

DUCKS UNLIMITED

ESTIMATED QUANTITIES

MOBILIZATION	1 L.S.
SITE PREPARATION	1 L.S.
TREE REMOVAL	11 AC.
CULVERT REMOVAL	4 EA.
EXCAVATION*	
AREA 1	1,540 C.Y.-P**
AREA 2	11,420 C.Y.-P**
AREA 3	7,510 C.Y.-P**
AREA 4	2,240 C.Y.-P**
AREA 5	4,860 C.Y.-P**
TOTAL	27,570 C.Y.-P**
EMBANKMENTS	
EMBANKMENT NORTH	520 C.Y.-P**
EMBANKMENT SOUTH	1,430 C.Y.-P**
EMBANKMENT WEST	790 C.Y.-P**
LEVEE RESHAPING	580 C.Y.-P**
FLOW-OVER LEVEE NORTH	4,820 C.Y.-P**
FLOW-OVER LEVEE SOUTH	4,730 C.Y.-P**
TOTAL	12,870 C.Y.-P**
UNCOMPACTED FILL	
TERRACE NORTH	7,810 C.Y.-P**
TERRACE SOUTH	9,560 C.Y.-P**
DITCH FILL WEST	240 C.Y.-P**
DITCH FILL CENTER	1,230 C.Y.-P**
DITCH FILL EAST	1,130 C.Y.-P**
SPOIL EXCAVATION AREA 1	1,300 C.Y.-P**
SPOIL EXCAVATION AREA 2	3,610 C.Y.-P**
TOTAL	24,880 C.Y.-P**
CONSTRUCTED TOPOGRAPHY	
MAIN CHANNEL	5,218 L.F.-A***
CROSS CHANNEL	408 L.F.-A***
TOTAL	5,626 L.F.-A***
WATER	1 M-GAL***
36"Ø ALUMINUM CMP	140 L.F.
24"Ø ALUMINUM CMP	75 L.F.
36"Ø ALUMINUM FLAP-GATE	2 EA.
24"Ø ALUMINUM FLAP-GATE	1 EA.
DU CLASS III RIPRAP	200 C.Y.-P**

\*QUANTITIES ARE FOR REFERENCE ONLY, SPOIL OF MATERIAL NOT USED FOR FILL SHALL BE CONSIDERED INCIDENTAL TO "SPOIL BID ITEMS"  
\*\*THE UNIT (CY-P) CUBIC YARDS-PLAN MEANS PAYMENT WILL BE BASED ON THE PLAN QUANTITY LISTED ABOVE.  
\*\*\*PAYMENT WILL BE BASED ON ACTUAL QUANTITY USED OR INSTALLED.

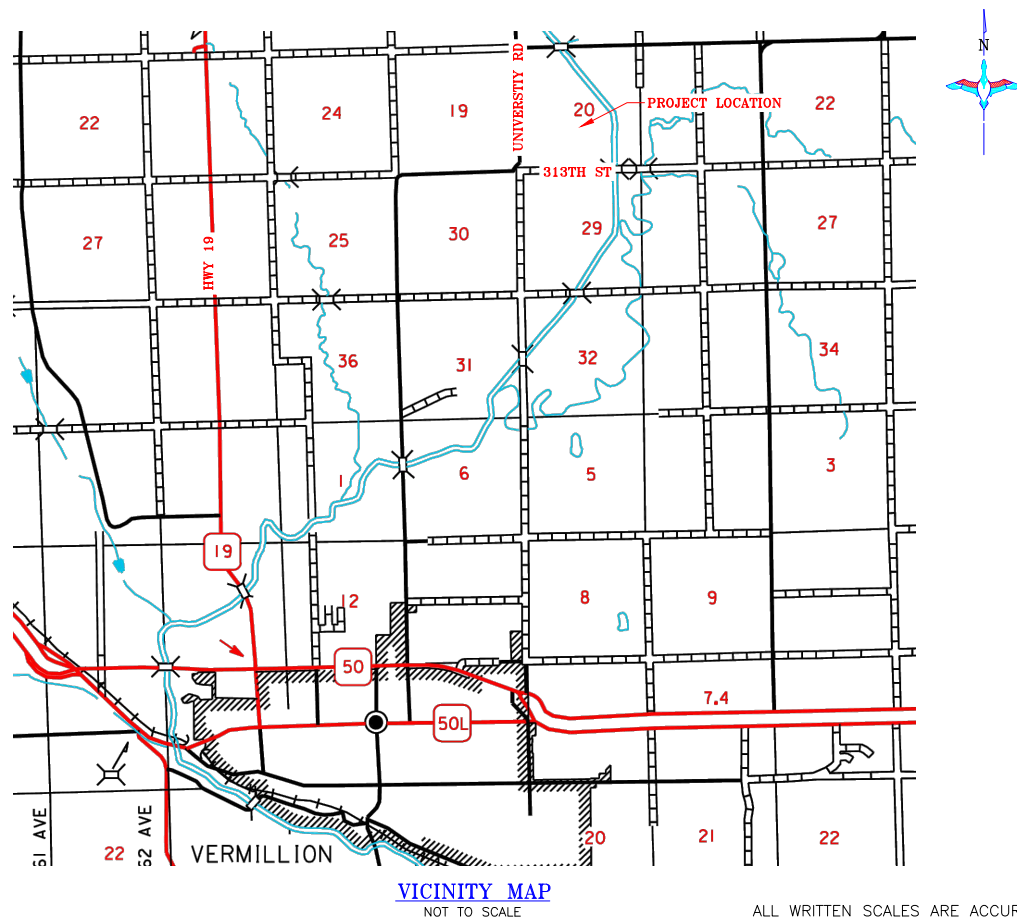
UTILITIES NOTE: BEFORE THE START OF CONSTRUCTION, THE OWNER OF ANY UTILITIES INVOLVED MUST BE NOTIFIED. THE EXCAVATOR/CONTRACTOR IS RESPONSIBLE FOR GIVING THIS NOTICE BY CALLING "DIGGER'S HOTLINE" AT (800) 781-7474 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION.

DUCKS UNLIMITED

PROJECT

SDILF-VERMILLION RIVER

LOCATED IN SECTION 20,  
TOWNSHIP 93N, RANGE 51W, 5TH P.M.  
CLAY COUNTY, SOUTH DAKOTA



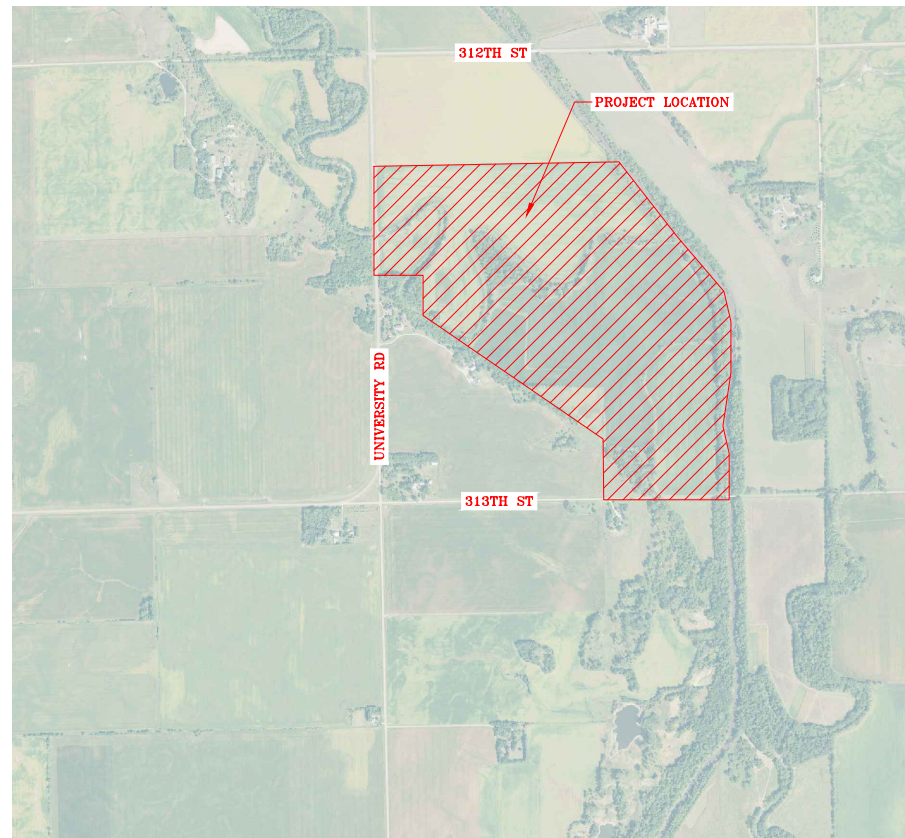
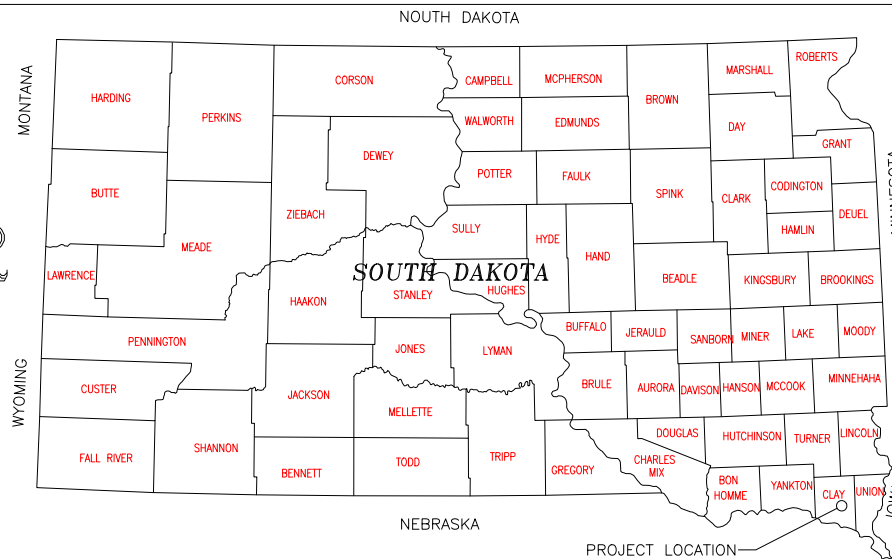
VICINITY MAP  
NOT TO SCALE

ALL WRITTEN SCALES ARE ACCURATE ON 24x36 INCH SHEETS

101	GENERAL CONDITIONS
102	SUPPLEMENTAL CONDITIONS
201	MOBILIZATION
202	SITE PREPARATION
203	EXCAVATION
204	EMBANKMENT CONSTRUCTION
205	WATER
206	CONSTRUCTED TOPOGRAPHY
302	STRUCTURE AND CULVERT APPURTENANCES
303	CULVERT AND PIPE INSTALLATION
305	RIPRAP, REVETMENT & AGGREGATE PLACEMENT
311	REMOVAL OF EXISTING CULVERTS AND STRUCTURES
SP405	UNCOMPACTED FILL

DU SENIOR REGIONAL ENGINEER:  
MITCH MESSMER, P.E.  
2121 N WEBB RD., SUITE 309  
GRAND ISLAND, NE 68803  
(308) 383-3086

DU REGIONAL ENGINEER:  
CASEY CAMPBELL  
2121 N WEBB RD., SUITE 309  
GRAND ISLAND, NE 68803  
(308) 385-8832




LOCATION MAP  
NOT TO SCALE

PLAN INDEX

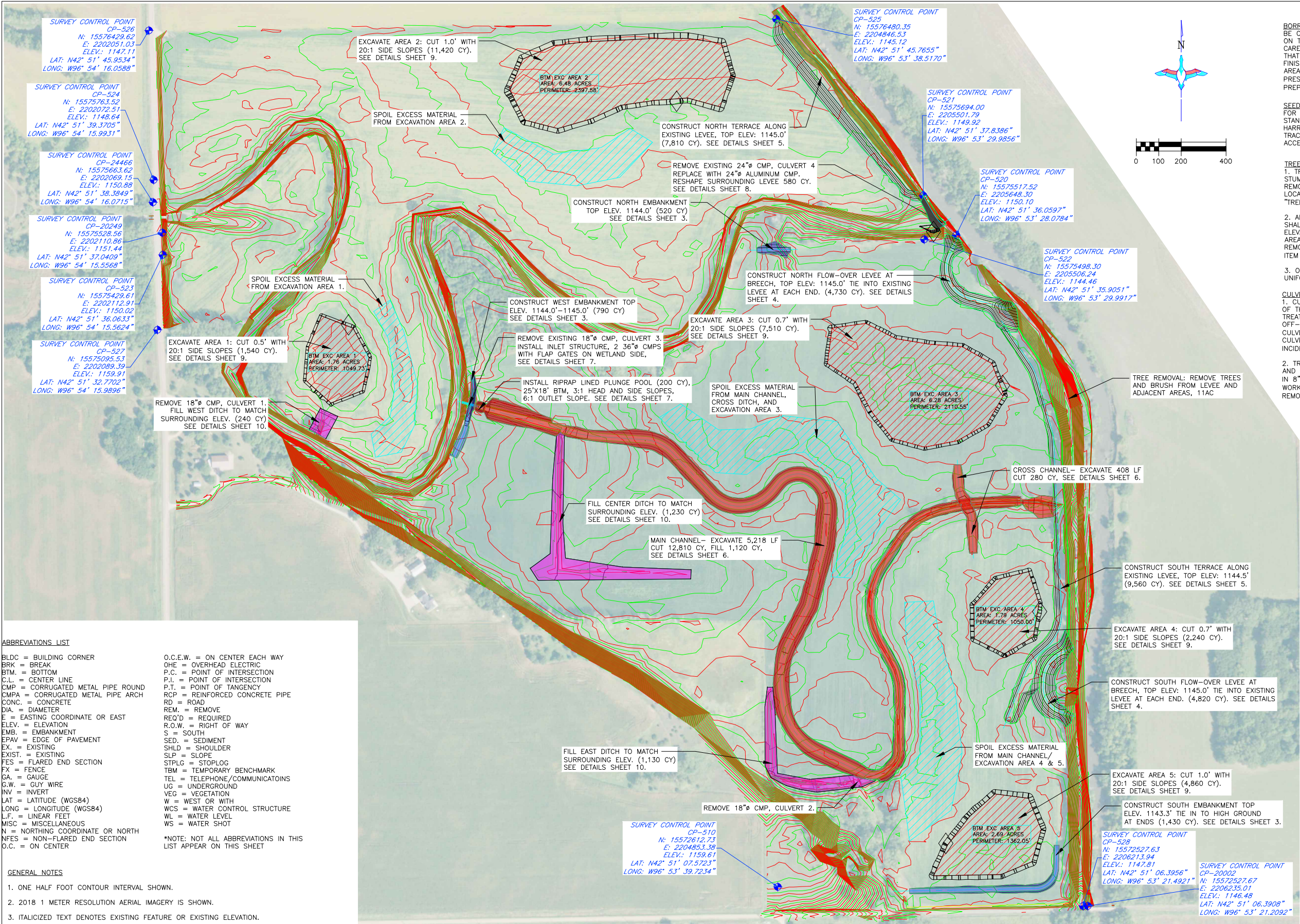
1	LOCATION & VICINITY MAPS
2	OVERALL PLAN
3	EMBANKMENTS
4	FLOW-OVER LEVEES
5	TERRACES

PLAN INDEX CONT.

6	CHANNEL EXCAVATIONS
7	INLET STRUCTURE
8	CULVERT 4/LEVEE RESHAPING
9	EXCAVATION AREAS
10	DITCH FILLS

 GREAT PLAINS REGIONAL OFFICE	PROJECT NO. SD-560-2 SDILF-VERMILLION RIVER	DESIGNED BY: CDC
	DATE: 6/18/2021	SHEET NO. 1 OF 10
		SURVEYED BY: STOCK
		CHECKED BY: MMM
		APPROVED BY:





ABBREVIATIONS LIST

BLDC = BUILDING CORNER  
BRK = BREAK  
BTM. = BOTTOM  
C.L. = CENTER LINE  
CMP = CORRUGATED METAL PIPE ROUND  
CMPA = CORRUGATED METAL PIPE ARCH  
CONC. = CONCRETE  
DIA. = DIAMETER  
E = EASTING COORDINATE OR EAST  
ELEV. = ELEVATION  
EMB. = EMBANKMENT  
EPAV = EDGE OF PAVEMENT  
EX. = EXISTING  
EXIST. = EXISTING  
FES = FLARED END SECTION  
FX = FENCE  
GA. = GAUGE  
G.W. = GUY WIRE  
INV = INVERT  
LAT = LATITUDE (WGS84)  
LONG = LONGITUDE (WGS84)  
L.F. = LINEAR FEET  
MISC. = MISCELLANEOUS  
N = NORTHING COORDINATE OR NORTH  
N.FS = NON-FLARED END SECTION  
O.C. = ON CENTER

O.C.E.W. = ON CENTER EACH WAY  
OHE = OVERHEAD ELECTRIC  
P.C. = POINT OF INTERSECTION  
P.I. = POINT OF INTERSECTION  
P.T. = POINT OF TANGENCY  
RCP = REINFORCED CONCRETE PIPE  
RD = ROAD  
REM. = REMOVE  
REQ'D = REQUIRED  
R.O.W. = RIGHT OF WAY  
S = SOUTH  
SED. = SEDIMENT  
SHLD = SHOULDER  
SLP = SLOPE  
STPLG = STOPLOG  
TBM = TEMPORARY BENCHMARK  
TEL = TELEPHONE/COMMUNICATOINS  
UG = UNDERGROUND  
VEG = VEGETATION  
W = WEST OR WITH  
WCS = WATER CONTROL STRUCTURE  
WL = WATER LEVEL  
WS = WATER SHOT

\*NOTE: NOT ALL ABBREVIATIONS IN THIS LIST APPEAR ON THIS SHEET

GENERAL NOTES

- ONE HALF FOOT CONTOUR INTERVAL SHOWN.
- 2018 1 METER RESOLUTION AERIAL IMAGERY IS SHOWN.
- ITALICIZED TEXT DENOTES EXISTING FEATURE OR EXISTING ELEVATION.
- SPOT ELEVATIONS INDICATED BY  $\oplus$ -XXXX.X ARE RANDOMLY LOCATED AND ARE BASED ON SURFACE MODEL ELEVATIONS.

THIS MATERIAL, DATA AND INFORMATION IS THE PROPERTY OF DUCKS UNLIMITED, INC. IT MAY NOT BE USED OR REPRODUCED FOR ANY PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF AN AUTHORIZED AGENT OF DUCKS UNLIMITED, INC. DUCKS UNLIMITED, INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS MATERIAL, DATA AND INFORMATION, INCLUDING, BUT NOT LIMITED TO, THE ACCURACY OF THE MATERIAL, DATA AND INFORMATION OR ITS SUITABILITY FOR ANY PURPOSE. ALL USE OF THE MATERIAL, DATA AND INFORMATION IS AT THE USER'S SOLE RISK. BY USING ANY OF THIS MATERIAL, DATA AND INFORMATION, USER AGREES THAT DUCKS UNLIMITED, INC. IS NOT RESPONSIBLE FOR THEIR USE OF THE MATERIAL, DATA AND INFORMATION OR THE RESULTS THEREOF.

HORIZONTAL AND VERTICAL CONTROL OPUS SOLUTION-- HORIZONTAL COORDINATES ARE UTM ZONE 14 GRID COORDINATES IN US FEET [NAD83]. VERTICAL CONTROL WAS ESTABLISHED USING GEOID 12A CONUS IN THE NAVD83. THE SITE SURVEY WAS CALIBRATED USING THE MIDSTATES VRS NETWORK WITH A TRIMBLE R10 SURVEY GRADE GPS RECEIVER USING RTK METHODS. THE SURVEY CONTROL REPORT IS ON FILE AT THE DUCKS UNLIMITED ENGINEERING DEPARTMENT IN GRAND ISLAND, NEBRASKA.

OVERALL PLAN VIEW  
SCALE: 1" = 200'

BORROW AREA NOTE: SUITABLE MATERIAL FOR ALL FILLS SHALL BE OBTAINED FROM THE DESIGNATED EXCAVATION AREAS SHOWN ON THIS SHEET AS APPROVED BY THE DU FIELD ENGINEER. CARE SHALL BE TAKEN NOT TO OPEN UP ANY SAND LENSES THAT WILL INCREASE SEEPAGE FROM ANY EXCAVATION AREAS. FINISHED SLOPES SHALL BE 20:1 OR FLATTER. EXCAVATION AREAS SHALL BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THIS WORK WILL BE CONSIDERED INCIDENTAL TO "SITE PREPARATION."

SEEDING AND MULCHING NOTE: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN ADEQUATE SEED BED TO ALLOW SEEDING WITH STANDARD SEEDING EQUIPMENT. THIS WILL INCLUDE USE OF A HARROW OR OTHER MEANS IN ORDER TO LEAVE A SMOOTH, TRACK-FREE FINISH. BACK DRAGGING WITH A DOZER IS NOT AN ACCEPTABLE FINISH.

TREE REMOVAL NOTES:

1. TREE REMOVAL INCLUDES THE REMOVAL OF ROOT-BALLS, STUMPS, FALLEN TREES, AND BRUSH. ALL PRODUCTS OF TREE REMOVAL SHALL BE BURNED AND BURIED IN THE DESIGNATED LOCATIONS. THIS WORK IS CONSIDERED INCIDENTAL TO BID ITEM "TREE REMOVAL."

2. ALL HOLES RESULTING FROM THE REMOVAL OF ROOT-BALLS SHALL BE REFILLED TO MATCH THE SURROUNDING GROUND ELEVATION AND COMPACTED. ADDITIONAL SOIL FROM EXCAVATION AREAS MAY BE REQUIRED TO FILL HOLES LEFT FROM TREE REMOVAL. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO BID ITEM "TREE REMOVAL."

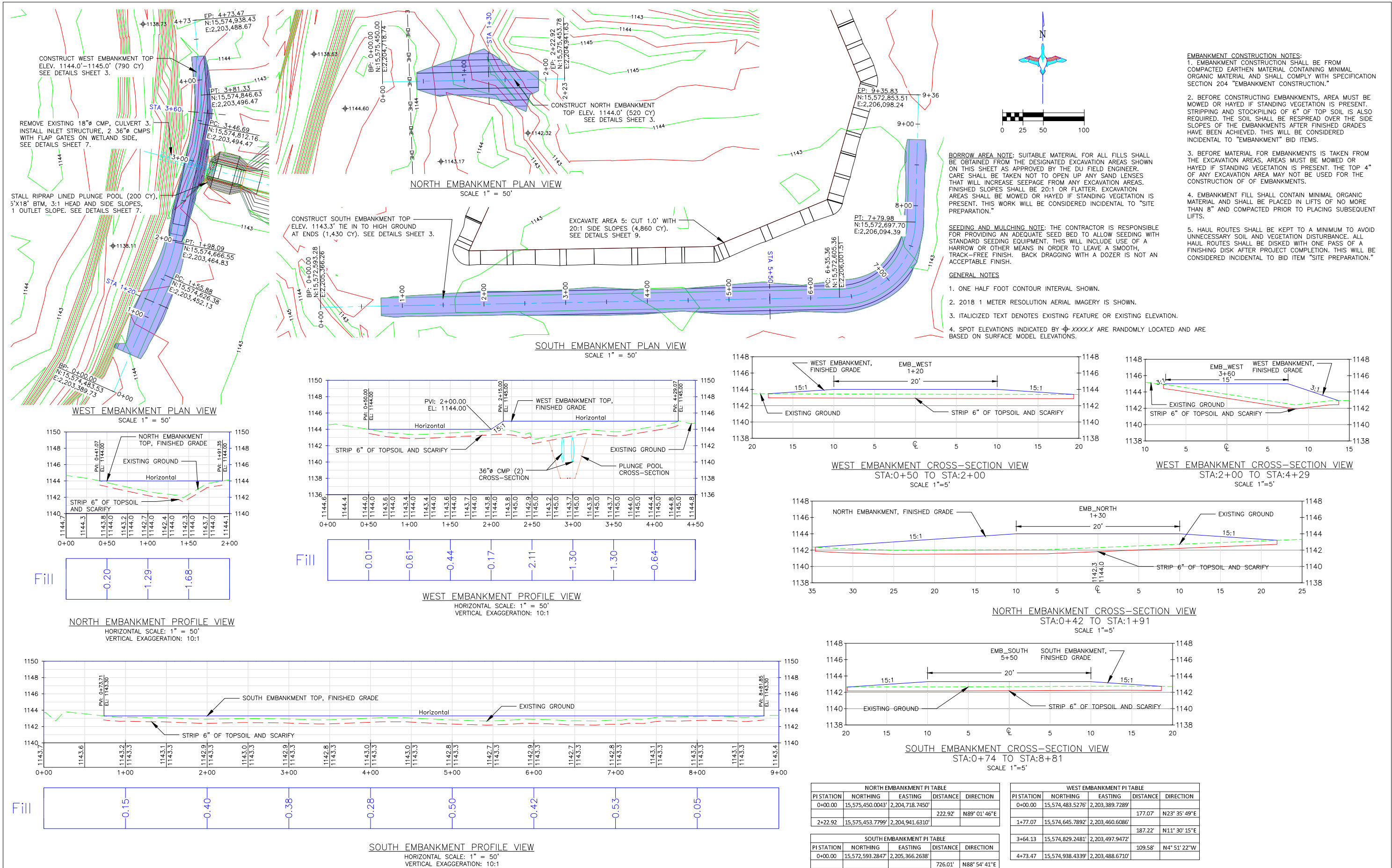
3. ONCE TREE REMOVAL IS COMPLETE, THE LEVEE SHALL HAVE A UNIFORM SURFACE FREE OF RUTS AND WOODY DEBRIS.

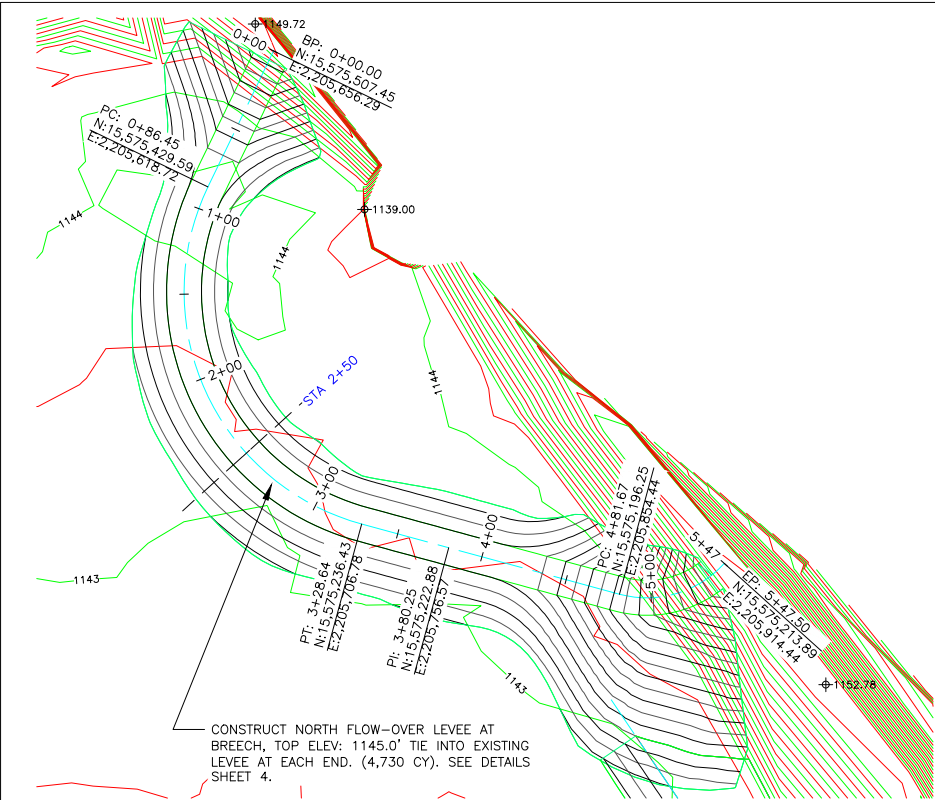
CULVERT REMOVAL NOTES:

1. CULVERTS REMOVED FROM THE SITE SHALL BECOME PROPERTY OF THE CONTRACTOR. THIS INCLUDES ANY CULVERT END TREATMENT SUCH AS FLAP-GATES AND FLARED END SECTIONS. OFF-SITE DISPOSAL OF THE MATERIALS GENERATED FROM CULVERT REMOVAL IS THE CONTRACTOR'S RESPONSIBILITY. CULVERT REMOVAL AND DISPOSAL SHALL BE CONSIDERED INCIDENTAL TO BID ITEM "CULVERT REMOVAL."

2. TRENCHES CREATED DURING THE REMOVAL OF CULVERTS 1 AND 2 SHALL BE FILLED WITH SOIL FROM THE EXCAVATION AREAS IN 8" LIFTS AND COMPACTED PRIOR TO SUBSEQUENT LIFTS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO BID ITEM "CULVERT REMOVAL."

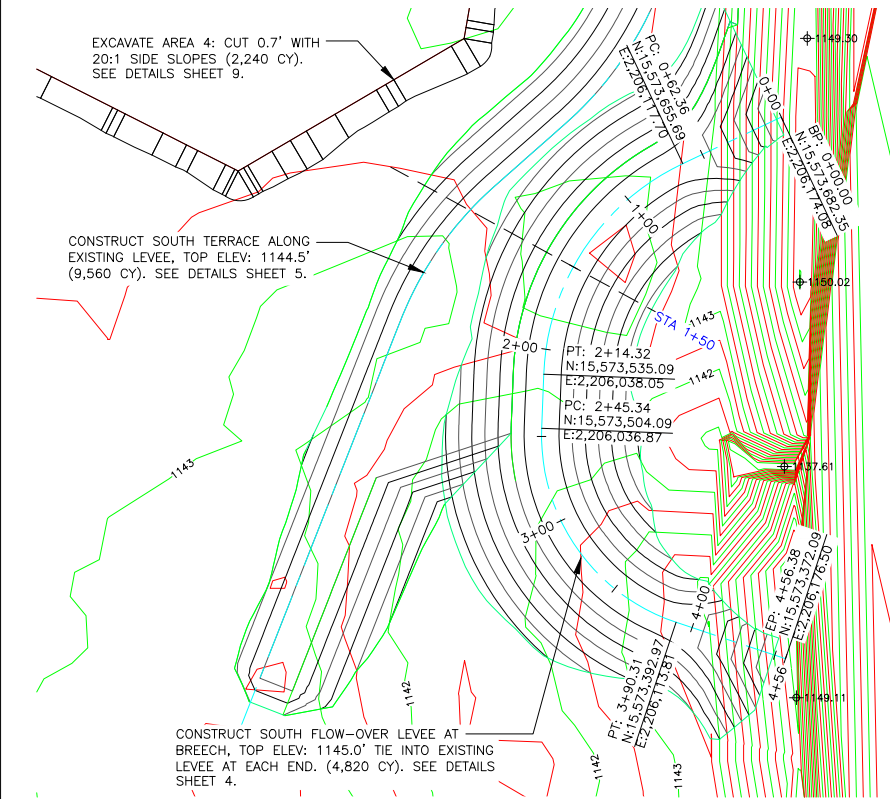






NORTH FLOW-OVER EMBANKMENT PLAN VIEW

SCALE 1" = 50'



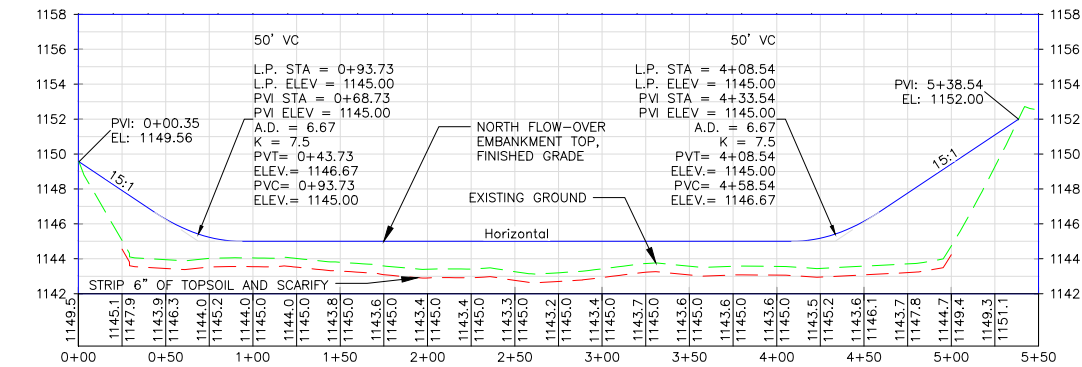
SOUTH FLOW-OVER EMBANKMENT PLAN VIEW

SCALE 1" = 50'

GENERAL NOTES

- ONE HALF FOOT CONTOUR INTERVAL SHOWN.
- 2018 1 METER RESOLUTION AERIAL IMAGERY IS SHOWN.
- ITALICIZED TEXT DENOTES EXISTING FEATURE OR EXISTING ELEVATION.
- SPOT ELEVATIONS INDICATED BY  $\oplus$ XXXX.X ARE RANDOMLY LOCATED AND ARE BASED ON SURFACE MODEL ELEVATIONS.

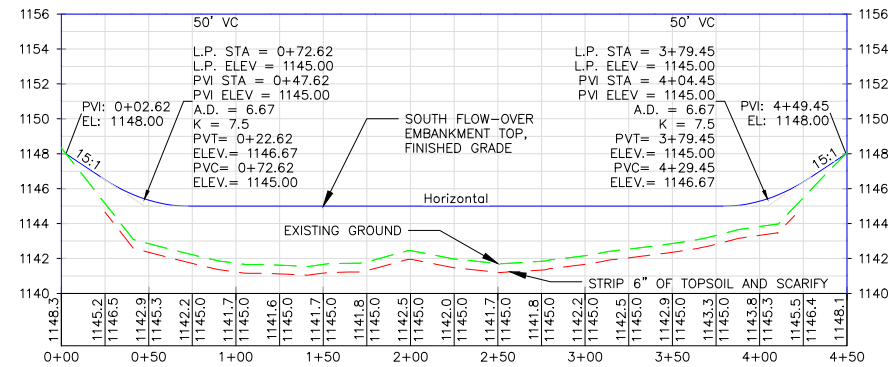
THIS MATERIAL, DATA AND INFORMATION IS THE PROPERTY OF DUCKS UNLIMITED, INC. IT MAY NOT BE USED OR REPRODUCED FOR ANY PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF AN AUTHORIZED AGENT OF DUCKS UNLIMITED, INC. DUCKS UNLIMITED, INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS MATERIAL, DATA AND INFORMATION, INCLUDING, BUT NOT LIMITED TO, THE ACCURACY OF THE MATERIAL, DATA AND INFORMATION OR ITS SUITABILITY FOR ANY PURPOSE. ALL USE OF THE MATERIAL, DATA AND INFORMATION IS AT THE USER'S SOLE RISK. BY USING ANY OF THIS MATERIAL, DATA AND INFORMATION, USER AGREES THAT DUCKS UNLIMITED, INC. IS NOT RESPONSIBLE FOR THEIR USE OF THE MATERIAL, DATA AND INFORMATION OR THE RESULTS THEREOF.



Fill

NORTH FLOW-OVER EMBANKMENT PROFILE VIEW

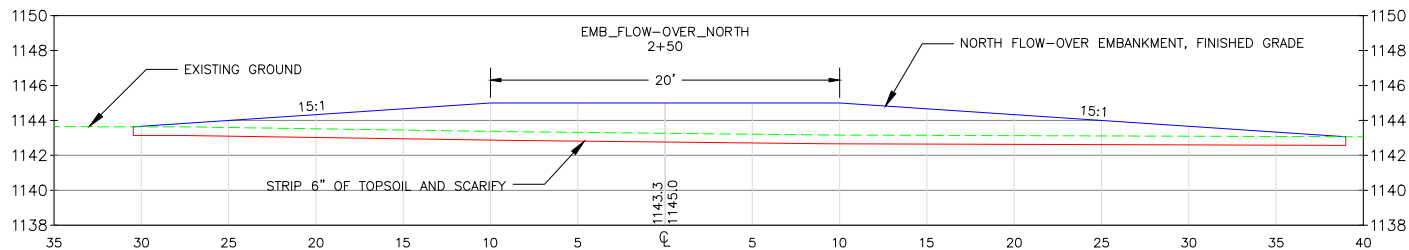
HORIZONTAL SCALE: 1" = 50'  
VERTICAL EXAGGERATION: 10:1



Fill

SOUTH FLOW-OVER EMBANKMENT PROFILE VIEW

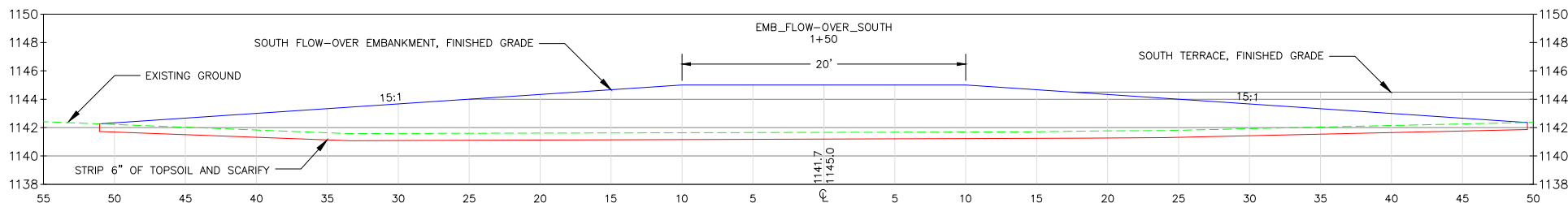
HORIZONTAL SCALE: 1" = 50'  
VERTICAL EXAGGERATION: 10:1



NORTH FLOW-OVER EMBANKMENT SECTION VIEW

STA:0+01 TO STA:5+38

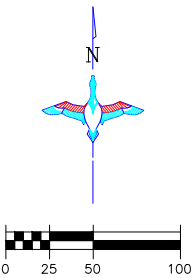
SCALE 1"=5'



SOUTH FLOW-OVER EMBANKMENT CROSS-SECTION VIEW

STA:0+03 TO STA:4+49

SCALE 1"=5'



BORROW AREA NOTE: SUITABLE MATERIAL FOR ALL FILLS SHALL BE OBTAINED FROM THE DESIGNATED EXCAVATION AREAS SHOWN ON THIS SHEET AS APPROVED BY THE DU FIELD ENGINEER. CARE SHALL BE TAKEN NOT TO OPEN UP ANY SAND LENSES THAT WILL INCREASE SEEPAGE FROM ANY EXCAVATION AREAS. FINISHED SLOPES SHALL BE 20:1 OR FLATTER. EXCAVATION AREAS SHALL BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THIS WORK WILL BE CONSIDERED INCIDENTAL TO "SITE PREPARATION."

SEEDING AND MULCHING NOTE: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN ADEQUATE SEED BED TO ALLOW SEEDING WITH STANDARD SEEDING EQUIPMENT. THIS WILL INCLUDE USE OF A HARROW OR OTHER MEANS IN ORDER TO LEAVE A SMOOTH, TRACK-FREE FINISH. BACK DRAGGING WITH A DOZER IS NOT AN ACCEPTABLE FINISH.

FLOW-OVER LEVEE CONSTRUCTION NOTES:

1. FLOW-OVER LEVEE CONSTRUCTION SHALL BE FROM COMPACTED EARTHEN MATERIAL CONTAINING MINIMAL ORGANIC MATERIAL AND SHALL COMPLY WITH SPECIFICATION SECTION 204 "EMBANKMENT CONSTRUCTION."

2. BEFORE CONSTRUCTING FLOW-OVER LEVEES, AREA MUST BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. STRIPPING AND STOCKPILING OF 6" OF TOP SOIL IS ALSO REQUIRED. THE SOIL SHALL BE RESPREAD OVER THE SIDE SLOPES OF THE FLOW-OVER LEVEES AFTER FINISHED GRADES HAVE BEEN ACHIEVED. THIS WILL BE CONSIDERED INCIDENTAL TO "FLOW-OVER LEVEE" BID ITEMS.

3. BEFORE MATERIAL FOR FLOW-OVER LEVEES IS TAKEN FROM THE EXCAVATION AREAS, AREAS MUST BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THE TOP 4" OF ANY EXCAVATION AREA MAY NOT BE USED FOR THE CONSTRUCTION OF FLOW-OVER LEVEES.

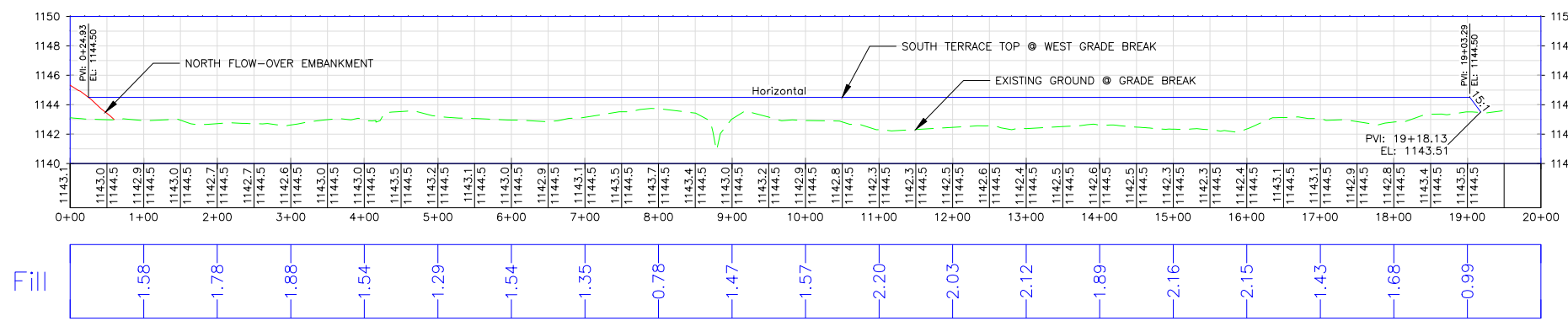
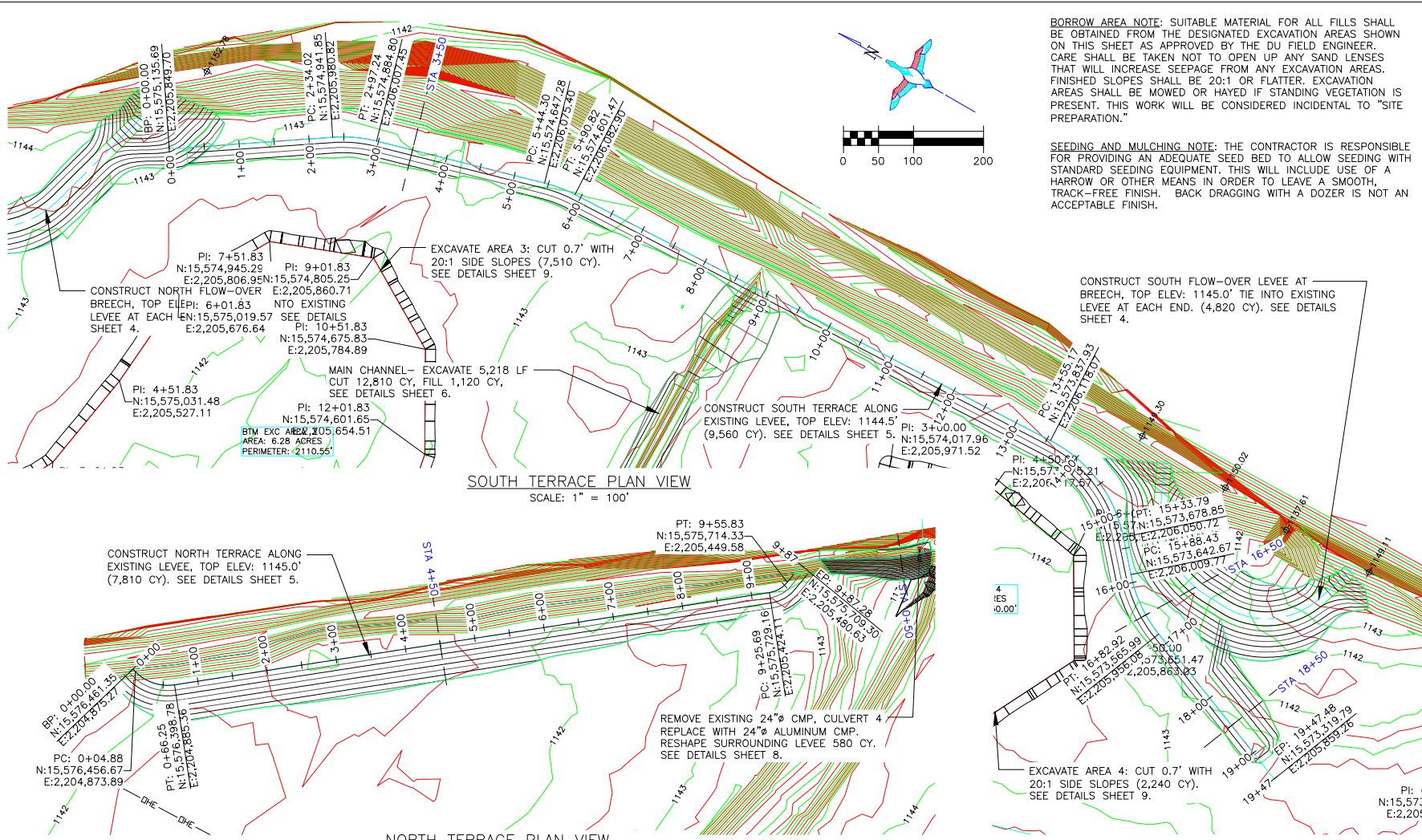
4. FLOW-OVER LEVEE FILL SHALL CONTAIN MINIMAL ORGANIC MATERIAL AND SHALL BE PLACED IN LIFTS OF NO MORE THAN 8" AND COMPACTED PRIOR TO PLACING SUBSEQUENT LIFTS.

5. HAUL ROUTES SHALL BE KEPT TO A MINIMUM TO AVOID UNNECESSARY SOIL AND VEGETATION DISTURBANCE. ALL HAUL ROUTES SHALL BE DISKED WITH ONE PASS OF A FINISHING DISK AFTER PROJECT COMPLETION. THIS WILL BE CONSIDERED INCIDENTAL TO BID ITEM "SITE PREPARATION."

NORTH FLOW-OVER EMBANKMENT PI TABLE				
PI STATION	NORTHING	EASTING	DISTANCE	DIRECTION
0+00.00	15,575,507.4475'	2,205,656.2944'	252.52'	S25° 45' 48"W
2+52.52	15,575,280.0257'	2,205,546.5340'	217.68'	S74° 46' 46"E
3+80.25	15,575,222.8785'	2,205,756.5740'	138.14'	S74° 46' 46"E
5+18.39	15,575,186.6122'	2,205,889.8681'	36.72'	N42° 00' 43"E
5+47.50	15,575,213.8929'	2,205,914.4419'		

SOUTH FLOW-OVER EMBANKMENT PI TABLE				
PI STATION	NORTHING	EASTING	DISTANCE	DIRECTION
0+00.00	15,573,682.3505'	2,206,174.0802'	146.90'	S64° 41' 43"W
1+46.90	15,573,619.5607'	2,206,041.2758'	200.05'	S2° 11' 09"W
3+29.84	15,573,419.6581'	2,206,033.6455'	150.57'	S71° 35' 06"E
4+56.38	15,573,372.0946'	2,206,176.5016'		



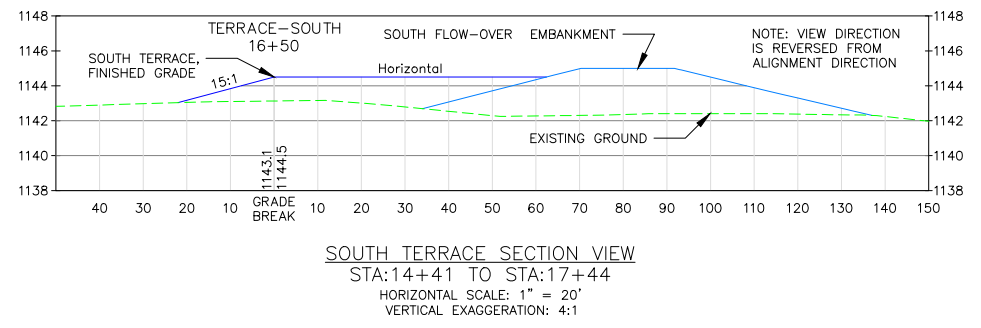


**SOUTH TERRACE PROFILE VIEW**  
HORIZONTAL SCALE: 1" = 20'  
VERTICAL EXAGGERATION: 20:1

**GENERAL NOTES**

- ONE HALF FOOT CONTOUR INTERVAL SHOWN.
- 2018 1 METER RESOLUTION AERIAL IMAGERY IS SHOWN.
- ITALICIZED TEXT DENOTES EXISTING FEATURE OR EXISTING ELEVATION.
- SPOT ELEVATIONS INDICATED BY  $\oplus$ XXXX.X ARE RANDOMLY LOCATED AND ARE BASED ON SURFACE MODEL ELEVATIONS.

THIS MATERIAL, DATA AND INFORMATION IS THE PROPERTY OF DUCKS UNLIMITED, INC. IT MAY NOT BE USED OR REPRODUCED FOR ANY PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF AN AUTHORIZED AGENT OF DUCKS UNLIMITED, INC. DUCKS UNLIMITED, INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS MATERIAL, DATA AND INFORMATION, INCLUDING, BUT NOT LIMITED TO, THE ACCURACY OF THE MATERIAL, DATA AND INFORMATION OR ITS SUITABILITY FOR ANY PURPOSE. ALL USE OF THE MATERIAL, DATA AND INFORMATION IS AT THE USER'S SOLE RISK. BY USING ANY OF THIS MATERIAL, DATA AND INFORMATION, USER AGREES THAT DUCKS UNLIMITED, INC. IS NOT RESPONSIBLE FOR THEIR USE OF THE MATERIAL, DATA AND INFORMATION OR THE RESULTS THEREOF.



**SOUTH TERRACE SECTION VIEW**  
STA:14+41 TO STA:17+44  
HORIZONTAL SCALE: 1" = 20'  
VERTICAL EXAGGERATION: 4:1

**BORROW AREA NOTE:** SUITABLE MATERIAL FOR ALL FILLS SHALL BE OBTAINED FROM THE DESIGNATED EXCAVATION AREAS SHOWN ON THIS SHEET AS APPROVED BY THE DU FIELD ENGINEER. CARE SHALL BE TAKEN NOT TO OPEN UP ANY SAND LENSES THAT WILL INCREASE SEEPAGE FROM ANY EXCAVATION AREAS. FINISHED SLOPES SHALL BE 20:1 OR FLATTER. EXCAVATION AREAS SHALL BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THIS WORK WILL BE CONSIDERED INCIDENTAL TO "SITE PREPARATION."

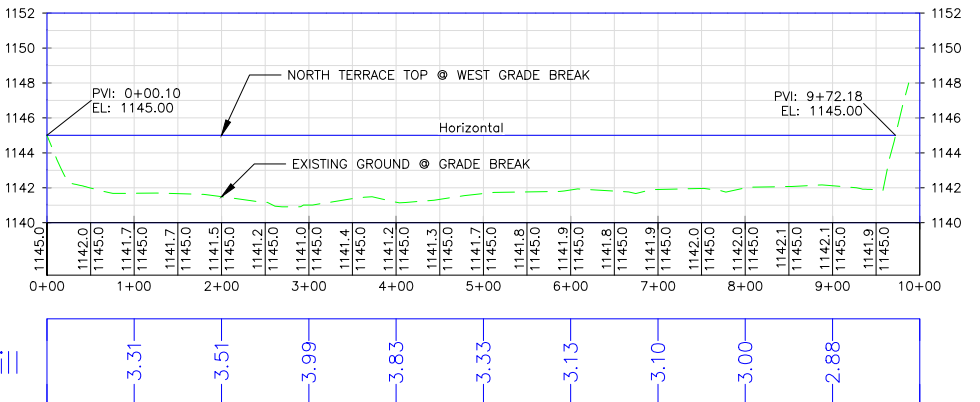
**SEEDING AND MULCHING NOTE:** THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN ADEQUATE SEED BED TO ALLOW SEEDING WITH STANDARD SEEDING EQUIPMENT. THIS WILL INCLUDE USE OF A HARROW OR OTHER MEANS IN ORDER TO LEAVE A SMOOTH, TRACK-FREE FINISH. BACK DRAGGING WITH A DOZER IS NOT AN ACCEPTABLE FINISH.

**TERRACE CONSTRUCTION NOTES:**

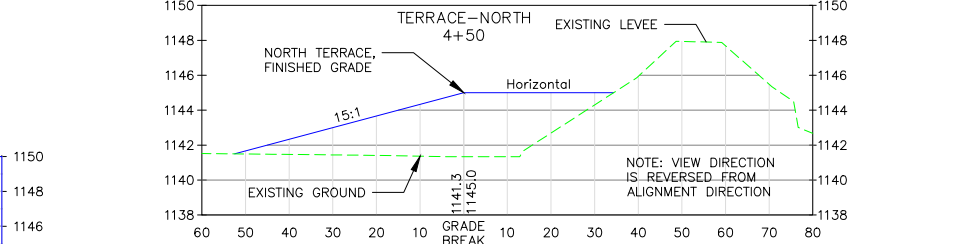
- TERRACE CONSTRUCTION SHALL BE FROM COMPACTED EARTHEN MATERIAL CONTAINING MINIMAL ORGANIC MATERIAL AND SHALL COMPLY WITH SPECIFICATION SP405 "UNCOMPACTED FILL."
- BEFORE CONSTRUCTING TERRACES, AREAS MUST BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. STRIPPING AND STOCKPILING OF TOP SOIL IS NOT REQUIRED. THIS WILL BE CONSIDERED INCIDENTAL TO "TERRACE" BID ITEMS.
- BEFORE MATERIAL FOR TERRACES IS TAKEN FROM THE EXCAVATION AREAS, AREAS MUST BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THIS WORK WILL BE CONSIDERED INCIDENTAL TO "TERRACE" BID ITEMS.
- HAUL ROUTES SHALL BE KEPT TO A MINIMUM TO AVOID UNNECESSARY SOIL AND VEGETATION DISTURBANCE. ALL HAUL ROUTES SHALL BE DISKED WITH ONE PASS OF A FINISHING DISK AFTER PROJECT COMPLETION. THIS WILL BE CONSIDERED INCIDENTAL TO BID ITEM "SITE PREPARATION."

NORTH TERRACE PI TABLE				
PI STATION	NORTHING	EASTING	DISTANCE	DIRECTION
0+00.00	15,576,461.3515'	2,204,875.2708'		
0+38.18	15,576,424.7258'	2,204,864.4855'	38.18'	S16° 24' 30"W
			908.53'	S38° 49' 07"E
9+41.47	15,575,716.8589'	2,205,434.0020'	47.24'	S80° 47' 32"E
9+87.28	15,575,709.3003'	2,205,480.6300'		

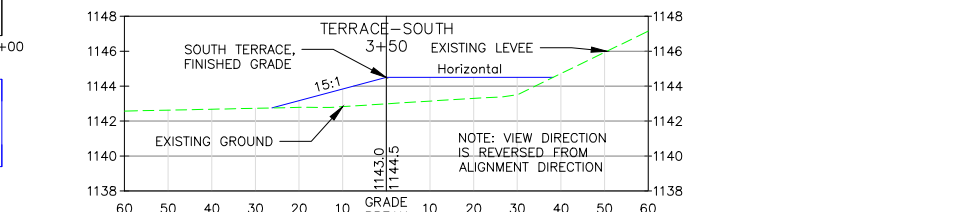
SOUTH TERRACE PI TABLE				
PI STATION	NORTHING	EASTING	DISTANCE	DIRECTION
0+00.00	15,575,135.6890'	2,205,849.6994'		
2+65.90	15,574,915.4456'	2,205,998.6818'	265.90'	S34° 04' 34"E
5+67.66	15,574,624.8115'	2,206,081.8255'	302.29'	S15° 57' 53"E
14+50.93	15,573,742.2642'	2,206,122.4788'	883.48'	S2° 38' 15"E
16+36.57	15,573,610.7958'	2,205,973.6962'	198.55'	S48° 32' 07"W
19+47.48	15,573,319.7885'	2,205,859.2580'	312.70'	S21° 28' 02"W



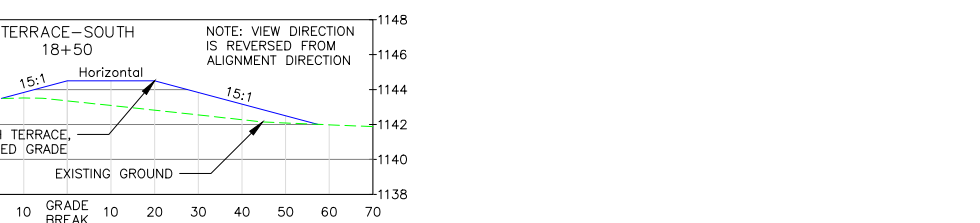
**NORTH TERRACE PROFILE VIEW**  
HORIZONTAL SCALE: 1" = 100'  
VERTICAL EXAGGERATION: 20:1




**NORTH TERRACE SECTION VIEW**  
STA:0+00 TO STA:9+72  
HORIZONTAL SCALE: 1" = 20'  
VERTICAL EXAGGERATION: 4:1



**SOUTH TERRACE SECTION VIEW**  
STA:0+25 TO STA:14+41  
HORIZONTAL SCALE: 1" = 20'  
VERTICAL EXAGGERATION: 4:1



**SOUTH TERRACE SECTION VIEW**  
STA:17+2 TO STA:19+18  
HORIZONTAL SCALE: 1" = 20'  
VERTICAL EXAGGERATION: 4:1



**DUCKS UNLIMITED INC.**

GREAT PLAINS REGIONAL OFFICE

DATE: 6/18/2021

PROJECT NO. SD-560-2

SDILF-VERMILLION RIVER

TERRACES

SHEET NO. 5 OF 10

APPROVED BY: [Signature]

DESIGNED BY: CDC

DRAWN BY: CDC

SURVEYED BY: STOCK

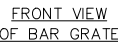
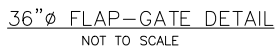
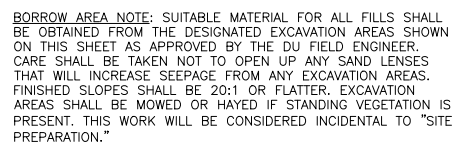
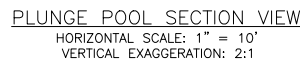
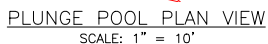
CHECKED BY: MMM

APPROVED BY: [Signature]

K:\Land Projects SD\SD-560-2 Vermillion\Final\SD-560-2 Vermillion4.dwg







NOT TO SCALE

1. ONE HALF FOOT CONTOUR INTERVAL SHOWN.
2. 2018 1 METER RESOLUTION AERIAL IMAGERY IS SHOWN.
3. ITALICIZED TEXT DENOTES EXISTING FEATURE OR EXISTING ELEVATION.
4. SPOT ELEVATIONS INDICATED BY  $\oplus$  XXXX.X ARE RANDOMLY LOCATED AND ARE BASED ON SURFACE MODEL ELEVATIONS.

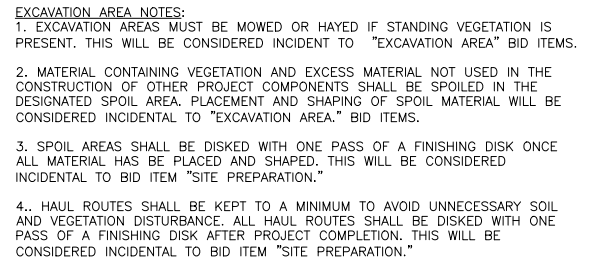
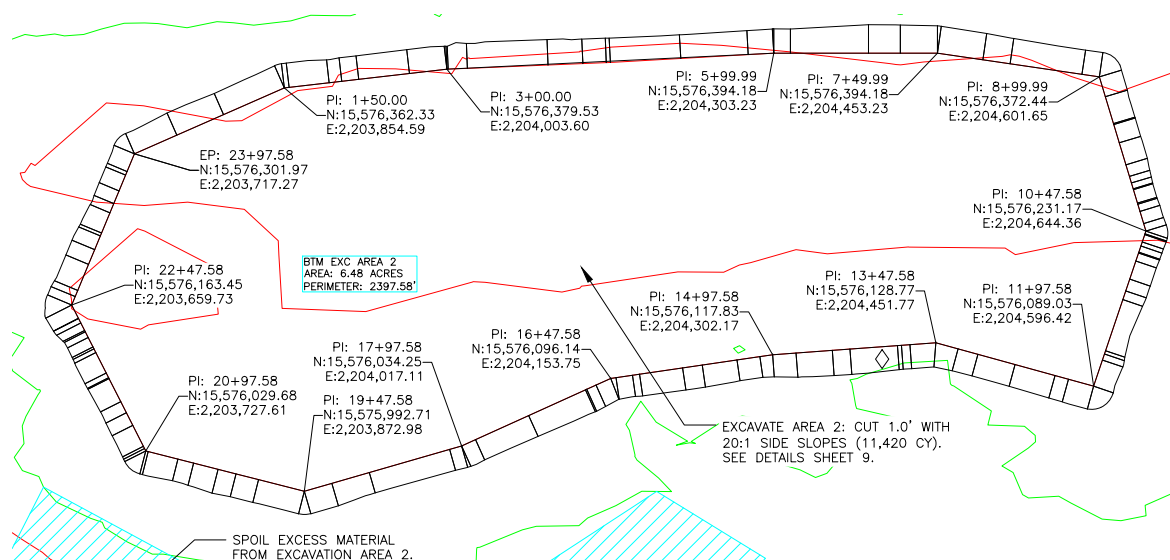
THIS MATERIAL DATA AND INFORMATION IS THE PROPERTY OF DUCKS UNLIMITED, INC. IT MAY NOT BE USED OR REPRODUCED FOR ANY PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF AN AUTHORIZED AGENT OF DUCKS UNLIMITED, INC. DUCKS UNLIMITED, INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS MATERIAL, DATA AND INFORMATION, INCLUDING, BUT NOT LIMITED TO, THE ACCURACY OF THE MATERIAL, DATA AND INFORMATION OR ITS SUITABILITY FOR ANY PURPOSE. ALL USE OF THE MATERIAL, DATA AND INFORMATION BY ANY USER OF THIS MATERIAL, DATA AND INFORMATION, USER AGREES THAT DUCKS UNLIMITED, INC. IS NOT RESPONSIBLE FOR THEIR USE OF THE MATERIAL, DATA AND INFORMATION OR THE RESULTS THEREOF.

HORIZONTAL AND VERTICAL CONTROL OPUS SOLUTION- HORIZONTAL COORDINATES ARE UTM ZONE 14 GRID COORDINATES IN US FEET [NAD83]. VERTICAL CONTROL WAS ESTABLISHED USING GEOID 12A CONUS IN THE NAVD88. THE SITE SURVEY WAS CALIBRATED USING THE MIDSTATES VRS NETWORK WITH A TRIMBLE R10 SURVEY GRADE GPS RECEIVER USING RTK METHODS. THE SURVEY CONTROL REPORT IS ON FILE AT THE DUCKS UNLIMITED ENGINEERING DEPARTMENT IN GRAND ISLAND, NEBRASKA.









**BORROW AREA NOTE:** SUITABLE MATERIAL FOR ALL FILLS SHALL BE OBTAINED FROM THE DESIGNATED EXCAVATION AREAS SHOWN ON THIS SHEET AS APPROVED BY THE DU FIELD ENGINEER. CARE SHALL BE TAKEN NOT TO OPEN UP ANY SAND LENSES THAT WILL INCREASE SEEPAGE FROM ANY EXCAVATION AREAS. FINISHED SLOPES SHALL BE 20:1 OR FLATTER. EXCAVATION AREAS SHALL BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THIS WORK WILL BE CONSIDERED INCIDENTAL TO "SITE PREPARATION."

SEEDING AND MULCHING NOTE: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN ADEQUATE SEED BED TO ALLOW SEEDING WITH STANDARD SEEDING EQUIPMENT. THIS WILL INCLUDE USE OF A HARROW OR OTHER MEANS IN ORDER TO LEAVE A SMOOTH, TRACK-FREE FINISH. BACK DRAGGING WITH A DOZER IS NOT AN ACCEPTABLE FINISH.

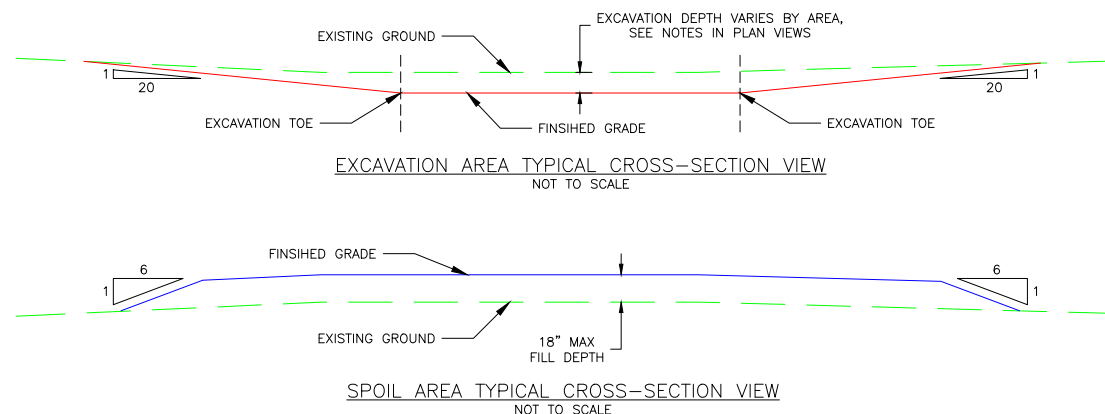
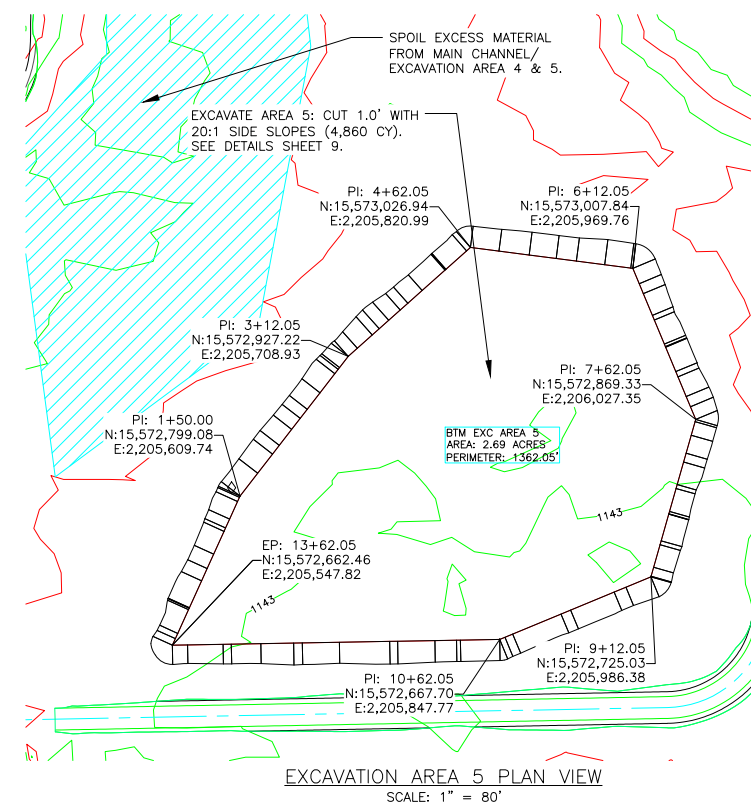
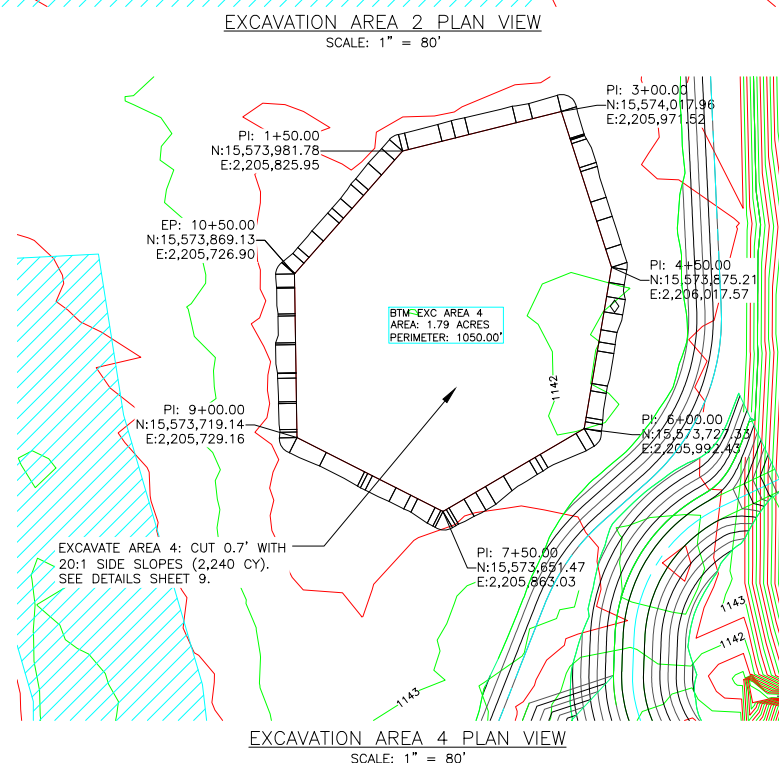
PI Station	Northing	Easting
0+00.00	15,575,157.3231'	2,202,820.5545'
1+50.00	15,575,103.0283'	2,202,960.3833'
3+00.00	15,574,971.2778'	2,203,032.0896'
4+50.00	15,574,824.4497'	2,203,001.4057'
6+00.00	15,574,769.0589'	2,202,862.0075'
7+50.00	15,574,869.5263'	2,202,750.6239'
9+00.00	15,575,018.9948'	2,202,763.2402'
10+49.73	15,575,157.3231'	2,202,820.5545'

PI Station	Northing	Easting
0+00.00	15,576,301.9726"	2,203,717.2672"
1+50.00	15,576,362.3277"	2,203,854.8580"
3+00.00	15,576,379.5259"	2,204,003.5998"
5+99.99	15,576,394.1783"	2,204,303.2313"
7+49.99	15,576,394.1783"	2,204,453.2313"
8+99.99	15,576,372.3489"	2,204,601.6476"
10+47.58	15,576,321.1669"	2,204,634.3590"
11+97.58	15,576,089.0348"	2,204,596.4166"
13+47.58	15,576,128.7675"	2,204,451.7745"
14+97.58	15,576,117.8342"	2,204,302.1736"
16+47.58	15,576,096.1418"	2,204,153.7504"
17+97.58	15,576,034.2517"	2,204,017.1136"
19+47.58	15,575,992.7123"	2,203,872.9801"
20+97.58	15,576,029.6810"	2,203,727.6070"
22+47.58	15,576,163.4456"	2,203,659.7321"
23+97.58	15,576,301.9726"	2,203,717.2672"

EXCAVATION AREA 3 TOE PI TABLE			
PI Station	Northing	Easting	
+0+00	15,575,103.0817	2,205,095.1554	
+1+51.8	15,575,124.1324	2,205,245.5197	
+3+01.83	15,575,055.9301	2,205,379.1178	
+4+51.83	15,575,031.4827	2,205,527.1121	
+6+01.83	15,575,019.5687	2,205,676.6382	
+7+51.83	15,574,945.2869	2,205,806.9540	
+9+01.83	15,574,805.2513	2,205,860.7129	
+10+51.83	15,574,675.8282	2,205,784.8863	
+12+01.83	15,574,601.6524	2,205,654.5102	
+13+51.83	15,574,572.6060	2,205,507.3493	
+15+01.83	15,574,612.6181	2,205,362.7844	
+16+51.83	15,574,731.6485	2,205,271.5058	
+18+01.83	15,574,863.5153	2,205,200.0136	
+19+51.83	15,574,945.7073	2,205,074.5366	
+21+10.55	15,575,103.0817	2,205,095.1554	

PI Station	Northing	Easting
0+00.00	15,573,969.1258'	2,205,726.9026'
1+50.00	15,573,981.7773'	2,205,825.9462'
3+00.00	15,574,017.9627'	2,205,971.5162'
4+50.00	15,573,875.2070'	2,206,017.5683'
6+00.00	15,573,727.3276'	2,205,992.4345'
7+50.00	15,573,651.4732'	2,205,863.0278'
9+00.00	15,573,719.1428'	2,205,729.1591'
10+50.00	15,573,869.1258'	2,205,726.9026'

EXCAVATION AREA 5 TOE PI TABLE			
PI Station	Northing	Easting	
0+00.00	15,572,662.4563'	2,205,547.8194'	
1+50.00	15,572,799.0811'	2,205,609.7360'	
3+12.05	15,572,927.2206'	2,205,708.9348'	
4+62.05	15,573,026.9447'	2,205,820.9862'	
6+12.05	15,573,007.8367'	2,205,969.7644'	
7+62.05	15,572,869.3317'	2,206,027.3523'	
9+12.05	15,572,725.0348'	2,205,986.3841'	
10+62.05	15,572,667.7013'	2,205,847.7736'	
13+62.05	15,572,662.4563'	2,205,547.8194'	

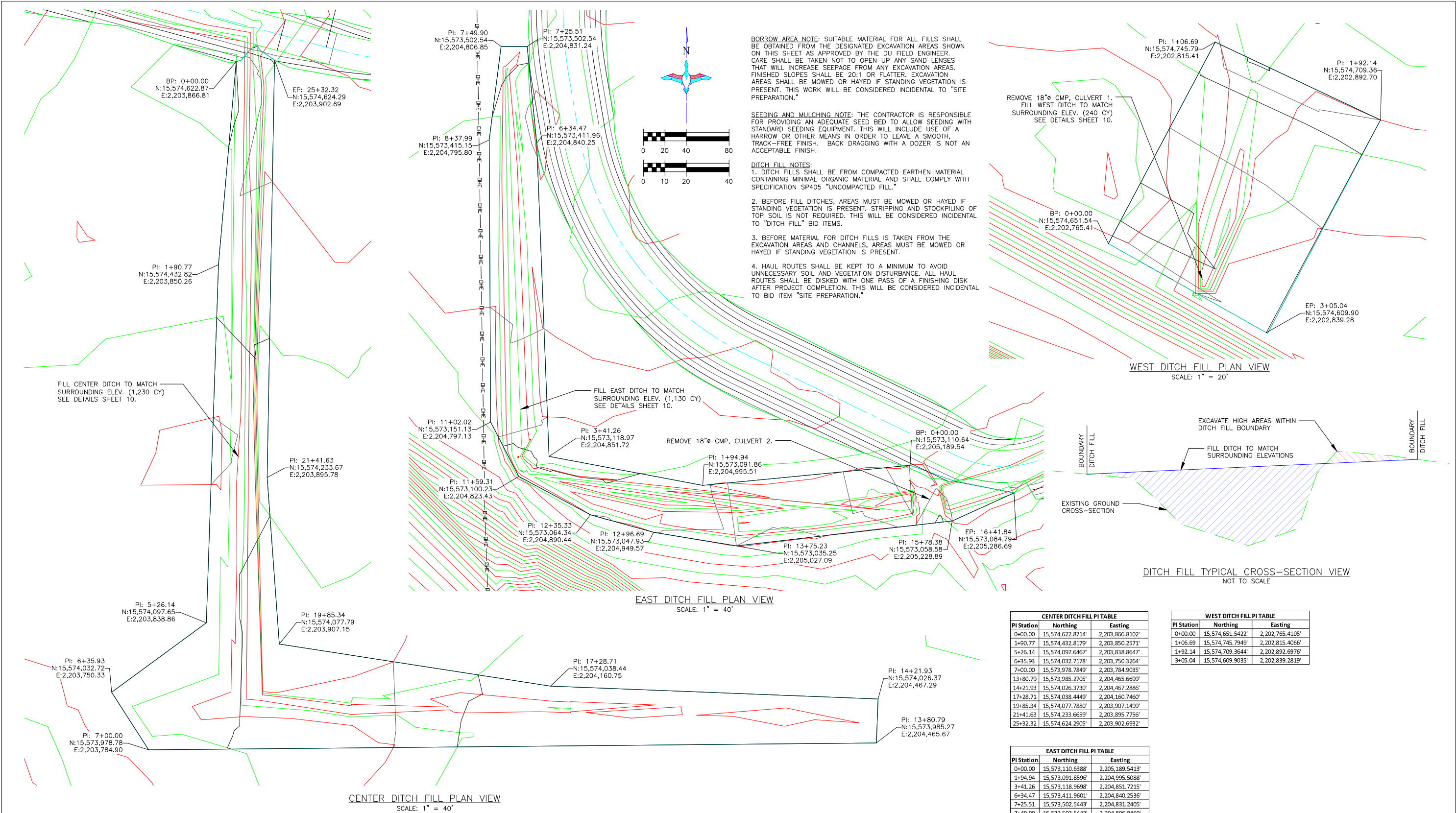


1. ONE HALF FOOT CONTOUR INTERVAL SHOWN.
2. 2018 1 METER RESOLUTION AERIAL IMAGERY IS SHOWN.
3. ITALICIZED TEXT DENOTES EXISTING FEATURE OR EXISTING ELEVATION.
4. SPOT ELEVATIONS INDICATED BY  $\oplus$  XXXX.X ARE RANDOMLY LOCATED AND ARE BASED ON SURFACE MODEL ELEVATIONS.

THIS MATERIAL, DATA AND INFORMATION IS THE PROPERTY OF DUCKS UNLIMITED, INC. IT MAY NOT BE USED OR REPRODUCED FOR ANY PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF AN AUTHORIZED AGENT OF DUCKS UNLIMITED, INC. DUCKS UNLIMITED, INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS MATERIAL, DATA AND INFORMATION, INCLUDING, BUT NOT LIMITED TO, THE ACCURACY OF THE MATERIAL, DATA AND INFORMATION OR ITS SUITABILITY FOR ANY PURPOSE. ALL USE OF THE MATERIAL, DATA AND INFORMATION BY ANY OTHER PERSONS SOLELY BEING AN AGENT OF DUCKS UNLIMITED, INC. AND INFORMATION, USER AGREES THAT DUCKS UNLIMITED, INC. IS NOT RESPONSIBLE FOR THEIR USE OF THE MATERIAL, DATA AND INFORMATION OR THE RESULTS THEREOF.

HORIZONTAL AND VERTICAL CONTROL OPUS SOLUTION- HORIZONTAL COORDINATES ARE UTM ZONE 14 GRID COORDINATES IN US FEET [NAD83]. VERTICAL CONTROL WAS ESTABLISHED USING GEOID 12A CONUS IN THE NAVD88. THE SITE SURVEY WAS CALIBRATED USING THE MIDSTATES VRS NETWORK WITH A TRIMBLE R10 SURVEY GRADE GPS RECEIVER USING RTK METHODS. THE SURVEY CONTROL REPORT IS ON FILE AT THE DUCKS UNLIMITED ENGINEERING DEPARTMENT IN GRAND ISLAND, NEBRASKA.





- GENERAL NOTES
- ONE HALF FOOT CONTOUR INTERVAL SHOWN.
  - 2018 1 METER RESOLUTION AERIAL IMAGERY IS SHOWN.
  - ITALICIZED TEXT DENOTES EXISTING FEATURE OR EXISTING ELEVATION.
  - SPOT ELEVATIONS INDICATED BY  $\phi$ -XXXX.X ARE RANDOMLY LOCATED AND ARE BASED ON SURFACE MODEL ELEVATIONS.

THIS MATERIAL, DATA AND INFORMATION IS THE PROPERTY OF DUCKS UNLIMITED, INC. IT MAY NOT BE USED OR REPRODUCED FOR ANY PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF AN AUTHORIZED AGENT OF DUCKS UNLIMITED, INC. DUCKS UNLIMITED, INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS MATERIAL, DATA AND INFORMATION, INCLUDING, BUT NOT LIMITED TO, THE ACCURACY OF THE MATERIAL, DATA AND INFORMATION OR ITS SUITABILITY FOR ANY PURPOSE. ALL USE OF THE MATERIAL, DATA AND INFORMATION IS AT THE USER'S SOLE RISK. BY USING ANY OF THIS MATERIAL, DATA AND INFORMATION, USER AGREES THAT DUCKS UNLIMITED, INC. IS NOT RESPONSIBLE FOR THEIR USE OF THE MATERIAL, DATA AND INFORMATION OR THE RESULTS THEREOF.

HORIZONTAL AND VERTICAL CONTROL OPUS SOLUTION-- HORIZONTAL COORDINATES ARE UTM ZONE 14 GRID COORDINATES IN US FEET [NAD83]. VERTICAL CONTROL WAS ESTABLISHED USING GEOID 12A CONUS IN THE NAVD83. THE SITE SURVEY WAS CALIBRATED USING THE MIDSTATES VRS NETWORK WITH A TRIMBLE R10 SURVEY GRADE GPS RECEIVER USING RTK METHODS. THE SURVEY CONTROL REPORT IS ON FILE AT THE DUCKS UNLIMITED ENGINEERING DEPARTMENT IN GRAND ISLAND, NEBRASKA.