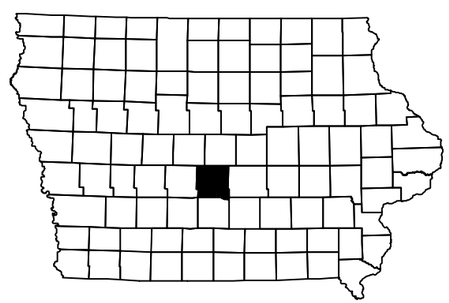
IOWA DEPARTMENT OF NATURAL RESOURCES

CONSTRUCTION DOCUMENTS FOR WALNUT WOODS STATE PARK ROADWAY REPLACEMENT PROJECT POLK COUNTY, IOWA

DNR PROJECT #15-05-77-01
IDOT PROJECT # SP-657-0(4)--7C-77

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



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, IOWA REG. NO. 13653 DATE
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2015

PAGES OR SHEETS COVERED BY THIS SEAL:
SHEETS 1-34

DIRECTORY

PROJECT MANAGER		CONSTRUCTION INSPECTOR	
COMPANY	IOWA DEPARTMENT OF NATURAL RESOURCES	COMPANY	IOWA DEPARTMENT OF NATURAL RESOURCES
ADDRESS	502 EAST 9TH STREET	ADDRESS	502 EAST 9TH STREET
CITY,STATE,ZIP	DES MOINES, IA 50319	CITY,STATE,ZIP	DES MOINES, IA 50319
CONTACT	BRETT JOHNSON	CONTACT	JASON KRUSE
TELEPHONE	515-250-3711	TELEPHONE	515-250-3707
FAX	515-281-8685	FAX	
EMAIL	brett.johnson@dnr.iowa.gov	EMAIL	jason.kruse@dnr.iowa.gov

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF REMOVAL OF THE EXISTING ASPHALT ROADWAY ALONG WITH ADJACENT LOOPS AND PARKING AREAS AND THE CONSTRUCTION OF A NEW PORTLAND CEMENT CONCRETE ROADWAY, LOOPS AND PARKING AREAS IN ITS PLACE LOCATED AT WALNUT WOODS STATE PARK IN POLK COUNTY, IOWA.

AUTHORIZATION TO BID

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

ENGINEERING BUREAU CHIEF DATE

SHEET INDEX

1	COVER SHEET
2	VICINITY MAPS
3	QUANTITIES & GENERAL NOTES
4	SURVEY CONTROL
5	OVERALL SITE PLAN
6	DEMOLITION PLAN
7	DEMOLITION PLAN INSETS
8	PLAN/PROFILE
9	PLAN/PROFILE
10	PLAN/PROFILE
11	PLAN/PROFILE
12	PLAN/PROFILE
13	PLAN/PROFILE
14	PLAN/PROFILE
15	PLAN/PROFILE
16	PLAN/PROFILE
17	BOAT PARKING AREA CONTROL
18	BOAT PARKING AREA GRADES
19	ENTRANCE LOOP DETAILS
20	EAST PARKING BAY DETAILS
21	WEST PARKING BAY DETAILS
22	LODGE LOOP DRIVE DETAILS
23	LODGE PARKING CONTROL
24	LODGE PARKING GRADES
25	INTERIOR GRADING DETAILS
26	PAVEMENT DETAILS
27	STANDARD DETAILS
28	STANDARD DETAILS
29	JOINT DETAILS
30	SURVEY/PAVEMENT CONTROL
31	PAVEMENT CONTROL
32	EDGE OF PAVEMENT CONTROL
33	EDGE OF PAVEMENT CONTROL
34	EDGE OF PAVEMENT CONTROL

CONSULTANT:

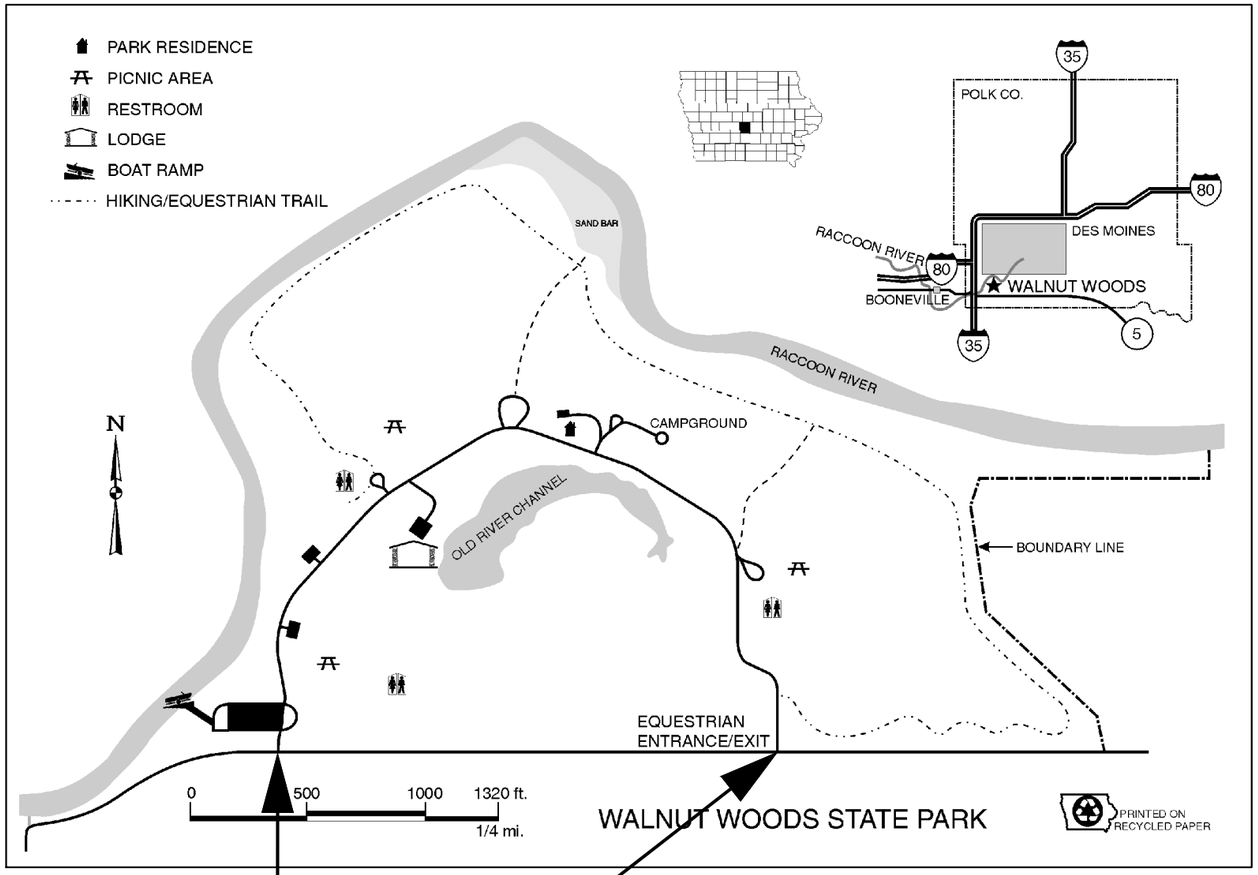
IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034

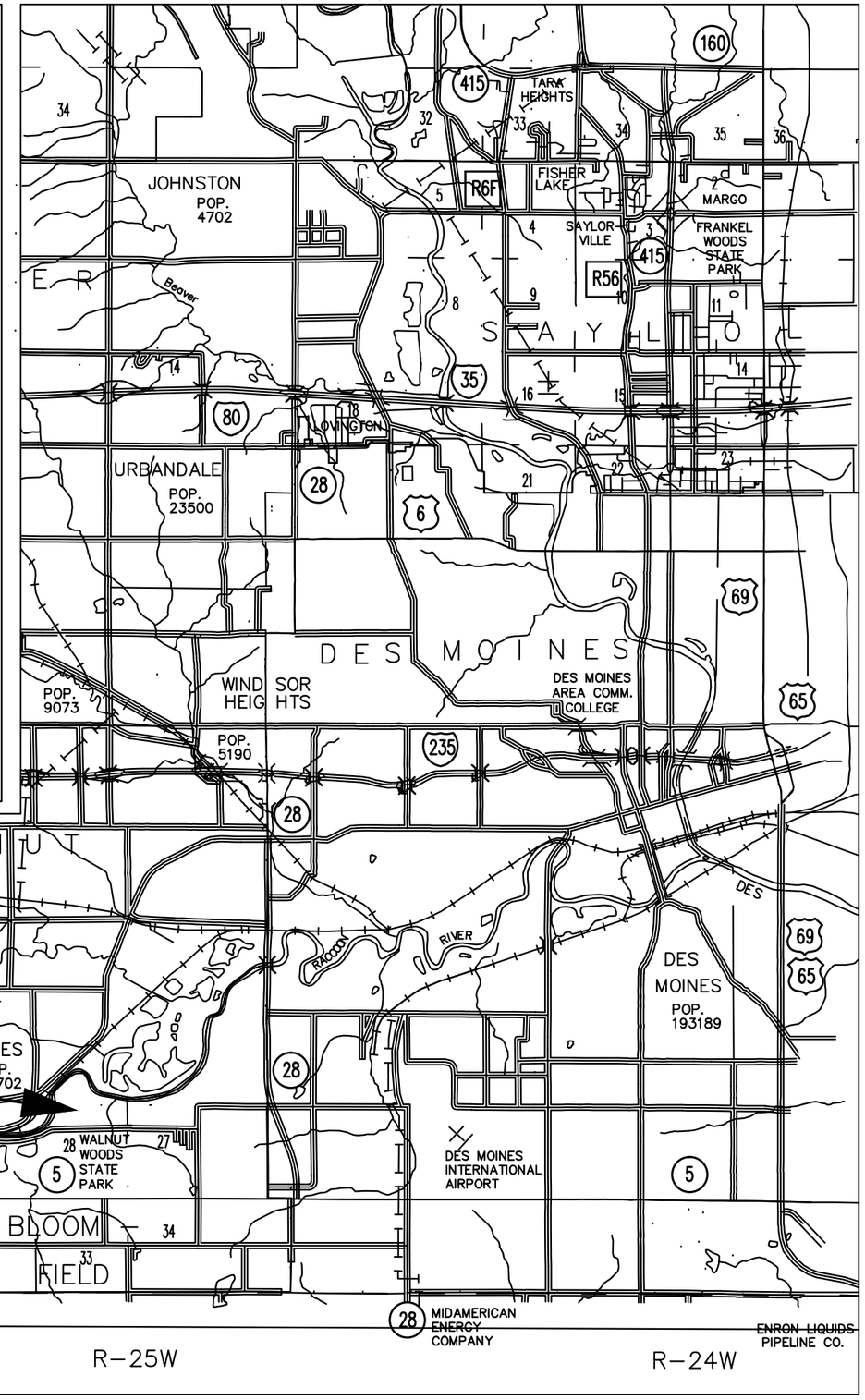
COVER SHEET

ROADWAY CONSTRUCTION PROJECT FOR:
WALNUT WOODS STATE PARK
POLK COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 15-05-77-01
CHK'D BY:
DATE: 07/02/2014
SHEET No: 1





PROJECT LOCATION

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

VICINITY MAPS

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 15-05-77-01
CHK'D BY:
DATE: 07/02/2014
SHEET No: 2

ESTIMATED PROJECT QUANTITIES

ITEM NO.	ITEM	UNIT	P&I	NON	TOTAL
1	CLEARING AND GRUBBING	LS	1		1
2	DEMOLITION	LS		1	1
3	FULL DEPTH SAW CUT	LF	327	12	339
4	HMA/PAVEMENT REMOVAL	SY	12,711	2,043	14,754
5	REMOVAL OF EXISTING SIDEWALKS	SY		29	29
6	REMOVAL OF EXISTING GRAVEL PARKING AREA	SY		400	400
7	GRADING	CY	3,550	325	3,875
8	FILTER SOCK	LF	384		384
9	SPECIAL BACKFILL	TONS	4,236		4,236
10	6-INCH NON-REINFORCED PCC	SY	15,530	2,301	17,831
11	PCC SPEED HUMP	EA	2		2
12	5-INCH NON-REINFORCED PCC SIDEWALK	SY		107	107
13	GRANULAR BASE FOR PARKING AREAS AND SIDEWALKS	TONS		600	600
14	12-INCH RCP CLASS III	LF	76		76
15	12-INCH RCP CLASS III FES	EA	4		4
16	18-INCH ARCH RCP CLASS III	LF	32		32
17	18-INCH ARCH RCP CLASS III FES	EA	2		2
18	PRECAST CONCRETE PARKING WHEEL STOPS	EA		30	30
19	PAINT STRIPING	LS	0.5	0.5	1
20	SIGNAGE	LS	1	1	1
21	TRAFFIC CONTROL	LS	1		1
22	SEEDING, FERTILIZING AND MULCHING	LS	1		1
23	CONSTRUCTION SURVEY STAKING	LS	1		1
24	NPDES GENERAL PERMIT #2 & SWPPP	LS	1		1
25	MOBILIZATION	LS	1		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. PROTECT EXISTING TREES AND VEGETATION OUTSIDE OF CONSTRUCTION CORRIDOR.

8. ANY SPOIL MATERIAL THAT MAY BE GENERATED DURING THE CONSTRUCTION CAN BE WASTED IN THE OLD RIVER CHANNEL DEPRESSION LOCATED SOUTHEAST OF THE LODGE AREA. COORDINATE LOCATION WITH DNR INSTPECTOR. SAID MATERIAL IS CONSIDERED INCIDENTAL TO THE CONTRACT.

9. LODGE ACCESS IS REQUIRED THROUGH JANUARY 1, 2015. PHASES 1 AND 2 CAN BE CONSTRUCTED IN 2014. PHASE 3: LODGE PARKING AREA AND ACCESS LOOP CONSTRUCTION NEEDS TO BE COMPLETED BETWEEN JANUARY 1 AND MAY 1, 2015. LODGE ACCESS IS REQUIRED AFTER MAY 1, 2015. PHASE 2 CONSTRUCTION CAN OCCUR AFTER PHASE 3 IS COMPLETED IF TIME CONSTRAINTS DICTATE.

10. CONTRACTOR TO INSTALL TYPE 3 BARRICADES AT ALL ROAD CLOSED LOCATIONS FOR EACH PHASE OF CONSTRUCTION.

11. CITY OF WEST DES MOINES FIRE DEPARTMENT NEEDS TO BE NOTIFIED 1 WEEK PRIO TO PHASE 3 CONSTRUCTION WHICH WILL CLOSE THE BOAT RAMP LOCATION. ALSO CONTACT WHEN RAMP IS RE-OPENED.

ESTIMATE REFERENCE INFORMATION

ITEM NO.	DESCRIPTION
1	CLEARING AND GRUBBING A. CONTRACTOR TO CLEAR AND GRUB THE PROJECT SITE AND REMOVE EXISTING TREES AS SHOWN ON THE DEMOLITION PLAN (SHEET #6). CONTRACTOR TO HAUL TREES & DEBRIS OFF-SITE AND DISPOSE OF PROPERLY. CLEARING IS BASED ON A 6-FOOT CLEAR ZONE BEYOND PAVEMENT EDGE AND GRADING LIMITS. CONTRACTOR TO VERIFY CLEAR ZONE IS ADEQUATE FOR THEIR PAVING MACHINE AND OPERATIONS. APPROXIMATELY 23 INDIVIDUAL TREES, 15 TREE STUMPS, AND 1 ACRE OF ACCESS TO SPOIL AREA CLEARING.
2	DEMOLITION A. CONTRACTOR TO REMOVE AND DISPOSE OF OFF-SITE PROPERLY THE EXISTING WOODEN PARKING BARRIERS, 2 EXISTING CULVERTS AND THE 3 LOCATIONS OF PCC SIDEWALK AS SHOWN ON SHEET #6.
3	FULL DEPTH SAW CUT A. CONTRACTOR SHALL SAW CUT EXISTING PAVEMENTS FULL DEPTH IN THE LOCATIONS SHOWN ON THE DEMOLITION PLAN SHEETS #6 & #7.
4	HMA REMOVAL A. CONTRACTOR SHALL REMOVE THE EXISTING HMA PARK ROAD, BOAT PARKING AREA, EAST PARKING AREA, WEST PARKING AREA, LODGE LOOP DRIVE, LODGE PARKING AREA AS SHOWN ON THE DEMOLITION PLAN SHEETS #6 & #7. THE HMA ENTRANCE ROAD IS ASSUMED TO BE AN AVERAGE OF 5-INCHES OF THICKNESS (3,074 TONS). MAY USE CRUSHED HMA AS SPECIAL BACKFILL.
5	REMOVAL OF EXISTING SIDEWALKS A. CONTRACTOR SHALL REMOVE AND DISPOSE OF OFF-SITE PROPERLY THOSE EXISTING SIDEWALKS LOCATED AT THE WEST PARKING AREA, THE LODGE, AND THE KIOSK AS SHOWN ON THE DEMOLITION PLAN SHEETS #6 & #7.
6	REMOVAL OF EXISTING GRAVEL PARKING AREAS A. CONTRACTOR SHALL REMOVE THE EXISTING GRAVEL PARKING AREA LOCATED AT THE LODGE. SALVAGED GRAVEL TO BE RE-SPREAD ON THE EXISTING LOOP DRIVE NORTH OF THE STORAGE BUILDING AS SHOWN ON THE DEMOLITION PLAN (SHEET #6).
7	GRADING A. CONTRACTOR SHALL GRADE THE SITE AS DETAILED IN THE PLANS. B. ANY SPOILS GENERATED CAN BE WASTED IN THE DESIGNATED SPOIL SITE LOCATED SOUTH OF THE PROPOSED PARK ROAD BETWEEN STATIONS 29+25 & 30+25 (SEE SHEET #25 FOR DETAILS). HAUL COSTS TO BE INCLUDED IN GRADING QUOTE.
8	FILTER SOCK A. CONTRACTOR SHALL INSTALL 8-INCH FILTER SOCK AS DETAILED IN THE PLANS. ADDITIONAL SILT FENCING/FILTER SOCKS MAY BE REQUIRED BY THE DNR INSPECTOR TO CONTROL EROSION.
9	SPECIAL BACKFILL A. CONTRACTOR SHALL INSTALL SPECIAL BACKFILL FOR THE ROADWAY BASE IN ACCORDANCE WITH IDOT SECTION 4132. SPECIAL BACKFILL CAN BE CRUSHED HMA IN ACCORDANCE WITH IDOT 4132.04.
10	6-INCH NON-REINFORCED PCC A. CONTRACTOR SHALL INSTALL 6-INCH NON-REINFORCED PCC PAVEMENT AS DETAILED IN THE PLANS. PARK ROAD, BOAT ACCESS ROAD, LODGE LOOP DRIVE AND LODGE PARKING DRIVE AISLE CONTAIN 15,530 SQUARE YARDS, PARKING AREAS CONTAIN 2,301 SQUARE YARDS.
11	PCC SPEED HUMP A. CONTRACTOR TO INSTALL 2 SPEED HUMPS AS DETAILED IN THE PLANS.
12	5-INCH NON-REINFORCED PCC SIDEWALK A. CONTRACTOR SHALL INSTALL 5-INCH NON-REINFORCED PCC SIDEWALK WITH 6-INCHES OF GRANULAR BASE LOCATED AT THE WEST PARKING AREA, LODGE ENTRANCES AND THE INFORMATIONAL KIOSK AS DETAILED IN THE PLANS.
13	GRANULAR BASE FOR PARKING AREAS AND SIDEWALK A. CONTRACTOR TO INSTALL 6-INCHES OF GRANULAR BASE FOR PARKING AREAS AND SIDEWALK. B. GRANULAR BASE TO BE CLASS 'A' CRUSHED STONE MEETING THE REQUIREMENT OF IDOT SECTION 4121 FOR GRADATION #11 WITH A MAXIMUM OF 4% MUD BALLS AND A MINIMUM OF 4% PASSING NO. 200 SIEVE.
14	12-INCH RCP CLASS III A. CONTRACTOR SHALL INSTALL 12-INCH RCP CLASS III AS DETAILED IN THE PLANS.
15	12-INCH RCP CLASS III FES A. CONTRACTOR SHALL INSTALL 12-INCH RCP CLASS III FES'S AS DETAILED IN THE PLANS.
16	18-INCH ARCH RCP CLASS III A. CONTRACTOR SHALL INSTALL 18-INCH ARCH RCP CLASS III AS DETAILED ON SHEET #25.
17	18-INCH ARCH RCP CLASS III FES A. CONTRACTOR SHALL INSTALL 18-INCH ARCH RCP CLASS III FES'S AS DETAILED ON SHEET #25.
18	PRECAST CONCRETE PARKING WHEEL STOPS A. CONTRACTOR SHALL INSTALL WHEEL STOPS AS DETAILED IN THE PLANS. B. CONTRACTOR TO ANCHOR WHEEL STOPS INTO PAVEMENT WITH #4 REBAR OR 1/2-INCH DOWELS, 18-INCH LENGTH.
19	PAINT STRIPING A. CONTRACTOR SHALL INSTALL PAINT MARKINGS (DOUBLE YELLOW LINE, SPEED HUMPS, PARKING SPACES, HANDICAP SPACES, BOAT RAMP WARNING, ETC.) AS DETAILED IN THE PLANS.
20	SIGNAGE A. CONTRACTOR TO INSTALL SIGNAGE (HANDICAP SPACES, SPEED HUMP) AS DETAILED IN THE PLANS.
21	TRAFFIC CONTROL A. CONTRACTOR SHALL IMPLEMENT TRAFFIC CONTROL ALONG 700TH STREET FOR THE CONSTRUCTION OF THE PARK ROAD. SEE SHEETS #8, #16, & #27 FOR DETAILS.
22	SEEDING, FERTILIZING AND MULCHING A. THE CONTRACTOR SHALL SEED, FERTILIZE AND MULCH ALL DISTURBED AREAS (APPROXIMATELY 4 ACRES). SEED WITH TYPE 1 SEED MIXTURE (PERMANENT LAWN MIXTURE).
23	CONSTRUCTION SURVEY STAKING A. CONTRACTOR IS RESPONSIBLE FOR THE CONSTRUCTION SURVEY STAKING FOR THE PROJECT.
24	NPDES GENERAL PERMIT #2 & SWPPP A. 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.

CONSULTANT:

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

QUANTITIES & GENERAL NOTES

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY DATE	REVISION

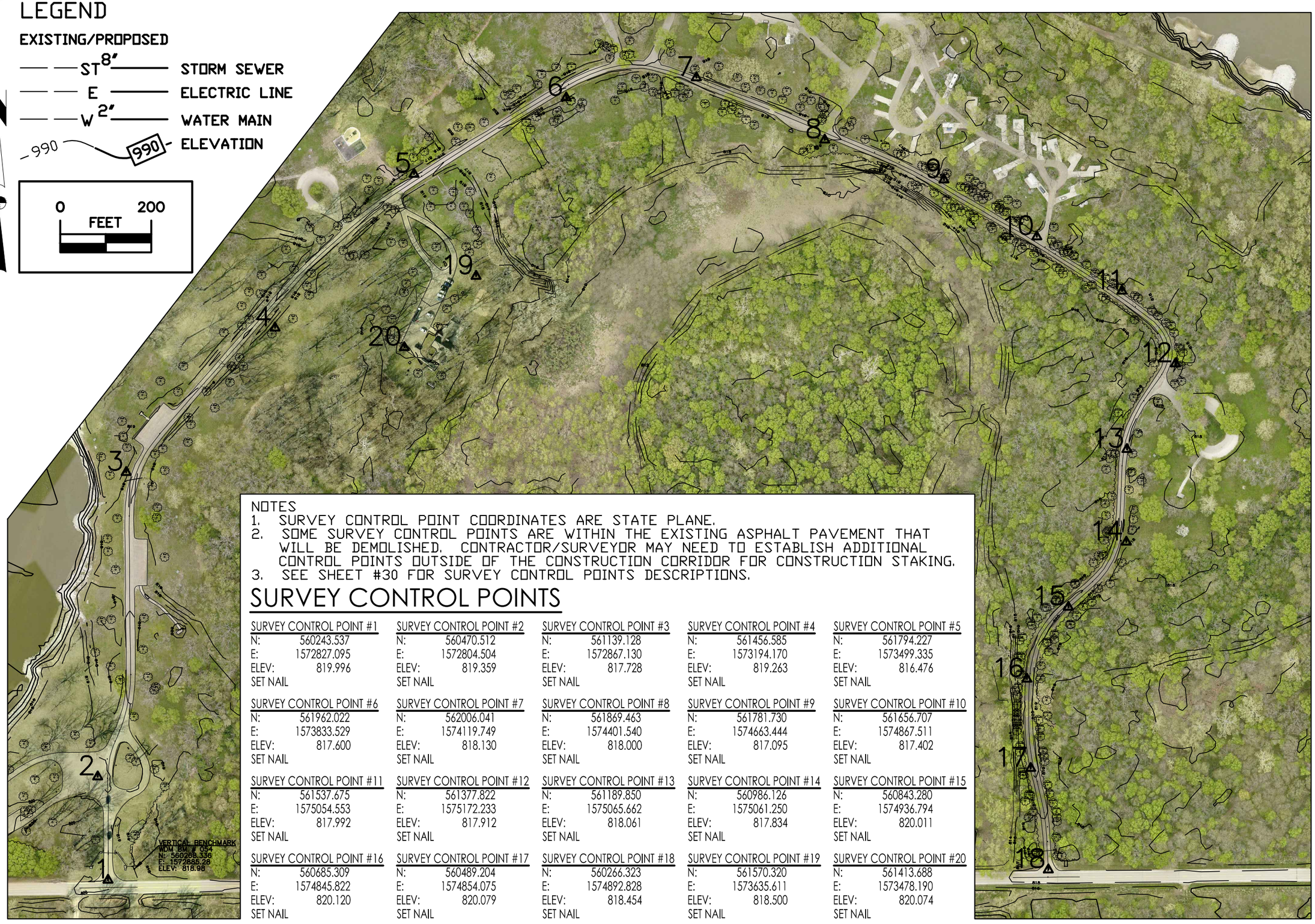
DRAWN BY:
PROJECT NUMBER: 15-05-77-01
CHK'D BY:
DATE: 07/02/2014
SHEET No: 3

LEGEND

EXISTING/PROPOSED

- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 — ELEVATION

0 200 FEET



NOTES

1. SURVEY CONTROL POINT COORDINATES ARE STATE PLANE.
2. SOME SURVEY CONTROL POINTS ARE WITHIN THE EXISTING ASPHALT PAVEMENT THAT WILL BE DEMOLISHED. CONTRACTOR/SURVEYOR MAY NEED TO ESTABLISH ADDITIONAL CONTROL POINTS OUTSIDE OF THE CONSTRUCTION CORRIDOR FOR CONSTRUCTION STAKING.
3. SEE SHEET #30 FOR SURVEY CONTROL POINTS DESCRIPTIONS.

SURVEY CONTROL POINTS

	N:	E:	ELEV:	
SURVEY CONTROL POINT #1	560243.537	1572827.095	819.996	SET NAIL
SURVEY CONTROL POINT #2	560470.512	1572804.504	819.359	SET NAIL
SURVEY CONTROL POINT #3	561139.128	1572867.130	817.728	SET NAIL
SURVEY CONTROL POINT #4	561456.585	1573194.170	819.263	SET NAIL
SURVEY CONTROL POINT #5	561794.227	1573499.335	816.476	SET NAIL
SURVEY CONTROL POINT #6	561962.022	1573833.529	817.600	SET NAIL
SURVEY CONTROL POINT #7	562006.041	1574119.749	818.130	SET NAIL
SURVEY CONTROL POINT #8	561869.463	1574401.540	818.000	SET NAIL
SURVEY CONTROL POINT #9	561781.730	1574663.444	817.095	SET NAIL
SURVEY CONTROL POINT #10	561656.707	1574867.511	817.402	SET NAIL
SURVEY CONTROL POINT #11	561537.675	1575054.553	817.992	SET NAIL
SURVEY CONTROL POINT #12	561377.822	1575172.233	817.912	SET NAIL
SURVEY CONTROL POINT #13	561189.850	1575065.662	818.061	SET NAIL
SURVEY CONTROL POINT #14	560986.126	1575061.250	817.834	SET NAIL
SURVEY CONTROL POINT #15	560843.280	1574936.794	820.011	SET NAIL
SURVEY CONTROL POINT #16	560685.309	1574845.822	820.120	SET NAIL
SURVEY CONTROL POINT #17	560489.204	1574854.075	820.079	SET NAIL
SURVEY CONTROL POINT #18	560266.323	1574892.828	818.454	SET NAIL
SURVEY CONTROL POINT #19	561570.320	1573635.611	818.500	SET NAIL
SURVEY CONTROL POINT #20	561413.688	1573478.190	820.074	SET NAIL

CONSULTANT:

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

SURVEY CONTROL

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY DATE	REVISION

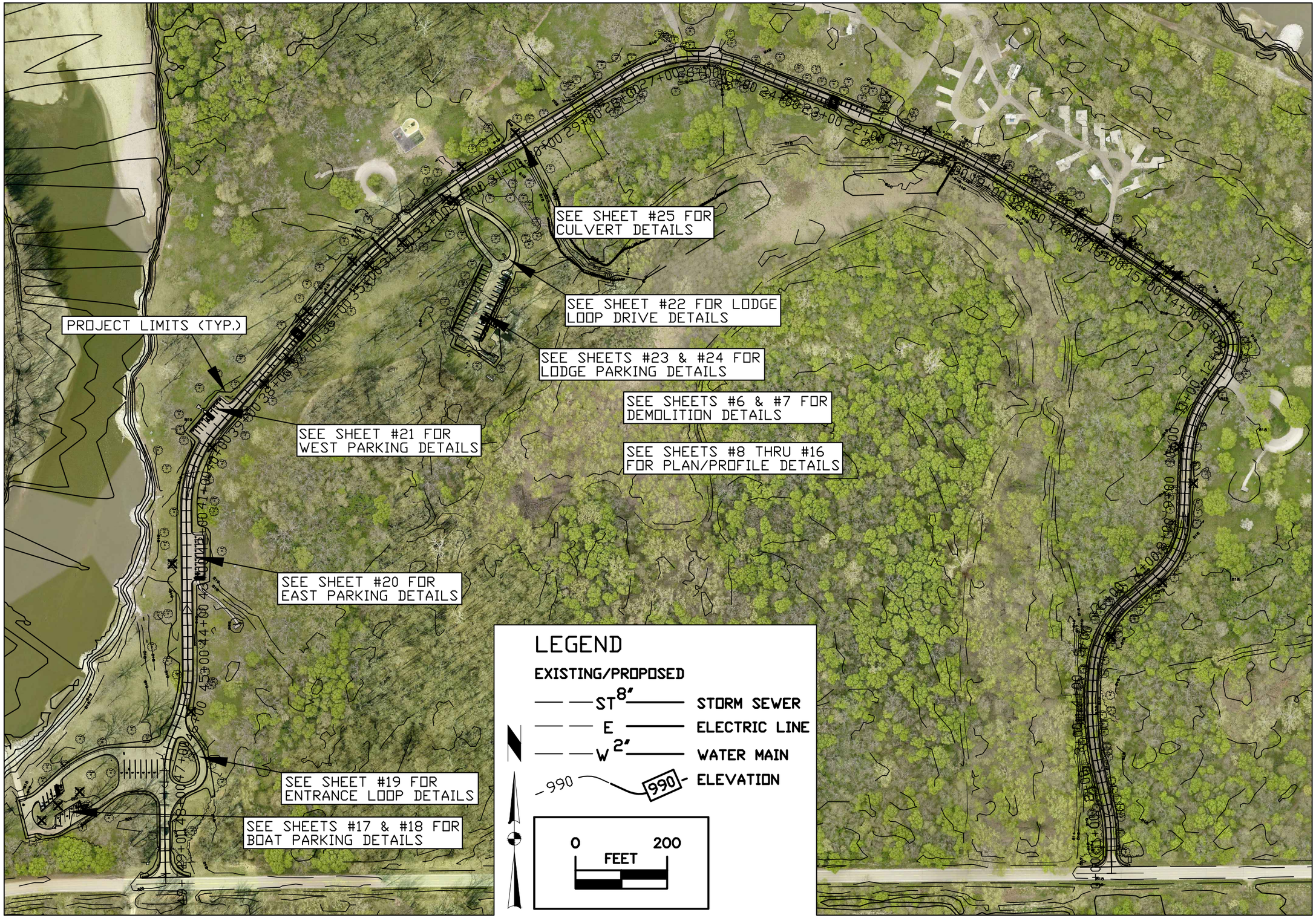
DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

DATE: 07/02/2014

SHEET No: 4



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

OVERALL SITE PLAN

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

DATE: 07/02/2014

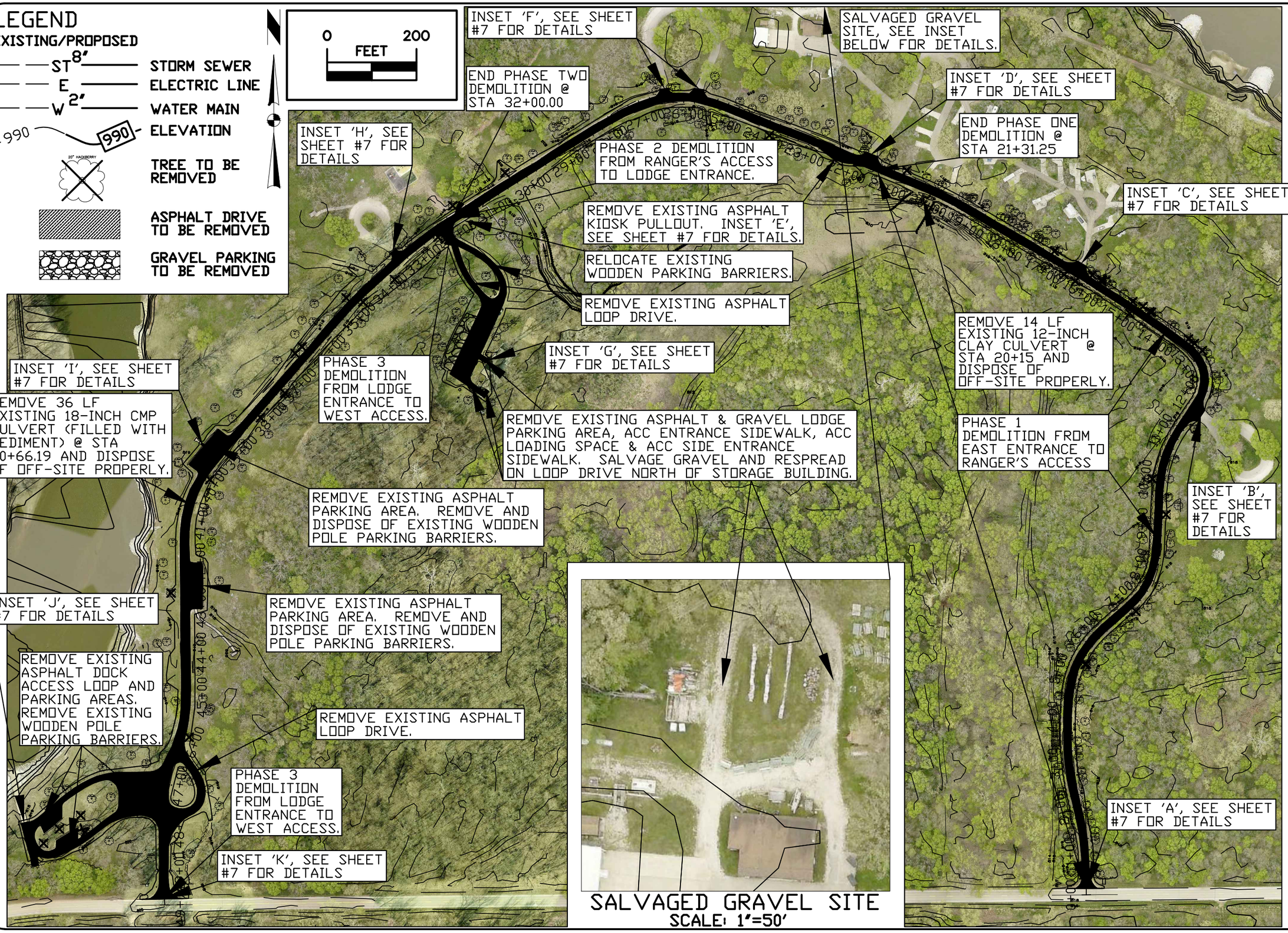
SHEET No: 5

LEGEND

EXISTING/PROPOSED

- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 — 990 — ELEVATION
- 20" HACKBERRY — TREE TO BE REMOVED
- ASPHALT DRIVE TO BE REMOVED
- GRAVEL PARKING TO BE REMOVED

0 200 FEET



SALVAGED GRAVEL SITE
SCALE: 1"=50'

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

DNR

DEMOLITION PLAN

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

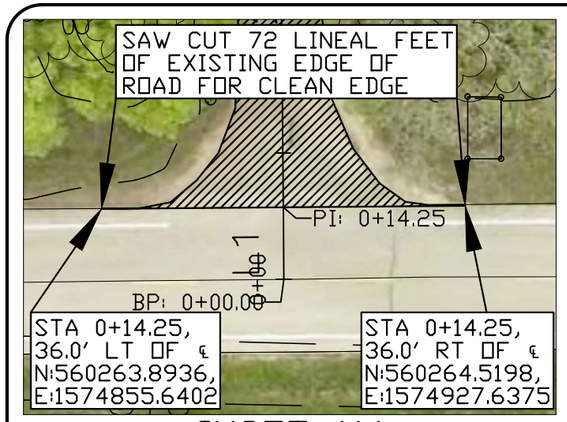
POLK COUNTY, IOWA

NO.	BY	DATE	REVISION

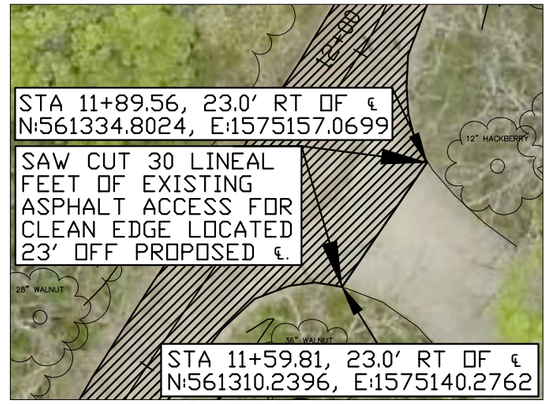
DRAWN BY: PROJECT NUMBER: 15-05-77-01

CHK'D BY: DATE: 07/02/2014

SHEET No: 6



INSET 'A'
SCALE: 1"=30'
*SEE NOTE ON TRAFFIC CONTROL



INSET 'B'
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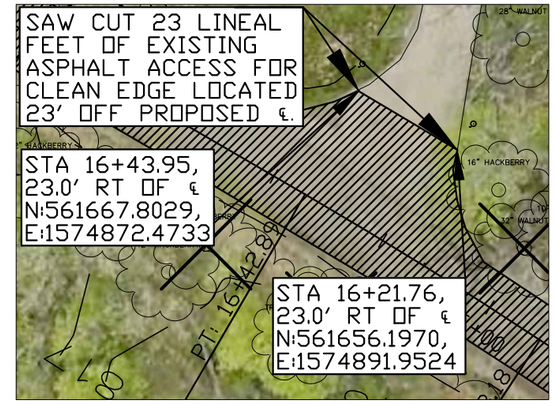

INSET 'C'
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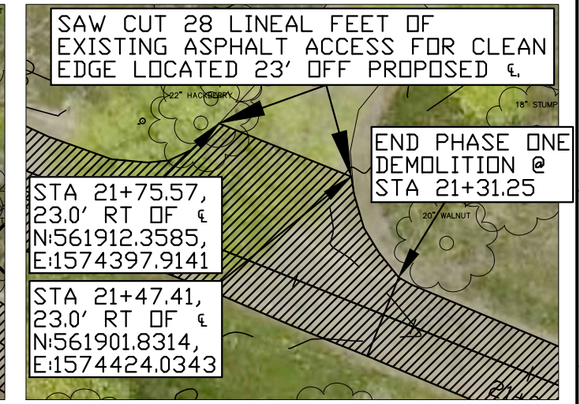

INSET 'D'
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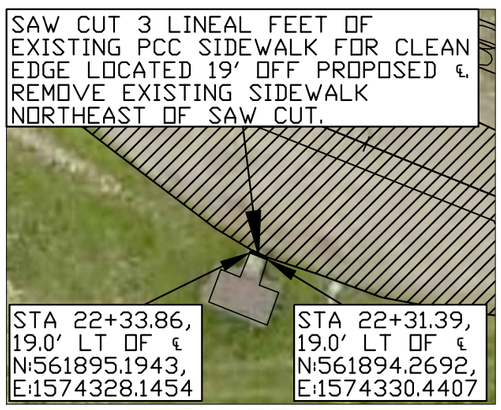
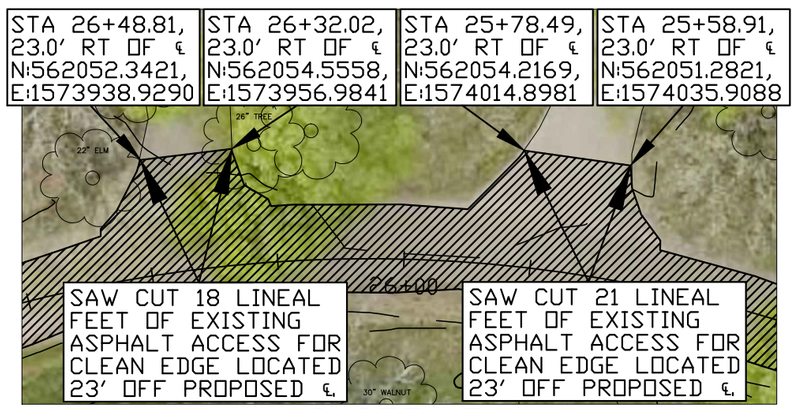


INSET 'E'
SCALE: 1"=20'



INSET 'F'
SCALE: 1"=30'

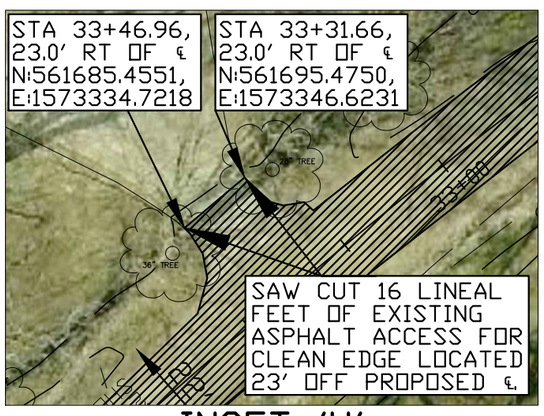
INSET 'G'
SCALE: 1"=20'

LEGEND

EXISTING

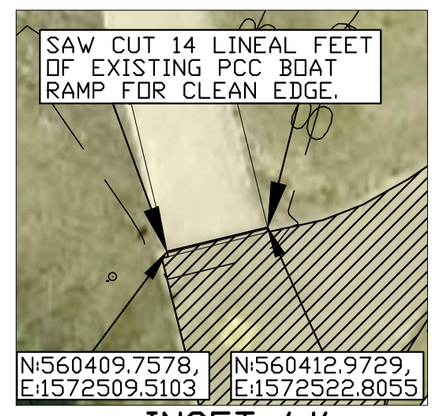
- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 — ELEVATION
- 20" HACKBERRY — TREE TO BE REMOVED
- ASPHALT DRIVE TO BE REMOVED

*NOTE: INITIATE TRAFFIC CONTROL WHEN WORKING IN ROW (SEE SHEET #27). MAINTAIN LANE CLOSURE IF ABRUPT GRADE CHANGE EXISTS ADJACENT TO ROAD.

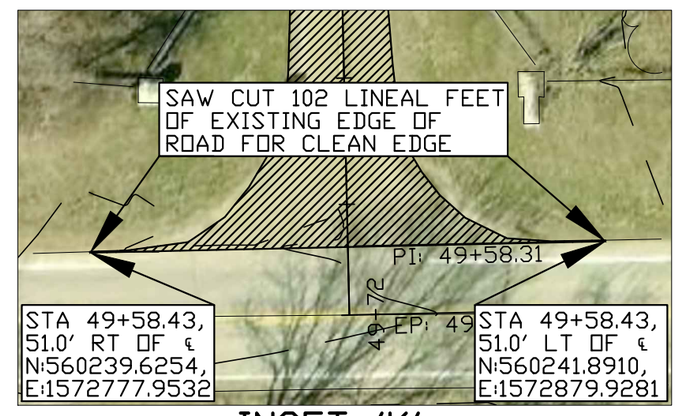


INSET 'H'
SCALE: 1"=30'

INSET 'I'
SCALE: 1"=20'



INSET 'J'
SCALE: 1"=20'



INSET 'K'
SCALE: 1"=30'
*SEE NOTE ON TRAFFIC CONTROL

CONSULTANT:

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

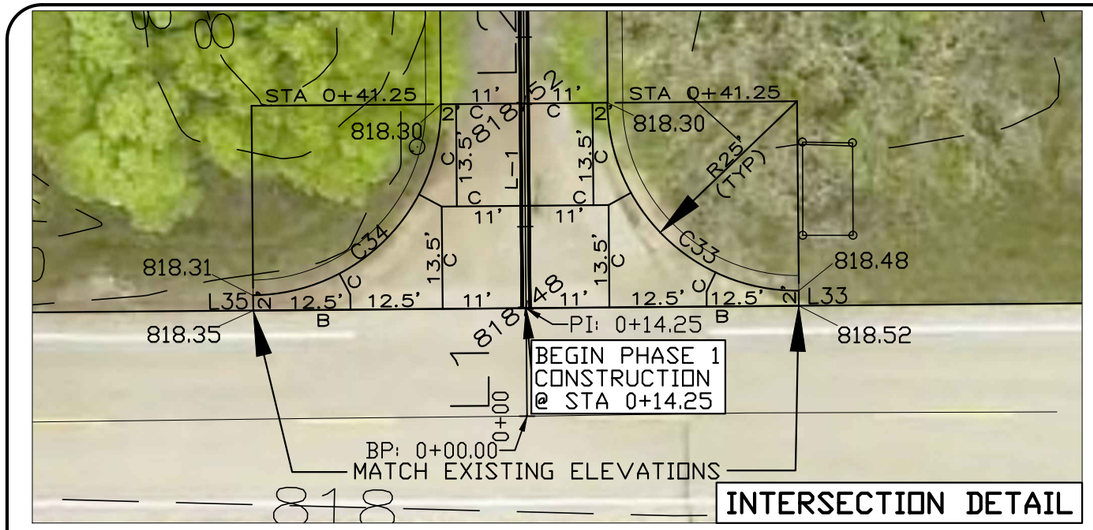
DNR

DEMOLITION PLAN INSETS

ROADWAY CONSTRUCTION PROJECT FOR:
WALNUT WOODS STATE PARK
POLK COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 15-05-77-01
CHK'D BY:
DATE: 07/02/2014
SHEET No: 7



INTERSECTION DETAIL

0 FEET 20

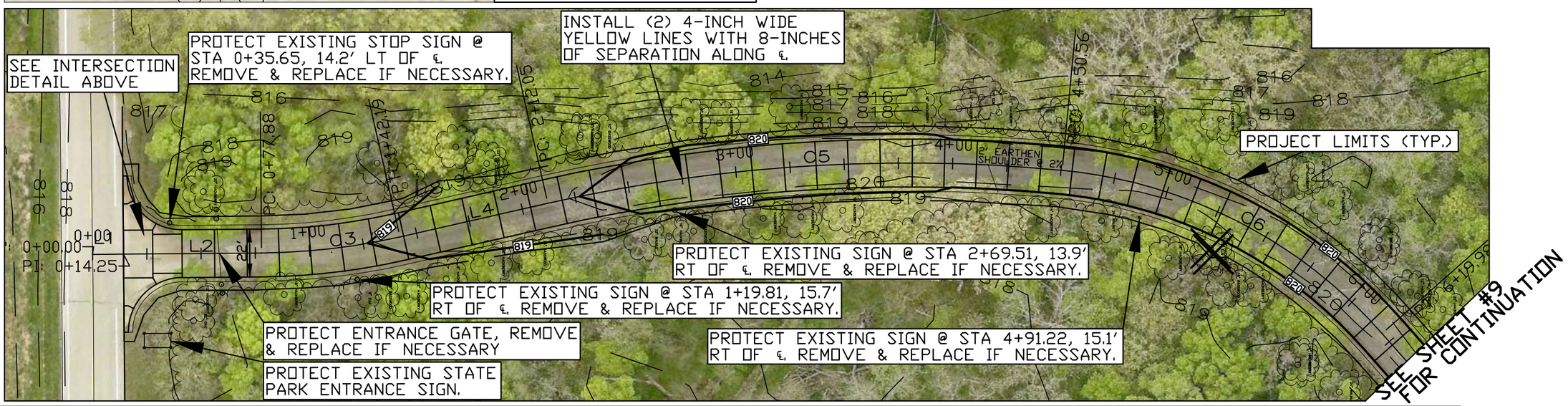
NOTES
1. EAST PARK ENTRANCE, SEE SHEET #31 FOR EDGE OF PAVEMENT CONTROL DETAILS.
2. SEE TYPICAL RURAL ROAD CROSS-SECTION (SHEET# 28) FOR GRADING WORK WITHIN CITY OF WEST DES MOINES ROW.

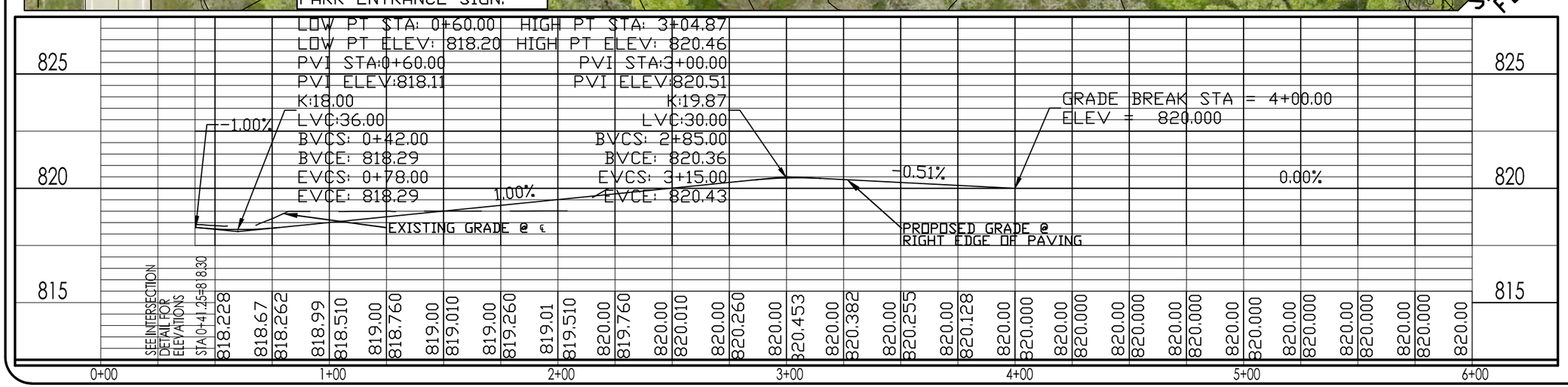
LEGEND

EXISTING/PROPOSED

- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 — 990 ELEVATION
- FILTER SOCK

0 FEET 50





CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

PLAN/PROFILE

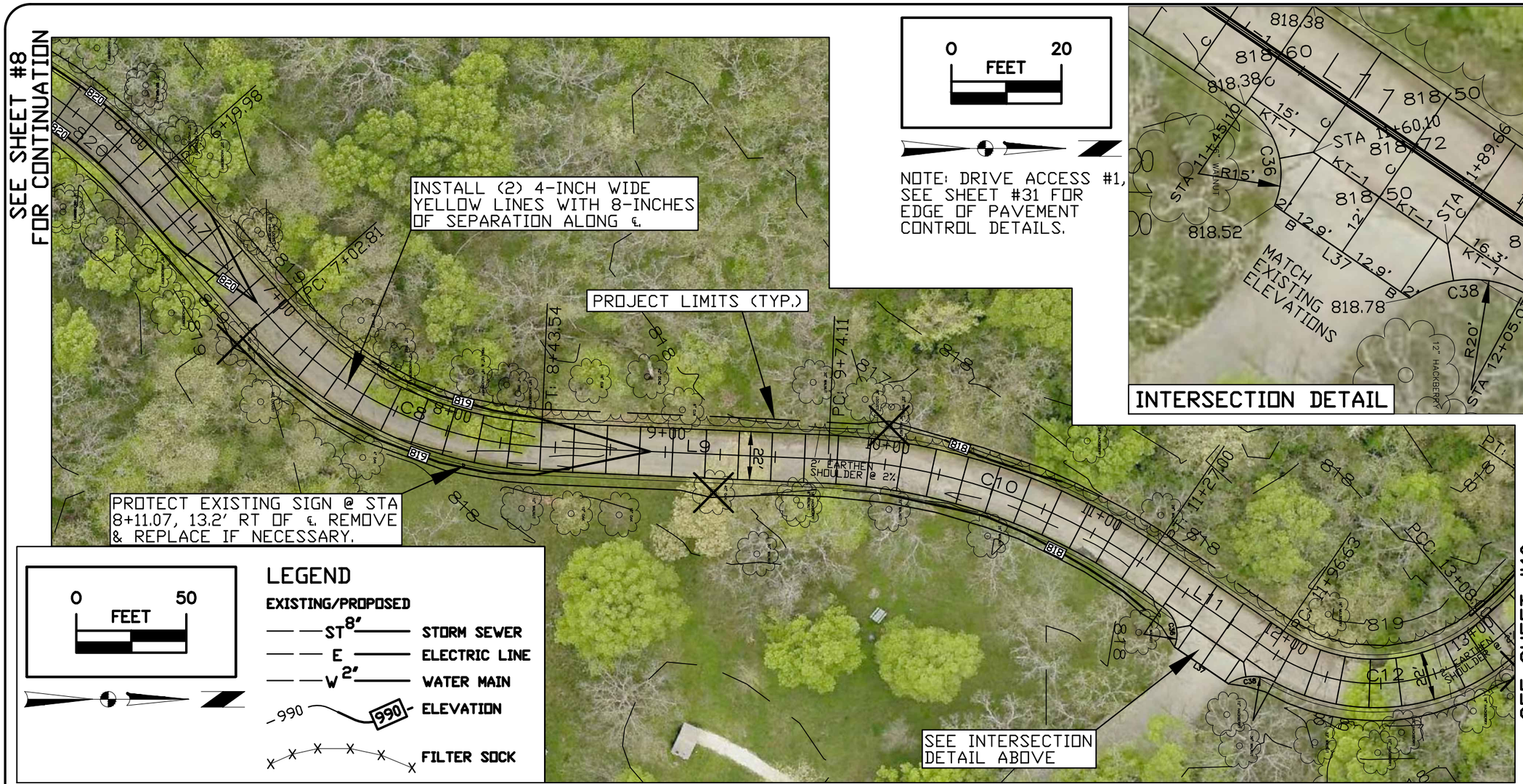
ROADWAY CONSTRUCTION PROJECT FOR:

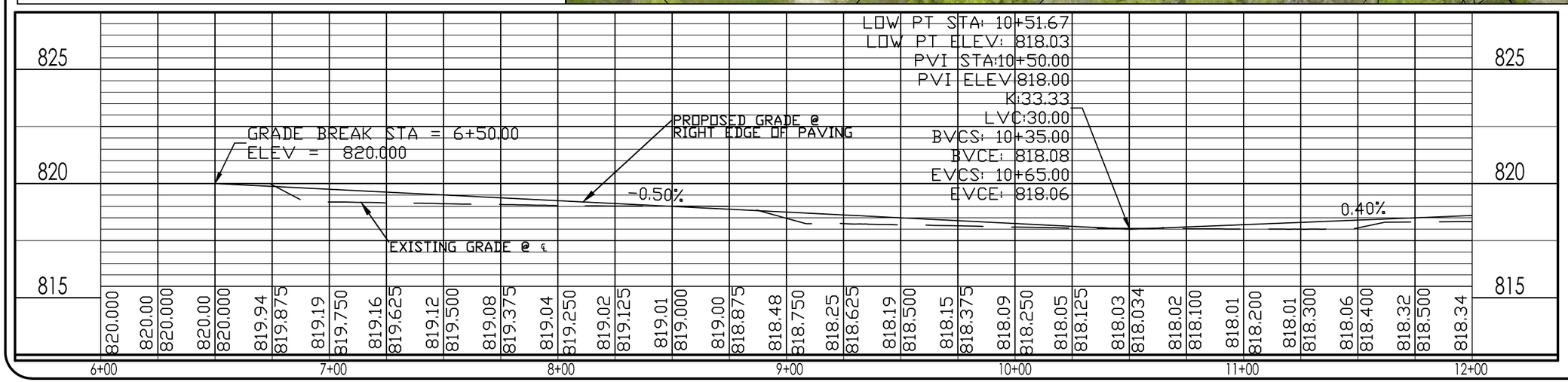
WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY	DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 15-05-77-01
CHK'D BY:
DATE: 07/02/2014
SHEET No: 8





CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

PLAN/PROFILE

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

DATE: 07/02/2014

SHEET No: 9

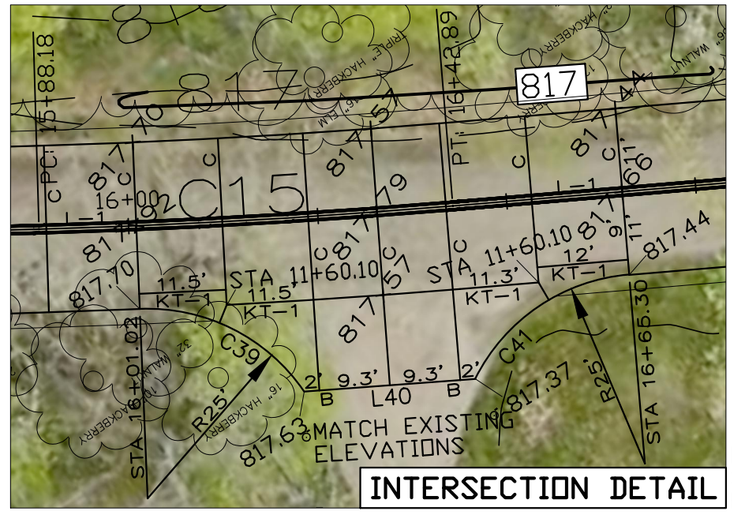
0 FEET 50

SEE SHEET #9
FOR CONTINUATION

LEGEND

EXISTING/PROPOSED

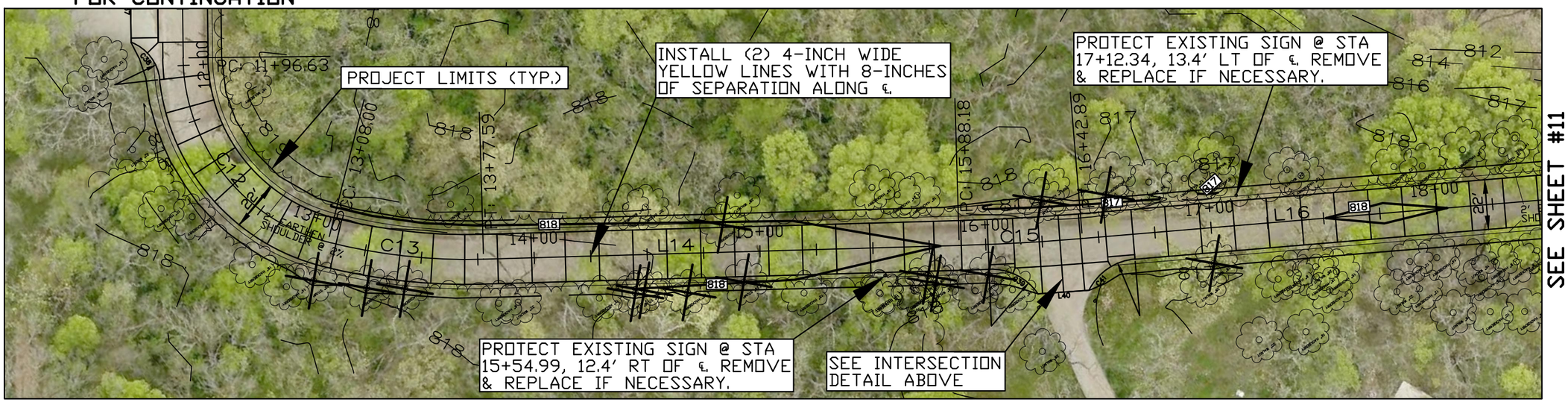
- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 — ELEVATION
- FILTER SOCK



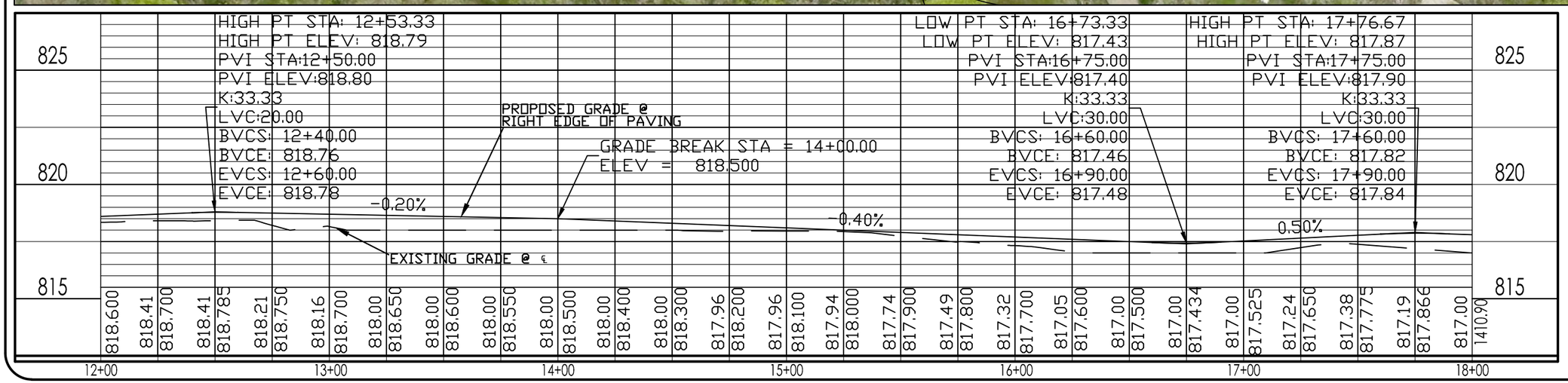
INTERSECTION DETAIL

0 FEET 20

NOTE: DRIVE ACCESS #2, SEE SHEET #31 FOR EDGE OF PAVEMENT CONTROL DETAILS.



SEE SHEET #11
FOR CONTINUATION



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

PLAN/PROFILE

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY	DATE	REVISION

DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

DATE: 07/02/2014

SHEET No: 10

LEGEND

EXISTING/PROPOSED

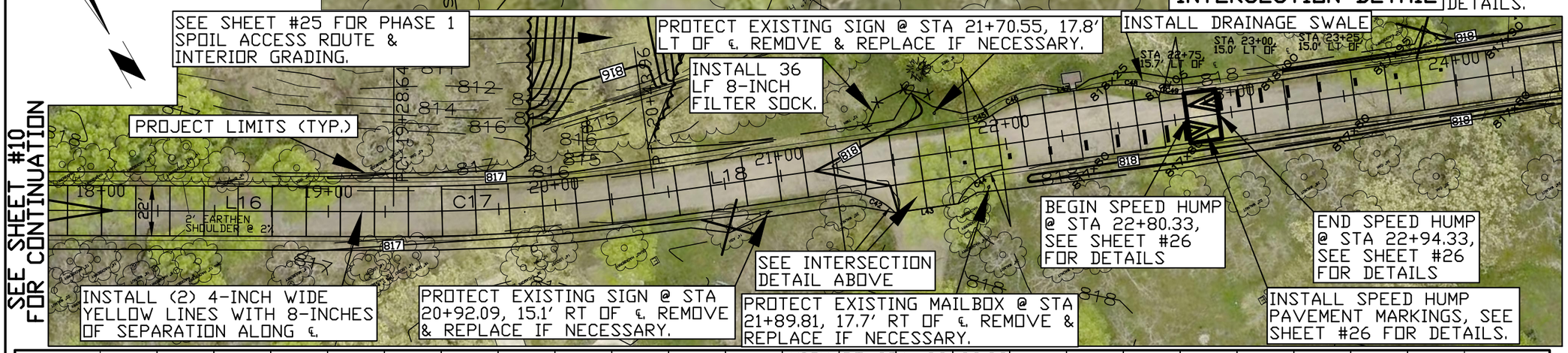
- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 — ELEVATION
- FILTER SOCK

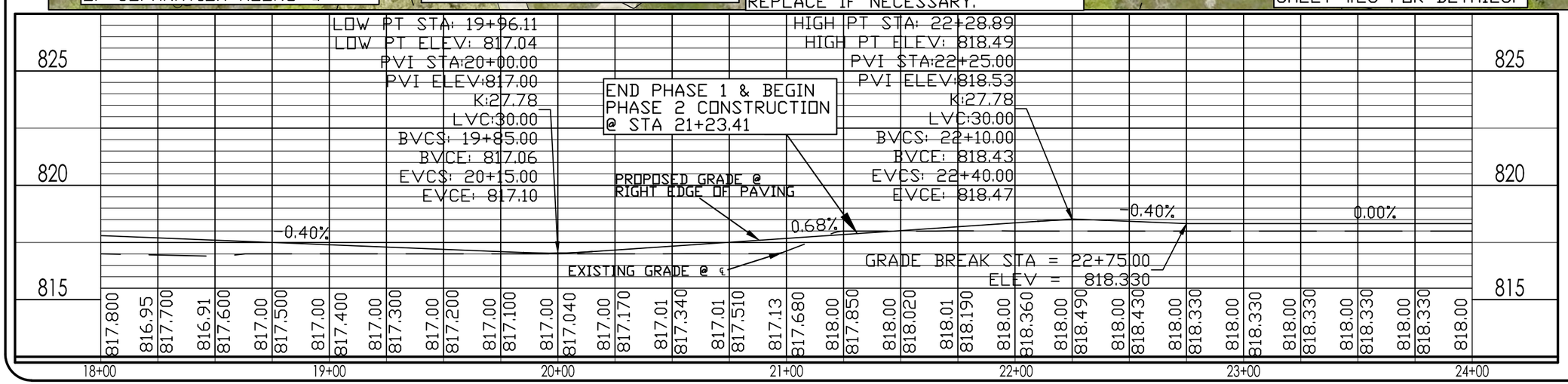
0 FEET 50

INTERSECTION DETAIL

0 FEET 20

NOTE: DRIVE ACCESS #3 & KIOSK PULLOUT, SEE SHEET #31 FOR EDGE OF PAVEMENT CONTROL DETAILS.





CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

PLAN/PROFILE

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY: DATE	REVISION

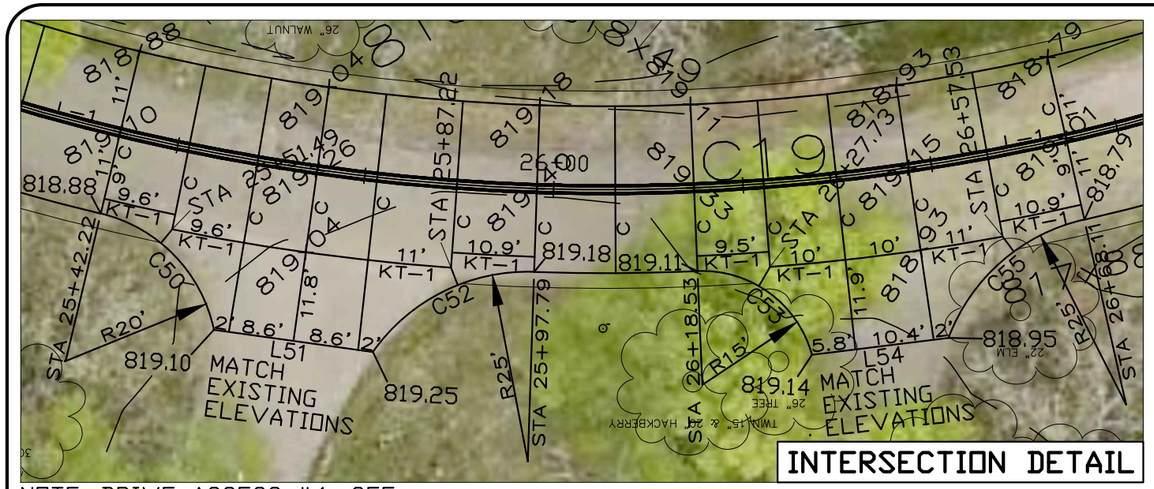
DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

DATE: 07/02/2014

SHEET No: 11



INTERSECTION DETAIL

NOTE: DRIVE ACCESS #4, SEE SHEET #31 FOR EDGE OF PAVEMENT CONTROL DETAILS.

0 FEET 20

SEE SHEET #25 FOR PHASE 1 SPOIL ACCESS ROUTE & INTERIOR GRADING.

PROJECT LIMITS (TYP.)

SEE SHEET #13 FOR CONTINUATION

SEE SHEET #11 FOR CONTINUATION

PROTECT EXISTING SIGN @ STA 24+18.49, 17.5' LT OF ℄. REMOVE & REPLACE IF NECESSARY.

INSTALL 36 LF 8-INCH FILTER SOCK.

DAYLIGHT DRAINAGE SWALE @ STA 25+29.69, 47.3' LT OF ℄ ELEV=817.72'

INSTALL 1' WIDE DRAINAGE SWALE

BEGIN SWALE @ STA 26+11, 18.6' LT OF ℄

INSTALL (2) 4-INCH WIDE YELLOW LINES WITH 8-INCHES OF SEPARATION ALONG ℄.

INSTALL 1' WIDE DRAINAGE SWALE

SEE INTERSECTION DETAIL ABOVE

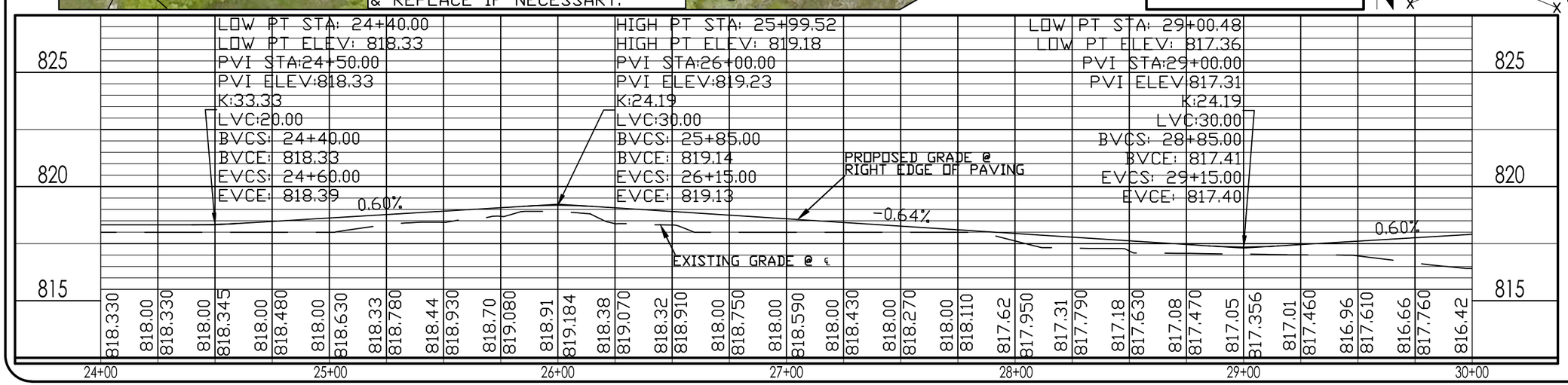
PROTECT EXISTING SIGN @ STA 26+06.55, 18.3' RT OF ℄. REMOVE & REPLACE IF NECESSARY.

0 FEET 50

LEGEND

EXISTING/PROPOSED

- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 — ELEVATION
- FILTER SOCK



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

PLAN/PROFILE

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY / DATE	REVISION

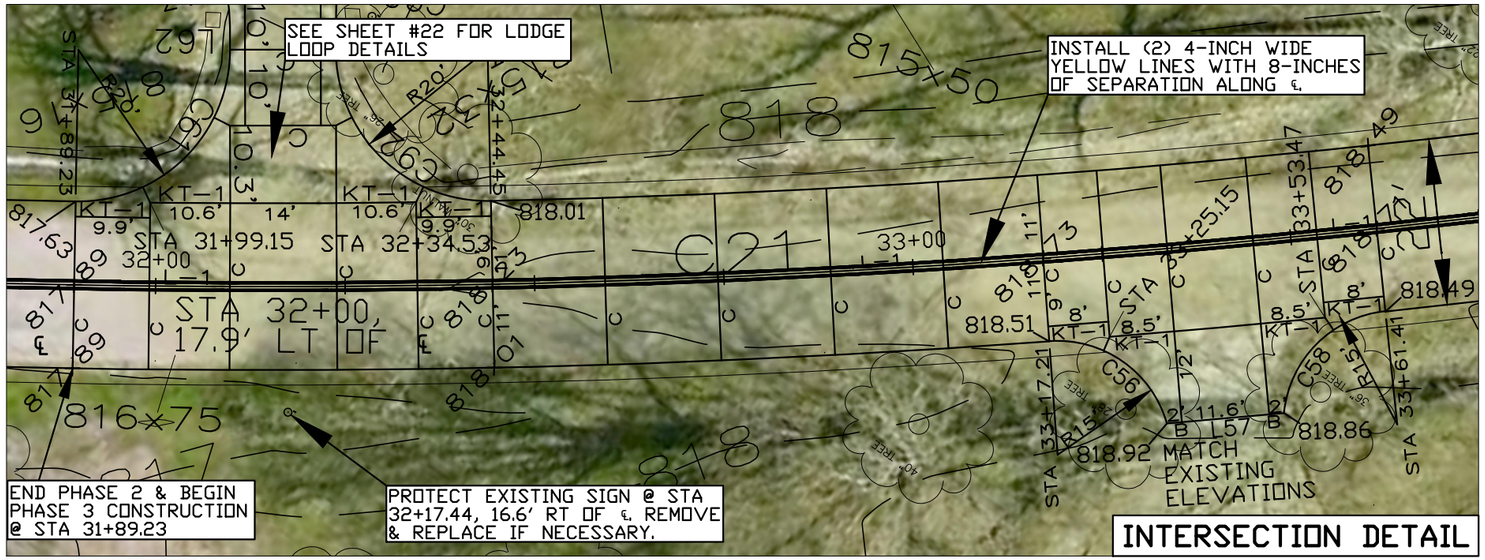
DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

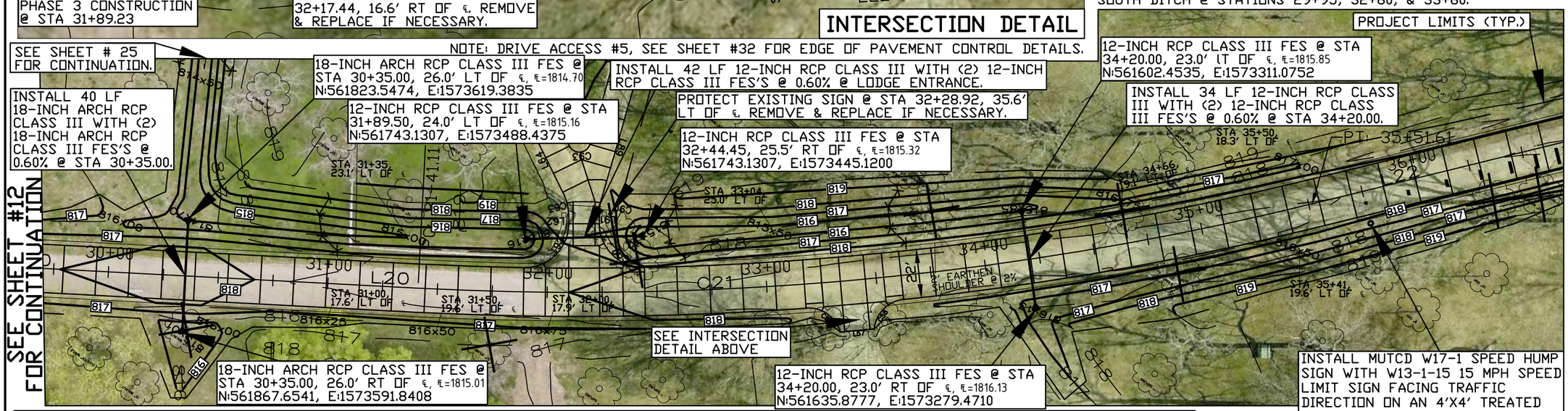
DATE: 07/02/2014

SHEET No: 12

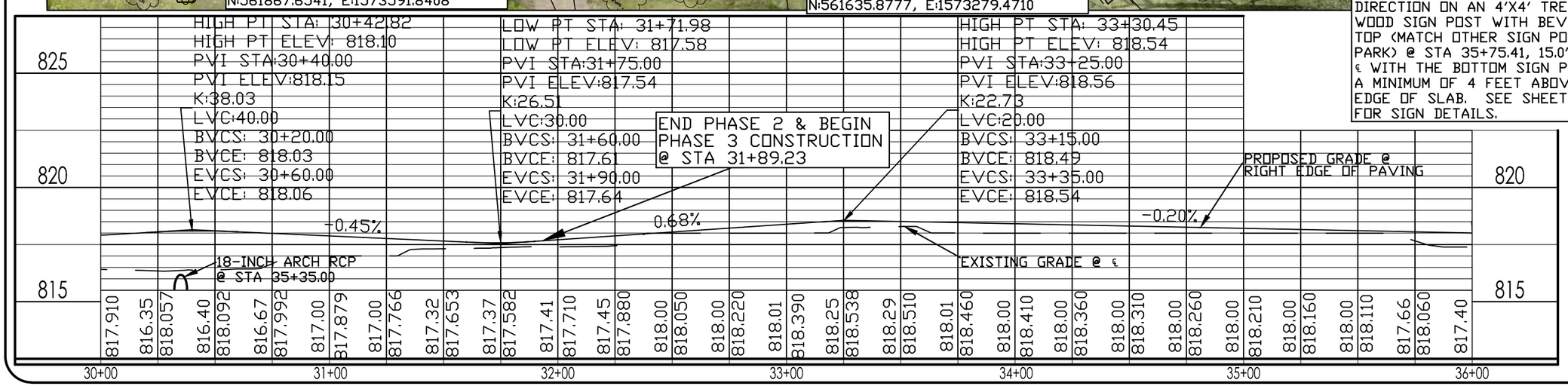


INTERSECTION DETAIL

NOTE: DRIVE ACCESS #5, SEE SHEET #32 FOR EDGE OF PAVEMENT CONTROL DETAILS.



NOTE: INSTALL 28 LF 8-INCH FILTER SOCK ON SOUTH DITCH @ STATIONS 29+95, 32+60, & 33+60.



LEGEND

EXISTING/PROPOSED

- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 — ELEVATION
- FILTER SOCK

0 FEET 20

0 FEET 50

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

PLAN/PROFILE

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

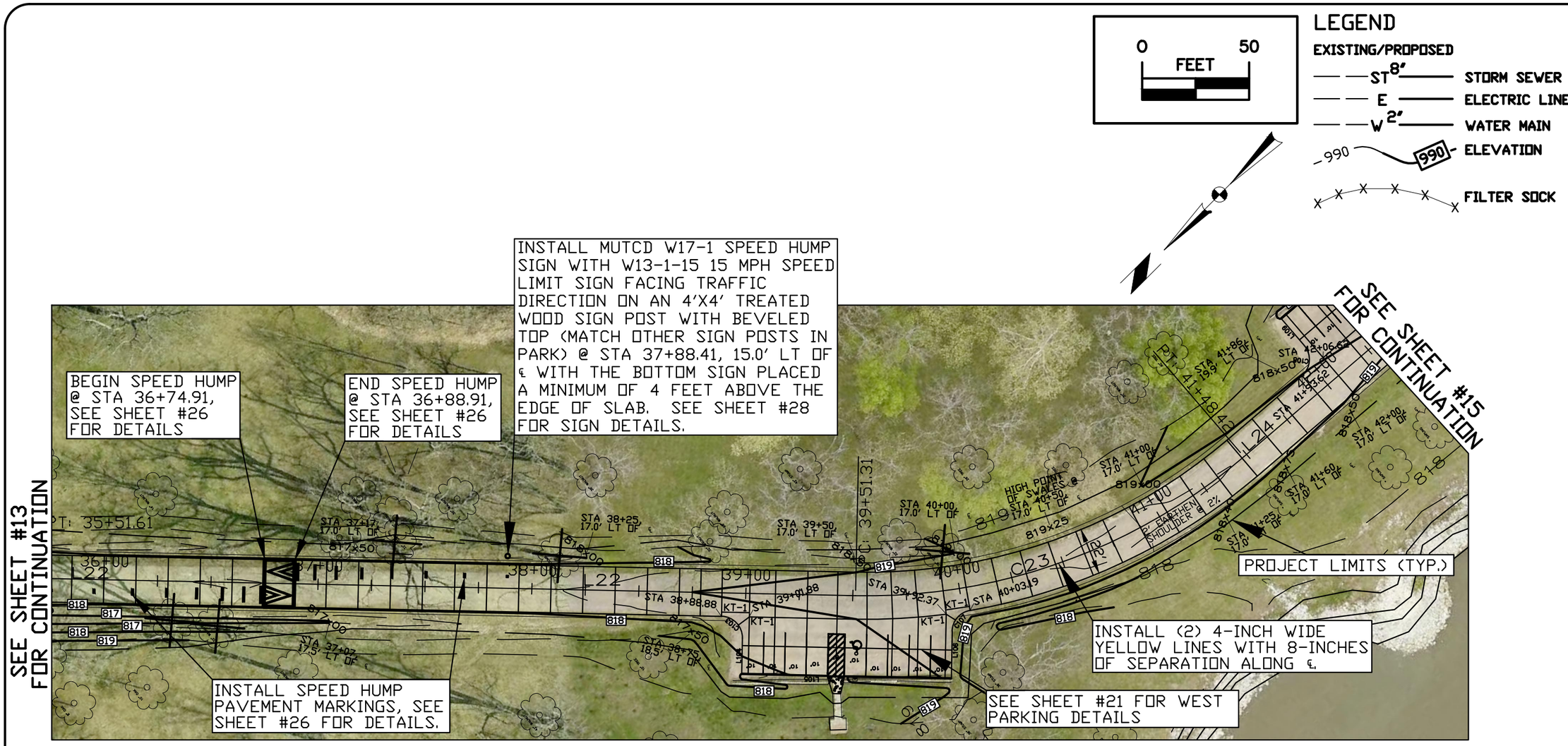
POLK COUNTY, IOWA

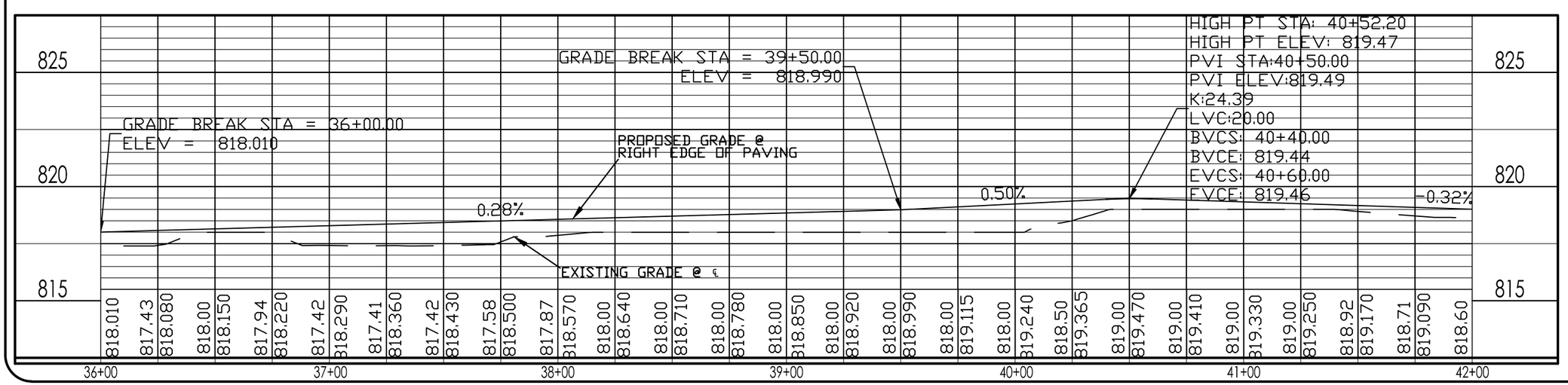
NO.	BY DATE	REVISION

DRAWN BY: PROJECT NUMBER: 15-05-77-01

CHK'D BY: DATE: 07/02/2014

SHEET No: 13





CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

PLAN/PROFILE

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY DATE	REVISION

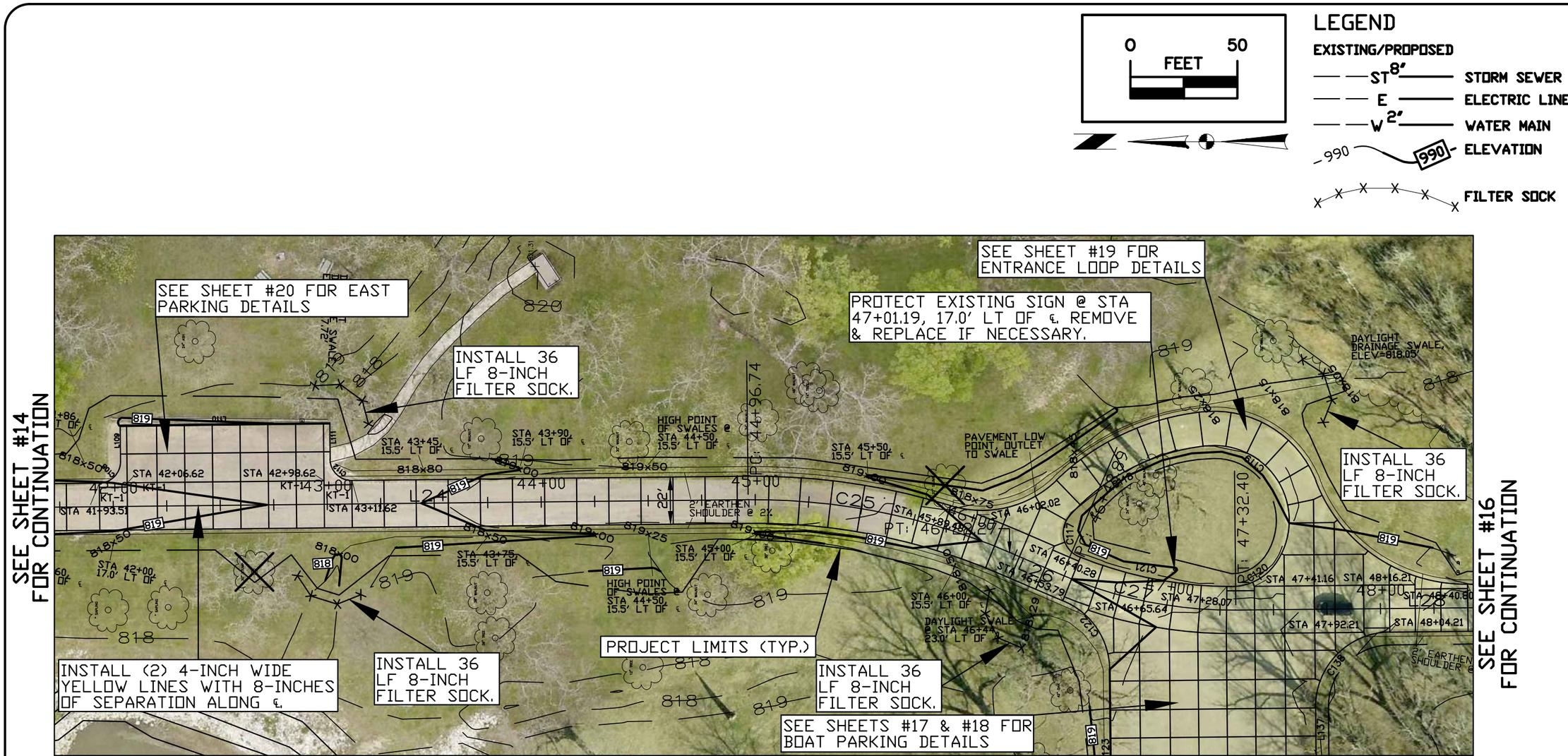
DRAWN BY:

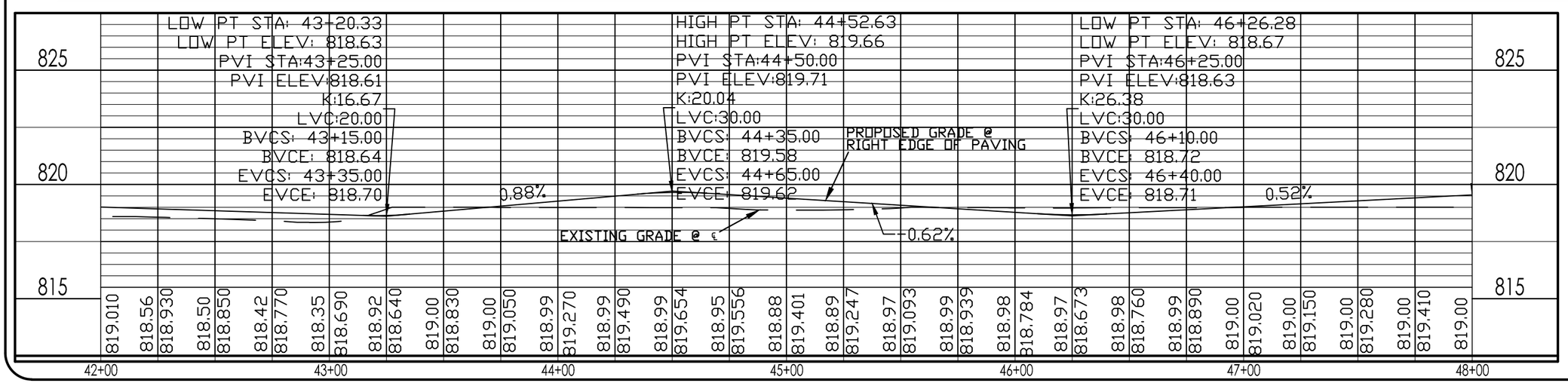
PROJECT NUMBER: 15-05-77-01

CHK'D BY:

DATE: 07/02/2014

SHEET No: 14





CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

PLAN/PROFILE

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:

PROJECT NUMBER: 15-05-77-01

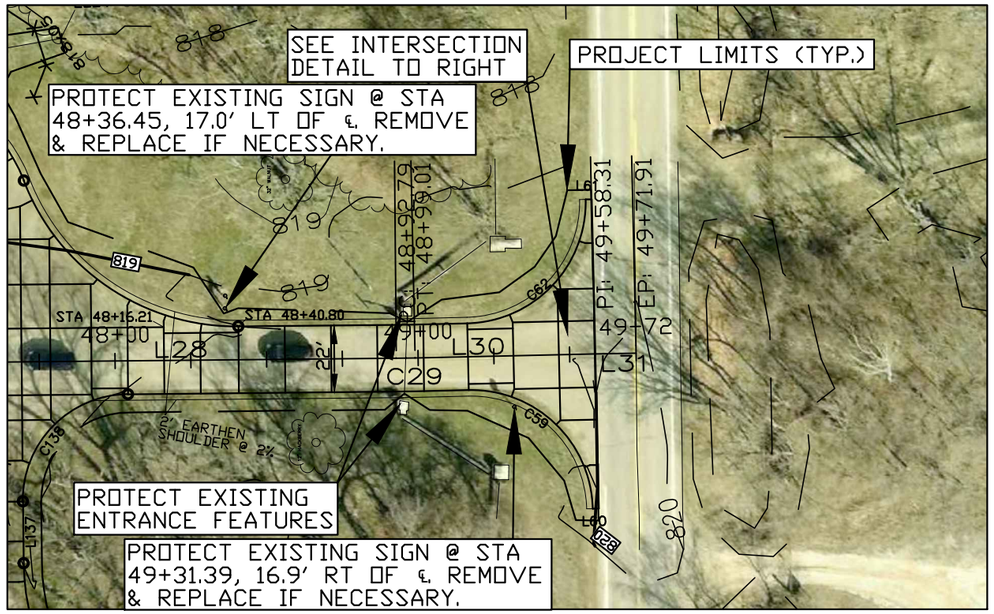
CHK'D BY:

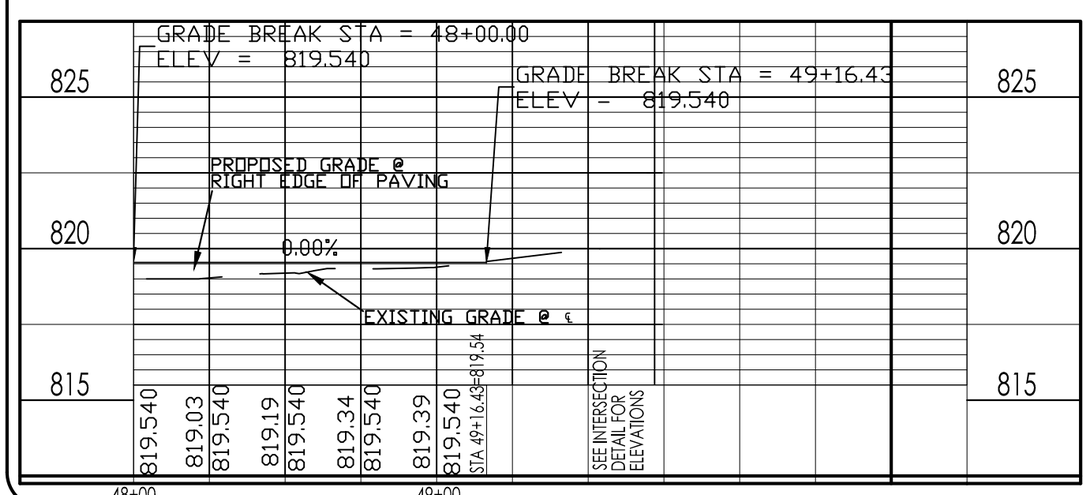
DATE: 07/02/2014

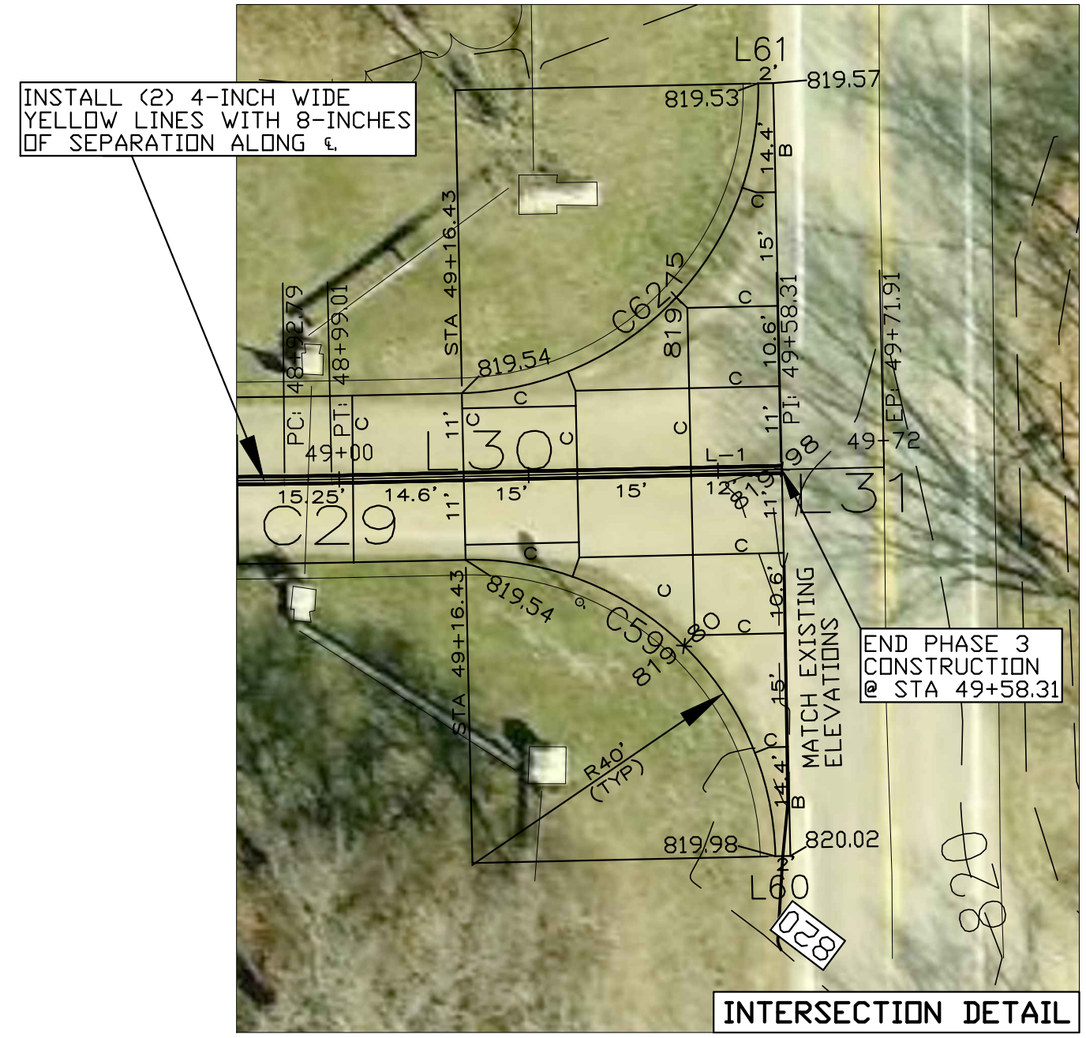
SHEET No: 15

0 50
FEET

SEE SHEET #15
FOR CONTINUATION







NOTE: WEST PARK ACCESS, SEE SHEET #32 FOR EDGE OF PAVEMENT CONTROL DETAILS.

0 20
FEET

LEGEND

EXISTING/PROPOSED

- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 — ELEVATION
- FILTER SOCK

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

PLAN/PROFILE

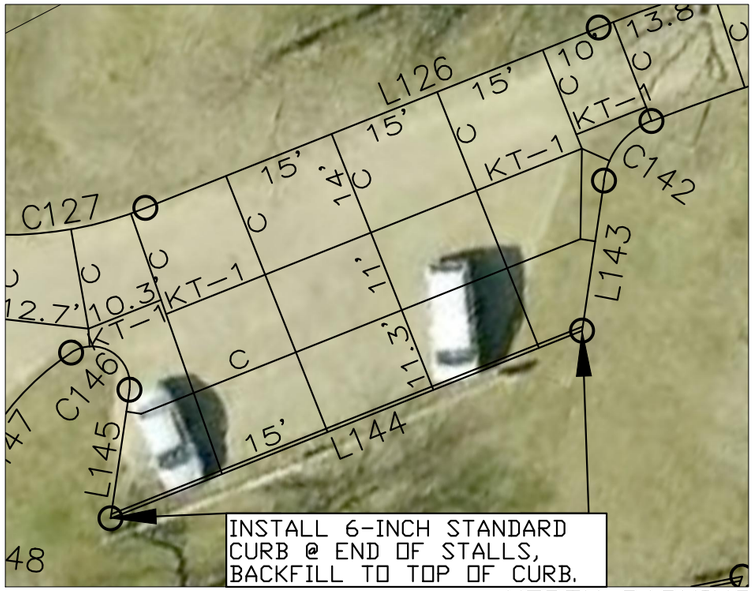
ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

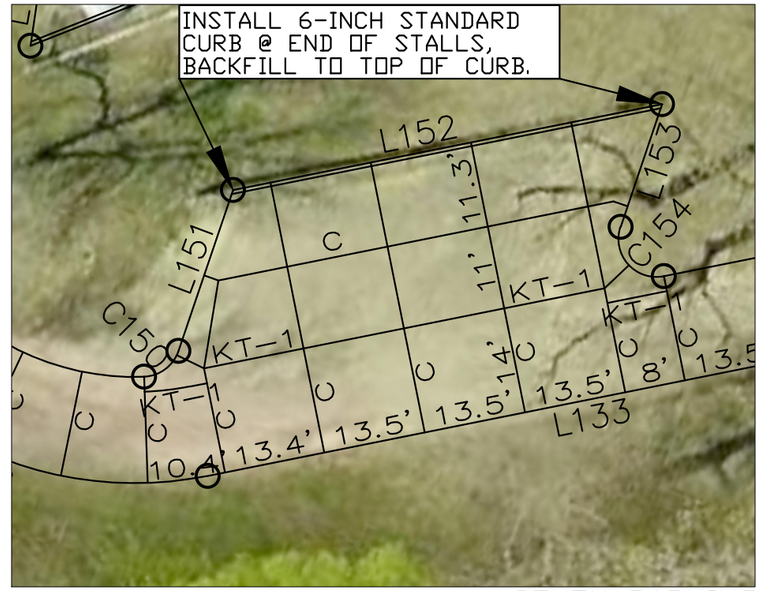
POLK COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 15-05-77-01
CHK'D BY:
DATE: 07/02/2014
SHEET No: 16



NORTH PARKING



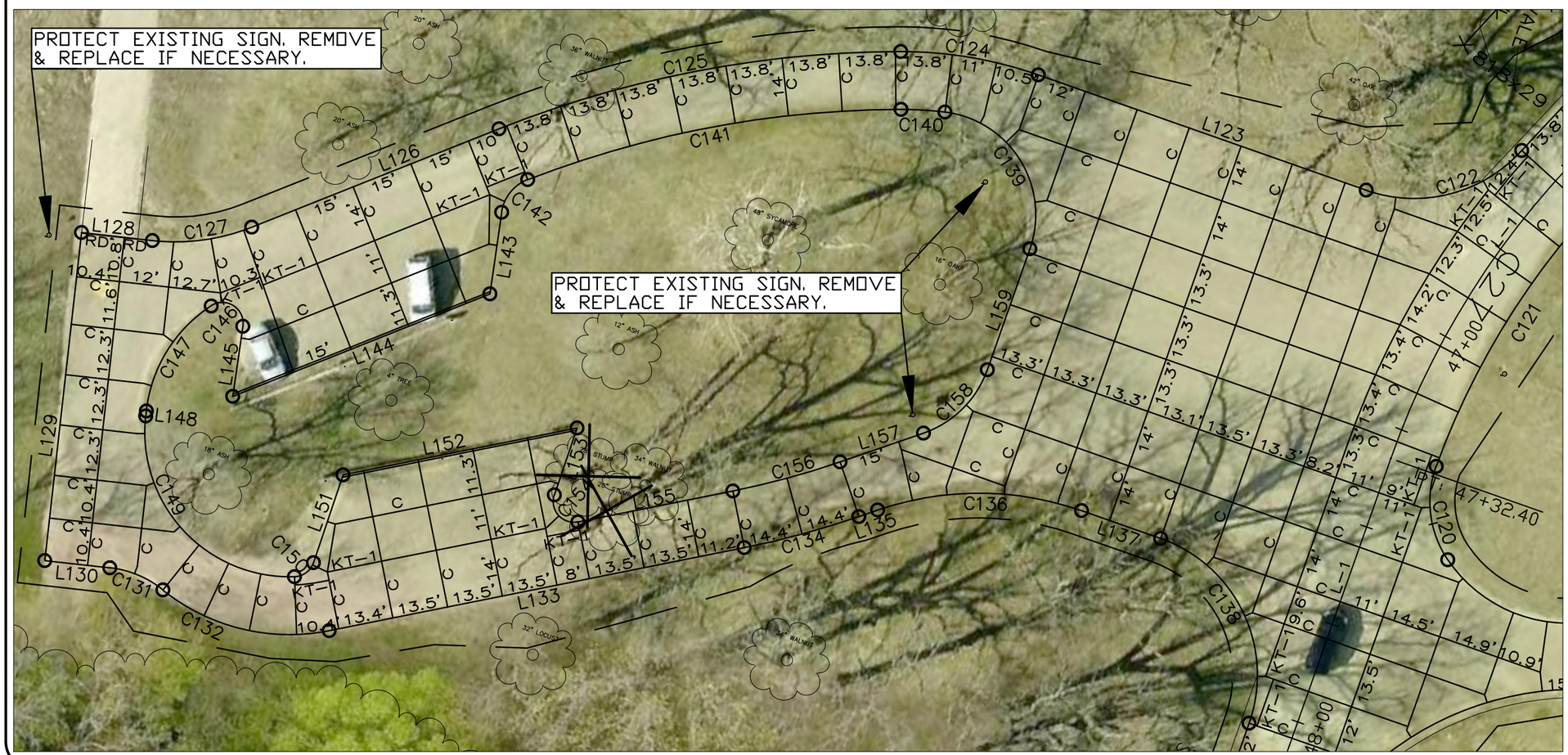
SOUTH PARKING

LEGEND

EXISTING/PROPOSED

- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 — ELEVATION
- FILTER SOCK

0 FEET 20



NOTE: BOAT PARKING/ DOCK AREA, SEE SHEET #34 FOR EDGE OF PAVEMENT CONTROL DETAILS.

0 FEET 30

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

BOAT PARKING AREA CONTROL

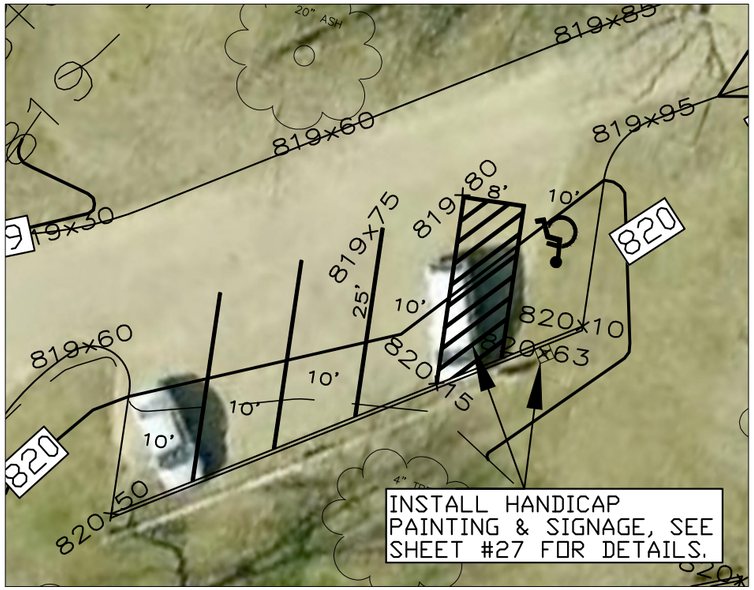
ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

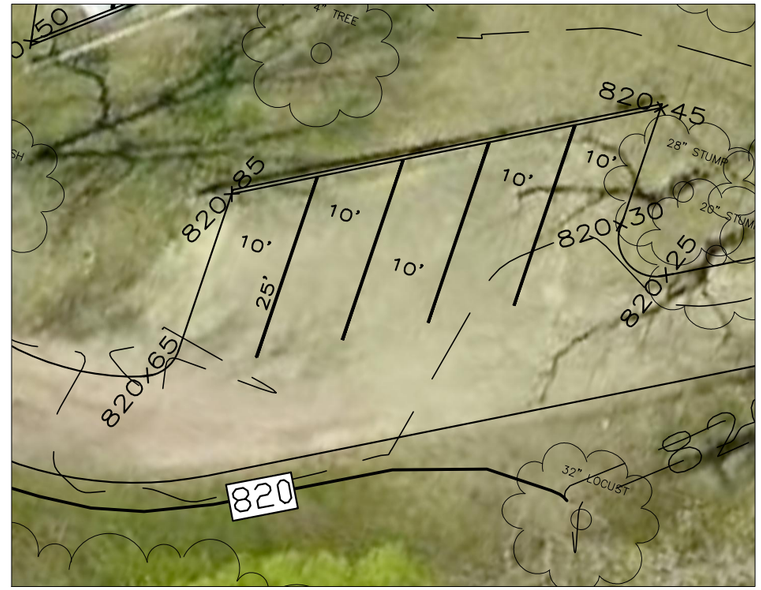
POLK COUNTY, IOWA

NO.	BY DATE	REVISION

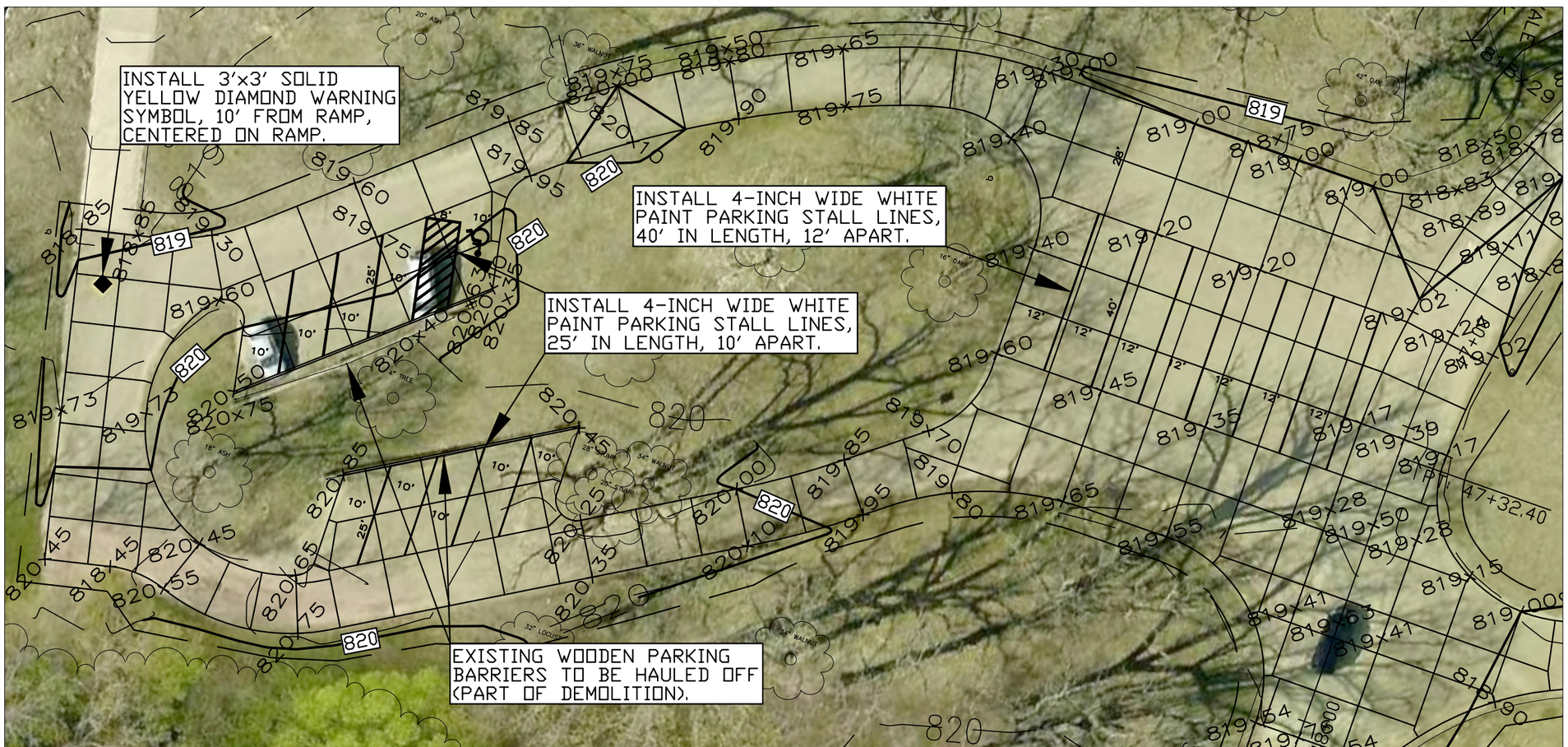
DRAWN BY:
PROJECT NUMBER: 15-05-77-01
CHK'D BY:
DATE: 07/02/2014
SHEET No: 17



NORTH PARKING



SOUTH PARKING



LEGEND

EXISTING/PROPOSED

- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 / 990 — ELEVATION
- X X X X X — FILTER SOCK

0 FEET 20

0 FEET 30

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

BOAT PARKING AREA GRADES

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY / DATE	REVISION

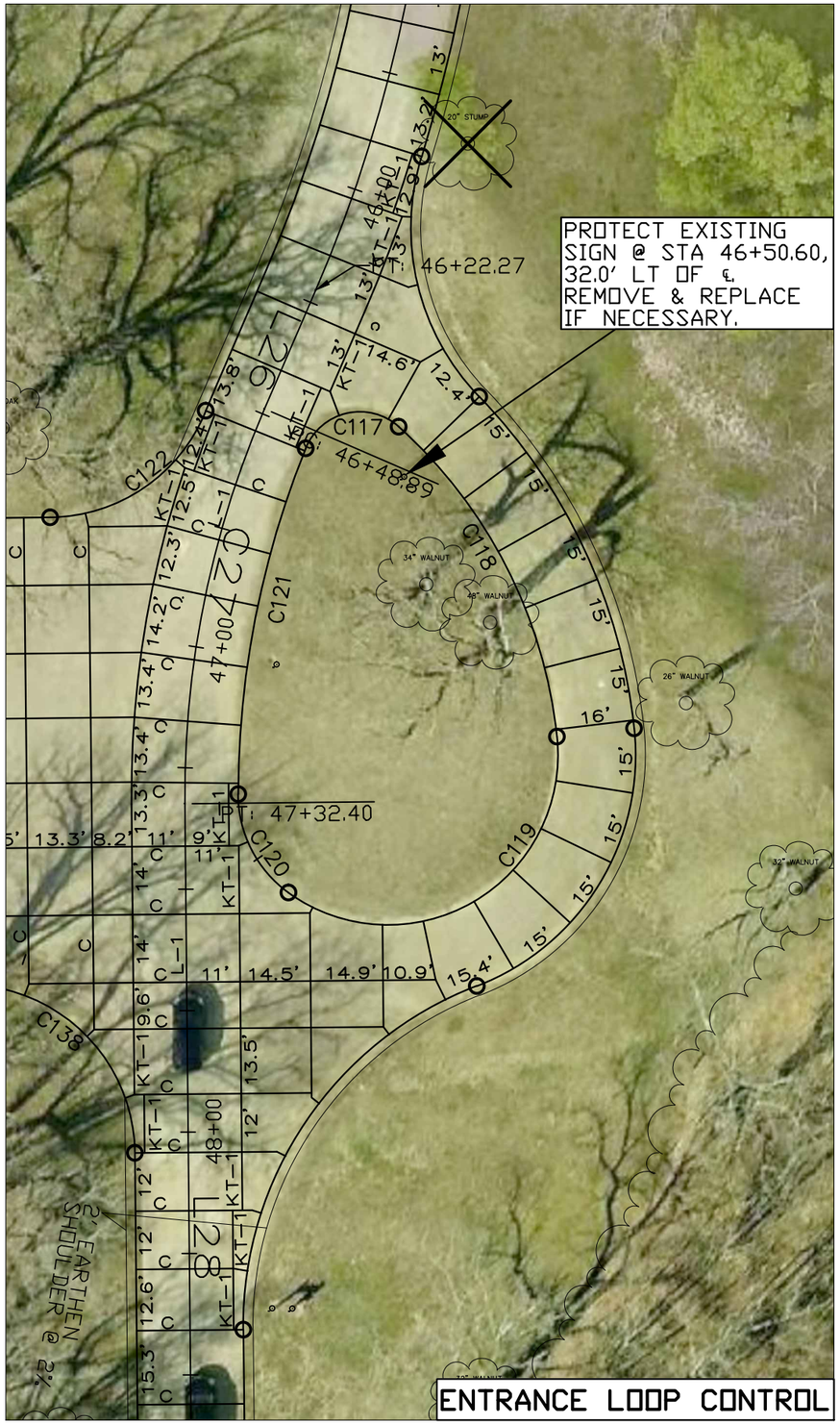
DRAWN BY:

PROJECT NUMBER: 15-05-77-01

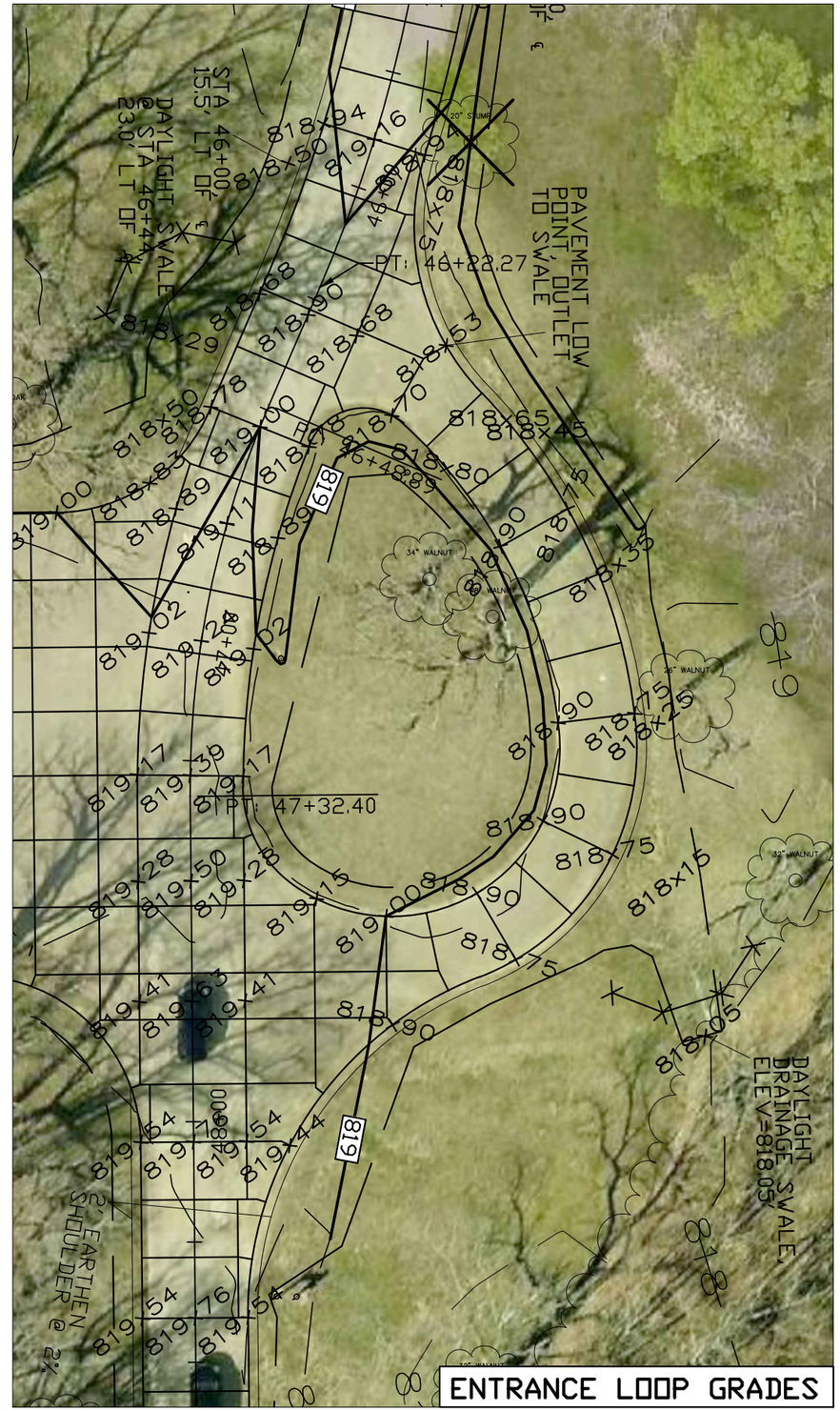
CHK'D BY:

DATE: 07/02/2014

SHEET No: 18



ENTRANCE LOOP CONTROL



ENTRANCE LOOP GRADES

NOTE: PARK ROAD WEST ENTRANCE LOOP, SEE SHEET #33 FOR EDGE OF PAVEMENT CONTROL DETAILS.

LEGEND

EXISTING/PROPOSED

- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 — 990 — ELEVATION
- FILTER SOCK

0 FEET 30

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

ENTRANCE LOOP

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

DATE: 07/02/2014

SHEET No: 19

EAST PARKING CONTROL

NOTE: EAST PARKING AREA, SEE SHEET #33 FOR EDGE OF PAVEMENT CONTROL DETAILS.

EAST PARKING GRADES

LEGEND

EXISTING/PROPOSED

- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 — ELEVATION
- FILTER SOCK

0 FEET 20

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

EAST PARKING BAY DETAILS

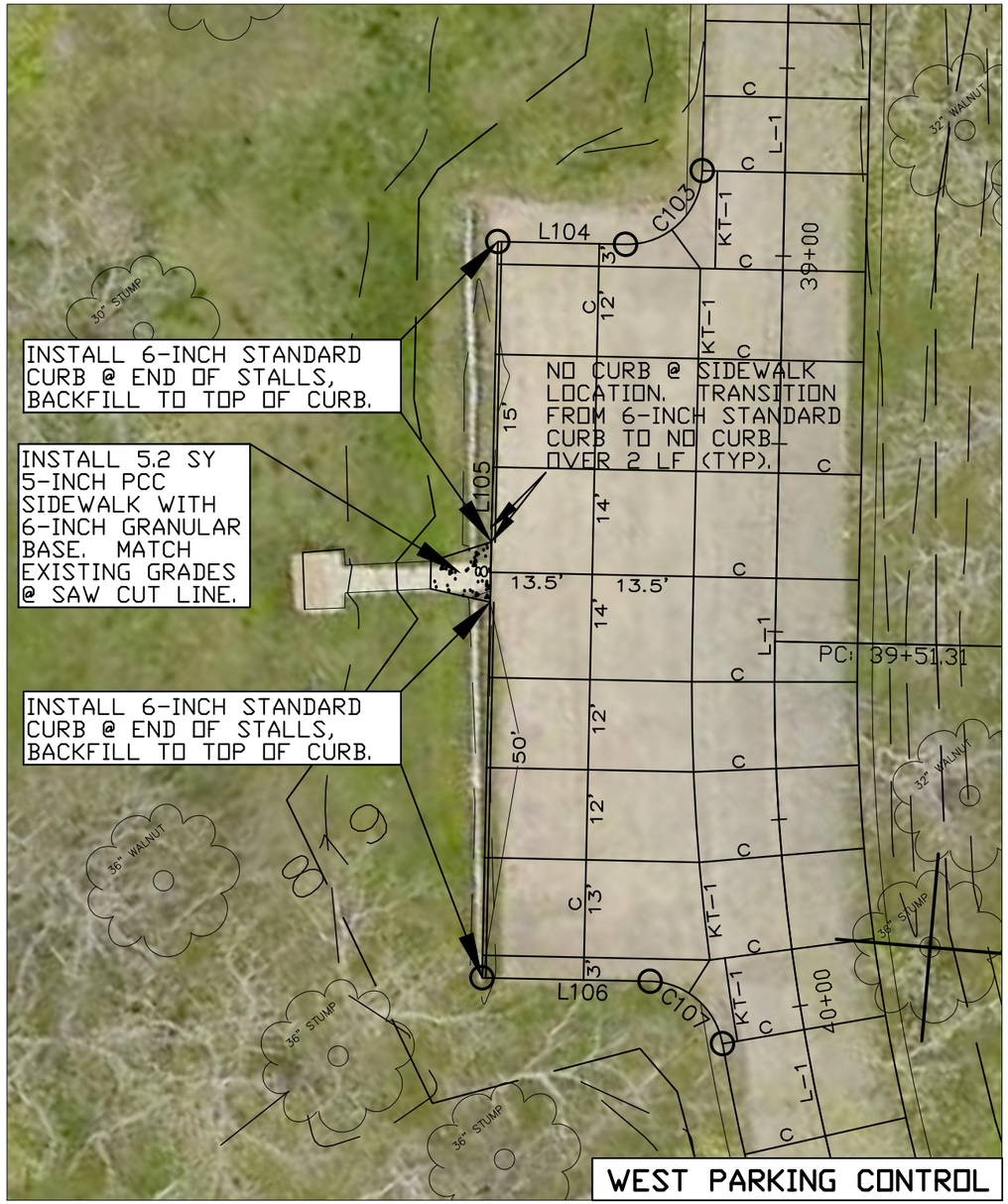
ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

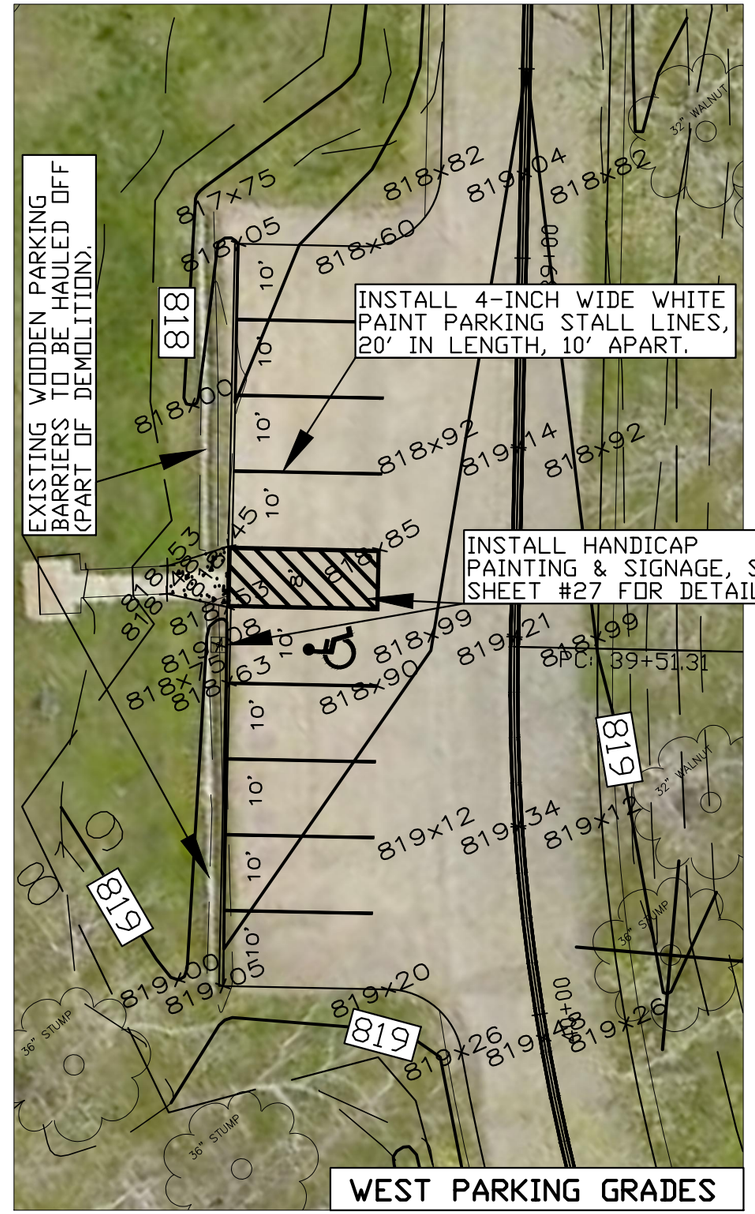
POLK COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY:
CHK'D BY:
PROJECT NUMBER: 15-05-77-01
DATE: 07/02/2014
SHEET No: 20



WEST PARKING CONTROL



WEST PARKING GRADES

NOTE: WEST PARKING AREA, SEE SHEET #33 FOR EDGE OF PAVEMENT CONTROL DETAILS.

LEGEND

EXISTING/PROPOSED

- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 — 990 — ELEVATION
- FILTER SOCK

0 FEET 20

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

WEST PARKING BAY DETAILS

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY / DATE	REVISION

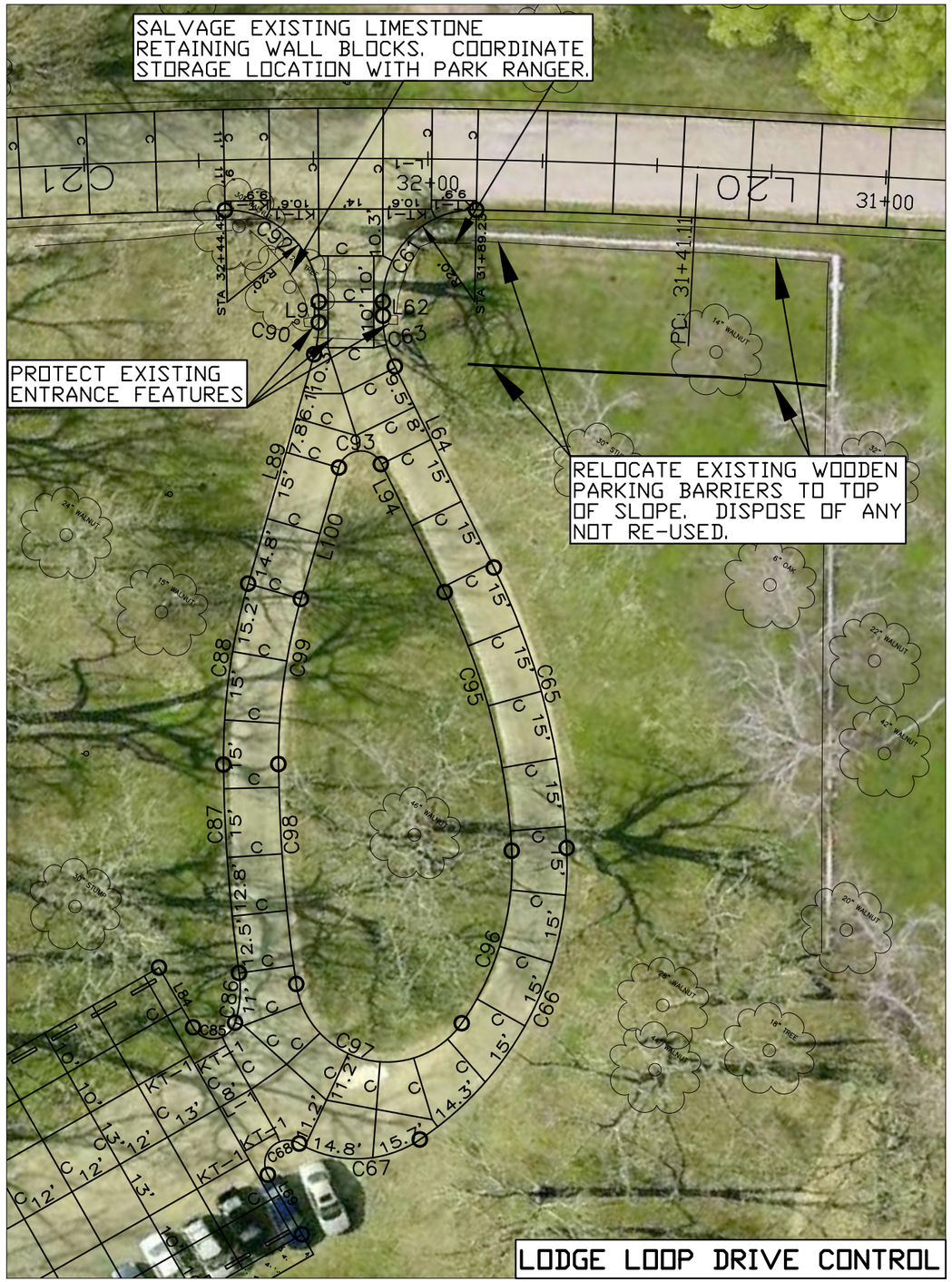
DRAWN BY:

PROJECT NUMBER: 15-05-77-01

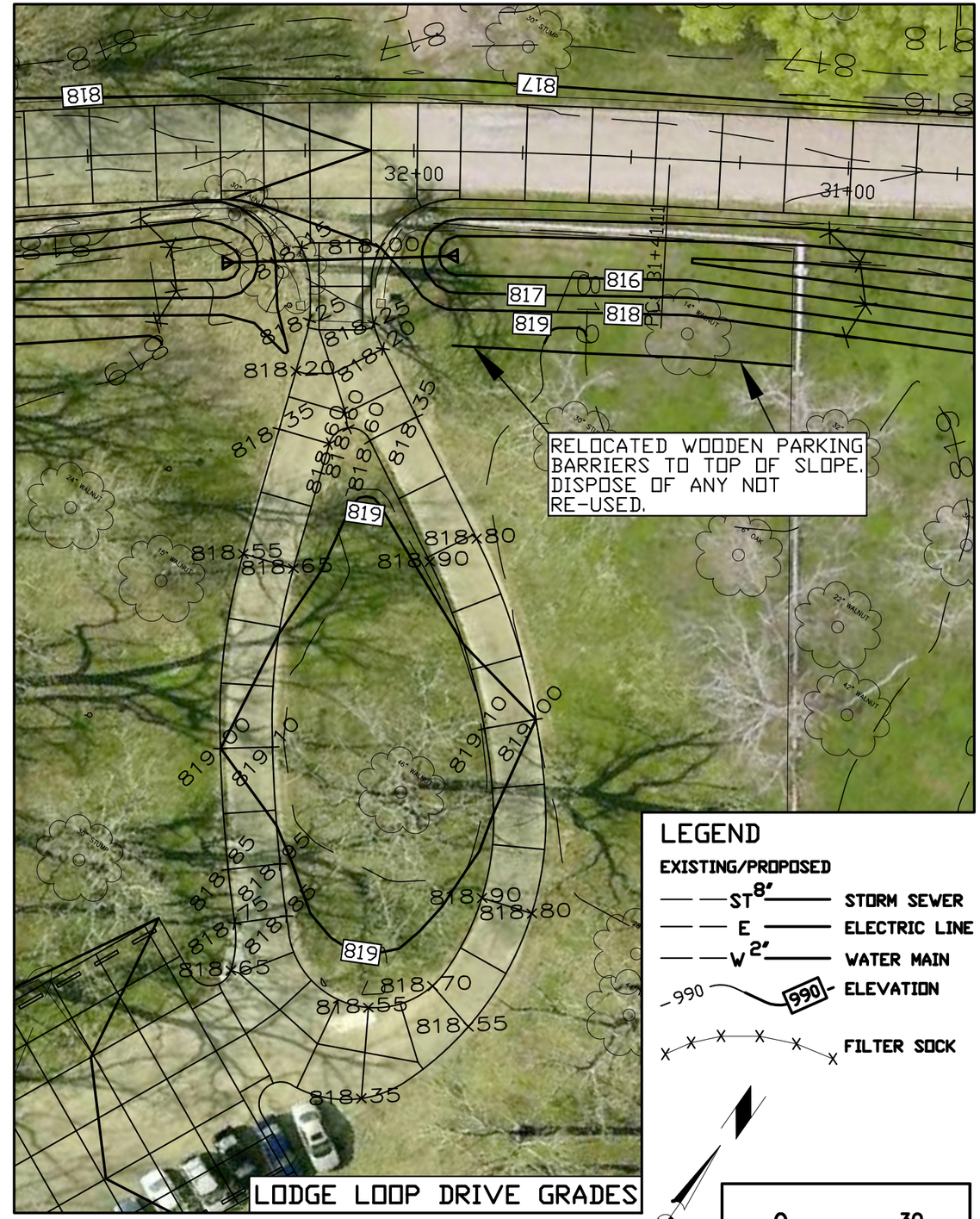
CHK'D BY:

DATE: 07/02/2014

SHEET No: 21



LODGE LOOP DRIVE CONTROL



LODGE LOOP DRIVE GRADES

LEGEND

EXISTING/PROPOSED

- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 — 990 — ELEVATION
- FILTER SOCK

0 FEET 30

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

LODGE LOOP DRIVE

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY / DATE	REVISION

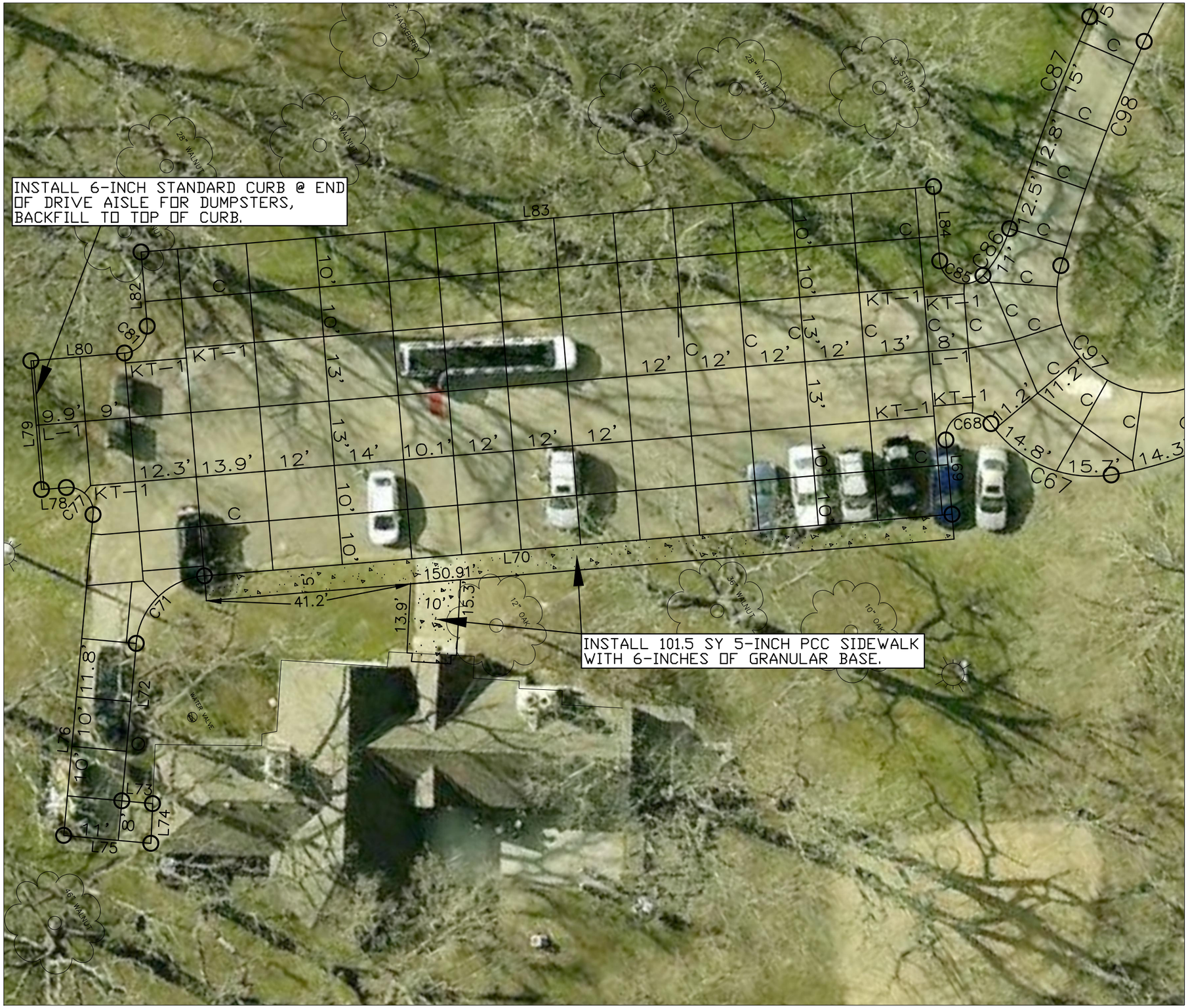
DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

DATE: 07/02/2014

SHEET No: 22



LEGEND

EXISTING/PROPOSED

- ST 8" — STORM SEWER
- E — ELECTRIC LINE
- W 2" — WATER MAIN
- 990 — ELEVATION
- FILTER SOCK

0 FEET 20

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

LODGE PARKING CONTROL

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY	DATE	REVISION

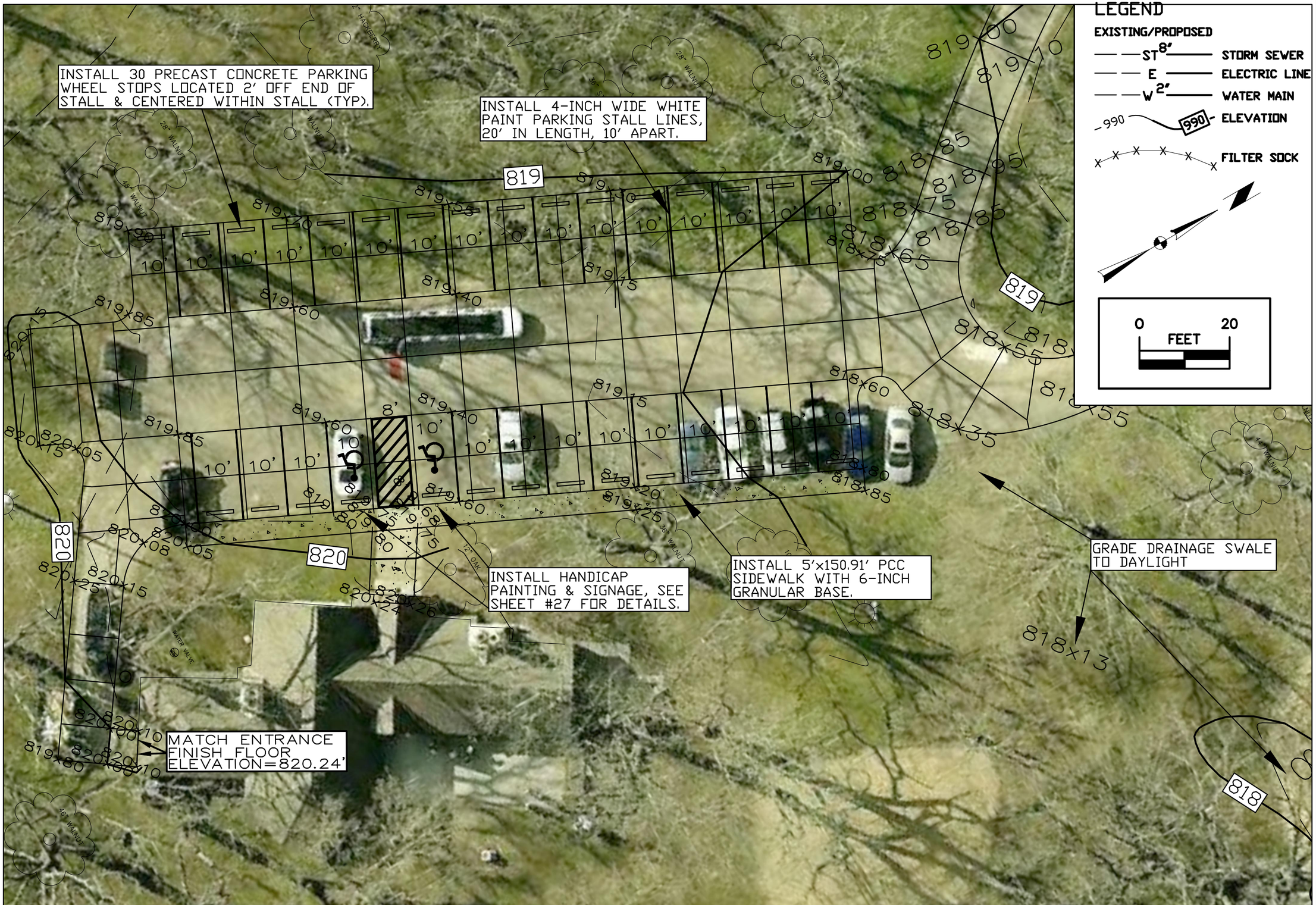
DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

DATE: 07/02/2014

SHEET No: 23



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

LODGE PARKING GRADES

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY / DATE	REVISION

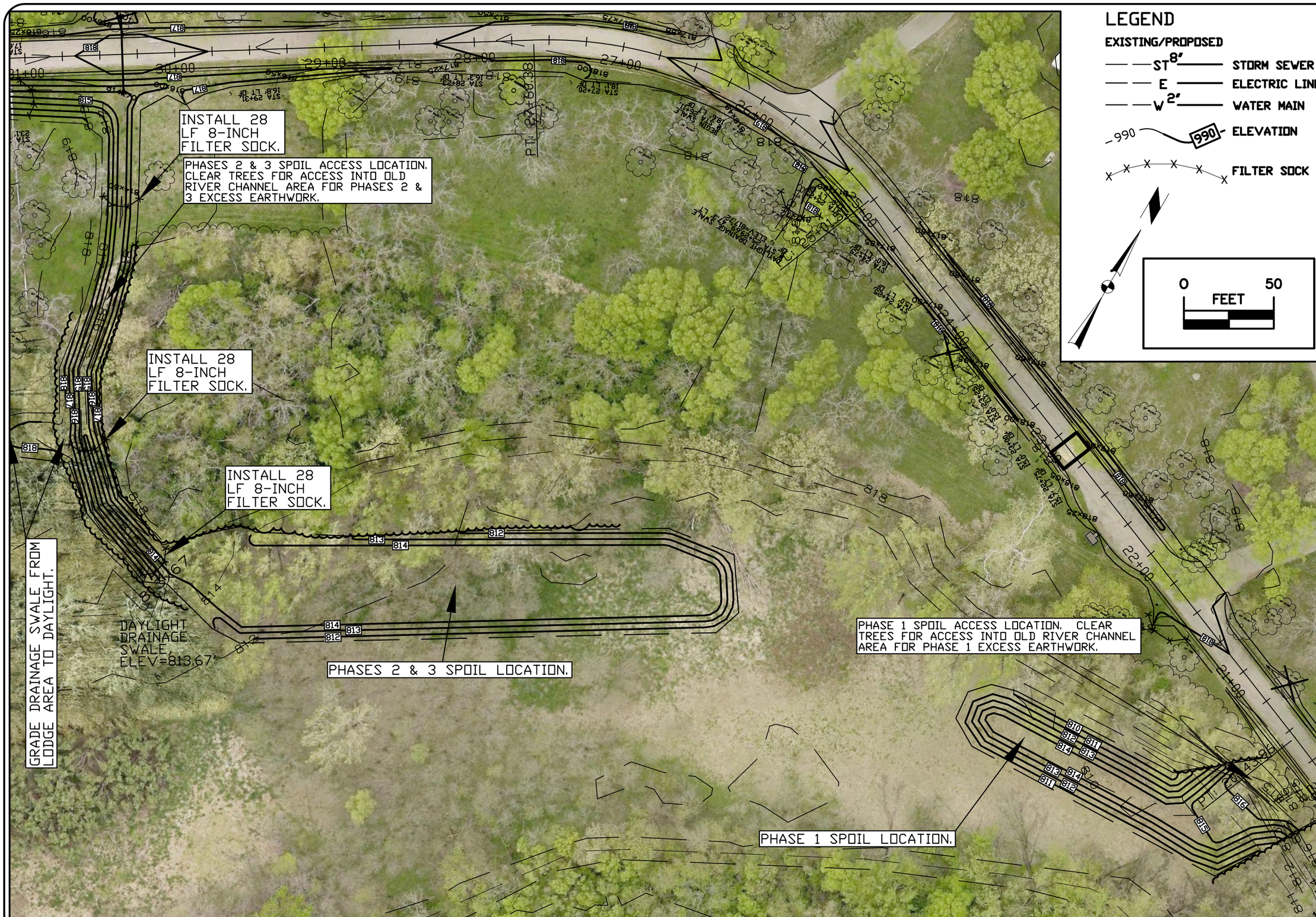
DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

DATE: 07/02/2014

SHEET No: 24



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

INTERIOR GRADING DETAILS

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY: DATE	REVISION

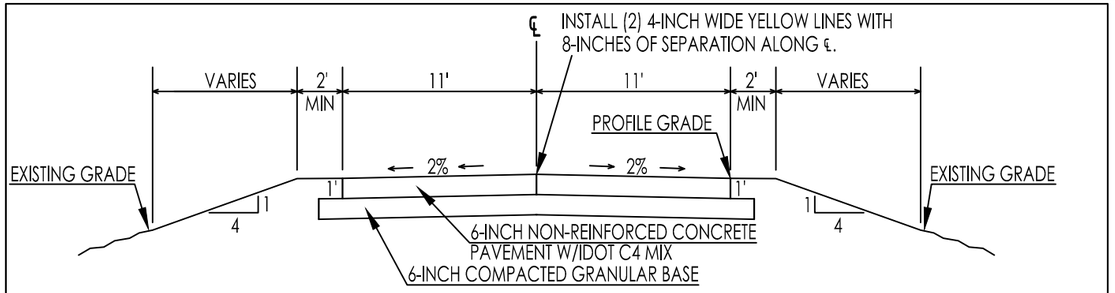
DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

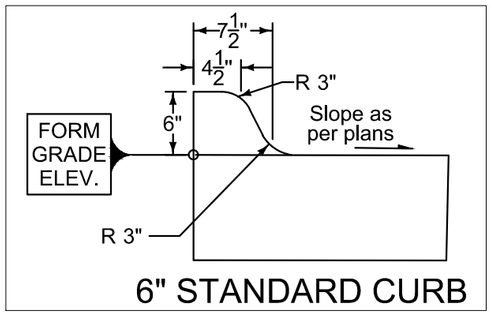
DATE: 07/02/2014

SHEET No: 25

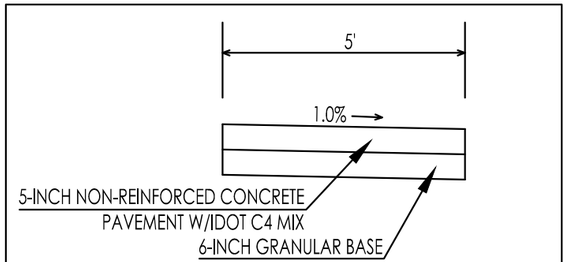


TYPICAL ROADWAY PAVEMENT CROSS-SECTION

NO SCALE

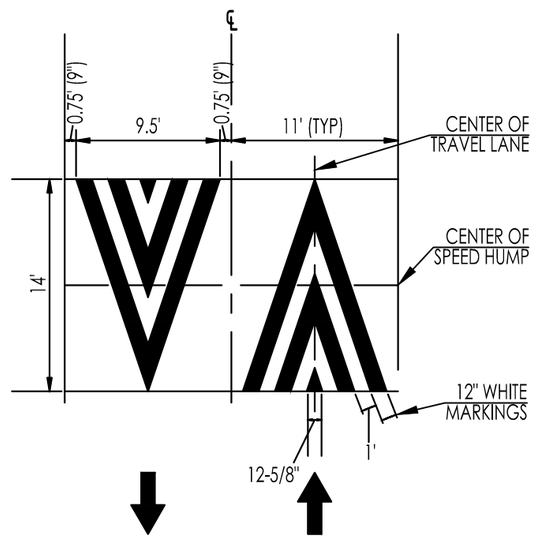


6" STANDARD CURB



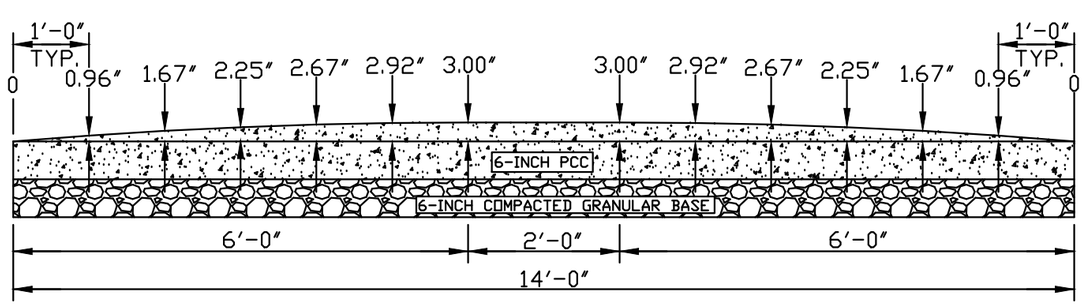
TYPICAL 5' SIDEWALK CROSS-SECTION

NO SCALE

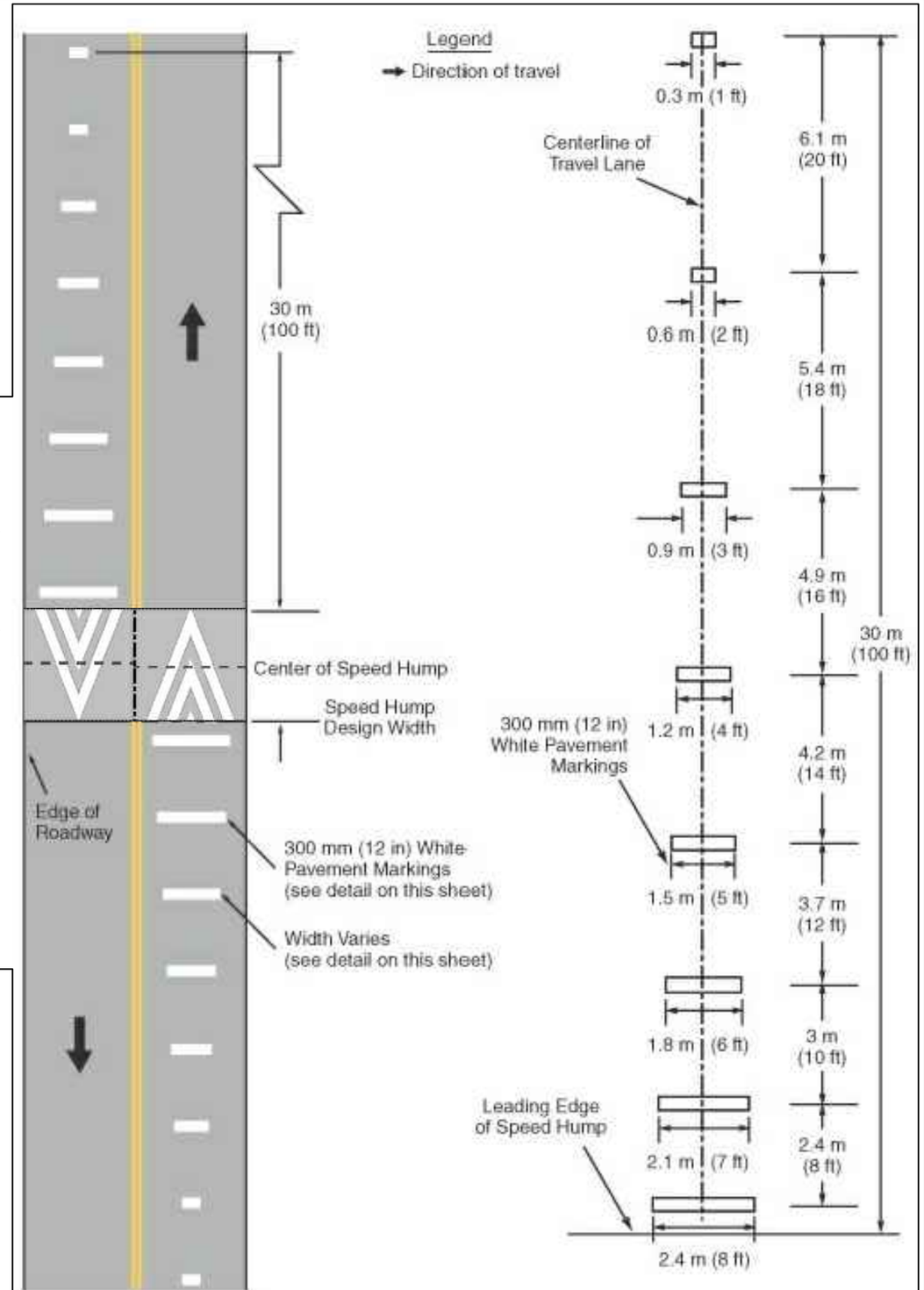


SPEED HUMP PAVEMENT MARKINGS

NO SCALE



SPEED HUMP CROSS-SECTION



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

PAVEMENT DETAILS

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY / DATE	REVISION

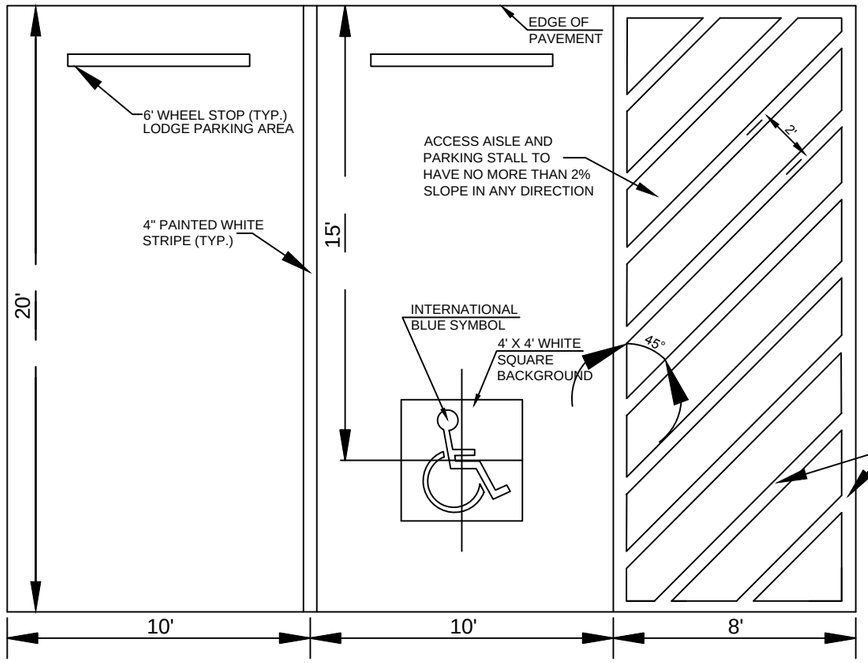
DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

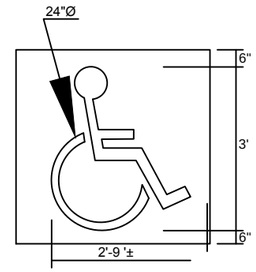
DATE: 07/02/2014

SHEET No: 26



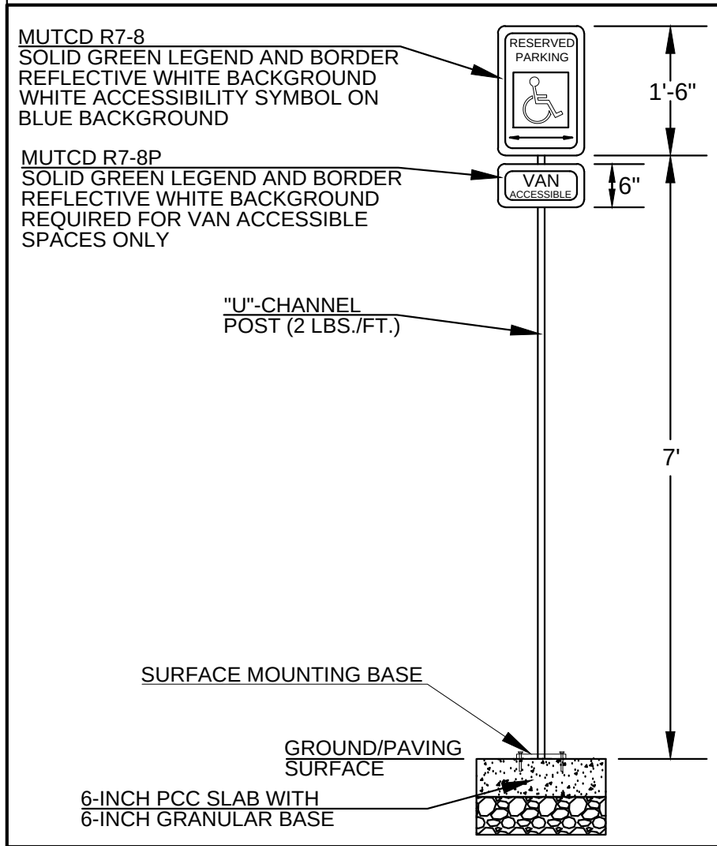
PAVEMENT MARKINGS FOR PARKING STALLS DETAIL

NOT TO SCALE



HANDICAP PARKING PAVEMENT MARKING

NOT TO SCALE



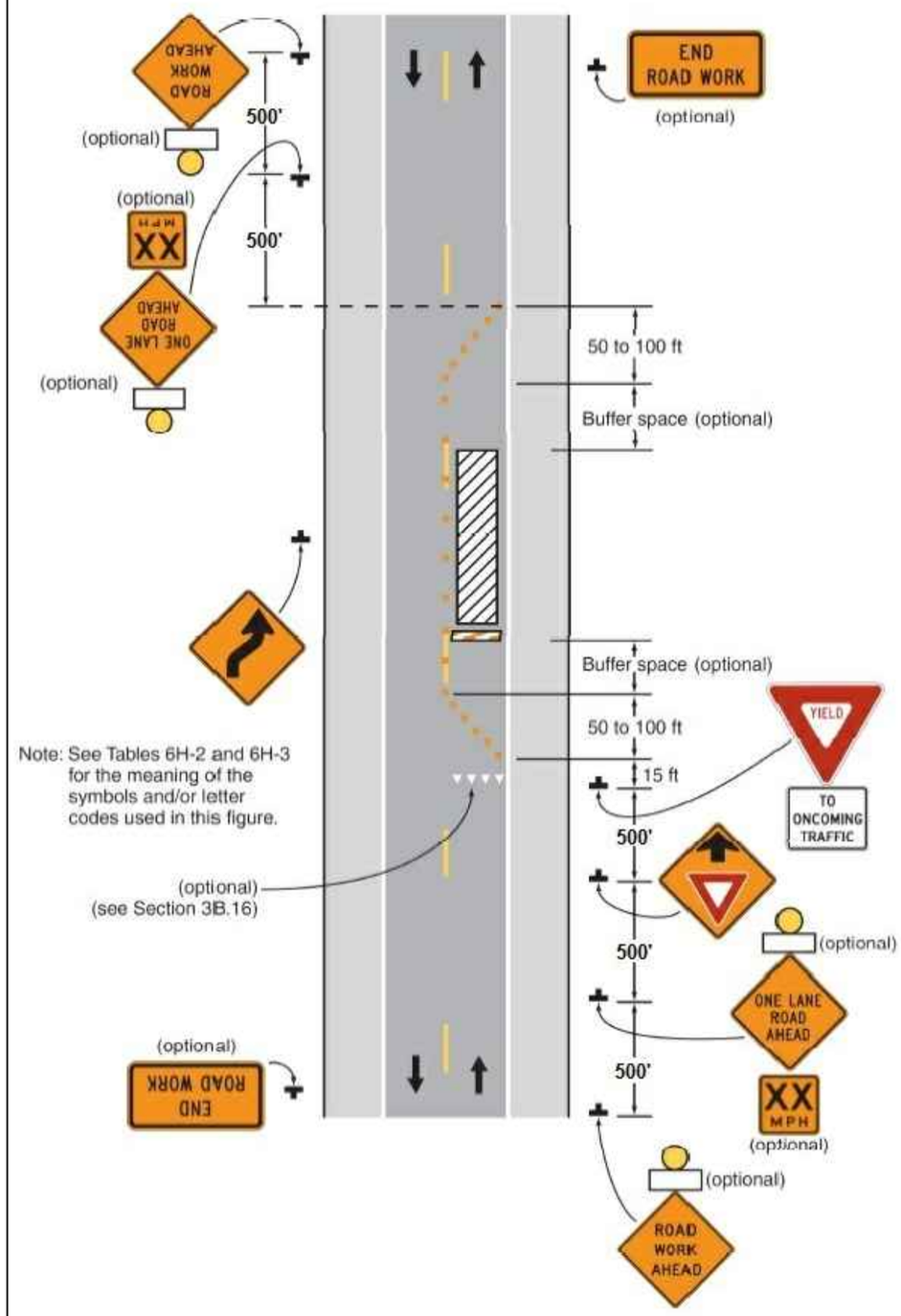
NOTES

1. 12"x18" ACCESSIBILITY SIGN (R7-8) SHALL BE MOUNTED 7' FROM FINISH GRADE TO BOTTOM EDGE OF SIGN FACE.
2. SIGNAGE SHALL BE INSTALLED IN FRONT OF EACH ACCESSIBLE SPACE, CENTERED ON THE WIDTH OF THE SPACE. PLACE SIGN POST AT END OF PARKING STALL AND EDGE OF SIDEWALK.
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.
5. SIGNAGE FOR LODGE PARKING TO BE LOCATED ON END OF PARKING STALL, ON EDGE OF 5' SIDEWALK. SIGNAGE FOR OTHER PARKING AREAS SHALL HAVE A 2'x2'x6" PCC PAD WITH 6-INCH GRANULAR BASE INSTALLED AT END OF STALL, CENTERED ON STALL.

HANDICAP SIGN DETAIL

NOT TO SCALE

Figure 6H-11. Lane Closure on a Two-Lane Road with Low Traffic Volumes (TA-11)



CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

STANDARD DETAILS

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY DATE	REVISION

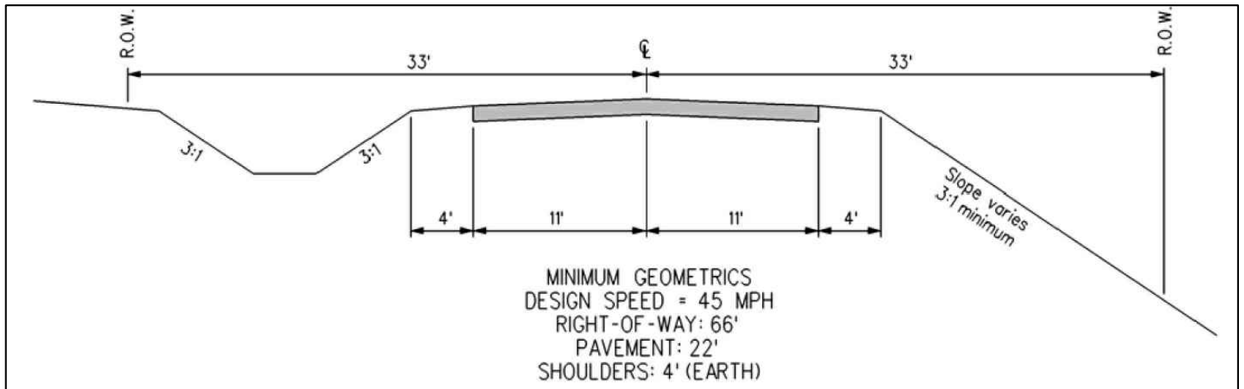
DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

DATE: 07/02/2014

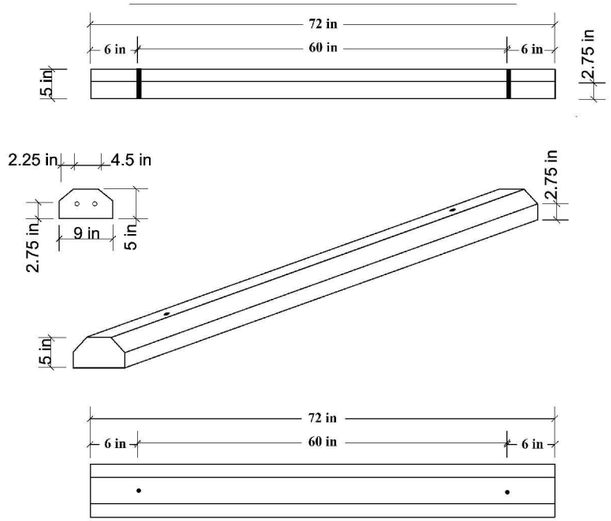
SHEET No: 27



TYPICAL RURAL ROAD CROSS-SECTION

USE FOR ROW GRADING AT PARK ENTRANCES

FLAT PARKING BUMPER



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

W17-1

SPEED HUMP

A	B	C	D	E	F	G	H	J	K
24	0.375	0.625	4 D	1.25	2	7.886	6.961	7.210	1.5

COLORS: LEGEND, BORDER – BLACK
BACKGROUND – YELLOW (RETROREFLECTIVE)

W13-1-15
12"x12"
BLACK ON YELLOW

W17-1 TRAFFIC CONTROL SIGN
WITH W15-1-15 SPEED LIMIT SIGN

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

STANDARD DETAILS

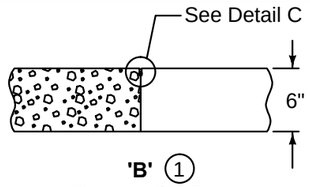
ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

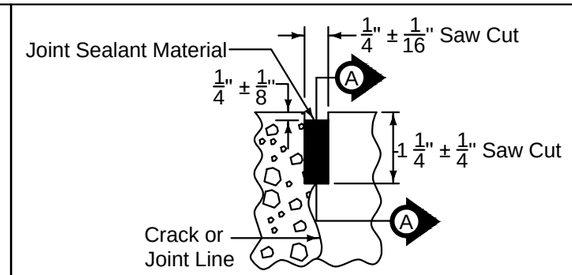
NO.	BY DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 15-05-77-01
CHK'D BY:
DATE: 07/02/2014
SHEET No: **28**

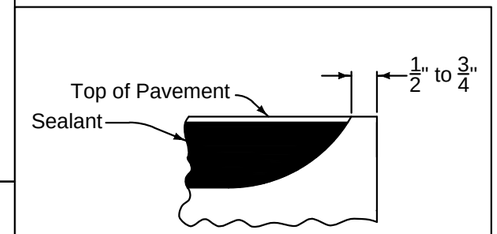


'B' (1)
PLAIN JOINT
(Abutting Pavement Slabs)

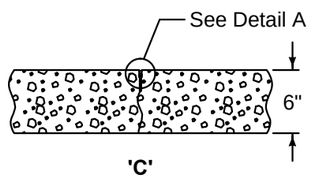
(1) Edge with 1/4 inch tool for length of joint indicated if formed; edging not required when cut with diamond blade saw. Remove header block and board when second slab is placed.



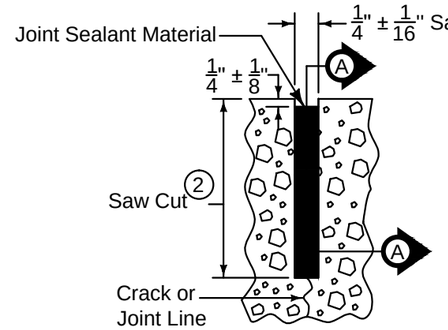
DETAIL C



SECTION A-A
(Detail at Edge of Pavement)



'C'
CONTRACTION JOINT



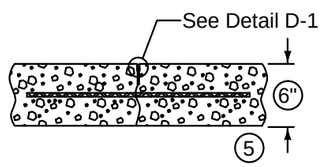
DETAIL A
(Saw cut formed by conventional concrete sawing equipment.)

(2) Saw 'C' joint to a depth of 2" ± 1/4".

(3) Bar supports may be necessary for fixed form paving to ensure the bar remains in a horizontal position in the plastic concrete.

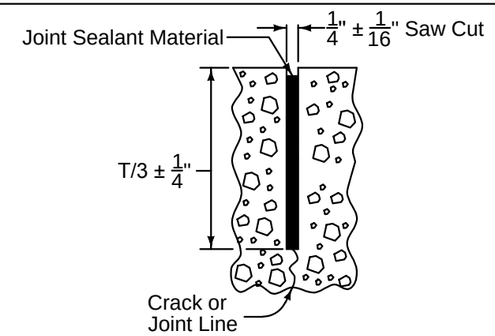
(4) Sawing or sealing of joint not required.

(5) The following joints are interchangeable, subject to the pouring sequence:
'L-1' and 'KT-1'

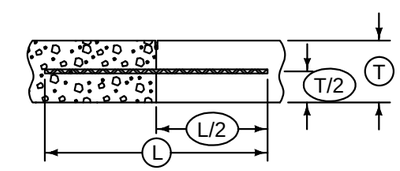


'L'
CONTRACTION JOINT

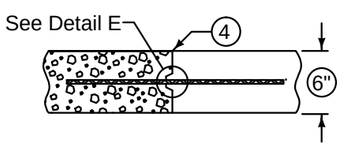
(T)	Joint	Bars	Bar Length and Spacing
6"	'L-1'	#4	36" Long at 30" Centers



DETAIL D-1

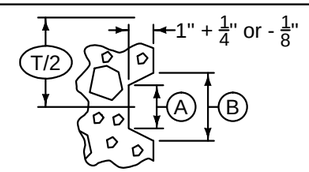


TIE BAR PLACEMENT
(Applies to all joints unless otherwise detailed.)



'KT'
ABUTTING PAVEMENT JOINT - KEYWAY TIE
(3) (5)

(T)	Joint	Bars	Bar Length and Spacing
6"	'KT-1'	#4	30" Long at 30" Centers



DETAIL E

KEYWAY DIMENSIONS			
Keyway Type	Pavement Thickness (T)	(A)	(B)
Standard	8" or greater	1 3/4"	2 3/4"
Narrow	Less than 8"	1"	2"

CONSULTANT:

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

JOINT DETAILS
ROADWAY CONSTRUCTION PROJECT FOR:
WALNUT WOODS STATE PARK
POLK COUNTY, IOWA

NO.	BY / DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 15-05-77-01
CHK'D BY:
DATE: 07/02/2014
SHEET No: 29

SURVEY CONTROL POINTS

Point #	Description
CP 1	Set 1 1/2" X 1/4" Magnail in asphalt near CL Walnut Woods entrance and near edge of city road approx. 63.25' SW of WDM 054 Benchmark
CP 2	Set 1 1/2" X 1/4" Magnail in asphalt near CL parking and approx. 11.5' West of main roadway. Tie #1 - 46.88' ENE to 16d nail in 8 X 8 sign post. Tie #2 - 114.57' SSE to 16d nail in N side West sign post.
CP 3	Set 12" X 3/8" Nail w/washer approx. 12' West of road. Tie #1 - 76.59' NNE to white tack in center of utility pole rail @ NW cor parking area. Tie #2 - 62.70' SE to 16d nail in 36" Mulberry.
CP 4	Set 12" X 3/8" Nail w/washer approx. 29' SE of road and approx 14' NE of 14" walnut.
CP 5	Set 12" X 3/8" Nail w/washer approx. 5' North of road. Tie #1 - 65.70' SW to 16d nail w/disc in sign post. Tie #2 - 30.29' SE to 16d nail w/disc in bottom utility pole retaining wall.
CP 6	Set 12" X 3/8" Nail w/washer approx. 14' South of road. Tie #1 - 11.89' SE to 16d nail in 14" Hackberry. Tie #2 - 68.91' NNE to 16d nail in twin 6" & 8" Hackberry.
CP 7	Set 4 1/2" Mag Spike in asphalt road approx. 1.2' from North edge of road. Tie #1 - 17.63' NNW to 16d nail in 36" Walnut. Tie #2 - 23.89' East to 16d nail in 38" Oak.
CP 8	Set 12" X 3/8" Nail w/washer approx. 7' South of road. Tie #1 - 31.94' SW to 16d nail w/disc in wood telephone post. Tie #2 - 13.98' WNW to 16d nail w/disc in sign post.
CP 9	Set 12" X 3/8" Nail w/washer approx. 8' North of road. Tie #1 - 6.39' NNE to 16d nail in 8" Mulberry. Tie #2 - 35.44' NW to 16d nail in 14" Locust.
CP 10	Set 4 1/2" Mag Spike in asphalt approx. 3' North of main road. Tie #1 33.45' South to 16d nail in 16" Elm. Tie #2 - 28.02' East to 16d nail w/disc in sign post.
CP 11	Set 12" X 3/8" Nail w/washer approx. 4.5' North of road. Tie #1 - 8.57' NW to 16d nail in 12" Hackberry. Tie #2 - 14.40 East to 16d nail in 10" Elm.
CP 12	Set 12" X 3/8" Nail w/washer approx. 10.5' East of road. Tie #1 - 46.43' West to 16d nail w/disc in 16" Mulberry. Tie #2 - 43.27' South to 16d nail in 12" Hackberry.
CP 13	Set 4 1/2" Mag Spike in asphalt road approx. 2' from East edge of road. Tie #1 - 26.30' SW to 16d nail in 30" Walnut. Tie #2 - 49.99' South to 16d nail in 18" Hackberry.
CP 14	Set 12" X 3/8" Nail w/washer approx. 14' East of road. Tie #1 - 6.29 West to 16d nail w/disc in sign post. Tie #2 - 57.90 SW to 16d nail w/disc in 12" Hackberry.
CP 15	Set 4 1/2" Mag Spike in asphalt road approx. 1.5' from East edge of road. Tie #1 - 31.75' East to 16d nail w/disc in 16" Hackberry. Tie #2 - 37.89' South to 16d nail w/disc in 16" Hackberry
CP 16	Set 4 1/2" Mag Spike in asphalt road approx. 3' from West edge of road. Tie #1 - 16.97' NW to 16d nail w/disc in 12" Hackberry. Tie #2 - 41.95' SSW to 16d nail w/disc in 12" Hackberry.
CP 17	Set 1 1/2" X 1/4" Magnail in asphalt road approx. 1.2' from West edge of road. Tie #1 - 17.76' WSW to 16d nail w/disc in 10" Basswood. Tie #2 - 27.59' South to 16d nail w/disc in 10" Hackberry.
CP 18	Set 1 1/2" X 1/4" Magnail in asphalt near CL park road and approx. 2.5 North of WDM road at East entrance. Tie #1 - 46.20' NNE to 16d nail w/disc in bollard post. Tie #2 - 24.33' NW to 16d nail w/disc in sign post.
CP 19	Set 12" X 3/8" Nail w/washer approx. 47' NE of Security Light Pole NE of Lodge.
CP 20	Set 4 1/2" Mag Spike in asphalt approx. 10' East of SW cor of parking lot at Lodge.

City of West Des Moines Elevation Benchmark #054

560268.336 1572885.28 818.98 Stamped Aluminum Cap, Northeast of intersection, 20 feet east of Walnut Woods State Park sign, 5 feet south of fence.

PARK ROAD CENTERLINE CONTROL

ROAD CENTERLINE CONTROL

No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point	Comment
L1	Line	14.25'		N0° 29' 53"W	0+00.00'	0+14.25'				(1574891.7627',560249.9584')	(1574891.6389',560264.2065')		Begin Construction @
L2	Line	63.63'		N0° 29' 53"W	0+14.25'	0+77.88'				(1574891.6389',560264.2065')	(1574891.0859',560327.8326')		STA 0+14.25
C3	Curve	64.31'	300.00'		0+77.88'	1+42.19'	12.2822 (d)	64.19'	N6° 38' 20"W	(1574891.0859',560327.8326')	(1574883.6651',560391.5883')	(1574591.0972',560325.2255')	
L4	Line	69.86'		N12° 46' 48"W	1+42.19'	2+12.05'				(1574883.6651',560391.5883')	(1574868.2116',560459.7168')		
C5	Curve	238.51'	750.00'		2+12.05'	4+50.56'	18.2211 (d)	237.51'	N3° 40' 10"W	(1574868.2116',560459.7168')	(1574853.0106',560696.7392')	(1575599.6314',560625.6238')	
C6	Curve	169.42'	225.00'		4+50.56'	6+19.98'	43.1428 (d)	165.45'	N27° 00' 45"E	(1574853.0106',560696.7392')	(1574928.1540',560844.1375')	(1575076.9969',560675.4046')	
L7	Line	82.83'		N48° 35' 02"E	6+19.98'	7+02.81'				(1574928.1540',560844.1375')	(1574990.2699',560898.9313')		
C8	Curve	140.73'	175.00'		7+02.81'	8+43.54'	46.0766 (d)	136.97'	N25° 32' 44"E	(1574990.2699',560898.9313')	(1575049.3357',561022.5128')	(1574874.5032',561030.1680')	
L9	Line	130.57'		N2° 30' 26"E	8+43.54'	9+74.11'				(1575049.3357',561022.5128')	(1575055.0472',561152.9548')		
C10	Curve	152.89'	275.00'		9+74.11'	11+27.00'	31.8534 (d)	150.92'	N18° 26' 02"E	(1575055.0472',561152.9548')	(1575102.7709',561296.1349')	(1575329.7840',561140.9252')	
L11	Line	69.64'		N34° 21' 38"E	11+27.00'	11+96.63'				(1575102.7709',561296.1349')	(1575142.0737',561353.6201')		
C12	Curve	111.36'	85.00'		11+96.63'	13+08.00'	75.0673 (d)	103.57'	N3° 10' 23"W	(1575142.0737',561353.6201')	(1575136.3410',561457.0299')	(1575071.9061',561401.5940')	
C13	Curve	69.59'	250.00'		13+08.00'	13+77.59'	15.9487 (d)	69.36'	N48° 40' 52"W	(1575136.3410',561457.0299')	(1575084.2449',561502.8280')	(1574946.8265',561293.9831')	
L14	Line	210.59'		N56° 39' 19"W	13+77.59'	15+88.18'				(1575084.2449',561502.8280')	(1574908.3196',561618.5856')		
C15	Curve	54.71'	1000.00'		15+88.18'	16+42.89'	3.1347 (d)	54.70'	N58° 13' 22"W	(1574908.3196',561618.5856')	(1574861.8157',561647.3937')	(1574358.6459',560783.2061')	
L16	Line	285.75'		N59° 47' 24"W	16+42.89'	19+28.64'				(1574861.8157',561647.3937')	(1574614.8738',561791.1746')		
C17	Curve	115.32'	800.00'		19+28.64'	20+43.96'	8.2593 (d)	115.22'	N63° 55' 11"W	(1574614.8738',561791.1746')	(1574511.3844',561841.8294')	(1574212.3380',561099.8246')	
L18	Line	457.55'		N68° 02' 58"W	20+43.96'	25+01.51'				(1574511.3844',561841.8294')	(1574087.0026',562012.8659')		
C19	Curve	258.86'	275.00'		25+01.51'	27+60.38'	53.9336 (d)	249.41'	S84° 59' 02"W	(1574087.0026',562012.8659')	(1573838.5470',561991.0582')	(1573984.2054',561757.8017')	
L20	Line	380.74'		S58° 01' 01"W	27+60.38'	31+41.11'				(1573838.5470',561991.0582')	(1573515.6047',561789.3951')		

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

SURVEY/PAVEMENT CONTROL

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY	DATE	REVISION

DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

DATE: 07/02/2014

SHEET No: 30

PARK ROAD CENTERLINE CONTROL (CONT.)

ROAD CENTERLINE CONTROL (CONT.)

No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point	Comment
C21	Curve	410.50'	1400.00'		31+41.11'	35+51.61'	16.7998 (d)	409.03'	S49° 37' 02"W	(1573515.6047',561789.3951')	(1573204.0352',561524.3893')	(1574257.1386',560601.9071')	
L22	Line	399.71'		S41° 13' 02"W	35+51.61'	39+51.31'				(1573204.0352',561524.3893')	(1572940.6632',561223.7244')		
C23	Curve	197.10'	270.00'		39+51.31'	41+48.42'	41.8266 (d)	192.76'	S20° 18' 14"W	(1572940.6632',561223.7244')	(1572873.7770',561042.9458')	(1573143.7617',561045.8171')	
L24	Line	348.33'		S0° 36' 34"E	41+48.42'	44+96.74'				(1572873.7770',561042.9458')	(1572877.4812',560694.6381')		
C25	Curve	125.53'	300.00'		44+96.74'	46+22.27'	23.9741 (d)	124.61'	S11° 22' 40"W	(1572877.4812',560694.6381')	(1572852.8977',560572.4725')	(1572577.4982',560691.4477')	
L26	Line	26.62'		S23° 21' 53"W	46+22.27'	46+48.89'				(1572852.8977',560572.4725')	(1572842.3425',560548.0397')		
C27	Curve	83.52'	200.00'		46+48.89'	47+32.40'	23.9255 (d)	82.91'	S11° 24' 07"W	(1572842.3425',560548.0397')	(1572825.9518',560466.7657')	(1573025.9422',560468.7229')	
L28	Line	160.39'		S0° 33' 38"E	47+32.40'	48+92.79'				(1572825.9518',560466.7657')	(1572827.5213',560306.3817')		
C29	Curve	6.21'	500.00'		48+92.79'	48+99.01'	0.7121 (d)	6.21'	S0° 55' 00"E	(1572827.5213',560306.3817')	(1572827.6207',560300.1686')	(1573327.4973',560311.2745')	
L30	Line	59.43'		S1° 16' 22"E	48+99.01'	49+58.43'				(1572827.6207',560300.1686')	(1572828.9406',560240.7582')		End Construction @
L31	Line	13.48'		S1° 16' 22"E	49+58.43'	49+71.91'				(1572828.9406',560240.7582')	(1572829.2400',560227.2837')		Sta 49+58.43

EDGE OF PAVEMENT CONTROL

EAST PARK ENTRANCE INTERSECTION

No.	Type	Length	Radius	Direction	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
L32	Line	2.00'		N0° 29' 53"W				(1574927.6375',560264.5193')	(1574927.6201',560266.5192')	
C33	Curve	39.27'	25.00'		90.0000 (d)	35.36'	N45° 29' 52"W	(1574927.6201',560266.5192')	(1574902.4038',560291.3010')	(1574927.4029',560291.5183')
L35	Line	2.00'		N0° 29' 53"W				(1574855.6402',560263.8936')	(1574855.6228',560265.8935')	
C34	Curve	39.27'	25.00'		90.0000 (d)	35.36'	N44° 30' 07"E	(1574855.6228',560265.8935')	(1574880.4046',560291.1099')	(1574855.4056',560290.8926')

DRIVE ACCESS #1

C36	Curve	20.54'	15.00'		78.4630 (d)	18.97'	N73° 35' 32"E	(1575122.0752',561304.8801')	(1575140.2762',561310.2396')	(1575134.4578',561296.4141')
L37	Line	29.76'		N34° 21' 38"E				(1575140.2762',561310.2396')	(1575157.0699',561334.8024')	
C38	Curve	21.82'	20.00'		62.5070 (d)	20.75'	N2° 34' 55"W	(1575157.0699',561334.8024')	(1575156.1350',561355.5344')	(1575173.6827',561345.9386')

DRIVE ACCESS #2

C39	Curve	25.34'	25.00'		58.0754 (d)	24.27'	N28° 21' 12"W	(1574903.4780',561634.8392')	(1574891.9524',561656.1970')	(1574916.9506',561655.8984')
L40	Line	22.67'		N59° 12' 47"W				(1574891.9524',561656.1970')	(1574872.4733',561667.8029')	
C41	Curve	25.60'	25.00'		58.6677 (d)	24.49'	N89° 07' 26"W	(1574872.4733',561667.8029')	(1574847.9813',561668.1774')	(1574860.5605',561689.7821')

DRIVE ACCESS #3 AND KIOSK PULLOUT

C42	Curve	27.82'	30.00'		53.1301 (d)	26.83'	N41° 29' 03"W	(1574441.8088',561881.7299')	(1574424.0343',561901.8314')	(1574453.0230',561909.5551')
L43	Line	28.16'		N68° 02' 58"W				(1574424.0343',561901.8314')	(1574397.9141',561912.3585')	
C44	Curve	25.60'	25.00'		58.6677 (d)	24.49'	S82° 37' 00"W	(1574397.9141',561912.3585')	(1574373.6223',561909.2108')	(1574382.9675',561932.3984')
C45	Curve	11.65'	25.00'		26.7049 (d)	11.55'	N81° 24' 06"W	(1574376.5286',561884.3199')	(1574365.1113',561886.0463')	(1574367.1834',561861.1323')
C46	Curve	23.30'	50.00'		26.7049 (d)	23.09'	N81° 24' 06"W	(1574365.1113',561886.0463')	(1574342.2768',561889.4989')	(1574360.9672',561935.8742')
L47	Line	28.00'		N68° 02' 58"W				(1574342.2768',561889.4989')	(1574316.3067',561899.9656')	
C48	Curve	23.30'	50.00'		26.7049 (d)	23.09'	N54° 41' 49"W	(1574316.3067',561899.9656')	(1574297.4595',561913.3116')	(1574334.9971',561946.3409')
C49	Curve	11.65'	25.00'		26.7049 (d)	11.55'	N54° 41' 49"W	(1574297.4595',561913.3116')	(1574288.0359',561919.9847')	(1574278.6907',561896.7970')

DRIVE ACCESS #4

C50	Curve	22.58'	20.00'		64.6941 (d)	21.40'	N44° 10' 59"W	(1574050.8249',562035.9345')	(1574035.9088',562051.2821')	(1574055.4836',562055.3843')
L51	Line	21.21'		N82° 02' 54"W				(1574035.9088',562051.2821')	(1574014.8981',562054.2169')	
C52	Curve	24.73'	25.00'		56.6793 (d)	23.73'	S63° 33' 08"W	(1574014.8981',562054.2169')	(1573993.6473',562043.6458')	(1573994.4726',562068.6322')
C53	Curve	20.17'	15.00'		77.0606 (d)	18.69'	N53° 53' 56"W	(1573972.0835',562043.5447')	(1573956.9841',562054.5558')	(1573971.4478',562058.5312')
L54	Line	18.19'		S83° 00' 36"W				(1573956.9841',562054.5558')	(1573938.9290',562052.3421')	
C55	Curve	24.73'	25.00'		56.6793 (d)	23.73'	S48° 54' 05"W	(1573938.9290',562052.3421')	(1573921.0429',562036.7398')	(1573915.5217',562061.1225')

CONSULTANT:

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

PAVEMENT CONTROL

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

DATE: 07/02/2014

SHEET No: 31

EDGE OF PAVEMENT CONTROL (CONT.)

DRIVE ACCESS #5

No.	Type	Length	Radius	Direction	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
C56	Curve	20.46'	15.00'		78.1676 (d)	18.91'	S89° 53' 38"W	(1573365.5368',561695.5100')	(1573346.6231',561695.4750')	(1573356.0584',561707.1358')
L57	Line	15.56'		S49° 54' 20"W				(1573346.6231',561695.4750')	(1573334.7218',561685.4551')	
C58	Curve	20.46'	15.00'		78.1676 (d)	18.91'	S9° 55' 03"W	(1573334.7218',561685.4551')	(1573331.4643',561666.8241')	(1573321.6237',561678.1450')

WEST PARK ENTRANCE INTERSECTION

No.	Type	Length	Radius	Direction	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
C59	Curve	62.83'	40.00'		90.0000 (d)	56.57'	S43° 43' 38"W	(1572817.0105',560282.5035')	(1572777.9088',560241.6249')	(1572777.0203',560281.6150')
L60	Line	2.00'		S1° 16' 22"E				(1572777.9088',560241.6249')	(1572777.9532',560239.6254')	
L61	Line	2.00'		S1° 16' 22"E				(1572879.8836',560243.8905')	(1572879.9281',560241.8910')	
C62	Curve	62.83'	40.00'		90.0000 (d)	56.57'	S46° 16' 22"E	(1572839.0050',560282.9922')	(1572879.8836',560243.8905')	(1572878.9952',560283.8807')

LODGE EDGE OF PAVEMENT

No.	Type	Length	Radius	Direction	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
C63	Curve	31.81'	20.00'		91.1347 (d)	28.56'	S10° 28' 50"W	(1573481.3811',561754.0882')	(1573476.1855',561726.0018')	(1573492.5511',561737.4982')
L64	Line	3.07'		S35° 05' 13"E				(1573476.1855',561726.0018')	(1573477.9489',561723.4915')	
C65	Curve	11.41'	25.00'		26.1490 (d)	11.31'	S48° 09' 41"E	(1573477.9489',561723.4915')	(1573486.3758',561715.9467')	(1573498.4059',561737.8619')
L66	Line	48.94'		S61° 14' 09"E				(1573486.3758',561715.9467')	(1573529.2738',561692.3983')	
C67	Curve	63.59'	156.00'		23.3545 (d)	63.15'	S49° 33' 31"E	(1573529.2738',561692.3983')	(1573577.3341',561651.4358')	(1573454.2057',561555.6475')
C68	Curve	74.45'	72.00'		59.2451 (d)	71.18'	S8° 15' 32"E	(1573577.3341',561651.4358')	(1573587.5583',561580.9970')	(1573520.5056',561607.2258')
C69	Curve	27.71'	25.00'		63.5015 (d)	26.31'	S53° 06' 52"W	(1573587.5583',561580.9970')	(1573566.5135',561565.2046')	(1573564.2761',561590.1042')
C70	Curve	13.05'	5.00'		149.5803 (d)	9.65'	S10° 04' 31"W	(1573566.5135',561565.2046')	(1573564.8254',561555.7037')	(1573566.9610',561560.2246')
L71	Line	15.00'		S64° 42' 54"E				(1573564.8254',561555.7037')	(1573578.3883',561549.2968')	
L72	Line	150.91'		S25° 17' 06"W				(1573578.3883',561549.2968')	(1573513.9321',561412.8464')	
C73	Curve	20.96'	15.00'		80.0545 (d)	19.29'	S14° 44' 32"E	(1573513.9321',561412.8464')	(1573518.8420',561394.1870')	(1573527.4951',561406.4395')
L74	Line	31.80'		S54° 46' 10"E				(1573518.8420',561394.1870')	(1573544.8214',561375.8398')	
L75	Line	6.23'		N35° 13' 50"E				(1573544.8214',561375.8398')	(1573548.4127',561380.9250')	
L76	Line	8.00'		S57° 27' 55"E				(1573548.4127',561380.9250')	(1573555.1572',561376.6225')	
L77	Line	17.60'		S35° 13' 50"W				(1573555.1572',561376.6225')	(1573545.0034',561362.2447')	
L78	Line	64.82'		N54° 46' 10"W				(1573545.0034',561362.2447')	(1573492.0576',561399.6361')	
C79	Curve	8.72'	5.00'		99.9455 (d)	7.66'	S75° 15' 28"W	(1573492.0576',561399.6361')	(1573484.6523',561397.6875')	(1573489.1733',561395.5519')
L80	Line	5.00'		S25° 17' 06"W				(1573484.6523',561397.6875')	(1573482.5167',561393.1666')	
L81	Line	26.00'		N64° 42' 54"W				(1573482.5167',561393.1666')	(1573459.0076',561404.2717')	
L82	Line	18.88'		N25° 17' 06"E				(1573459.0076',561404.2717')	(1573467.0733',561421.3463')	
C83	Curve	7.85'	5.00'		90.0000 (d)	7.07'	N19° 42' 54"W	(1573467.0733',561421.3463')	(1573464.6879',561428.0029')	(1573462.5523',561423.4819')
L84	Line	15.00'		N64° 42' 54"W				(1573464.6879',561428.0029')	(1573451.1250',561434.4097')	
L85	Line	160.00'		N25° 17' 06"E				(1573451.1250',561434.4097')	(1573519.4644',561579.0808')	
L86	Line	15.00'		S64° 42' 54"E				(1573519.4644',561579.0808')	(1573533.0274',561572.6740')	
C87	Curve	11.62'	5.00'		133.1075 (d)	9.17'	N48° 43' 52"E	(1573533.0274',561572.6740')	(1573539.9230',561578.7253')	(1573535.1630',561577.1950')
C88	Curve	10.96'	25.00'		25.1185 (d)	10.87'	N30° 22' 54"W	(1573539.9230',561578.7253')	(1573534.4242',561588.1047')	(1573516.1228',561571.0736')
C89	Curve	45.60'	356.00'		7.3393 (d)	45.57'	N39° 16' 17"W	(1573534.4242',561588.1047')	(1573505.5784',561623.3833')	(1573795.0358',561830.6280')
C90	Curve	39.95'	137.00'		16.7062 (d)	39.80'	N27° 14' 55"W	(1573505.5784',561623.3833')	(1573487.3536',561658.7708')	(1573616.9707',561703.1376')
L91	Line	52.06'		N18° 53' 44"W				(1573487.3536',561658.7708')	(1573470.4958',561708.0208')	
C92	Curve	7.06'	25.00'		16.1912 (d)	7.04'	N26° 59' 28"W	(1573470.4958',561708.0208')	(1573467.3001',561714.2951')	(1573446.8430',561699.9246')
L93	Line	4.48'		N35° 05' 13"W				(1573467.3001',561714.2951')	(1573464.7270',561717.9579')	
C94	Curve	31.81'	20.00'		91.1255 (d)	28.56'	N80° 38' 59"W	(1573464.7270',561717.9579')	(1573436.5458',561722.5982')	(1573448.3614',561706.4616')

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

EDGE OF PAVEMENT CONTROL

ROADWAY CONSTRUCTION PROJECT FOR:
WALNUT WOODS STATE PARK
POLK COUNTY, IOWA

NO.	BY DATE	REVISION

DRAWN BY:
PROJECT NUMBER: 15-05-77-01
CHK'D BY:
DATE: 07/02/2014
SHEET No: 32

EDGE OF PAVEMENT CONTROL (CONT.)

LODGE ENTRANCE ROAD ISLAND

No.	Type	Length	Radius	Direction	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
C95	Curve	12.01'	5.00'		137.6598 (d)	9.33'	N49° 56' 03"E	(1573489.0499',561690.8699')	(1573496.1865',561696.8721')	(1573493.7805',561692.4891')
L96	Line	31.16'		S61° 14' 09"E				(1573496.1865',561696.8721')	(1573523.4993',561681.8790')	
C97	Curve	58.70'	144.00'		23.3545 (d)	58.29'	S49° 33' 31"E	(1573523.4993',561681.8790')	(1573567.8627',561644.0674')	(1573454.2057',561555.6475')
C98	Curve	39.88'	60.00'		38.0829 (d)	39.15'	S18° 50' 23"E	(1573567.8627',561644.0674')	(1573580.5053',561607.0146')	(1573520.5056',561607.2258')
C99	Curve	47.53'	20.00'		136.1724 (d)	37.11'	S68° 17' 16"W	(1573580.5053',561607.0146')	(1573546.0282',561593.2861')	(1573560.5054',561607.0850')
C100	Curve	48.18'	344.00'		8.0242 (d)	48.14'	N39° 36' 50"W	(1573546.0282',561593.2861')	(1573515.3354',561630.3691')	(1573795.0358',561830.6280')
C101	Curve	36.45'	125.00'		16.7062 (d)	36.32'	N27° 14' 55"W	(1573515.3354',561630.3691')	(1573498.7069',561662.6570')	(1573616.9707',561703.1376')
L102	Line	29.82'		N18° 53' 44"W				(1573498.7069',561662.6570')	(1573489.0499',561690.8699')	

WEST PARKING AREA

C103	Curve	15.71'	10.00'		90.0000 (d)	14.14'	S86° 13' 02"W	(1572973.5246',561277.9330')	(1572959.4133',561277.0000')	(1572966.0024',561284.5221')
L104	Line	17.00'		N48° 46' 58"W				(1572959.4133',561277.0000')	(1572946.6256',561288.2015')	
L105	Line	98.00'		S41° 13' 02"W				(1572946.6256',561288.2015')	(1572882.0518',561214.4843')	
L106	Line	22.36'		S48° 46' 58"E				(1572882.0518',561214.4843')	(1572898.8678',561199.7541')	
C107	Curve	13.79'	10.00'		78.9910 (d)	12.72'	S9° 17' 14"E	(1572898.8678',561199.7541')	(1572900.9207',561187.2005')	(1572892.2787',561192.2319')

EAST PARKING AREA

C108	Curve	15.71'	10.00'		90.0014 (d)	14.14'	S45° 36' 36"E	(1572885.2571',560997.8623')	(1572895.3631',560987.9692')	(1572895.2565',560997.9687')
L109	Line	17.00'		N89° 23' 26"E				(1572895.3631',560987.9692')	(1572912.3618',560988.1500')	
L110	Line	98.00'		S0° 36' 34"E				(1572912.3618',560988.1500')	(1572913.4041',560890.1556')	
L111	Line	17.00'		S89° 23' 26"W				(1572913.4041',560890.1556')	(1572896.4050',560889.9748')	
C112	Curve	15.71'	10.00'		90.0000 (d)	14.14'	S44° 23' 26"W	(1572896.4050',560889.9748')	(1572886.5119',560879.8690')	(1572896.5114',560879.9753')

PARK ROAD WEST ENTRANCE LOOP

C113	Curve	53.34'	50.00'		61.1212 (d)	50.84'	S13° 27' 33"E	(1572874.7477',560599.9943')	(1572886.5821',560550.5458')	(1572922.5370',560585.2912')
C114	Curve	76.80'	116.00'		37.9344 (d)	75.41'	S25° 03' 10"E	(1572886.5821',560550.5458')	(1572918.5130',560482.2339')	(1572803.1667',560469.9364')
C115	Curve	66.81'	51.00'		75.0594 (d)	62.14'	S31° 26' 39"W	(1572918.5130',560482.2339')	(1572886.0989',560429.2230')	(1572867.8004',560476.8272')
C116	Curve	91.02'	75.00'		69.5346 (d)	85.54'	S34° 12' 24"W	(1572886.0989',560429.2230')	(1572838.0119',560358.4828')	(1572913.0084',560359.2167')
C117	Curve	23.00'	12.00'		109.8098 (d)	19.64'	S77° 02' 01"W	(1572869.9998',560544.3227')	(1572850.8638',560539.9166')	(1572861.9799',560535.3964')
C118	Curve	73.26'	100.00'		41.9760 (d)	71.63'	N27° 04' 25"W	(1572902.6032',560480.5377')	(1572869.9998',560544.3227')	(1572803.1667',560469.9364')
C119	Curve	80.60'	35.00'		131.9466 (d)	63.93'	N59° 53' 16"E	(1572847.2966',560448.4619')	(1572902.6032',560480.5377')	(1572867.8004',560476.8272')
C120	Curve	23.62'	25.00'		54.1389 (d)	22.75'	S27° 04' 10"E	(1572836.9422',560468.7229')	(1572847.2966',560448.4619')	(1572861.9422',560468.7229')
C121	Curve	72.99'	189.00'		22.1286 (d)	72.54'	S11° 03' 51"W	(1572850.8638',560539.9166')	(1572836.9422',560468.7229')	(1573025.9422',560468.7229')

CONSULTANT:

IOWA DEPARTMENT OF NATURAL RESOURCES

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

EDGE OF PAVEMENT CONTROL

ROADWAY CONSTRUCTION PROJECT FOR:

WALNUT WOODS STATE PARK

POLK COUNTY, IOWA

NO.	BY	DATE	REVISION

DRAWN BY:

PROJECT NUMBER: 15-05-77-01

CHK'D BY:

DATE: 07/02/2014

SHEET No: 33

EDGE OF PAVEMENT CONTROL (CONT.)

BOAT PARKING/DOCK AREA

No.	Type	Length	Radius	Direction	Delta angle	Chord length	Chord Direction	Start Point	End Point	Center Point
C122	Curve	41.18'	35.00'		67.4107 (d)	38.84'	S55° 39' 52"W	(1572830.2501',560547.6255')	(1572798.1743',560525.7157')	(1572797.7894',560560.7136')
L123	Line	84.10'		S89° 22' 12"W				(1572798.1743',560525.7157')	(1572714.0753',560524.7908')	
C124	Curve	33.92'	100.00'		19.4330 (d)	33.75'	S79° 39' 12"W	(1572714.0753',560524.7908')	(1572680.8695',560518.7284')	(1572715.1750',560424.7969')
C125	Curve	99.65'	264.00'		21.6275 (d)	99.06'	S59° 07' 23"W	(1572680.8695',560518.7284')	(1572595.8476',560467.8905')	(1572771.4360',560270.7491')
L126	Line	64.38'		S48° 18' 34"W				(1572595.8476',560467.8905')	(1572547.7741',560425.0728')	
C127	Curve	24.52'	50.00'		28.0961 (d)	24.27'	S62° 21' 27"W	(1572547.7741',560425.0728')	(1572526.2711',560413.8110')	(1572514.5187',560462.4102')
L128	Line	17.24'		S76° 24' 20"W				(1572526.2711',560413.8110')	(1572509.5103',560409.7578')	
L129	Line	79.88'		S13° 35' 40"E				(1572509.5103',560409.7578')	(1572528.2870',560332.1117')	
L130	Line	15.84'		N76° 24' 20"E				(1572528.2870',560332.1117')	(1572543.6784',560335.8337')	
C131	Curve	14.11'	25.00'		32.3394 (d)	13.92'	S87° 25' 29"E	(1572543.6784',560335.8337')	(1572557.5884',560335.2081')	(1572549.5546',560311.5341')
C132	Curve	42.81'	49.00'		50.0578 (d)	41.46'	N83° 42' 58"E	(1572557.5884',560335.2081')	(1572598.8007',560339.7463')	(1572573.3348',560381.6090')
L133	Line	102.41'		N58° 41' 14"E				(1572598.8007',560339.7463')	(1572686.2932',560392.9696')	
C134	Curve	28.77'	214.00'		7.7015 (d)	28.74'	N54° 50' 11"E	(1572686.2932',560392.9696')	(1572709.7913',560409.5233')	(1572575.0750',560575.7987')
L135	Line	4.84'		N50° 59' 08"E				(1572709.7913',560409.5233')	(1572713.5493',560412.5680')	
C136	Curve	50.24'	75.00'		38.3843 (d)	49.31'	N70° 10' 40"E	(1572713.5493',560412.5680')	(1572759.9382',560429.2894')	(1572760.7630',560354.2939')
L137	Line	20.33'		N89° 22' 12"E				(1572759.9382',560429.2894')	(1572780.2717',560429.5130')	
C138	Curve	55.02'	35.00'		90.0694 (d)	49.53'	S45° 35' 43"E	(1572780.2717',560429.5130')	(1572815.6549',560394.8576')	(1572780.6566',560394.5151')
C139	Curve	44.64'	25.00'		102.2983 (d)	38.94'	S51° 46' 45"E	(1572695.9339',560508.6168')	(1572726.5257',560484.5255')	(1572701.5272',560484.2505')
C140	Curve	10.71'	86.00'		7.1347 (d)	10.70'	N73° 30' 15"E	(1572685.6723',560505.5780')	(1572695.9339',560508.6168')	(1572715.1750',560424.7969')
C141	Curve	92.44'	250.00'		21.1858 (d)	91.91'	N59° 20' 38"E	(1572606.6031',560458.7123')	(1572685.6723',560505.5780')	(1572771.4360',560270.7491')
C142	Curve	10.55'	10.00'		60.4417 (d)	10.07'	N18° 31' 49"E	(1572603.4039',560449.1675')	(1572606.6031',560458.7123')	(1572613.1965',560451.1938')
L143	Line	19.99'		N11° 41' 26"W				(1572607.4547',560429.5905')	(1572603.4039',560449.1675')	
L144	Line	66.97'		N48° 18' 34"E				(1572557.4431',560385.0465')	(1572607.4547',560429.5905')	
L145	Line	17.11'		S11° 41' 26"E				(1572553.9755',560401.8047')	(1572557.4431',560385.0465')	
C146	Curve	11.46'	5.00'		131.3665 (d)	9.11'	S77° 22' 26"E	(1572545.0830',560403.7967')	(1572553.9755',560401.8047')	(1572549.0792',560400.7916')
C147	Curve	30.87'	35.00'		50.5374 (d)	29.88'	N11° 40' 27"E	(1572539.0368',560374.5343')	(1572545.0830',560403.7967')	(1572573.0563',560382.7610')
L148	Line	1.19'		N13° 35' 40"W				(1572539.3154',560373.3824')	(1572539.0368',560374.5343')	
C149	Curve	60.10'	35.00'		98.3882 (d)	52.98'	N62° 47' 19"W	(1572586.4362',560349.1536')	(1572539.3154',560373.3824')	(1572573.3348',560381.6090')
C150	Curve	6.05'	5.00'		69.3302 (d)	5.69'	S33° 21' 08"W	(1572589.5633',560353.9047')	(1572586.4362',560349.1536')	(1572584.5646',560353.7901')
L151	Line	22.43'		S1° 18' 46"E				(1572589.0494',560376.3272')	(1572589.5633',560353.9047')	
L152	Line	57.74'		S58° 41' 14"W				(1572638.3749',560406.3328')	(1572589.0494',560376.3272')	
L153	Line	17.11'		N1° 18' 46"W				(1572638.7670',560389.2241')	(1572638.3749',560406.3328')	
C154	Curve	10.47'	5.00'		120.0000 (d)	8.66'	N61° 18' 46"W	(1572646.3642',560385.0669')	(1572638.7670',560389.2241')	(1572643.7657',560389.3386')
L155	Line	38.22'		S58° 41' 14"W				(1572679.0173',560404.9304')	(1572646.3642',560385.0669')	
C156	Curve	26.88'	200.00'		7.7015 (d)	26.86'	S54° 50' 11"W	(1572700.9780',560420.4011')	(1572679.0173',560404.9304')	(1572575.0750',560575.7987')
L157	Line	21.40'		S50° 59' 08"W				(1572717.6055',560433.8727')	(1572700.9780',560420.4011')	
C158	Curve	22.52'	25.00'		51.6157 (d)	21.77'	S25° 10' 40"W	(1572726.8661',560453.5723')	(1572717.6055',560433.8727')	(1572701.8676',560453.2974')
L159	Line	30.96'		S0° 37' 48"E				(1572726.5257',560484.5255')	(1572726.8661',560453.5723')	

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