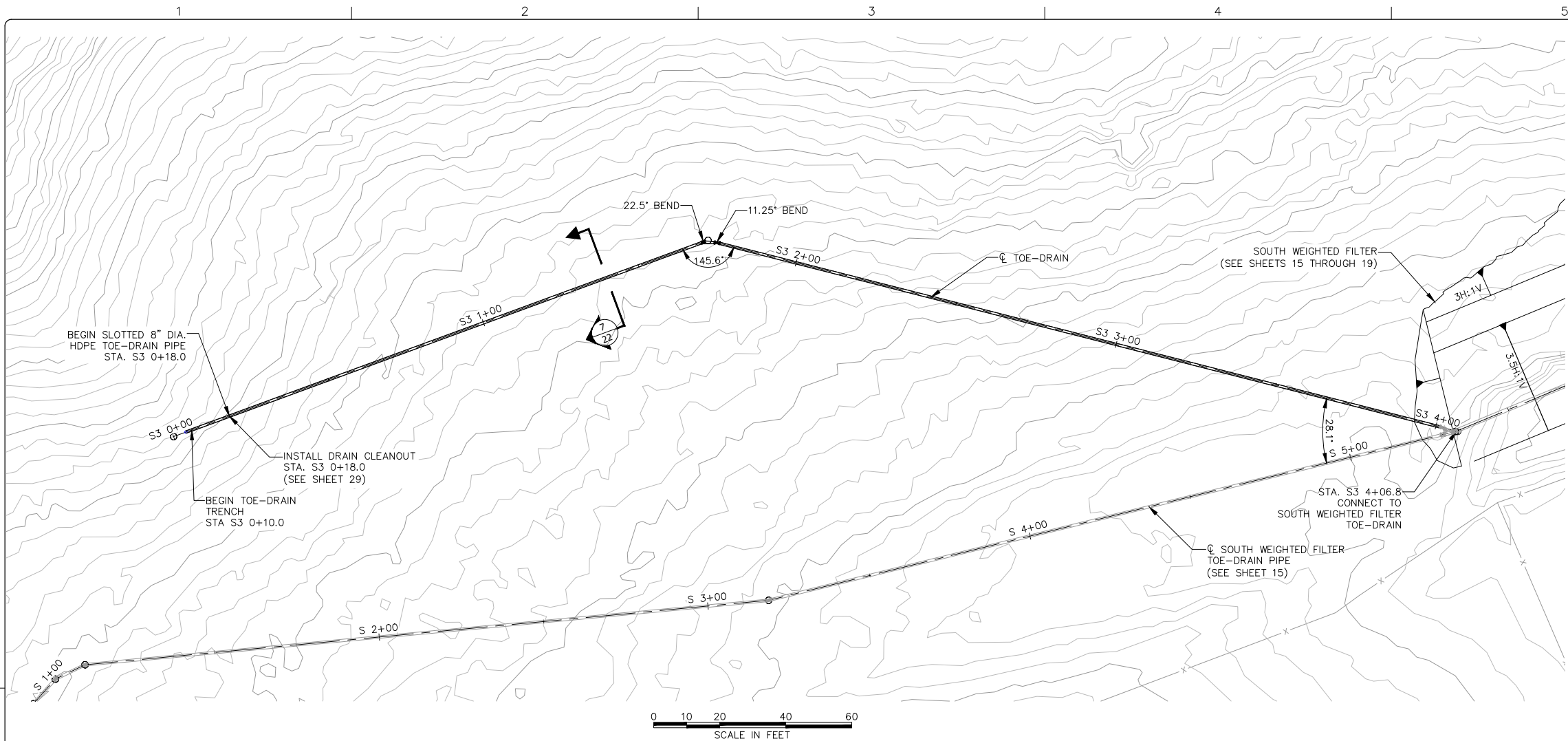
ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

MAIN DAM - NORTHWEST
SPUR

DWG. NO.
25
SHEET NO.
25 of 30

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NOTE:
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NO.	DATE	ISSUE/REVISION	DES	DRN	CHK	APP



RJH PROJECT 20114

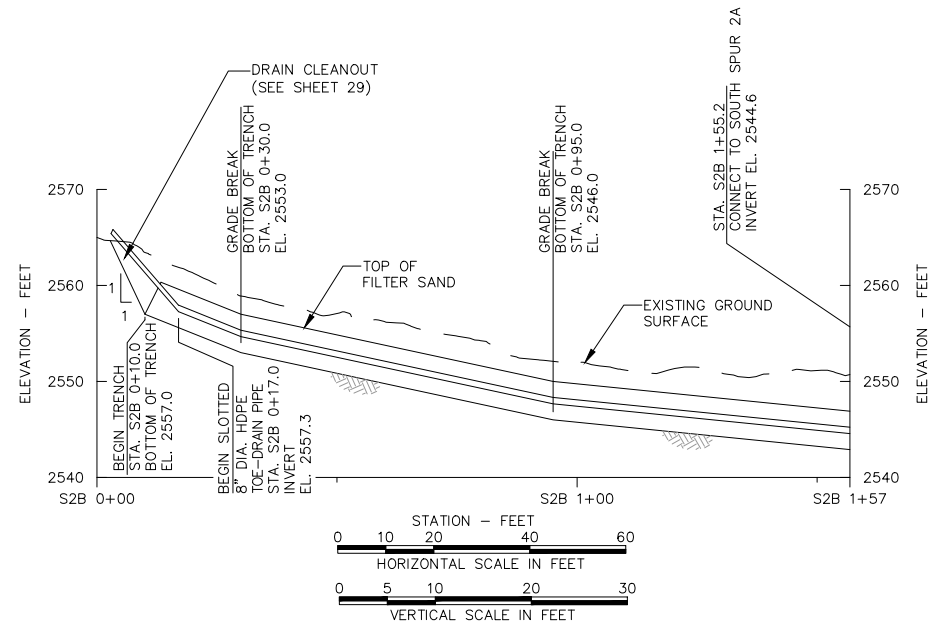
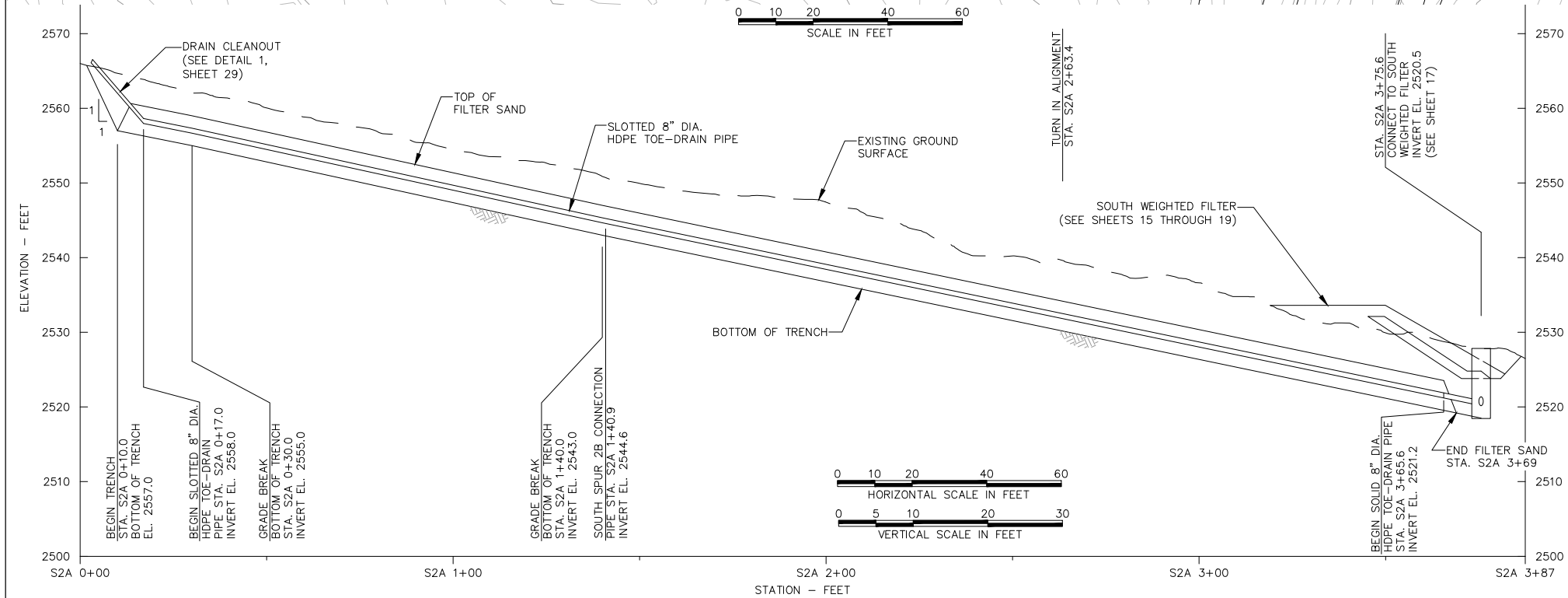
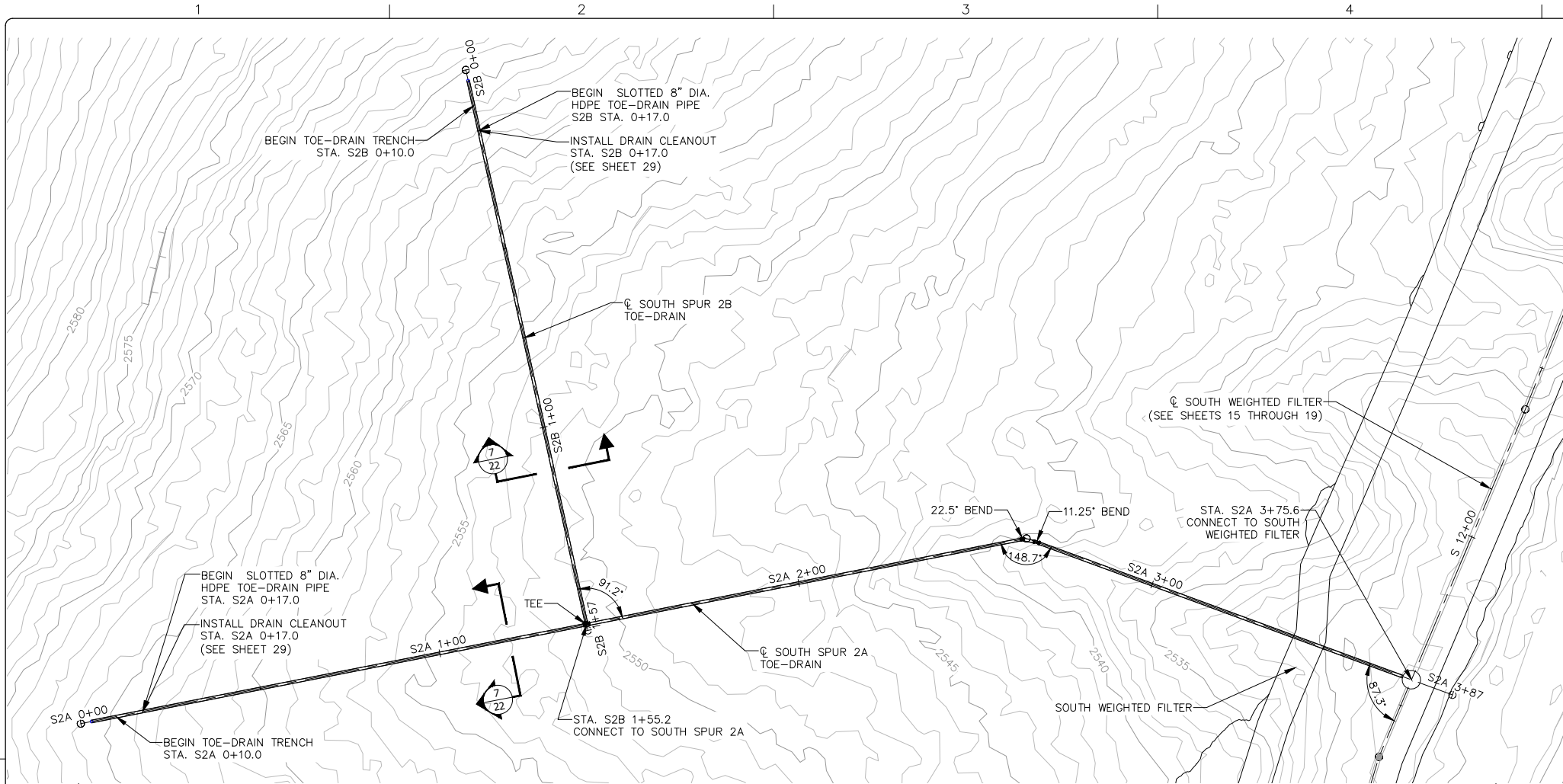
ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

MAIN DAM - SOUTH SPUR 3

DWG. NO.
26
SHEET NO.
26 of 30

20885

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1. SURVEY INFORMATION FOR LAYOUT IS PROVIDED ON SHEET 29.



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	07/2022	ISSUED FOR BID	EJS	KLH	EJS
NO.	DATE	ISSUE/REVISION	DES	DRN	CHK
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RJH PROJECT 20114

ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

MAIN DAM - SOUTH SPUR
2A AND 2B

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	07/2022	ISSUED FOR BID	EJS	KLH	EJS	ATM
NO.	DATE	ISSUE/REVISION	DES	DRN	CHK	APP

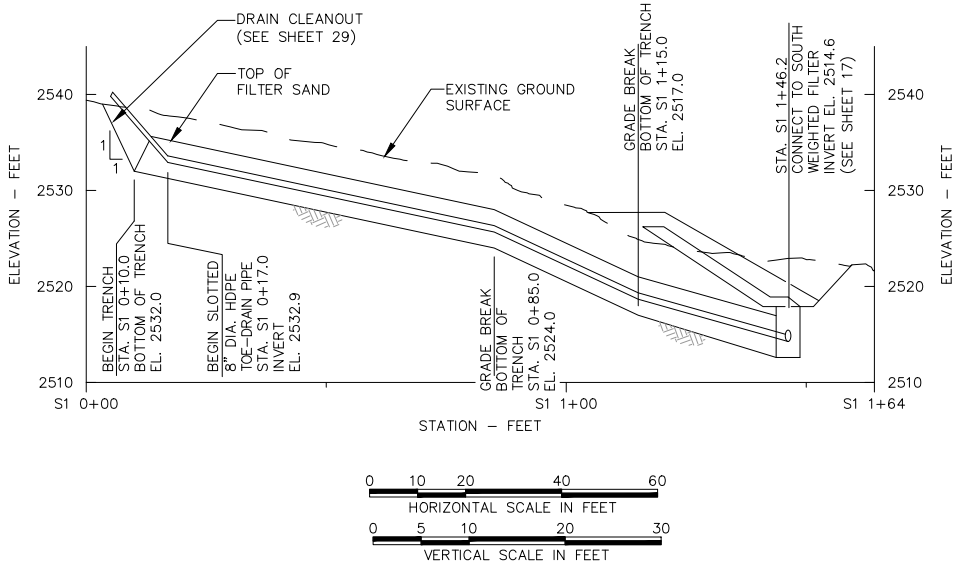
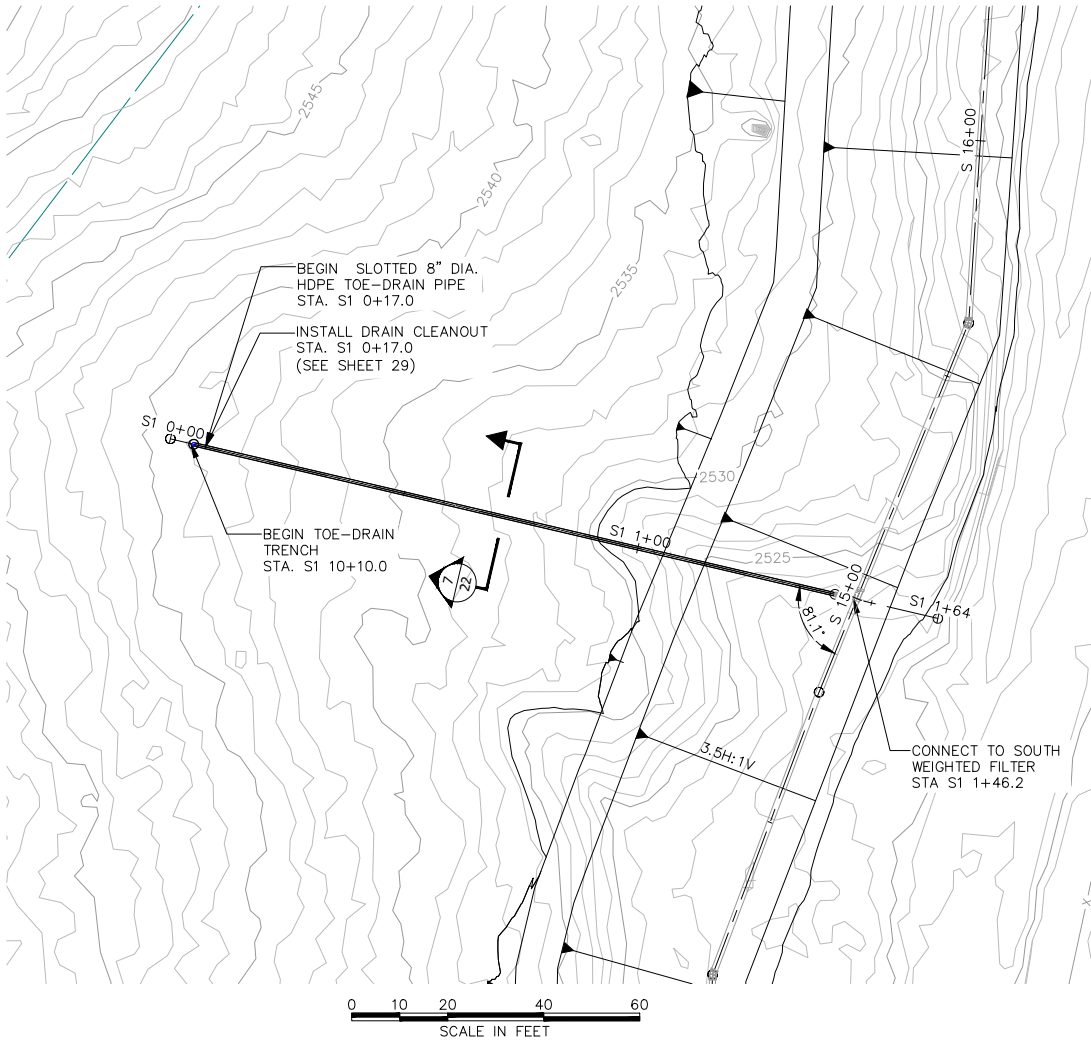


RJH PROJECT 20114

ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

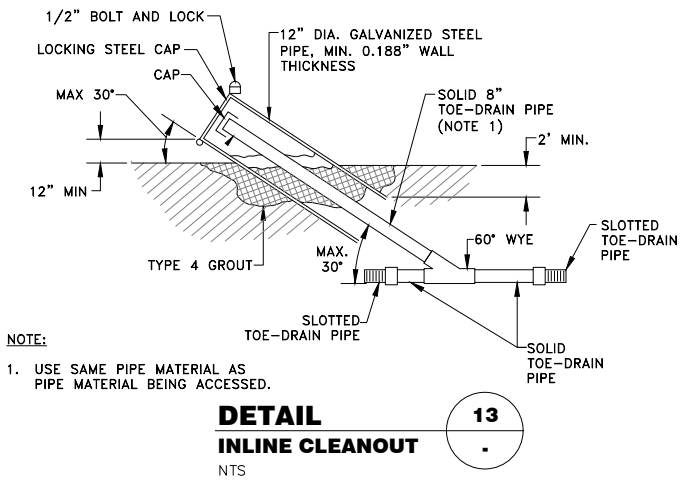
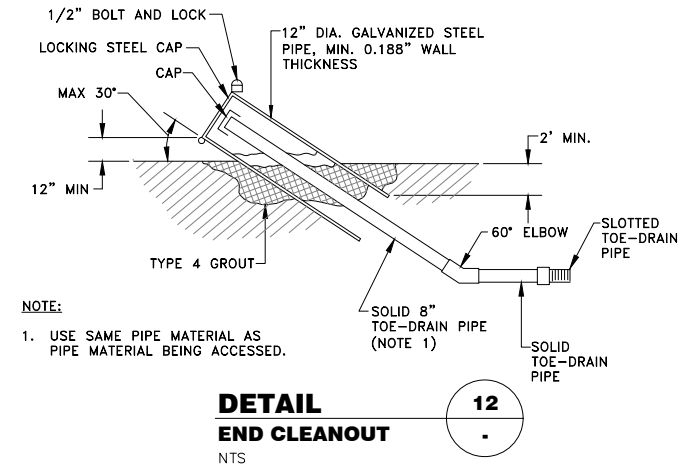
MAIN DAM - SOUTH SPUR 1

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NOTE:
1. SURVEY INFORMATION FOR LAYOUT IS PROVIDED ON SHEET 29.

P:\2014 - ELWOOD DAM SEEPAGE AND ALTERNATIVES STUDY\CAD\SHEET FILES\MAIN DAM - STANDARD DETAILS.DWG 7/18/2022



NORTHWEST WEIGHTED FILTER					
Number	START STATION	START NORTHING	START EASTING	Line/Chord Direction	LENGTH
L100	0+00.0	293816.0	1680849.4	S39° 19' 09.8"E	400.0
L101	4+00.0	293506.5	1681102.8	S50° 34' 09.8"E	100.0
L102	5+00.0	293443.0	1681180.1	S50° 34' 09.8"E	77.2
L103	5+77.2	293394.0	1681239.7	S39° 19' 09.8"E	87.8
L104	6+65.0	293326.0	1681295.3	S21° 35' 46.1"E	95.2
L105	7+60.2	293237.5	1681330.4	S10° 20' 46.1"E	13.0
L106	7+73.2	293224.7	1681332.7	S0° 54' 14.9"W	20.0
L107	7+93.2	293204.7	1681332.4	S12° 09' 13.9"W	20.0
L108	8+13.2	293185.2	1681328.2	S0° 54' 07.3"W	136.1
L109	9+49.4	293049.0	1681326.0	S10° 20' 46.1"E	30.4
L110	9+79.8	293019.1	1681331.5	S21° 35' 46.1"E	50.1
L111	10+29.9	292972.5	1681349.9	S32° 51' 43.5"E	121.4

NORTH WEIGHTED FILTER					
Number	START STATION	START NORTHING	START EASTING	Line/Chord Direction	LENGTH
L52	0+00.0	294273.5	1680394.5	S30° 43' 52.6"E	33.7
L51	0+33.7	294244.6	1680411.7	S53° 13' 52.6"E	3.0
L50	0+36.7	294242.8	1680414.0	S75° 40' 28.4"E	40.0
L151	0+76.7	294232.9	1680452.8	S64° 25' 28.4"E	40.0
L49	1+16.7	294215.6	1680488.9	S53° 10' 28.4"E	30.0
L48	1+46.7	294197.7	1680512.9	S38° 23' 22.1"E	74.9
L47	2+21.6	294138.9	1680559.4	S49° 38' 22.1"E	10.0
L46	2+31.6	294132.5	1680567.0	S60° 53' 22.1"E	146.2
L41	3+77.8	294061.3	1680694.8	S83° 23' 22.1"E	20.0
L42	3+97.8	294059.0	1680714.7	S60° 53' 22.1"E	60.0
L43	4+57.8	294029.8	1680767.1	S83° 23' 22.1"E	9.9
L44	4+67.7	294028.7	1680776.9	N74° 06' 37.9"E	9.9
L45	4+77.7	294031.4	1680786.5	N51° 36' 37.9"E	60.0
L53	5+37.7	294068.7	1680833.5	N74° 06' 37.9"E	10.0
L54	5+47.7	294071.4	1680843.1	N85° 21' 37.9"E	5.0
L55	5+52.7	294071.8	1680848.1	S83° 23' 22.1"E	30.0
L56	5+82.7	294068.3	1680877.9	S72° 08' 08.2"E	55.0
L57	6+37.7	294051.5	1680930.3	S49° 08' 22.1"E	100.0
L58	7+37.7	293986.1	1681005.9	S37° 53' 22.1"E	271.5
L59	10+09.1	293771.8	1681172.6	S15° 23' 22.1"E	462.4

NORTHWEST WEIGHTED FILTER UPPER SAND LIMIT			
DESCRIPTION	NORTHING	EASTING	ELEVATION
CTL50	293475.72	1681081.11	2533.13
CTL51	293366.35	1681214.11	2536.74
CTL52	293307.15	1681261.73	2535.49
CTL53	293224.29	1681294.39	2534.00
CTL54	293191.94	1681290.61	2533.20
CTL55	293143.34	1681289.17	2532.57
CTL56	293120.86	1681285.19	2531.01
CTL57	293042.21	1681292.70	2528.77
CTL58	293014.90	1681289.17	2526.06

SOUTH WEIGHTED FILTER					
Number	START STATION	START NORTHING	START EASTING	Line/Chord Direction	LENGTH
L128	0+00.0	290932.0	1682204.8	N43° 42' 09.4"W	90.5
L127	0+90.5	290997.4	1682142.3	N22° 23' 19.9"W	10.0
L126	1+00.5	291006.7	1682138.5	N0° 06' 40.1"E	10.0
L125	1+10.5	291016.7	1682138.5	N20° 33' 48.4"E	208.0
L124	3+18.5	291211.4	1682211.6	N12° 08' 23.6"E	214.3
L123	5+32.7	291420.9	1682256.6	N3° 29' 04.3"E	245.7
L122	7+78.4	291666.1	1682271.6	N3° 23' 16.5"W	49.9
L121	8+28.3	291715.9	1682268.6	N9° 43' 56.7"W	141.0
L120	9+69.3	291854.9	1682244.8	N22° 48' 03.4"W	165.4
L119	11+34.7	292007.4	1682180.7	N16° 43' 51.0"W	103.1
L118	12+37.8	292106.1	1682151.0	N17° 40' 56.9"W	109.0
L117	13+46.8	292209.9	1682117.9	N37° 10' 58.6"W	69.3
L116	14+16.1	292265.1	1682076.0	N18° 55' 05.0"W	62.9
L115	14+79.0	292324.6	1682055.6	N17° 30' 07.4"W	83.0
L114	15+62.0	292403.8	1682030.7	N35° 50' 29.7"W	96.2
L113	16+58.2	292481.8	1681974.3	N17° 14' 56.4"W	354.8
L112	20+13.0	292820.7	1681869.1	N2° 52' 19.7"E	80.3

MAX SECTION LOWER					
Number	START STATION	START NORTHING	START EASTING	Line/Chord Direction	LENGTH
L129	0+00.0	292850.9	1681409.8	N87° 51' 56.3"E	451.6
L130	4+51.6	292867.7	1681861.0	N43° 42' 17.1"E	8.8
L131	4+60.4	292874.1	1681867.1	N4° 20' 26.3"E	2.4

MAX SECTION UPPER					
Number	START STATION	START NORTHING	START EASTING	Line/Chord Direction	LENGTH
L132	0+00.0	292743.2	1681546.9	N68° 32' 50.7"E	335.8

RIPRAP LINED CHANNEL					
Number	START STATION	START NORTHING	START EASTING	Line/Chord Direction	LENGTH
L152	0+00.0	292878.5	1681457.1	S88° 49' 31.0"E	110.7
L153	1+10.7	292876.2	1681567.8	N82° 26' 42.1"E	29.7
L154	1+40.4	292880.1	1681597.2	N88° 10' 44.5"E	50.7
L155	1+91.0	292881.7	1681647.9	N89° 02' 44.6"E	57.2
L156	2+48.3	292882.7	1681705.1	N88° 06' 38.9"E	81.9
L157	3+30.2	292885.4	1681787.0	N86° 53' 06.1"E	89.8

PUMP STATION WEIGHTED FILTER					
Number	START STATION	START NORTHING	START EASTING	Line/Chord Direction	LENGTH
L143	0+00.0	288806.2	1683782.2	S60° 46' 49.0"W	57.1
L142	0+57.1	288778.3	1683732.4	S84° 31' 43.2"W	20.2
L141	0+77.3	288776.4	1683712.3	N88° 06' 47.2"W	6.9
L140	0+84.2	288776.6	1683705.4	N71° 00' 18.6"W	16.3
L139	1+00.4	288781.9	1683690.0	N63° 07' 13.5"W	18.7
L138	1+19.1	288790.4	1683673.4	N66° 55' 23.5"W	14.3
L137	1+33.4	288796.0	1683660.2	S72° 32' 49.5"W	11.8
L136	1+45.2	288792.4	1683648.9	S64° 48' 54.1"W	11.4
L135	1+56.6	288787.6	1683638.6	S54° 04' 51.8"W	70.7
L134	2+27.4	288746.1	1683581.3	N32° 55' 32.4"W	38.7
L133	2+66.1	288778.6	1683560.3	N51° 21' 12.9"E	29.1

NORTHWEST SPUR					
Number	START STATION	START NORTHING	START EASTING	Line/Chord Direction	LENGTH
L158	0+00.0	293527.7	1680843.8	N79° 07' 18.5"E	107.7
L159	1+07.7	293548.0	1680949.6	N50° 40' 50.2"E	92.2

SOUTH SPUR 1					
Number	START STATION	START NORTHING	START EASTING	Line/Chord Direction	LENGTH
L145	0+00.0	292279.3	1681917.8	N63° 36' 54.1"E	164.2

SOUTH SPUR 2A					
Number	START STATION	START NORTHING	START EASTING	Line/Chord Direction	LENGTH
L146	0+00.0	291788.4	1681901.3	N39° 21' 36.0"E	263.4
L147	2+63.4	291992.1	1682068.4	N70° 36' 49.2"E	124.0

SOUTH SPUR 2B					
Number	START STATION	START NORTHING	START EASTING	Line/Chord Direction	LENGTH
L148	0+00.0	291993.2	1681868.6	S51° 50' 36.6"E	156.8

SOUTH SPUR 3					
Number	START STATION	START NORTHING	START EASTING	Line/Chord Direction	LENGTH
L149	0+00.0	291071.0	1682088.2	N5° 47' 20.3"E	172.4
L150	1+72.4	291242.6	1682105.6	N40° 14' 14.4"E	234.3



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NO.	DATE	ISSUE/REVISION	DES	DRN	CHK	APP	



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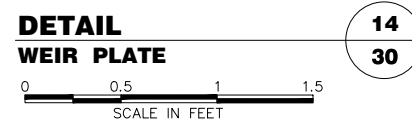
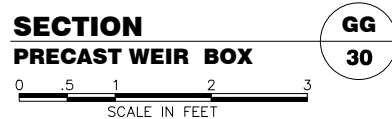
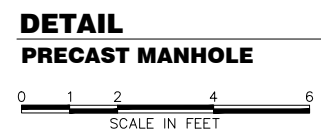
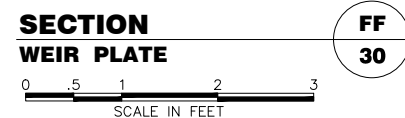
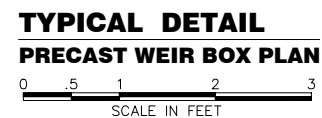
ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

MAIN DAM -
STANDARD DETAILS

DWG. NO.
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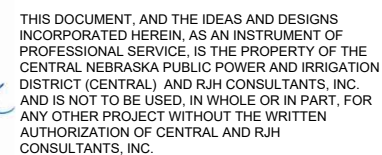
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H (FT)	Q (gpm)
0.1	3.70
0.2	20.65
0.3	56.43
0.4	115.18
0.5	200.32
0.6	314.85
0.7	461.45
0.8	642.61
0.9	860.60
1.0	1117.59
1.1	1415.59
1.2	1756.52

H = WATER HEAD, FEET, ABOVE INVERT OF
V-NOTCH WEIR PLATE

1. STAFF GAUGE SHALL BE ALIGNED VERTICALLY WITH BOTTOM OF V-NOTCH TO WITHIN ± 0.1 INCHES. MATCH ZERO READING ON STAFF GAGE WITH BOTTOM OF V-NOTCH.
2. V-NOTCH WEIR SHALL BE $90^\circ \pm 0.1'$. ORIENT WEIR SO BEVELED EDGE IS ON DOWNSTREAM SIDE.
3. USE TYPE 1 GROUT TO FORM SMOOTH TRANSITION OF INVERTS WITH NO STANDING WATER.



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NO.	DATE	ISSUE/REVISION	DES	DRN	CHK	APP



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ELWOOD DAM SEEPAGE
MITIGATION PROJECT
GOSPER COUNTY, NEBRASKA

PRECAST WEIR BOX - SECTIONS AND DETAILS

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