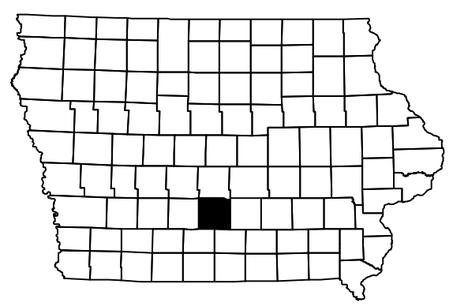
IOWA DEPARTMENT OF NATURAL RESOURCES

CONSTRUCTION DOCUMENTS
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

DNR PROJECT #21-05-91-02
IDOT PROJECT #SP-601-0(10)--7C-91

IOWA ONE CALL
1-800-292-8989 | 811
www.iowaonecall.com



LICENSED PROFESSIONAL ENGINEER
BRETT A. JOHNSON
13653
IOWA

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

Brett A Johnson 6/29/22

BRETT A. JOHNSON, IOWA REG. NO. 13653 DATE
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2023

PAGES OR SHEETS COVERED BY THIS SEAL:
SHEETS 1-46

DIRECTORY

PROJECT MANAGER		CONSTRUCTION INSPECTOR	
COMPANY	IOWA DEPT OF NATURAL RESOURCES	COMPANY	IOWA DEPT OF NATURAL RESOURCES
ADDRESS	502 EAST 9TH STREET	ADDRESS	806 E. TRAIL RIDGE PLACE
CITY,STATE,ZIP	DES MOINES, IA 50319	CITY,STATE,ZIP	INDIANOLA, IA 50125
CONTACT	BRETT JOHNSON	CONTACT	JASON KRUSE
TELEPHONE	515-250-3711	TELEPHONE	515-250-3707
FAX		FAX	
EMAIL	brett.johnson@dnr.iowa.gov	EMAIL	jason.kruse@dnr.iowa.gov

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF REMOVAL OF THE EXISTING ASPHALT ROADS AND REMOVAL OF TREES AND VEGETATION THAT ARE IN CONFLICT WITHIN THE WORK ZONE, GRADING THE PROJECT SITE, INSTALLING NEW PORTLAND CEMENT CONCRETE ROADS AND PARKING AREAS FOR THE EXISTING BOAT RAMP AND BEACH AREAS, STORM SEWER AND INTAKES, PEDESTRIAN WALKWAY CONNECTION AND SEEDING AND MULCHING ALL DISTURBED AREAS LOCATED AT LAKE AHQUABI STATE PARK IN WARREN COUNTY, IOWA.

AUTHORIZATION TO BID

AUTHORIZATION - PARKS | WILDLIFE | FISHERIES | LAW ENFORCEMENT | FORESTRY DATE

ENGINEERING BUREAU CHIEF DATE

SHEET INDEX

CONSULTANT:

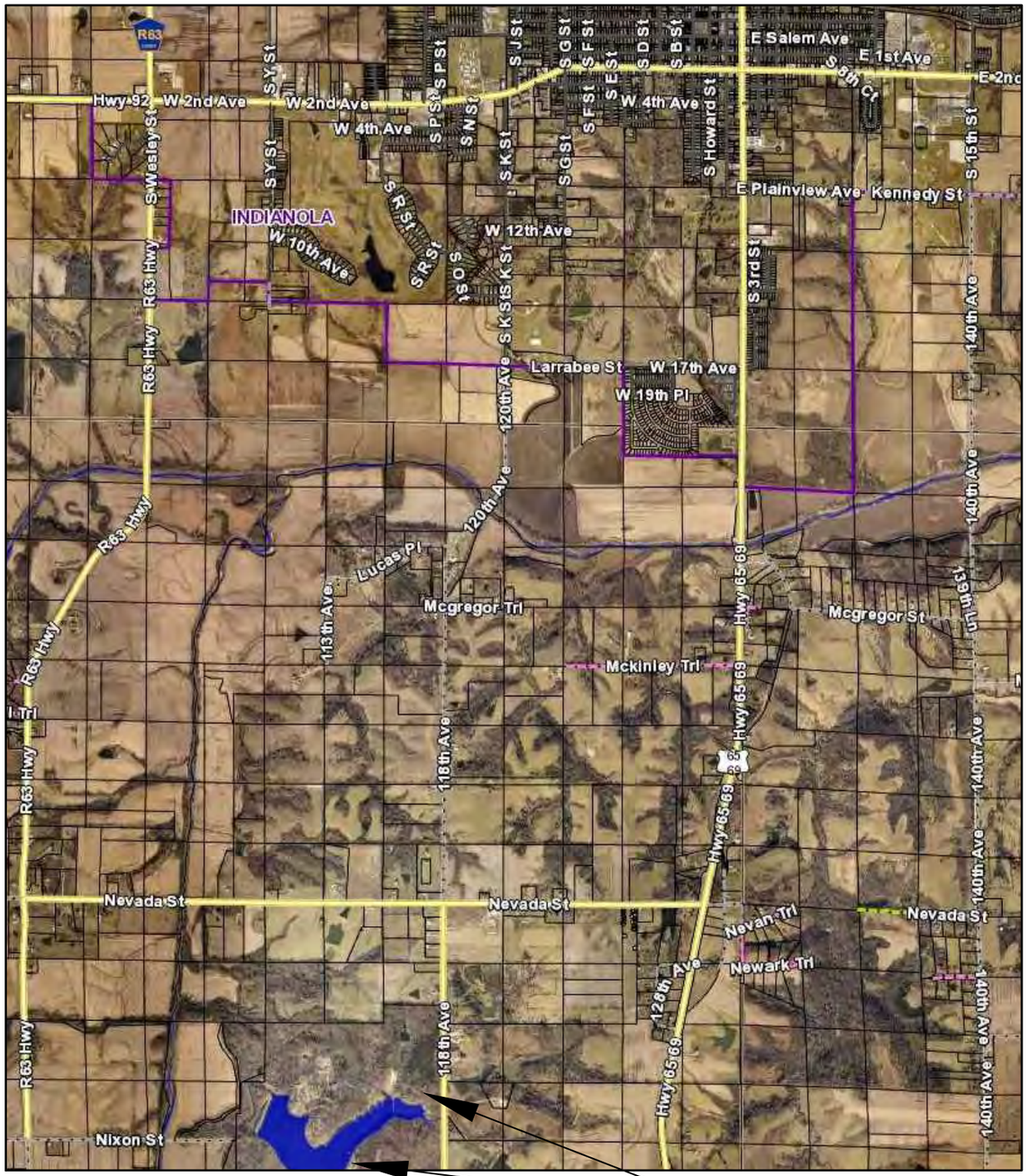
IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

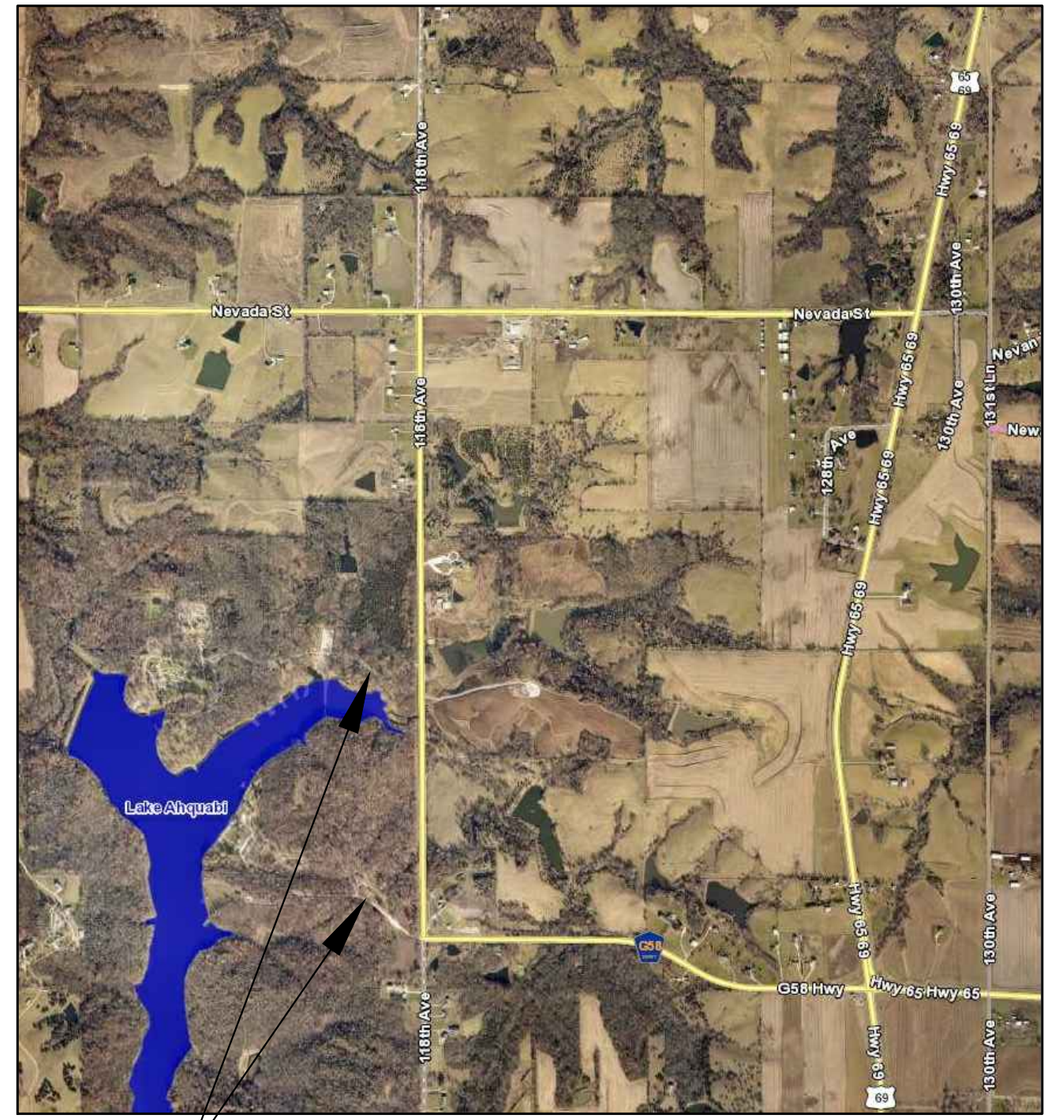
COVER SHEET

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
CHK'D BY:
PROJECT NUMBER: 21-05-91-02
DATE: 6/29/2022
SHEET No: 1





PROJECT LOCATION

PROJECT LOCATION:
16510 118TH AVE
INDIANOLA, IA 50125
COORDINATES: 41°17'45.16"N (41.295878°), 93°35'28.42"W (93.5912278°)

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

VICINITY MAPS

CONSTRUCTION PROJECT FOR:

LAKE AHQUABI CAMPGROUND UPGRADE PROJECT

WARREN COUNTY, IOWA

NO.	BY: DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 2

ESTIMATED PROJECT QUANTITIES

ITEM NO.	ITEM	UNIT	QUANTITY	NON-P&I	P&I
1	DEMOLITION	LS	1	0	1
2	CLEARING AND GRUBBING	LS	1	0	1
3	TREE CLEARING	LS	1	0	1
4	FULL DEPTH SAW CUT	LF	89	0	89
5	HMA PAVEMENT REMOVAL	SY	23,046	0	23,046
6	PCC REMOVAL	SY	214	0	214
7	GRADING	LS	1	0	1
8	12-INCH FILTER SOCK	LF	2,225	0	2,225
9	TYPE SW-401 CIRCULAR CIRCULAR STORM MH W/SW-602 TYPE E CASTING	EA	1	0	1
10	TYPE SW-503 SINGLE GRATE INTAKE W/MH & SW-603 TYPE 'R&E' CASTINGS	EA	1	0	1
11	TYPE SW-506 DOUBLE GRATE INTAKE W/MH & SW-603 TYPE 'R&E' CASTINGS	EA	4	0	4
12	TYPE SW-512 CIRCULAR AREA INTAKE W/SW-604 TYPE 3A CASTING	EA	1	0	1
13	TYPE SW-512 CIRCULAR AREA INTAKE W/SW-604 TYPE 3B CASTING	EA	1	0	1
14	TYPE SW-512 CIRCULAR AREA INTAKE W/SW-604 TYPE 5 CASTING	EA	1	0	1
15	TYPE SW-513 OPEN SIDED INTAKE W/SW-602 TYPE G CASTING	EA	4	0	4
16	6-INCH SLOTTED PVC SUBDRAIN	LF	323	0	323
17	SUBDRAIN CLEANOUT TYPE A-2	EA	6	0	6
18	12-INCH RCP CLASS III	LF	436	0	436
19	15-INCH RCP CLASS III	LF	185	0	185
20	18-INCH RCP CLASS III	LF	122	0	122
21	24-INCH RCP CLASS III	LF	344	0	344
22	30-INCH RCP CLASS III	LF	91	0	91
23	36-INCH RCP CLASS III	LF	339	0	339
24	12-INCH RCP CLASS III FES	EA	7	0	7
25	18-INCH RCP CLASS III FES W/FOOTING & APRON GUARD	EA	2	0	2
26	24-INCH RCP CLASS III FES W/FOOTING & APRON GUARD	EA	2	0	2
27	36-INCH RCP CLASS III FES W/FOOTING & APRON GUARD	EA	7	0	7
28	FLEXSTORM #62LCBFX INLET FILTER (OR APPROVED EQUAL)	EA	18	0	18
29	FLEXSTORM #62MRDFX INLET FILTER (OR APPROVED EQUAL)	EA	4	0	4
30	FLEXSTORM #62LRDFX INLET FILTER (OR APPROVED EQUAL)	EA	2	0	2
31	3/8" MINUS PEA GRAVEL	TONS	40	0	40
32	CLASS 'D' RIPRAP	TONS	125	0	125
33	SPECIAL BACKFILL/GRANULAR BASE	TONS	8,718	1,498	7,220
34	6-INCH NON-REINFORCED PCC	SY	4,930	4,930	0
35	7-INCH NON-REINFORCED PCC	SY	22,002	0	22,002
36	6-INCH STANDARD PCC CURB AND 2-INCH DROP PCC CURB	LF	701	0	701
37	GRANULAR BASE-SIDEWALKS	TONS	53.1	53.1	0
38	5-INCH NON-REINFORCED PCC SIDEWALKS	SY	262.6	262.6	0
39	CLASS 'A' CRUSHED STONE	TONS	25	25	0
40	TRAFFIC CONTROL	LS	1	0	1
41	SEEDING, FERTILIZING AND MULCHING	AC	3.5	0	3.5
42	STREET SIGNAGE	LS	1	0	1
43	HANDICAP PARKING SIGNAGE	LS	1	1	0
44	STREET PAVEMENT MARKINGS	LS	1	0	1
45	PARKING SPACE PAVEMENT STRIPING, HANDICAP PARKING CROSS HATCH MARKINGS	LS	1	1	0
46	6' CONCRETE PARKING WHEEL STOPS	EA	4	4	0
47	CONCRETE BOLLARDS	EA	2	2	0
48	CONSTRUCTION SURVEY STAKING AND AS-BUILT SURVEY	EA	1	0	1
49	NPDES GENERAL PERMIT #2 & SWPPP	LS	1	0	1
50	MOBILIZATION	LS	1	0	1

GENERAL NOTES

1. TWO WEEKS PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL NOTIFY:
   A. IOWA DNR PROJECT MANAGER: BRETT JOHNSON 515-250-3711
   B. DISTRICT INSPECTOR: JASON KRUSE 515-250-3707
2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH STATEWIDE URBAN STANDARD DESIGN SPECIFICATIONS FOR PUBLIC IMPROVEMENTS (SUDAS). ALL CONSTRUCTION TESTING TO BE IN ACCORDANCE WITH SUDAS AND IS THE EXPENSE OF THE CONTRACTORS.
3. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS PRIOR TO THE START OF CONSTRUCTION AND NOTIFY THE ABOVE MENTIONED CONTACTS OF ANY DISCREPANCIES.
4. THE LOCATIONS AND DIMENSIONS SHOWN ON THE PLANS FOR EXISTING FACILITIES ARE IN ACCORDANCE WITH AVAILABLE INFORMATION WITHOUT UNCOVERING AND MEASURING. THE ENGINEER DOES NOT GUARANTEE THE ACCURACY OF THIS INFORMATION OR THAT ALL EXISTING UNDERGROUND FACILITIES ARE SHOWN. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT ALL PUBLIC AND/OR PRIVATE UTILITIES SERVING THE AREA TO DETERMINE THE PRESENT EXTENT AND LOCATION OF THEIR FACILITIES BEFORE BEGINNING WORK.
5. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES OR STRUCTURES AT THE SITE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROPER UTILITY IMMEDIATELY UPON BREAKING OR DAMAGE TO ANY UTILITY LINE OR APPURTENANCE, OR THE INTERRUPTION OF THEIR SERVICE. HE SHALL NOTIFY THE PROPER UTILITY INVOLVED. IF EXISTING UTILITY LINES ARE ENCOUNTERED THAT CONFLICT IN LOCATION WITH NEW CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED.
6. CONTRACTOR TO PROTECT ALL UTILITY, PAVING, BUILDINGS, ETC. OUTSIDE OF LIMITS OF PROPOSED CONSTRUCTION.
7. IN THE EVENT THAT THERE IS A DISCREPANCY BETWEEN THE QUANTITIES AND THE PLANS, THE DETAILED PLANS SHALL GOVERN.
8. MAINTAIN ALL CUT AND FILL AREAS TO ACCOMMODATE SURFACE DRAINAGE.
9. FINISHED GRADE ON ALL AREAS SHALL BE WITHIN 0.20 FOOT OF PLAN GRADE.
10. TOPSOIL SHALL BE SPREAD TO A MINIMUM THICKNESS OF 4-INCHES ON ALL DISTURBED UNPAVED AREAS ADJACENT TO PAVEMENT.
11. BACKFILL TO THE TOP OF ALL ROCK AND PAVEMENT SURFACES.
12. ALL ELEVATIONS ARE TO FINISH GRADE.
13. PROTECT ALL EXISTING TREES AND VEGETATION UNLESS OTHERWISE NOTED.
14. AN NPDES GENERAL PERMIT #2 WILL BE REQUIRED BY THE CONTRACTOR AS THE PROJECT IS DISTURBING OVER 1 ACRE.
15. EARTHWORK QUANTITY IS ROUGHLY 7,000 CY, AND IS ROUGHLY BALANCED. A SURFACE FILE IS AVAILABLE UPON REQUEST.
16. CONTRACTOR SHALL HYDRAULICALLY SEED ALL DISTURBED AREAS (APPROXIMATELY 3.5 ACRES). USE TYPE 1 (PERMANENT LAWN MIXTURE) SEED MIX FOR ALL DISTURBED AREAS IN ACCORDANCE WITH SUDAS SECTION 9010.
17. REMOVED TREES TO BE BE HAULED OFF SITE. COORDINATE WITH THE DNR INSPECTOR.
18. TOTAL COST ESTIMATE FOR THE FUNDING OF THE PROJECT IS $2,832,474.36 OF WHICH $462,883.66 IS NON-P&I ITEMS AND $2,369,590.70 IS P&I ITEMS.
19. THE ENTRANCE ROAD LEADING TO THE CAMPGROUND CANNOT BE STARTED UNTIL AFTER JANUARY 1, 2023 AS CONSTRUCTION OF THE CAMPROUND AREA WILL NOT BE COMPLETED UNTIL THE END OF 2022. THE CONTRACTOR FOR THIS CAMPGROUND PROJECT WILL NEED TO COORDINATE CONSTRUCTION TIMELINES AND ACTIVITIES WITH THE CONTRACTOR (VIECO CONSTRUCTION, PAUL VIESTENZ, 816-387-1884, vieco@sbcglobal.net, WHO WAS AWARDED THE CONTRACT FOR THE CAMPGROUND PROJECT.

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM DESCRIPTION
1	DEMOLITION - CONTRACTOR TO DEMOLISH AND REMOVE RESTROOM BUILDING AS DETAILED ON SHEETS #9, 11 AND 13. CONTRACTOR TO REMOVE BUILDINGS ENTIRELY FROM SITE AND LEGALLY DISPOSED PER LOCAL CODES AND REGULATIONS. CONTRACTOR TO CAP ALL UTILITIES.
2	CLEARING AND GRUBBING - CONTRACTOR TO CLEAR AND GRUB THE PROJECT SITE CONSISTING OF, BUT NOT LIMITED TO: 2,245 SY GRAVEL, EXISTING SIGNAGE, CULVERTS, AS DETAILED ON SHEETS #6-13 AND DISPOSE OF PROPERLY OFF-SITE IN ACCORDANCE WITH ALL RULES AND REGULATIONS.
3	TREE CLEARING - CONTRACTOR TO CLEAR INDIVIDUAL TREES AS DETAILED ON SHEETS #6-13, INSPECTOR MAY REQUIRE ADDITIONAL TREES REMOVED IF THEY ARE IN CONFLICT WITH CONSTRUCTION ACTIVITIES.
4	FULL DEPTH SAW CUT - CONTRACTOR SHALL SAW CUT EXISTING PAVEMENT FULL DEPTH IN THE LOCATION SHOWN ON SHEETS #6-13.
5	HMA REMOVAL - CONTRACTOR SHALL REMOVE THE EXISTING HMA CAMPGROUND ROADS AS DETAILED ON SHEETS #6-13. THE 23,046 SY HMA ROADS ARE ASSUMED TO BE AN AVERAGE OF 5.5-INCHES OF THICKNESS WHICH WILL YIELD APPROXIMATELY 6,040 TONS OF MATERIAL WHICH CAN BE CRUSHED AND USED AS GRANULAR SUBBASE FOR THE PAVEMENT IN ACCORDANCE WITH IDOT SECTION 4132.
6	PCC REMOVAL - CONTRACTOR SHALL REMOVE THE EXISTING PCC AS DETAILED ON SHEETS #6-13. CONTRACTOR SHALL DISPOSE OF THE REMOVED PCC PROPERLY OFF-SITE IN ACCORDANCE WITH ALL RULES AND REGULATIONS.
7	GRADING - CONTRACTOR SHALL GRADE THE SITE (APPROXIMATELY 7,000 CY OF CUT/FILL) AS DETAILED ON SHEETS #16-43. TOPSOIL TO BE STRIPPED AND STOCKPILED AND RESPREAD TO A MINIMUM DEPTH OF 4-INCHES. ANY EXCESS CUT CAN BE SPREAD ALONG THE ABANDONED ROADWAY THAT IS FROM THE LOWER BEACH PARKING TO THE SOUTH SHELTER AREA (MAINTAIN DRAINAGE ALONG THIS ROUTE).
8	12-INCH FILTER SOCK - CONTRACTOR TO INSTALL FILTER SOCK AS DETAILED ON SHEETS #16-43.
9	TYPE SW-401 CIRCULAR CIRCULAR STORM MH W/SW-602 TYPE E CASTING - CONTRACTOR TO INSTALL TYPE SW-401 CIRCULAR CIRCULAR STORM MH W/SW-602 TYPE E CASTING AS SHOWN ON SHEETS #14-15.
10	TYPE SW-503 SINGLE GRATE INTAKE W/MH & SW-603 TYPE 'R&E' CASTINGS - CONTRACTOR TO INSTALL TYPE SW-503 SINGLE GRATE INTAKE W/MH & SW-603 TYPE 'R&E' CASTINGS AS SHOWN ON SHEETS #14-15.
11	TYPE SW-506 DOUBLE GRATE INTAKE W/MH & SW-603 TYPE 'R&E' CASTINGS - CONTRACTOR TO INSTALL TYPE SW-506 DOUBLE GRATE INTAKE W/MH & SW-603 TYPE 'R&E' CASTINGS AS SHOWN ON SHEETS #14-15.
12	TYPE SW-512 CIRCULAR AREA INTAKE W/SW-604 TYPE 3A CASTING - CONTRACTOR TO INSTALL TYPE SW-512 CIRCULAR AREA INTAKE W/SW-604 TYPE 3A CASTING AS SHOWN ON THE CONSTRUCTION DRAWINGS.
13	TYPE SW-512 CIRCULAR AREA INTAKE W/SW-604 TYPE 3B CASTING - CONTRACTOR TO INSTALL TYPE SW-512 CIRCULAR AREA INTAKE W/SW-604 TYPE 3B CASTING AS SHOWN ON THE CONSTRUCTION DRAWINGS.
14	TYPE SW-512 CIRCULAR AREA INTAKE W/SW-604 TYPE 5 CASTING - CONTRACTOR TO INSTALL TYPE SW-512 CIRCULAR AREA INTAKE W/SW-604 TYPE 3B CASTING AS SHOWN ON THE CONSTRUCTION DRAWINGS.
15	TYPE SW-513 OPEN SIDED INTAKE W/SW-602 TYPE G CASTING - CONTRACTOR TO INSTALL TYPE SW-513 OPEN SIDED INTAKE W/SW-602 TYPE G CASTING AS SHOWN ON THE CONSTRUCTION DRAWINGS.
16	6-INCH SLOTTED PVC SUBDRAIN - CONTRACTOR TO INSTALL 4-INCH SLOTTED PVC SUBDRAIN AS SHOWN ON SHEET #44.
17	SUBDRAIN CLEANOUT TYPE A-2 - CONTRACTOR TO INSTALL SUBDRAIN CLEANOUT TYPE A-2 AS SHOWN ON SHEET #44.
18	12-INCH RCP CLASS III - CONTRACTOR TO INSTALL 12-INCH RCP CLASS III AS SHOWN ON THE CONSTRUCTION DRAWINGS.
19	15-INCH RCP CLASS III - CONTRACTOR TO INSTALL 15-INCH RCP CLASS III AS SHOWN ON THE CONSTRUCTION DRAWINGS.
20	18-INCH RCP CLASS III - CONTRACTOR TO INSTALL 18-INCH RCP CLASS III AS SHOWN ON THE CONSTRUCTION DRAWINGS.
21	24-INCH RCP CLASS III - CONTRACTOR TO INSTALL 24-INCH RCP CLASS III AS SHOWN ON THE CONSTRUCTION DRAWINGS.
22	30-INCH RCP CLASS III - CONTRACTOR TO INSTALL 30-INCH RCP CLASS III AS SHOWN ON THE CONSTRUCTION DRAWINGS.
23	36-INCH RCP CLASS III - CONTRACTOR TO INSTALL 36-INCH RCP CLASS III AS SHOWN ON THE CONSTRUCTION DRAWINGS.
24	12-INCH RCP CLASS III FES AS SHOWN ON THE CONSTRUCTION DRAWINGS.
25	18-INCH RCP CLASS III FES W/FOOTING & APRON GUARD AS SHOWN ON THE CONSTRUCTION DRAWINGS.
26	24-INCH RCP CLASS III FES W/FOOTING & APRON GUARD AS SHOWN ON THE CONSTRUCTION DRAWINGS.
27	36-INCH RCP CLASS III FES W/FOOTING & APRON GUARD AS SHOWN ON THE CONSTRUCTION DRAWINGS.
28	FLEXSTORM #62LCBFX INLET FILTER - CONTRACTOR TO INSTALL FLEXSTORM #62LCBFX INLET FILTER AS SHOWN (9 EXTRAS ARE TO BE GIVEN TO INSPECTOR).
29	FLEXSTORM #62MRDFX INLET FILTER - CONTRACTOR TO INSTALL FLEXSTORM #62LCBFX INLET FILTER AS SHOWN (2 EXTRAS ARE TO BE GIVEN TO INSPECTOR).
30	FLEXSTORM #62LRDFX INLET FILTER - CONTRACTOR TO INSTALL FLEXSTORM #62LCBFX INLET FILTER AS SHOWN (1 EXTRA TO BE GIVEN TO THE INSPECTOR).
31	3/8" MINUS PEA GRAVEL - CONTRACTOR TO INSTALL 3/8" MINUS PEA GRAVEL AS SHOWN ON SHEET #44
32	CLASS 'D' RIPRAP - CONTRACTOR TO INSTALL CLASS 'D' RIPRAP AS SHOWN ON THE CONSTRUCTION DRAWINGS.
33	SPECIAL BACKFILL/GRANULAR BASE - CONTRACTOR SHALL INSTALL 6-INCH SPECIAL BACKFILL OR GRANULAR BASE FOR THE ROADWAY BASE & PCC PARKING AREAS IN ACCORDANCE WITH IDOT SECTION 4132. SPECIAL BACKFILL CAN BE CRUSHED HMA (HMA THAT WAS REMOVED IN BID ITEM #5) IN ACCORDANCE WITH IDOT 4132.04.
34	6-INCH NON-REINFORCED PCC - CONTRACTOR TO INSTALL 6-INCH NON-REINFORCED PCC FOR THE PARKING AREAS AS SHOWN ON THE CONSTRUCTION DRAWINGS.
35	7-INCH NON-REINFORCED PCC - CONTRACTOR TO INSTALL 7-INCH NON-REINFORCED PCC FOR THE ROADWAYS AS DETAILED IN THE PLANS ON SHEETS #16-42.
36	6-INCH STANDARD CURB AND 2-INCH DROP CURB - CONTRACTOR TO INSTALL 6-INCH STANDARD CURB AND TRANSITION CURBS AS DETAILED IN THE PLANS.
37	GRANULAR BASE-SIDEWALKS - CONTRACTOR TO INSTALL 4-INCH GRANULAR BASE FOR PCC SIDEWALKS AS DETAILED IN THE PLANS.
38	5-INCH NON-REINFORCED PCC SIDEWALKS - CONTRACTOR TO INSTALL 5-INCH NON-REINFORCED PCC SIDEWALKS AS DETAILED IN THE PLANS.
39	CLASS 'A CRUSHED STONE - CONTRACTOR TO INSTALL CLASS 'A CRUSHED STONE FOR THE CANOE/KAYAK DROP-OFF LOCATION AT THE BOAT RAMP (SHEET #20).
40	TRAFFIC CONTROL - CONTRACTOR TO INSTALL TRAFFIC CONTROL AS DETAILED ON SHEET #5 AND INSTALL TYPE III BARRICADES OR SOME OTHER KIND OF ROAD CLOSURE BARRIER AT THE ENTRANCES TO KEEP THE GENERAL PUBLIC FROM ENTERING THE CONSTRUCTION SITE.
41	SEEDING, FERTILIZING AND MULCHING - CONTRACTOR SHALL HYDRAULICALLY SEED ALL DISTURBED AREAS (APPROXIMATELY 3.5 ACRES). USE TYPE 1 (PERMANENT LAWN MIXTURE) SEED MIX IN ACCORDANCE WITH SUDAS SECTION 9010.
42	STREET SIGNAGE - CONTRACTOR TO INSTALL STREET SIGNAGE AS DETAILED IN THE PLANS.
43	HANDICAP PARKING SIGNAGE - CONTRACTOR TO INSTALL HANDICAP PARKING SIGNAGE AS DETAILED IN THE PLANS.
44	STREET PAVEMENT MARKINGS - CONTRACTOR TO INSTALL STREET PAVEMENT MARKINGS AS DETAILED IN THE PLANS (CENTERLINE STRIPING ALONG CAMPGROUND ENTRANCE ROAD, BEACH ENTRANCE ROAD AND THE BEACH SHELTER ROAD).
45	PARKING SPACES PAVEMENT STRIPING, HANDICAP PARKING CROSS HATCH MARKINGS - CONTRACTOR TO INSTALL PARKING SPACES PAVEMENT STRIPING, HANDICAP PARKING CROSS HATCH MARKINGS AS DETAILED IN THE PLANS.
46	6' CONCRETE PARKING WHEEL STOPS - CONTRACTOR TO INSTALL 6' CONCRETE PARKING WHEEL STOPS AS DETAILED IN THE PLANS.
47	CONCRETE BOLLARDS - CONTRACTOR TO INSTALL CONCRETE BOLLARDS AS DETAILED IN THE PLANS.
48	CONSTRUCTION SURVEY STAKING AND AS-BUILT SURVEY - CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONSTRUCTION SURVEY STAKING AND PROVIDING AN AS-BUILT SURVEY TO THE OWNER UPON COMPLETION OF THE PROJECT.
49	NPDES GENERAL PERMIT #2 & SWPPP - CONTRACTOR SHALL OBTAIN THE NECESSARY NPDES GENERAL PERMIT #2 AS GREATER THAN 1 ACRE OF AREA IS BEING DISTURBED WITH THIS PROJECT AND TO PREPARE A SWPPP IN ACCORDANCE WITH PERMIT #2. CONTRACTOR IS RESPONSIBLE FOR SUPPLYING INSPECTIONS & RECORD KEEPING.
50	MOBILIZATION - COST FOR CONTRACTOR TO MOBILIZE.

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

QUANTITIES & GENERAL NOTES

CONSTRUCTION PROJECT FOR:

LAKE AHQUABI CAMPGROUND UPGRADE PROJECT

WARREN COUNTY, IOWA

NO.	BY	DATE	REVISION

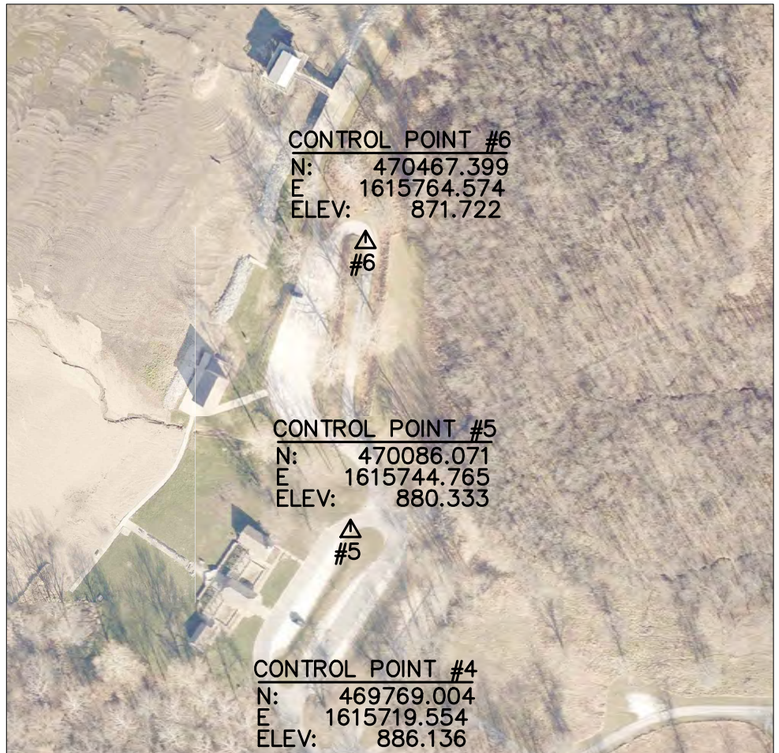
DRAWN BY:

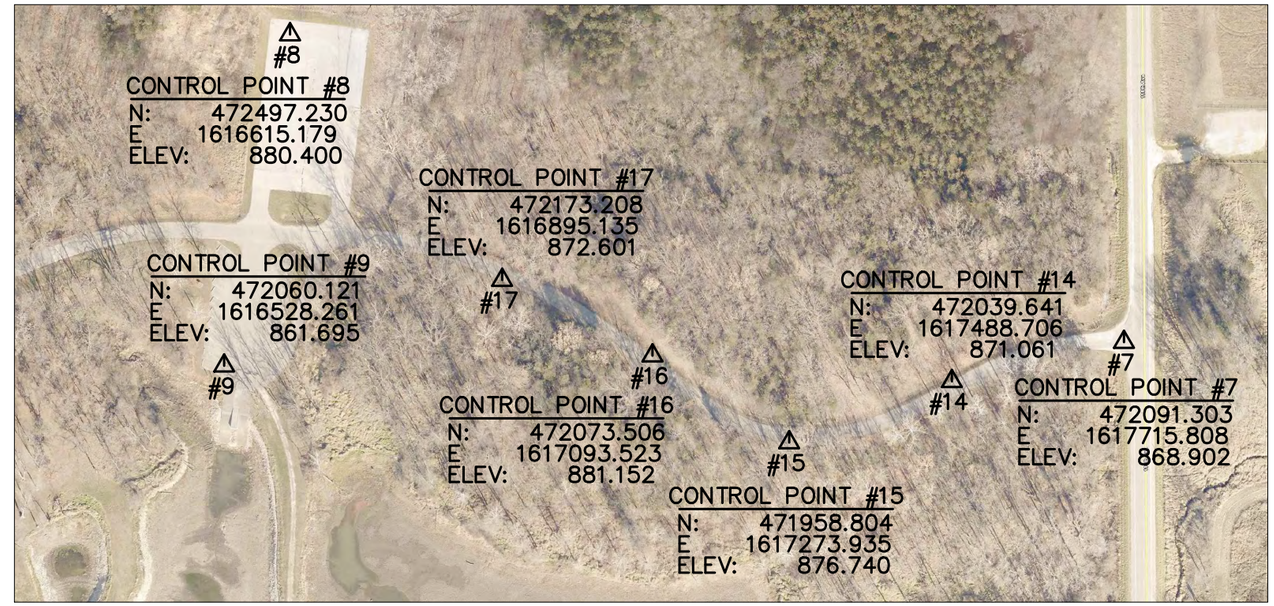
PROJECT NUMBER: 21-05-91-02

CHK'D BY:

DATE: 6/29/2022

SHEET No: 3





N

0 200
FEET

SURVEY CONTROL NOTES

1. SURVEY CONTROL POINT COORDINATES ARE STATE PLANE.
2. MANY OF THE CONTROL POINTS ARE PK NAILS SET IN THE EXISTING ASPHALT SURFACE WHICH WILL BE REMOVED DURING THE DEMOLITION PHASE, SURVEYOR SHOULD ESTABLISH ADDITIONAL CONTROL POINTS OUTSIDE OF CONSTRUCTION AREAS.
3. SURVEYOR IS RESPONSIBLE FOR CONFIRMING THE ACCURACY OF ANY CONTROL POINTS USED.
4. SURVEY WAS DONE BY SHIVE-HATTERY, INC.

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

SURVEY CONTROL

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
CHK'D BY:
PROJECT NUMBER: 21-05-91-02
DATE: 6/29/2022
SHEET No: 4

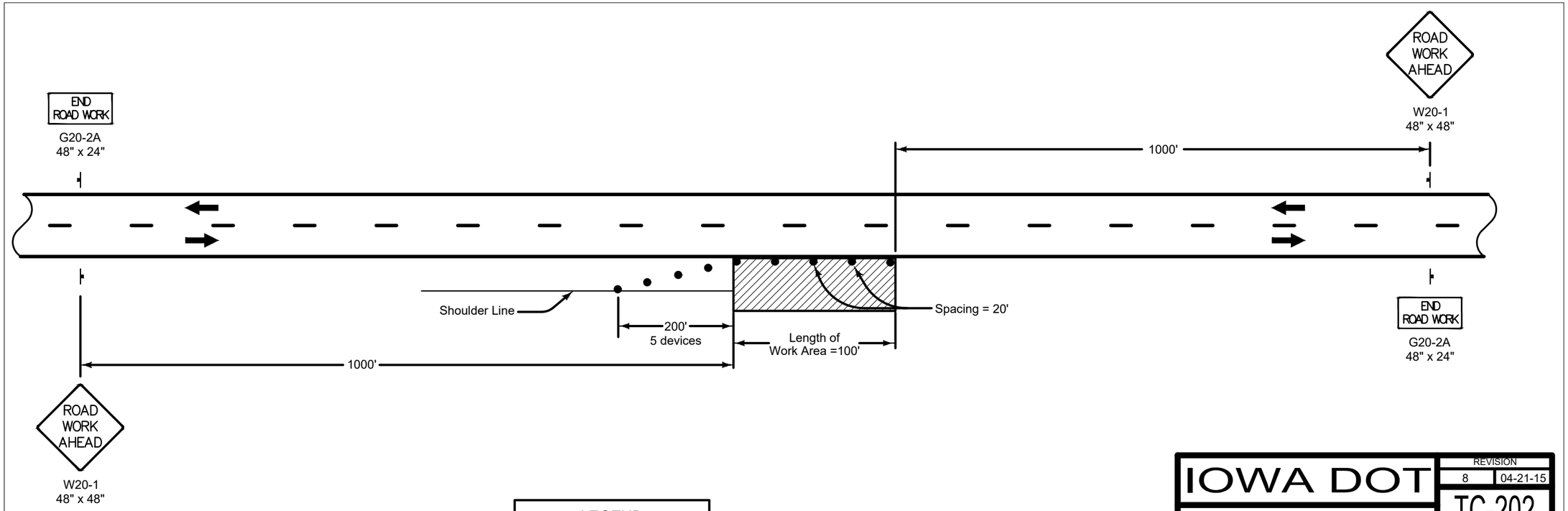
October 20, 2009
Supersedes April 18, 2006

Matls. IM 488.04
Appendix A

APPROVED SOURCES
REBOUNDABLE 42-INCH CHANNELIZER

MANUFACTURER	PRODUCT DESIGNATION
Bent Manufacturing Company	42" Stackable Channelizer Cone with 30# Round Base
Eastern Molding Intl. Highway Tech.	42" Stackable Channelizer Cone with 30# Round Base
Lakeside Plastics, Inc.	The DIVERTOR with 30# Rubber Base
Plastic Safety Systems, Inc.	42" Navigator Channelizer with 30# rubber ballasts
Three D Traffic Works	42" Stackable Cone with 30# Rubber
Traffix Devices, Inc.	42" Grabber Cone with 30# Rubber Base
Work Area Protection Corp.	42" Channelizer Cone with 30# Rubber Base

SEE DEMOLITION SHEETS #6 AND #10 FOR WORK AREA LOCATION DETAILS



LEGEND
- Traffic Sign
- 42" Channelizer
- Work Area
- Direction of Traffic

SPEED LIMIT (mph)	A	B	C	T
55	1000'	N/A	20'	200'

IOWA DOT
STANDARD ROAD PLAN

REVISION 8 04-21-15
TC-202
SHEET 1 of 1

Traffic Control

WORK WITHIN 15 FT OF TRAVELED WAY

CONSULTANT:

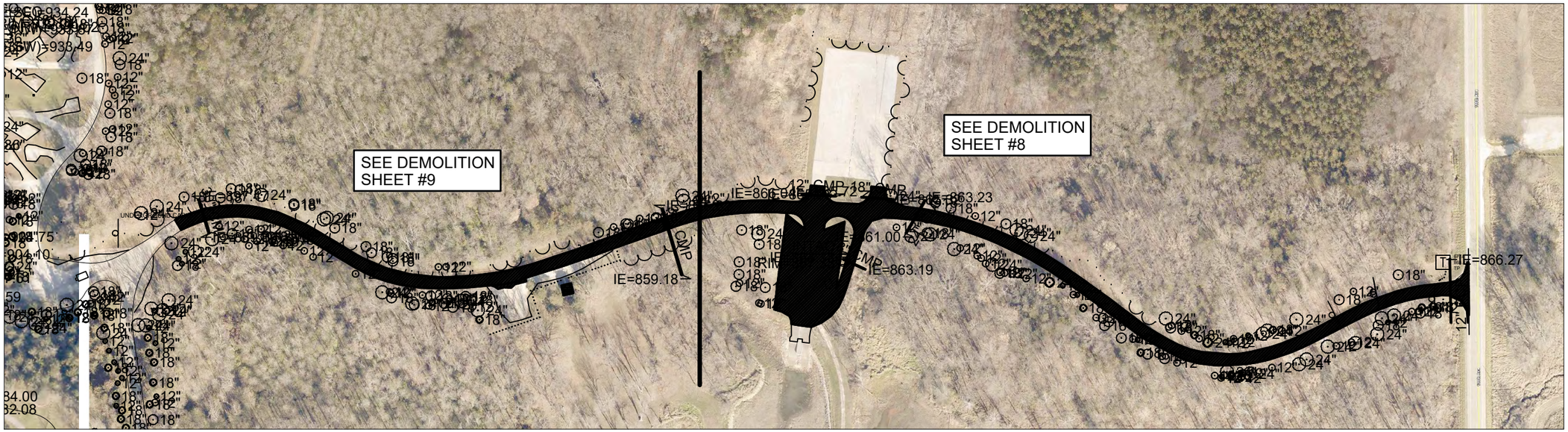
IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

TRAFFIC CONTROL

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 5



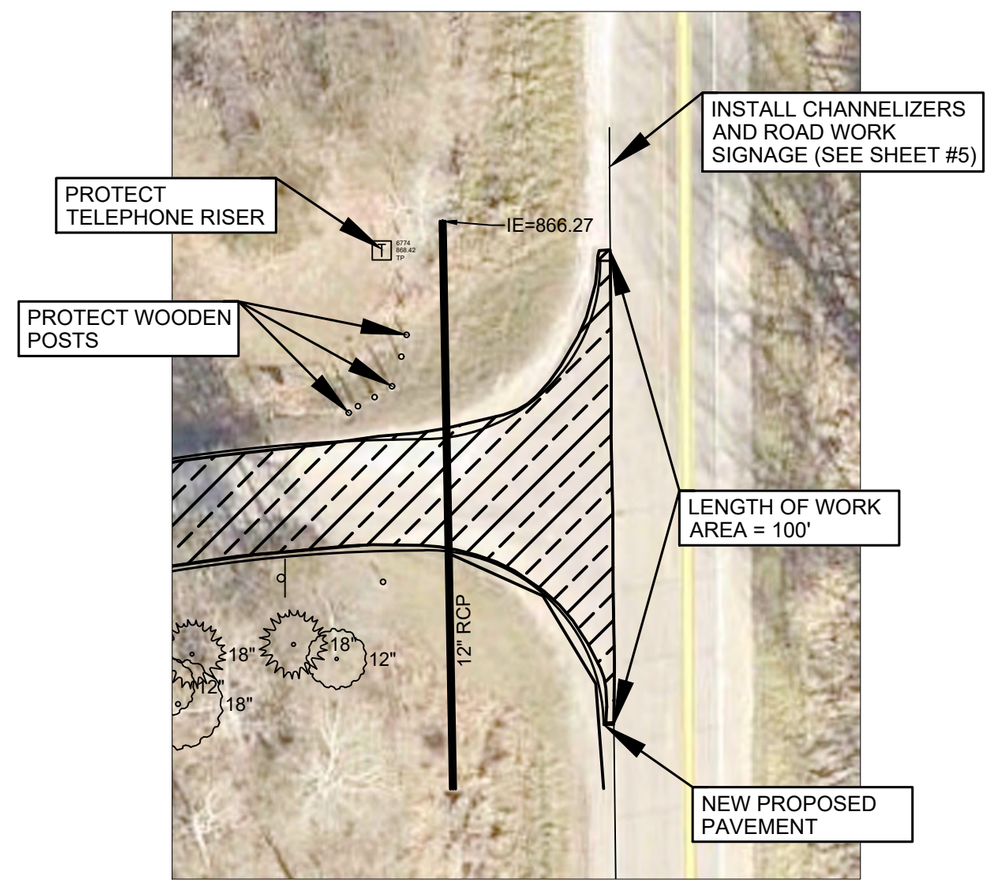
SEE SHEET #7 FOR OVERALL DEMOLITION PLAN FOR THE SOUTH HALF

0 200
FEET

LEGEND

EXISTING/PROPOSED

—— —— SAN 8"	SANITARY SEWER
—— —— ST 8"	STORM SEWER
—— —— E	ELECTRIC LINE
—— —— W 2"	WATER MAIN
20" ASH	TREE TO BE REMOVED
	SURFACE HMA ROAD TO BE REMOVED
	CONCRETE TO BE REMOVED
	GRAVEL AREA TO BE REMOVED
	BUILDINGS TO BE REMOVED



1"=30', SEE SHEET #5 FOR TRAFFIC CONTROL/SIGNAGE DETAILS

DEMOLITION NOTES

1. CONTRACTOR TO REMOVE EXISTING BUILDING STRUCTURE WHERE DETAILED. REMOVAL SHALL INCLUDE THE ENTIRE BUILDING STRUCTURE, ROOF, FLOORS, WALLS, FOOTINGS IN THEIR ENTIRETY, REMOVE ALL PAVEMENT, SIDEWALKS AND ANY UTILITY SERVICE LINES. REMOVE ALL BUILDING CONTENTS, DEBRIS, ETC. WITHIN BUILDINGS. CONTRACTOR TO DISPOSE OF PROPERLY IN ACCORDANCE WITH ALL RULES AND REGULATIONS.
2. CONTRACTOR TO REMOVE EXISTING GRAVEL IN AREAS DETAILED (ASSUMED 4 INCH DEPTH). GRAVEL CAN BE USED IN EXISTING GRAVEL AREAS, FILL LOCATIONS AND ALONG SPOIL CORRIDOR WHICH IS ALONG THE ONE-WAY ACC ROAD BEING REMOVED FROM THE BEACH AREA TO THE SOUTH SHELTER. THIS ROAD IS BEING REMOVED AND ABANDONED AND THIS CORRIDOR CAN BE USED AS A SPOIL SITE (MAINTAIN DRAINAGE ALONG THIS CORRIDOR), COMPACT TO 95% DENSITY.
3. CONTRACTOR TO REMOVE EXISTING CONCRETE SIDEWALKS AND PCC PAVEMENT AS SHOWN. CONCRETE FROM DEMOLITION AREAS (SIDEWALKS, SLABS, ETC) TO BE DISPOSED OF PROPERLY OFF-SITE.
5. CONTRACTOR SHALL REMOVE THE EXISTING HMA CAMPGROUND ROAD IN THE AREAS SHOWN. THE HMA CAMPGROUND ROAD IS ASSUMED TO BE AN AVERAGE OF 6-INCHES OF THICKNESS (APPROXIMATELY 6,585 TONS). MAY USE CRUSHED HMA AS SPECIAL BACKFILL FOR THE ROADWAY AND PARKING AREAS BASE IN ACCORDANCE WITH IDOT SECTION 4132.

TREE CLEARING, CLEARING & GRUBBING NOTES

1. CONTRACTOR TO CLEAR AND GRUB THE PROJECT SITE CONSISTING OF, BUT NOT LIMITED TO: THOSE TREES DESIGNATED FOR REMOVAL (ADDITIONAL TREES MAY BE NEEDED TO BE REMOVED THAT ARE WITHIN THE GRADING LIMITS), A 5 FOOT CLEAR ZONE OUTSIDE OF EDGE OF PROPOSED PAVEMENT TO ALLOW FOR NEEDED CLEARANCE FOR PAVING EQUIPMENT, TO THE GRADING LIMITS AS SHOWN ON THE PLANS, REMOVING 2,245 SY GRAVEL, EXISTING SIGNAGE, CULVERTS AND INLETS, PCC SIDEWALKS AND PAVEMENT AS SHOWN ON THE PLANS, REMOVE AND SALVAGE 8 WOODEN POSTS BEING USED AS PARKING BARRIERS. CULVERTS, INLETS AND PCC CONCRETE TO BE DISPOSED OF PROPERLY OFF-SITE IN ACCORDANCE WITH ALL RULES AND REGULATIONS.

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

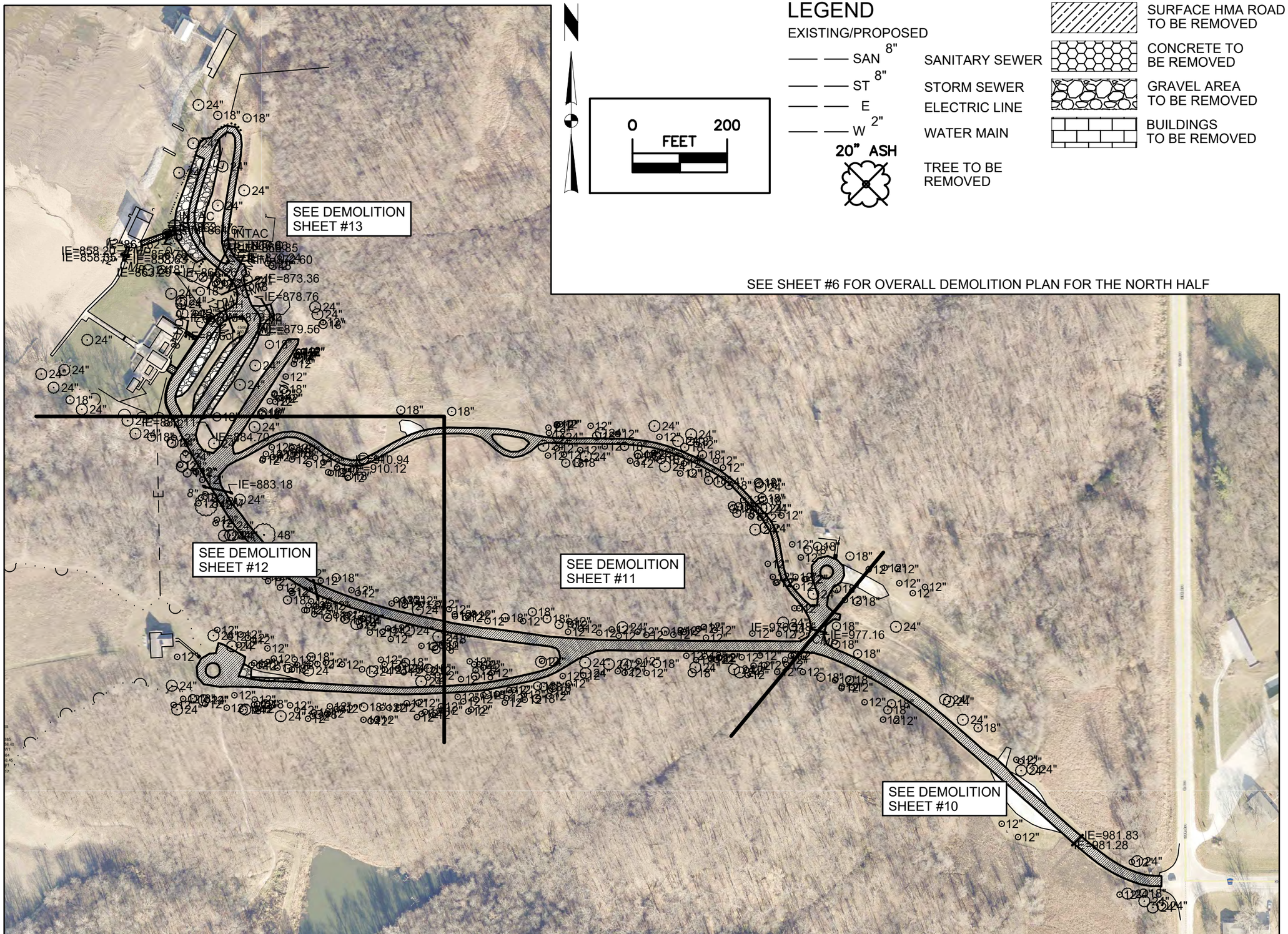
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

OVERALL DEMO PLAN NORTH 1/2

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 6



SEE SHEET #6 FOR OVERALL DEMOLITION PLAN FOR THE NORTH HALF

LEGEND

EXISTING/PROPOSED

SAN 8"	SANITARY SEWER
ST 8"	STORM SEWER
E	ELECTRIC LINE
W 2"	WATER MAIN
20" ASH	TREE TO BE REMOVED
	SURFACE HMA ROAD TO BE REMOVED
	CONCRETE TO BE REMOVED
	GRAVEL AREA TO BE REMOVED
	BUILDINGS TO BE REMOVED

0 200 FEET

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

OVERALL DEMO PLAN SOUTH 1/2

CONSTRUCTION PROJECT FOR:

LAKE AHQUABI ROAD RECONSTRUCTION PROJECT

WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:

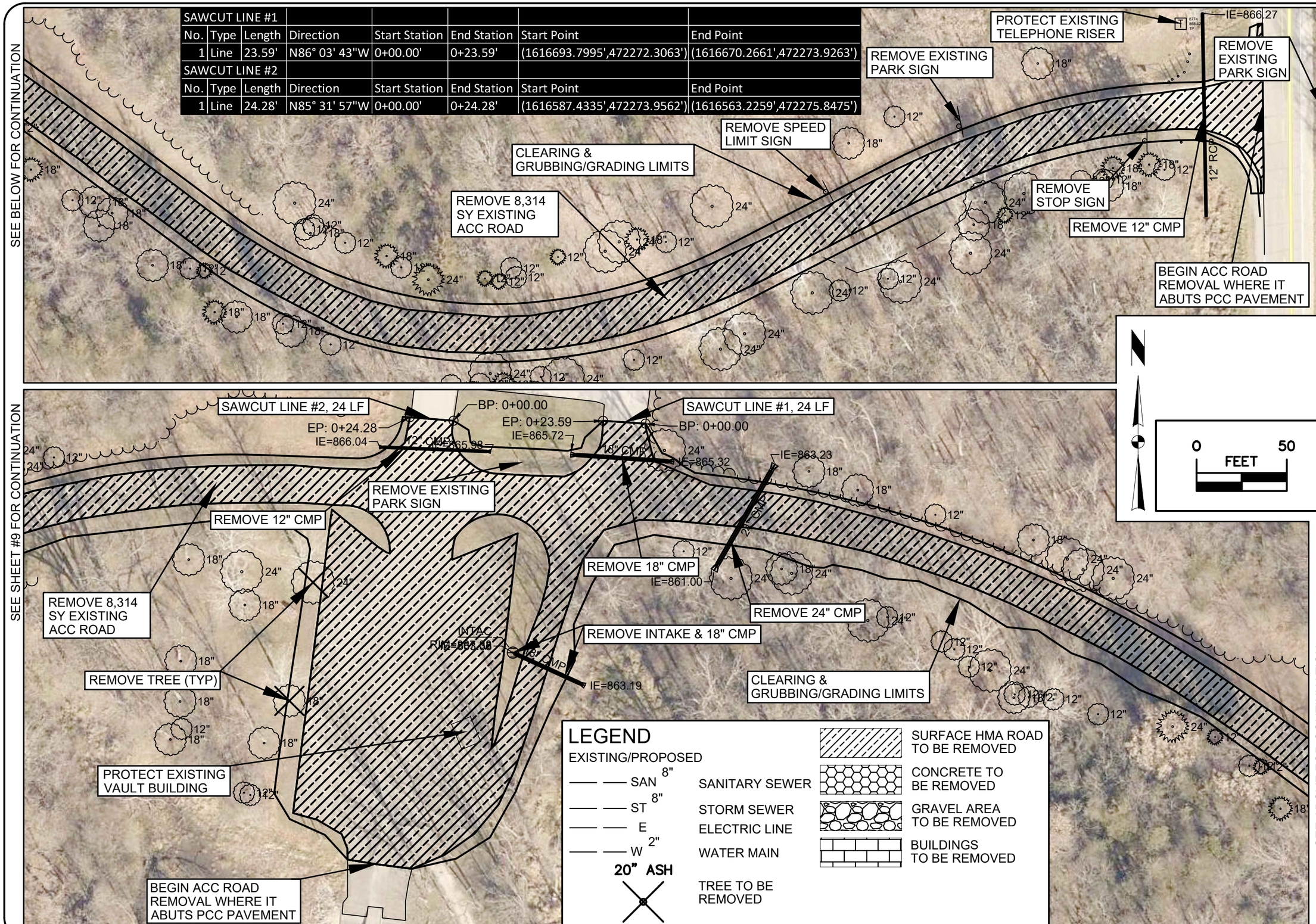
CHK'D BY:

PROJECT NUMBER: 21-05-91-02

DATE: 6/29/2022

SHEET No: 7

SAWCUT LINE #1							
No.	Type	Length	Direction	Start Station	End Station	Start Point	End Point
1	Line	23.59'	N86° 03' 43"W	0+00.00'	0+23.59'	(1616693.7995',472272.3063')	(1616670.2661',472273.9263')
SAWCUT LINE #2							
No.	Type	Length	Direction	Start Station	End Station	Start Point	End Point
1	Line	24.28'	N85° 31' 57"W	0+00.00'	0+24.28'	(1616587.4335',472273.9562')	(1616563.2259',472275.8475')



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

DEMOLITION PLAN

CONSTRUCTION PROJECT FOR:

LAKE AHQUABI ROAD RECONSTRUCTION PROJECT

WARREN COUNTY, IOWA

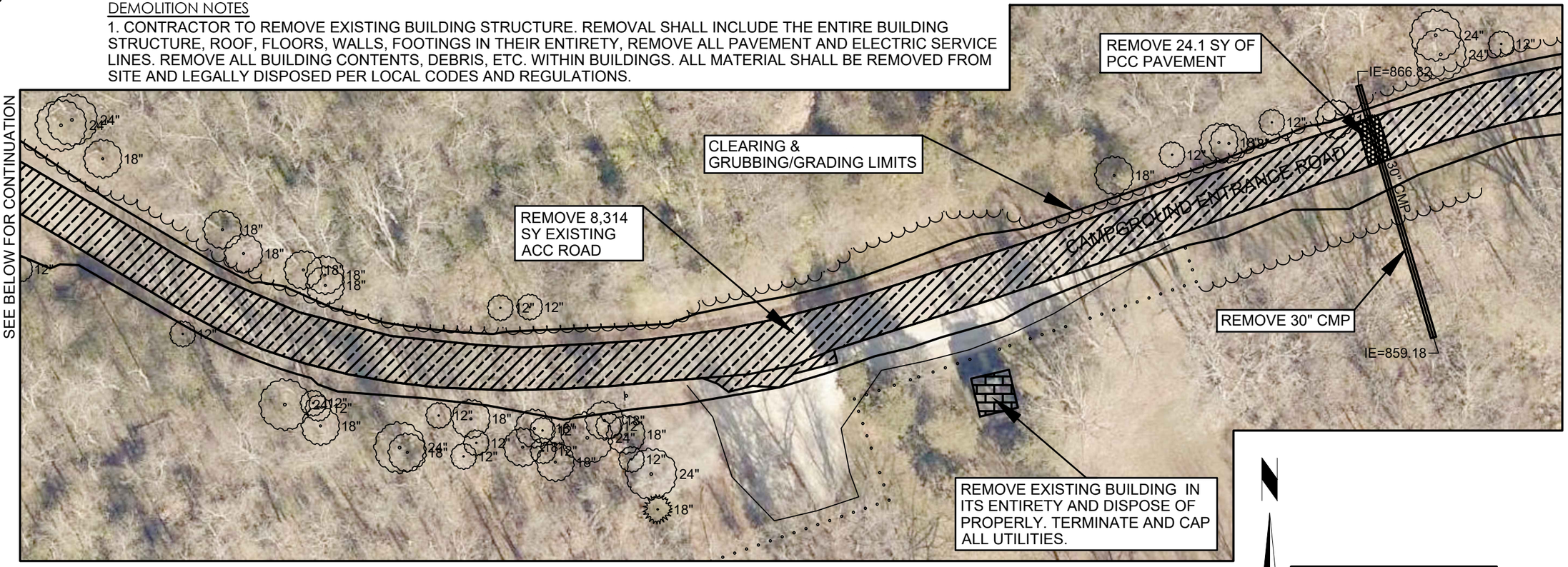
NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 8

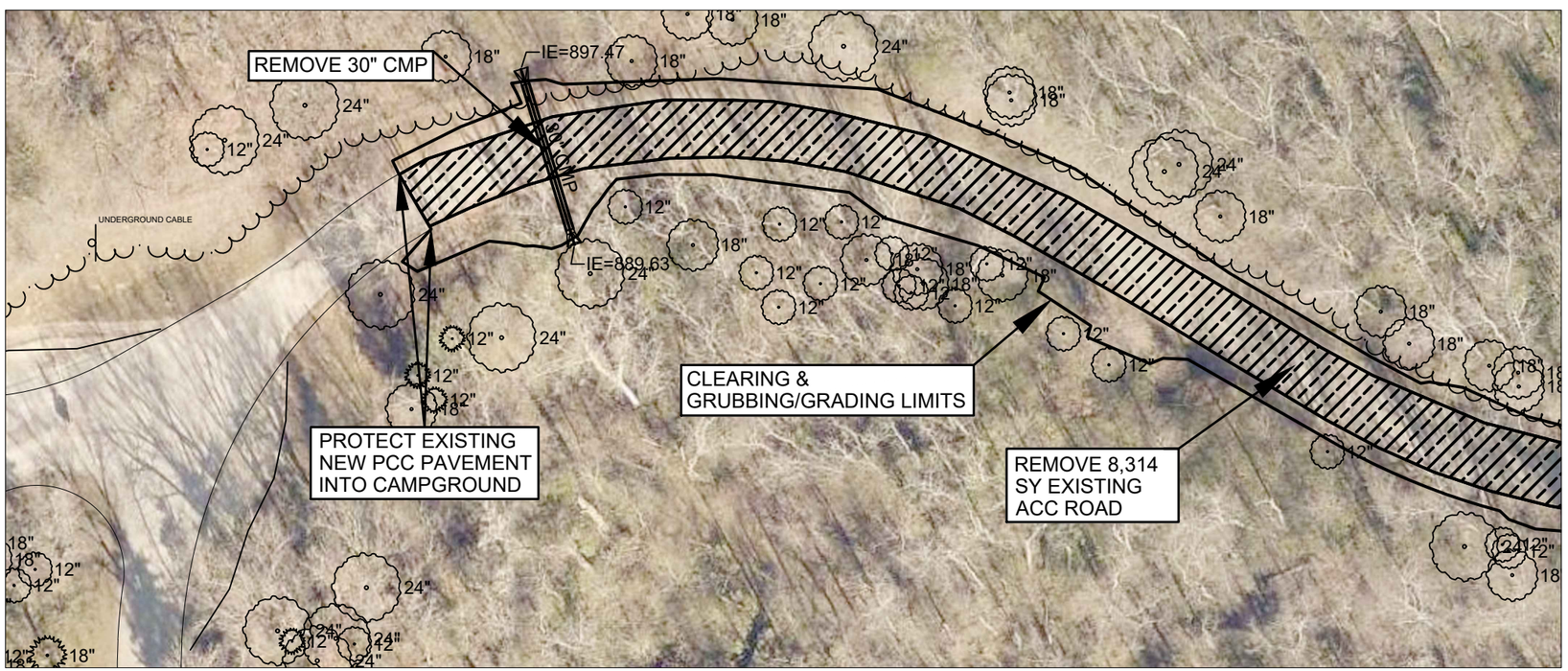
DEMOLITION NOTES

1. CONTRACTOR TO REMOVE EXISTING BUILDING STRUCTURE. REMOVAL SHALL INCLUDE THE ENTIRE BUILDING STRUCTURE, ROOF, FLOORS, WALLS, FOOTINGS IN THEIR ENTIRETY, REMOVE ALL PAVEMENT AND ELECTRIC SERVICE LINES. REMOVE ALL BUILDING CONTENTS, DEBRIS, ETC. WITHIN BUILDINGS. ALL MATERIAL SHALL BE REMOVED FROM SITE AND LEGALLY DISPOSED PER LOCAL CODES AND REGULATIONS.

SEE BELOW FOR CONTINUATION



SEE SHEET #8 FOR CONTINUATION



0 FEET 50

LEGEND

EXISTING/PROPOSED

—— —— SAN 8"	SANITARY SEWER
—— —— ST 8"	STORM SEWER
—— —— E	ELECTRIC LINE
—— —— W 2"	WATER MAIN
20" ASH	TREE TO BE REMOVED
	SURFACE HMA ROAD TO BE REMOVED
	CONCRETE TO BE REMOVED
	GRAVEL AREA TO BE REMOVED
	BUILDINGS TO BE REMOVED

SEE ABOVE FOR CONTINUATION

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

DEMOLITION PLAN

CONSTRUCTION PROJECT FOR:

LAKE AHQUABI ROAD RECONSTRUCTION PROJECT

WARREN COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY:

PROJECT NUMBER: 21-05-91-02

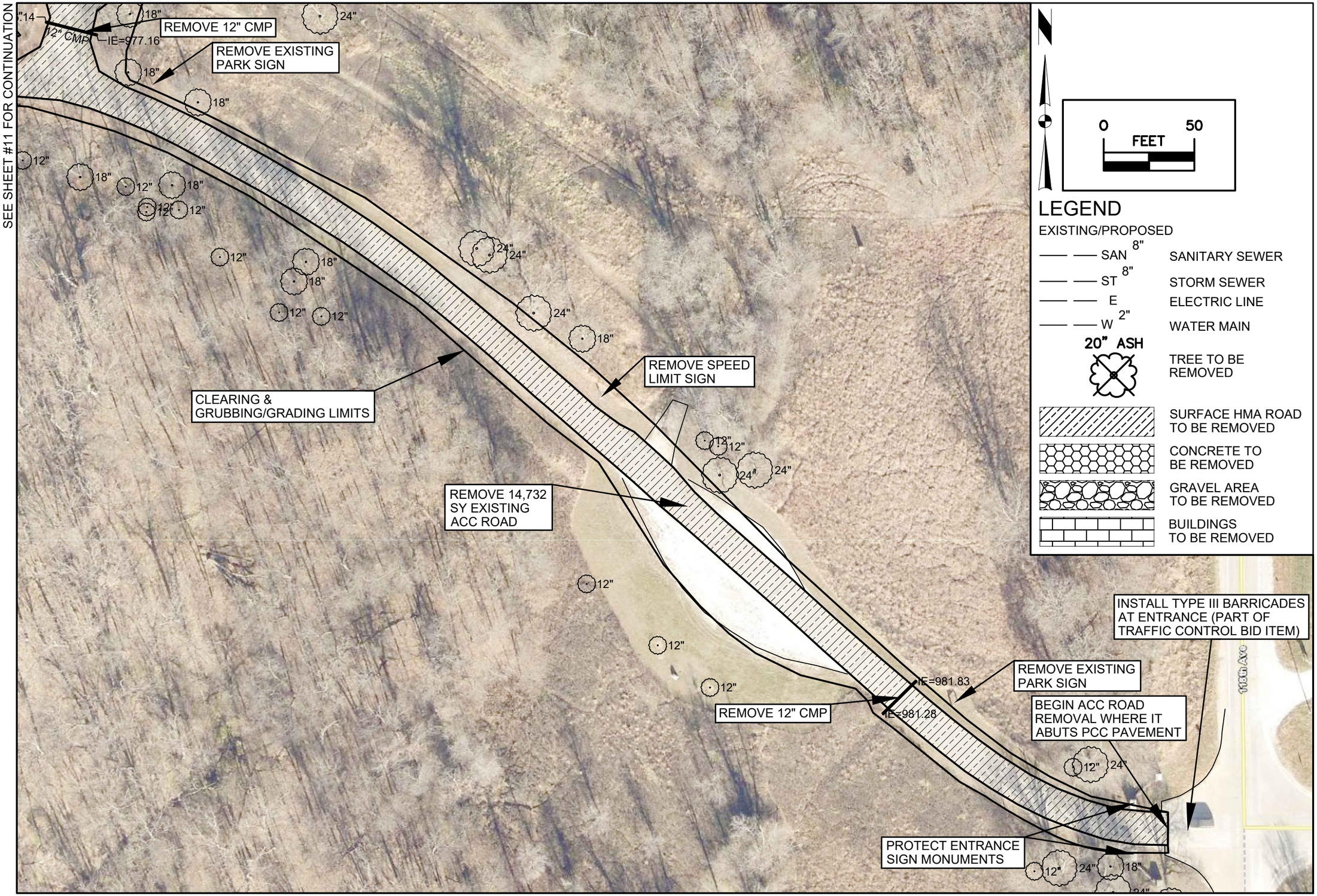
CHK'D BY:

DATE: 6/29/2022

SHEET No: 9

SEE SHEET #11 FOR CONTINUATION

SEE SHEET #11 FOR CONTINUATION



0 50
FEET

LEGEND

EXISTING/PROPOSED

SAN 8"	SANITARY SEWER
ST 8"	STORM SEWER
E	ELECTRIC LINE
W 2"	WATER MAIN
20" ASH	TREE TO BE REMOVED
	SURFACE HMA ROAD TO BE REMOVED
	CONCRETE TO BE REMOVED
	GRAVEL AREA TO BE REMOVED
	BUILDINGS TO BE REMOVED

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

DNR

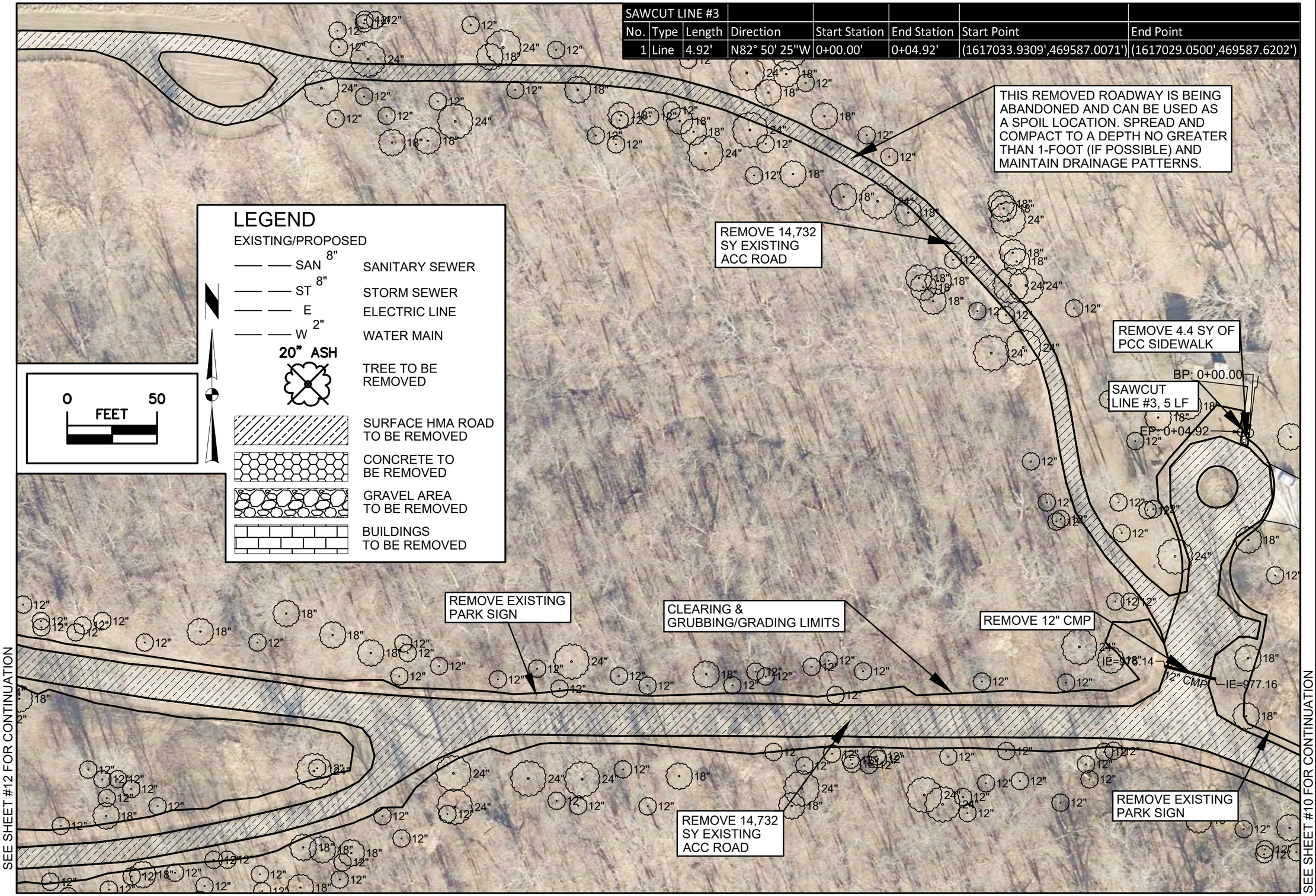
DEMOLITION PLAN

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 10

SAWCUT LINE #3							
No.	Type	Length	Direction	Start Station	End Station	Start Point	End Point
1	Line	4.92'	N82° 50' 25"W	0+00.00'	0+04.92'	(1617033.9309',469587.0071')	(1617029.0500',469587.6202')



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

DNR

DEMOLITION PLAN

CONSTRUCTION PROJECT FOR:

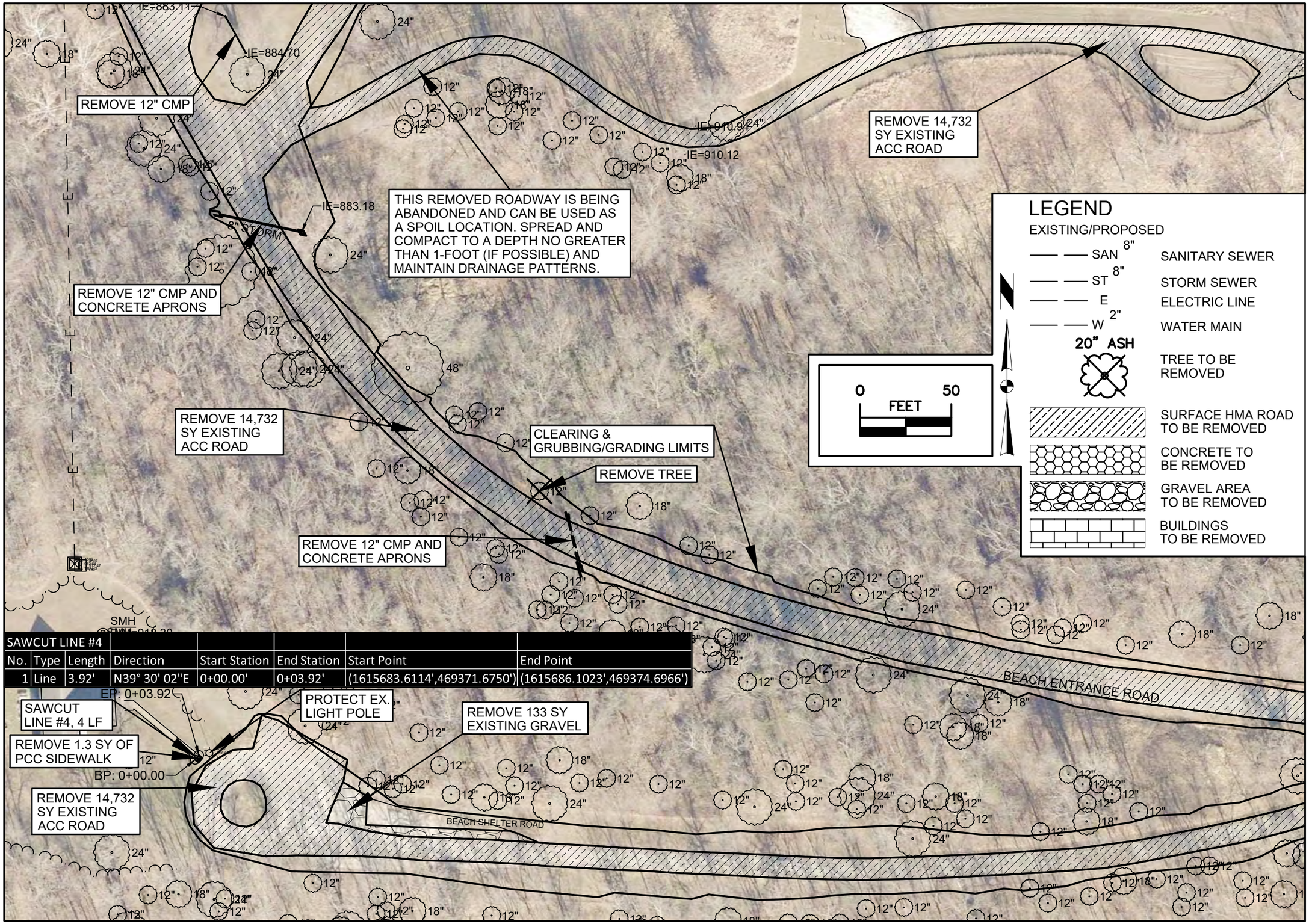
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT

WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 11

SEE SHEET #13 FOR CONTINUATION



SAWCUT LINE #4							
No.	Type	Length	Direction	Start Station	End Station	Start Point	End Point
1	Line	3.92'	N39° 30' 02"E	0+00.00'	0+03.92'	(1615683.6114',469371.6750')	(1615686.1023',469374.6966')

SEE SHEET #11 FOR CONTINUATION

SEE SHEET #11 FOR CONTINUATION

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

DNR

DEMOLITION PLAN

CONSTRUCTION PROJECT FOR:

LAKE AHQUABI ROAD RECONSTRUCTION PROJECT

WARREN COUNTY, IOWA

NO.	BY DATE	REVISION

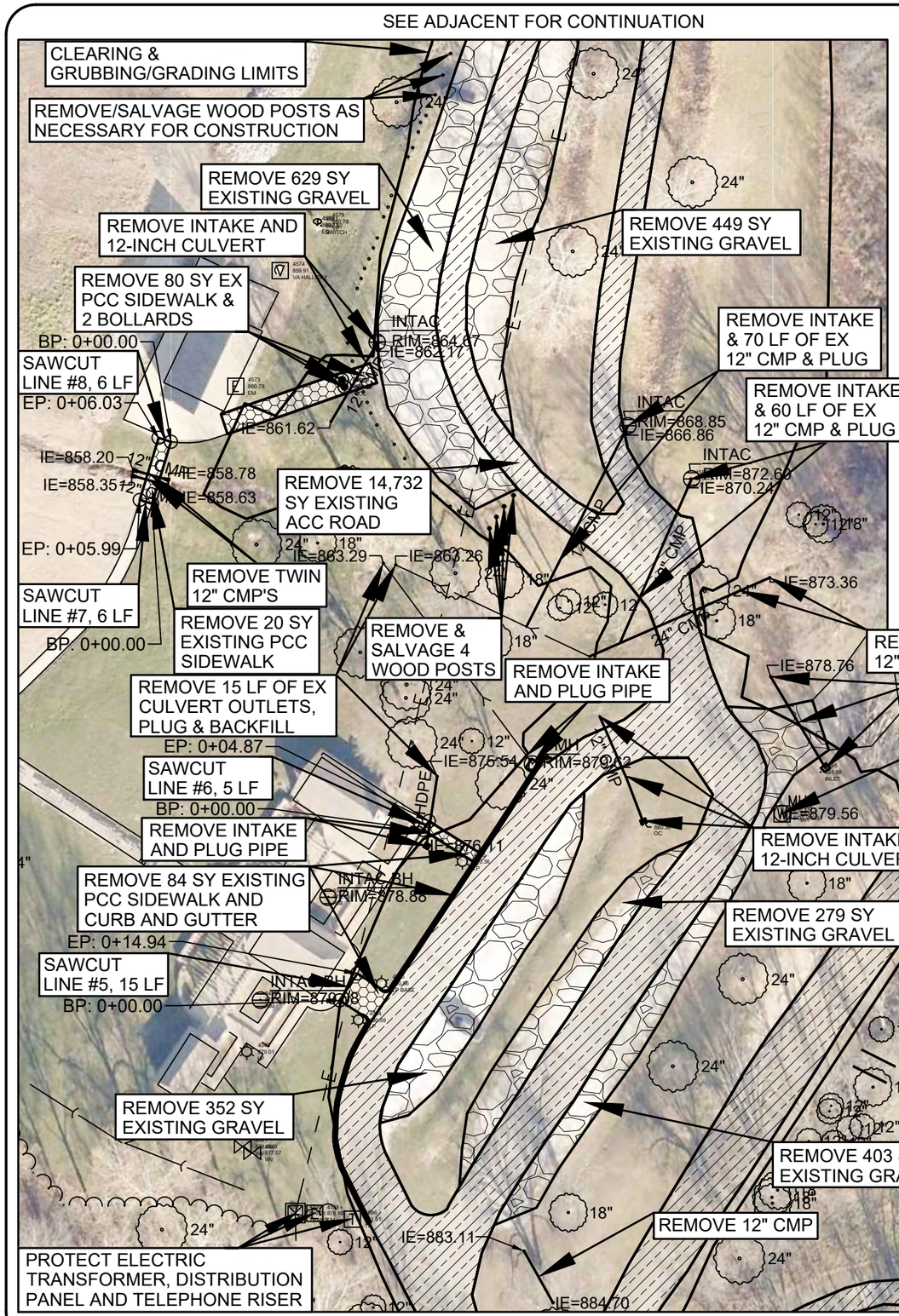
DRAWN BY:

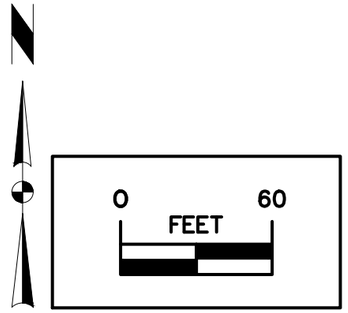
PROJECT NUMBER: 21-05-91-02

CHK'D BY:

DATE: 6/29/2022

SHEET No: 12



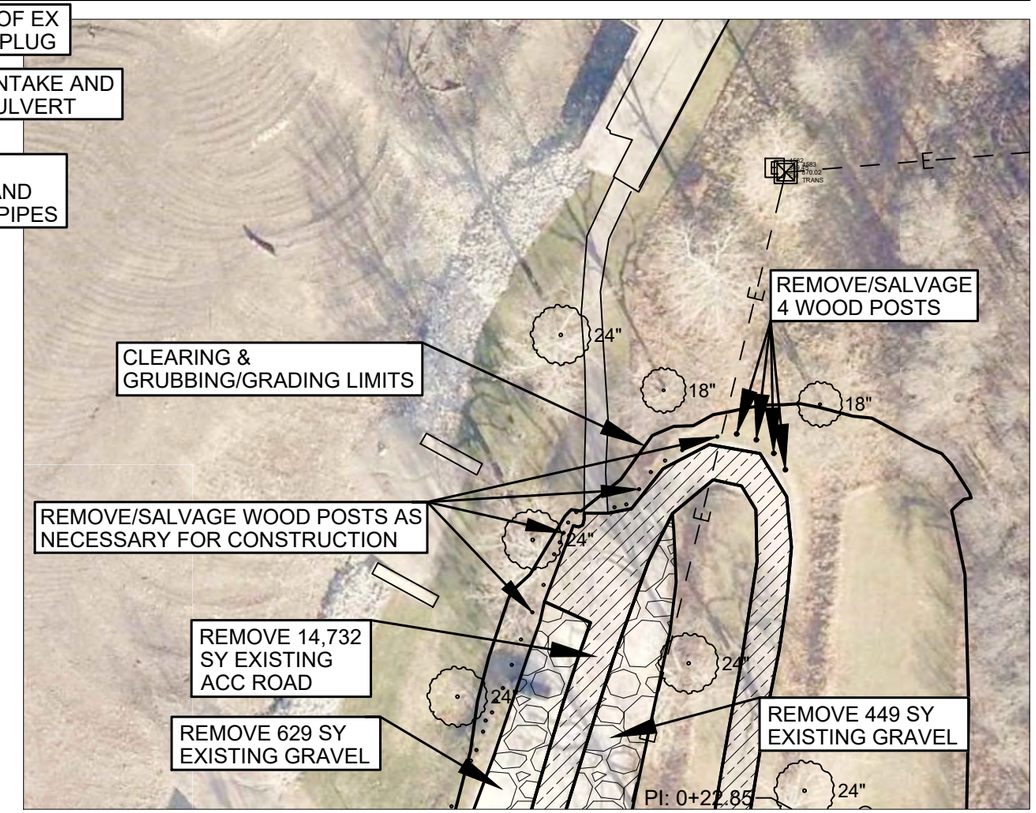


LEGEND

EXISTING/PROPOSED

- SAN 8" — SANITARY SEWER
- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 20" ASH — TREE TO BE REMOVED
- SURFACE HMA ROAD TO BE REMOVED
- CONCRETE TO BE REMOVED
- GRAVEL AREA TO BE REMOVED
- BUILDINGS TO BE REMOVED

SAWCUT LINE #5							
No.	Type	Length	Direction	Start Station	End Station	Start Point	End Point
1	Line	14.94'	N33° 16' 58"E	0+00.00'	0+14.94'	(1615617.7470',469977.3960')	(1615625.9480',469989.8890')
SAWCUT LINE #6							
No.	Type	Length	Direction	Start Station	End Station	Start Point	End Point
1	Line	4.87'	N33° 23' 43"E	0+00.00'	0+04.87'	(1615656.5557',470056.6544')	(1615659.2340',470060.7170')
SAWCUT LINE #7							
No.	Type	Length	Direction	Start Station	End Station	Start Point	End Point
1	Line	5.99'	N73° 01' 56"W	0+00.00'	0+05.99'	(1615530.5893',470208.2145')	(1615524.8628',470209.9618')
SAWCUT LINE #8							
No.	Type	Length	Direction	Start Station	End Station	Start Point	End Point
1	Line	6.03'	N72° 34' 18"W	0+00.00'	0+06.03'	(1615539.3880',470237.0520')	(1615533.6350',470238.8580')



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

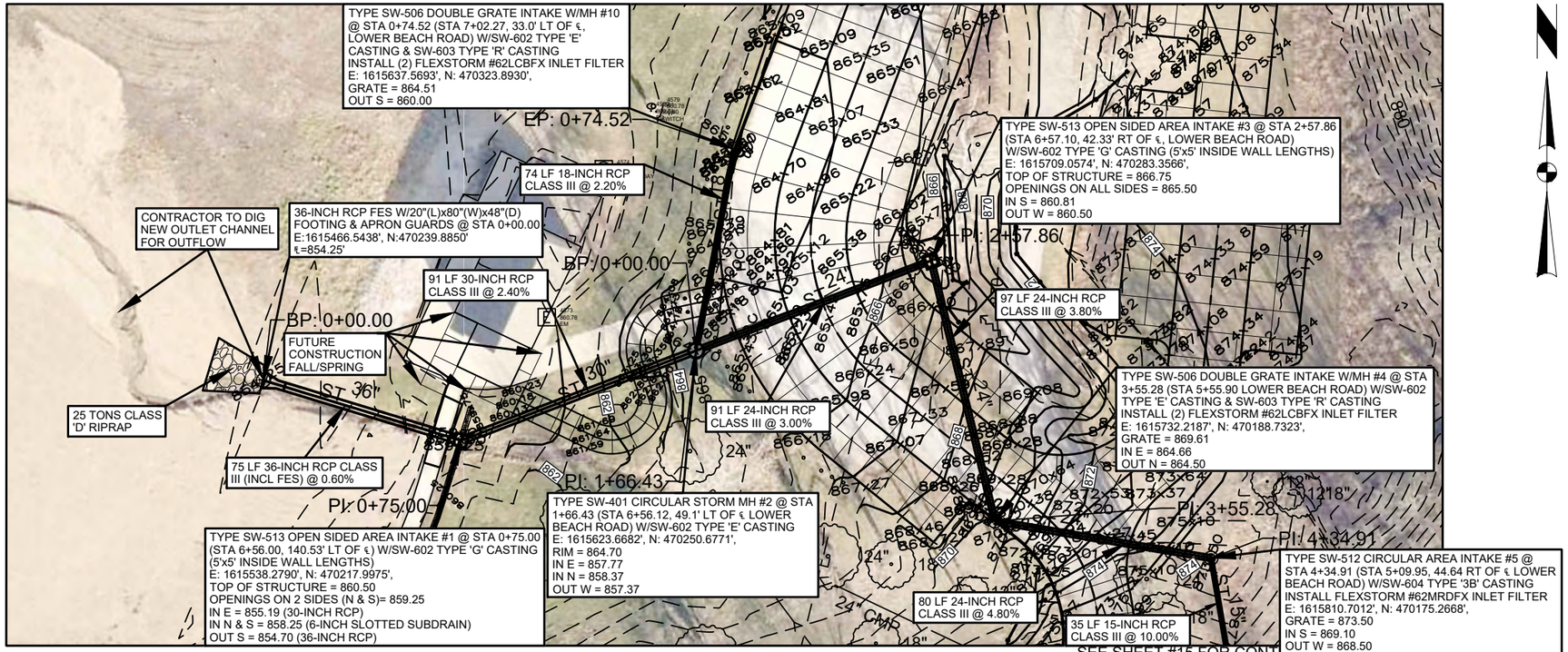
DNR

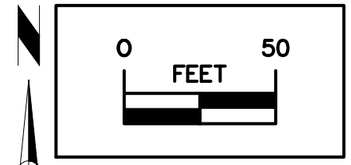
DEMOLITION PLAN

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 13



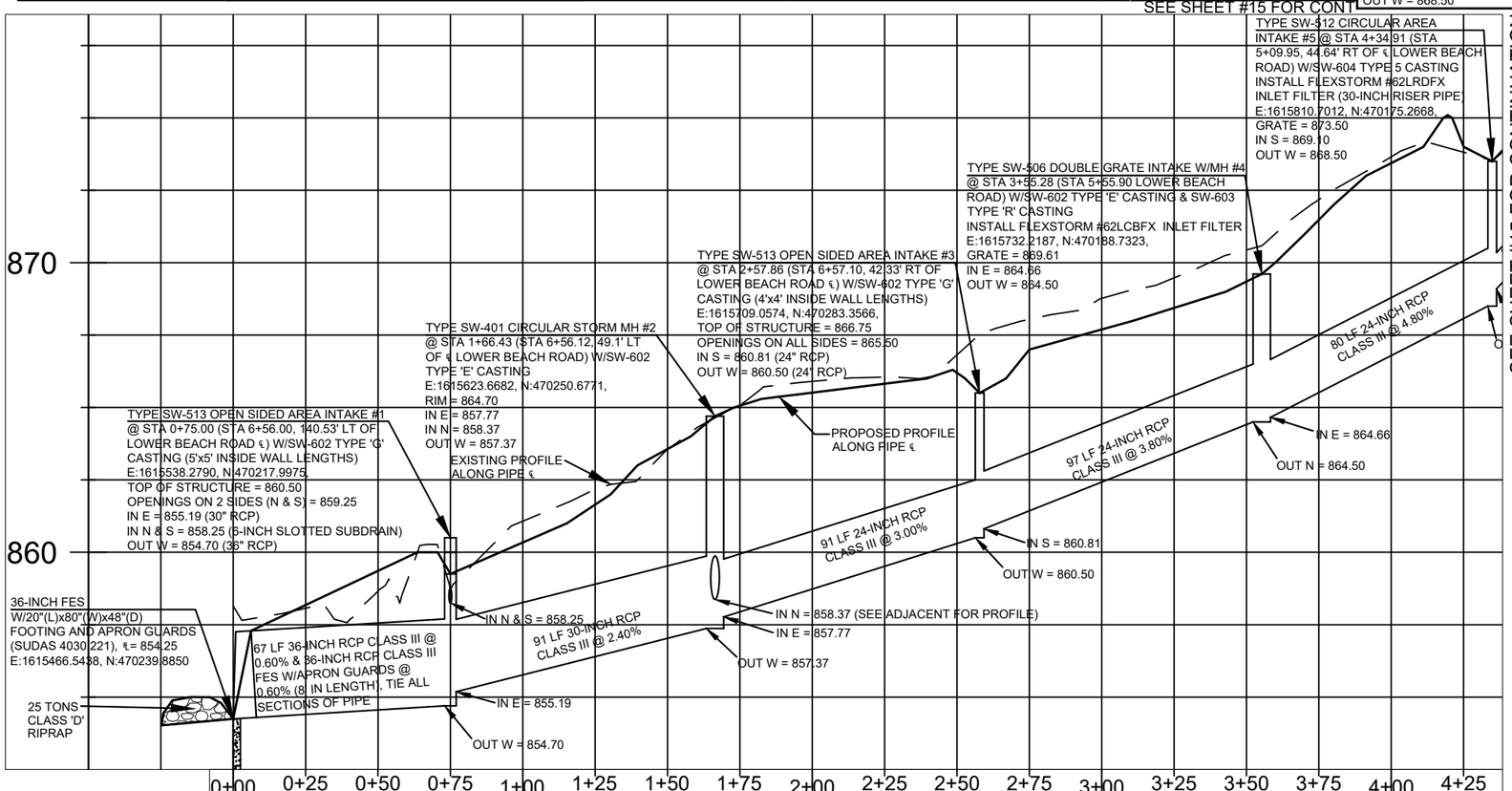


LEGEND

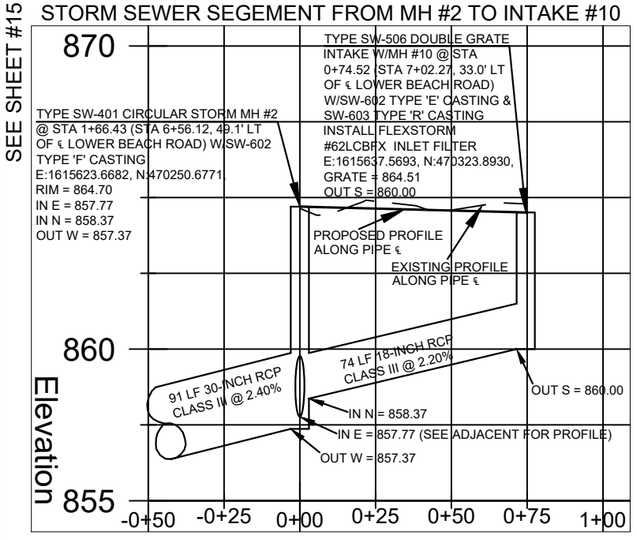
EXISTING/PROPOSED

SAN 8"	SANITARY SEWER
ST 8"	STORM SEWER
E	ELECTRIC LINE
W 2"	WATER MAIN
	MANHOLE
	INTAKE
	HYDRANT
	VALVE
	OUTLET POST
PP/LP	POWER POLE/ LIGHT POLE

NOTE: INSTALL 30 LF OF 12-INCH FILTER SOCK AROUND EACH INTAKE (9 INTAKES=270 LF)



STORM SEWER SEGEMENT FROM MH #2 TO INTAKE #10



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

STORM SEWER PLAN LOWER BEACH ROAD

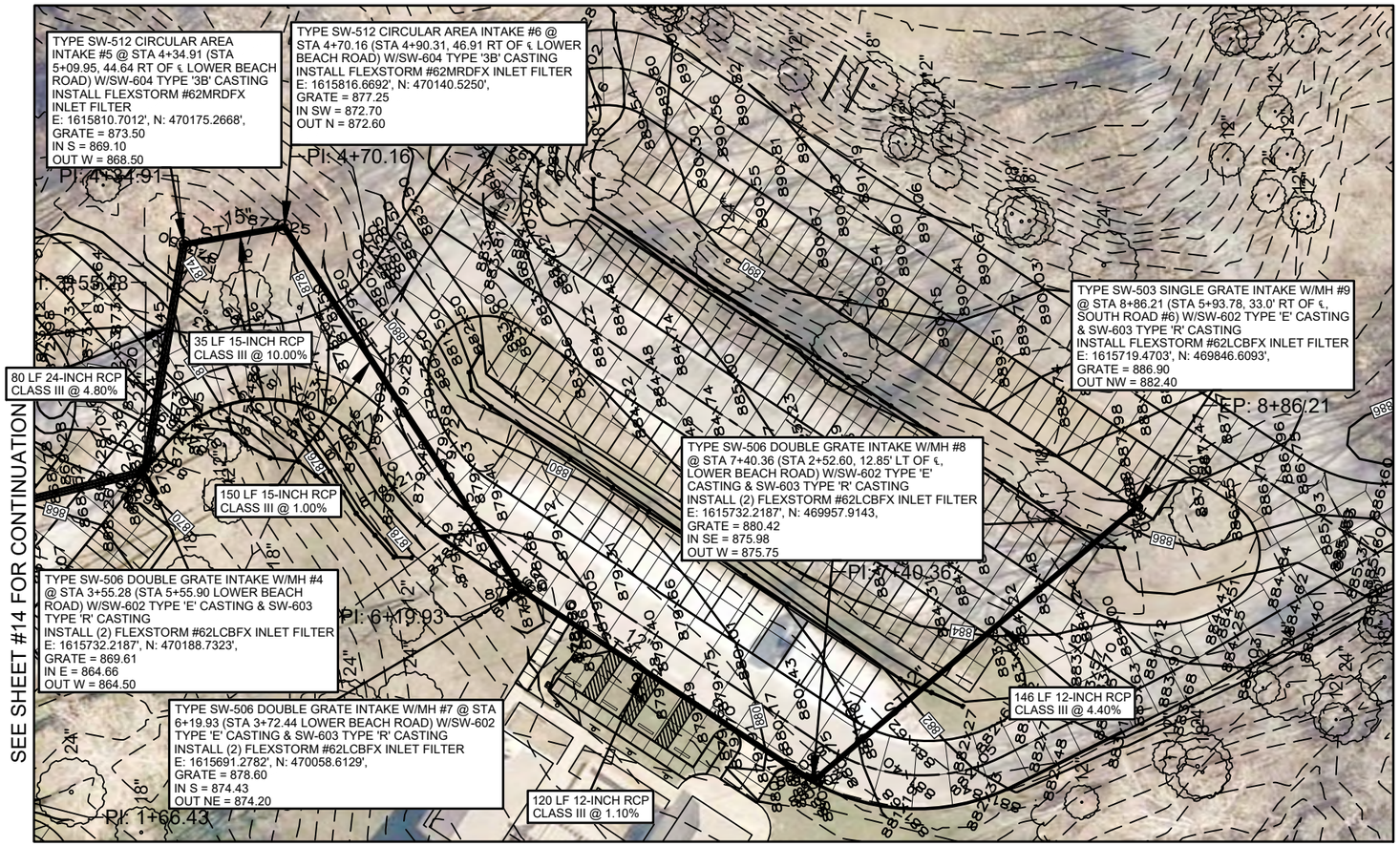
CONSTRUCTION PROJECT FOR:

LAKE AHQUABI ROAD RECONSTRUCTION PROJECT

WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 14

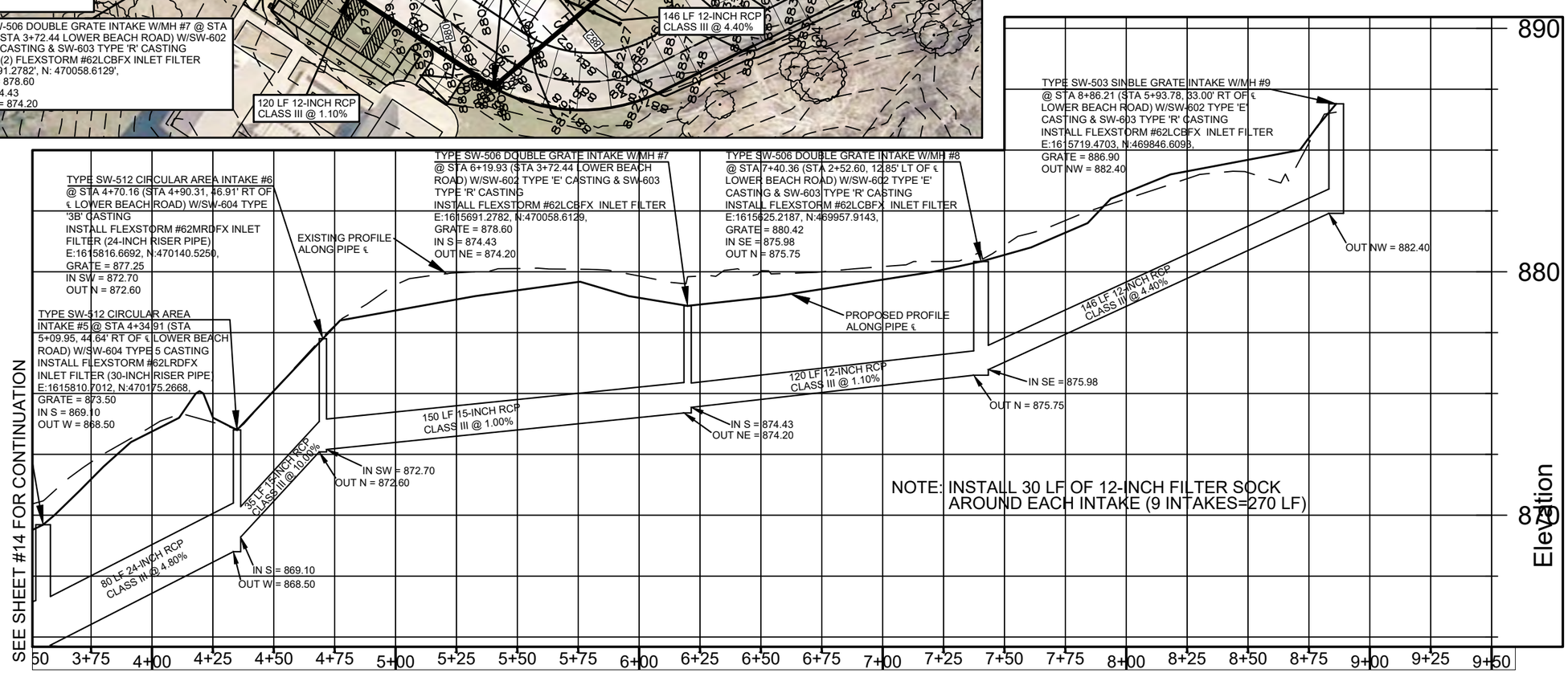


0 50
FEET

LEGEND

EXISTING/PROPOSED

SAN 8"	SANITARY SEWER
ST 8"	STORM SEWER
E	ELECTRIC LINE
W 2"	WATER MAIN
	MANHOLE
	INTAKE
	HYDRANT
	VALVE
	OUTLET POST
PP/LP	POWER POLE/ LIGHT POLE



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

STORM SEWER PLAN LOWER BEACH ROAD

CONSTRUCTION PROJECT FOR:

LAKE AHQUABI ROAD RECONSTRUCTION PROJECT

WARREN COUNTY, IOWA

NO	BY / DATE	REVISION

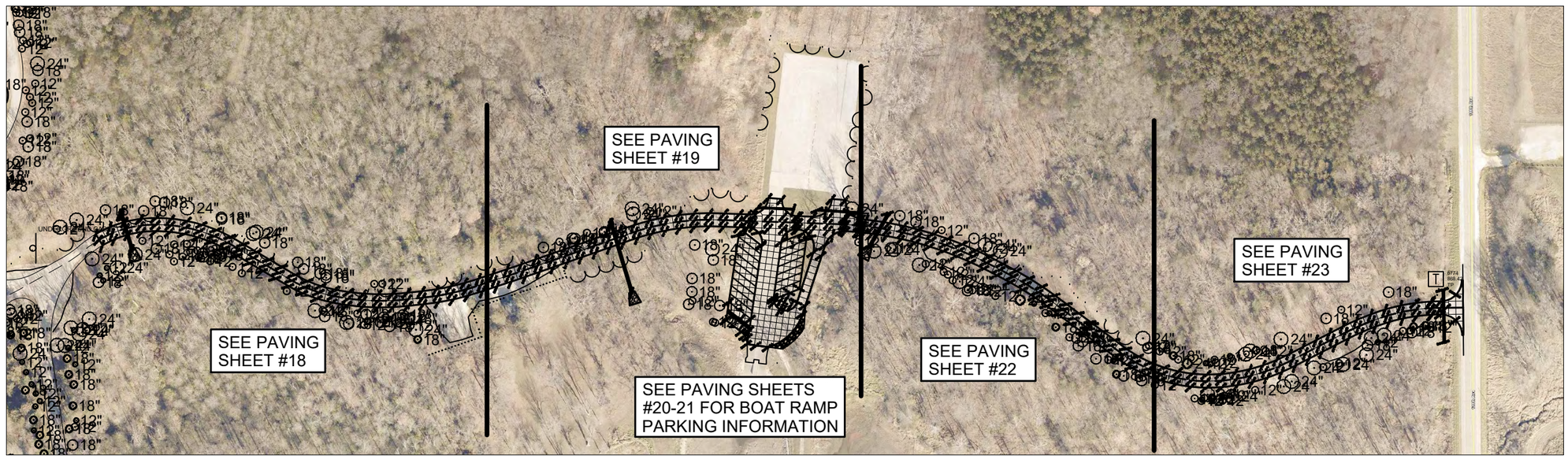
DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 15

0 200
FEET

LEGEND

EXISTING/PROPOSED

- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- PP/LP — POWER POLE
- 990 — ELEVATION
- 1144x50 — SPOT ELEVATION
- FILTER SOCK
- DRAINAGE SWALE



SEE SHEET #17 FOR OVERALL PAVING PLAN FOR THE SOUTH HALF

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

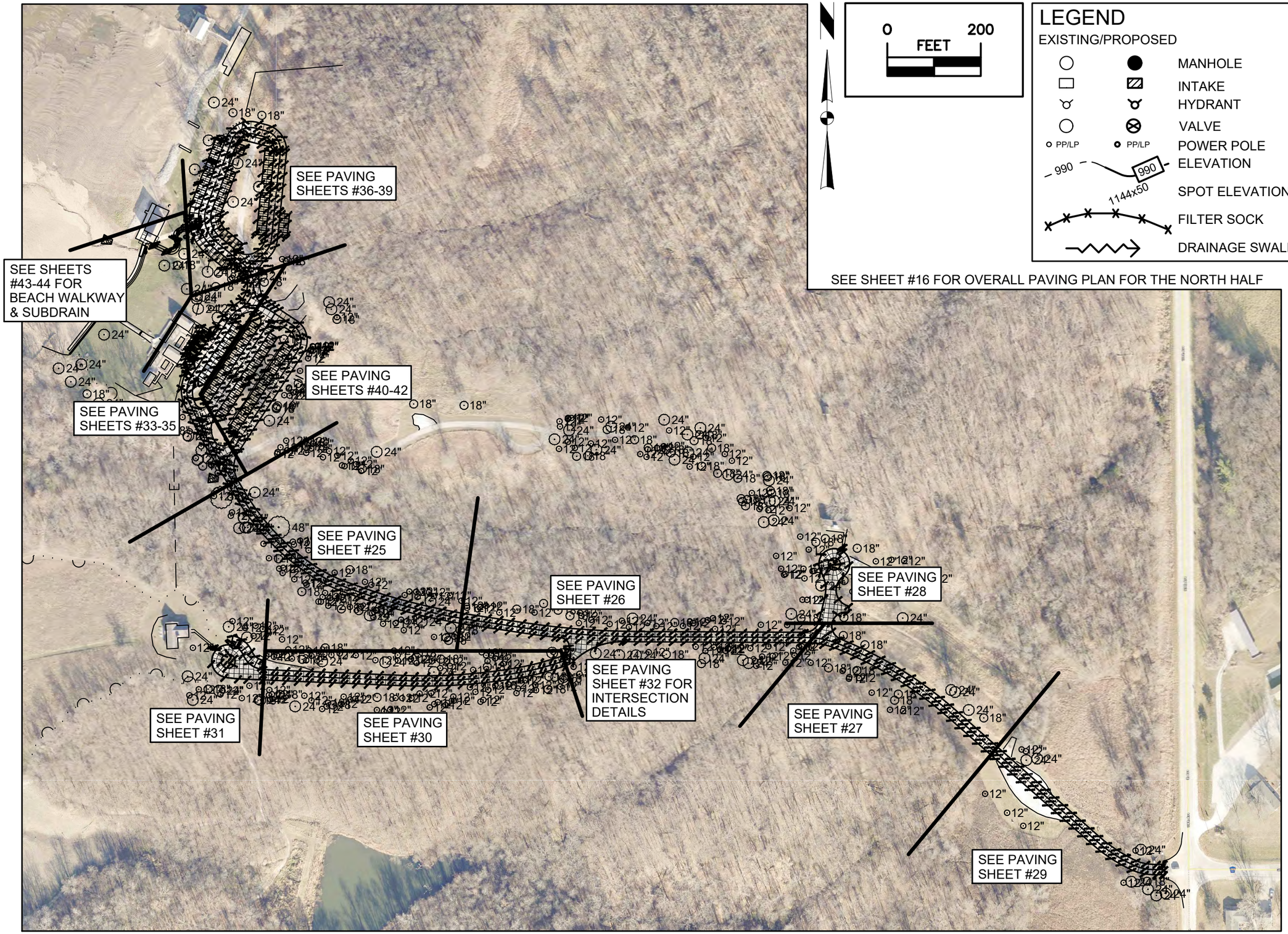
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

OVERALL PAVING PLAN NORTH 1/2

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 16



SEE SHEET #16 FOR OVERALL PAVING PLAN FOR THE NORTH HALF

0 200
FEET

LEGEND

EXISTING/PROPOSED

- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- PP/LP PP/LP POWER POLE
- 990 990 ELEVATION
- 1144x50 SPOT ELEVATION
- FILTER SOCK
- DRAINAGE SWALE

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

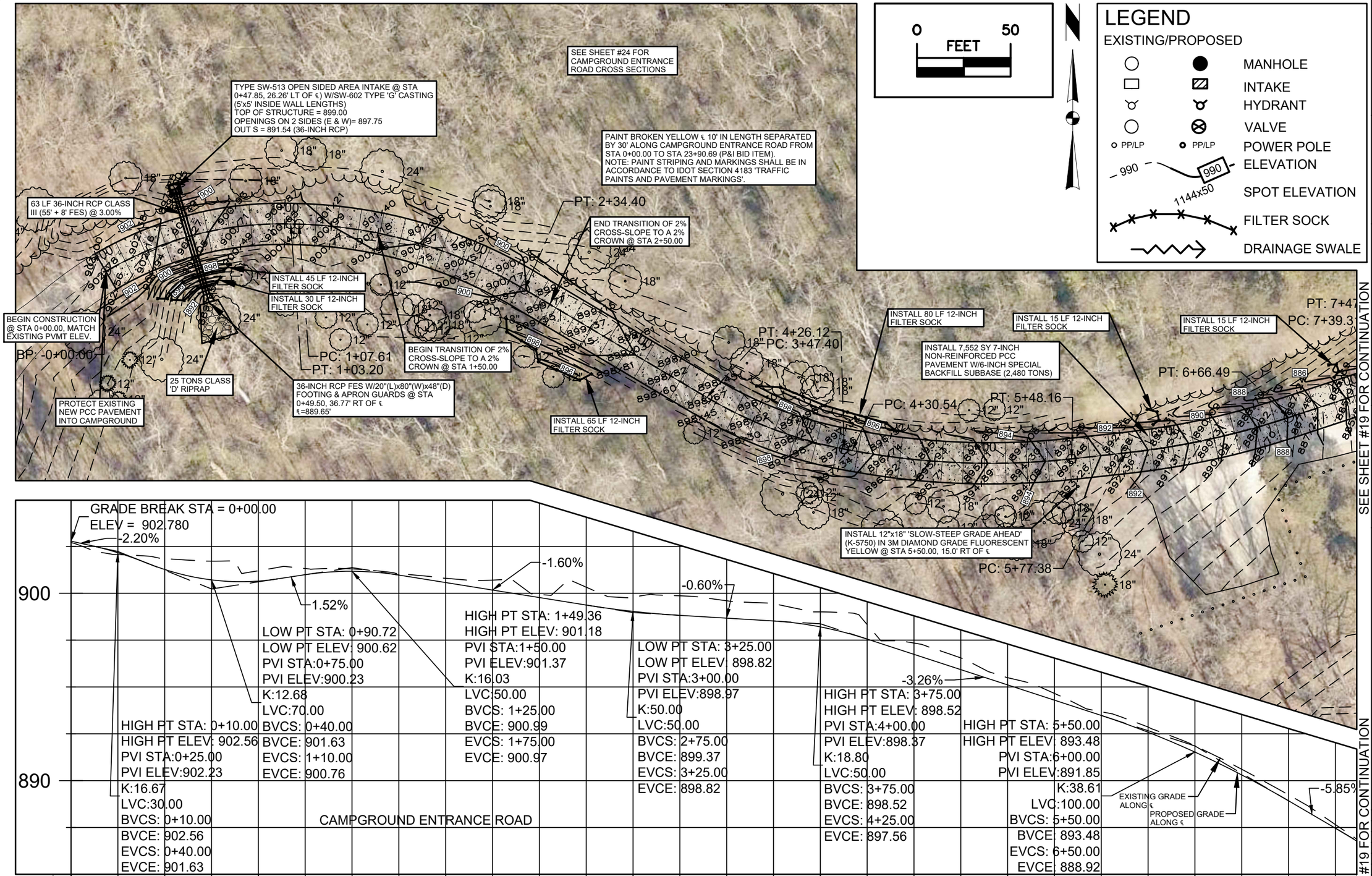
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

OVERALL PAVING PLAN SOUTH 1/2

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 17



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PAVING PLAN CAMP ENTRANCE ROAD

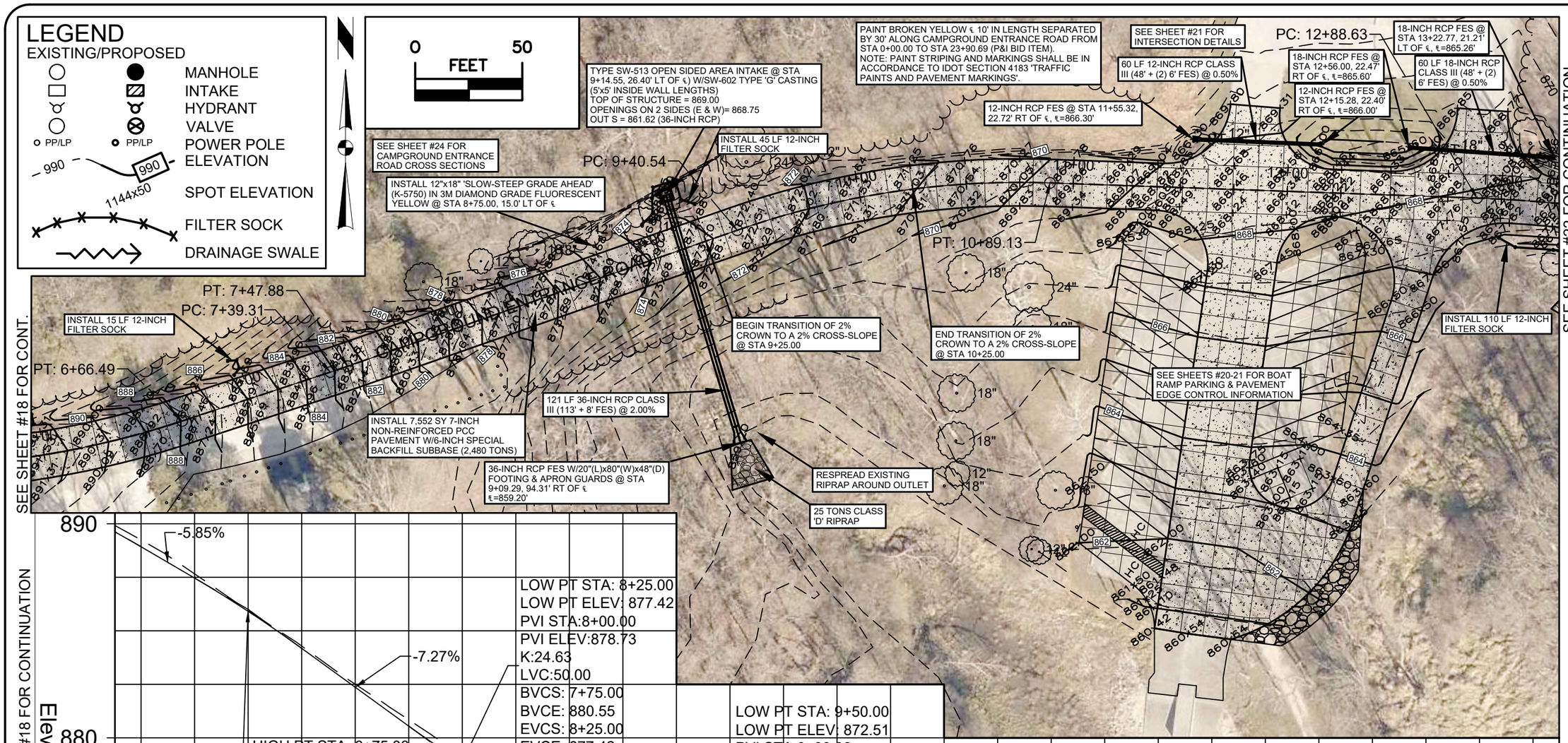
CONSTRUCTION PROJECT FOR:

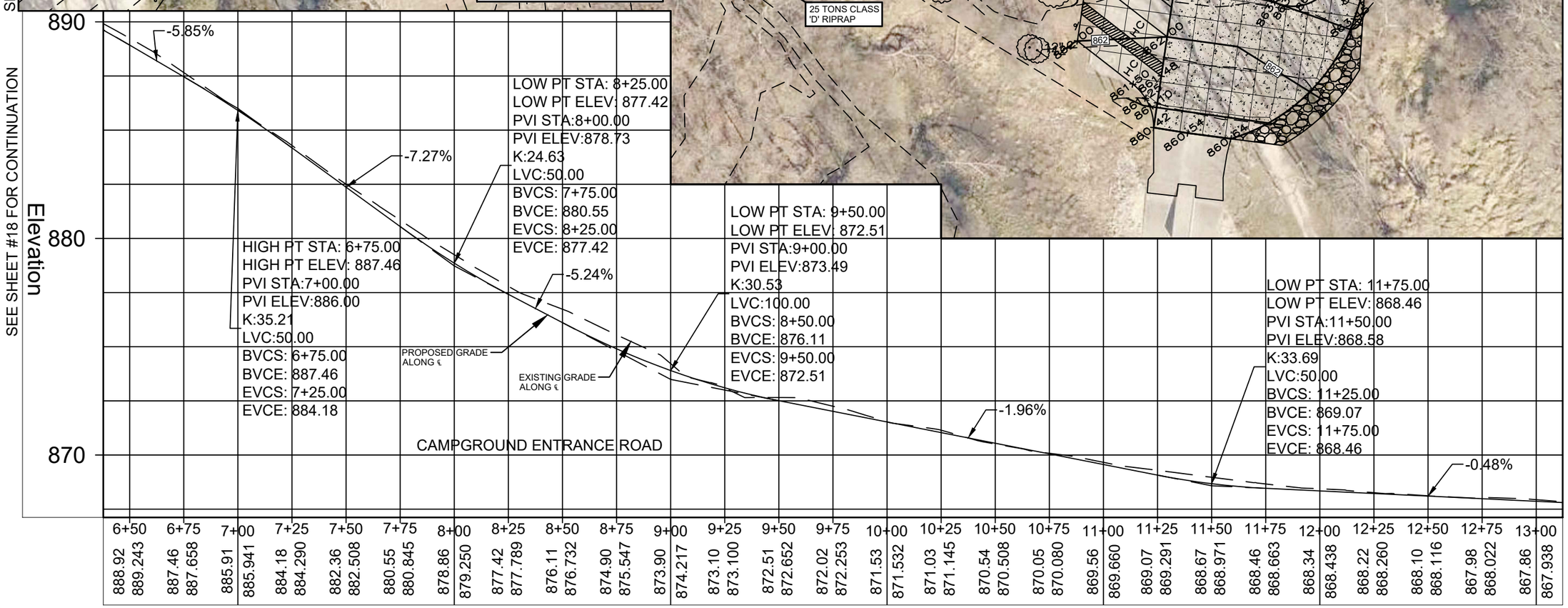
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT

WARREN COUNTY, IOWA

NO.	BY	DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 18





CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PAVING PLAN CAMP ENTRANCE ROAD

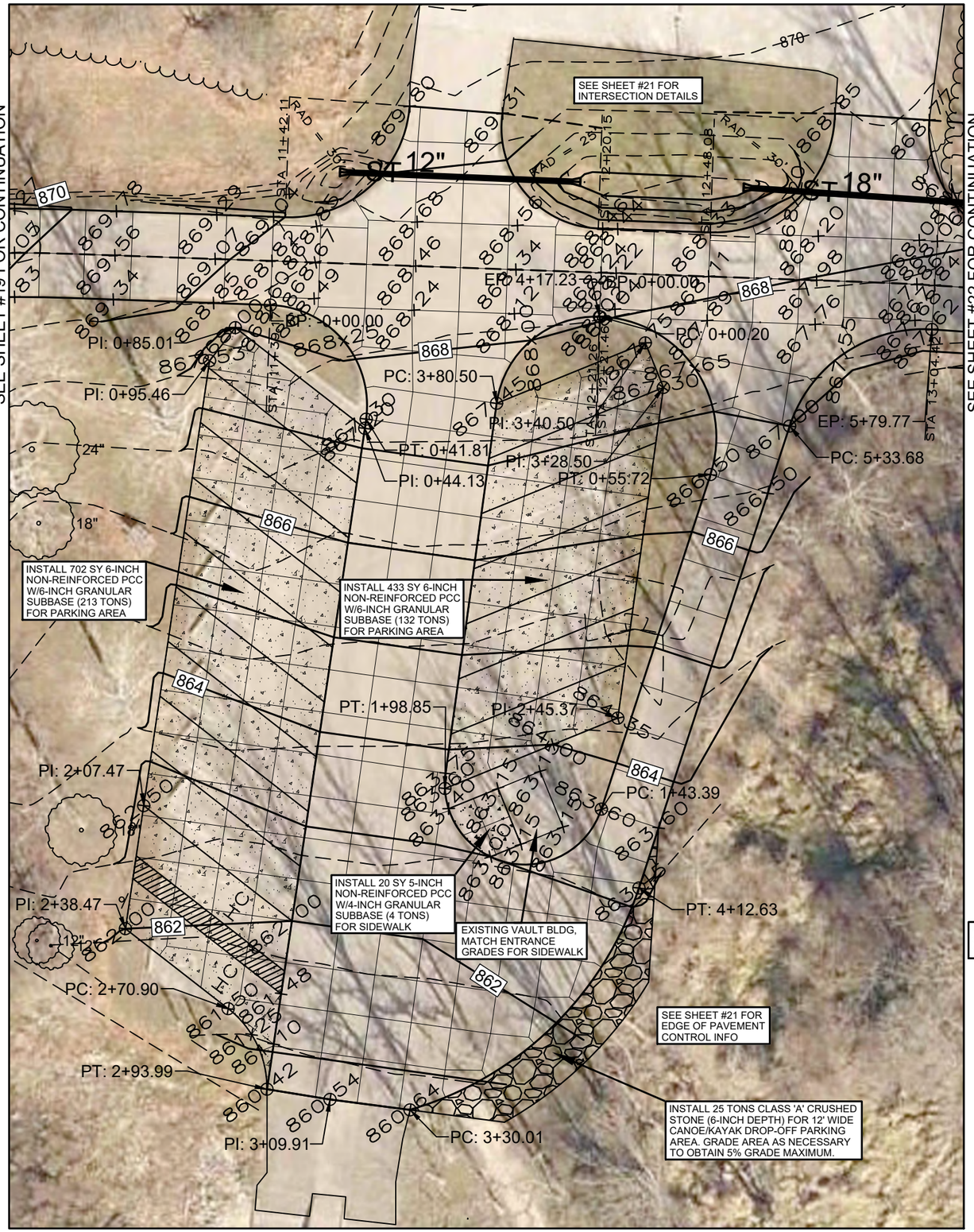
CONSTRUCTION PROJECT FOR:

LAKE AHQUABI ROAD RECONSTRUCTION PROJECT

WARREN COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY:
CHK'D BY:
PROJECT NUMBER: 21-05-91-02
DATE: 6/29/2022
SHEET No: 19

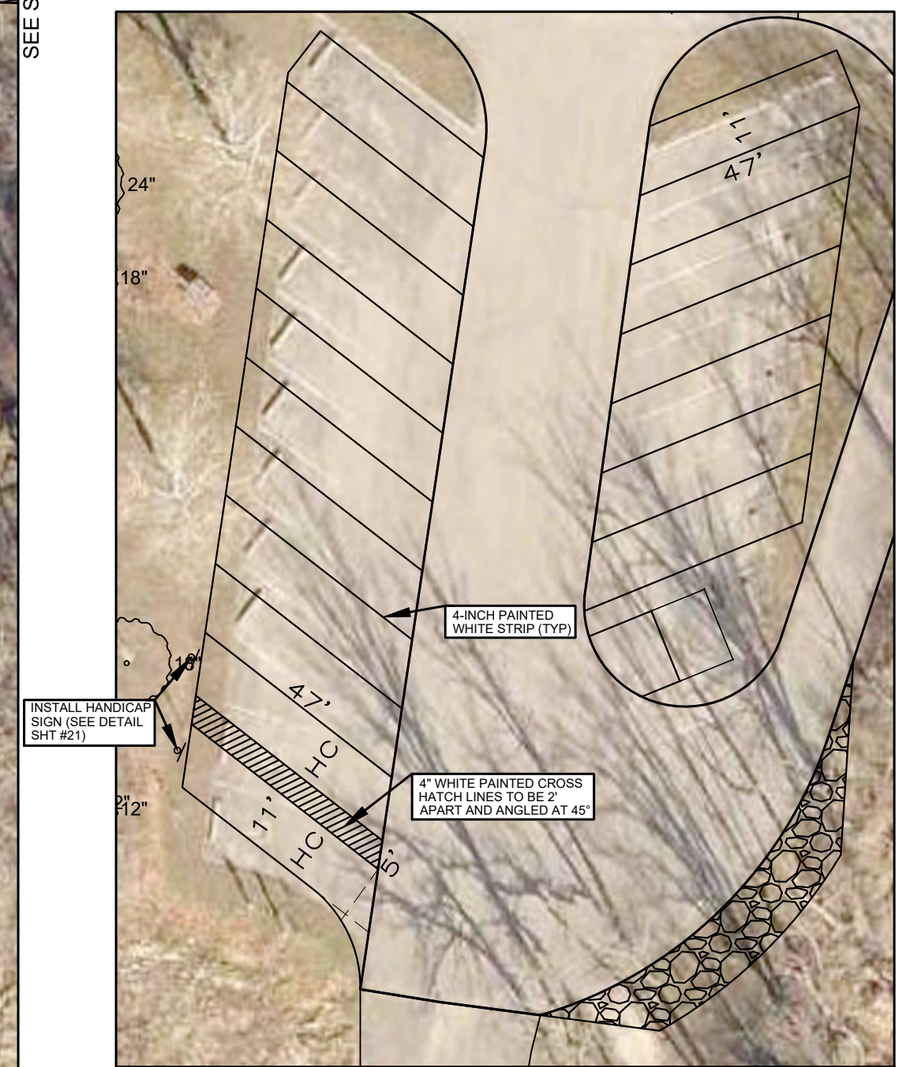


0 30
FEET

LEGEND

EXISTING/PROPOSED

- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- OUTLET POST
- PP/LP — PP/LP — POWER POLE/ LIGHT POLE



BOAT RAMP PARKING PAVEMENT MARKINGS 1"=30'

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PAVING PLAN BOAT RAMP PARKING

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

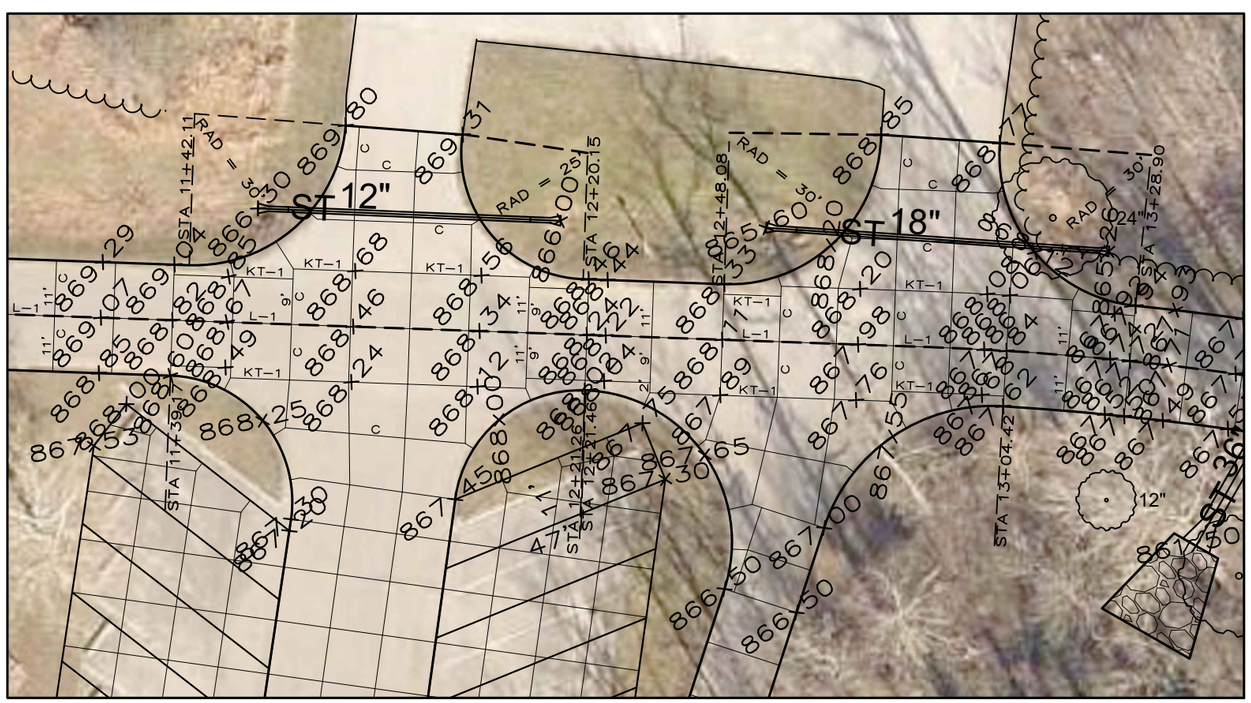
NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 20

BOAT RAMP PARKING AREA OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	41.81'	25.00'		0+00.00'	0+41.81'	95.8303 (d)	37.11'	S40° 03' 01"E	(1616529.5812',472226.2394',868.60')	(1616553.4585',472197.8342',867.30')	(1616528.6936',472201.2552')
2	Line	2.32'		S8° 25' 44"W	0+41.81'	0+44.13'				(1616553.4585',472197.8342',867.30')	(1616553.1182',472195.5382',867.20')	
3	Line	40.88'		N52° 08' 07"W	0+44.13'	0+85.01'				(1616553.1182',472195.5382',867.20')	(1616520.8483',472220.6279',868.00')	
4	Line	10.45'		S37° 51' 53"W	0+85.01'	0+95.46'				(1616520.8483',472220.6279',868.00')	(1616514.4354',472212.3798',867.53')	
5	Line	112.01'		S8° 25' 44"W	0+95.46'	2+07.47'				(1616514.4354',472212.3798',867.53')	(1616498.0166',472101.5772',862.50')	
6	Line	31.00'		S8° 25' 44"W	2+07.47'	2+38.47'				(1616498.0166',472101.5772',862.50')	(1616493.4723',472070.9099',862.00')	
7	Line	32.43'		S52° 08' 07"E	2+38.47'	2+70.90'				(1616493.4723',472070.9099',862.00')	(1616519.0742',472051.0045',861.50')	
8	Curve	23.08'	25.00'		2+70.90'	2+93.99'	52.9006 (d)	22.27'	S25° 41' 06"E	(1616519.0742',472051.0045',861.50')	(1616528.7270',472030.9340',860.42')	(1616503.7292',472031.2680'
9	Line	15.92'		S80° 51' 28"E	2+93.99'	3+09.91'				(1616528.7270',472030.9340',860.42')	(1616544.4480',472028.4040',860.54')	
10	Line	20.10'		S82° 33' 49"E	3+09.91'	3+30.01'				(1616544.4480',472028.4040',860.54')	(1616564.3830',472025.8020',860.64')	
11	Curve	82.62'	85.00'		3+30.01'	4+12.63'	55.6885 (d)	79.40'	N45° 55' 24"E	(1616564.3830',472025.8020',860.64')	(1616621.4261',472081.0354',863.15')	(1616540.6227',472107.4136')
12	Line	121.05'		N18° 04' 45"E	4+12.63'	5+33.68'				(1616621.4261',472081.0354',863.15')	(1616658.9915',472196.1080',867.00')	
13	Curve	46.10'	35.00'		5+33.68'	5+79.77'	75.4625 (d)	42.84'	N55° 48' 38"E	(1616658.9915',472196.1080',867.00')	(1616694.4257',472220.1796',867.62')	(1616692.2635',472185.2464')

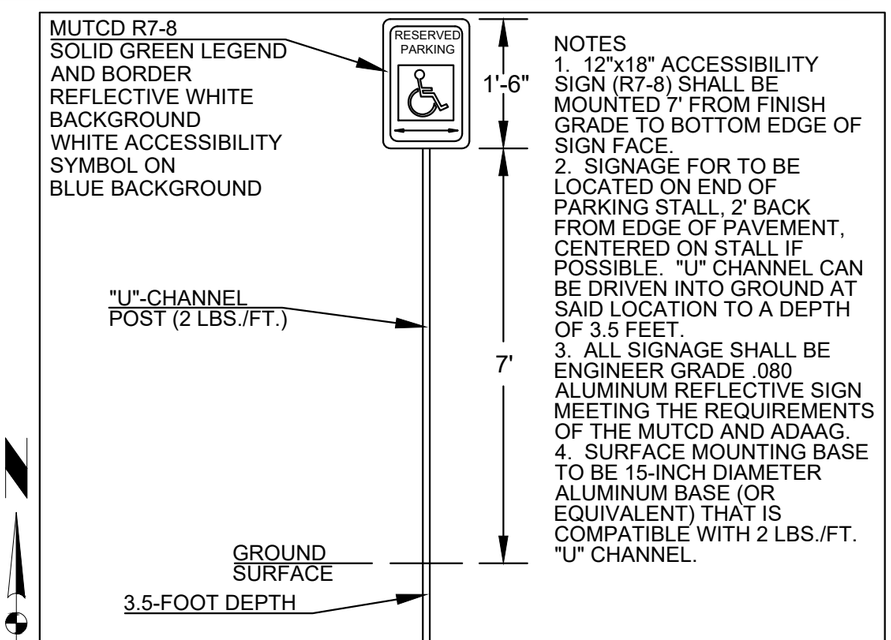
BOAT RAMP PARKING AREA OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Line	0.20'		S87° 57' 56"E	0+00.00'	0+00.20'				(1616611.6170',472223.3252',868.02')	(1616611.8149',472223.3181',868.02')	
2	Curve	55.52'	30.00'		0+00.20'	0+55.72'	106.0447 (d)	47.93'	S34° 56' 35"E	(1616611.8149',472223.3181',868.02')	(1616639.2687',472184.0271',866.50')	(1616610.7498',472193.3371')
3	Line	87.67'		S18° 04' 45"W	0+55.72'	1+43.39'				(1616639.2687',472184.0271',866.50')	(1616612.0626',472100.6876',863.60')	
4	Curve	55.46'	20.00'		1+43.39'	1+98.85'	158.8885 (d)	39.32'	N82° 28' 35"W	(1616612.0626',472100.6876',863.60')	(1616573.0780',472105.8363',863.60')	(1616593.0500',472106.8942')
5	Line	46.51'		N67° 51' 53"E	1+98.85'	2+45.37'				(1616573.0780',472105.8363',863.60')	(1616616.1617',472123.3616',864.35')	
6	Line	83.14'		N7° 51' 53"E	2+45.37'	3+28.50'				(1616616.1617',472123.3616',864.35')	(1616627.5381',472205.7180',867.30')	
7	Line	12.00'		N22° 08' 07"W	3+28.50'	3+40.50'				(1616627.5381',472205.7180',867.30')	(1616623.0166',472216.8336',867.75')	
8	Line	40.00'		S67° 51' 53"W	3+40.50'	3+80.50'				(1616623.0166',472216.8336',867.75')	(1616585.9647',472201.7618',867.45')	
9	Curve	36.73'	25.00'		3+80.50'	4+17.23'	84.1697 (d)	33.51'	N49° 56' 59"E	(1616585.9647',472201.7618',867.45')	(1616611.6170',472223.3252',868.02')	(1616610.7295',472198.3409')

SEE SHEET #19 FOR CONTINUATION



INTERSECTION DETAIL 1"=30'

SEE SHEET #22 FOR CONTINUATION



NOTES
1. 12"x18" ACCESSIBILITY SIGN (R7-8) SHALL BE MOUNTED 7' FROM FINISH GRADE TO BOTTOM EDGE OF SIGN FACE.
2. SIGNAGE FOR TO BE LOCATED ON END OF PARKING STALL, 2' BACK FROM EDGE OF PAVEMENT, CENTERED ON STALL IF POSSIBLE. "U" CHANNEL CAN BE DRIVEN INTO GROUND AT SAID LOCATION TO A DEPTH OF 3.5 FEET.
3. ALL SIGNAGE SHALL BE ENGINEER GRADE .080 ALUMINUM REFLECTIVE SIGN MEETING THE REQUIREMENTS OF THE MUTCD AND ADAAG.
4. SURFACE MOUNTING BASE TO BE 15-INCH DIAMETER ALUMINUM BASE (OR EQUIVALENT) THAT IS COMPATIBLE WITH 2 LBS./FT. "U" CHANNEL.

HANDICAP SIGN DETAIL

NOT TO SCALE

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

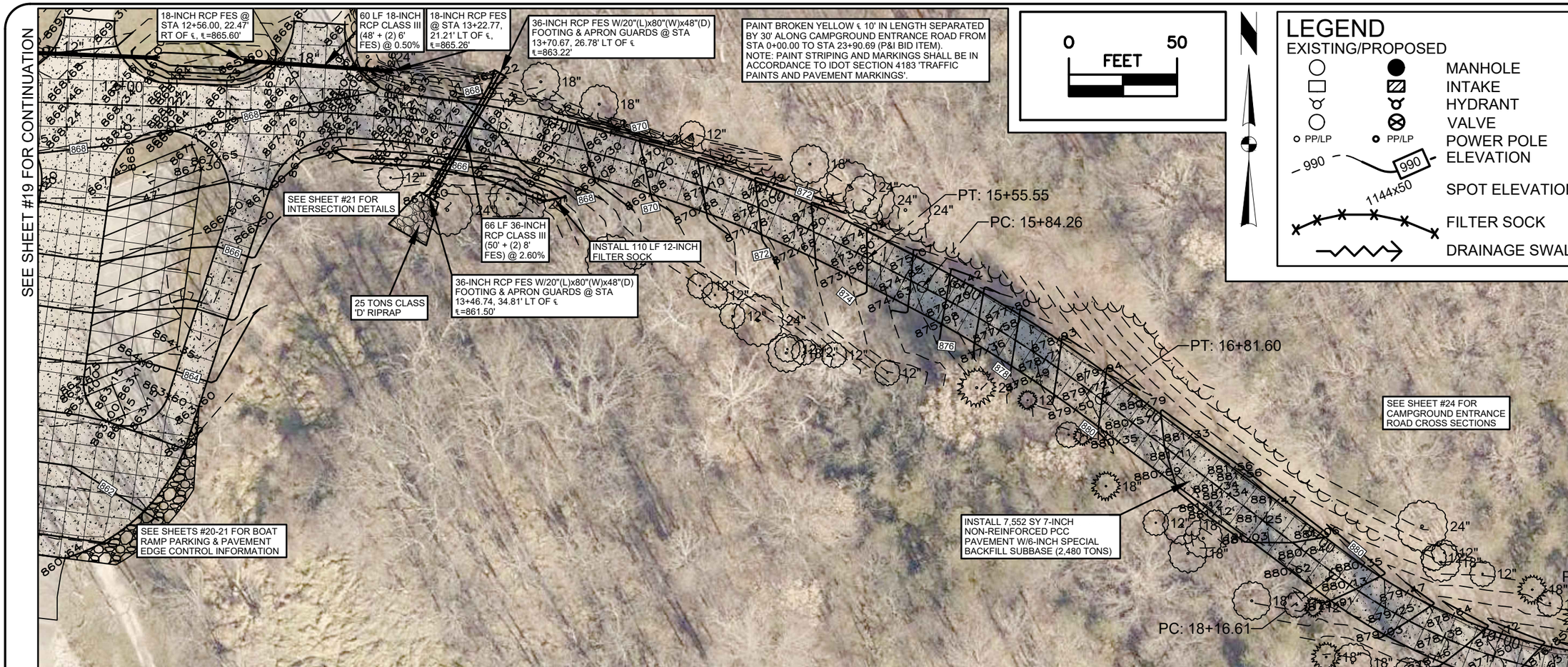
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

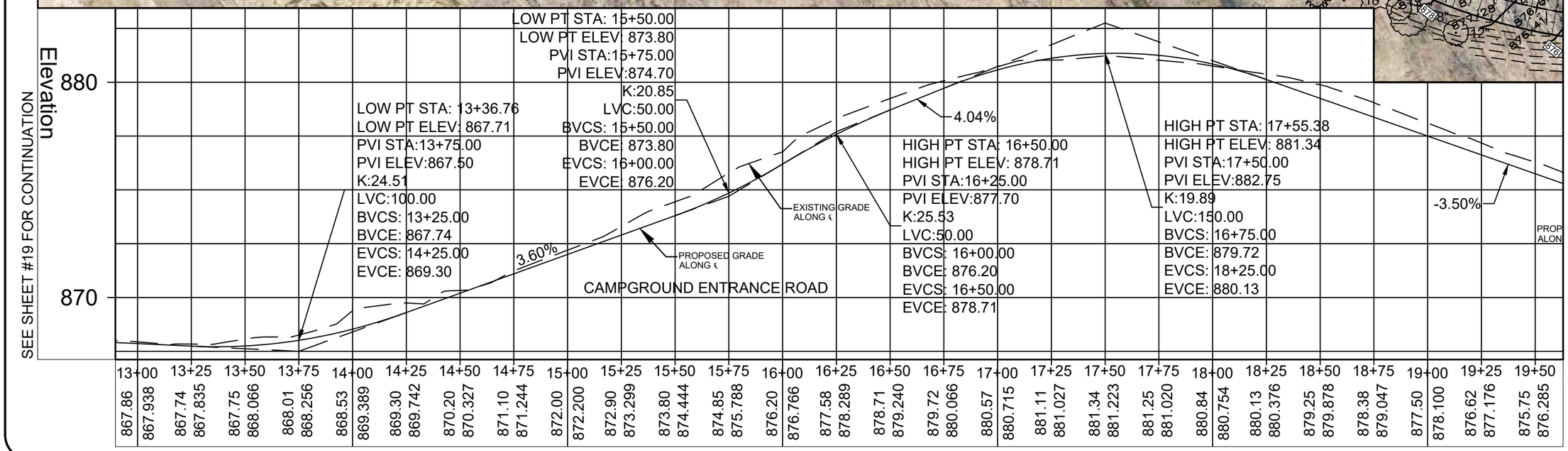
PAVING PLAN BOAT RAMP PARKING

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY	DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 21





CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PAVING PLAN CAMP ENTRANCE ROAD

CONSTRUCTION PROJECT FOR:

LAKE AHQUABI ROAD RECONSTRUCTION PROJECT

WARREN COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY:

PROJECT NUMBER: 21-05-91-02

CHK'D BY:

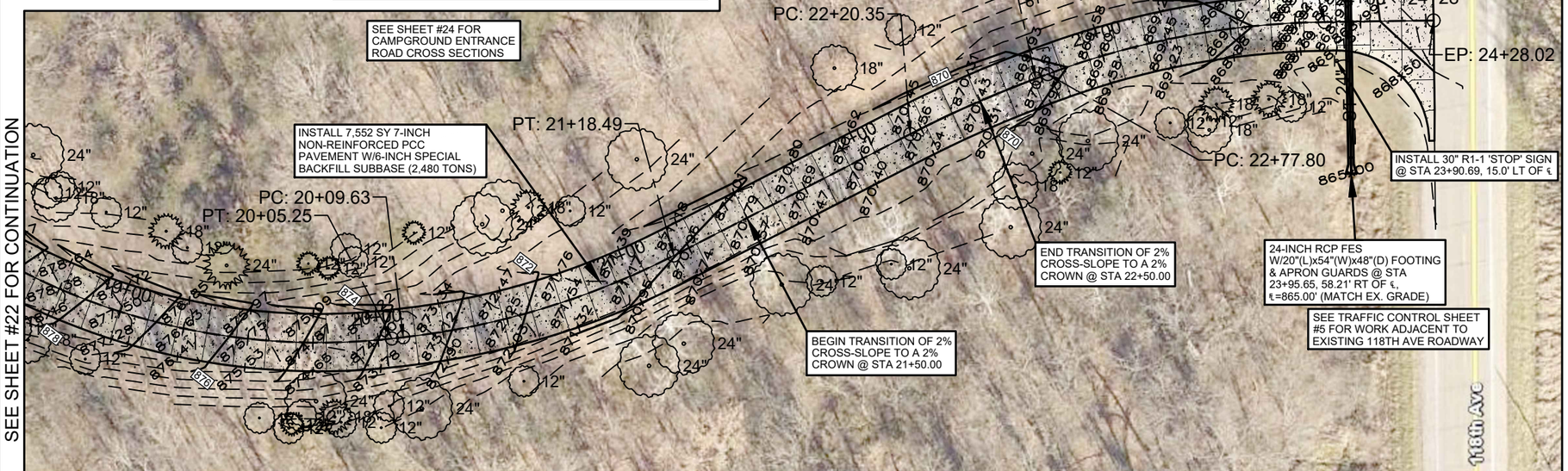
DATE: 6/29/2022

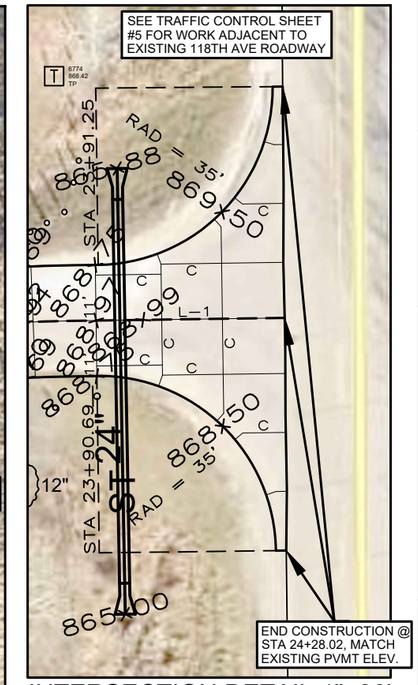
SHEET No: 22

0 50
FEET

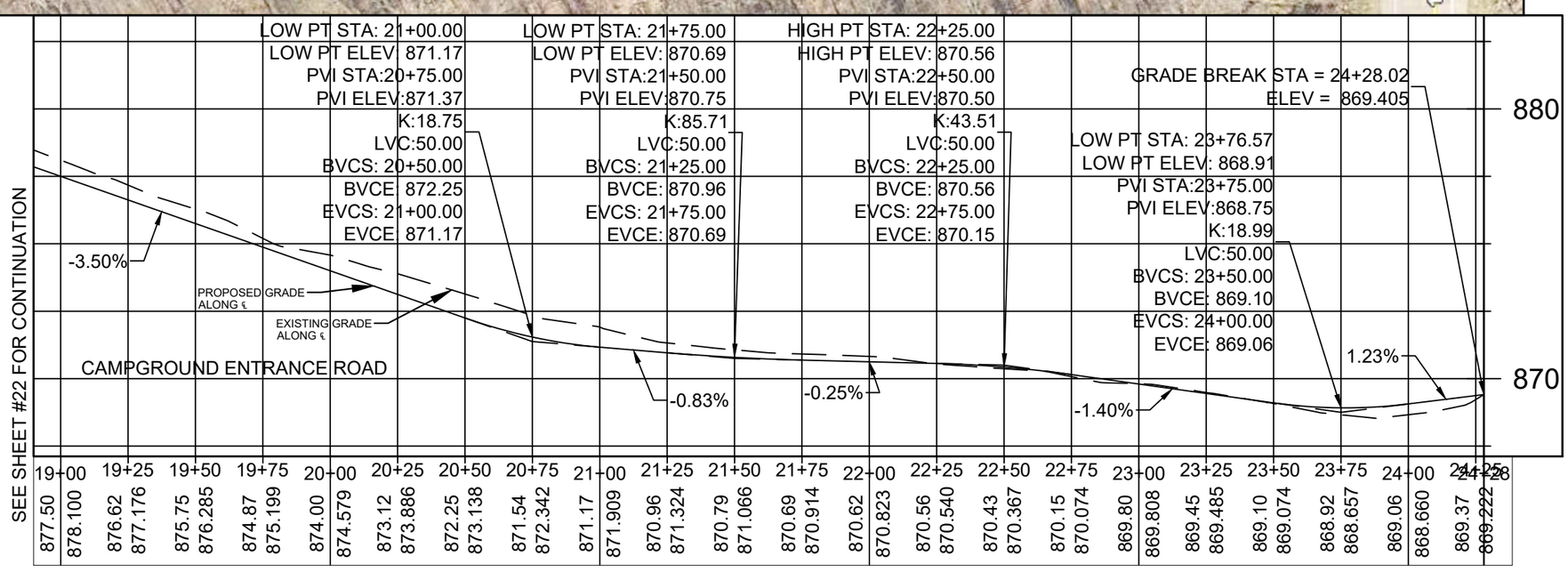
LEGEND
EXISTING/PROPOSED

- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- PP/LP — PP/LP — POWER POLE
- 990 — 990 — ELEVATION
- 1144x50 — SPOT ELEVATION
- FILTER SOCK
- DRAINAGE SWALE





INTERSECTION DETAIL 1"=30'



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

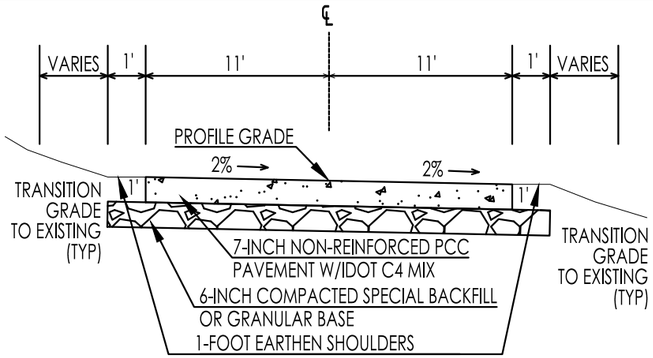
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PAVING PLAN CAMP ENTRANCE ROAD

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

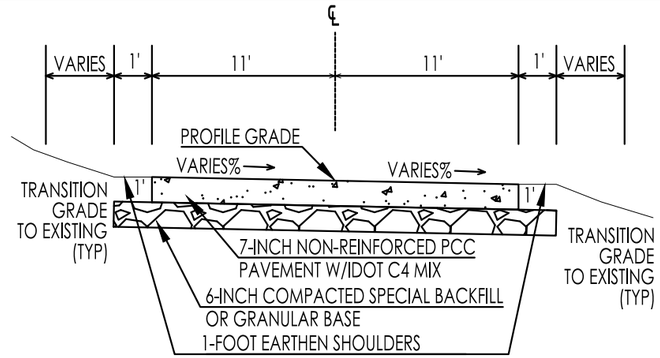
NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 23



STA 0+00.00 TO STA 1+50.00
CAMPGROUND ENTRANCE ROAD CROSS-SECTION

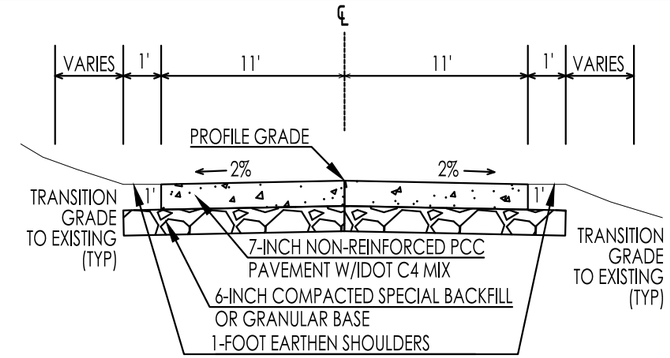
NO SCALE



NOTE: TRANSITION CROSS-SLOPE FROM +2% TO A CROWN BETWEEN STATIONS 1+50.00 AND 2+50.00. AT STATION 1+50.00 THE CROSS-SLOPE IS 2% LEFT TO RIGHT, AT STATION 2+50.00 THERE WILL BE A CROWN WITH A 2% CROSS SLOPE EACH WAY.

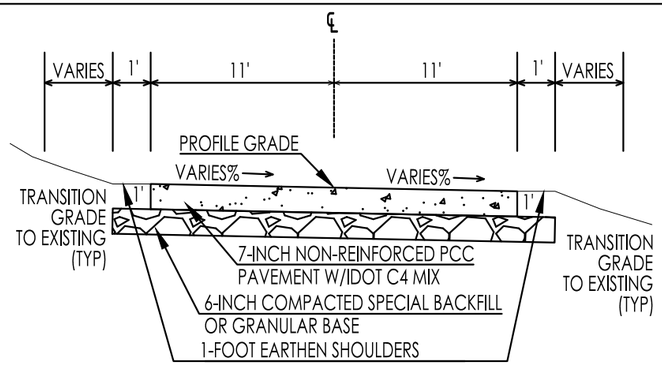
STA 0+00.00 TO STA 1+50.00
CAMPGROUND ENTRANCE ROAD CROSS-SECTION

NO SCALE



STA 2+50.00 TO STA 9+25.00
CAMPGROUND ENTRANCE ROAD CROSS-SECTION

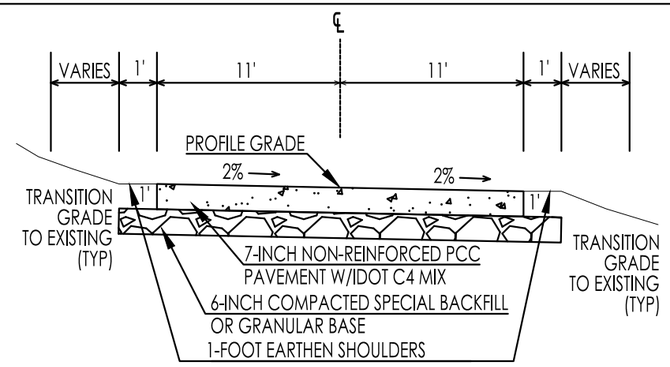
NO SCALE



NOTE: TRANSITION CROSS-SLOPE FROM A CROWN TO A STRAIGHT +2% BETWEEN STATIONS 9+25.00 AND 10+25.00. AT STATION 9+25.00 THERE WILL BE A CROWN WITH A 2% CROSS SLOPE EACH WAY AND AT STATION 10+25.00 THE CROSS-SLOPE IS 2% LEFT TO RIGHT, .

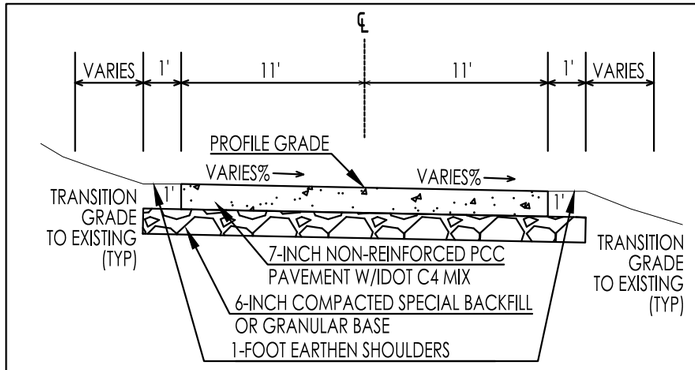
STA 9+25.00 TO STA 10+25.00
CAMPGROUND ENTRANCE ROAD CROSS-SECTION

NO SCALE



STA 10+25.00 TO STA 21+50.00
CAMPGROUND ENTRANCE ROAD CROSS-SECTION

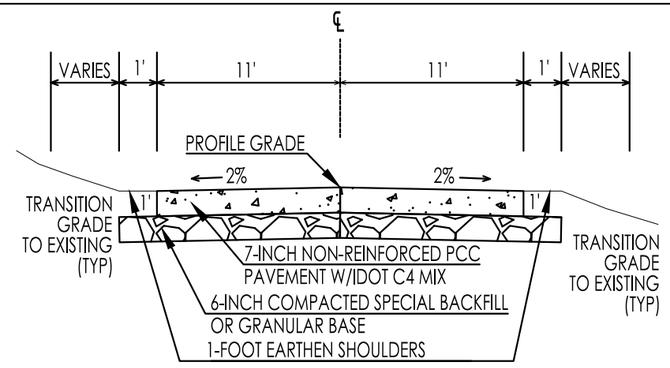
NO SCALE



NOTE: TRANSITION CROSS-SLOPE FROM +2% TO A CROWN BETWEEN STATIONS 21+50.00 AND 22+50.00. AT STATION 21+50.00 THE CROSS-SLOPE IS 2% LEFT TO RIGHT, AT STATION 22+50.00 THERE WILL BE A CROWN WITH A 2% CROSS SLOPE EACH WAY.

STA 21+50.00 TO STA 22+50.00
CAMPGROUND ENTRANCE ROAD CROSS-SECTION

NO SCALE



STA 22+50.00 TO STA 23+90.69
CAMPGROUND ENTRANCE ROAD CROSS-SECTION

NO SCALE

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

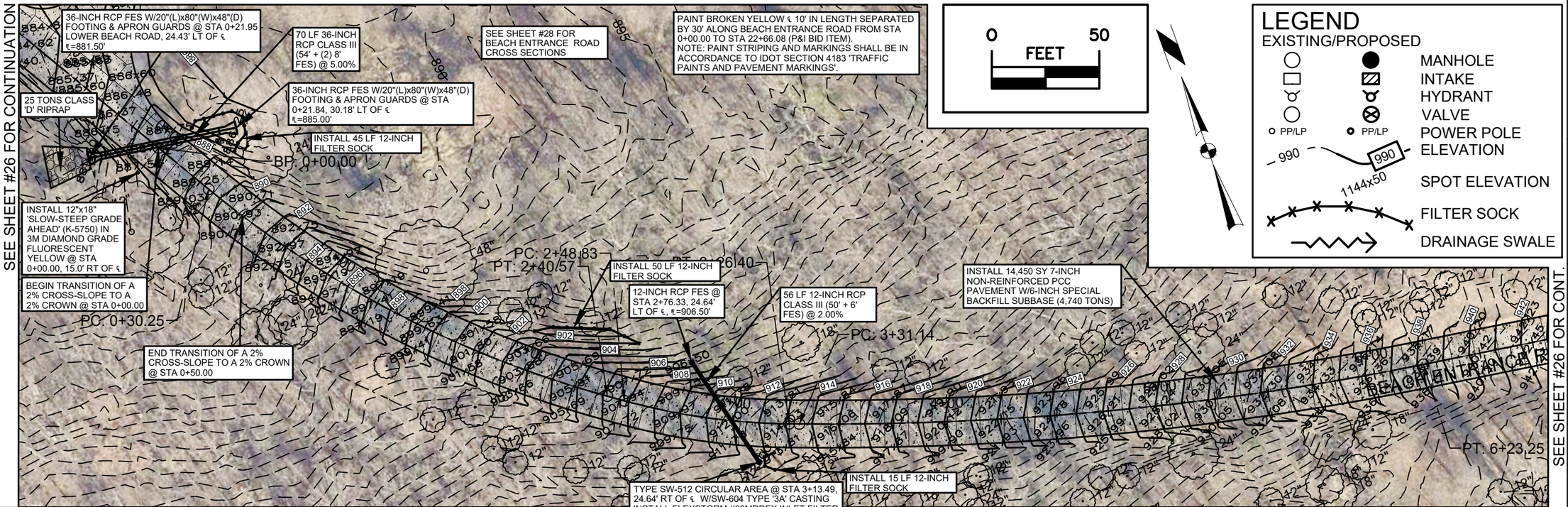
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

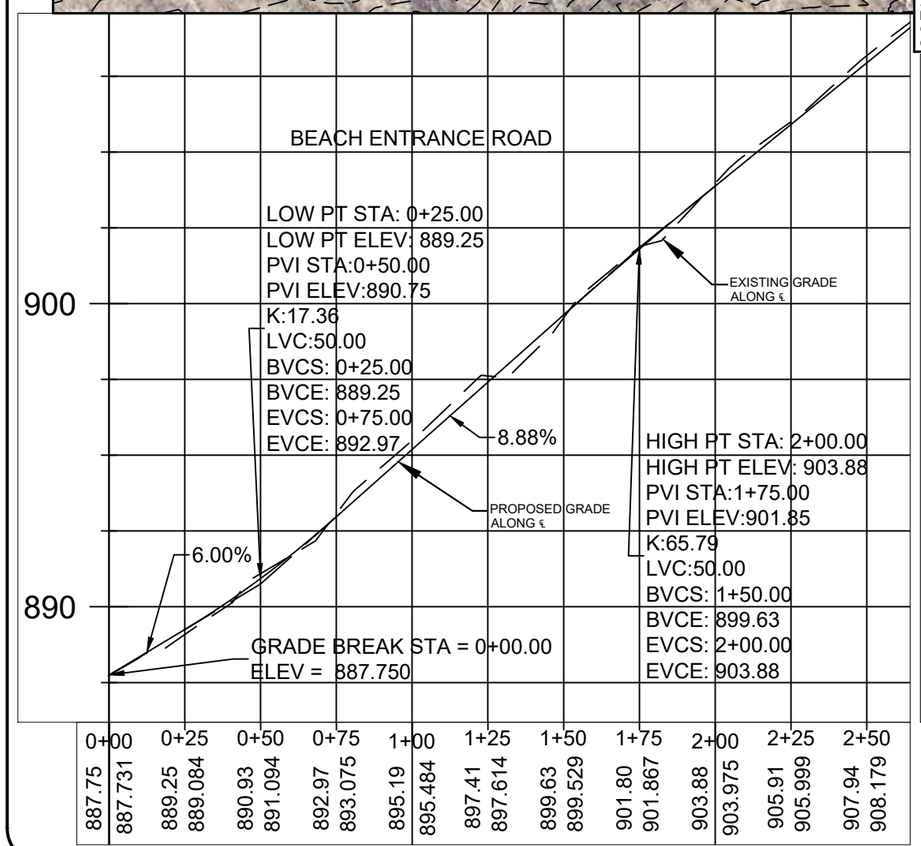
CAMP ENTRANCE ROAD X-SECTIONS

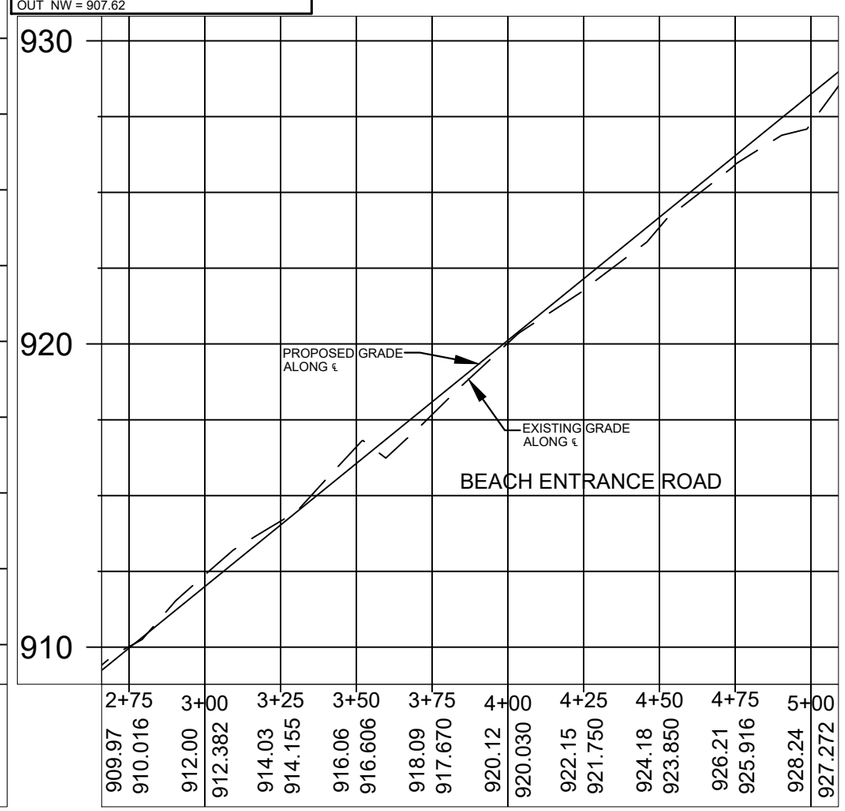
CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

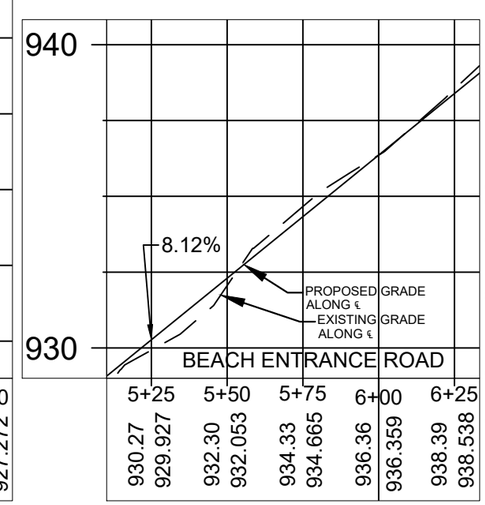
NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 24









SEE SHEET #26 FOR CONTINUATION

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

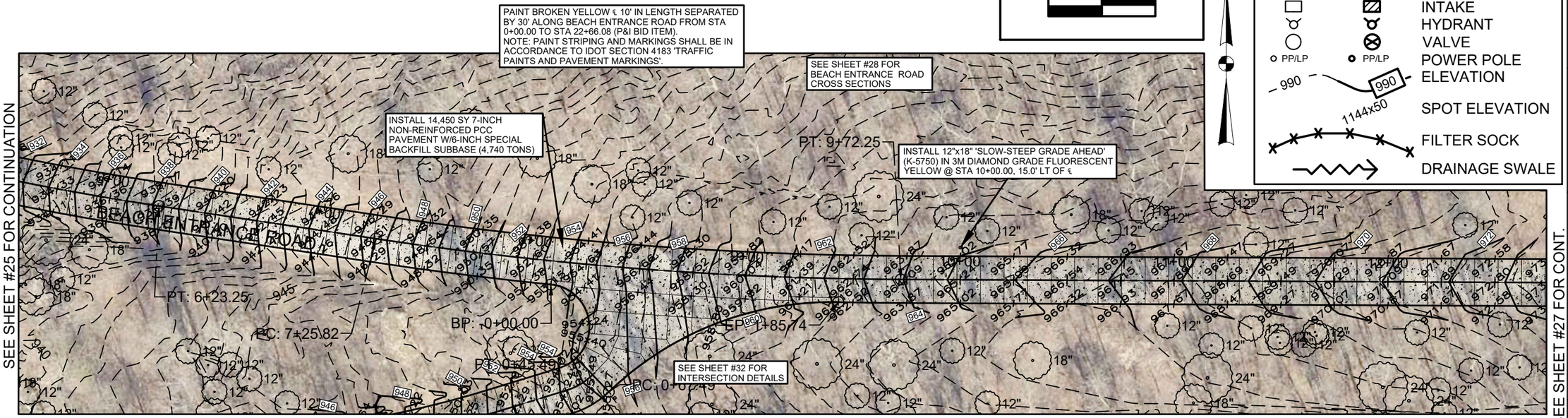
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

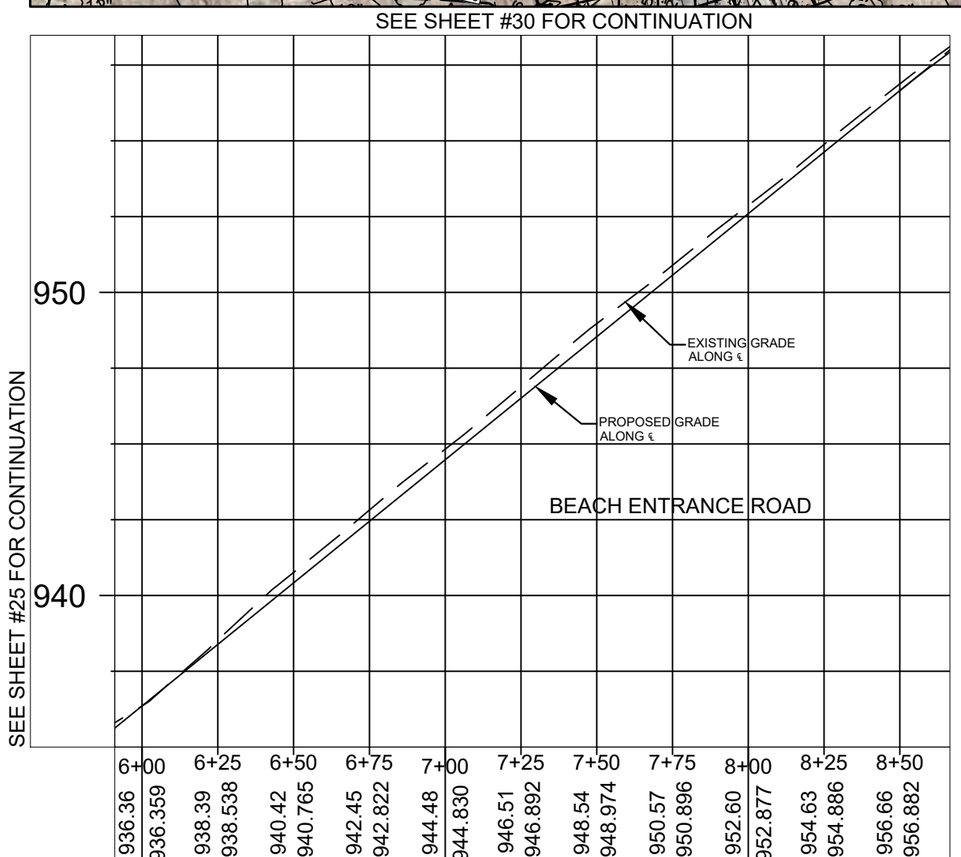
PAVING PLAN BEACH ENTRANCE ROAD

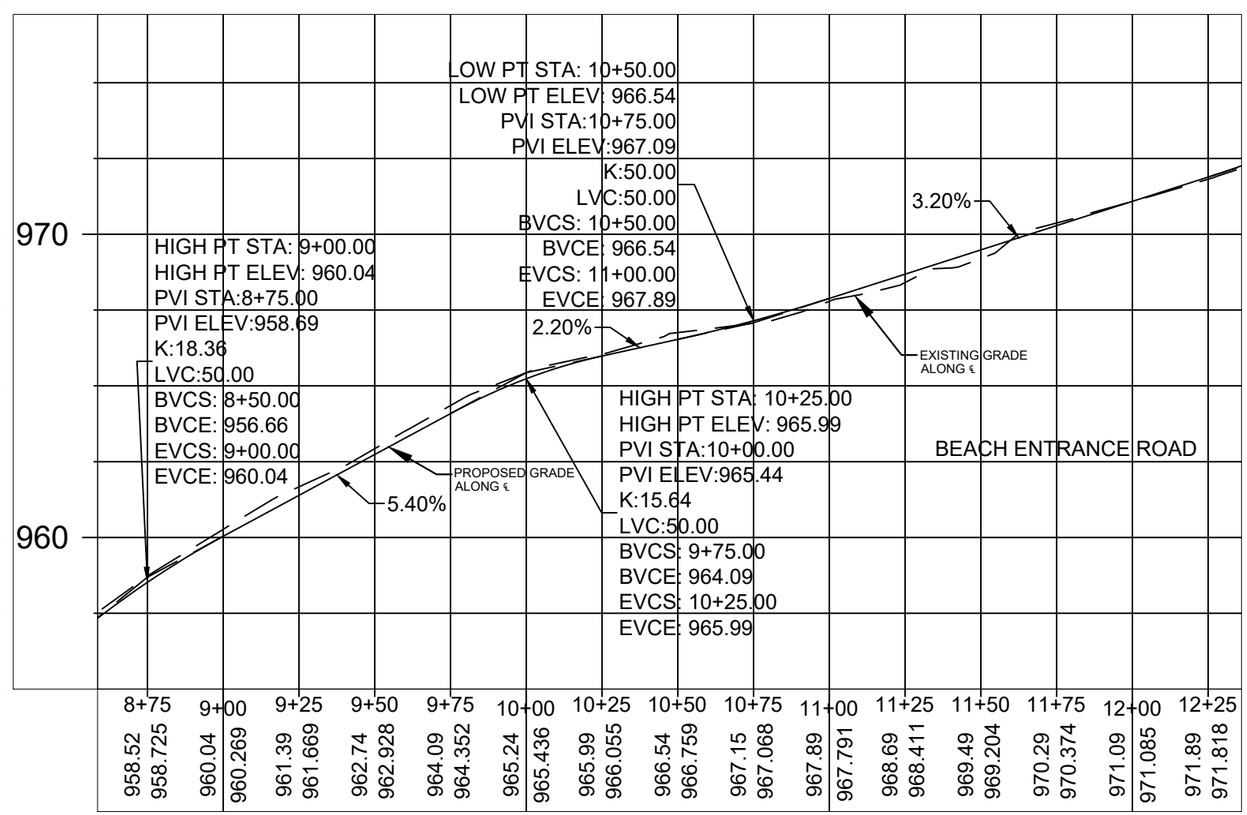
CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 25







SEE SHEET #25 FOR CONTINUATION

SEE SHEET #27 FOR CONTINUATION

SEE SHEET #27 FOR CONT.

0 FEET 50

LEGEND

EXISTING/PROPOSED

- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- PP/LP — POWER POLE
- 990 — ELEVATION
- 1144x50 — SPOT ELEVATION
- FILTER SOCK
- DRAINAGE SWALE

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PAVING PLAN BEACH ENTRANCE ROAD

CONSTRUCTION PROJECT FOR:

LAKE AHQUABI ROAD RECONSTRUCTION PROJECT

WARREN COUNTY, IOWA

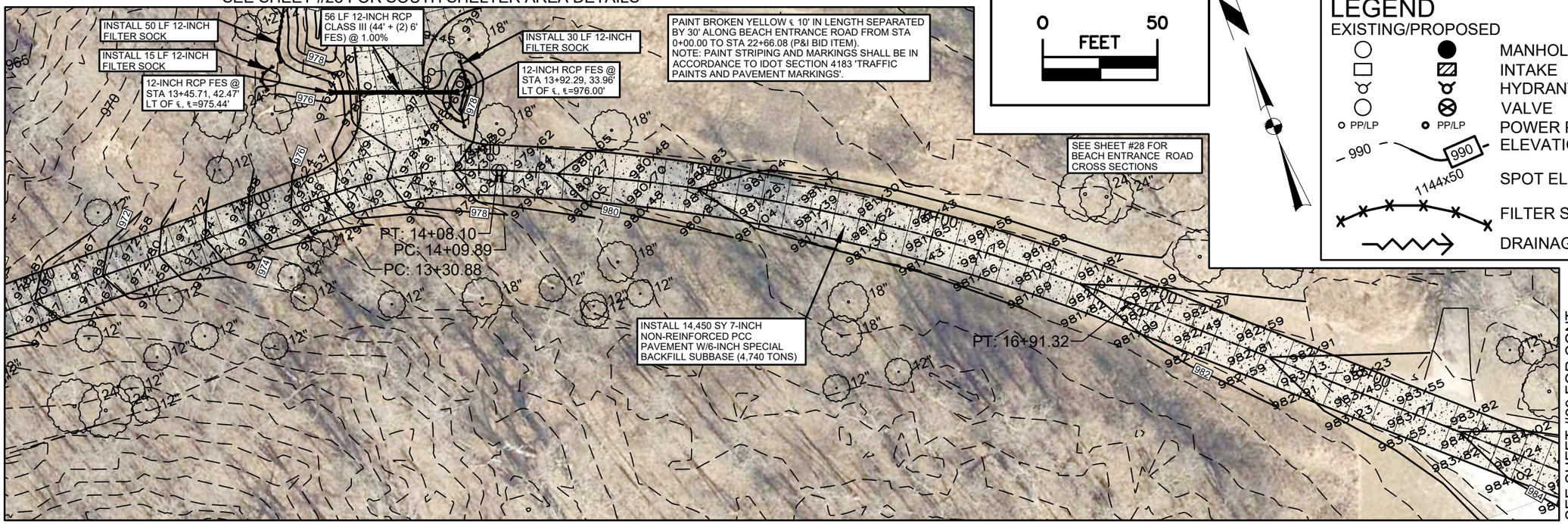
NO.	BY / DATE	REVISION

DRAWN BY: | PROJECT NUMBER: 21-05-91-02

CHK'D BY: | DATE: 6/29/2022

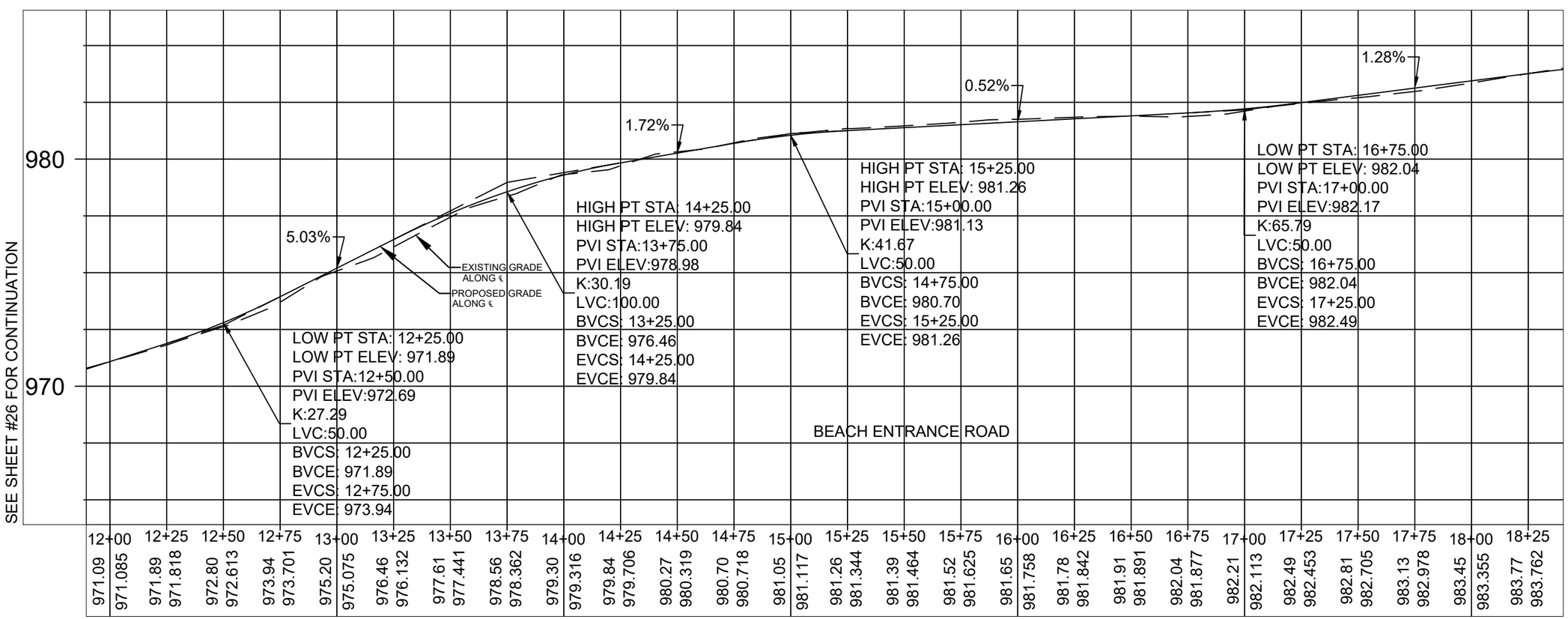
SHEET No: 26

SEE SHEET #28 FOR SOUTH SHELTER AREA DETAILS



SEE SHEET #26 FOR CONTINUATION

SEE SHEET #29 FOR CONT.



SEE SHEET #26 FOR CONTINUATION

SEE SHEET #29 FOR CONTINUATION

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PAVING PLAN BEACH ENTRANCE ROAD

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022

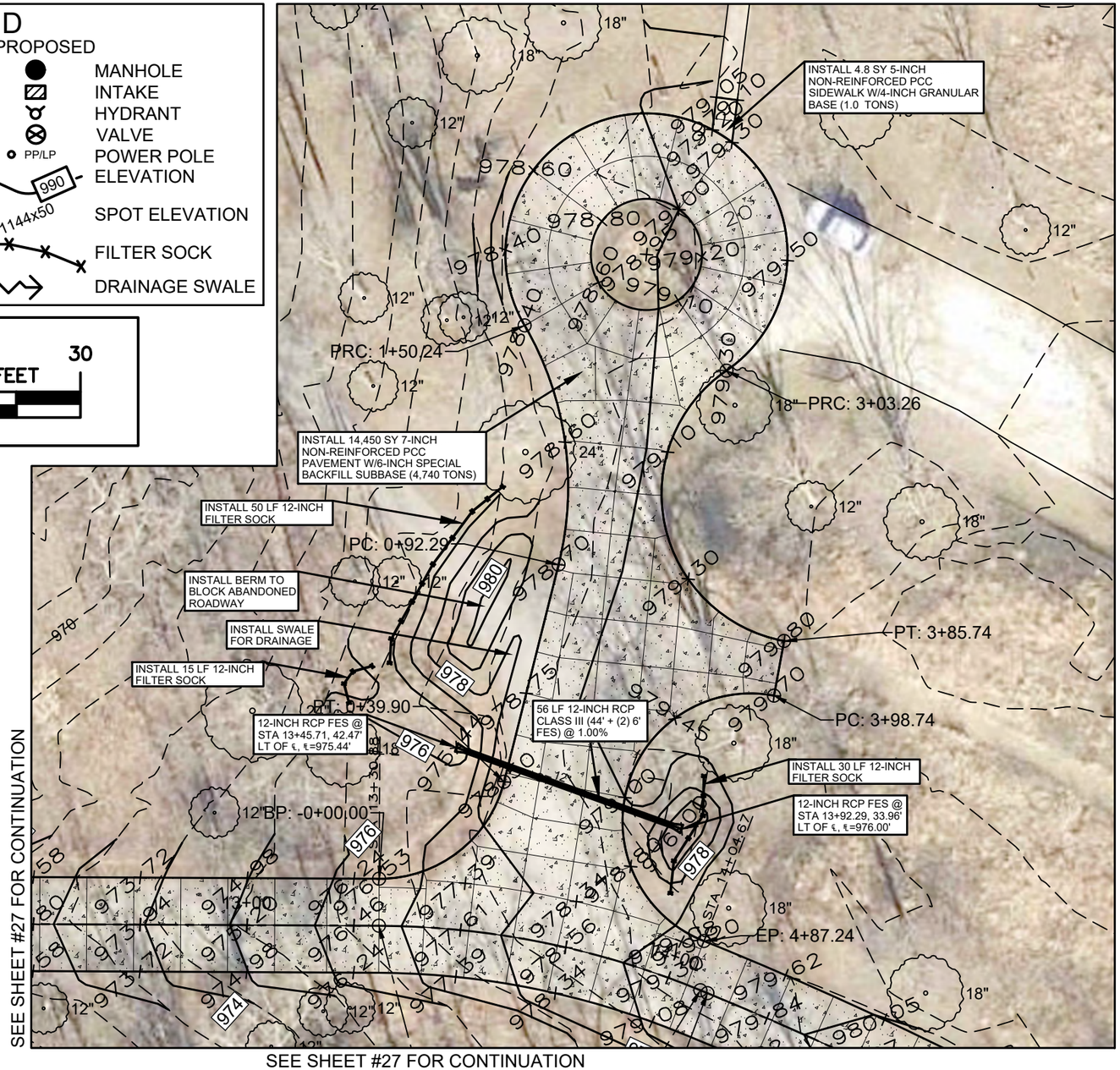
SHEET No: 27

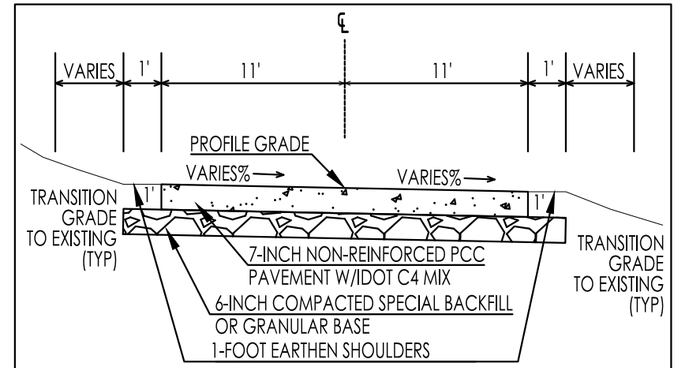
LEGEND

EXISTING/PROPOSED

- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- PP/LP — PP/LP — POWER POLE
- 990 — 990 — ELEVATION
- 1144x50 — SPOT ELEVATION
- FILTER SOCK
- DRAINAGE SWALE

0 — 30 FEET



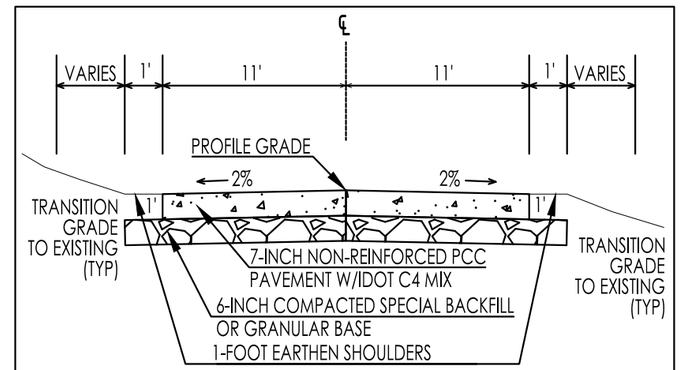


NOTE: TRANSITION CROSS-SLOPE FROM +2% TO A CROWN BETWEEN STATIONS 0+00.00 AND 0+50.00. AT STATION 0+00.00 THE CROSS-SLOPE IS 0% LT OF ℄ AND 2% LEFT TO RIGHT RT OF ℄, AT STATION 0+50.00 THERE WILL BE A CROWN WITH A 2% CROSS SLOPE EACH WAY.

STA 0+00.00 TO STA 0+50.00

BEACH ENTRANCE ROAD CROSS-SECTION

NO SCALE



STA 0+50.00 TO STA 22+66.08

BEACH ENTRANCE ROAD CROSS-SECTION

NO SCALE

SOUTH SHELTER AREA OUTSIDE EDGE OF PAVEMENT

No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	39.90'	30.00'		0+00.00'	0+39.90'	76.2006 (d)	37.02'	N52° 10' 40"E	(1616950.1004',469404.7536',976.53')	(1616979.3450',469427.4562',978.50')	(1616950.2460',469434.7532')
2	Line	52.39'		N14° 04' 39"E	0+39.90'	0+92.29'				(1616979.3450',469427.4562',978.50')	(1616992.0873',469478.2698',978.70')	
3	Curve	57.96'	75.00'		0+92.29'	1+50.24'	44.2777 (d)	56.53'	N8° 03' 41"W	(1616992.0873',469478.2698',978.70')	(1616984.1602',469534.2391',978.40')	(1616919.3397',469496.5124')
4	Curve	153.01'	33.00'		1+50.24'	3+03.26'	265.6688 (d)	48.40'	S77° 21' 57"E	(1616984.1602',469534.2391',978.40')	(1617031.3876',469523.6529',979.30')	(1617012.6812',469550.8388')
5	Curve	82.48'	35.00'		3+03.26'	3+85.74'	135.0206 (d)	64.68'	S12° 02' 30"E	(1617031.3876',469523.6529',979.30')	(1617044.8806',469460.3997',979.80')	(1617051.2276',469494.8193')
6	Line	13.00'		S10° 26' 53"W	3+85.74'	3+98.74'				(1617044.8806',469460.3997',979.80')	(1617042.5231',469447.6152',979.70')	
7	Curve	88.50'	30.00'		3+98.74'	4+87.24'	169.0298 (d)	59.73'	S15° 55' 59"W	(1617042.5231',469447.6152',979.70')	(1617026.1277',469390.1844',979.20')	(1617037.0828',469418.1126')

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PAVING PLAN SOUTH SHELTER AREA

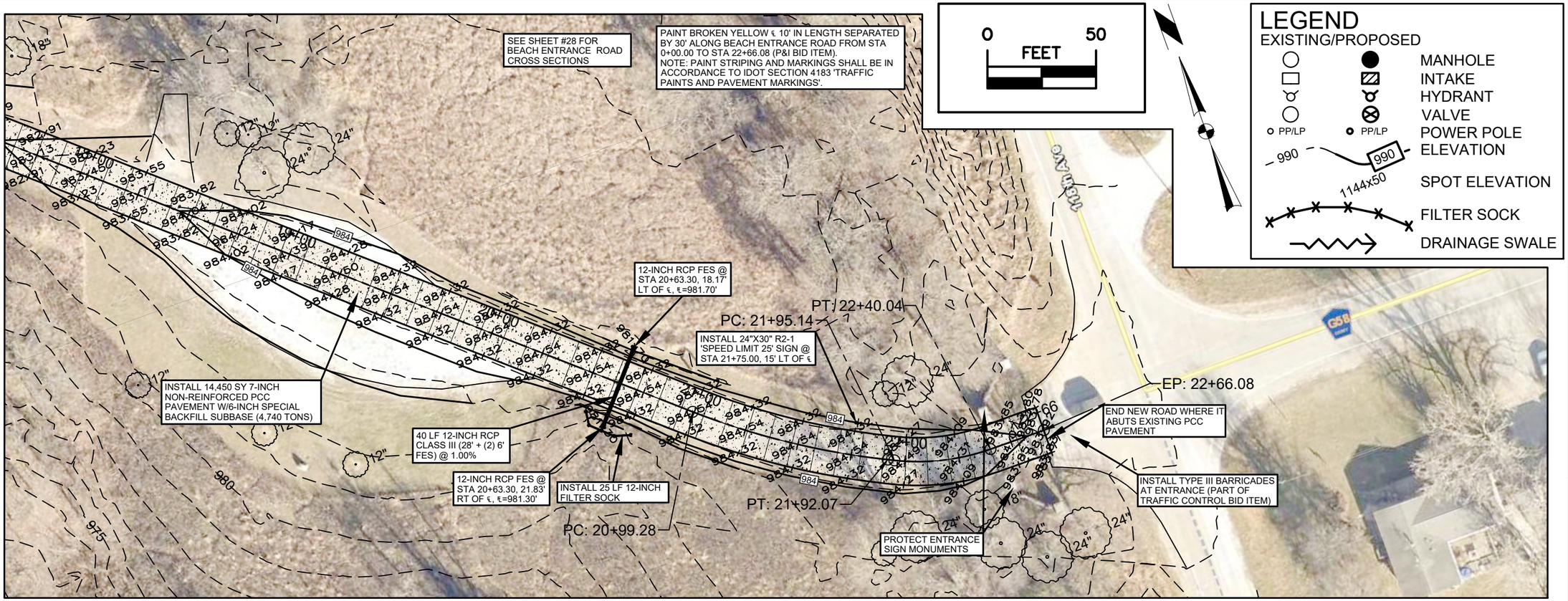
CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

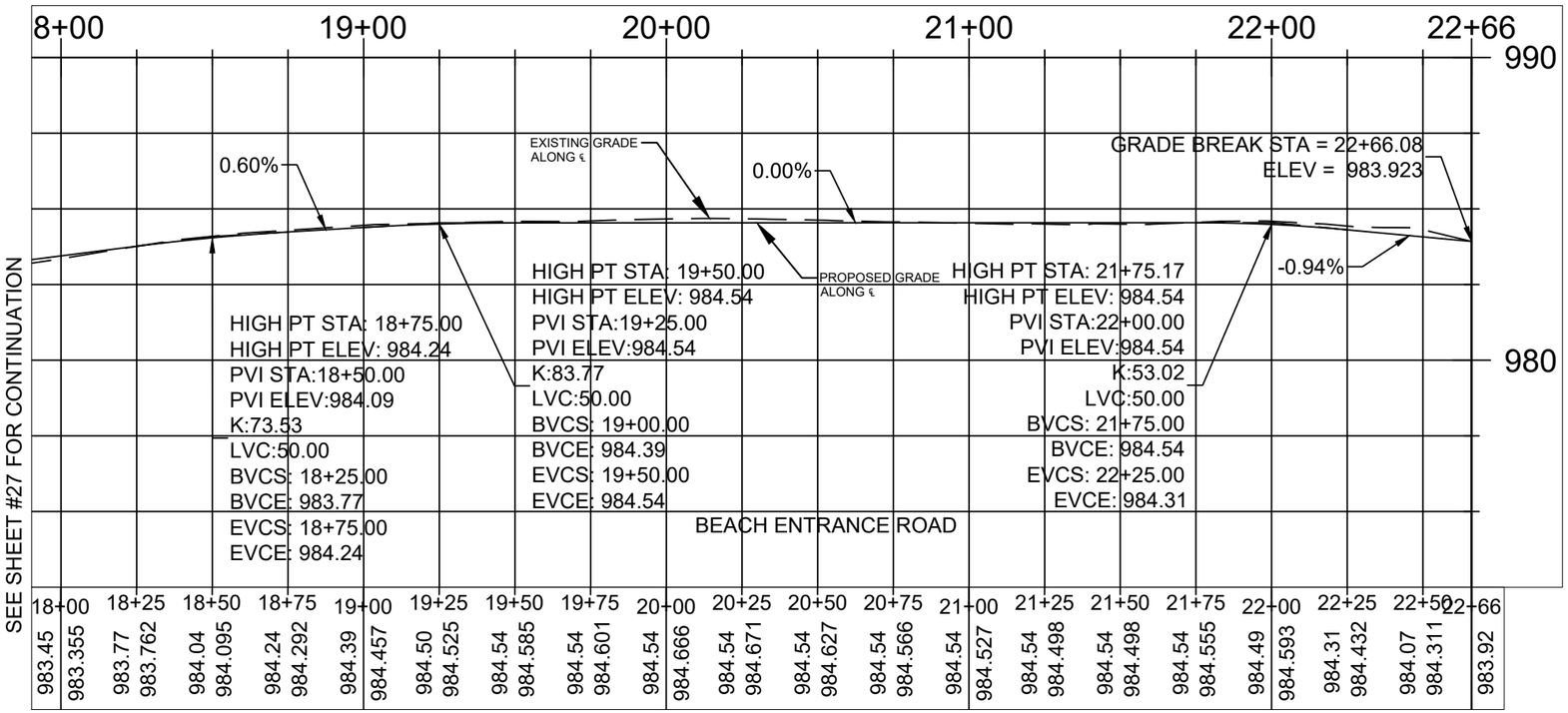
NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022

SHEET No: 28

SEE SHEET #27 FOR CONTINUATION





SEE SHEET #27 FOR CONTINUATION

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

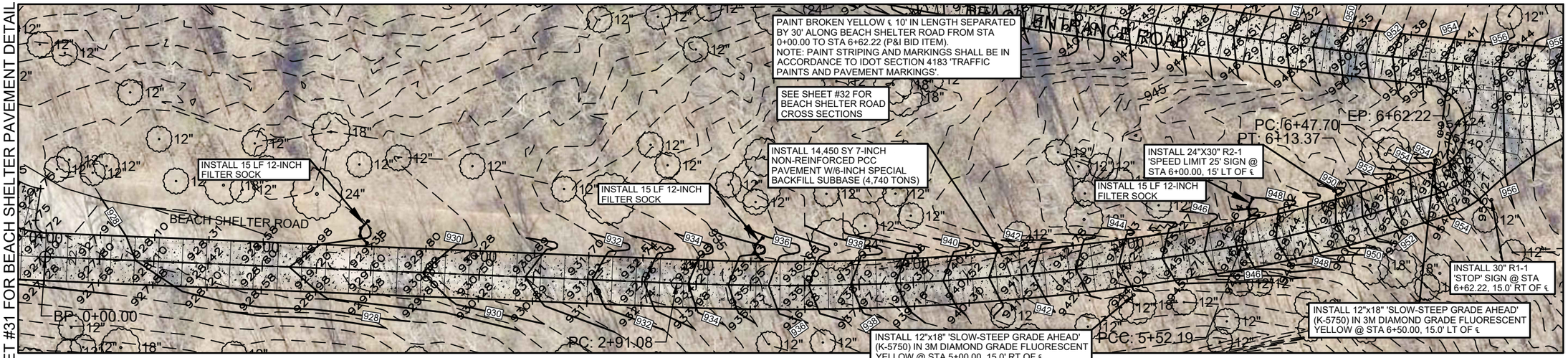
PAVING PLAN BEACH ENTRANCE ROAD

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

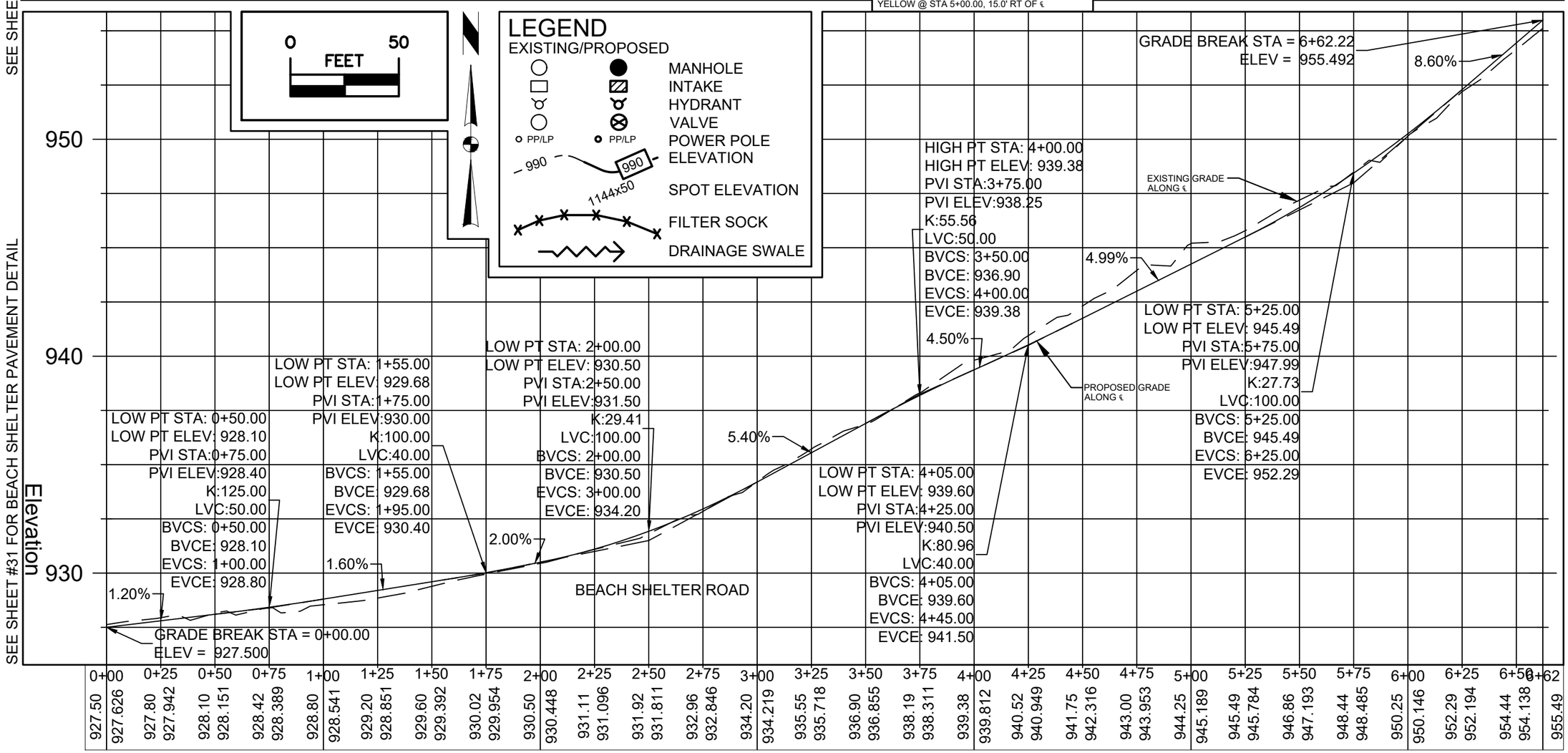
NO.	BY / DATE	REVISION

DRAWN BY:
CHK'D BY:
PROJECT NUMBER: 21-05-91-02
DATE: 6/29/2022
SHEET No: 29

SEE SHEET #31 FOR BEACH SHELTER PAVEMENT DETAIL



SEE SHEET #32 FOR INTERSECTION DETAIL



SEE SHEET #31 FOR BEACH SHELTER PAVEMENT DETAIL

SEE SHEET #32 FOR INTERSECTION DETAIL

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PAVING PLAN BEACH SHELTER ROAD

CONSTRUCTION PROJECT FOR:

LAKE AHQUABI ROAD RECONSTRUCTION PROJECT

WARREN COUNTY, IOWA

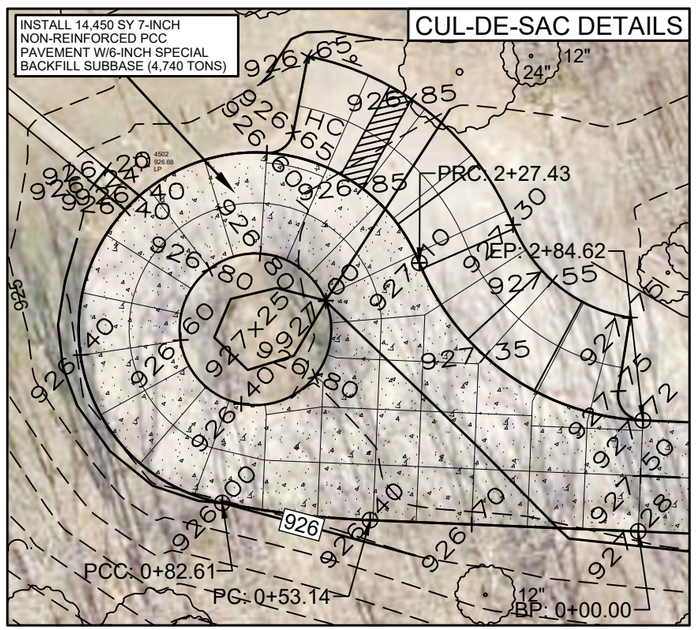
NO.	BY / DATE	REVISION

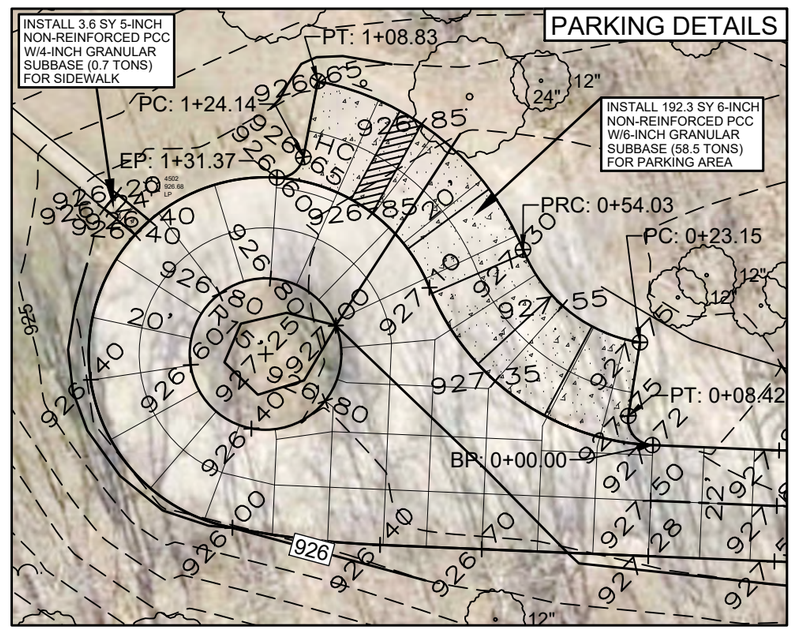
DRAWN BY:
CHK'D BY:
PROJECT NUMBER: 21-05-91-02
DATE: 6/29/2022
SHEET No: 30

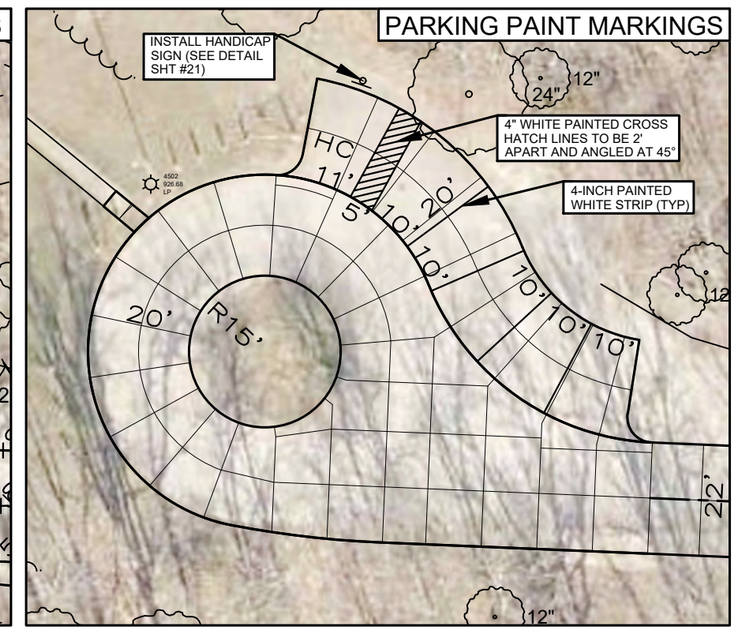
0 30
FEET

LEGEND
EXISTING/PROPOSED

- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- PP/LP — POWER POLE
- 990 — ELEVATION
- 1144x50 — SPOT ELEVATION
- FILTER SOCK
- DRAINAGE SWALE







BEACH SHELTER AREA PARKING OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	8.42'	5.00'		0+00.00'	0+08.42'	96.5385 (d)	7.46'	N39° 19' 58"W	(1615792.1243',469324.9073',927.72')	(1615787.3942',469330.6796',927.75')	(1615792.3335',469329.9029')
2	Line	14.72'		N8° 56' 11"E	0+08.42'	0+23.15'				(1615787.3942',469330.6796',927.75')	(1615789.6810',469345.2222',927.75')	
3	Curve	30.89'	30.00'		0+23.15'	0+54.03'	58.9882 (d)	29.54'	N51° 34' 10"W	(1615789.6810',469345.2222',927.75')	(1615766.5405',469363.5833',927.30')	(1615794.3412',469374.8581')
4	Curve	54.80'	55.00'		0+54.03'	1+08.83'	57.0863 (d)	52.56'	N50° 37' 07"W	(1615766.5405',469363.5833',927.30')	(1615725.9147',469396.9318',926.65')	(1615715.5725',469342.9129')
5	Line	15.31'		S10° 50' 18"W	1+08.83'	1+24.14'				(1615725.9147',469396.9318',926.65')	(1615723.0351',469381.8912',926.65')	
6	Curve	7.23'	5.00'		1+24.14'	1+31.37'	82.8192 (d)	6.61'	S52° 14' 53"W	(1615723.0351',469381.8912',926.65')	(1615717.8053',469377.8416',926.60')	(1615718.1243',469382.8314')
BEACH SHELTER AREA CUL-DE-SAC OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Line	53.14'		N87° 36' 07"W	0+00.00'	0+53.14'				(1615791.3287',469302.9211',927.28')	(1615738.2310',469305.1447',926.40')	
2	Curve	29.46'	200.00'		0+53.14'	0+82.61'	8.4404 (d)	29.44'	N83° 22' 55"W	(1615738.2310',469305.1447',926.40')	(1615708.9911',469308.5373',926.00')	(1615746.5990',469504.9696')
3	Curve	144.83'	35.00'		0+82.61'	2+27.43'	237.0863 (d)	61.49'	N39° 22' 53"E	(1615708.9911',469308.5373',926.00')	(1615748.0067',469356.0668',927.10')	(1615715.5725',469342.9129')
4	Curve	57.18'	50.00'		2+27.43'	2+84.62'	65.5267 (d)	54.12'	S54° 50' 19"E	(1615748.0067',469356.0668',927.10')	(1615792.2492',469324.9019',927.72')	(1615794.3412',469374.8581')

CONSULTANT:

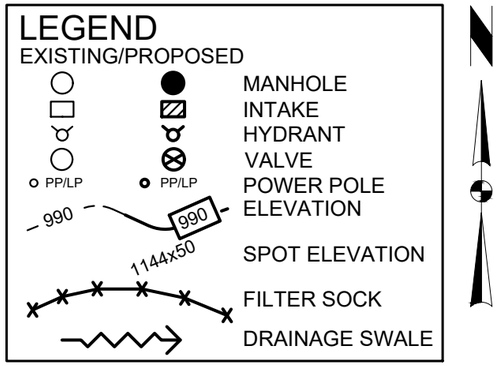
IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

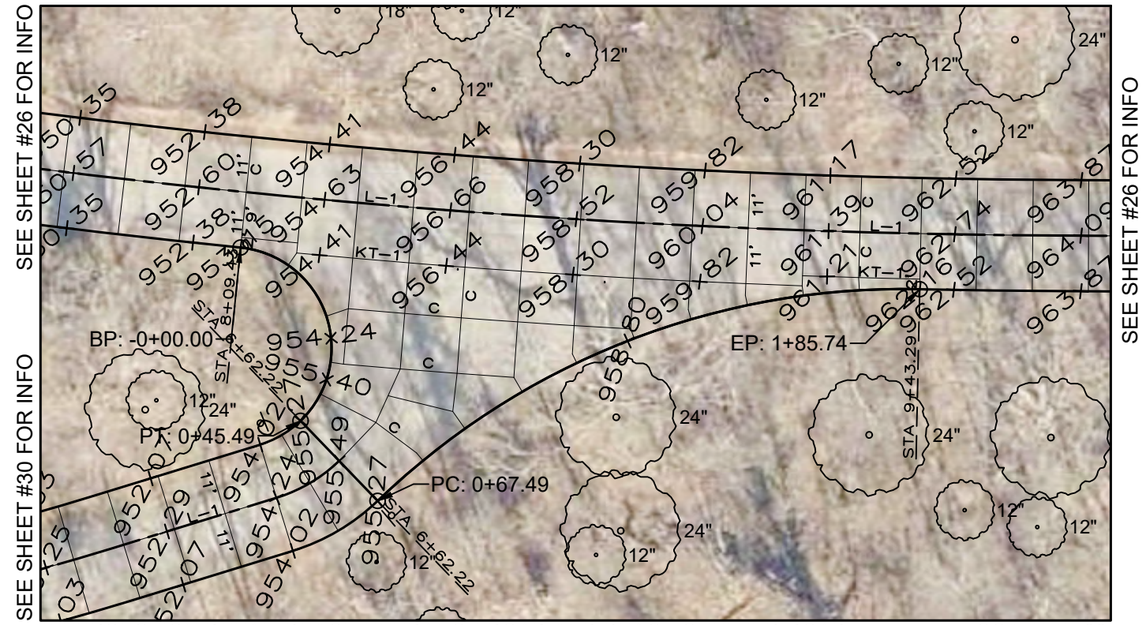
PAVING PLAN BEACH SHELTER ROAD

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

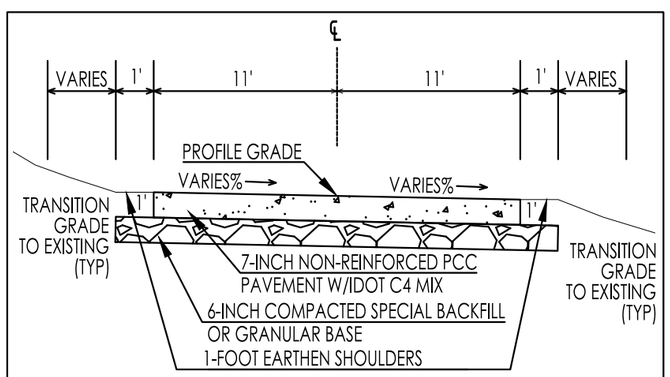
DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 31





INTERSECTION DETAIL BEACH ENTRANCE ROAD AND BEACH SHELTER ROAD SCALE 1"=30'

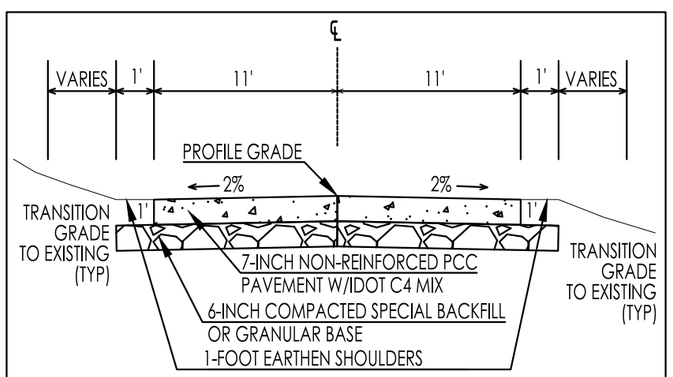
BEACH ENTRANCE ROAD INTERSECTION WITH BEACH SHELTER ROAD OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	45.49'	20.00'		0+00.00'	0+45.49'	130.3195 (d)	36.30'	S19° 04' 28"E	(1616427.7846',469393.1302',953.15')	(1616439.6471',469358.8240',955.27')	(1616425.7753',469373.2314')
2	Line	22.00'		S43° 54' 53"E	0+45.49'	0+67.49'				(1616439.6471',469358.8240',955.27')	(1616454.9060',469342.9758',955.27')	
3	Curve	118.25'	150.00'		0+67.49'	1+85.74'	45.1689 (d)	115.21'	N68° 40' 11"E	(1616454.9060',469342.9758',955.27')	(1616562.2271',469384.8840',962.16')	(1616558.9442',469234.9199')



NOTE: TRANSITION CROSS-SLOPE FROM +2% TO A CROWN BETWEEN STATIONS 0+00.00 AND 1+00.00. AT STATION 0+00.00 THE CROSS-SLOPE IS 2% LEFT TO RIGHT AND AT STATION 1+00.00 THERE WILL BE A CROWN WITH A 2% CROSS SLOPE EACH WAY.

STA 0+00.00 TO STA 1+00.00
BEACH SHELTER ROAD CROSS-SECTION

NO SCALE



STA 1+00.00 TO STA 6+62.22
BEACH SHELTER ROAD CROSS-SECTION

NO SCALE

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PAVING PLAN BEACH SHELTER ROAD

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
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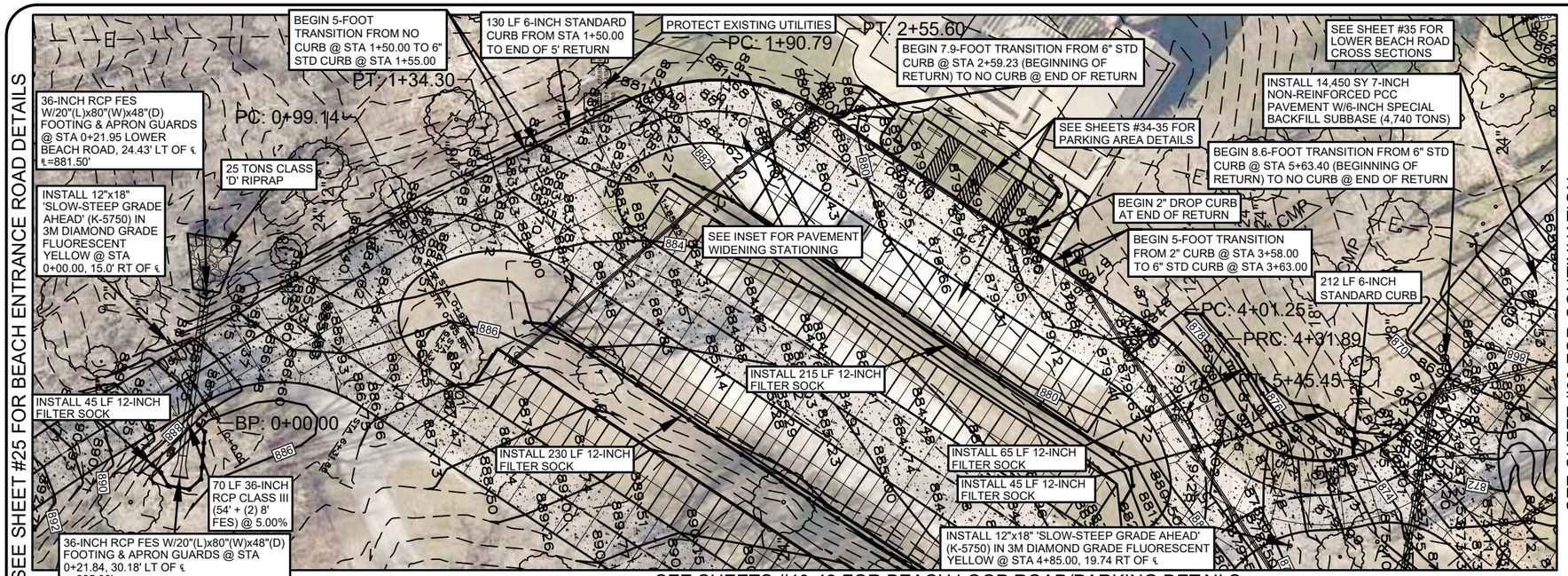
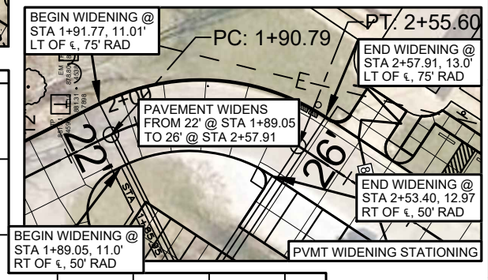
DATE: 6/29/2022
SHEET No: 32

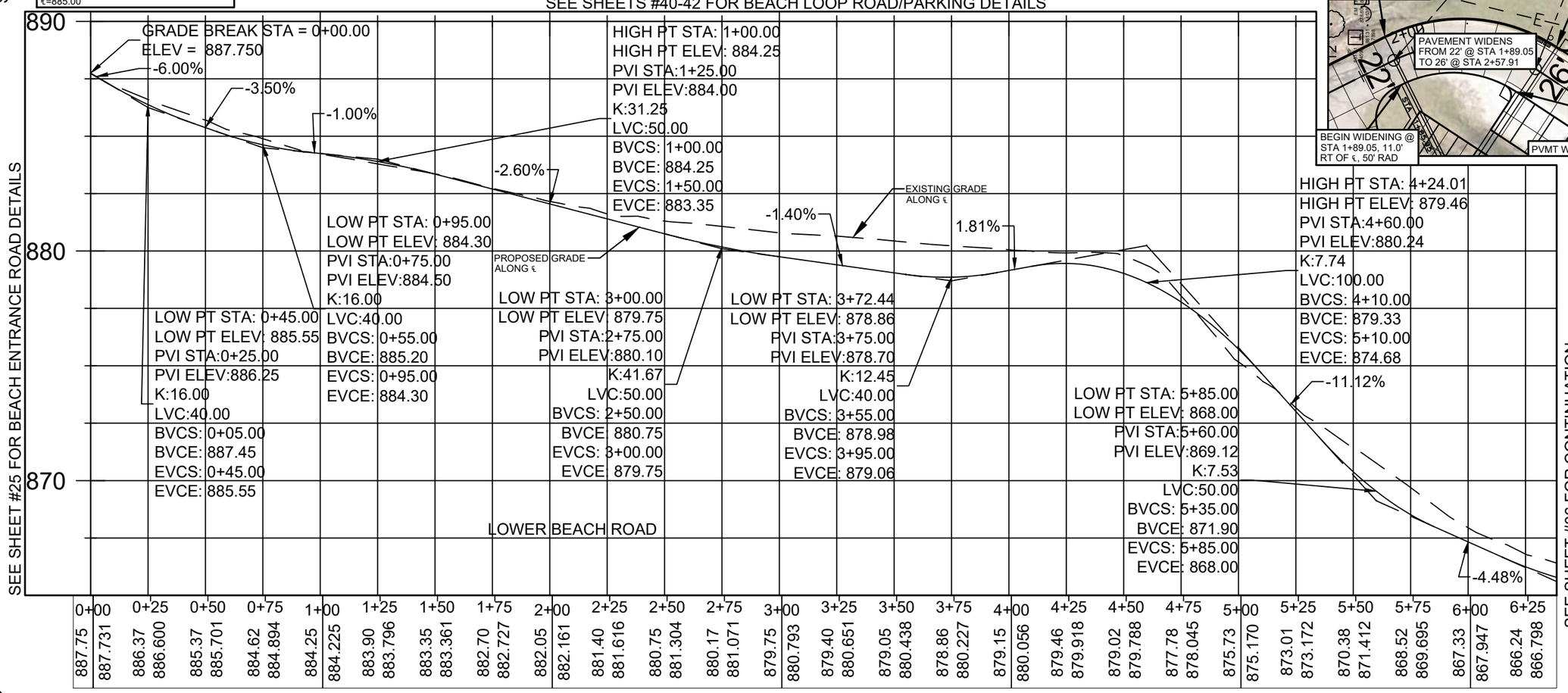


SEE SHEET #25 FOR BEACH ENTRANCE ROAD DETAILS

SEE SHEET #36 FOR CONTINUATION

SEE SHEETS #40-42 FOR BEACH LOOP ROAD/PARKING DETAILS





SEE SHEET #25 FOR BEACH ENTRANCE ROAD DETAILS

SEE SHEET #36 FOR CONTINUATION

0 FEET 50

LEGEND

EXISTING/PROPOSED

- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- PP/LP — PP/LP — POWER POLE
- 990 — 990 — ELEVATION
- 1144x50 — SPOT ELEVATION
- FILTER SOCK
- DRAINAGE SWALE

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

DNR

PAVING PLAN LOWER BEACH ROAD

CONSTRUCTION PROJECT FOR:

LAKE AHQUABI ROAD RECONSTRUCTION PROJECT

WARREN COUNTY, IOWA

NO.	BY	DATE	REVISION

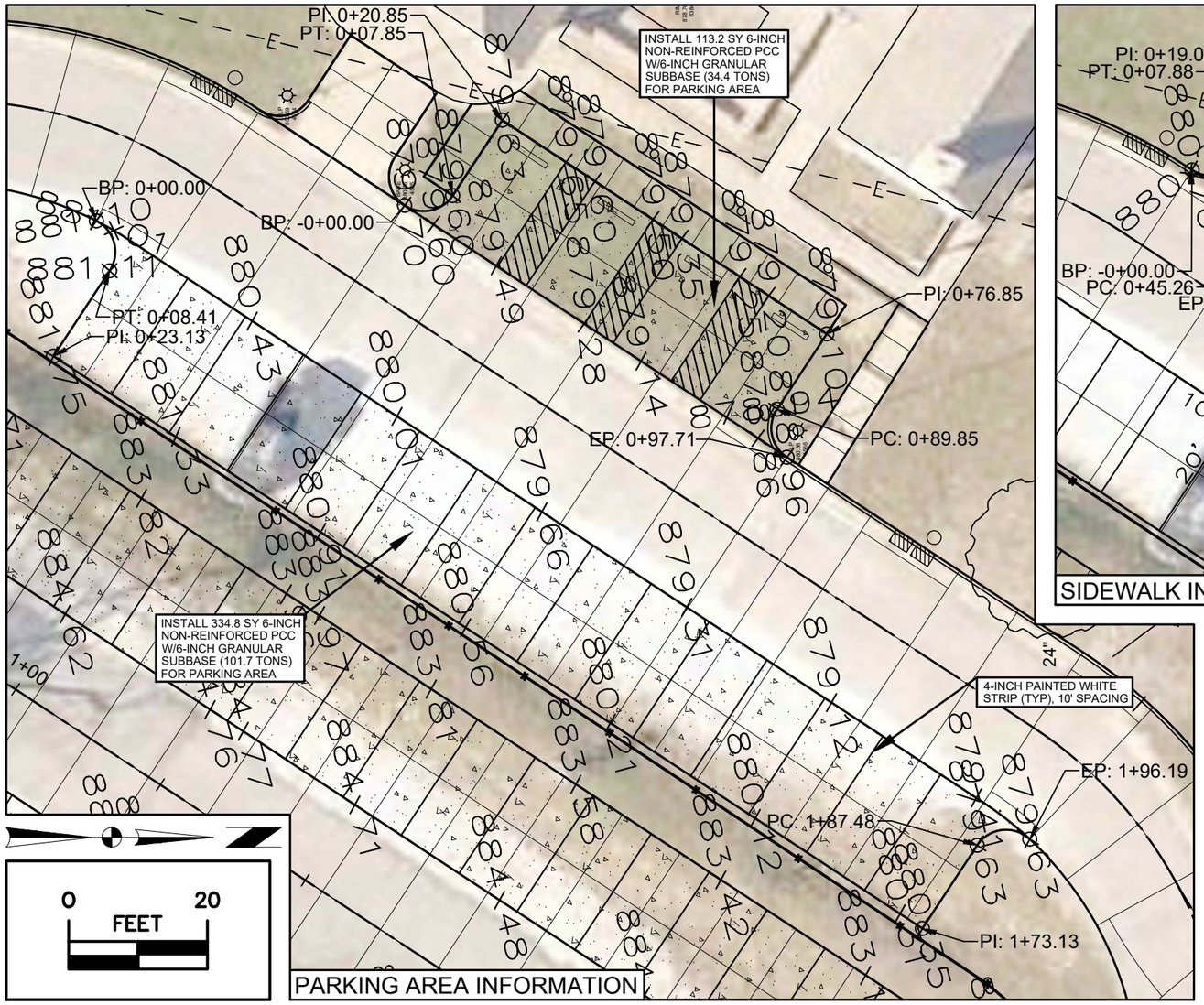
DRAWN BY:

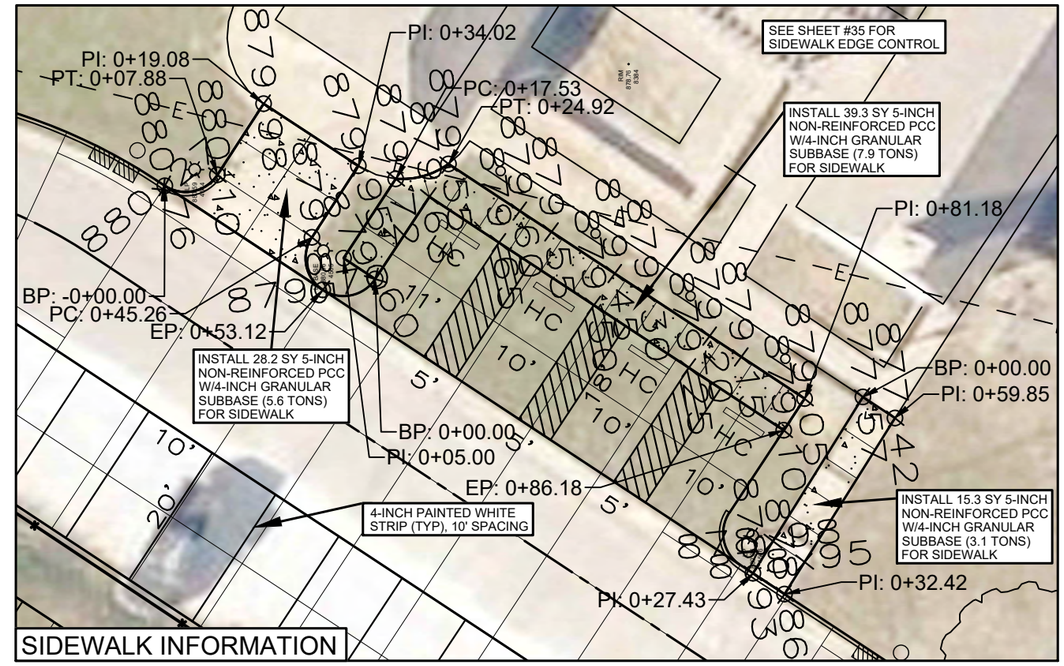
PROJECT NUMBER: 21-05-91-02

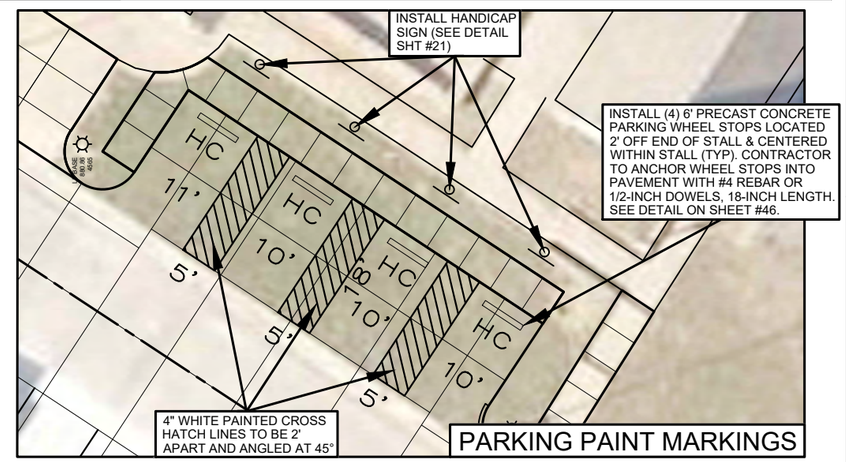
CHK'D BY:

DATE: 6/29/2022

SHEET No: 33







LOWER BEACH ROAD BEACH AREA ADA PARKING OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Statio	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	7.85'	5.00'		0+00.00'	0+07.85'	90.0000 (d)	7.07'	N11° 37' 24"W	(1615642.3080',469985.1889',879.70')	(1615640.8833',469992.1149',879.60')	(1615638.1326',469987.9396')
2	Line	13.00'		N56° 37' 24"W	0+07.85'	0+20.85'				(1615640.8833',469992.1149',879.60')	(1615630.0274',469999.2668',879.63')	
3	Line	56.00'		N33° 22' 36"E	0+20.85'	0+76.85'				(1615630.0274',469999.2668',879.63')	(1615660.8353',470046.0308',879.10')	
4	Line	13.00'		S56° 37' 24"E	0+76.85'	0+89.85'				(1615660.8353',470046.0308',879.10')	(1615671.6912',470038.8789',878.94')	
5	Curve	7.85'	5.00'		0+89.85'	0+97.71'	90.0000 (d)	7.07'	N78° 22' 36"E	(1615671.6912',470038.8789',878.94')	(1615678.6173',470040.3036',878.96')	(1615674.4420',470043.0543')
LOWER BEACH ROAD BEACH AREA PARKING OPPOSITE ADA PARKING OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Statio	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	8.41'	5.00'		0+00.00'	0+08.41'	96.3794 (d)	7.45'	N75° 11' 13"E	(1615644.5397',469940.7530',881.10')	(1615651.7455',469942.6586',0.0000')	(1615648.9948',469938.4833')
2	Line	14.72'		S56° 37' 24"E	0+08.41'	0+23.13'				(1615651.7455',469942.6586',881.11')	(1615664.0389',469934.5598',0.0000')	
3	Line	150.00'		N33° 22' 36"E	0+23.13'	1+73.13'				(1615664.0389',469934.5598',881.75')	(1615746.5601',470059.8205',0.0000')	
4	Line	14.35'		N56° 37' 24"W	1+73.13'	1+87.48'				(1615746.5601',470059.8205',880.35')	(1615734.5755',470067.7159',0.0000')	
5	Curve	8.70'	5.00'		1+87.48'	1+96.19'	99.7383 (d)	7.65'	N6° 45' 15"W	(1615734.5755',470067.7159',879.63')	(1615733.6763',470075.3086',879.63')	(1615737.3262',470071.8913')

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

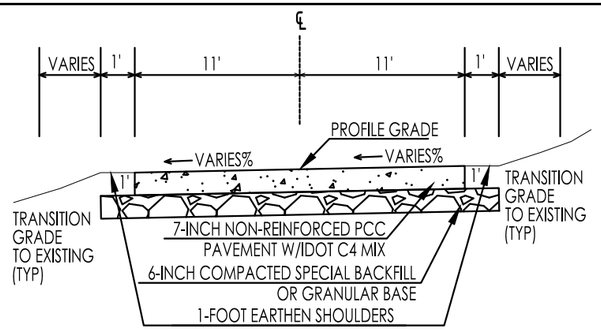
PAVING PLAN LOWER BEACH ROAD

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 34

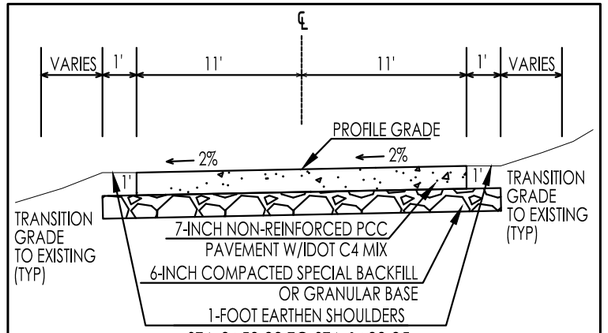
BEACH AREA ENTRANCE WALK OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	7.88'	5.00'		0+00.00'	0+07.88'	90.3461 (d)	7.09'	N11° 47' 50"W	(1615628.5810',469964.3523',880.76')	(1615627.1310',469971.2949',880.10')	(1615624.4056',469967.1030')
2	Line	11.19'		N56° 58' 11"W	0+07.88'	0+19.08'				(1615627.1310',469971.2949',880.10')	(1615617.7470',469977.3960',879.98')	
3	Line	14.94'		N33° 16' 58"E	0+19.08'	0+34.02'				(1615617.7470',469977.3960',879.98')	(1615625.9480',469989.8890',879.95')	
4	Line	11.24'		S57° 00' 27"E	0+34.02'	0+45.26'				(1615625.9480',469989.8890',879.95')	(1615635.3754',469983.7685',879.85')	
5	Curve	7.86'	5.00'		0+45.26'	0+53.12'	90.0901 (d)	7.08'	N78° 25' 18"E	(1615635.3754',469983.7685',879.85')	(1615642.3080',469985.1889',879.60')	(1615638.1326',469987.9396')
BEACH AREA ADA PARKING WALK OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Line	5.00'		S33° 22' 36"W	0+00.00'	0+05.00'				(1615640.8833',469992.1149',879.60')	(1615638.1326',469987.9396',879.65')	
2	Line	12.53'		N56° 37' 24"W	0+05.00'	0+17.53'				(1615638.1326',469987.9396',879.65')	(1615627.6700',469994.8323',879.72')	
3	Curve	7.39'	10.39'		0+17.53'	0+24.92'	40.7472 (d)	7.24'	N15° 44' 09"W	(1615627.6700',469994.8323',879.72')	(1615625.7074',470001.7978',879.55')	(1615617.3106',469995.6727')
4	Line	56.26'		N33° 22' 36"E	0+24.92'	0+81.18'				(1615625.7074',470001.7978',879.55')	(1615656.6600',470048.7815',879.05')	
5	Line	5.00'		S56° 37' 24"E	0+81.18'	0+86.18'				(1615656.6600',470048.7815',879.05')	(1615660.8353',470046.0308',879.10')	
BEACH AREA NORTH WALK OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Line	27.43'		S58° 02' 15"E	0+00.00'	0+27.43'				(1615656.4440',470056.4850',877.57')	(1615679.7127',470041.9663',878.93')	
2	Line	5.00'		N33° 22' 36"E	0+27.43'	0+32.42'				(1615679.7127',470041.9663',878.93')	(1615682.4618',470046.1391',878.86')	
3	Line	27.42'		N57° 53' 15"W	0+32.42'	0+59.85'				(1615682.4618',470046.1391',878.86')	(1615659.2340',470060.7170',877.42')	
4	Line	5.07'		S33° 23' 43"W	0+59.85'	0+64.92'				(1615659.2340',470060.7170',877.42')	(1615656.4440',470056.4850',877.57')	



NOTE: TRANSITION CROSS-SLOPE BETWEEN STATIONS 0+00.00 AND 0+50.00. AT STATION 0+00.00 THE CROSS-SLOPE IS 0% RT OF ℄ AND 2% RIGHT TO LEFT LT OF ℄, AT STATION 0+50.00 THERE WILL BE A 2% CROSS SLOPE RIGHT TO LEFT.

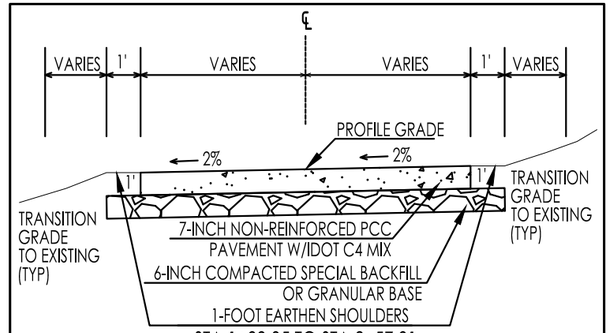
STA 0+00.00 TO STA 0+50.00
LOWER BEACH ROAD CROSS-SECTION

NO SCALE



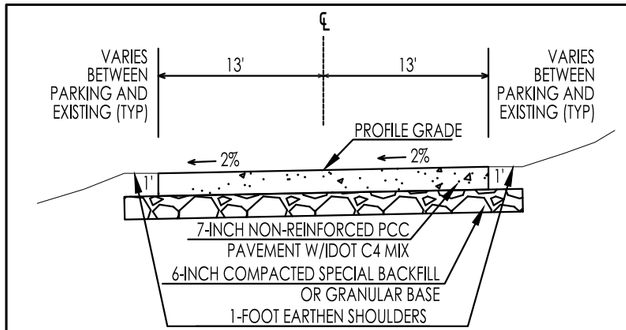
STA 0+50.00 TO STA 1+89.05
LOWER BEACH ROAD CROSS-SECTION

NO SCALE



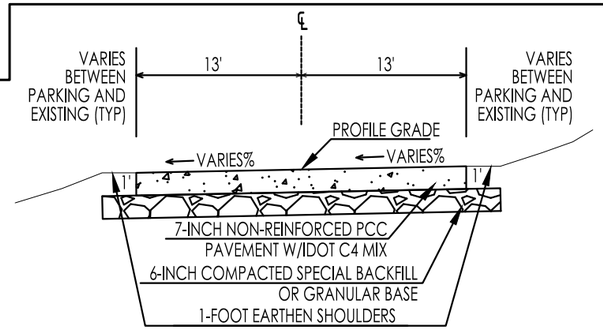
STA 1+89.05 TO STA 2+57.91
LOWER BEACH ROAD CROSS-SECTION

NO SCALE



STA 2+57.91 TO STA 8+50.00
LOWER BEACH ROAD CROSS-SECTION

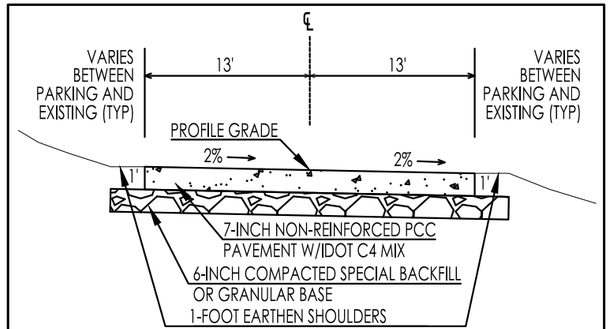
NO SCALE



NOTE: TRANSITION CROSS-SLOPE BETWEEN STATIONS 8+50.00 AND 9+50.00. AT STATION 8+50.00 THE CROSS-SLOPE IS 2% RIGHT TO LEFT, AT STATION 9+00.00 THERE IS NO CROSS-SLOPE, AT STATION 9+50.00 THERE WILL BE A 2% CROSS SLOPE LEFT TO RIGHT.

STA 8+50.00 TO STA 9+50.00
LOWER BEACH ROAD CROSS-SECTION

NO SCALE



STA 9+50.00 TO STA 12+30.06
LOWER BEACH ROAD CROSS-SECTION

NO SCALE

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

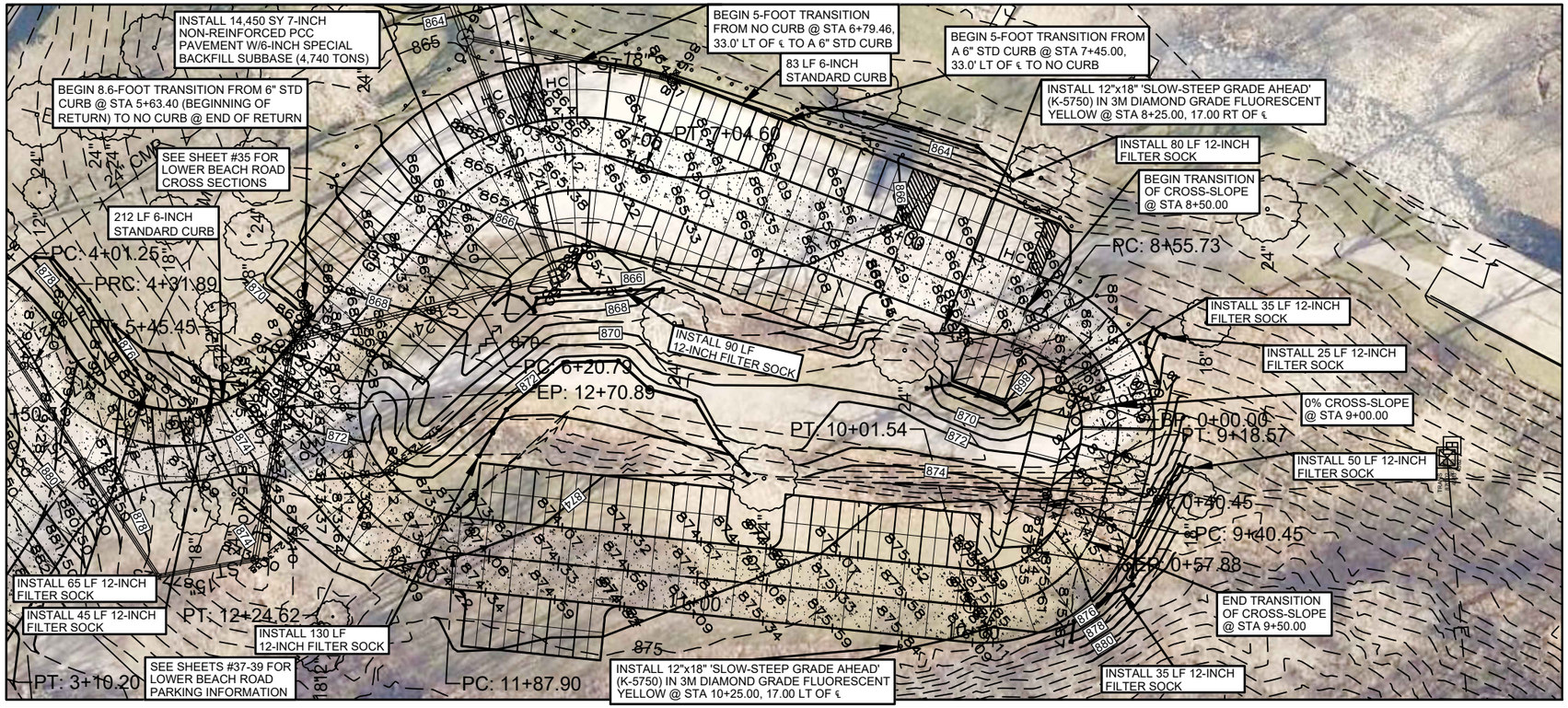
PAVING PLAN LOWER BEACH ROAD

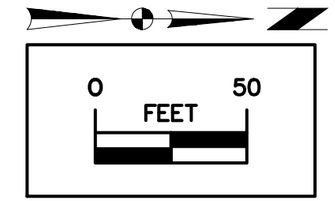
CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 35

SEE SHEET #43 FOR BOAT RENTAL WALKWAY INFORMATION

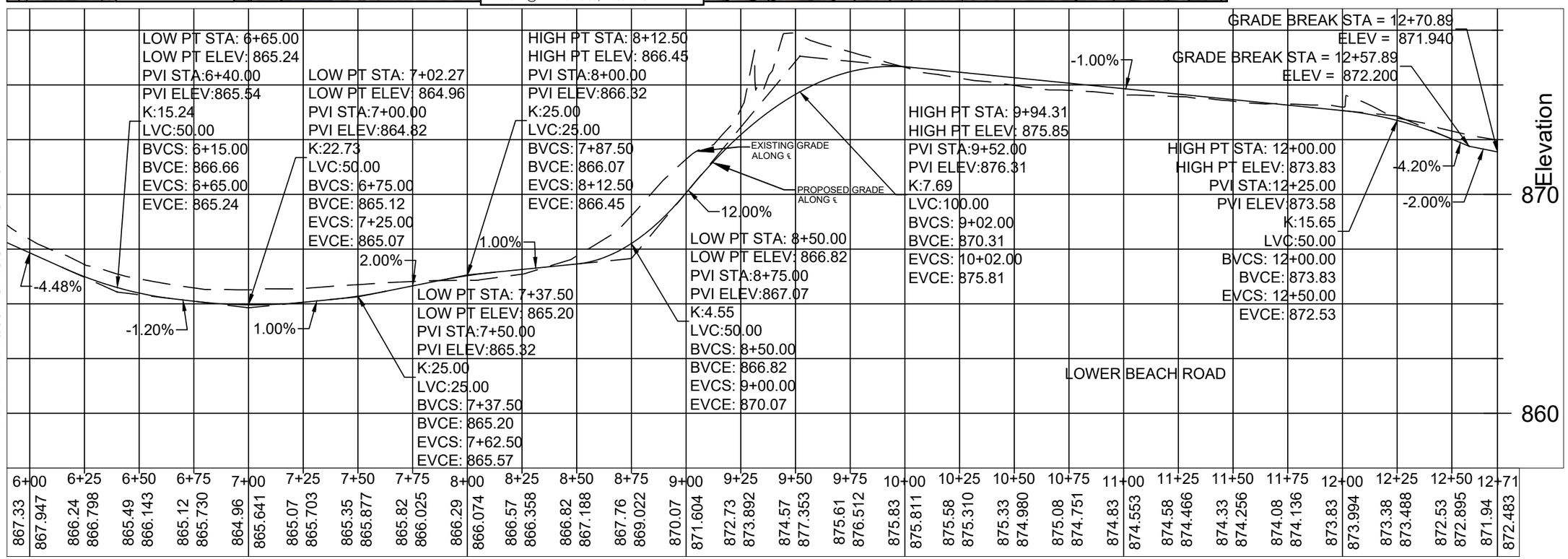




LEGEND

EXISTING/PROPOSED

- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- PP/LP — POWER POLE
- 990 — ELEVATION
- 1144x50 — SPOT ELEVATION
- FILTER SOCK
- DRAINAGE SWALE



SEE SHEET #33 FOR CONTINUATION

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

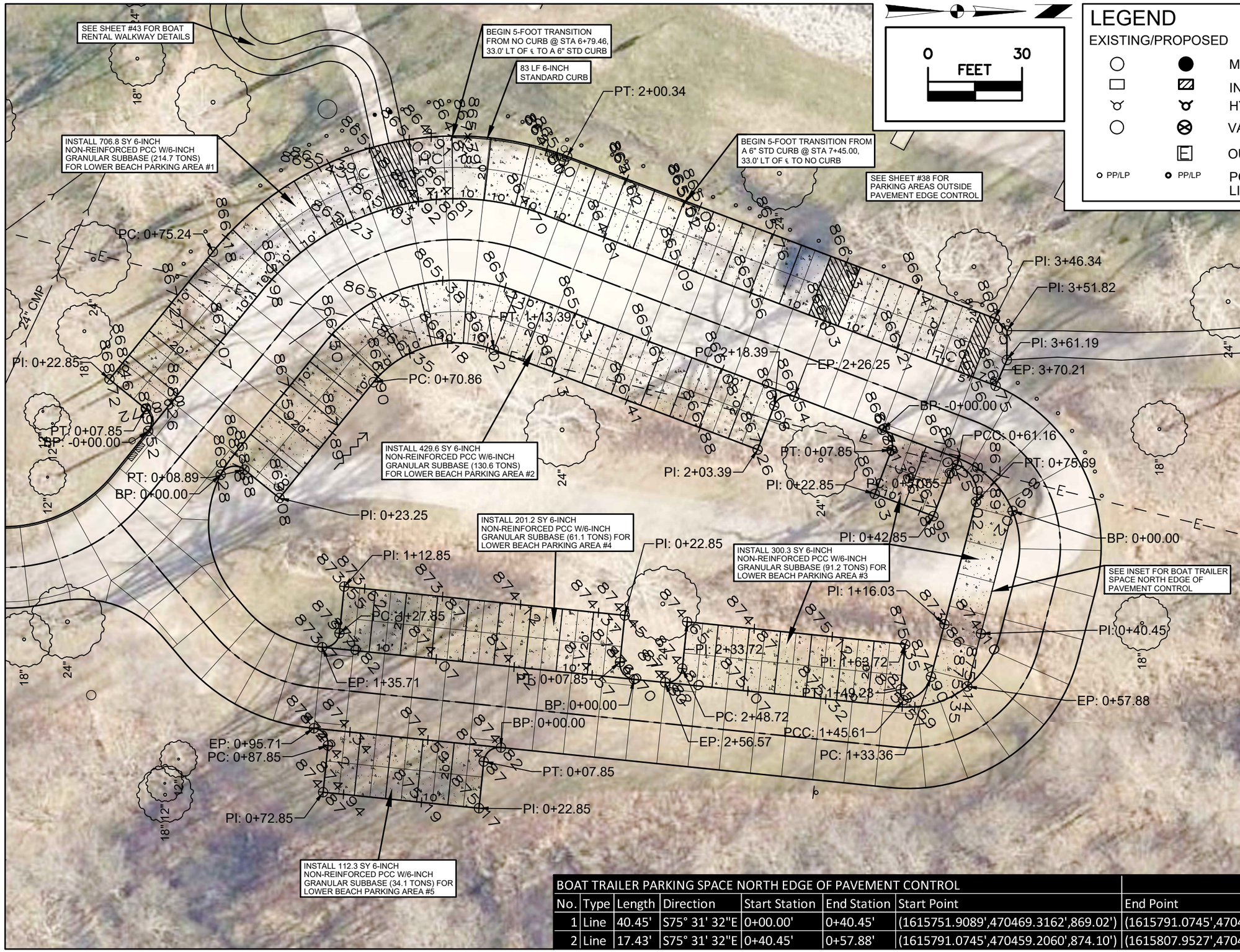
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PAVING PLAN LOWER BEACH ROAD

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
CHK'D BY:
PROJECT NUMBER: 21-05-91-02
DATE: 6/29/2022
SHEET No: 36



0 30
FEET

LEGEND

EXISTING/PROPOSED

- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- OUTLET POST
- PP/LP — POWER POLE/ LIGHT POLE

BOAT TRAILER PARKING SPACE NORTH EDGE OF PAVEMENT CONTROL							
No.	Type	Length	Direction	Start Station	End Station	Start Point	End Point
1	Line	40.45'	S75° 31' 32"E	0+00.00'	0+40.45'	(1615751.9089',470469.3162',869.02')	(1615791.0745',470459.2060',874.10')
2	Line	17.43'	S75° 31' 32"E	0+40.45'	0+57.88'	(1615791.0745',470459.2060',874.10')	(1615807.9527',470454.8491',875.14')

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PAVING PLAN LOWER BEACH ROAD

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY: DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 37

LOWER BOAT RENTAL PARKING AREA #1 OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	7.85'	5.00'		0+00.00'	0+07.85'	90.0000 (d)	7.07'	S84° 04' 04"W	(1615726.3989',470193.4630',869.52')	(1615719.3657',470192.7323',868.72')	(1615723.2477',470189.5810')
2	Line	15.00'		S39° 04' 04"W	0+07.85'	0+22.85'				(1615719.3657',470192.7323',868.72')	(1615709.9121',470181.0863',868.72')	
3	Line	52.39'		N50° 55' 56"W	0+22.85'	0+75.24'				(1615709.9121',470181.0863',868.72')	(1615669.2366',470214.1044',866.45')	
4	Curve	125.09'	100.00'		0+75.24'	2+00.34'	71.6735 (d)	117.10'	N15° 05' 43"W	(1615669.2366',470214.1044',866.45')	(1615638.7419',470327.1595',855.02')	(1615732.2607',470291.7444')
5	Line	146.00'		N20° 44' 29"E	2+00.34'	3+46.34'				(1615638.7419',470327.1595',855.02')	(1615690.4478',470463.6970',866.55')	
6	Line	5.48'		N45° 22' 01"E	3+46.34'	3+51.82'				(1615690.4478',470463.6970',866.55')	(1615694.3502',470467.5497',866.60')	
7	Line	9.36'		S89° 47' 38"E	3+51.82'	3+61.19'				(1615694.3502',470467.5497',866.60')	(1615703.7150',470467.5160',866.65')	
8	Line	9.02'		S66° 29' 25"E	3+61.19'	3+70.21'				(1615703.7150',470467.5160',866.65')	(1615711.9873',470463.9175',866.75')	
LOWER BOAT RENTAL PARKING AREA #2 OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	8.89'	5.00'		0+00.00'	0+08.89'	101.9082 (d)	7.77'	N11° 53' 10"W	(1615740.3540',470216.5931',869.28')	(1615738.7543',470224.1930',868.88')	(1615742.6363',470221.0418')
2	Line	14.35'		N39° 04' 04"E	0+08.89'	0+23.25'				(1615738.7543',470224.1930',868.88')	(1615747.8010',470235.3377',869.08')	
3	Line	47.62'		N50° 55' 56"W	0+23.25'	0+70.86'				(1615747.8010',470235.3377',869.08')	(1615710.8325',470265.3468',866.98)	
4	Curve	42.53'	34.00'		0+70.86'	1+13.39'	71.6735 (d)	39.81'	N15° 05' 43"W	(1615710.8325',470265.3468',866.98)	(1615700.4643',470303.7855',866.04')	(1615732.2607',470291.7444')
5	Line	90.00'		N20° 44' 29"E	1+13.39'	2+03.39'				(1615700.4643',470303.7855',866.04')	(1615732.3378',470387.9525',867.26')	
6	Line	15.00'		N69° 15' 31"W	2+03.39'	2+18.39'				(1615732.3378',470387.9525',867.26')	(1615718.3100',470393.2648',866.66')	
7	Curve	7.85'	5.00'		2+18.39'	2+26.25'	90.0000 (d)	7.07'	N24° 15' 31"W	(1615718.3100',470393.2648',866.66')	(1615715.4048',470399.7115',866.54')	(1615720.0808',470397.9407')
LOWER BOAT RENTAL PARKING AREA #3 OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	7.85'	5.00'		0+00.00'	0+07.85'	90.0000 (d)	7.07'	N65° 44' 29"E	(1615726.0293',470427.7671',866.88')	(1615732.4760',470430.6723',867.13')	(1615730.7053',470425.9964')
2	Line	15.00'		S69° 15' 31"E	0+07.85'	0+22.85'				(1615732.4760',470430.6723',867.13')	(1615746.5038',470425.3600',867.93')	
3	Line	20.00'		N20° 44' 29"E	0+22.85'	0+42.85'				(1615746.5038',470425.3600',867.93')	(1615753.5869',470444.0638',867.95')	
4	Line	14.70'		N69° 15' 31"W	0+42.85'	0+57.55'				(1615753.5869',470444.0638',867.95')	(1615739.8408',470449.2693',867.25')	
5	Curve	3.61'	5.00'		0+57.55'	0+61.16'	41.3151 (d)	3.53'	N48° 36' 02"W	(1615739.8408',470449.2693',867.25')	(1615737.1946',470451.6023',867.25')	(1615741.6116',470453.9453')
6	Curve	14.53'	10.00'		0+61.16'	0+75.69'	83.2778 (d)	13.29'	N62° 50' 07"E	(1615737.1946',470451.6023',867.25')	(1615749.0175',470457.6692',869.02')	(1615746.5180',470447.9866')
7	Line	40.34'		S75° 31' 32"E	0+75.69'	1+16.03'				(1615749.0175',470457.6692',869.02')	(1615788.0752',470447.5869',873.86')	
8	Line	17.33'		S75° 31' 32"E	1+16.03'	1+33.36'				(1615788.0752',470447.5869',873.86')	(1615804.8586',470443.2544',874.90')	
9	Curve	12.24'	10.00'		1+33.36'	1+45.61'	70.1350 (d)	11.49'	S40° 27' 29"E	(1615804.8586',470443.2544',874.90')	(1615812.3149',470434.5113',875.54')	(1615802.3592',470433.5718')
10	Curve	3.62'	5.00'		1+45.61'	1+49.23'	41.4893 (d)	3.54'	S75° 07' 51"W	(1615812.3149',470434.5113',875.54')	(1615808.8915',470433.6024',875.50')	(1615809.4033',470438.5761')
11	Line	14.49'		N84° 07' 28"W	1+49.23'	1+63.72'				(1615808.8915',470433.6024',875.50')	(1615794.4727',470435.0862',875.35')	
12	Line	70.00'		S5° 52' 32"W	1+63.72'	2+33.72'				(1615794.4727',470435.0862',875.35')	(1615787.3069',470365.4540',874.65')	
13	Line	15.00'		S84° 07' 28"E	2+33.72'	2+48.72'				(1615787.3069',470365.4540',874.65')	(1615802.2281',470363.9184',874.80')	
14	Curve	7.85'	5.00'		2+48.72'	2+56.57'	90.0000 (d)	7.07'	S39° 07' 28"E	(1615802.2281',470363.9184',874.80')	(1615806.6900',470358.4328',874.80')	(1615801.7163',470358.9447')
LOWER BOAT RENTAL PARKING AREA #4 OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	7.85'	5.00'		0+00.00'	0+07.85'	89.9995 (d)	7.07'	S50° 52' 33"W	(1615805.6663',470348.4853',874.70')	(1615800.1807',470344.0235',874.60')	(1615800.6926',470348.9972')
2	Line	15.00'		N84° 07' 28"W	0+07.85'	0+22.85'				(1615800.1807',470344.0235',874.60')	(1615785.2595',470345.5590',874.45')	
3	Line	90.00'		S5° 52' 32"W	0+22.85'	1+12.85'				(1615785.2595',470345.5590',874.45')	(1615776.0463',470256.0318',873.55')	
4	Line	15.00'		S84° 07' 28"E	1+12.85'	1+27.85'				(1615776.0463',470256.0318',873.55')	(1615790.9675',470254.4963',873.70')	
5	Curve	7.85'	5.00'		1+27.85'	1+35.71'	90.0000 (d)	7.07'	S39° 07' 28"E	(1615790.9675',470254.4963',873.70')	(1615795.4294',470249.0107',873.70')	(1615790.4557',470249.5226')
LOWER BOAT RENTAL PARKING AREA #5 OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	7.85'	5.00'		0+00.00'	0+07.85'	90.0000 (d)	7.07'	S39° 07' 28"E	(1615827.4349',470306.0339',874.82')	(1615831.8968',470300.5483',874.87')	(1615832.4087',470305.5221')
2	Line	15.00'		S84° 07' 28"E	0+07.85'	0+22.85'				(1615831.8968',470300.5483',874.87')	(1615846.8180',470299.0128',875.17')	
3	Line	50.00'		S5° 52' 32"W	0+22.85'	0+72.85'				(1615846.8180',470299.0128',875.17')	(1615841.6996',470249.2755',874.87')	
4	Line	15.00'		N84° 07' 28"W	0+72.85'	0+87.85'				(1615841.6996',470249.2755',874.87')	(1615826.7784',470250.8110',874.42')	
5	Curve	7.85'	5.00'		0+87.85'	0+95.71'	90.0000 (d)	7.07'	S50° 52' 32"W	(1615826.7784',470250.8110',874.42')	(1615821.2928',470246.3491',874.22')	(1615826.2665',470245.8373')

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

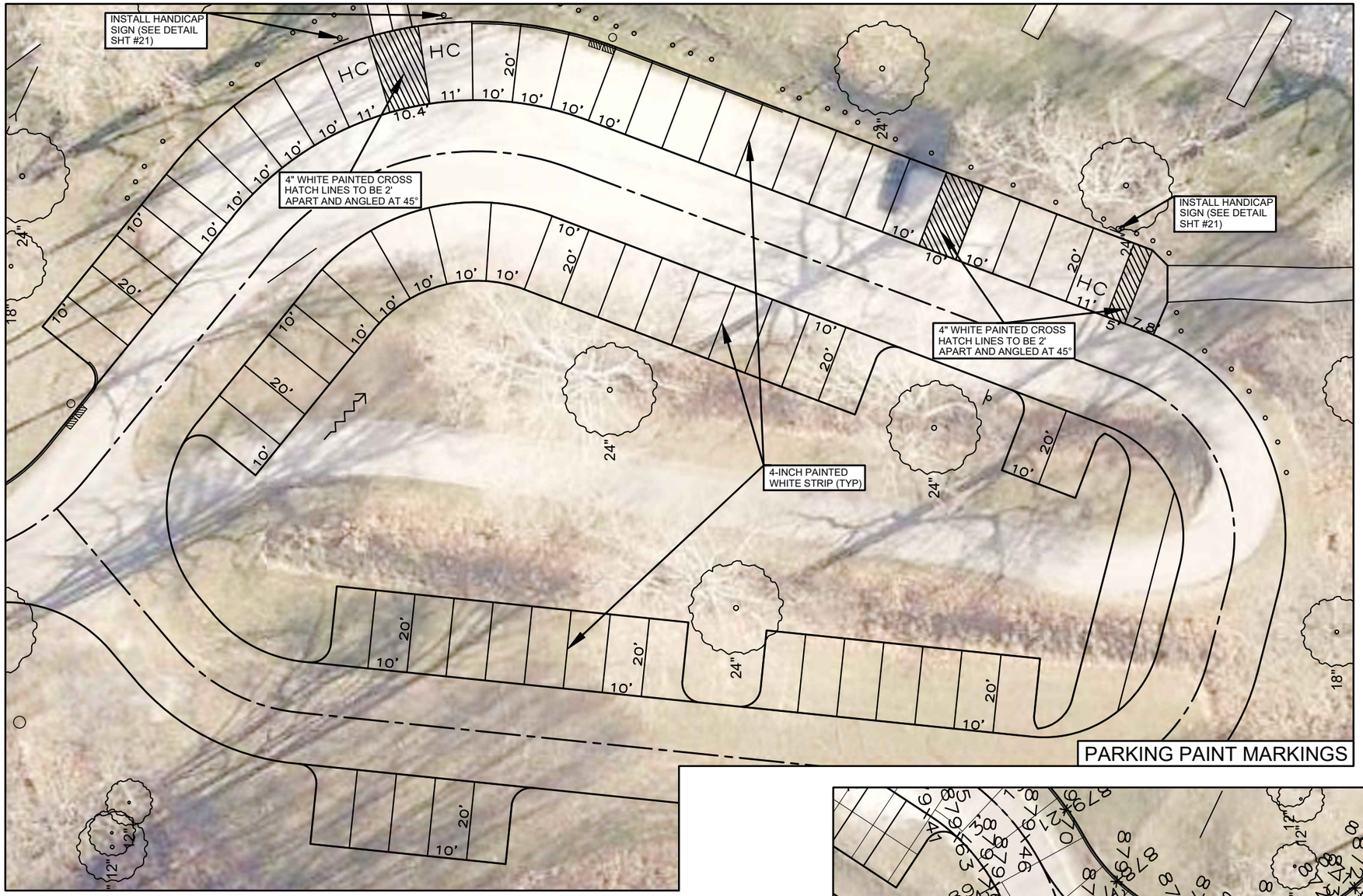
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PAVING PLAN BEACH ENTRANCE ROAD

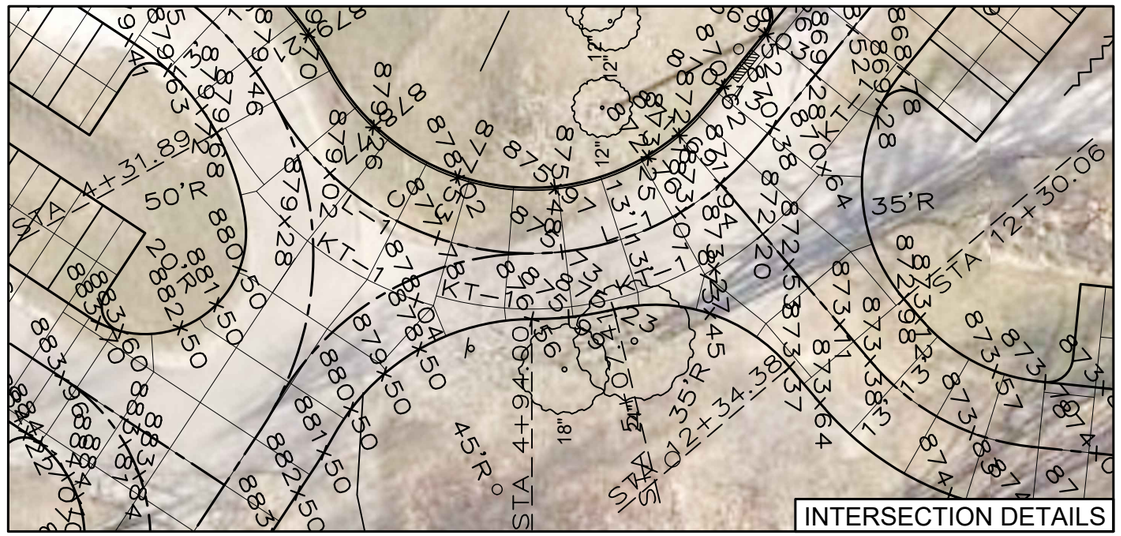
CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY	DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 38



PARKING PAINT MARKINGS



INTERSECTION DETAILS

LEGEND

EXISTING/PROPOSED

- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- OUTLET POST
- PP/LP — POWER POLE/ LIGHT POLE

0 30
FEET

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PAVING PLAN LOWER BEACH ROAD

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY DATE	REVISION

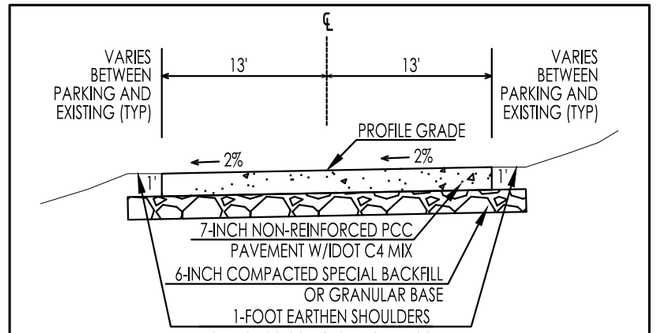
DRAWN BY:
CHK'D BY:
PROJECT NUMBER: 21-05-91-02
DATE: 6/29/2022
SHEET No: 39

LEGEND

EXISTING/PROPOSED

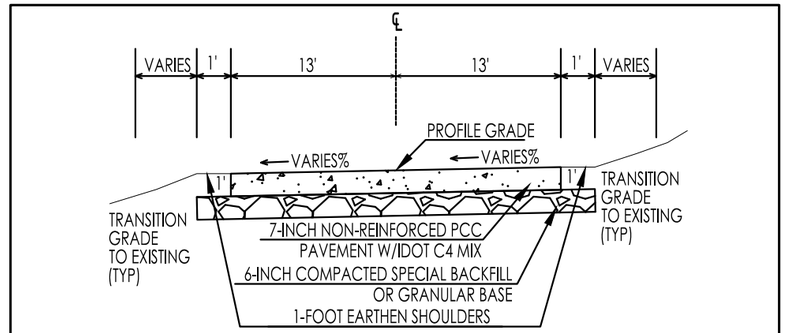
- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- OUTLET POST
- PP/LP — PP/LP — POWER POLE/ LIGHT POLE

0 — 50 FEET



STA 0+00.00 TO STA 2+75.00
BEACH LOOP ROAD CROSS-SECTION

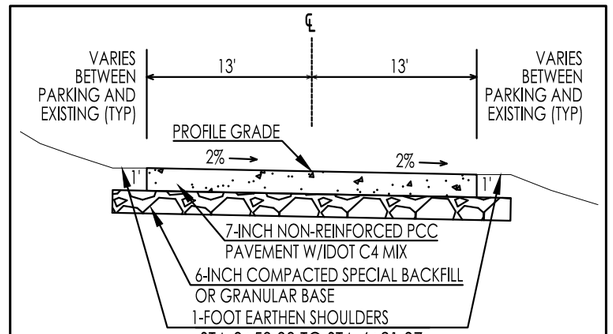
NO SCALE



NOTE: TRANSITION CROSS-SLOPE BETWEEN STATIONS 2+75.00 AND 3+50.00. AT STATION 2+50.00 THE CROSS-SLOPE IS 2% RIGHT TO LEFT, AT STATION 3+50.00 THERE WILL BE A 2% CROSS SLOPE LEFT TO RIGHT.

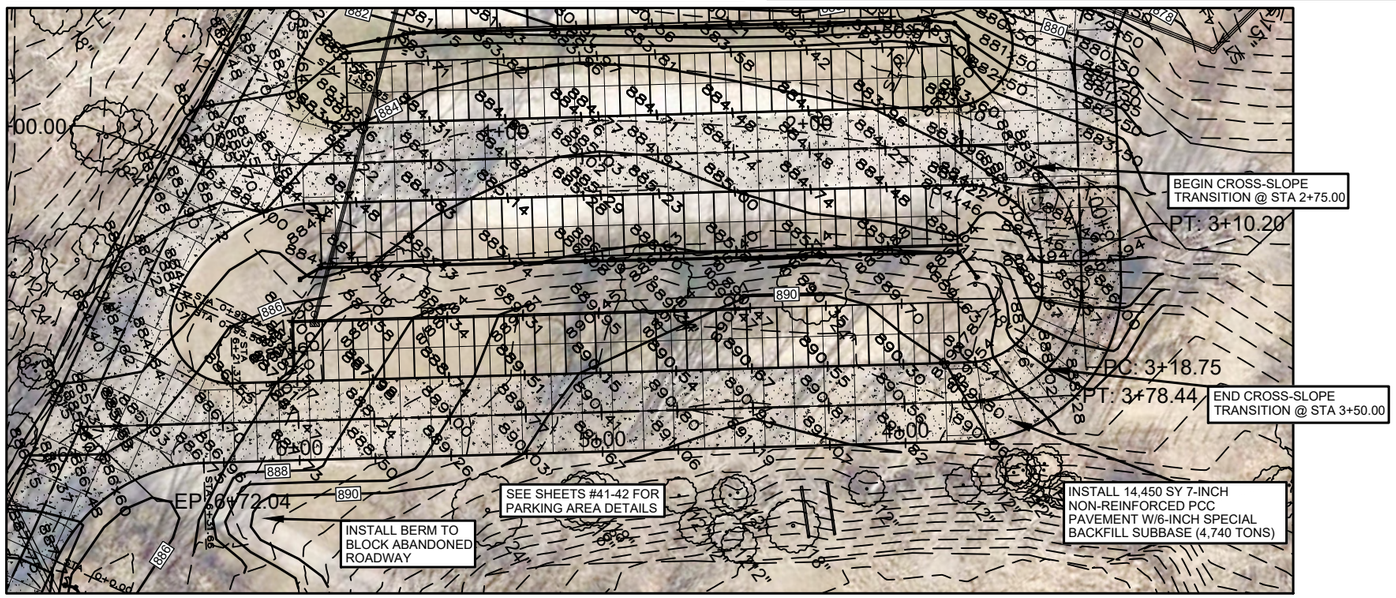
STA 2+75.00 TO STA 3+50.00
BEACH LOOP ROAD CROSS-SECTION

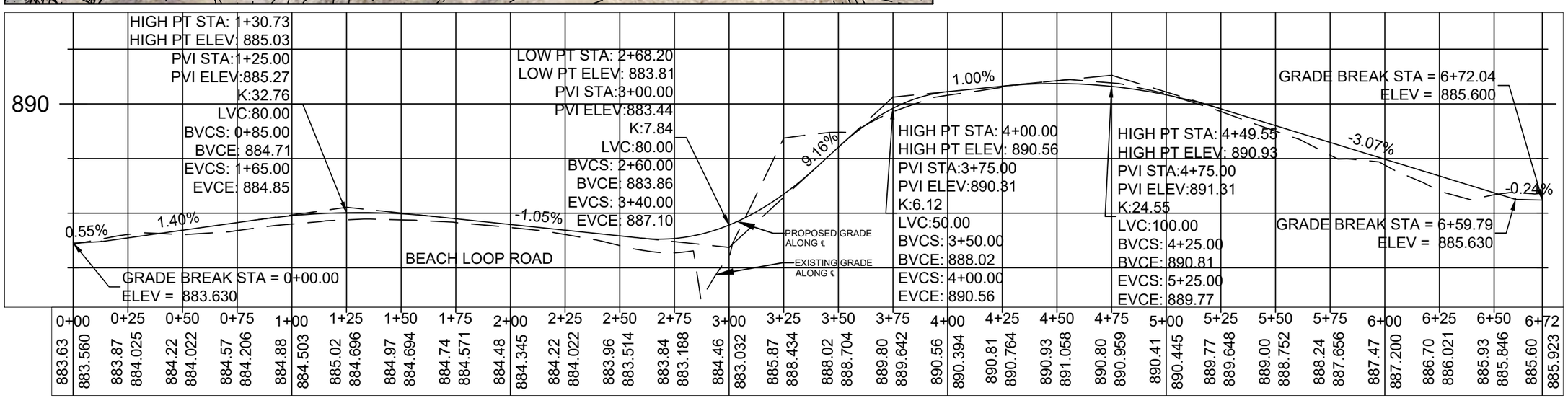
NO SCALE



STA 3+50.00 TO STA 6+21.37
BEACH LOOP ROAD CROSS-SECTION

NO SCALE





CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

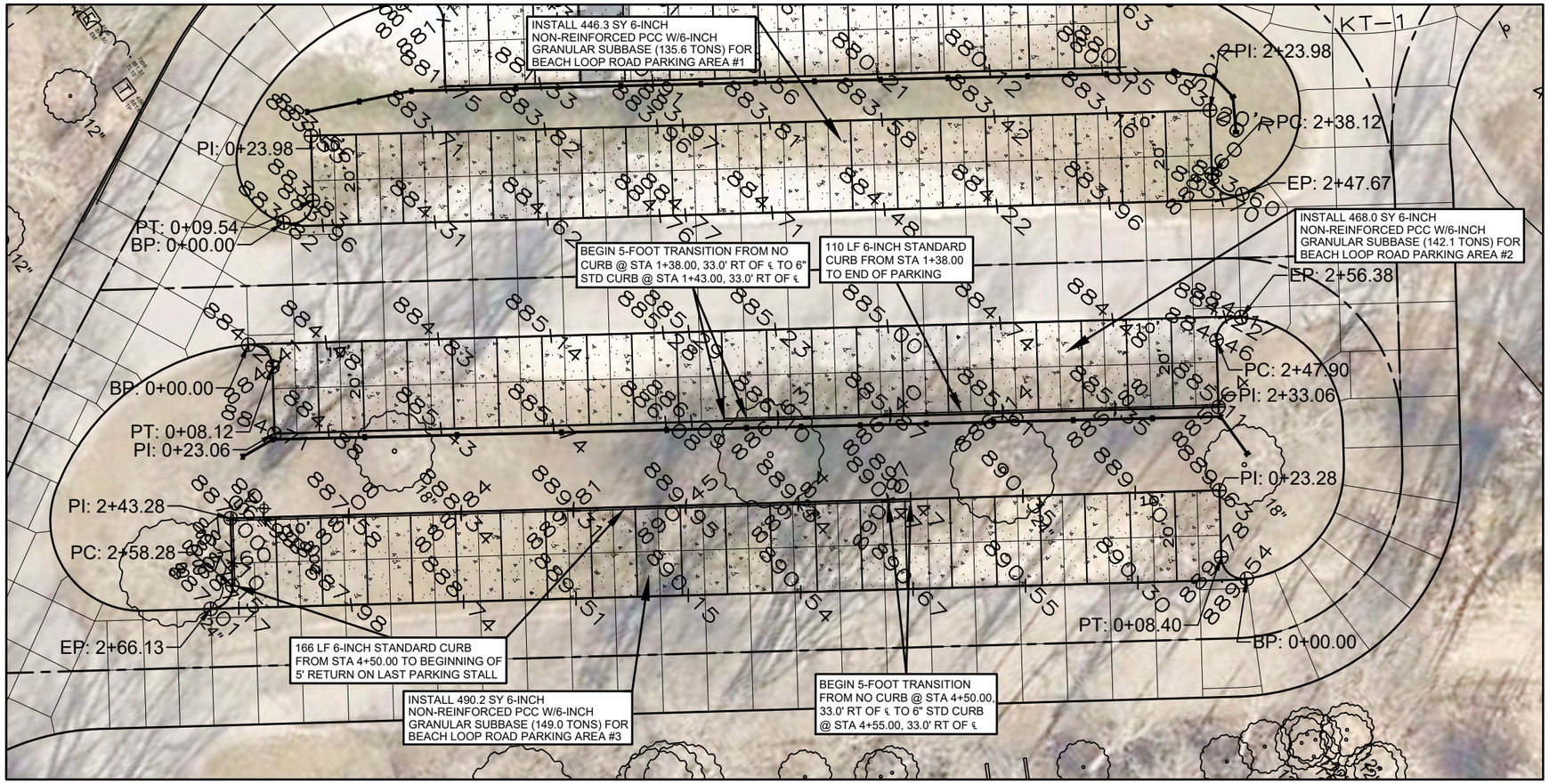
PAVING PLAN BEACH LOOP ROAD

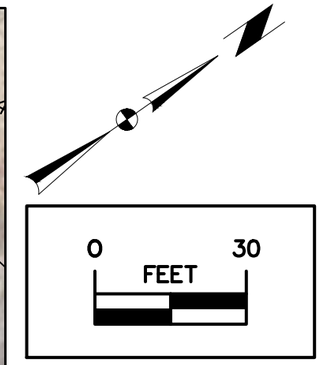
CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
CHK'D BY:
PROJECT NUMBER: 21-05-91-02
DATE: 6/29/2022

SHEET No: 40





LEGEND

EXISTING/PROPOSED

- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- OUTLET POST
- PP/LP — PP/LP — POWER POLE/ LIGHT POLE

BEACH LOOP ROAD PARKING AREA #1 OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	9.54'	5.00'		0+00.00'	0+09.54'	109.3281 (d)	8.16'	N1° 57' 33"W	(1615668.2445',469887.7253',883.82')	(1615667.9656',469895.8783',883.83')	(1615665.2149',469891.7029')
2	Line	14.44'		N56° 37' 24"W	0+09.54'	0+23.98'				(1615667.9656',469895.8783',883.83')	(1615655.9102',469903.8203',883.53')	
3	Line	200.00'		N33° 22' 36"E	0+23.98'	2+23.98'				(1615655.9102',469903.8203',883.53')	(1615765.9384',470070.8347',883.00')	
4	Line	14.14'		S56° 37' 24"E	2+23.98'	2+38.12'				(1615765.9384',470070.8347',883.00')	(1615777.7481',470063.0545',883.60')	
5	Curve	9.55'	5.00'		2+38.12'	2+47.67'	109.4712 (d)	8.16'	N68° 38' 28"E	(1615777.7481',470063.0545',883.60')	(1615785.3523',470066.0282',883.60')	(1615780.4988',470067.2298')
BEACH LOOP ROAD PARKING AREA #2 OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	8.12'	5.00'		0+00.00'	0+08.12'	93.0517 (d)	7.26'	N76° 51' 03"E	(1615685.9841',469865.7265',884.24')	(1615693.0507',469867.3773',884.41')	(1615690.3000',469863.2019')
2	Line	14.94'		S56° 37' 24"E	0+08.12'	0+23.06'				(1615693.0507',469867.3773',884.41')	(1615705.5235',469859.1603',884.71')	
3	Line	210.00'		N33° 22' 36"E	0+23.06'	2+33.06'				(1615705.5235',469859.1603',884.71')	(1615821.0532',470034.5253',885.64')	
4	Line	14.85'		N56° 37' 24"W	2+33.06'	2+47.90'				(1615821.0532',470034.5253',885.64')	(1615808.6549',470042.6932',884.46')	
5	Curve	8.47'	5.00'		2+47.90'	2+56.38'	97.0939 (d)	7.49'	N8° 04' 33"W	(1615808.6549',470042.6932',884.46')	(1615807.6020',470050.1139',884.17')	(1615811.4056',470046.8686')
BEACH LOOP ROAD PARKING AREA #3 OUTSIDE EDGE OF PAVEMENT												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	8.40'	5.00'		0+00.00'	0+08.40'	96.2046 (d)	7.44'	S75° 16' 26"W	(1615856.0024',470017.7664',889.54')	(1615848.8035',470015.8743',889.78')	(1615851.5542',470020.0497')
2	Line	14.88'		N56° 37' 24"W	0+08.40'	0+23.28'				(1615848.8035',470015.8743',889.78')	(1615836.3753',470024.0620',889.63')	
3	Line	220.00'		S33° 22' 36"W	0+23.28'	2+43.28'				(1615836.3753',470024.0620',889.63')	(1615715.3442',469840.3462',887.50')	
4	Line	15.00'		S56° 37' 24"E	2+43.28'	2+58.28'				(1615715.3442',469840.3462',887.50')	(1615727.8703',469832.0941',887.15')	
5	Curve	7.85'	5.00'		2+58.28'	2+66.13'	90.0000 (d)	7.07'	S11° 37' 24"E	(1615727.8703',469832.0941',887.15')	(1615729.2949',469825.1680',887.01')	(1615725.1196',469827.9188')

CONSULTANT:

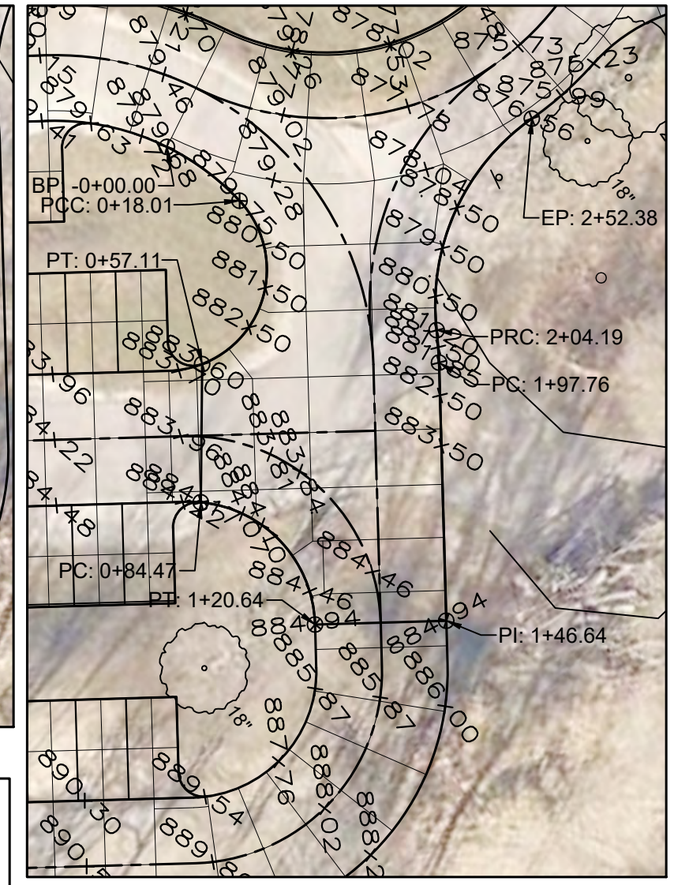
IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

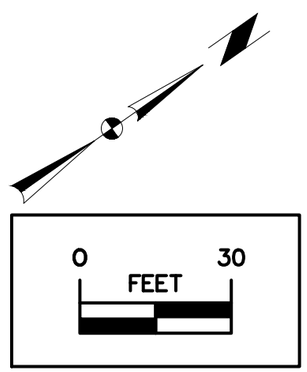
PAVING PLAN BEACH LOOP ROAD

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY	DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 41





LEGEND

EXISTING/PROPOSED

- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- OUTLET POST
- PP/LP — PP/LP — POWER POLE/ LIGHT POLE

LOWER BEACH AND BEACH LOOP ROADS INTERSECTIONS EDGE OF PAVEMENT CONTROL												
No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Curve	18.01'	50.00'		0+00.00'	0+18.01'	20.6340 (d)	17.91'	N71° 33' 49"E	(1615746.1235',470084.9703',979.68')	(1615763.1137',470090.6342',879.75')	(1615770.1754',470041.1354')
2	Curve	39.10'	20.00'		0+18.01'	0+57.11'	112.0247 (d)	33.17'	S42° 06' 25"E	(1615763.1137',470090.6342',879.75')	(1615785.3523',470066.0282',883.60')	(1615765.9384',470070.8347')
3	Line	27.36'		S54° 25' 31"E	0+57.11'	0+84.47'				(1615785.3523',470066.0282',883.60')	(1615807.6020',470050.1139',884.17')	
4	Curve	36.17'	25.00'		0+84.47'	1+20.64'	82.9057 (d)	33.10'	N81° 55' 26"E	(1615807.6020',470050.1139',884.17')	(1615840.3739',470054.7641',884.94')	(1615826.6203',470033.8873')
5	Line	26.00'		N33° 22' 36"E	1+20.64'	1+46.64'				(1615840.3739',470054.7641',884.94')	(1615854.6775',470076.4760',884.94')	
6	Line	51.12'		N56° 37' 24"W	1+46.64'	1+97.76'				(1615854.6775',470076.4760',884.94')	(1615811.9862',470104.6008',881.85')	
7	Curve	6.43'	76.00'		1+97.76'	2+04.19'	4.8455 (d)	6.43'	N59° 02' 46"W	(1615811.9862',470104.6008',881.85')	(1615806.4759',470107.9057',881.20')	(1615770.1754',470041.1354')
8	Curve	48.19'	45.00'		2+04.19'	2+52.38'	61.3578 (d)	45.92'	N30° 47' 24"W	(1615806.4759',470107.9057',881.20')	(1615782.9697',470147.3536',876.56')	(1615827.9696',470147.4408')

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

PAVING PLAN BEACH LOOP ROAD

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

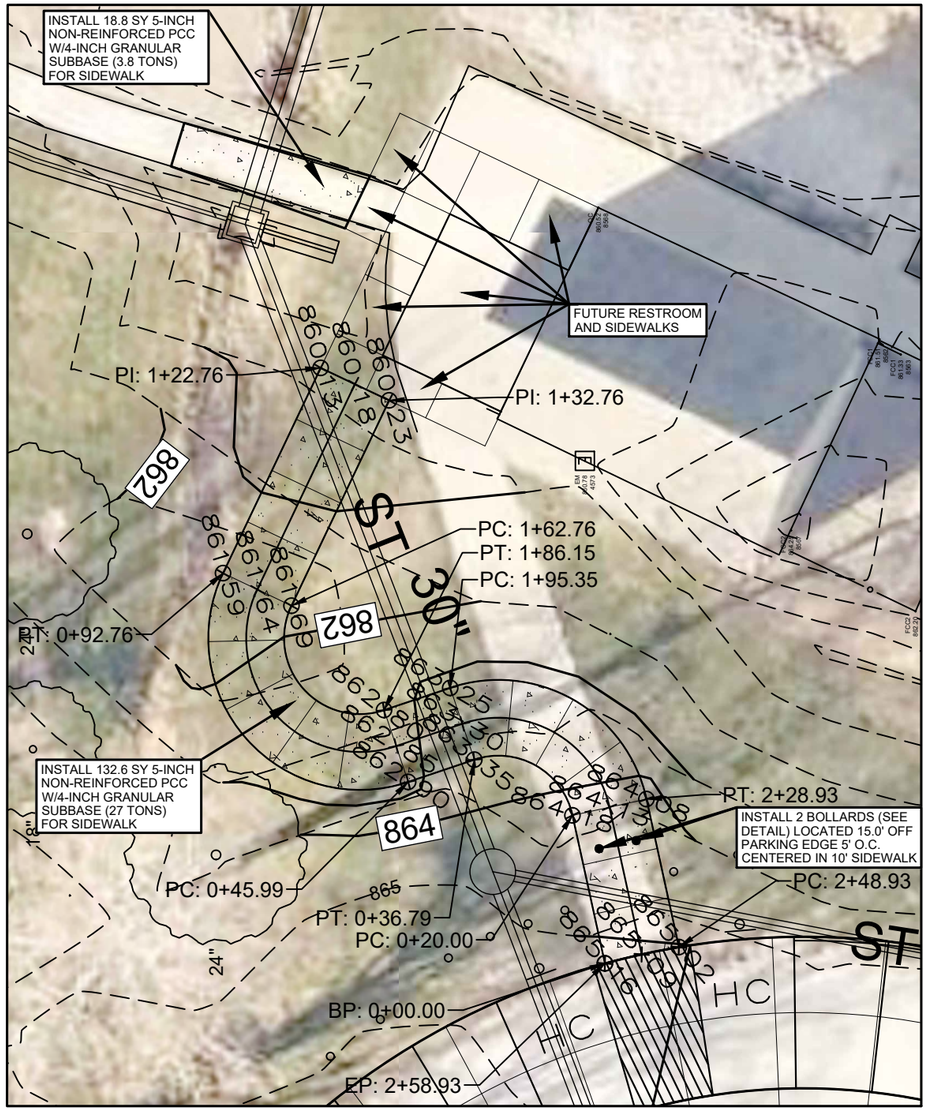
DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 42

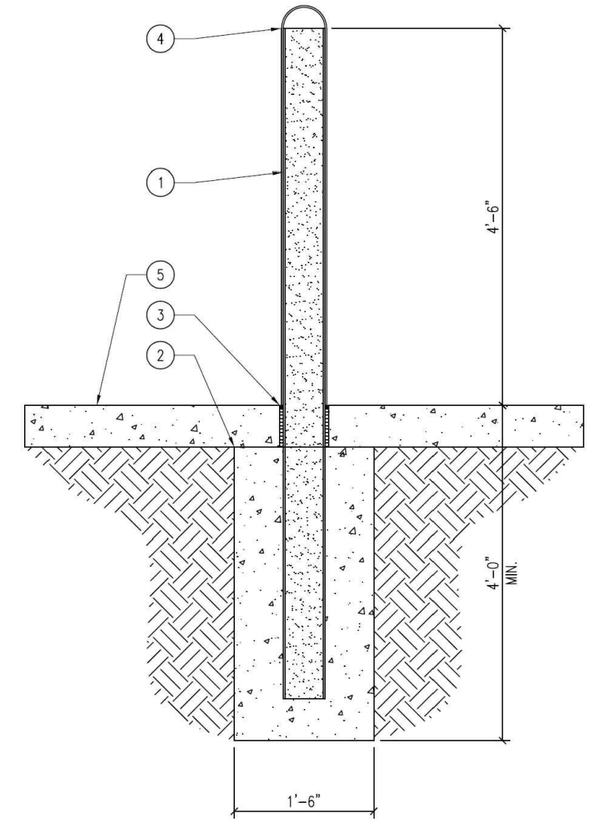
0 20
FEET

LEGEND

EXISTING/PROPOSED

- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- OUTLET POST
- PP/LP — PP/LP — POWER POLE/ LIGHT POLE





1. 6" DIAMETER X $\frac{3}{16}$" THICK X 8'-0" LONG STEEL POST, EMBED 3'-0" INTO FOOTING, GROUT POST SOLID.
2. 18" DIAMETER CONCRETE BOLLARD BASE, 4'-0" DEEP MINIMUM.
3. $\frac{1}{2}$" EXPANSION MATERIAL AROUND POST, CAULK WITH POLYURETHANE SEALANT, CONTINUOUS.
4. OSHA YELLOW PLASTIC BOLLARD SLEEVE TO COMPLETELY COVER EXPOSED BOLLARD.
5. 6" CONCRETE SIDEWALK/DRIVE, REFER TO CIVIL DRAWINGS.

BOAT RENTAL WALKWAY OUTSIDE EDGE OF WALK

No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
1	Line	20.00'		S77° 37' 54"W	0+00.00'	0+20.00'				(1615635.7748',470265.4676',865.16')	(1615616.2390',470261.1837',864.18')	
2	Curve	16.79'	10.00'		0+20.00'	0+36.79'	96.1975 (d)	14.89'	S29° 31' 58"W	(1615616.2390',470261.1837',864.18')	(1615608.9014',470248.2318',863.35')	(1615618.3810',470251.4158')
3	Line	9.20'		S18° 33' 57"E	0+36.79'	0+45.99'				(1615608.9014',470248.2318',863.35')	(1615611.8304',470239.5114',862.90')	
4	Curve	46.78'	20.00'		0+45.99'	0+92.76'	134.0011 (d)	36.82'	S48° 26' 05"W	(1615611.8304',470239.5114',862.90')	(1615584.2814',470215.0820',861.59')	(1615592.8712',470233.1435')
5	Line	30.00'		N64° 33' 53"W	0+92.76'	1+22.76'				(1615584.2814',470215.0820',861.59')	(1615557.1893',470227.9667',860.13')	
6	Line	10.00'		N25° 26' 07"E	1+22.76'	1+32.76'				(1615557.1893',470227.9667',860.13')	(1615561.4841',470236.9974',860.23')	
7	Line	30.00'		S64° 33' 53"E	1+32.76'	1+62.76'				(1615561.4841',470236.9974',860.23')	(1615588.5763',470224.1128',861.69')	
8	Curve	23.39'	10.00'		1+62.76'	1+86.15'	134.0011 (d)	18.41'	N48° 26' 05"E	(1615588.5763',470224.1128',861.69')	(1615602.3508',470236.3274',862.80')	(1615592.8712',470233.1435')
9	Line	9.20'		N18° 33' 57"W	1+86.15'	1+95.35'				(1615602.3508',470236.3274',862.80')	(1615599.4218',470245.0478',863.25')	
10	Curve	33.58'	20.00'		1+95.35'	2+28.93'	96.1975 (d)	29.77'	N29° 31' 58"E	(1615599.4218',470245.0478',863.25')	(1615614.0970',470270.9516',864.08')	(1615618.3810',470251.4158')
11	Line	20.00'		N77° 37' 54"E	2+28.93'	2+48.93'				(1615614.0970',470270.9516',864.08')	(1615633.6328',470275.2355',865.02')	
12	Curve	10.00'	100.00'		2+48.93'	2+58.93'	5.7320 (d)	10.00'	S12° 22' 06"E	(1615633.6328',470275.2355',865.02')	(1615635.7748',470265.4676',865.16')	(1615732.2607',470291.7444')

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

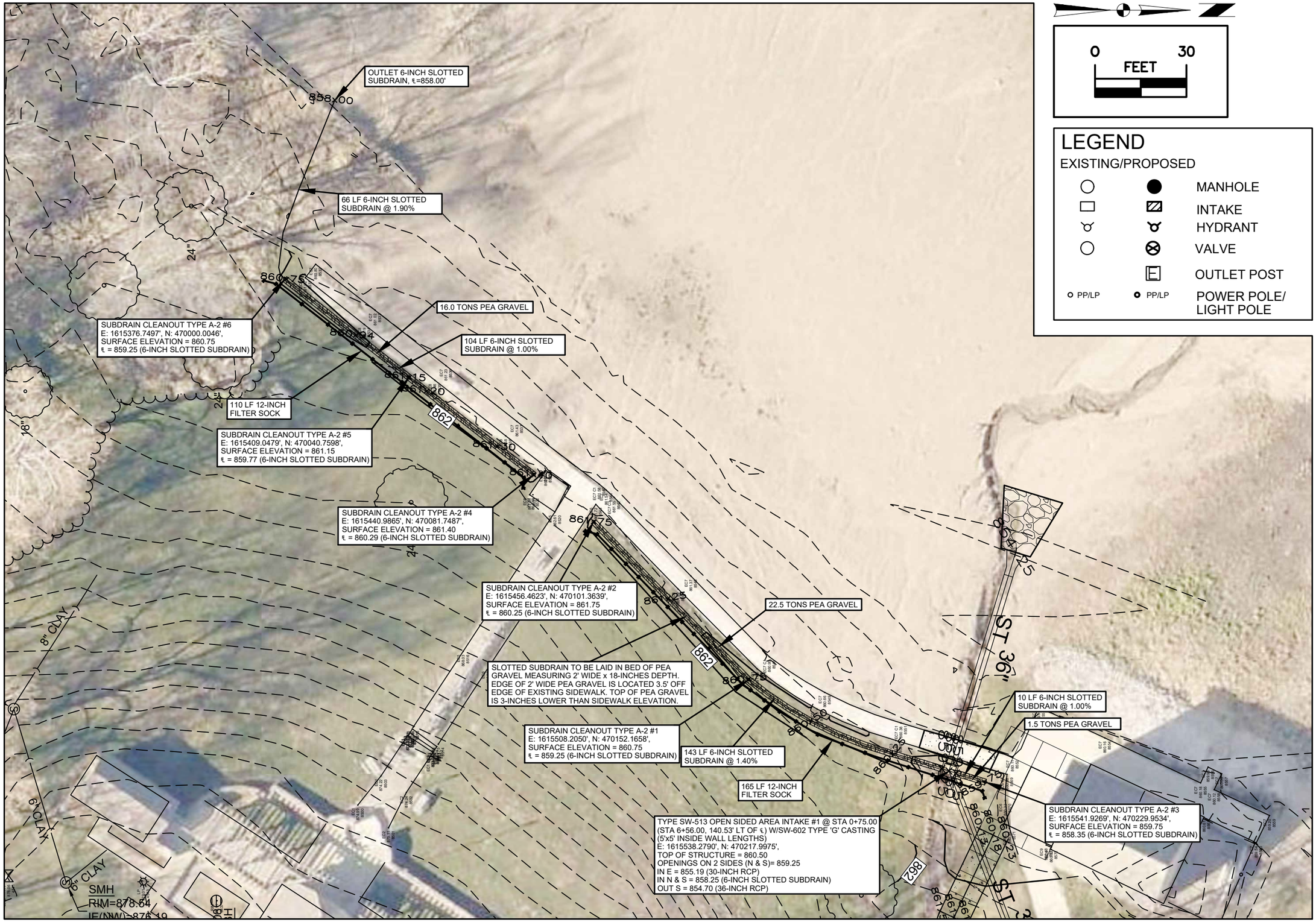
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

BOAT RENTAL WALKWAY

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY	DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 43



0 30
FEET

LEGEND

EXISTING/PROPOSED

- MANHOLE
- INTAKE
- HYDRANT
- VALVE
- OUTLET POST
- PP/LP — PP/LP — POWER POLE/ LIGHT POLE

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

BEACH WALKWAY SUBDRAIN

CONSTRUCTION PROJECT FOR:

LAKE AHQUABI ROAD RECONSTRUCTION PROJECT

WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:

PROJECT NUMBER: 21-05-91-02

CHK'D BY:

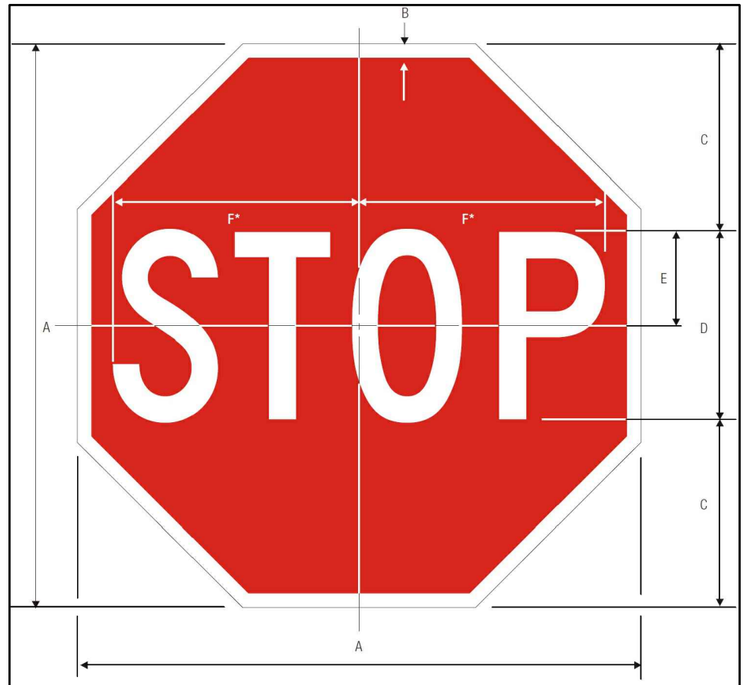
DATE: 6/29/2022

SHEET No: 44

R2-1
SPEED LIMIT (ENGLISH)

*Optically space numerals about centerline

	A	B	C	D	E	F	G	H	J	K	L
	18	24	.375	.625	3	3 E	2	8 E	7.188	5.5	1.5
C	24	30	.375	.625	4	4 E	2	10 E	9.563	7.313	1.5
	36	48	.625	.875	6	6 E	5	14 E	14.375	11	2.25
	48	60	.75	1.25	8	8 E	6	16 E	19.125	14.625	3



R1-1
STOP

*Reduce spacing 40%

A	B	C	D	E	F
30	.75	10	10 C	5	12.5

COLORS: LEGEND – WHITE (RETROREFLECTIVE)
BACKGROUND – RED (RETROREFLECTIVE)

SIGNAGE QUANTITIES
3 EA R2-1 24"x30" 'SPEED LIMIT 25' SIGN
2 EA R1-1 'STOP' SIGN
9 EA 12"x18" 'SLOW-STEEP GRADE AHEAD' (K-5750)
IN 3M DIAMOND GRADE FLUORESCENT YELLOW

SEE SHEETS #18-40 FOR SIGN LOCATIONS.

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

SIGN DETAILS

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

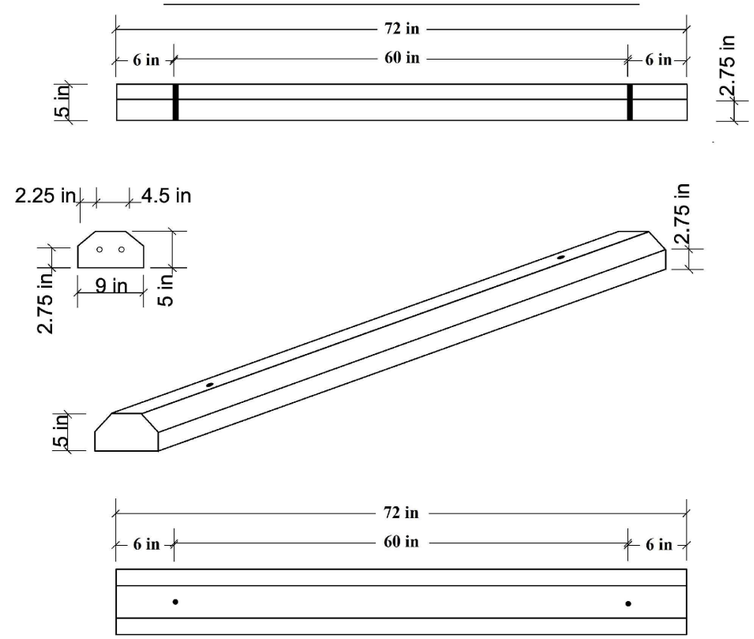
NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 21-05-91-02
CHK'D BY:
DATE: 6/29/2022
SHEET No: 45

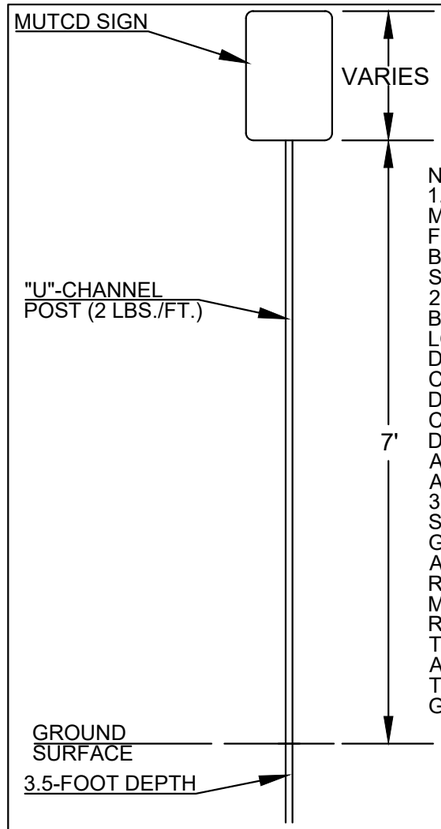
12"x18" 'SLOW-STEEP GRADE AHEAD' IN 3M DIAMOND GRADE FLUORESCENT YELLOW
ROAD TRAFFIC SIGNS COMPANY (K-5750) (OR APPROVED EQUAL)

NOTE: INSTALL 6' PRECAST CONCRETE PARKING WHEEL STOPS LOCATED 2' OFF END OF PARKING STALLS & CENTERED WITHIN STALL. CONTRACTOR TO ANCHOR WHEEL STOPS INTO 6-INCH CONCRETE (PRE-DRILL) WITH #4 REBAR OR 1/2-INCH DOWELS, 18-INCH LENGTH.

FLAT PARKING BUMPER



Air Entrained Concrete
4000 p.s.i. @ 28 days
Length: 6'0"
Height: 5"
Width: 9"



NOTES
1. SIGNS SHALL BE MOUNTED 7' FROM FINISH GRADE TO BOTTOM EDGE OF SIGN FACE.
2. SIGNAGE FOR TO BE INSTALLED AT LOCATIONS DESIGNATED IN THE CONSTRUCTION DRAWINGS. "U" CHANNEL CAN BE DRIVEN INTO GROUND AT SAID LOCATION TO A DEPTH OF 3.5 FEET.
3. ALL SIGNAGE SHALL BE ENGINEER GRADE .080 ALUMINUM REFLECTIVE SIGN MEETING THE REQUIREMENTS OF THE MUTCD AND ADAAG EXCEPT FOR THE 'SLOW STEEP GRADE SIGN'.

SIGN DETAIL
NOT TO SCALE

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

SIGN DETAILS

CONSTRUCTION PROJECT FOR:
LAKE AHQUABI ROAD RECONSTRUCTION PROJECT
WARREN COUNTY, IOWA

NO.	BY / DATE	REVISION

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SHEET No: 46