



Incidental Take Conservation Plan
Unnamed tributary to Waupecan Creek, Grundy County Illinois
A part of the SE $\frac{1}{4}$ of Section 1, Township 31N, R 5E, 3 PM LaSalle County Illinois and
The SW $\frac{1}{4}$ of Section 6, Township 31N, R6E. 3PM, Grundy County Illinois.
LYB Project 4056.02

Prepared for
Illinois Department of Natural Resources
Permit Number 2012-1677

Prepared by
Lewis Yockey & Brown, Inc
505 N. Main Street
Bloomington, IL 61701
1-7-14

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Section 1.0 Introduction

The project is the improvements to the approach grades to the Railroad Crossing of East 30th Road in Allen Township with the Norfolk Southern Railroad. An unnamed tributary to Waupecan creek runs along the east side of East 30th Road and functions as the roadside ditch. As a part of this project this unnamed tributary will be shifted east to accommodate a safer roadway with flatter side slopes. This plan is to provide a conservation outline for the incidental taking of the Slippershell mussel (*Alasmidonta viridis*), which have been found to be living in the areas affected by our project.

Section 2.0 Description of Impact

The primary impact from this construction will be the filling in of the existing channel as a part of the relocation of the unnamed tributary to the Waupecan Creek in LaSalle and Grundy County Illinois. The existing channel provides a collection point for runoff and discharge from surrounding farm fields and provides habitat for aquatic flora and fauna. By collecting this water it reduces nuisance flooding damages to adjacent property and maintains the functionality of the watershed.

2.1 LEGAL DESCRIPTION

The project location is shown on the plan cover sheet and a layman's description would be the east side of LaSalle County East 30th Road between N 17th and N 18th Road along the LaSalle Grundy county lines. All property affected by this project is on public Right of way managed by the Allen Township Highway Department.

2.2. BIOLOGICAL DATA ON SPECIES

The Slippershell mussel, *Alasmidonta Viridis*, is a small somewhat rectangular shell mussel with wavy green rays on the posterior half of the shell generally found in sand deposits and sandy mud in headwater streams. This species is widespread in the eastern U.S. and distributed from Lake Huron, St. Clair and Erie, and upper Mississippi River system, south to Ohio, Cumberland, and Tennessee River systems. It is considered stable throughout most of its range while being endangered in Illinois and Iowa and threatened in Wisconsin.

The Illinois Natural History Survey has provided an overview of the Slippershell mussel at:

<http://wx.inhs.illinois.edu/collections/mollusk/publications/guide/index/86> a copy of which is attached to this report.

2.3 DESCRIPTION OF ACTIVITIES

The activity which will result in the taking of the endangered species is the filling in of the existing channel as part of the relocation of the waterway.

2.4 ANTICIPATED ADVERSE EFFECTS

This filling of the channel will result in the mortality of any mussels left in the channel at the time of filling and will permanently destroy the suitability of the existing channel as habitat for the slippershell mussel.

SECTION 3.0 MEASURES TO MINIMIZE AND MITIGATE THE IMPACT

3.1 PLANS TO MINIMIZE AREAS IMPACTED

In order to minimize the impact upon the mussels the extent of the channel length being relocated has been minimized to only those areas necessary for the safety improvements to the roadway. The existing waterway inside of the limits of construction between station 395+00 and 405+00 has a measured channel length of 1,016 feet. It has 6,440 square feet of area below the measured water surface. A biological survey of the channel in an area approximately 60 feet long by 5' wide turned up one slippershell mussel. Extrapolating this area to the entire channel being affected would yield a population of 21 slippershell mussels (1 mussel/300 sq feet over 6440 sq ft) in the area to be affected. This disruption to the habitat of the slippershell should be short lived as the construction plans include provisions to excavate the sediment in the existing channel and transfer it to the proposed channel to a depth of 12" transferring the majority of the mussels in the channel where they will find habitat that closely replicates the existing habitat they are currently in.

3.2 PLANS FOR MANAGEMENT OF AFFECTED AREAS

The new channel area will be completely inside of the public ROW both existing and newly acquired for this project. As this area is located inside of the flood plain and development is regulated by the LaSalle County Flood Damage Prevention Ordinance and the Grundy County floodplain restrictions contained in their zoning ordinance. Ownership and maintenance of the property will remain with the Allen Township Road Commissioner and they will ensure that the area is maintained as a protected channel surrounded by a vegetated native buffer area in the same manner as other stream areas that are maintained by Allen Township.

3.3 MEASURES TO BE IMPLEMENTED

To maximize the success rate of this transfer, during construction the Township Road Commissioner and the Resident Engineer will both monitor the actions of the contractor to verify the majority of the existing channel sediment has been transferred from the existing channel to the proposed channel. This work will also be restricted to time periods when the water temperature is favorable for reestablishment of the mussels in their new habitat, specifically when the water temperature is above 40 degrees Fahrenheit.

3.4 PLANS FOR MONITORING THE EFFECTS

While the area of construction is completely inside of the public ROW, the majority of the watershed is privately owned and used for agriculture. The township will on an annual basis inspect the waterway and remove trash, debris and excess silt to maintain the channel. However the greatest threat to this

habitat is from runoff or spills into the waterway from the upstream property owners. The township will make contact with the LaSalle County Soil and Water Conservation District to inform them of this project and partner with them to provide guidance to the upstream landowners about steps they can take to protect the stream channel.

3.5 ADAPTIVE MANAGEMENT PRACTICES

On this project adaptive management practices will be implemented to allow the township to monitor and improve the habitat over time to meet the changing needs of the flora and fauna. For example at this time the majority of the channel is silty mud with scattered sand and gravel deposits. As reductions in runoff occur from the surrounding fields the township will monitor the potential transition of the channel to greater percentages of sand and gravel with less silt. They will maintain contacts with the LaSalle County Soil Conservation Office, the Illinois Department of Natural Resources and the Illinois Natural History Department to modify and implement the current management practices relevant to channel maintenance as new methodologies are developed. Should the channel change in different ways, or other unexpected events occur in the new channel the township will discuss these changes with their contacts and continue to manage and monitor the channel in accordance with the best available information available at that time.

3.6 VERIFICATION OF SUFFICIENT FUNDING

The Allen Township Highway Department is a public entity with taxing authority. They will be the entity responsible for implementing this plan and maintaining these improvements into the future. The construction costs for these improvements will be included with the funding provided by the Illinois Commerce Commission as a part of their safe railroad crossings program. The anticipated cost of maintaining the proposed channel should be very similar to the costs of maintaining the existing channel and these costs are already included in the ongoing maintenance budget of Allen Township and therefore sufficient funding is available for the support and implementation of the mitigation plan.

SECTION 4 CONSIDERED ALTERNATES

The primary purpose of this project is to improve safety for the public for the grade crossing between East 30th road and the Norfolk Southern Railroad. The number one safety issue is sight distance due to the sharp approach grades at crossing.

4.1 No Action Alternate

The first alternate considered was closing this crossing entirely. This would eliminate any impact to the waterway, but was rejected based upon comments received from the public that use this crossing as well as an analysis of the potential of this road to serve the surrounding population into the future as the center of an existing stretch of roadway extending 6.5 Miles north and 5 miles south of this crossing.

To keep the crossing open will require improved safety at this crossing. The biggest safety issue is the sight lines provided at the crossing. The roadway profile needs to be raised to create smoother approach grades with a longer tapered approach. This will increase the visibility of trains to approaching vehicles and also allows vehicles to observe oncoming traffic at the crossing and avoid sudden movements as vehicles come into view near the crossing.

4.2 Construction Alternates

To revise the approach three alternates were considered. The alternatives were as follows:

- 4.2.1 Shifting the roadway to the west to avoid any impact to the creek
- 4.2.2 Installing sheet pilings or retaining walls to limit the widening to the existing embankment footprint and avoiding relocation of the creek
- 4.2.3 Construct an earthen embankment and relocating the channel to the east.

Alternate 4.2.1 was rejected due to the need to keep the roadway centered on the county line and also due to the need to cross the RR tracks at the existing crossing.

Alternate 4.2.2 was considered and rejected due to the cost and safety issues involved with installing sheet pilings or retaining walls and guardrails at this location. Consideration was given to the long term maintenance of the retaining walls and the sheet pilings and the expense was not justified.

Alternate 4.2.3 is the selected alternate which meets the political, financial and esthetic needs of the owner and the public in the most efficient manner.

SECTION 5 LIKELIHOOD OF SURVIVAL OF THE SPECIES

This proposed taking should not significantly reduce the likelihood of the survival of the species in the wild as slippershell mussels are found across a range in the United States stretching from Maine to South Dakota and from Georgia to Arkansas. While threatened in Illinois, the habitat being lost as a part of this project is being recreated at approximately the same location and will serve the same function. This particular stream is an intermittent stream and in discussions

with Edward Dewalt of the Prairie Research Institute at the Illinois Natural History Survey he expressed his opinion that as this stream is intermittent most likely the specimen found at this location was an offspring of a larger community dwelling in the Waupecan Creek. Every few years there will be a drought and this stream will completely dry up and all mussels in this reach will die. This is a natural occurrence and one that the slippershell has evolved to deal with as a part of their natural environment. When the drought ends this unnamed tributary will be flooded again and a direct connection to the mussel reservoir in the Waupecan creek will be restored allowing mussels to again colonize this tributary. This occurs as the glochidia are transported up this tributary by fish and drop off into suitable habitat creating a new colony. Then at some time after that the creek will again dry up and wipe out the new mussel colony starting the cycle over again. This construction project should not wipe out all of the mussels in this stretch of the channel, but if it does it will mimic a natural occurrence that the mussels have evolved to survive.

A second check on the survivability of the species led to the finding that the slippershell mussel is not considered at risk of failure to survive in the wild in Illinois. The International Union for Conservation of Nature says that the "*Alasmidonta viridis* has been assessed as Least Concern due to its wide distribution and lack of threat processes impacting its global population. However, this species is listed as Threatened in many states and is Vulnerable under American Fisheries Society classification and populations demonstrate local declines, thus requiring careful future monitoring." Based upon the limited geographic impact from this project, there is only a minor potential impact to the overall population of this species and its survival in Illinois.

SECTION 6 IMPLEMENTATION AGREEMENT

This plan is agreed to by the following:

Bill Bergeson, Roadway Commissioner, Allen Township.

Specifically the Road Commissioner is agreeing too:

Monitor the construction of these improvements and minimize the mortality of the slippershell mussels living in the channel. At a minimum during construction the site will be checked weekly to assure compliance by the contractor with the plans.

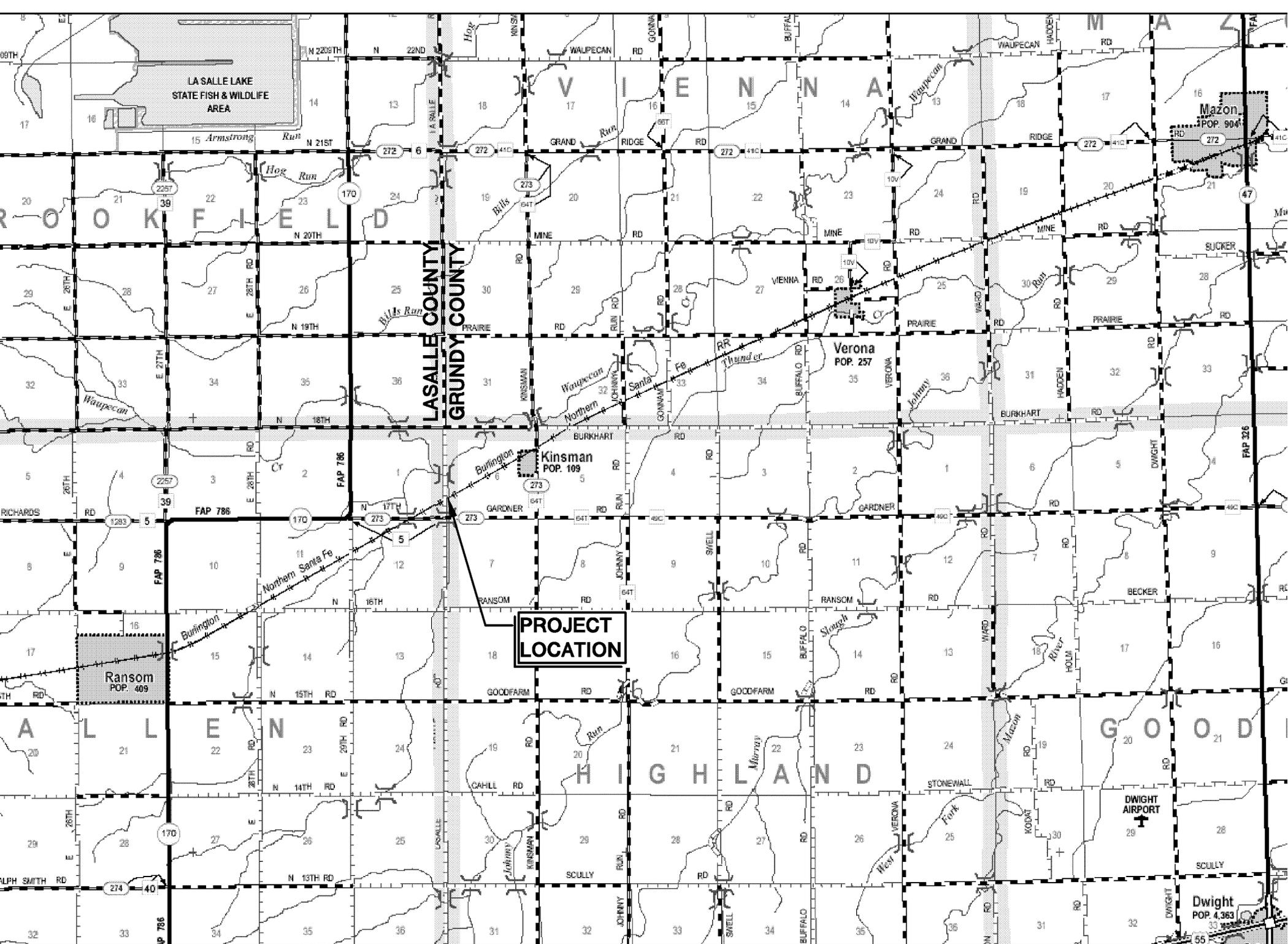
Provide the IEPA with monthly progress reports during construction verifying that the plan is being implemented. This work should begin in April of 2014 and be complete by July of 2014.

Maintain the channel into the future and take steps to react to changes in the watershed and channel to meet the needs of the flora and fauna existing in the channel. This will be on going work over the life of the improvements and into the future.

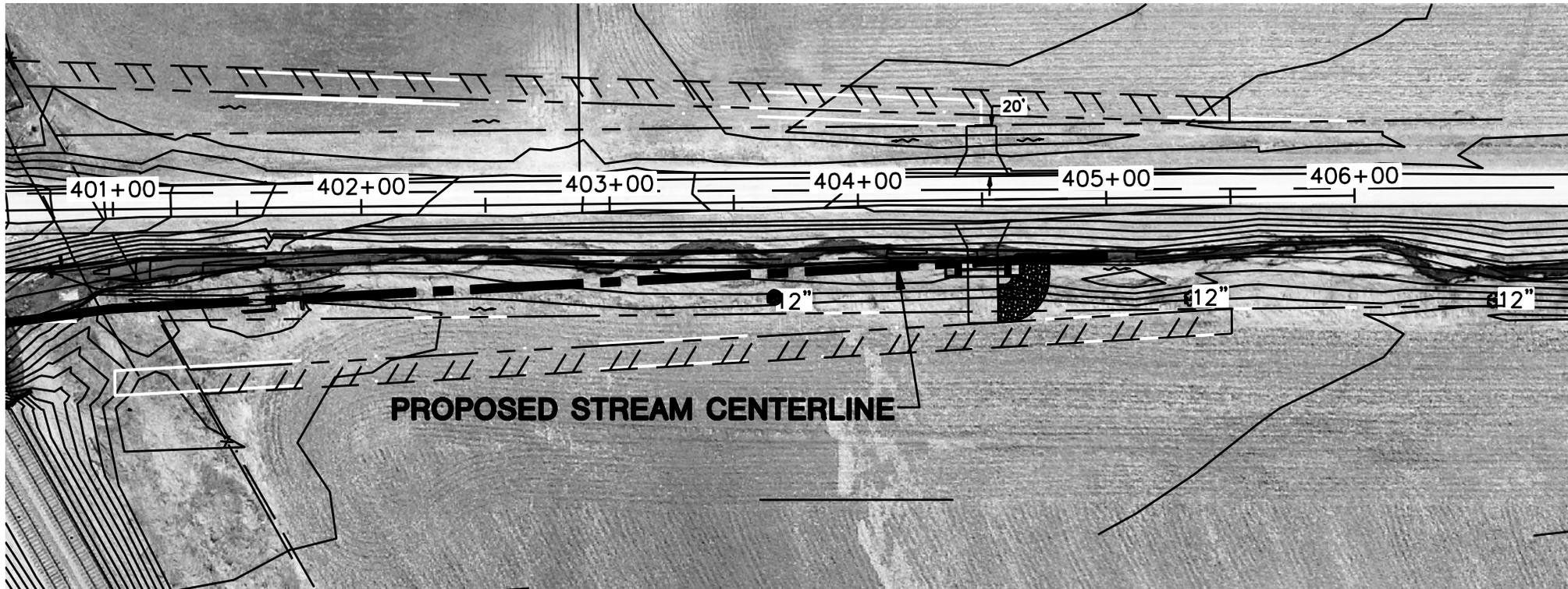
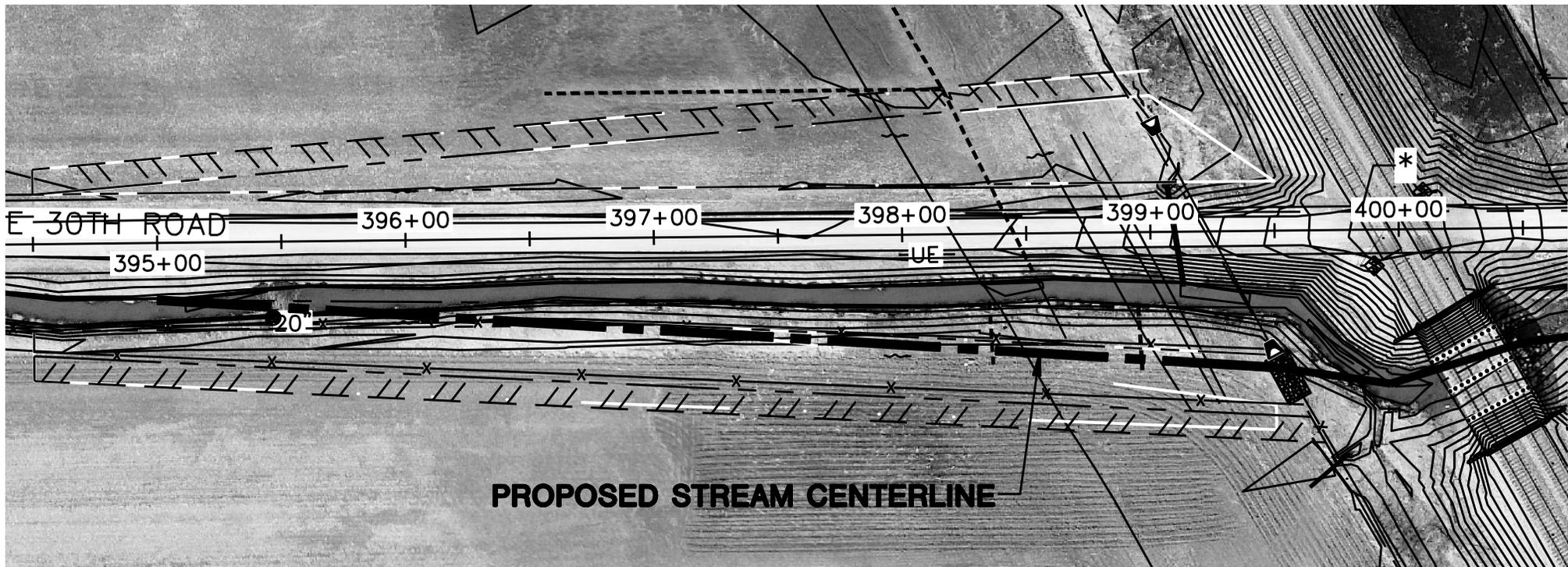
Verify that the construction is in compliance with the requirements of:

The Army Corp of Engineers, Rock Island District
The Illinois Department of Natural Resources
The Illinois Environmental Protection Agency
The LaSalle County Highway Department

This compliance will be verified during the weekly inspections and final compliance will be assured at the end of the construction as a part of the project closeout prior to issuing final payment to the contractor.



LOCATION MAP
NO SCALE



ALLEN ROAD DISTRICT IMPROVEMENT EAST 30th ROAD

PART OF THE SE1/4, SECTION 1, T.31N, R.5E, 3P.M, LASALLE COUNTY, ILLINOIS
AND SW1/4, SECTION 6, T.31N, R.6E, 3P.M, GRUNDY COUNTY, ILLINOIS

SCALE: CUSTOM
LIVINGSTON COUNTY

INDEX OF SHEETS

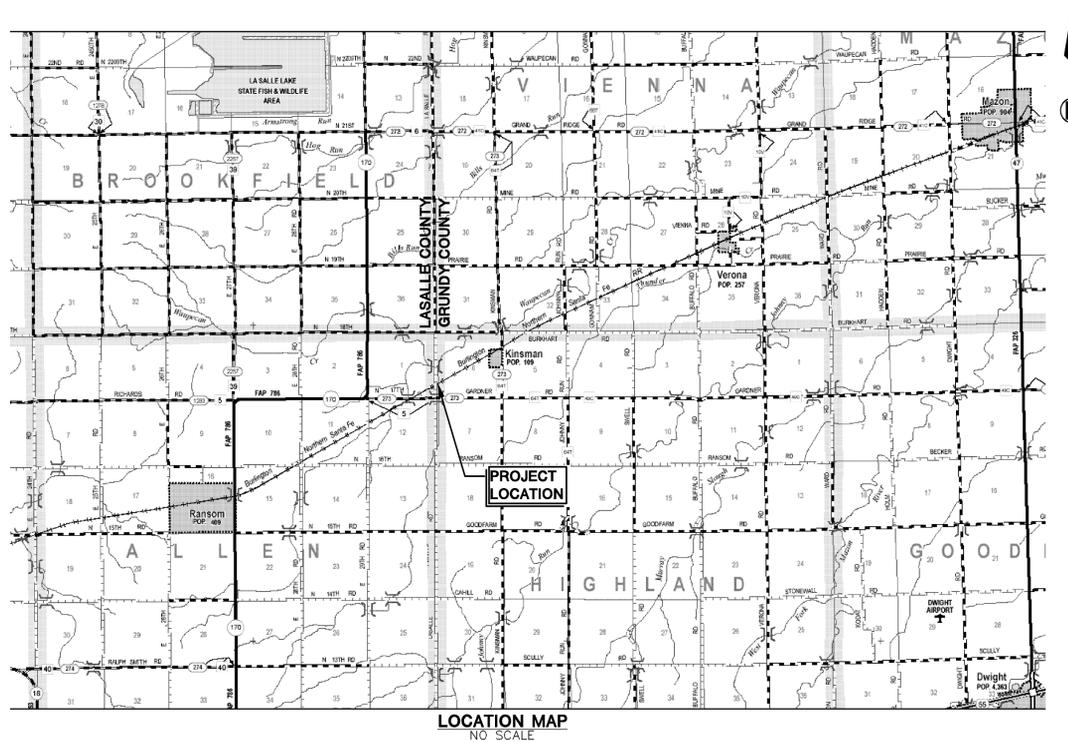
SHEET No.	SUBJECT
1.	COVER SHEET
2.	PLAN AND PROFILE PLAN
3.	CROSS SECTIONS STA 394+00 TO STA 397+50
4.	CROSS SECTIONS STA 398+00 TO STA 399+23.68
5.	CROSS SECTIONS STA 399+50 TO STA 402+50
6.	CROSS SECTIONS STA 403+00 TO STA 406+00
7.	EROSION CONTROL PLAN & DETAILS

OWNER: ALLEN TOWNSHIP
KEN ARRIGO TOWNSHIP ROAD COMMISSIONER
P.O. BOX 231
RANSOM, IL 61470

LEGEND

---	CENTERLINE OF PROPOSED ROAD
- - - -	TEMPORARY CONSTRUCTION EASEMENT
---	EXISTING ROW AS OCCUPIED
---	PROPOSED ROW
•	5/8" IRON ROD FOUND
o	5/8" IRON ROD SET
⊗	ROW MARKER
⊠	CONCRETE MONUMENT
•	CROSS IN CONCRETE
⬢	SECTION CORNER
---	EDGE OF FIELD
⊕	EXISTING SIGN
⊙	RAILROAD WARNING LIGHT
⊖	EXISTING POWER POLE
⊕	EXISTING GUY WIRE
⊠	EXISTING TELEPHONE PEDESTAL
⊠	EXISTING ELECTRIC BOX
⊠	EXISTING CABLE PEDESTAL
OE	EXISTING OVERHEAD POWER LINE
OX	EXISTING OVERHEAD UTILITY
UX	EXISTING UNDERGROUND UTILITY
8" G	EXISTING STORM SEWER
15" SS	EXISTING STORM SEWER
G	EXISTING GAS MAIN OR PIPELINE
8" G	GAS MAIN IN CASING PIPE
12" G	GAS MAIN IN CASING PIPE
---	EXISTING FENCE
▲	PROPOSED FLARED END SECTION
15" SS	PROPOSED STORM SEWER
⚡	PROPOSED DIRECTION OF DRAINAGE
⬇	FLOOD ROUTE
⊙	EXISTING TREE
⊙	EXISTING TREE W/ DIAMETER
⊙	EXISTING TREE TO BE REMOVED

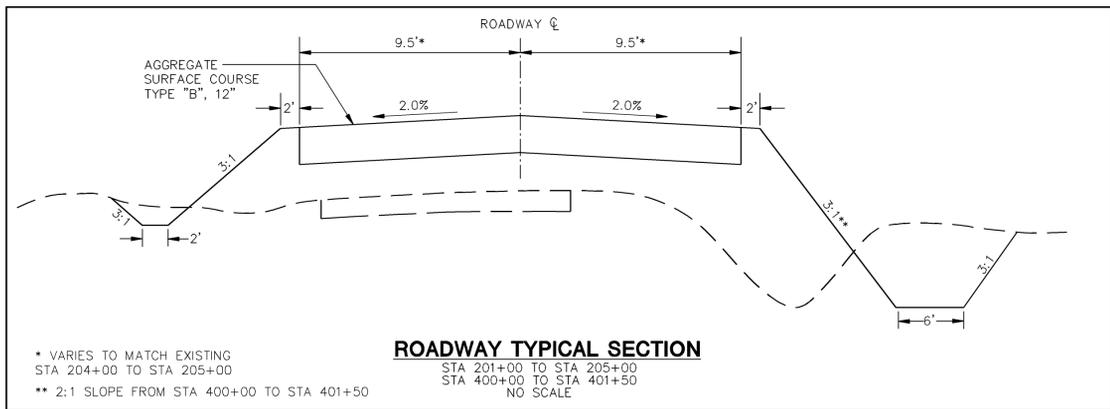
Summary of Quantities		
Description	Unit	Quantity
EARTH EXCAVATION	CU YD	2058
FURNISHED EXCAVATION	CU YD	5761
SEEDING, CLASS 3 SLOPE MIXTURE	ACRE	2.2
MULCH	ACRE	2.2
NITROGEN FERTILIZER NUTRIENT	POUND	200
PHOSPHORUS FERTILIZER NUTRIENT	POUND	200
POTASSIUM FERTILIZER NUTRIENT	POUND	200
INLET AND PIPE PROTECTION	EACH	2
TEMPORARY DITCH CHECKS	EACH	10
PERMIETER EROSION BARRIER	FOOT	60
STONE DUMPED RIPRAP, CLASS B4	SQ YD	67.1
FILTER FABRIC	SQ YD	67.1
AGGREGATE SURFACE COURSE TYPE B	TON	1496
3 STRAND BARBED WIRE FENCE	FOOT	520
8" FIELD TILE	FOOT	25
24" CORRUGATED METAL PIPE	FOOT	95
24" METAL END SECTIONS	EACH	2
6' X 3' PRECAST CONCRETE BOX CULVERT	FOOT	18
6' X 3' PRECAST CONCRETE BOX CULVERT END SECTIONS	EACH	2
TRENCH BACKFILL	CU YD	38.9
REMOVE EXISTING FENCE	FOOT	545
REMOVE EXISTING CULVERTS	EACH	1
REMOVE EXISTING FIELD TILE	FOOT	50
REMOVE EXISTING CONCRETE ABUTMENT	EACH	2
RAILROAD PROTECTIVE LIABILITY INSURANCE	L SUM	1
RAILROAD FLAGGER	L SUM	1



BEGINNING STATION=394+50
END STATION =405+50
COMMISSION FOR BNSF RR CROSSING #4453F
STA. 399+80 TO STA. 400+20

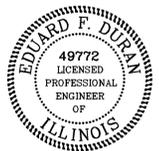
TOTAL LENGTH: 1100 FEET (0.21 MILES)
OMISSION LENGTH: 40 FEET (0.01 MILES)
LENGTH OF IMPROVEMENT: 1060 FEET (0.20 MILES)

BENCHMARK #3:
CAPPED IRON ROD STA 393+60.97, 9.01' RT. ELEV. 646.57
BENCHMARK #4:
CAPPED IRON ROD STA 408+91.32, 13.59' LT. ELEV. 645.84



APPROVED _____ 20____
KEN ARRIGO ROAD COMMISSIONER
ALLEN TOWNSHIP

APPROVED _____ 20____
LAWRENCE KINZER COUNTY ENGINEER
LASALLE COUNTY



EDUARD F. DURAN I.L.P.E. #49772 DATE
LICENSE EXPIRES 11/30/2011

CALL JULIE. BEFORE YOU DIG: 811 AND 1-800-892-0123

THE CONTRACTOR(S) SHALL CONTACT ALL UTILITY COMPANIES, INCLUDING THE OWNER, FOR THE LOCATIONS OF UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES. THE LOCATIONS, SIZES, AND ELEVATIONS OF EXISTING UTILITIES SHOWN ON THE PLAN MAY BE INCOMPLETE AND ARE APPROXIMATE ONLY. THE CONTRACTOR(S) SHALL BE RESPONSIBLE FOR KEEPING EXISTING UTILITIES IN SERVICE AND PROMPTLY REPAIRING ANY WHICH ARE DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

CONTRACTOR SHALL CONTACT BUCKEYE PETROLEUM PIPELINE RIGHT OF WAY AGENT JOMARIE JENKINS AT 1-610-904-4138 PRIOR TO STARTING ANY FILL OR EXCAVATION WITHIN 25' OF THE EXISTING FACILITIES SHOWN ON THE PLANS. NO VIBRATORY EQUIPMENT LARGER THAN WALK BEHIND UNITS SHALL BE USED WITHIN 25' OF THE PIPELINE.

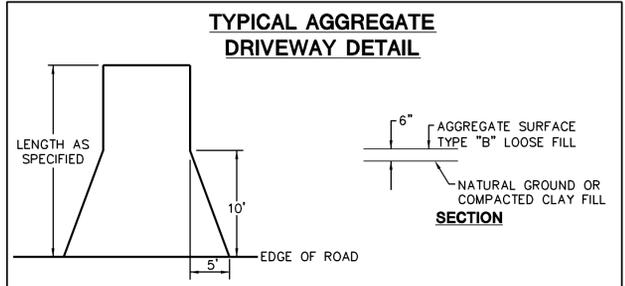
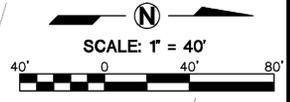
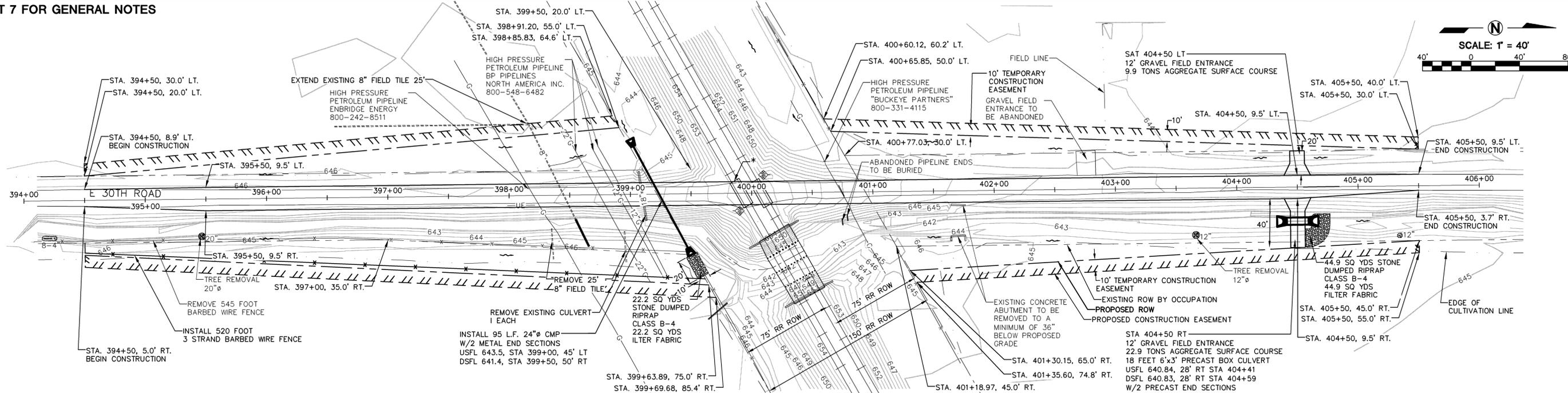
Lewis, Yockey & Brown, Inc.
Consulting Engineers & Land Surveyors
Professional Design Firm Registration #184000808
505 North Main Street, 222 East Center Street, 155 South Elm Street
Bloomington, Illinois LeRoy, Illinois El Paso, Illinois
Ph. (309) 829-2552 Ph. (309) 962-8151 Ph. (309) 527-2552

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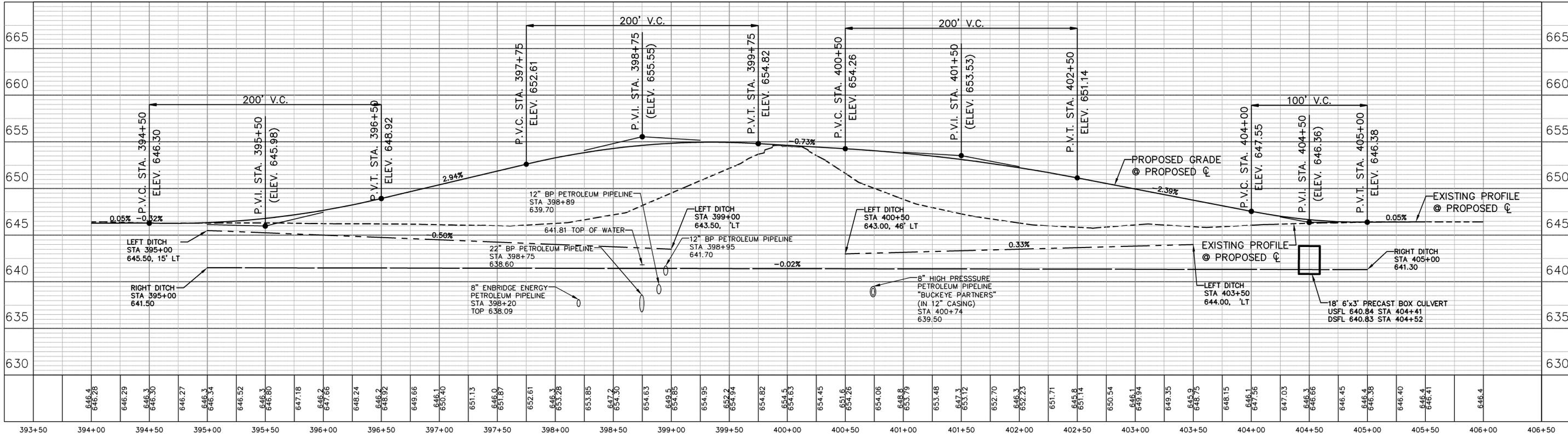
**EAST 30TH ROAD RR CROSSING
LASALLE COUNTY, ILLINOIS
COVER SHEET**

4056.02

SEE SHEET 7 FOR GENERAL NOTES



* OMISSION STA 399+80 TO 400+20 BNSF RR CROSSING #4453F TO BE WIDENED & UPGRADED BY OTHERS



645.4	646.28	646.29	646.30	646.27	646.3	646.34	646.52	646.3	646.80	647.18	646.2	647.06	648.24	648.92	649.66	646.1	650.40	651.13	648.0	651.87	652.61	646.3	653.28	653.85	647.2	654.30	654.63	649.5	654.85	654.95	652.2	654.94	654.82	654.5	654.63	654.45	651.6	654.26	654.06	646.8	653.79	653.48	647.3	653.12	652.70	646.3	652.23	651.71	646.8	651.14	650.54	646.1	649.94	649.35	646.9	648.75	648.15	646.1	647.56	647.03	646.3	646.66	646.45	646.4	646.41	646.4																																																						
393+50	394+00	394+50	395+00	395+50	396+00	396+50	397+00	397+50	398+00	398+50	399+00	399+50	400+00	400+50	401+00	401+50	402+00	402+50	403+00	403+50	404+00	404+50	405+00	405+50	406+00	406+50	407+00	408+00	409+00	410+00	411+00	412+00	413+00	414+00	415+00	416+00	417+00	418+00	419+00	420+00	421+00	422+00	423+00	424+00	425+00	426+00	427+00	428+00	429+00	430+00	431+00	432+00	433+00	434+00	435+00	436+00	437+00	438+00	439+00	440+00	441+00	442+00	443+00	444+00	445+00	446+00	447+00	448+00	449+00	450+00	451+00	452+00	453+00	454+00	455+00	456+00	457+00	458+00	459+00	460+00	461+00	462+00	463+00	464+00	465+00	466+00	467+00	468+00	469+00	470+00	471+00	472+00	473+00	474+00	475+00	476+00	477+00	478+00	479+00	480+00	481+00	482+00	483+00	484+00	485+00	486+00	487+00	488+00	489+00	490+00	491+00	492+00	493+00	494+00	495+00	496+00	497+00	498+00	499+00	500+00

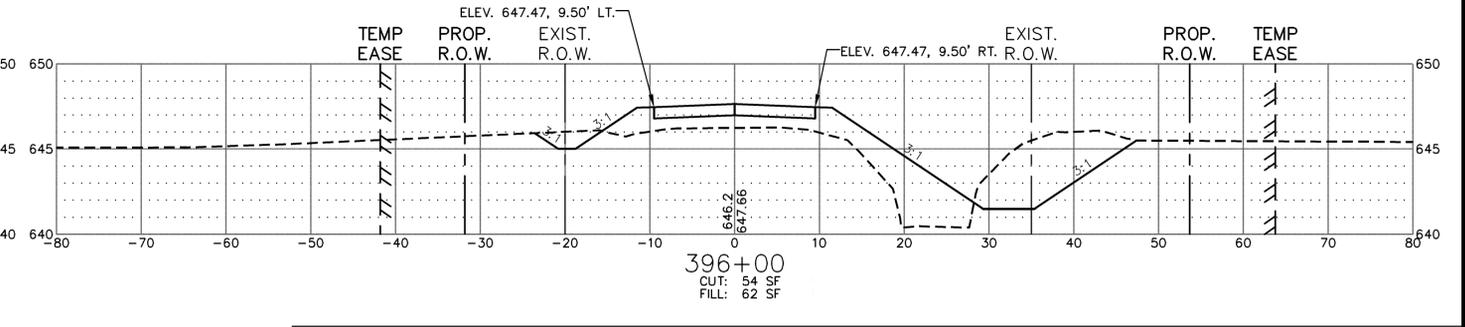
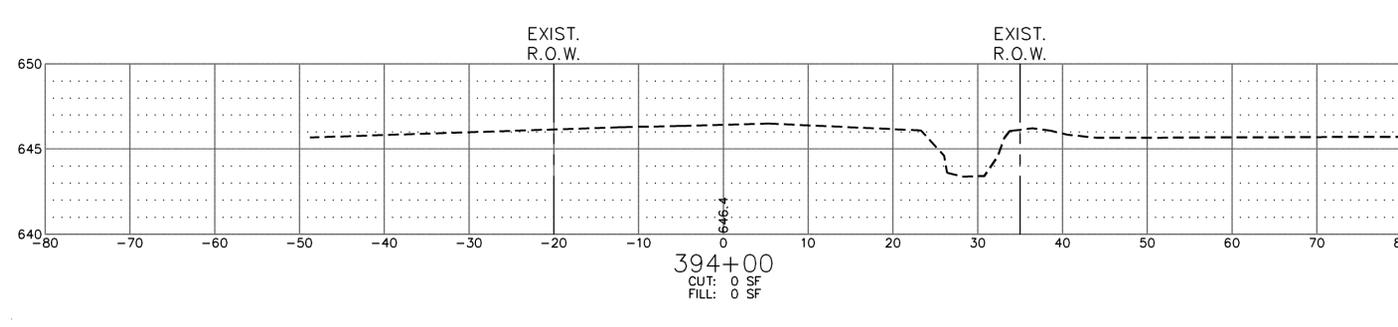
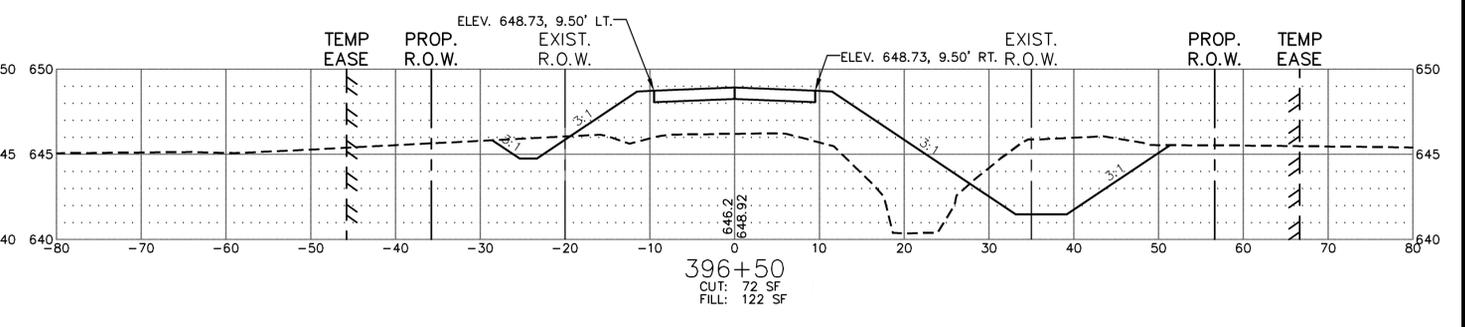
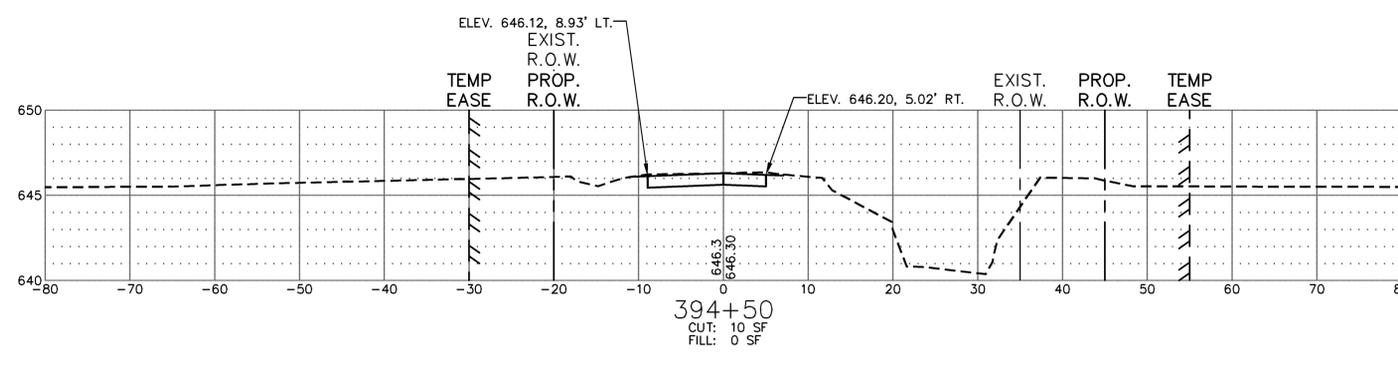
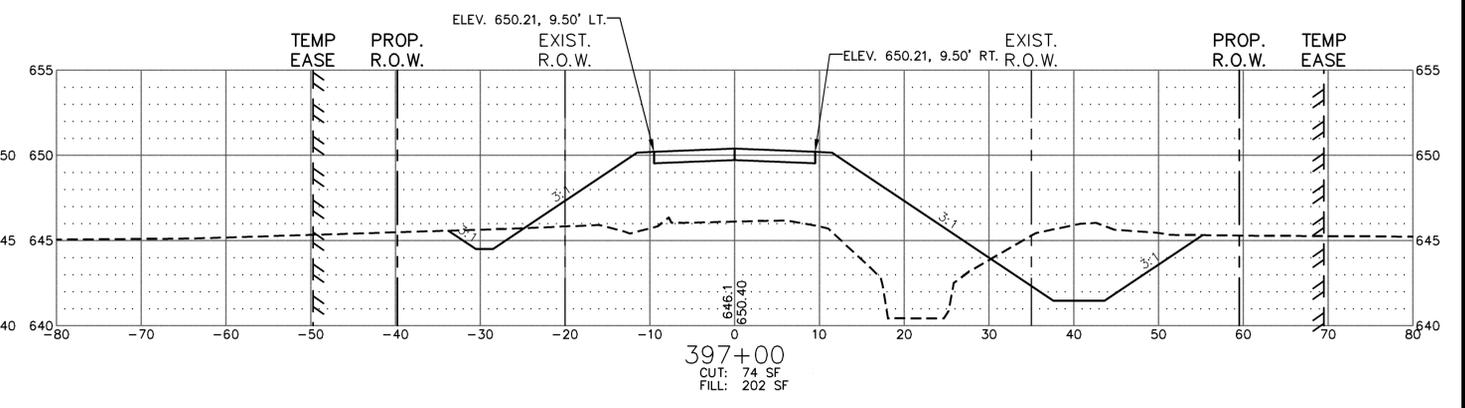
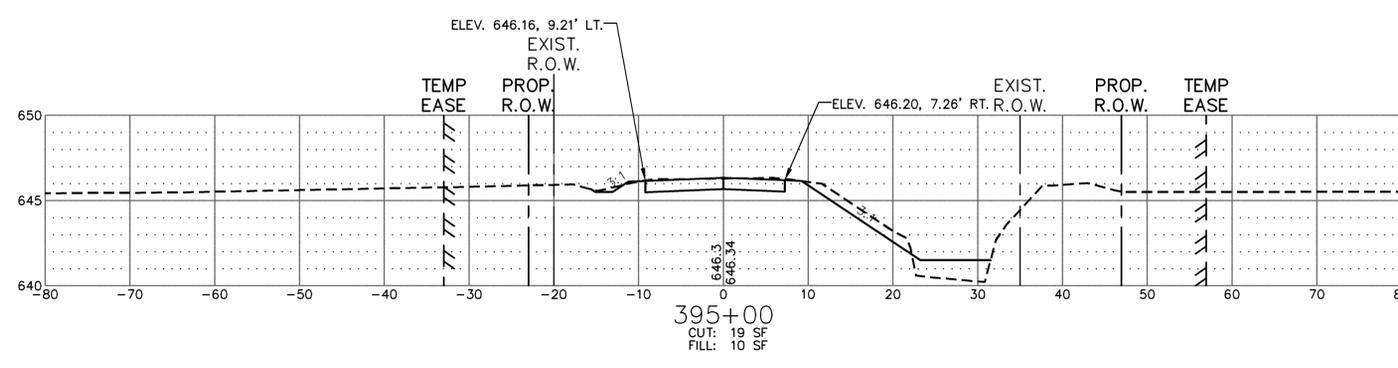
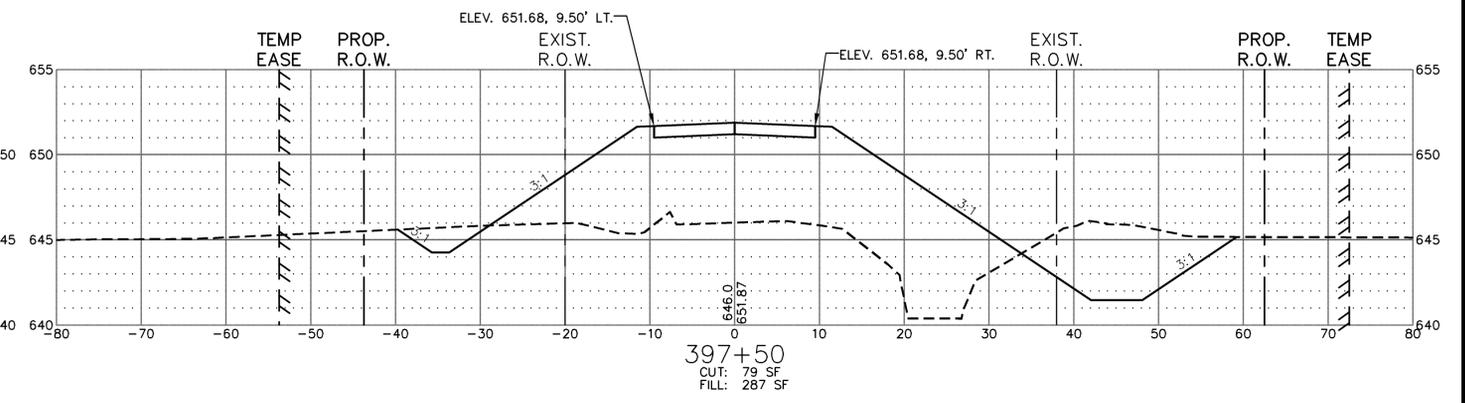
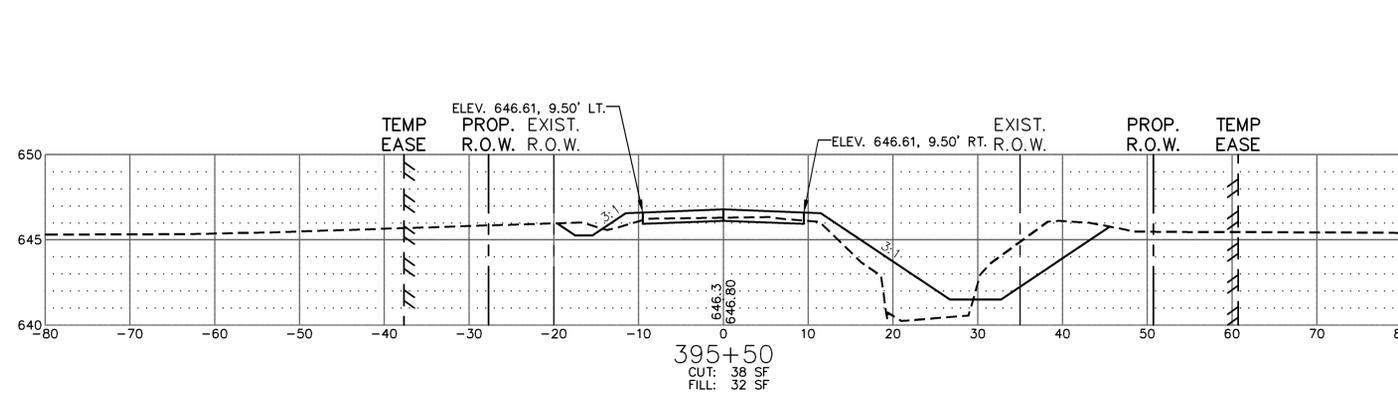
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		Dsn.	EFD
		App.	LDY

**EAST 30TH ROAD RR CROSSING
 LASALLE COUNTY, ILLINOIS
 PLAN & PROFILE
 ROADWAY STA 394+00 TO STA 406+00**

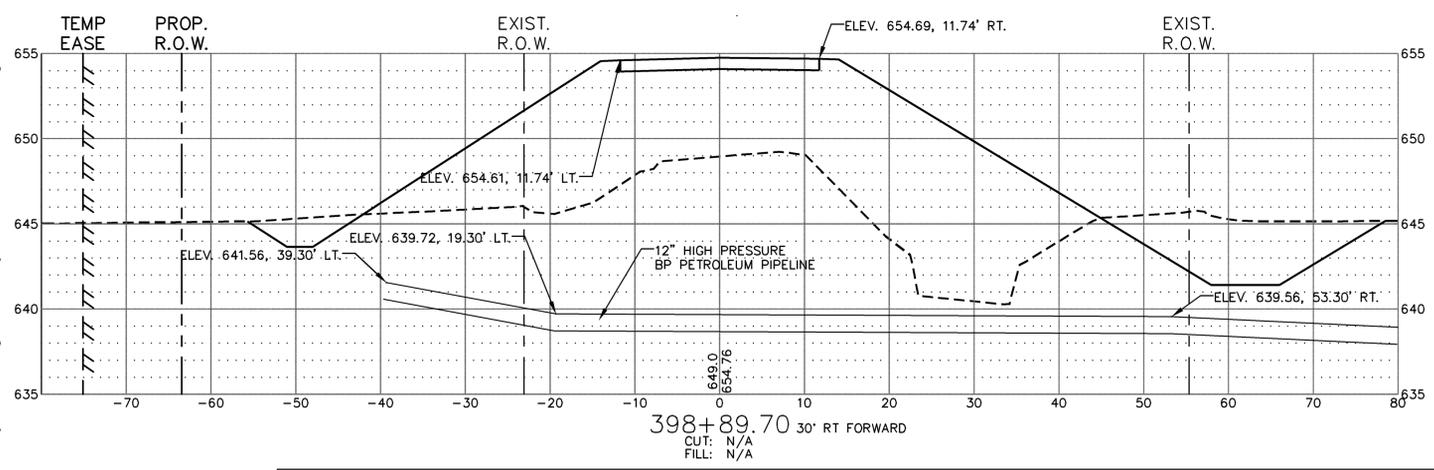
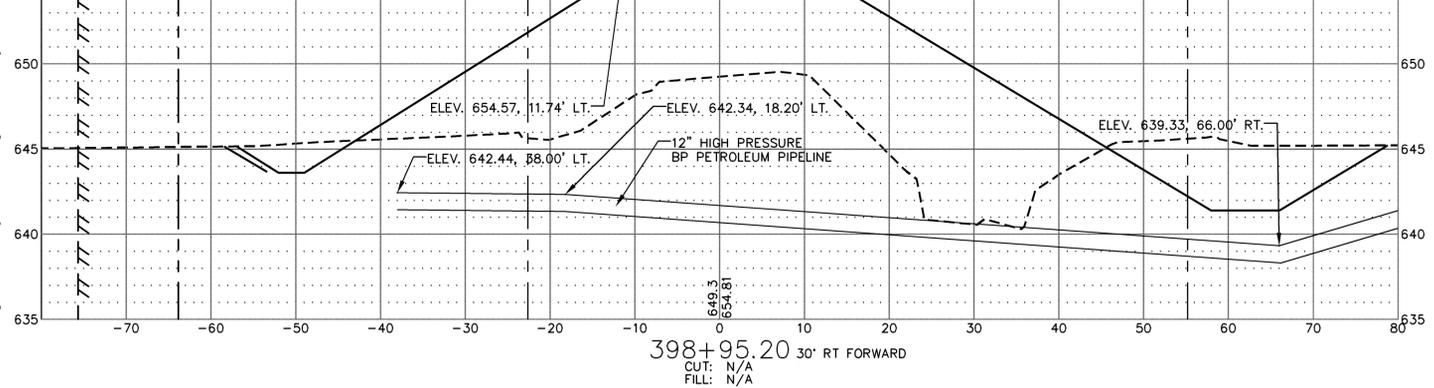
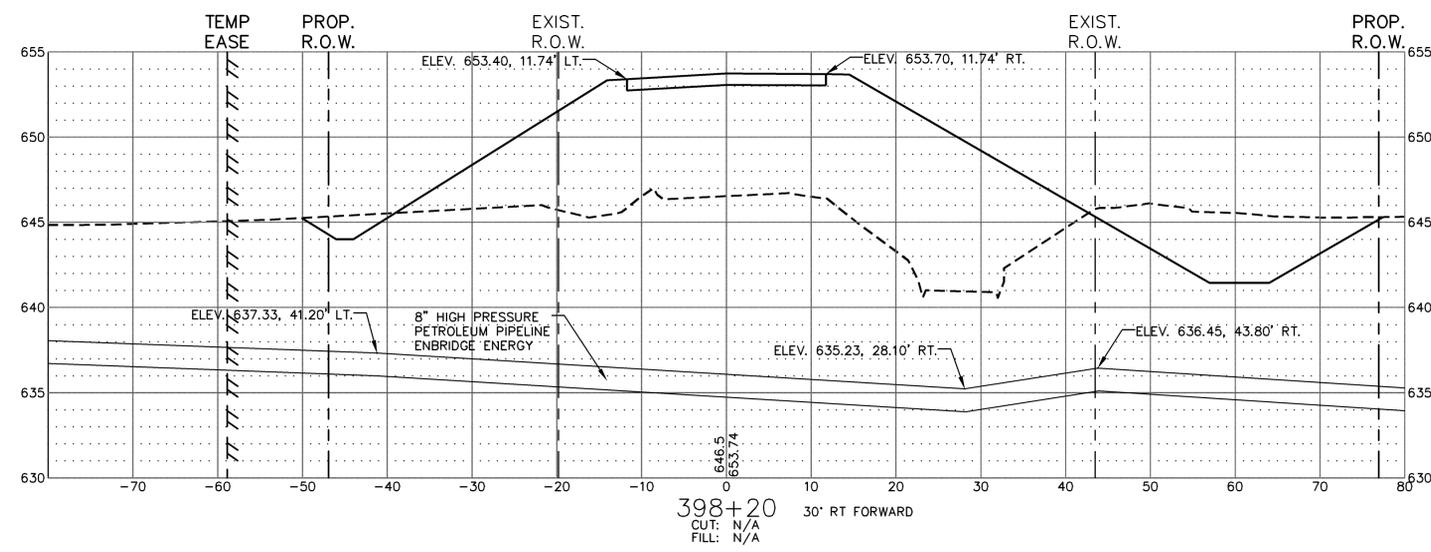
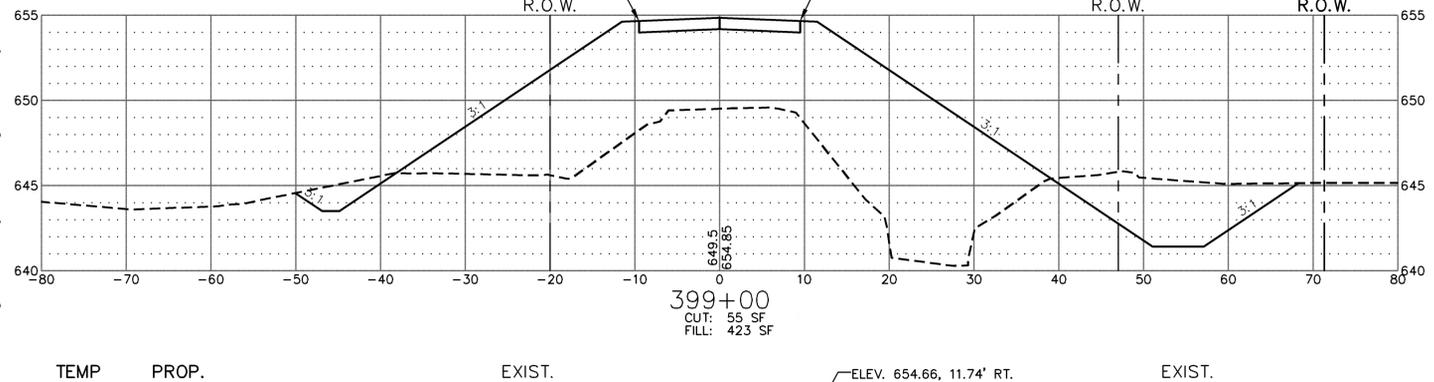
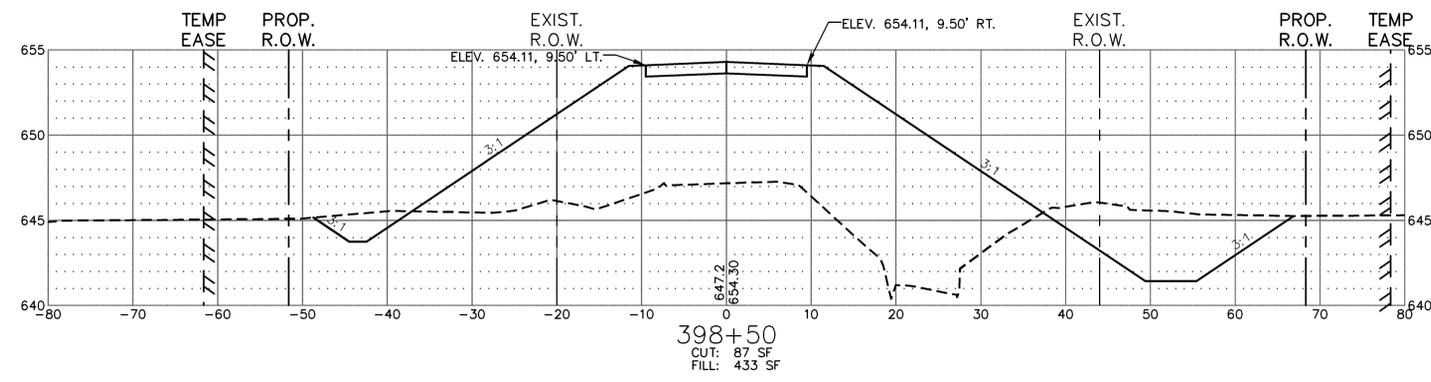
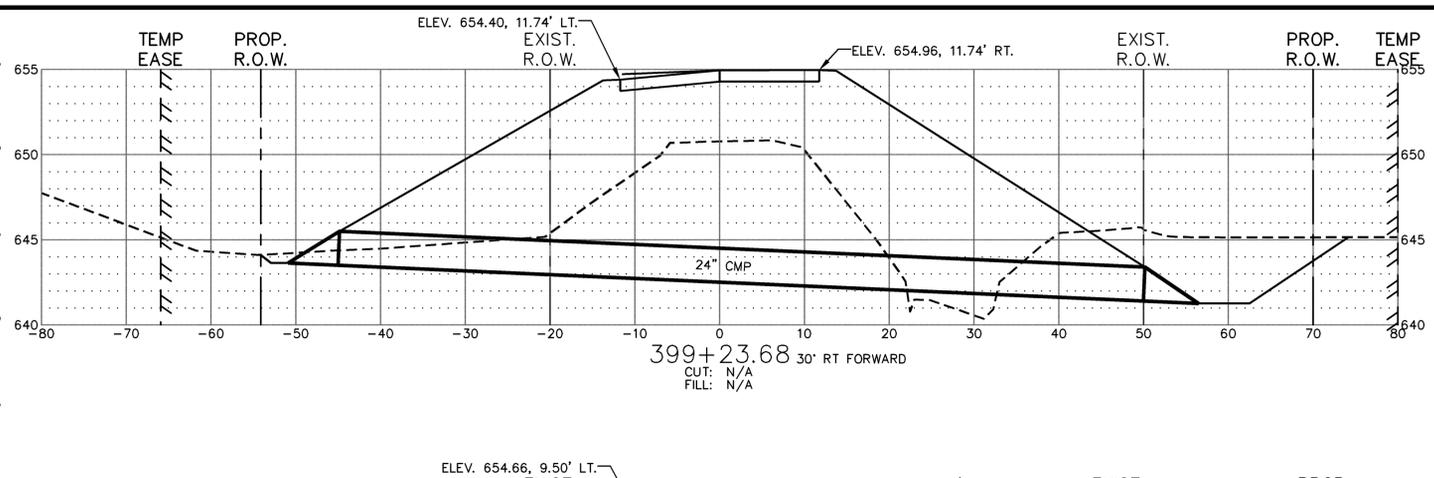
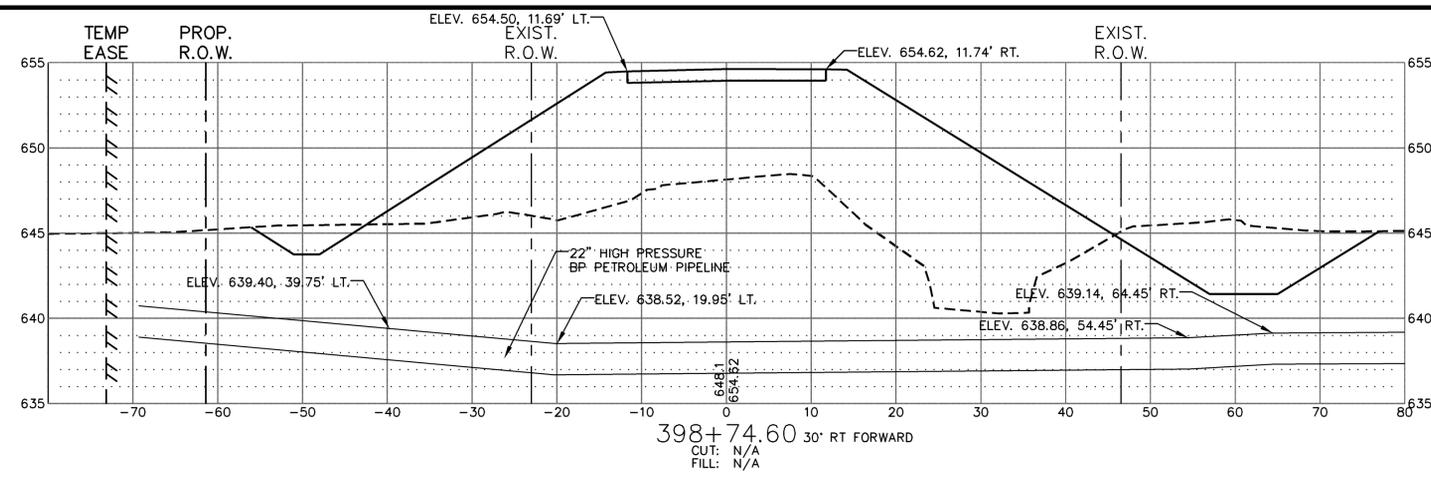
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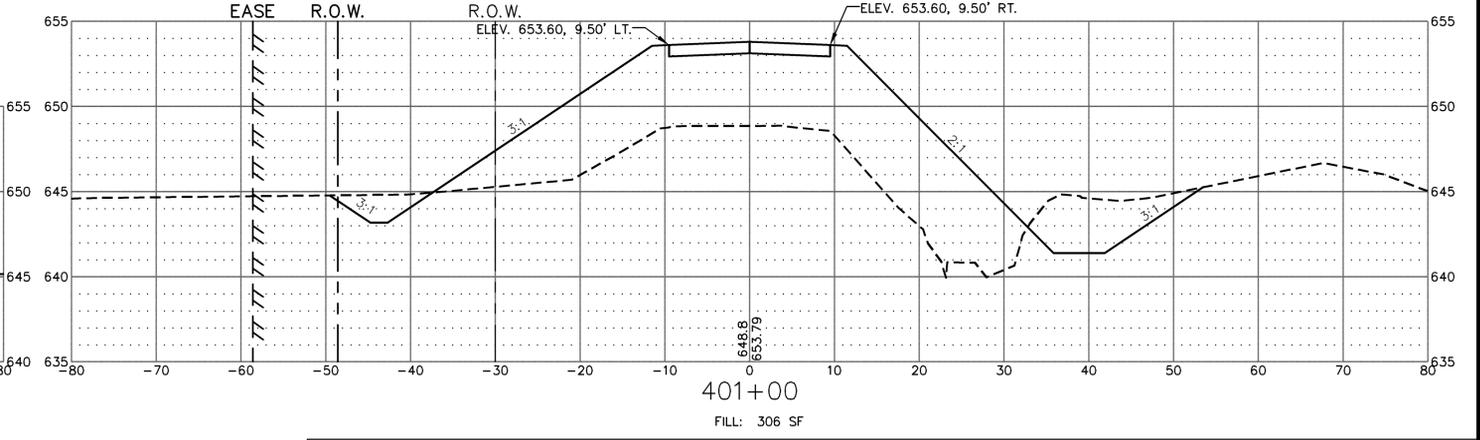
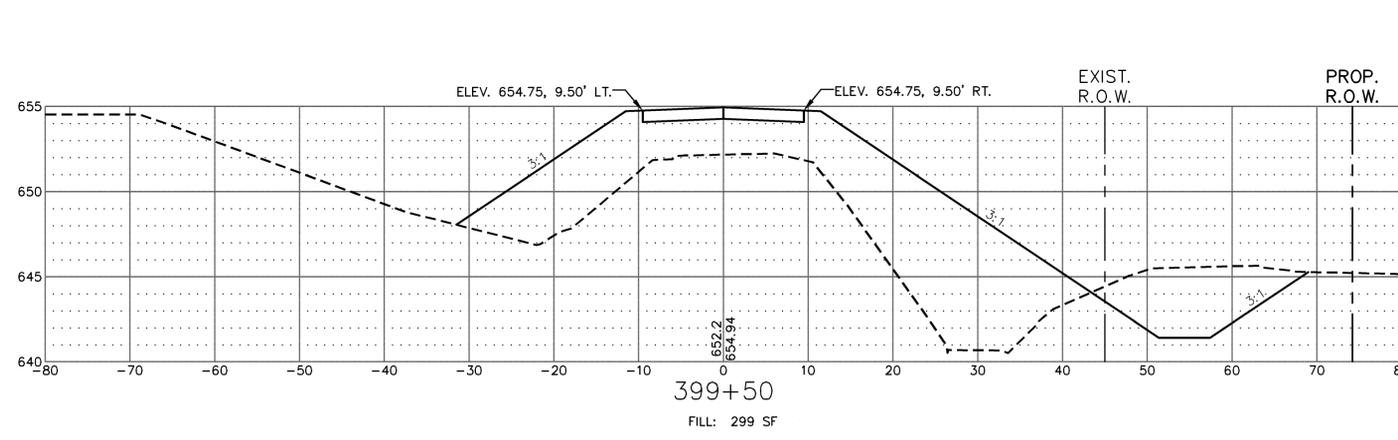
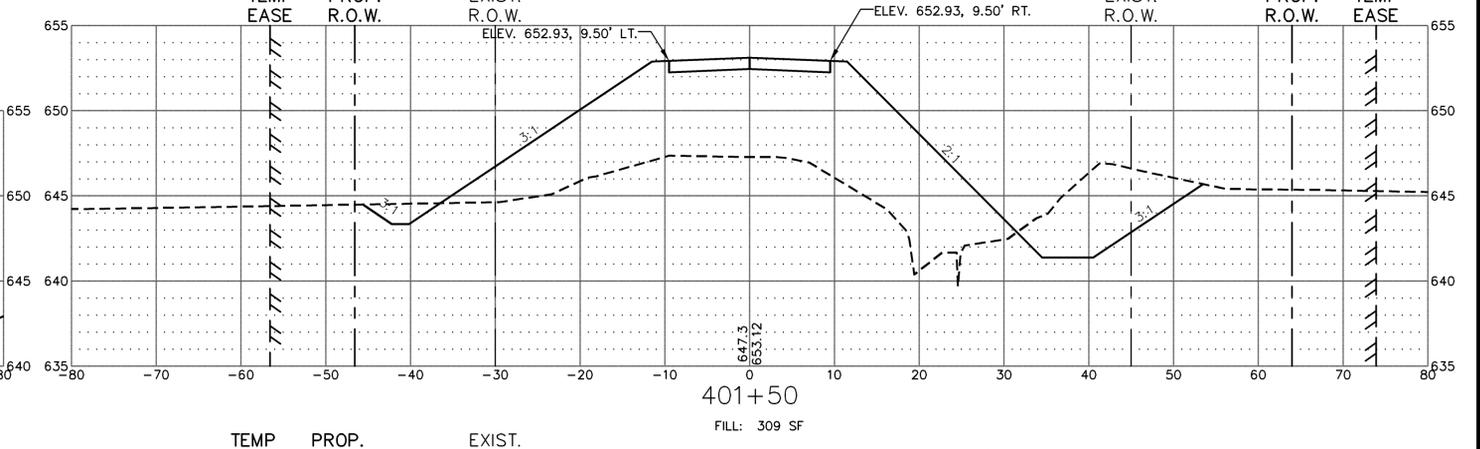
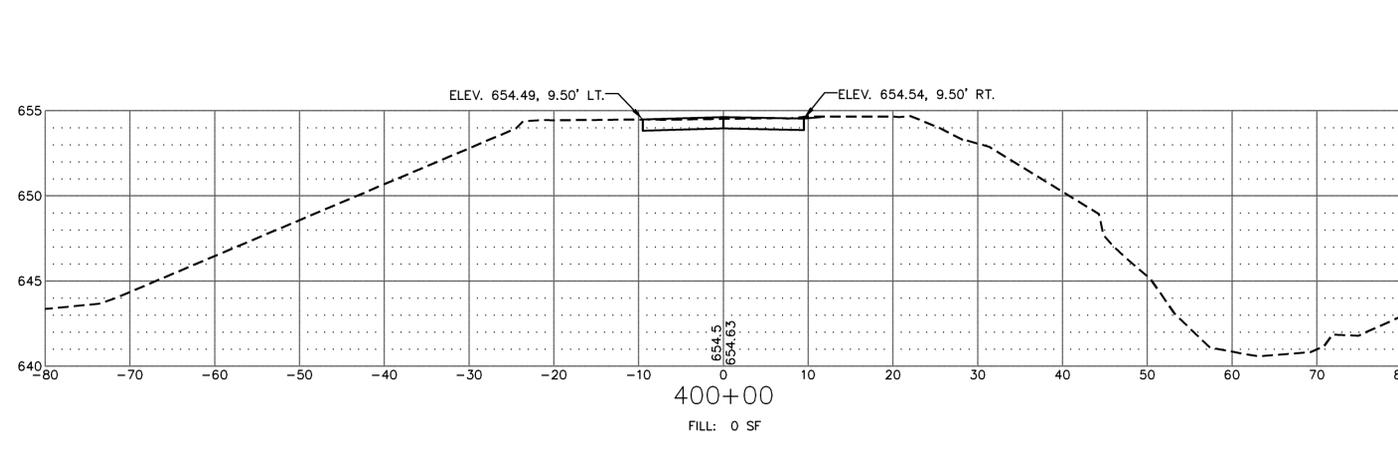
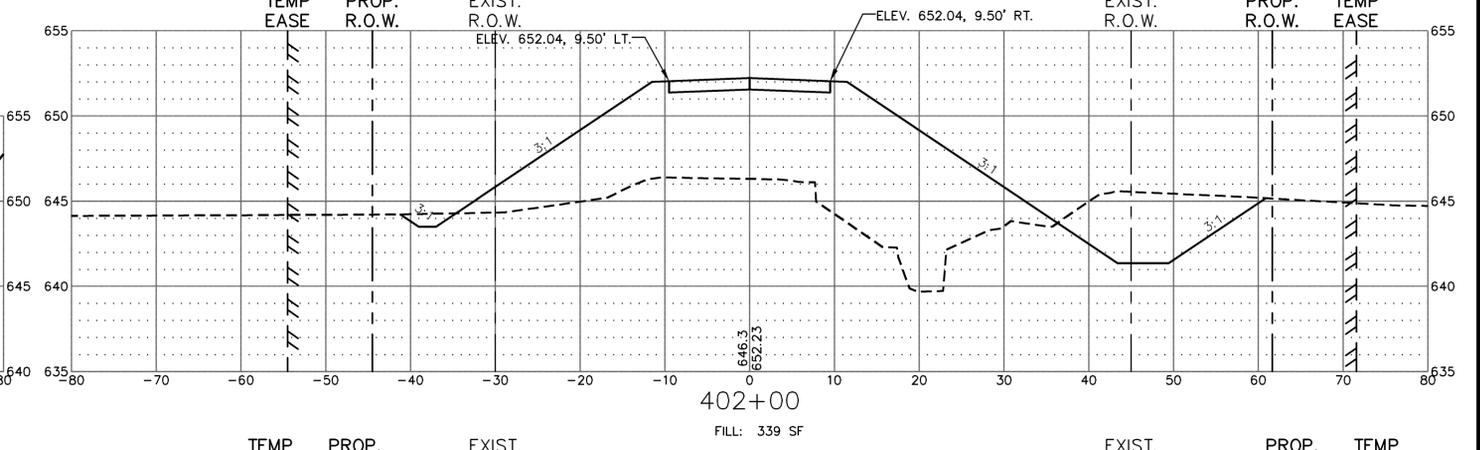
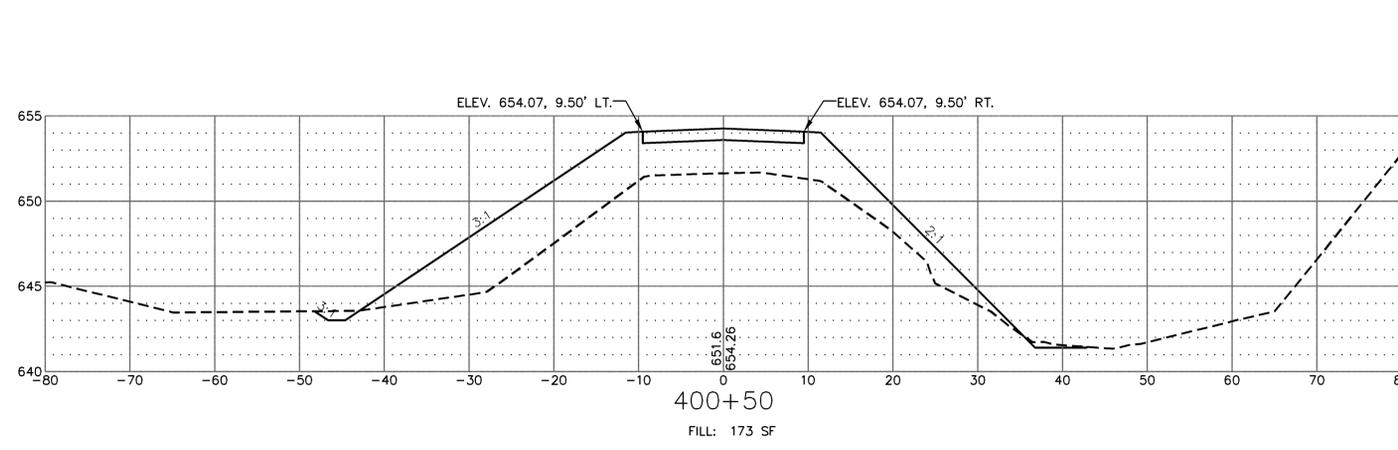
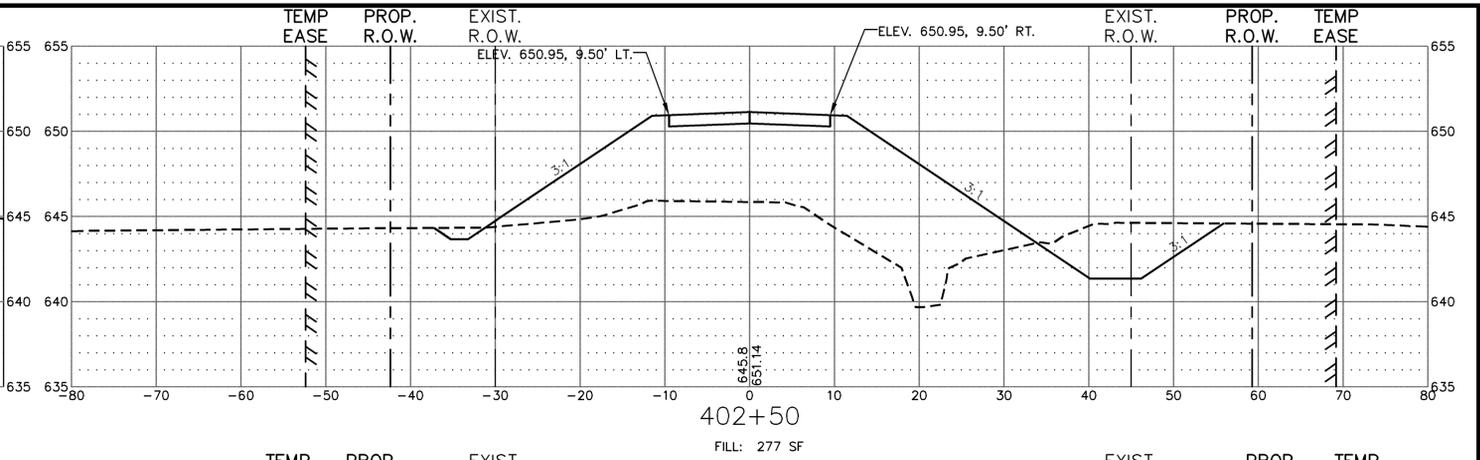
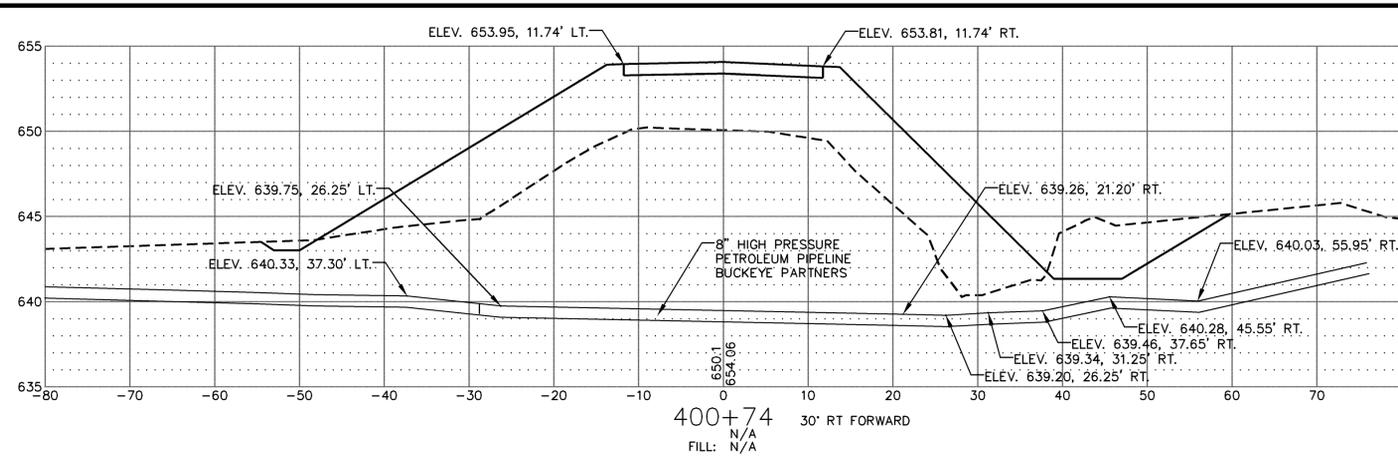
Lewis, Yockey & Brown, Inc. Consulting Engineers & Land Surveyors Professional Design Firm Registration #184000808 505 North Main Street 222 East Center Street 155 South Elm Street Bloomington, Illinois LeRoy, Illinois El Paso, Illinois Ph. (309) 829-2552 Ph. (309) 962-8151 Ph. (309) 527-2552			Rev.	Bk.	EAST 30TH ROAD RR CROSSING LASALLE COUNTY, ILLINOIS ROADWAY CROSS SECTIONS STA 394+00 TO STA 397+50	Sheet
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			Dwn.	SPN		
			Dsn.	EFD		
			App.	LDY		

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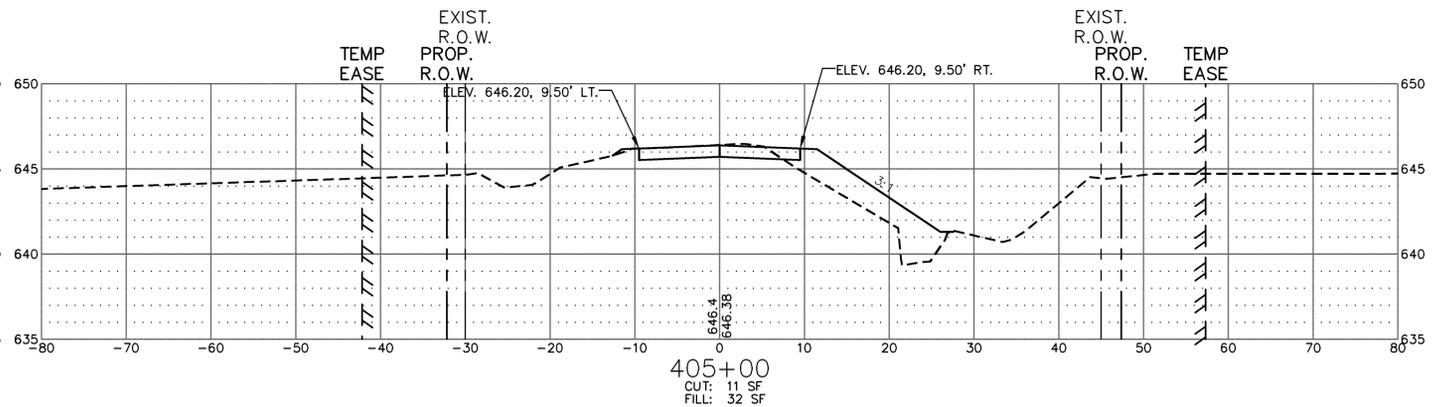
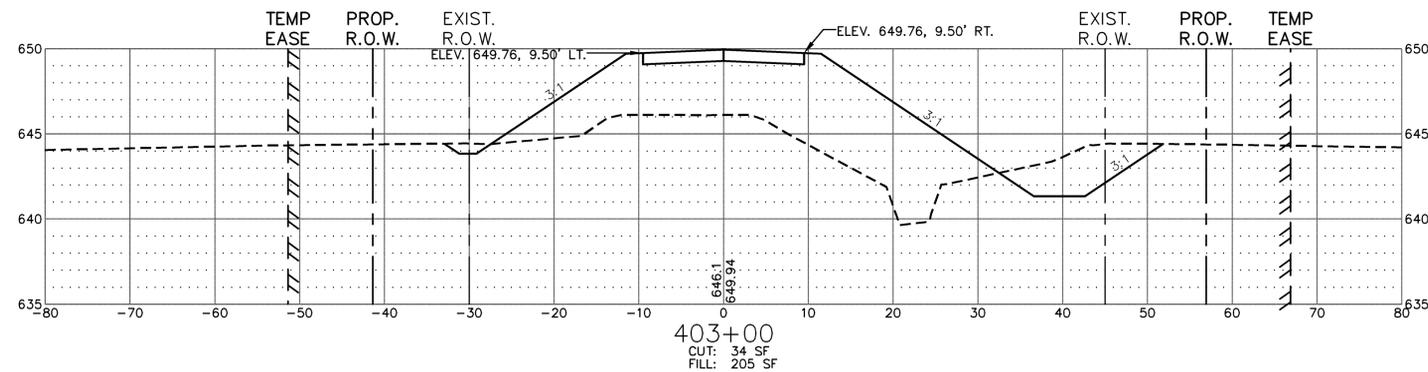
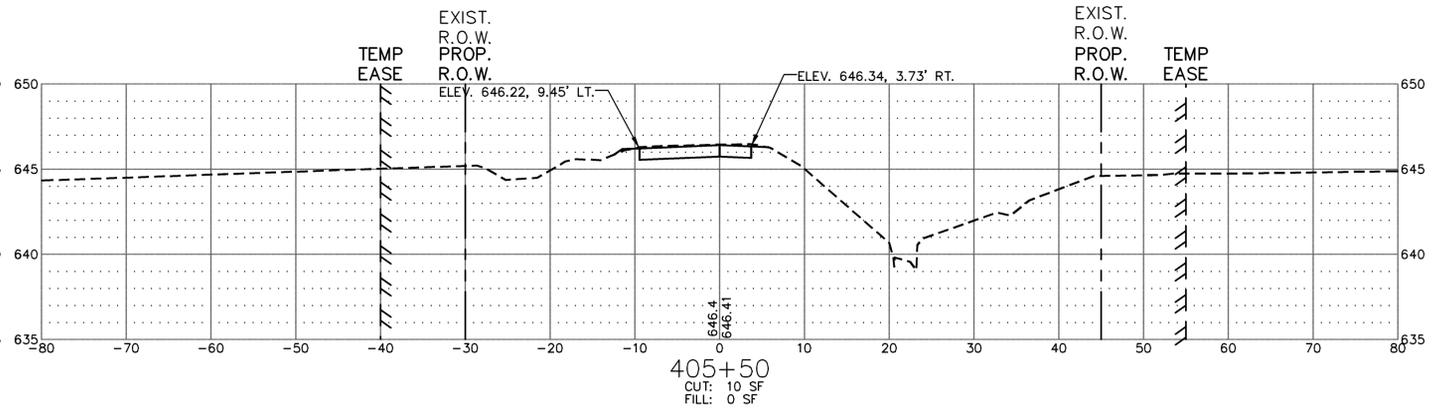
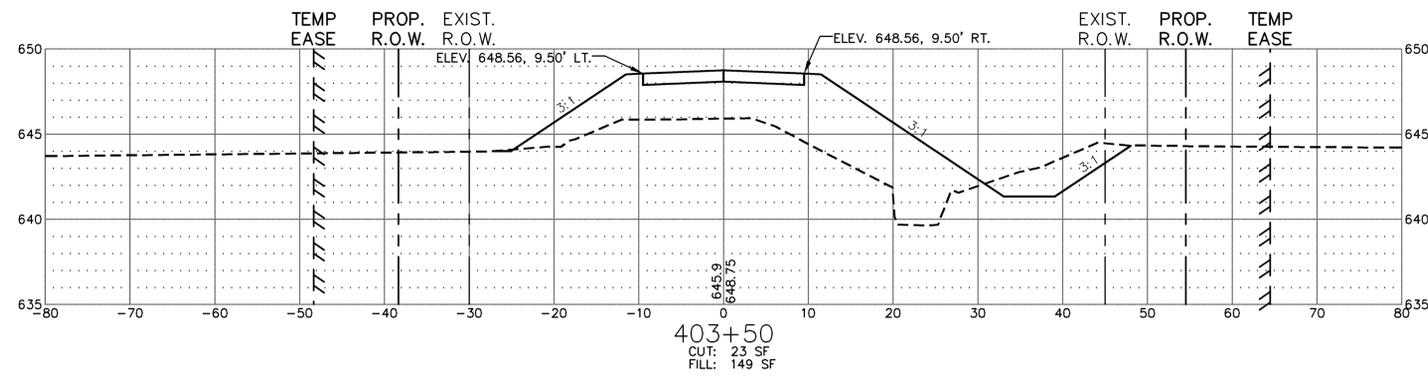
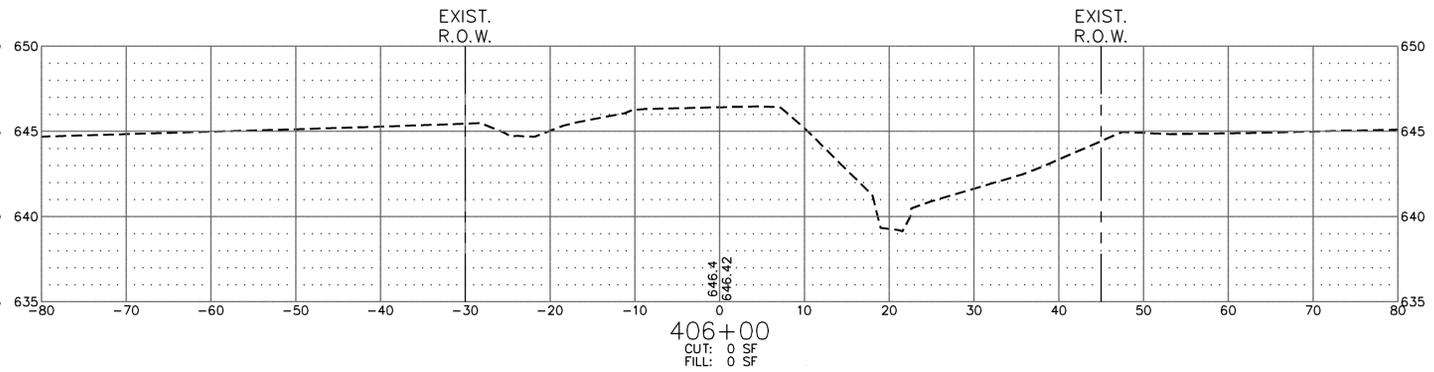
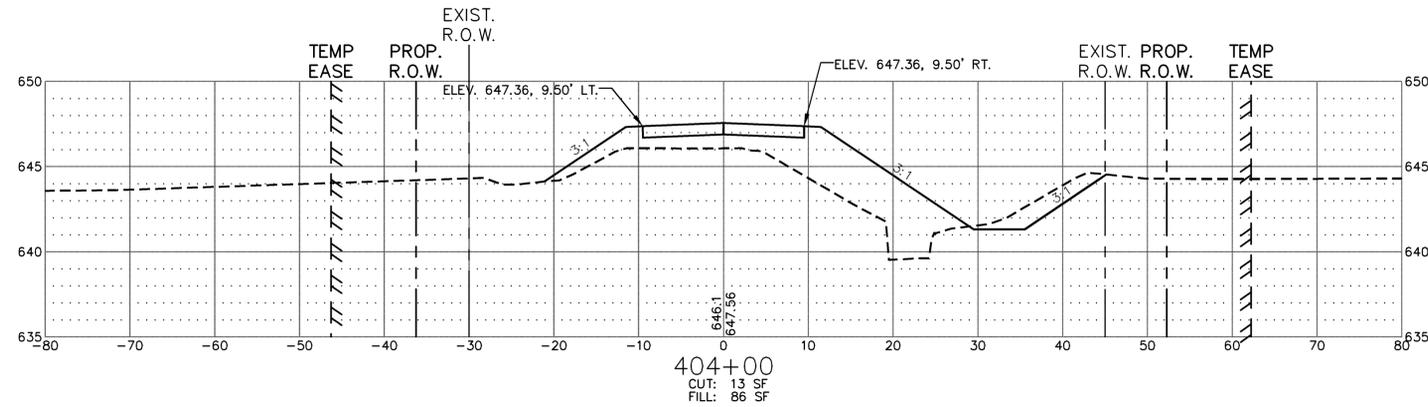
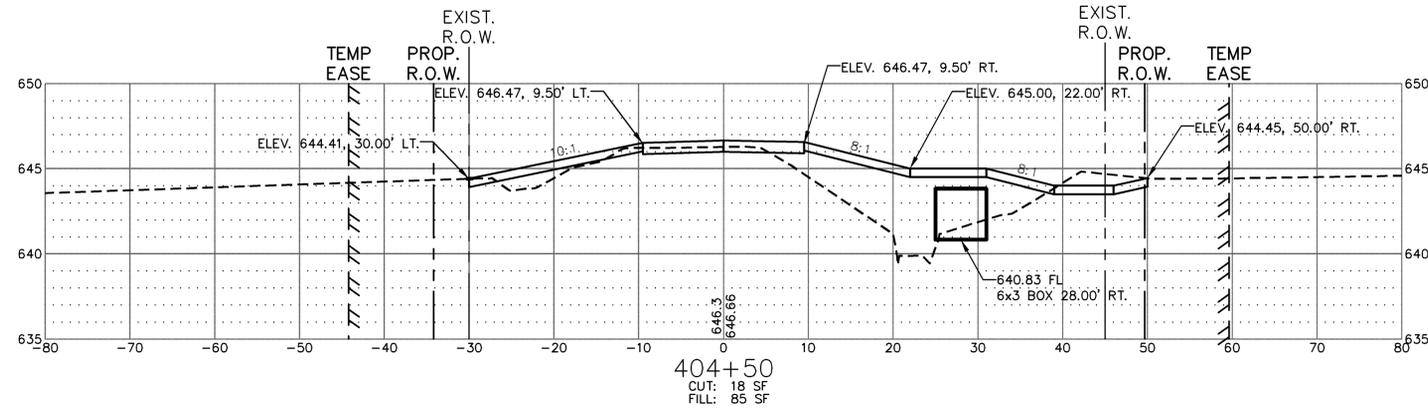
Lewis, Yockey & Brown, Inc.		Rev.	Bk.	EAST 30TH ROAD RR CROSSING LASALLE COUNTY, ILLINOIS ROADWAY CROSS SECTIONS STA 398+00 TO STA 399+23.68	4 of 7
Consulting Engineers & Land Surveyors			895		
Professional Design Firm Registration #184000808			SPN		
505 North Main Street 222 East Center Street 155 South Elm Street Bloomington, Illinois LeRoy, Illinois El Paso, Illinois Ph. (309) 829-2552 Ph. (309) 962-8151 Ph. (309) 527-2552			EFD		
			App.	LDY	

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Consulting Engineers & Land Surveyors			895		
Professional Design Firm Registration #184000808			SPN		
505 North Main Street, 222 East Center Street, 155 South Elm Street Bloomington, Illinois LeRoy, Illinois El Paso, Illinois Ph. (309) 829-2552 Ph. (309) 962-8151 Ph. (309) 527-2552			EFD		
			LDY		

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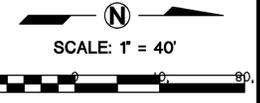
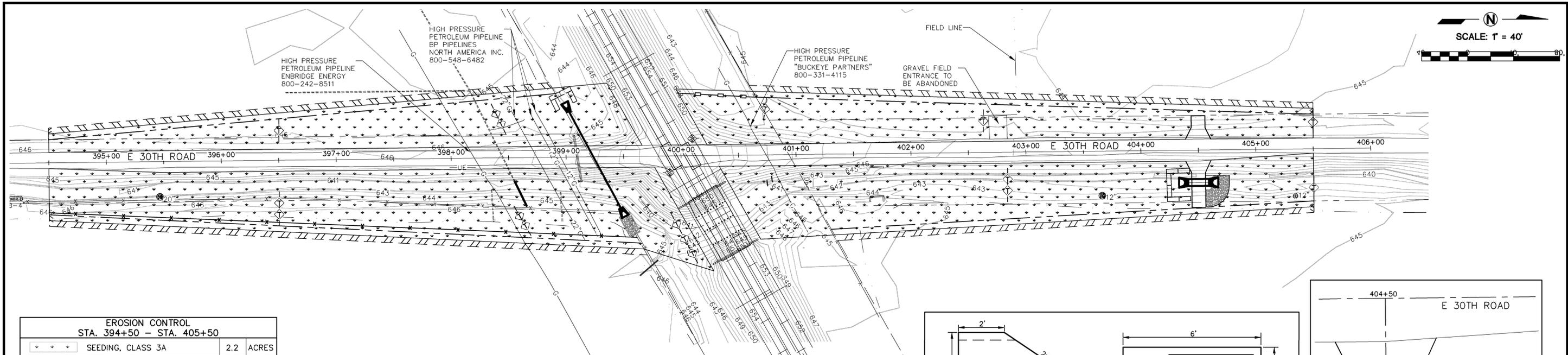


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 505 North Main Street 222 East Center Street 155 South Elm Street
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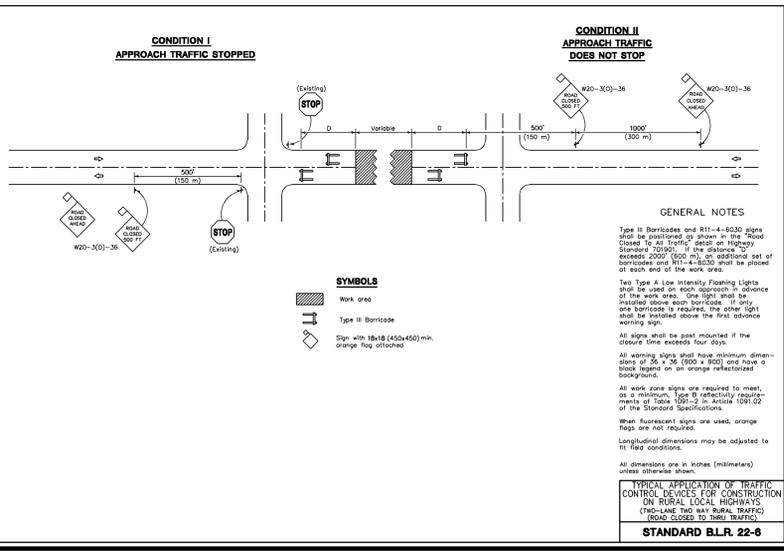
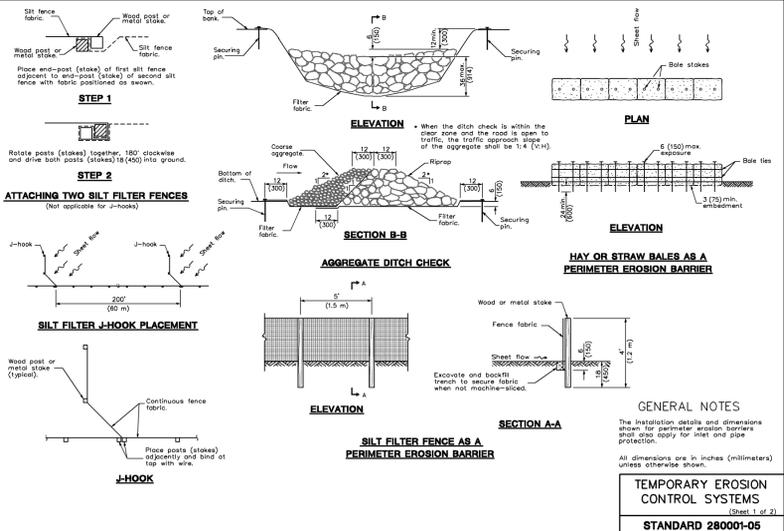
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		Drn.	SPN
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LASALLE COUNTY, ILLINOIS
ROADWAY CROSS SECTIONS
STA 403+00 TO STA 406+00

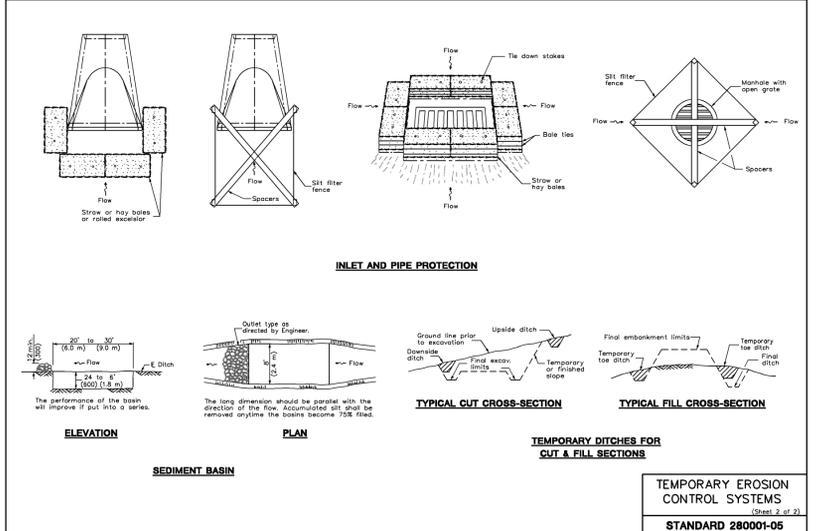
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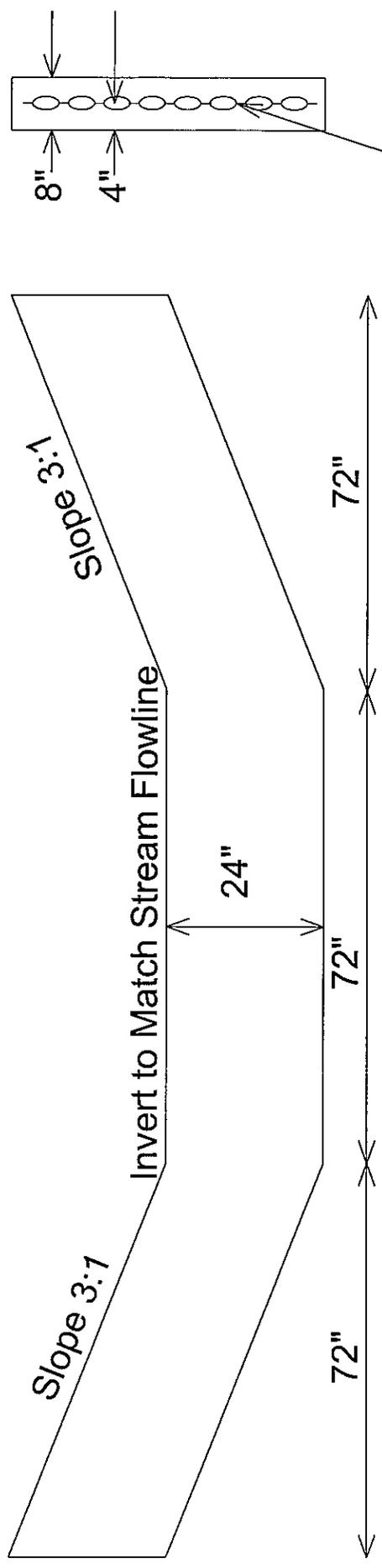
EROSION CONTROL STA. 394+50 - STA. 405+50			
	SEEDING, CLASS 3A	2.2	ACRES
	PERIMETER EROSION BARRIER	60	FOOT
	TEMPORARY DITCH CHECKS	10	EACH
	INLET AND PIPE PROTECTION	2	EACH



SEE SHEET 1 FOR LEGEND



PIPE DIA.	THICK-NESS	DIMENSIONS					SLOPE (Approx.)	BODY
		A	B	H	L	W		
12	0.064	6	6	18	18	24	1:26	1 P.c.
18	0.064	8	8	24	24	36	1:26	1 P.c.
24	0.064	10	10	30	30	42	1:26	1 P.c.
30	0.064	12	12	36	36	48	1:26	1 P.c.
36	0.064	14	14	42	42	54	1:26	1 P.c.
42	0.064	16	16	48	48	60	1:26	1 P.c.
48	0.064	18	18	54	54	66	1:26	1 P.c.
54	0.064	20	20	60	60	72	1:26	1 P.c.
60	0.064	22	22	66	66	78	1:26	1 P.c.
66	0.064	24	24	72	72	84	1:26	1 P.c.
72	0.064	26	26	78	78	90	1:26	1 P.c.
78	0.064	28	28	84	84	96	1:26	1 P.c.
84	0.064	30	30	90	90	102	1:26	1 P.c.
90	0.064	32	32	96	96	108	1:26	1 P.c.
96	0.064	34	34	102	102	114	1:26	1 P.c.
102	0.064	36	36	108	108	120	1:26	1 P.c.
108	0.064	38	38	114	114	126	1:26	1 P.c.
114	0.064	40	40	120	120	132	1:26	1 P.c.
120	0.064	42	42	126	126	138	1:26	1 P.c.
126	0.064	44	44	132	132	144	1:26	1 P.c.
132	0.064	46	46	138	138	150	1:26	1 P.c.
138	0.064	48	48	144	144	156	1:26	1 P.c.
144	0.064	50	50	150	150	162	1:26	1 P.c.
150	0.064	52	52	156	156	168	1:26	1 P.c.
156	0.064	54	54	162	162	174	1:26	1 P.c.
162	0.064	56	56	168	168	180	1:26	1 P.c.
168	0.064	58	58	174	174	186	1:26	1 P.c.
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186	0.064	64	64	192	192	204	1:26	1 P.c.
192	0.064	66	66	198	198	210	1:26	1 P.c.
198	0.064	68	68	204	204	216	1:26	1 P.c.
204	0.064	70	70	210	210	222	1:26	1 P.c.
210	0.064	72	72	216	216	228	1:26	1 P.c.
216	0.064	74	74	222	222	234	1:26	1 P.c.
222	0.064	76	76	228	228	240	1:26	1 P.c.
228	0.064	78	78	234	234	246	1:26	1 P.c.
234	0.064	80	80	240	240	252	1:26	1 P.c.
240	0.064	82	82	246	246	258	1:26	1 P.c.
246	0.064	84	84	252	252	264	1:26	1 P.c.
252	0.064	86	86	258	258	270	1:26	1 P.c.
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264	0.064	90	90	270	270	282	1:26	1 P.c.
270	0.064	92	92	276	276	288	1:26	1 P.c.
276	0.064	94	94	282	282	294	1:26	1 P.c.
282	0.064	96	96	288	288	300	1:26	1 P.c.
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294	0.064	100	100	300	300	312	1:26	1 P.c.
300	0.064	102	102	306	306	318	1:26	1 P.c.
306	0.064	104	104	312	312	324	1:26	1 P.c.
312	0.064	106	106	318	318	330	1:26	1 P.c.
318	0.064	108	108	324	324	336	1:26	1 P.c.
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336	0.064	114	114	342	342	354	1:26	1 P.c.
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354	0.064	120	120	360	360	372	1:26	1 P.c.
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396	0.064	134	134	402	402	414	1:26	1 P.c.
402	0.064	136	136	408	408	420	1:26	1 P.c.
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438	0.064	148	148	444	444	456	1:26	1 P.c.
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456	0.064	154	154	462	462	474	1:26	1 P.c.
462	0.064	156	156	468	468	480	1:26	1 P.c.
468	0.064	158	158	474	474	486	1:26	1 P.c.
474	0.064	160	160	480	480	492	1:26	1 P.c.
480	0.064	162	162	486	486	498	1:26	1 P.c.
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492	0.064	166	166	498	498	510	1:26	1 P.c.
498	0.064	168	168	504	504	516	1:26	1 P.c.
504	0.064	170	170	510	510	522	1:26	1 P.c.
510	0.064	172	172	516	516	528	1:26	1 P.c.
516	0.064	174	174	522	522	534	1:26	1 P.c.
522	0.064	176	176	528	528	540	1:26	1 P.c.
528	0.064	178	178	534	534	546	1:26	1 P.c.
534	0.064	180	180	540	540	552	1:26	1 P.c.
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546	0.064	184	184	552	552	564	1:26	1 P.c.
552	0.064	186	186	558	558	570	1:26	1 P.c.
558	0.064	188	188	564	564	576	1:26	1 P.c.
564	0.064	190	190	570	570	582	1:26	1 P.c.
570	0.064	192	192	576	576	588	1:26	1 P.c.
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582	0.064	196	196	588	588	600	1:26	1 P.c.
588	0.064	198	198	594	594	606	1:26	1 P.c.
594	0.064	200	200	600	600	612	1:26	1 P.c.
600	0.064	202	202	606	606	618	1:26	1 P.c.
606	0.064	204	204	612	612	624	1:26	1 P.c.
612	0.064	206	206	618	618	630	1:26	1 P.c.
618	0.064	208	208	624	624	636	1:26	1 P.c.
624	0.064	210	210	630	630	642	1:26	1 P.c.
630	0.064	212	212	636	636	648	1:26	1 P.c.
636	0.064	214	214	642	642	654	1:26	1 P.c.
642	0.064	216	216	648	648	660	1:26	1 P.c.
648	0.064	218	218	654	654	666	1:26	1 P.c.
654	0.064	220	220	660	660	672	1:26	1 P.c.
660	0.064	222	222	666	666	678	1:26	1 P.c.
666	0.064	224	224	672	672	684	1:26	1 P.c.
672	0.064	226	226	678	678	690	1:26	1 P.c.
678	0.064	228	228	684	684	696	1:26	1 P.c.
684	0.064	230	230	690	690	702	1:26	1 P.c.
690	0.064	232	232	696	696	708	1:26	1 P.c.
696	0.064	234	234	702	702	714	1:26	1 P.c.
702	0.064	236	236	708	708	720	1:26	1 P.c.
708	0.064	238	238	714	714	726	1:26	1 P.c.
714	0.064	240	240	720	720	732	1:26	1 P.c.
720	0.064	242	242	726	726	738	1:26	1 P.c.
726	0.064	244	244	732	732	744	1:26	1 P.c.
732	0.064	246	246	738	738	750	1:26	1 P.c.
738	0.064	248	248	744	744	756	1:26	1 P.c.
744	0.064	250	250	750	750	762	1:26	1 P.c.
750	0.064	252	252	756	756	768	1:26	1 P.c.
756	0.064	254	254	762	762	774	1:26	1 P.c.
762	0.064	256	256	768	768	780	1:26	1 P.c.
768	0.064	258	258	774	774	786	1:26	1 P.c.
774	0.064	260	260	780	7			



1.2 Cu Yds of Class SI Concrete required. Concrete may be direct deposited into a trench and forming will not be required.

Welded wire Fabric Weighing not less than 58 lbs per 100 square ft.

Concrete Erosion Control Structure Station 495+00 Rt and 505+00 Rt

Alasmidonta viridis (Rafinesque, 1820)

Slippershell mussel



Alasmidonta viridis, INHS 7866. Baker Creek, Kankakee County, Illinois.

Length: 1.4 inches (3.6 cm).

Other common names None.

Key characters Small, somewhat rectangular shell, high posterior ridge, wavy green rays on posterior half of the shell, poorly developed lateral teeth.

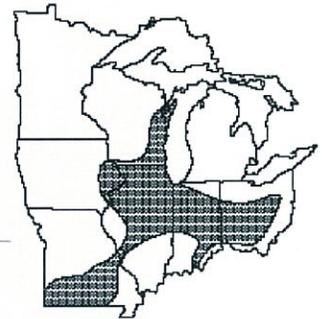
Similar species [Elktoe](#).

Description Shell small (usually about an inch), somewhat inflated, thin in young individuals to moderately thick in adults. Anterior end rounded, posterior end squared or truncated. Posterior ridge high and rounded, posterior slope flattened. Ventral margin straight or slightly arched. Umbos full and elevated above the hinge line. Beak sculpture of three or four elevated ridges or loops. Shell smooth to rough and yellowish green with numerous wavy green rays, particularly on the posterior half of the shell. Length to 1.5 inches (3.8 cm).

Pseudocardinal teeth triangular; two in the left valve, one in the right. Lateral teeth poorly developed, generally appearing as a slight swelling along the hinge line. Beak cavity moderately deep. Nacre white, iridescent on the posterior third of the shell.

Habitat Creeks and the headwaters of large rivers in sand, mud, or fine gravel.

Status Endangered in Illinois and Iowa. Threatened in Wisconsin.



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Illinois Natural History Survey

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217-333-6880
cms@inhs.illinois.edu

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