



SURVEYOR'S OFFICE

# Hamilton County

*Kenton C. Ward, CFM*  
*Surveyor of Hamilton County*  
*Phone (317) 776-8495*  
*Fax (317) 776-9628*

*Suite 188*  
*One Hamilton County Square*  
*Noblesville, Indiana 46060-2230*

October 11, 2011

To: Hamilton County Drainage Board

Re: Spring Mill Run Drain, 106<sup>th</sup> and Ditch Road RAB Reconstruction

Attached is a petition and plans for the proposed reconstruction of the Springmill Run Drain. The reconstruction is being proposed by the Hamilton County Highway Department. The proposal is to reconstruct the drain to provide drainage for the 106<sup>th</sup> Street and Ditch Road Round-a-bout. The reconstruction is as shown per plans by First Group Engineering, Inc., having Job No. PR-99-0001, and last revised date of September 24, 2009.

The reconstruction will remove Structure 151 of the Laurel Ridge Arm of the Springmill Run Drain and replace it with Structure 16 on the road plans. The project will also place Structure 15, a B.M.P. unit, approximately 36 feet downstream of Structure 16 on the Laurel Ridge Arm. The BMP at Structure 15 (Aqua-swirl) shall be maintained as part of the regulated drain.

The project will also add the following new drain lengths to provide drainage for the new round-a-bout intersection:

12" RCP	395 ft.	24" RCP	192 ft.
15" RCP	208 ft.	6" SSD	137 ft.
18" RCP (twin)	147 ft.		

The total length of new drain shall be 1,079 feet. None of the original drain shall be vacated. This proposal will add 1,079 feet to the drain's total length.

The cost of the reconstruction was paid by the Hamilton County Highway Department.

The Hamilton County Highway Department was not required to provide surety.

This reconstruction will remove 1.26 acres of road assessment for Ditch Road from the Thomas Hussey Regulated Drain and add 5.64 acres of road assessment for Ditch Road and 106<sup>th</sup> Street to the Spring Mill Run Regulated Drain. This will result in a remove of \$12.60 from the Thomas Hussey Annual Maintenance Fund and an increase of \$56.40 to the Spring Mill Run Annual Maintenance Fund. These changes apply to the current owner of the Right of Way, which is the City of Carmel.

I believe this proposed drain meets the requirements for Urban Drain Classification as set out in IC 36-9-27-67 to 69. Therefore, this drain shall be designated as an Urban Drain.

The easement for this drain will be the existing right of way for 106<sup>th</sup> Street and Ditch Road.

I recommend the Board set a hearing for this proposed drain for November 28, 2011.



Kenton C. Ward, CFM  
Hamilton County Surveyor

KCW/pll



FINDINGS AND ORDER

CONCERNING THE MAINTENANCE OF THE

Springmill Run Drain,  
106<sup>th</sup> and Ditch Road RAB Reconstruction

On this 28<sup>th</sup> day of November, 2011, the Hamilton County Drainage Board has held a hearing on the Maintenance Report and Schedule of Assessments of the *Springmill Run Drain, 106<sup>th</sup> and Ditch Road RAB Reconstruction*.


Evidence has been heard. Objections were presented and considered. The Board then adopted the original/amended Schedule of Assessments. The Board now finds that the annual maintenance assessment will be less than the benefits to the landowners and issues this order declaring that this Maintenance Fund be established.

HAMILTON COUNTY DRAINAGE BOARD

  
\_\_\_\_\_  
President

  
\_\_\_\_\_  
Member

  
\_\_\_\_\_  
Member

Attest: 

STATE OF INDIANA )  
 ) ss:  
COUNTY OF HAMILTON )

BEFORE THE HAMILTON COUNTY  
DRAINAGE BOARD  
NOBLESVILLE, INDIANA

IN THE MATTER OF THE  
RECONSTRUCTION OF THE  
**Springmill Run Drain, 106th and Ditch Road RAB Reconstruction**

FINDINGS AND ORDER FOR RECONSTRUCTION

The matter of the proposed Reconstruction of the **Springmill Run Drain, 106<sup>th</sup> and Ditch Road RAB Reconstruction** came before the Hamilton County Drainage Board for hearing **on November 28, 2011**, on the Reconstruction Report consisting of the report and the Schedule of Damages and Assessments. The Board also received and considered the written objection of an owner of certain lands affected by the proposed Reconstruction, said owner being:

Evidence was heard on the Reconstruction Report and on the aforementioned objections.

The Board, having considered the evidence and objections, and, upon motion duly made, seconded and unanimously carried, did find and determine that the costs, damages and expenses of the proposed Reconstruction will be less than the benefits accruing to the owners of all land benefited by the Reconstruction.

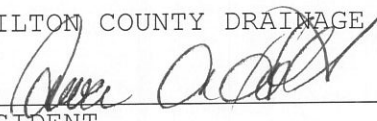
The Board having considered the evidence and objections, upon motion duly made, seconded and unanimously carried, did adopt the Schedule of Assessments as proposed, subject to amendment after inspection of the subject drain as it relates to the lands of any owners which may have been erroneously included or omitted from the Schedule of Assessments.

The Board further finds that it has jurisdiction of these proceedings and that all required notices have been duly given or published as required by law.

Wherefore, it is ORDERED, that the proposed Reconstruction of the **Springmill Run Drain, 106<sup>th</sup> and Ditch Road RAB Reconstruction** be and is hereby declared established.

Thereafter, the Board made inspection for the purpose of determining whether or not the lands of any owners had been erroneously included or excluded from the Schedule of Assessments. The Board finds on the basis of the reports and findings at this hearing as follows:

HAMILTON COUNTY DRAINAGE BOARD

  
\_\_\_\_\_  
PRESIDENT

  
\_\_\_\_\_  
Member

  
\_\_\_\_\_  
Member

ATTEST:

  
Executive Secretary

BEFORE THE HAMILTON COUNTY DRAINAGE BOARD  
IN THE MATTER OF

***Springmill Run Drain,  
106<sup>th</sup> and Ditch Road RAB Reconstruction***

NOTICE

To Whom It May Concern and: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Notice is hereby given of the hearing of the Hamilton County Drainage Board concerning the reconstruction of the **Springmill Run Drain, 106<sup>th</sup> and Ditch Road RAB Reconstruction** on **November 28, 2011**, at **9:15 A.M.** in Commissioners Court, Hamilton County Judicial Center, One Hamilton County Square, Noblesville, Indiana. Construction and maintenance reports of the Surveyor and the Schedule of Assessments proposed by the Drainage Board have been filed and are available for public inspection in the office of the Hamilton County Surveyor.

Hamilton County Drainage Board

Attest: Lynette Mosbaugh

ONE TIME ONLY

STATE OF INDIANA     )  
                              ) SS                   BEFORE THE HAMILTON  
                              )  
COUNTY OF HAMILTON )                   DRAINAGE BOARD

IN THE MATTER OF **Springmill Run Drain, 106<sup>th</sup> and Ditch Road**  
**RAB Reconstruction**

NOTICE

Notice is hereby given that the Hamilton County Drainage Board at its regular meeting **November 28, 2011** adopted the reconstruction report of the Surveyor and the Amended Schedule of damages and assessments including annual assessment for periodic maintenance, finding that the costs, damages and expense of the proposed improvement would be less than the benefits which will result to the owner of lands benefited thereby.

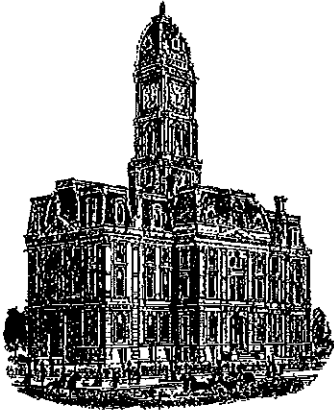
The Board issued an order declaring the proposed improvement established. Such findings and order were marked filed and are available for inspection in the Office of the Hamilton County Surveyor.

If judicial review of the findings and order of the Board is not requested pursuant to Article VIII of the 1965 Indiana Drainage Code as amended within twenty (20) days from the date of publication of this notice, the findings and order shall become conclusive.

HAMILTON COUNTY DRAINAGE BOARD

BY: Steven A. Holt  
PRESIDENT

ATTEST: Lynette Mosbaugh  
SECRETARY



*Kenton C. Ward, CFM*  
*Surveyor of Hamilton County*  
*Phone (317) 776-8495*  
*Fax (317) 776-9628*

*Suite 188*  
*One Hamilton County Square*  
*Noblesville, Indiana 46060-2230*

**To: Hamilton County Drainage Board**

**December 4, 2015**

**Re: Springmill Run Drain: 106<sup>th</sup> & Ditch Roundabout**

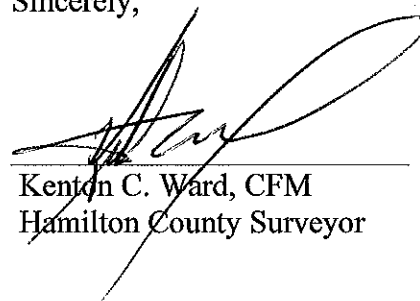
Attached are plans, and other information for the 106<sup>th</sup> & Ditch Roundabout. An inspection of the drainage facilities for this section has been made and the facilities were found to be complete and acceptable.

During construction, changes there were no significant changes made to the drainage plans submitted with my report for this drain dated October 11, 2011. (See Drainage Board Minutes Book 14, Pages 32-34) Therefore, the length of the drain remains at **1079 feet**.

A non-enforcement was not required as the easement, as outlined in my original report to the Board, will be the existing right of way for 106<sup>th</sup> Street and Ditch Road. The project was paid for by the Hamilton County Highway Department, therefore sureties were not required.

I recommend the Board approve the drain's construction as complete and acceptable.

Sincerely,



Kenton C. Ward, CFM  
Hamilton County Surveyor



HOLEY MOLEY SAYS  
"DIG SAFELY"



"IT'S THE LAW"  
CALL TWO WORKING DAYS BEFORE YOU DIG  
1-800-382-5544  
CALL TOLL FREE  
1-800-428-5200  
FOR CALLS OUTSIDE OF INDIANA

PER INDIANA STATE LAW 32-1-22,  
IT IS AGAINST THE LAW TO EXCAVATE  
WITHOUT NOTIFYING THE UNDERGROUND  
LOCATION SERVICE TWO (2) WORKING  
DAYS BEFORE COMMENCING WORK.

# CONSTRUCTION PLANS FOR HCHD PROJECT No. PR-99-0001 106TH ST. & DITCH RD. ROUNDABOUT CLAY TOWNSHIP

Board Of Commissioners  
Hamilton County, Indiana

TRAFFIC DATA	DITCH ROAD	106th STREET
A.A.D.T. (1998)	4300 V.P.D.	6000 V.P.D.
A.A.D.T. (2020 PROJECTED)	6700 V.P.D.	9400 V.P.D.
D.H.V. (1998)	428 V.P.H.	595 V.P.H.
DIRECTIONAL DISTRIBUTION	50 %	50 %
TRUCKS	2% D.H.V.	2% A.A.D.T.

DESIGN DATA	
DESIGN SPEED (URBAN SINGLE LANE)	35 km/H. (15 M.P.H.)
PROJECT DESIGN CRITERIA	RECONSTRUCTION (NON-FREEWAY)
FUNCTIONAL CLASSIFICATION	COLLECTOR
RURAL/URBAN	RURAL
TERRAIN	LEVEL
ACCESS CONTROL	NONE

## UTILITIES

### TELEPHONE

AT&T  
5858 N. COLLEGE AVE.  
INDIANAPOLIS, IN 46220  
GREG CAMMACK  
(317) 252-5134

TIME WARNER TELECOM  
4625 WEST 86TH STREET  
INDIANAPOLIS, IN 46268  
LARRY BENSON  
(317) 713-8900

### GAS

INDIANA GAS CO. INC./VECTREN  
16000 N. ALLISONVILLE RD.  
NOBLESVILLE, IN 46061-1700  
DON PERDUE  
(317) 776-5534

### ELECTRIC

INDPLS. POWER & LIGHT CO.  
3600 N. ARLINGTON AVENUE  
INDIANAPOLIS, IN. 46218-1807  
RHONDA WILLIAMS  
(317) 261-5203

### WATER

INDPLS. WATER CO. INC.  
P.O. BOX 1220  
1220 WATERWAY BLVD.  
INDIANAPOLIS, IN. 46206  
DALE KOCH  
(317) 283-6446

CITY OF CARMEL WATER  
3450 W 131ST AVE  
WESTFIELD, IN 46074  
STEVE COOK  
(317) 733-2849

### CABLE

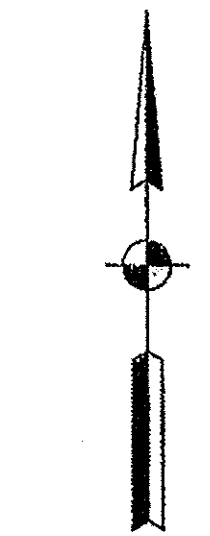
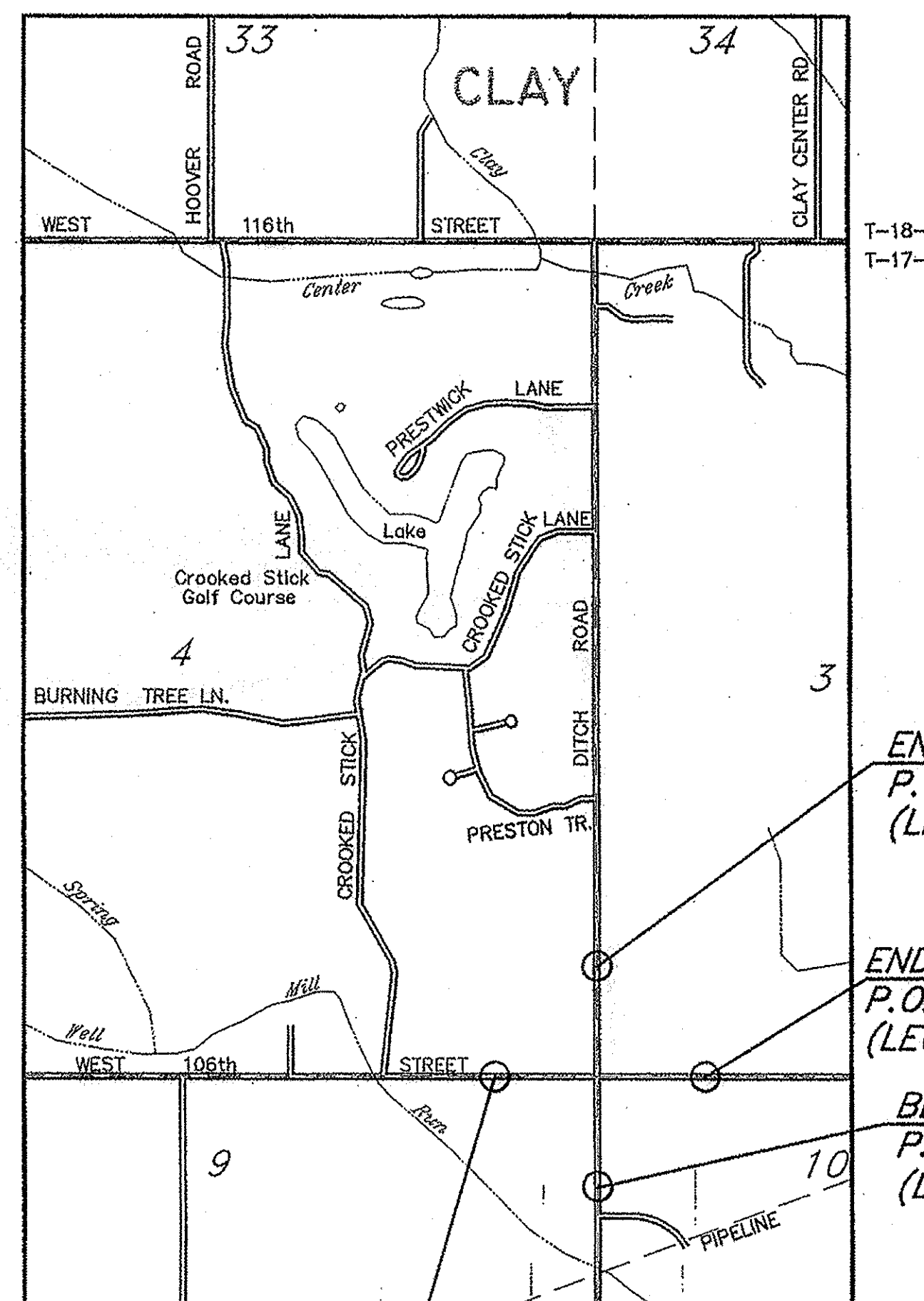
COMCAST CABLE  
5330 EAST 65TH STREET  
INDIANAPOLIS, IN 46220  
JIM PAYTON  
(317) 841-3687

BRIGHTHOUSE NETWORKS  
3030 ROOSEVELT AVENUE  
INDIANAPOLIS, IN 46218  
JOE EVANS  
(317) 339-9075

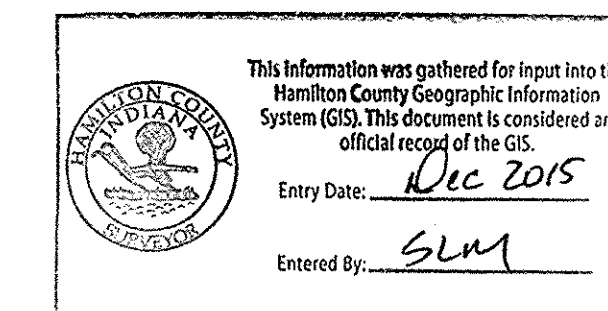
## INDEX

SHT. NO.	DESCRIPTION
1	TITLE AND INDEX SHEET
2-3	TYPICAL CROSS SECTIONS
4	MAINTENANCE OF TRAFFIC
5-8	PLAN AND PROFILE
9-10	GEOMETRIC DETAILS
11	POND DETAIL
12	TEMPORARY EROSION & SEDIMENT CONTROL
13	PAVEMENT MARKINGS
14-16	SIGNING & LIGHTING PLANS
17	APPROACH TABLE AND STRUCTURE DATA
18	UNDERDRAIN TABLE
19-31	CROSS SECTIONS

HAMILTON COUNTY HIGHWAY DEPARTMENT  
STANDARD SPECIFICATIONS DATED 1998  
AND  
INDIANA DEPARTMENT OF TRANSPORTATION  
STANDARD SPECIFICATIONS DATED 2010  
TO BE USED WITH THESE PLANS.



SCALE: 1:10000



## Board Of Commissioners

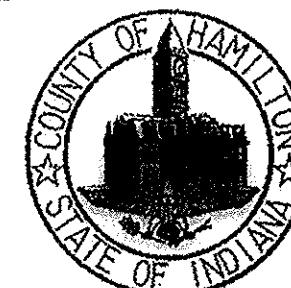
Steven A. Holt 8-24-2009  
Steven A. Holt, President Date  
Christine Altman 8-24-2009  
Christine Altman, Member Date  
Steven C. Dillinger 8-24-2009  
Steven C. Dillinger, Member Date

## Attest

Dawn Coverdale 8-24-2009  
Dawn Coverdale, County Auditor Date

## County Highway Engineer

James W. Neal 8/24/09  
James W. Neal, PE Date



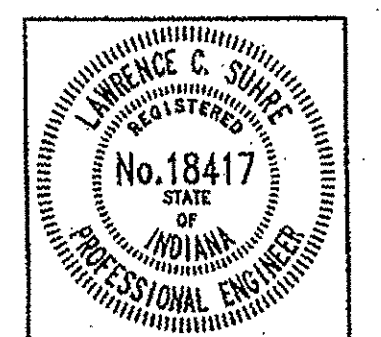
ALL IN R-3-E, CLAY TOWNSHIP.

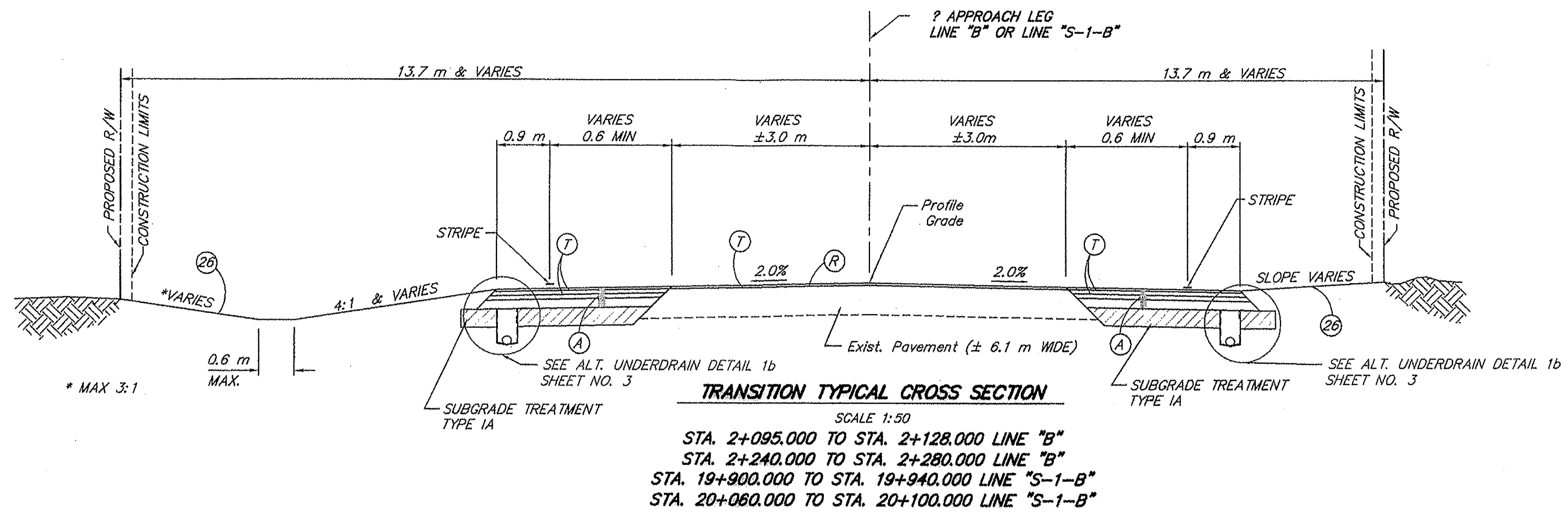
HAMILTON COUNTY

THESE PLANS PREPARED BY:  
FIRST GROUP ENGINEERING INC.

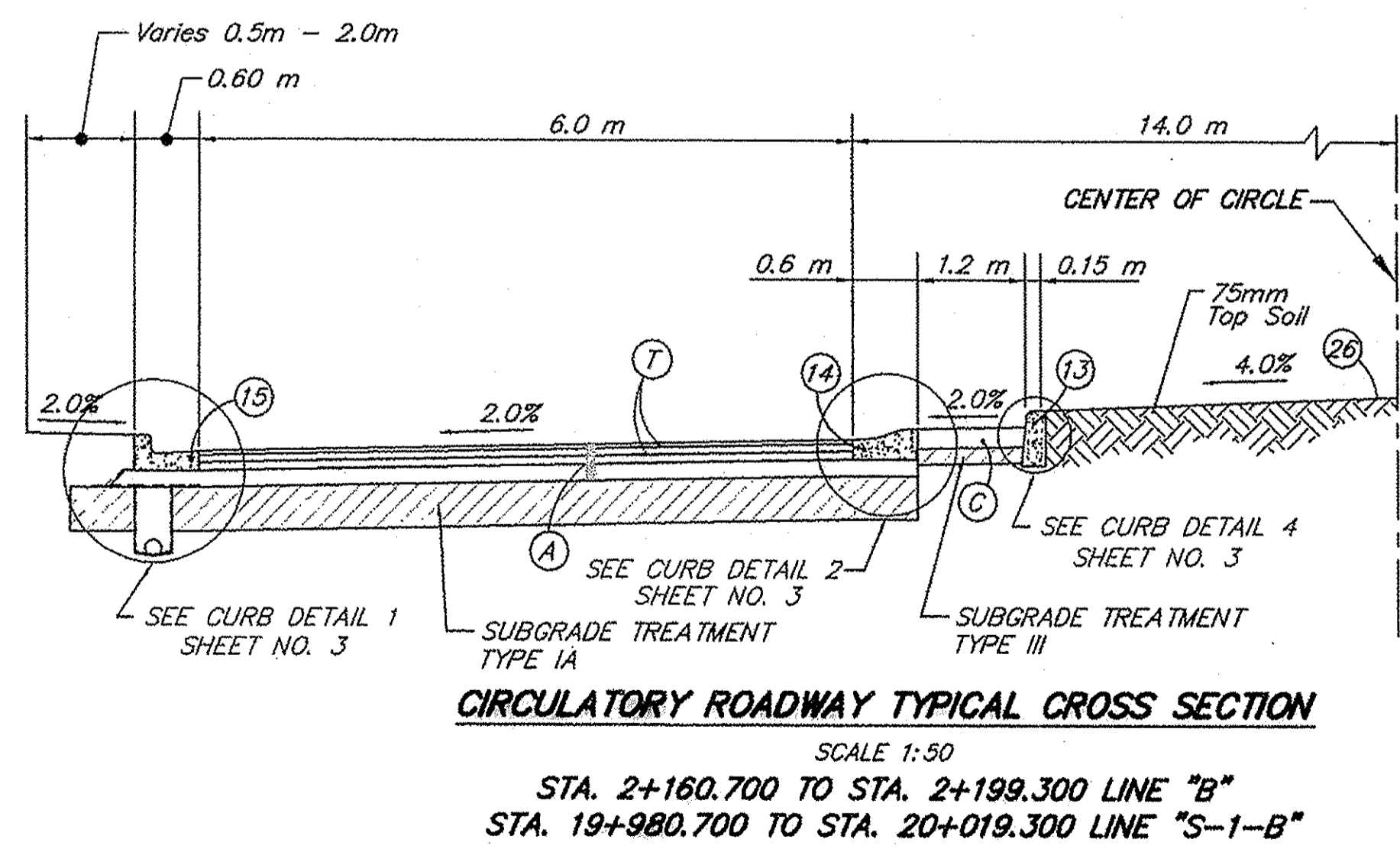
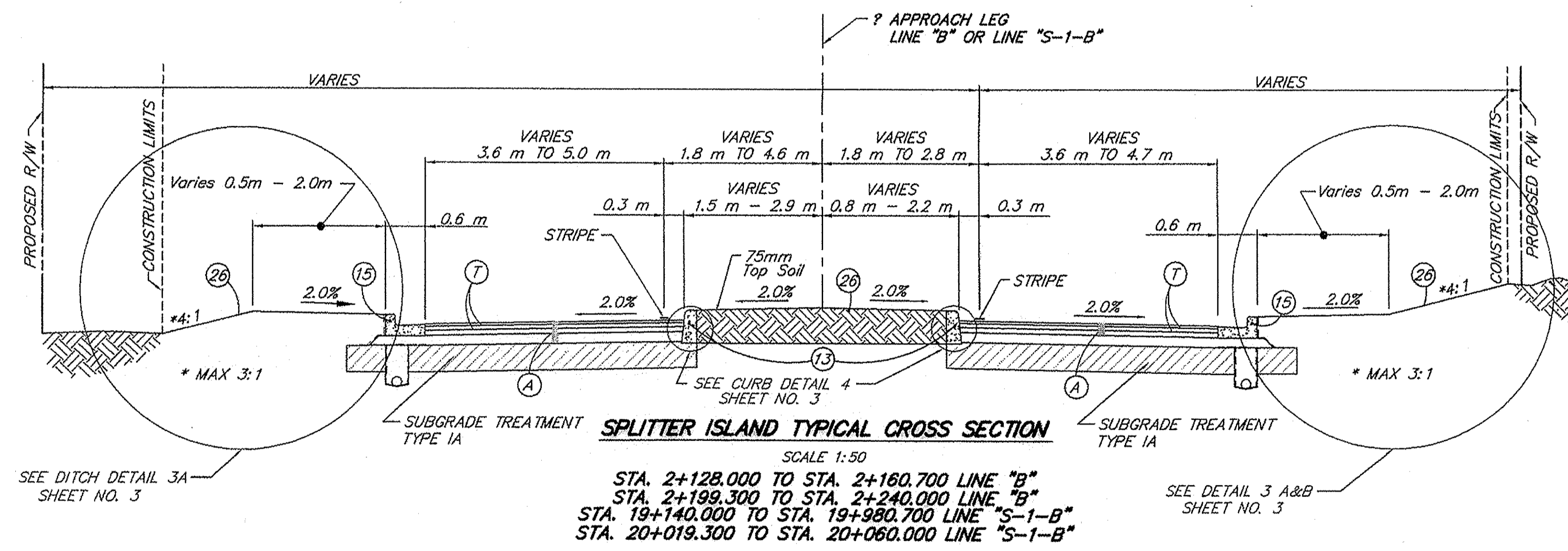
CONSULTING ENGINEERS  
5925 LAKESIDE BLVD, INDIANAPOLIS, IN 46278  
PH. (317) 290-9549 FAX. (317) 290-9560

CERTIFIED Lawrence C. Surber DATE 8/25/09





EARTHWORK TABLE		
LINE	"CUT"	"FILL"
"B"	435 m <sup>3</sup>	730 m <sup>3</sup>
"S-1-B"	397 m <sup>3</sup>	729 m <sup>3</sup>
POND "B"	29 m <sup>3</sup>	122 m <sup>3</sup>
TOTAL	861 m <sup>3</sup>	(+25%) 1977 m <sup>3</sup>
WET "B"	86 m <sup>3</sup>	(+25%) 30 m <sup>3</sup>



This information was gathered for input into the Hamilton County Geographic Information System (GIS). This document is considered an official record of the GIS.  
Entry Date: 6/16/2015  
Entered By: SLM

- LEGEND**
- (A) 90 kg/m<sup>2</sup> QC/QA HMA, 2, 70 SURFACE, 9.5mm, ON 150 kg/m<sup>2</sup> QC/QA HMA, 2, 70 INTERMEDIATE, 19.0mm, ON 180 kg/m<sup>2</sup> QC/QA HMA, 2, 64 BASE, 25.0mm, ON 150 mm COMPACTED AGGREGATE, NO. 53, BASE SUBGRADE TREATMENT TYPE EA
  - (C) PCCP, 180 mm (STAMPED) SUBGRADE TREATMENT TYPE III
  - (C1) PCCP, 225 mm SUBGRADE TREATMENT TYPE IIIA
  - (F) 100 mm CONCRETE SIDEWALK
  - (D) CENTER CURB, D, CONCRETE
  - (R) ASPHALT, MILLING 38 mm 90 kg/m<sup>2</sup> QC/QA HMA, 2, 70 SURFACE, 9.5mm
  - (Rx) CURB RAMP (X DESIGNATES TYPE)
  - (T) ASPHALT MATERIAL FOR TACK COAT
  - (13) CONCRETE BARRIER CURB, 150 mm
  - (14) CONCRETE ROLL CURB, 600 mm
  - (15) CONCRETE CURB AND GUTTER, 600 mm
  - (16) CURB TURNOUT
  - (26) SODDING (NURSERY)

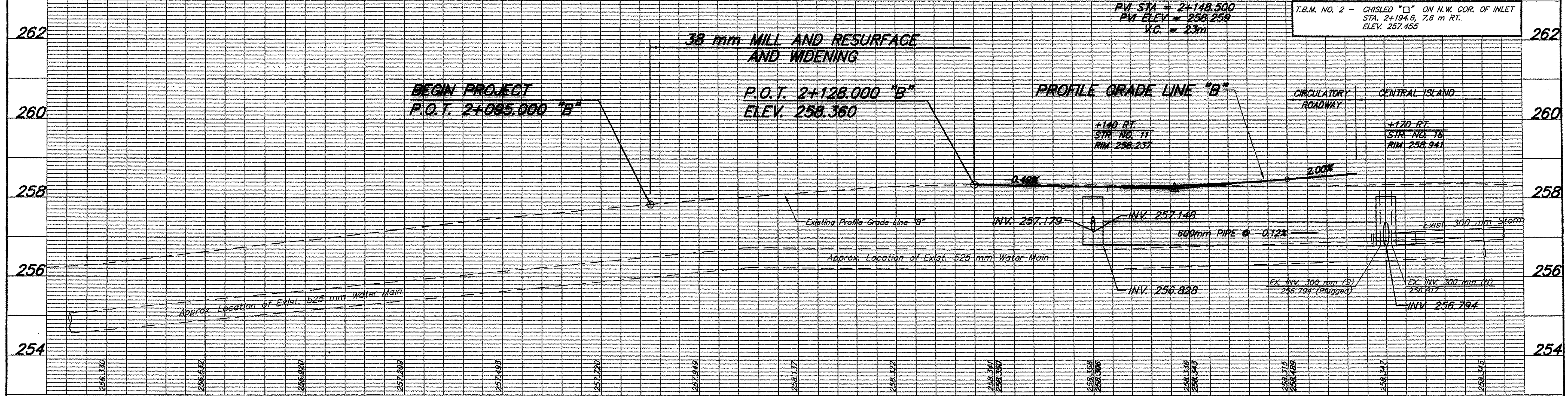
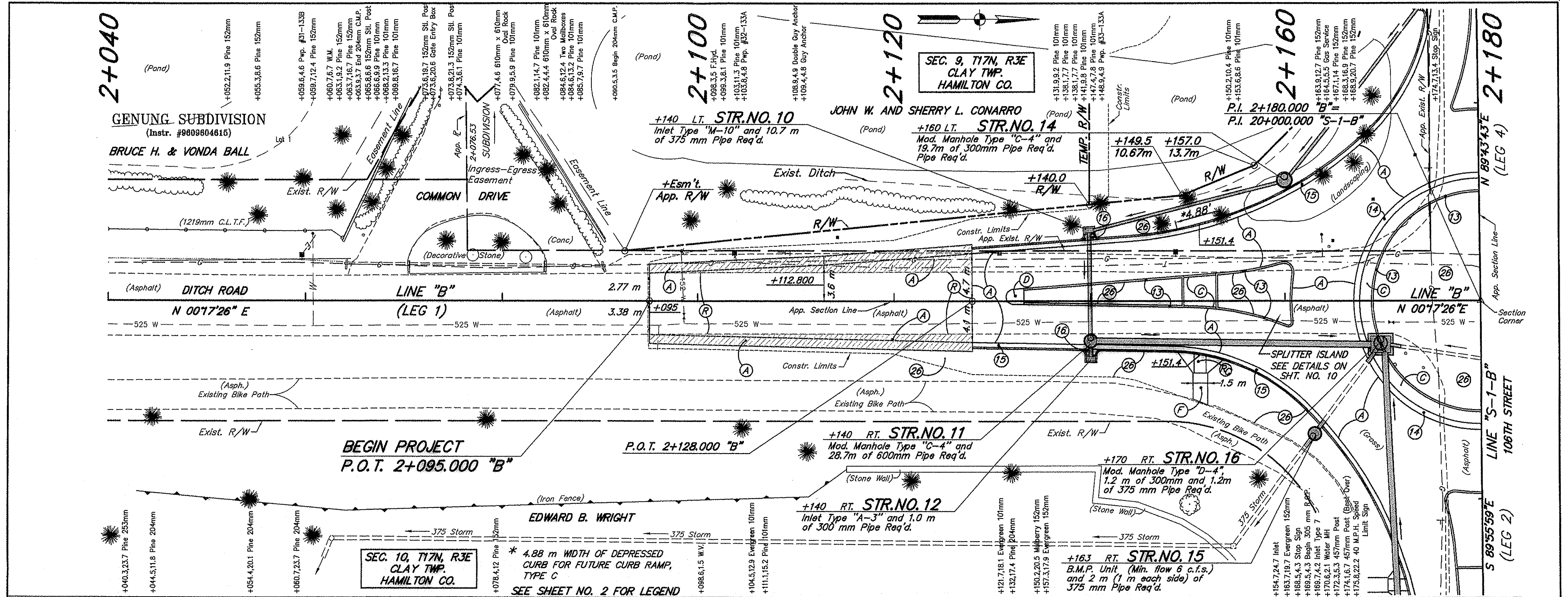
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DESIGNED: R.K. DRAWN: A.J.S.  
CHECKED: L.C.S. CHECKED: R.K.

**HAMILTON COUNTY**  
106TH STREET AND DITCH ROAD  
TYPICAL CROSS SECTIONS

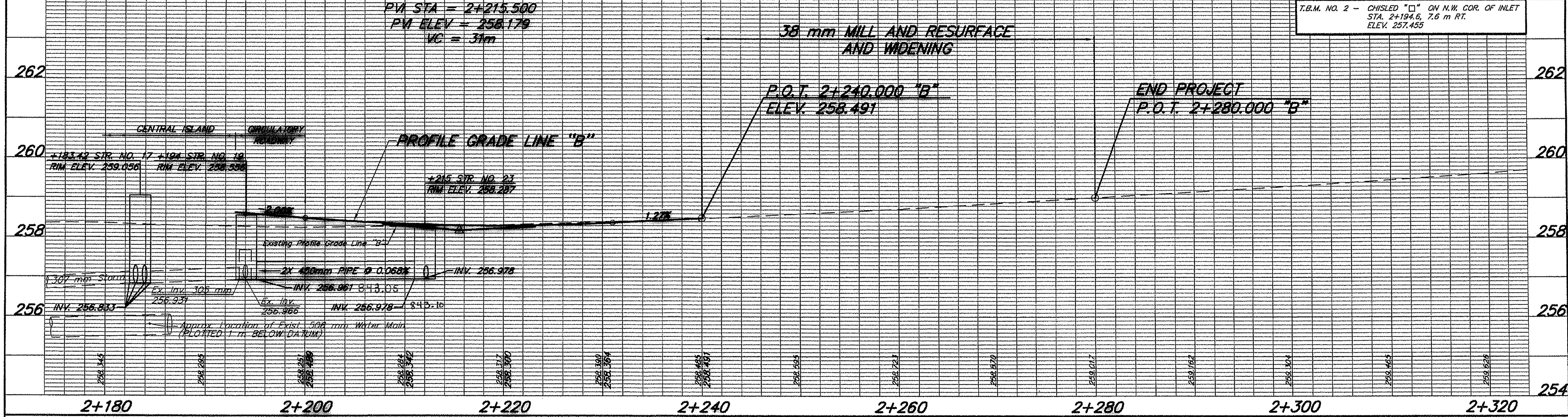
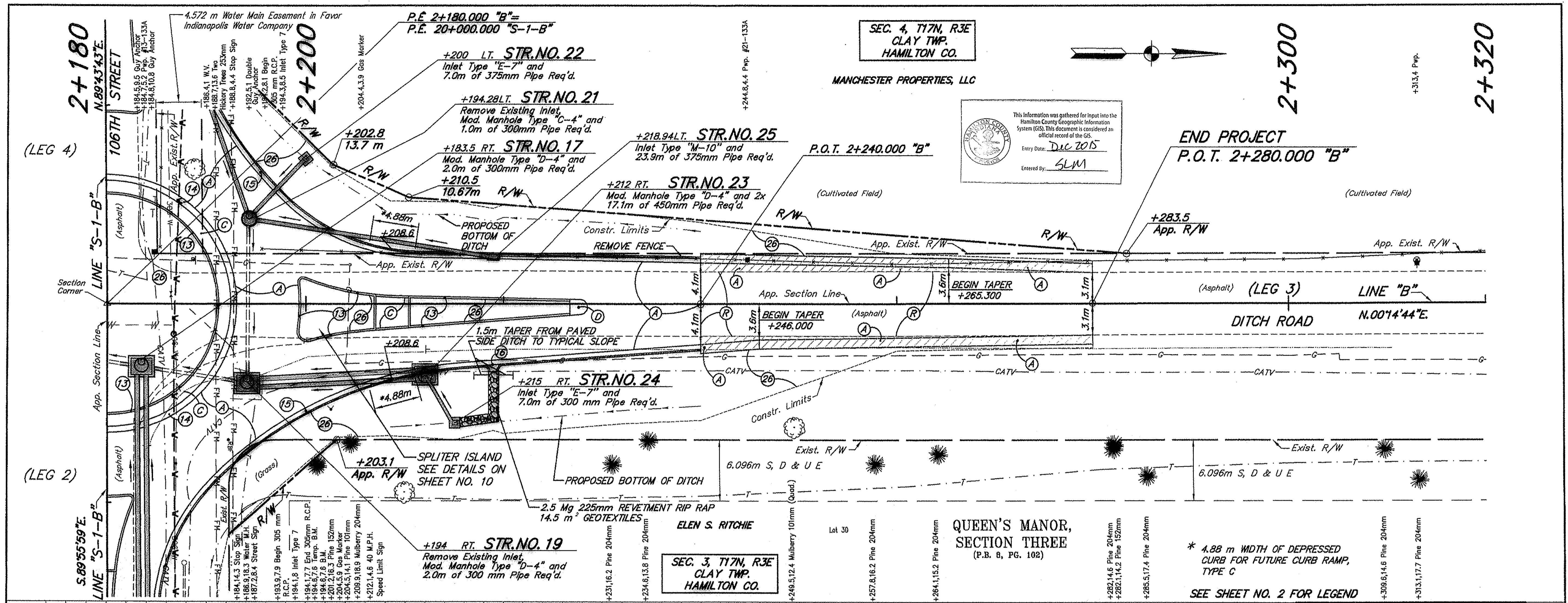
HORIZONTAL SCALE	BRIDGE FILE
AS NOTED	
VERTICAL SCALE	DESIGNATION
AS NOTED	
SURVEY BOOK	SHEETS
	2 of 31
CONTRACT	PROJECT
	PR-99-0001



2+040	2+060	2+080	2+100	2+120	2+140	2+160	2+180
						<p align="center"><b>HAMILTON COUNTY</b></p> <p align="center"><b>106TH STREET AND DITCH ROAD</b></p> <p align="center"><b>LINE "B" (LEG 1)</b></p>	
<p>HORIZONTAL SCALE 1:200</p>		<p>VERTICAL SCALE 1:50</p>		<p>SURVEY BOOK</p>		<p>BRIDGE FILE</p>	
<p>DESIGNED: R.K.</p>		<p>DRAWN: A.J.S.</p>		<p>CHECKED: L.C.S.</p>		<p>DESIGNATION</p>	
<p>CONTRACT</p>		<p>PR-99-0001</p>		<p>SHEETS</p>		<p>5 of 31</p>	

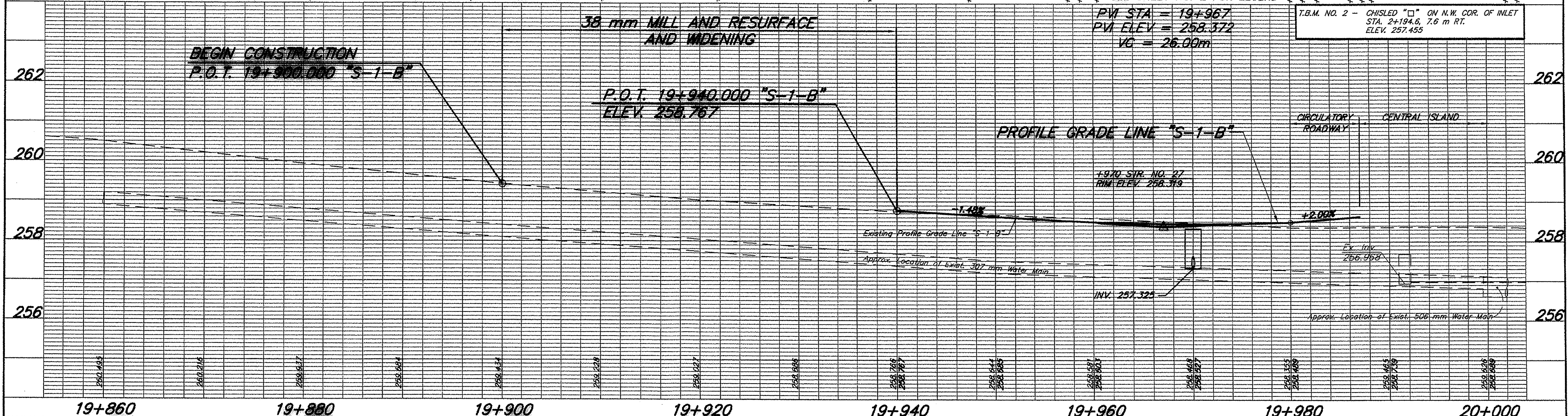
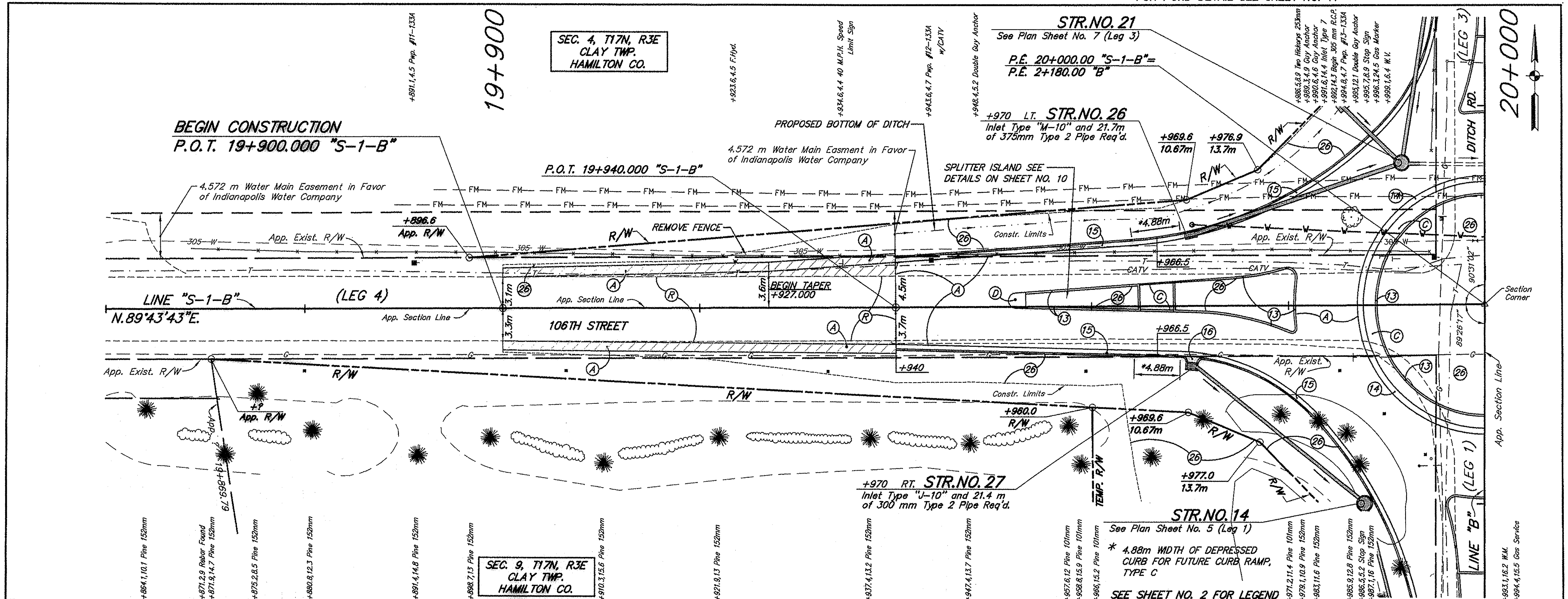
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				<b>HAMILTON COUNTY</b> 106TH STREET AND DITCH ROAD LINE "B" (LEG 3)		HORIZONTAL SCALE 1:200	BRIDGE FILE
NORTH 3150.4868 EAST 1530.9351 P.I. 2+180.000 "B" P.I. 20+000.000 "S-1-B"		NORTH 3330.4848 EAST 1531.7084 P.O.T. 2+360.000 "B"		DESIGNED: R.K. CHECKED: L.C.S.	DRAWN: A.J.S. CHECKED: R.K.	VERTICAL SCALE 1:50	DESIGNATION
						SURVEY BOOK	SHEETS 7 of 31
						CONTRACT	PROJECT PR-99-0001

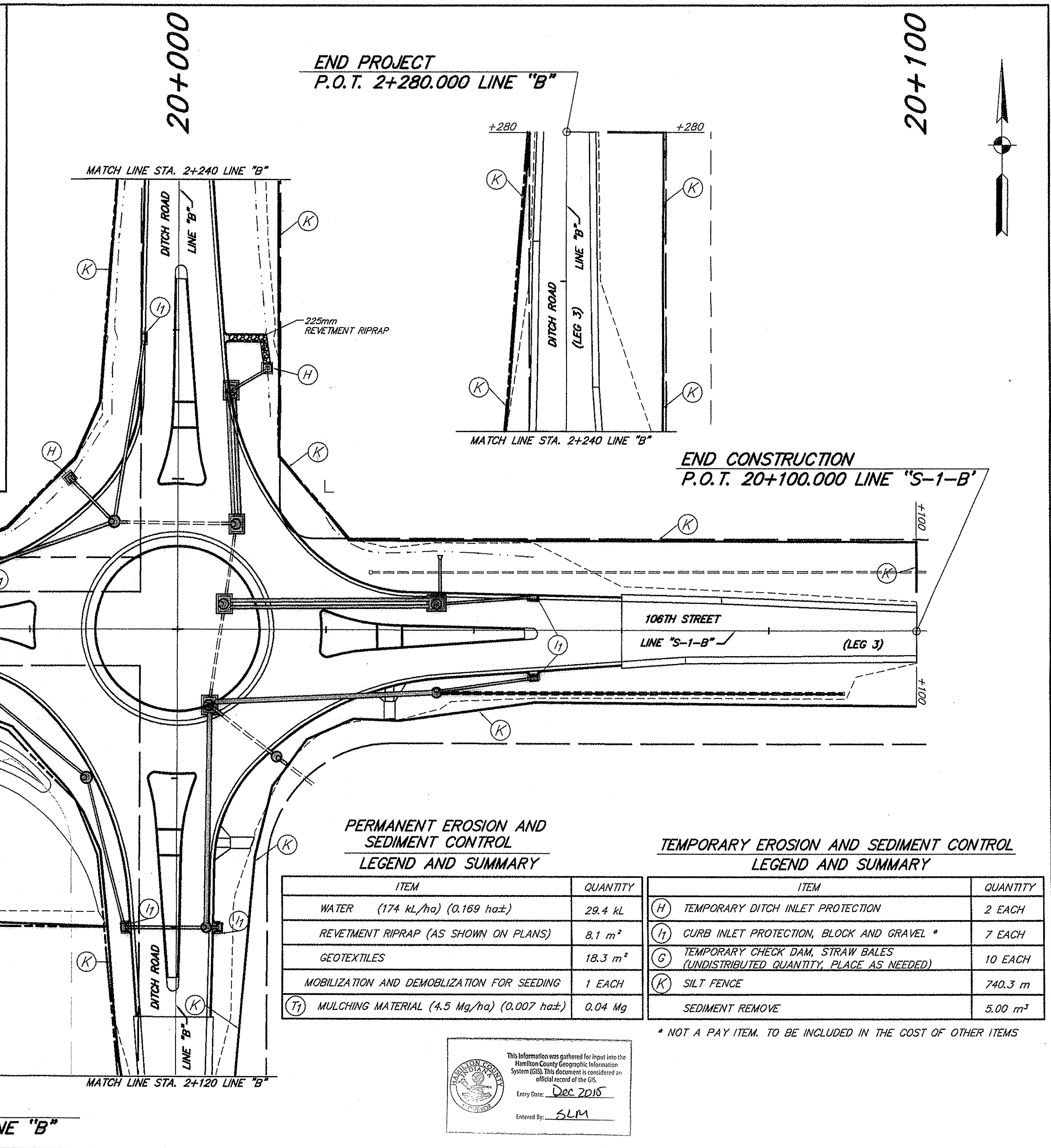
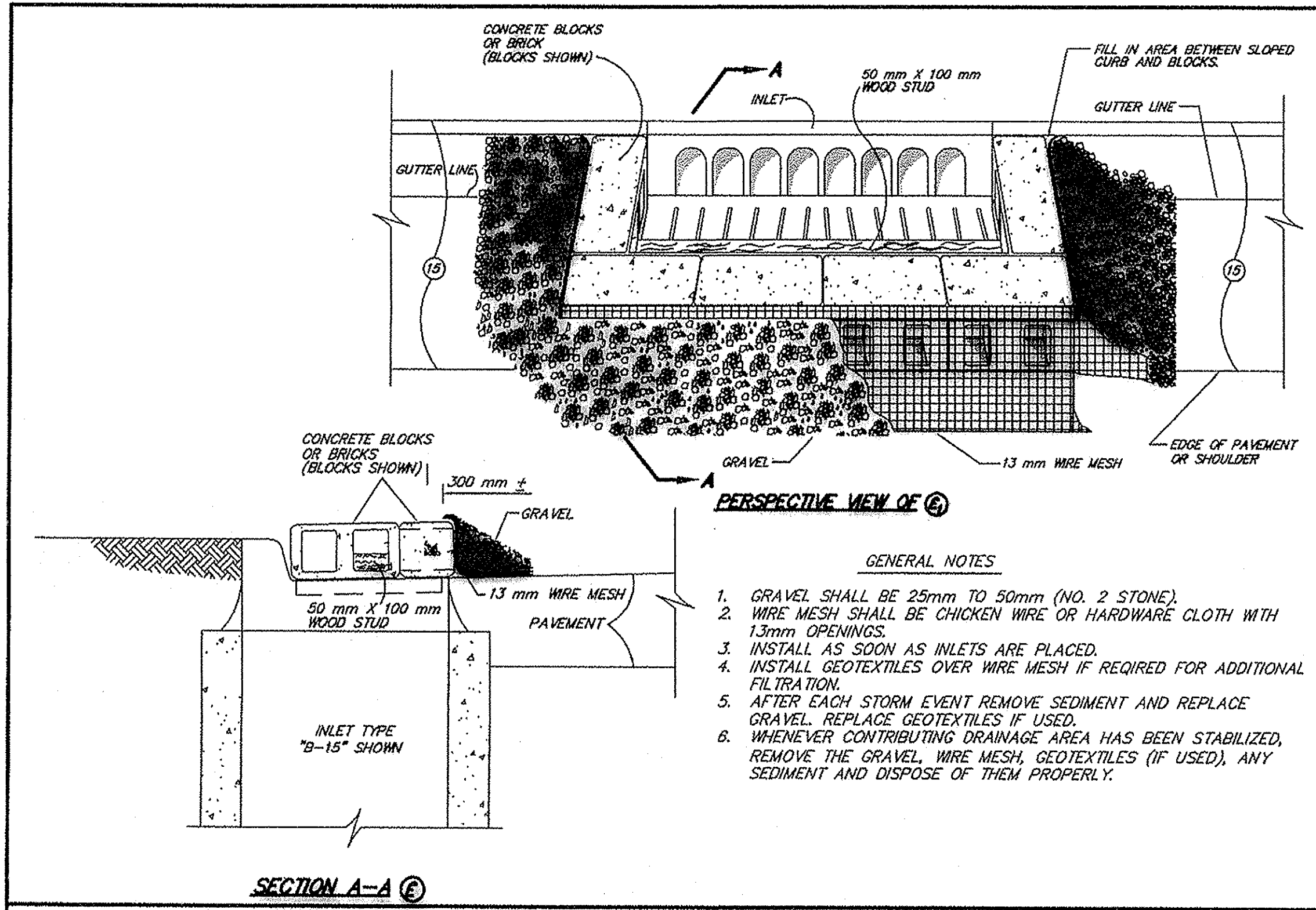
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<p><b>SEC. 4, T17N, R3E CLAY TWP. HAMILTON CO.</b></p>	<p><b>SEC. 9, T17N, R3E CLAY TWP. HAMILTON CO.</b></p>	<p><b>SEC. 10, T17N, R3E CLAY TWP. HAMILTON CO.</b></p>	<p><b>SEC. 11, T17N, R3E CLAY TWP. HAMILTON CO.</b></p>	<p><b>SEC. 12, T17N, R3E CLAY TWP. HAMILTON CO.</b></p>	<p><b>SEC. 13, T17N, R3E CLAY TWP. HAMILTON CO.</b></p>
<p>North Arrow NORTH 3149.6339 EAST 1350.9375</p>	<p>North Arrow NORTH 3150.4868 EAST 1530.9351</p>	<p>This information was gathered for input into the Hamilton County Geographic Information System (GIS). This document is considered an official record of the GIS. Entry Date: <b>DEC 2015</b> Entered By: <b>SLM</b></p>		<p><b>NO. 18417</b> Professional Engineer</p>	<p><b>HAMILTON COUNTY</b></p> <p><b>106TH STREET AND DITCH ROAD LINE "S-1-B" (LEG 4)</b></p>
<p>P.O.T. 19+820.000 "S-1-B"</p>	<p>P.I. 2+180.000 "B" = P.I. 20+000.000 "S-1-B"</p>	<p>DESIGNED: R.K. CHECKED: L.C.S.</p>	<p>DRAWN: A.J.S. CHECKED: R.K.</p>	<p>HORIZONTAL SCALE 1:200</p> <p>VERTICAL SCALE 1:50</p> <p>SURVEY BOOK CONTRACT</p>	<p>BRIDGE FILE DESIGNATION</p> <p>SHEETS 8 of 31</p> <p>PROJECT PR-99-0001</p>

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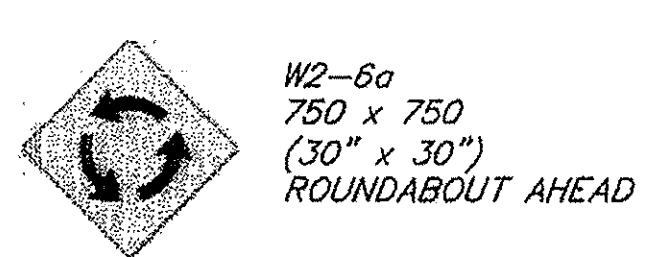
		<b>HAMILTON COUNTY</b>		HORIZONTAL SCALE 1:300 VERTICAL SCALE N/A	BRIDGE FILE DESIGNATION
DESIGNED: R.K. CHECKED: L.C.S.	DRAWN: A.J.S. CHECKED: R.K.	<b>106TH STREET AND DITCH ROAD</b> <b>TEMPORARY EROSIONS &amp; SEDIMENT CONTROL</b>		SURVEY BOOK CONTRACT	SHEETS 12 of 31 PROJECT PR-99-0001



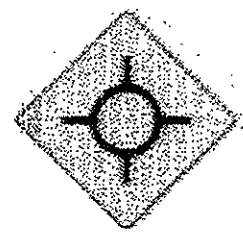
19+900

20+000

20+100



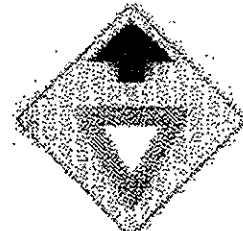
W2-6a  
750 x 750  
(30" x 30")  
ROUNDBOUT AHEAD



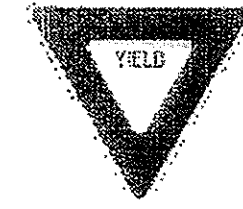
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INTERSECTION SYM.



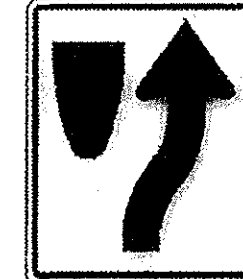
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(18" x 18")  
ADVISORY SPEED 15 M.P.H.



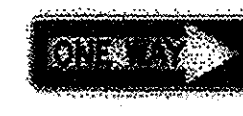
W3-2a  
750x750  
(30" x 30")  
YIELD AHEAD



R1-2  
900 x 900 x 900  
(36" x 36" x 36")  
YIELD



R4-7  
600 x 750  
(24" x 30")  
KEEP RIGHT



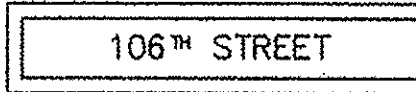
R6-1(R)  
900 x 300  
(36" x 12")  
ONE WAY RIGHT



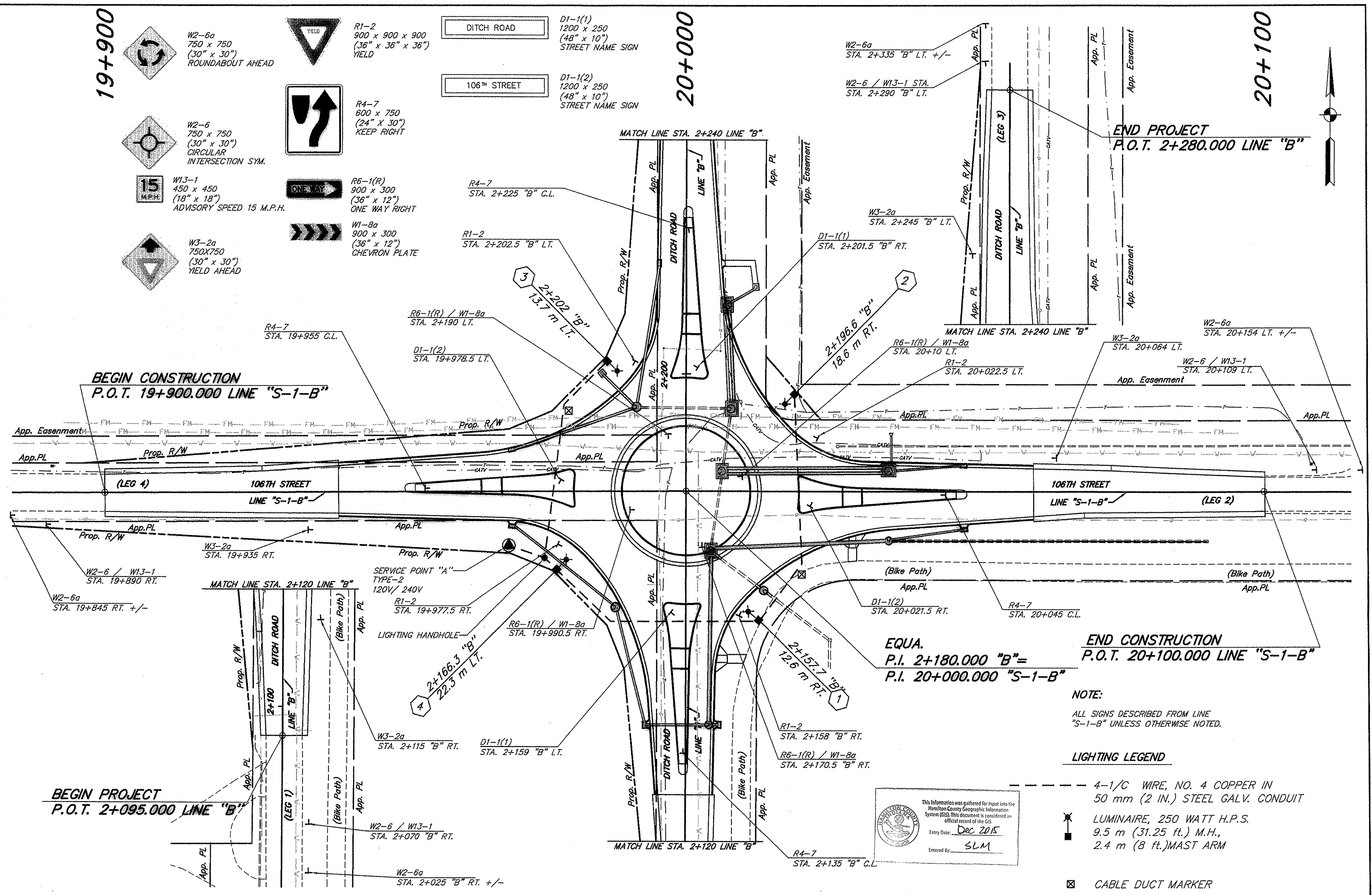
W1-8a  
900 x 300  
(36" x 12")  
CHEVRON PLATE



DITCH ROAD  
D1-1(1)  
1200 x 250  
(48" x 10")  
STREET NAME SIGN



106TH STREET  
D1-1(2)  
1200 x 250  
(48" x 10")  
STREET NAME SIGN



BEGIN CONSTRUCTION  
P.O.T. 19+900.000 LINE "S-1-B"

BEGIN PROJECT  
P.O.T. 2+095.000 LINE "B"

END PROJECT  
P.O.T. 2+280.000 LINE "B"

EQUA.  
P.I. 2+180.000 "B"=  
P.I. 20+000.000 "S-1-B"

END CONSTRUCTION  
P.O.T. 20+100.000 LINE "S-1-B"

NOTE:  
ALL SIGNS DESCRIBED FROM LINE  
"S-1-B" UNLESS OTHERWISE NOTED.

LIGHTING LEGEND

- 4-1/C WIRE, NO. 4 COPPER IN 50 mm (2 IN.) STEEL GALV. CONDUIT
- LUMINAIRE, 250 WATT H.P.S. 9.5 m (31.25 ft.) M.H., 2.4 m (8 ft.) MAST ARM

CABLE DUCT MARKER

This information was gathered for input into the Hamilton County Geographic Information System (GIS). This document is considered an official record of the GIS.

Entry Date: Dec 2015  
Entered By: SLM

J:\80 HAMILTON COUNTY\106th & Ditch\Drawings\14-106TH-Sign - Lighting.dwg, Model: 02520209 2:12:14 PM, T:Schreck, dmsaPDF, 0.0392701.0.3

		<b>HAMILTON COUNTY</b> 106TH STREET AND DITCH ROAD SIGNING & LIGHTING PLANS		HORIZONTAL SCALE	BRIDGE FILE
				1:300	
DESIGNED: R.K.	DRAWN: A.J.S.	VERTICAL SCALE	DESIGNATION		
CHECKED: L.C.S.	CHECKED: R.K.	N/A			
		SURVEY BOOK	SHEETS		
		CONTRACT	14 of 31		
			PROJECT		
			PR-99-0001		



## UNDERDRAIN TABLE

Underdrain Pipe Limits	UNDERDRAIN PIPE						OUTLET PIPE				Remarks	
	Type 4 Pipe		Geotextile for Underdrains	Aggregate for Underdrains	Special Grade	Flow Line Elevation @ Underdrain Pipe Limit	Outlet Pipe Required	Connect Underdrain Pipe to Structure No. _____	Structure Invert Elevation	45 Degree Elbows Required (1 or 2)		150 mm Outlet Pipe
	100 mm (m)	150 mm (m)										
<b>LEG 1 RT.</b>												
2+095		44.5	155.8	9.4	0.20%	257.080	N				HIGH POINT	
2+139.5						256.991	N	11	256.986	1	LOW POINT	
2+140.5		24.9	87.2	5.3	1.03%	257.268	N	11	257.265	1	LOW POINT	
2+163.5						257.524	N				HIGH POINT	

<b>LEG 1 LT.</b>											
2+095		44.5	155.8	9.4	0.20%	257.080	N				HIGH POINT
2+139.5						256.991	Y	11	256.960	2	CROSSES ROADWAY
2+168.7		30.9	108.2	6.5	0.54%	257.525	N				HIGH POINT
2+140						257.357	N	10	257.352	1	LOW POINT

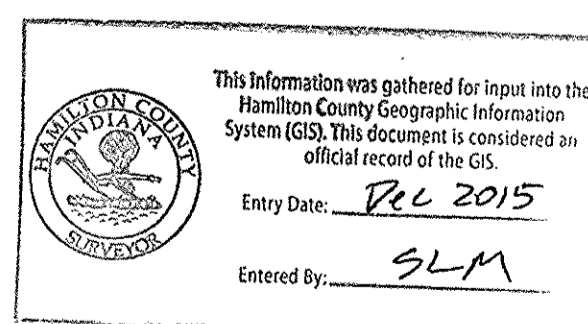
<b>LEG 2 RT.</b>											
20+016.9		21.3	74.6	4.7	1.76%	257.525	N				HIGH POINT
20+035						257.150	N	29	257.145	2	
20+036.5		11.3	39.6	2.5	0.20%	257.150	N				
20+047.8						257.120	N	31	257.115	2	LOW POINT
20+048.5		51.5	180.3	10.9	0.20%	257.120	N	31	257.115		LOW POINT
20+100						257.223	N				HIGH POINT

<b>LEG 2 LT.</b>											
20+011.1		44.2	154.7	9.3	0.20%	257.640	N				HIGH POINT
20+024.1						257.550	N				INSTALLED OVER PIPE
20+024.1		23.9	83.7	5.3	1.91%	257.550	N				INSTALLED OVER PIPE
20+048						257.060	N	32	257.055	2	LOW POINT
20+048		52.0	55.5	11.0	0.20%	257.060	N	32	257.055	2	LOW POINT
20+100						257.164	N				HIGH POINT

COLUMN 1											
SUB TOTALS		349.0	1095.4	74.3	X	X	X	X	X	13	9.0

**Summary of Underdrain Quantities**

Pipe, Type 4, Circular, 150 mm..... 750 m  
 Pipe, Underdrain Outlet, 150 mm..... 15 m  
 (Additional 6 m added for elbows and connectors)  
 Aggregate for Underdrains..... 136 m<sup>3</sup>  
 Geotextiles for Underdrains..... 2498 m<sup>2</sup>  
 Structure Backfill ..... 4 m<sup>3</sup>  
 Video Inspection for Underdrains..... 1000 m



## UNDERDRAIN TABLE

Underdrain Pipe Limits	UNDERDRAIN PIPE						OUTLET PIPE				Remarks	
	Type 4 Pipe		Geotextile for Underdrains	Aggregate for Underdrains	Special Grade	Flow Line Elevation @ Underdrain Pipe Limit	Outlet Pipe Required	Connect Underdrain Pipe to Structure No. _____	Structure Invert Elevation	45 Degree Elbows Required (1 or 2)		150 mm Outlet Pipe
	100 mm (m)	150 mm (m)										
<b>LEG 3 RT.</b>												
2+191.2		22.4	78.4	4.7	1.10%	257.524	N				HIGH POINT	
2+210.6						257.276	N	23	257.273		LOW POINT	
2+213.5		66.5	232.8	14.0	0.96%	257.276	N	23	257.273		LOW POINT	
2+280						257.892	N				HIGH POINT	

<b>LEG 3 LT.</b>											
2+197.2		6.0	21.0	1.3	0.20%	257.612	N				HIGH POINT
2+202.8						257.600	N				INSTALLED OVER PIPE
2+202.8		15.5	54.3	3.3	2.32%	257.600	N				INSTALLED OVER PIPE
2+218.3						257.240	N	25	257.235		LOW POINT
2+219.7		60.3	211.1	12.7	1.46%	257.240	N	25	257.235		LOW POINT
2+280						258.120	N				HIGH POINT

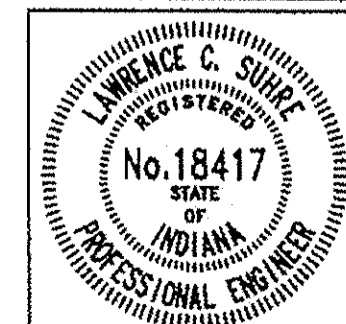
<b>LEG 4 RT.</b>											
19+900		70	245.0	2.7	1.31%	258.400	N				HIGH POINT
19+970						257.480	N	27	257.475	2	LOW POINT
19+970		15.0	52.5	3.2	0.30%	257.480	N	27	257.475	2	LOW POINT
19+983.1						257.525	N				HIGH POINT

<b>LEG 4 LT.</b>											
19+900		70.0	245	14.7	1.46%	258.500	N				HIGH POINT
19+970						257.490	N	26	257.488		LOW POINT
19+970		20.4	71.4	4.3	0.20%	257.490	N	26	257.488	2	LOW POINT
19+988.4						257.531	N				HIGH POINT

<b>FRENCH DRAIN ON LEG 2 RT.</b>											
20+035.5		54.5	190.8	24.6	0.20%	256.964	N	30	256.964		LOW POINT
20+090						257.073	N				HIGH POINT

COLUMN 2											
SUB TOTALS		400.6	1402.3	60.9	X	X	X	X	X	6	0.0

COLUMN 1		349.0	1095.4	74.3	X	X	X	X	X	13	9.0	X
COLUMN 2		400.6	1402.3	60.9	X	X	X	X	X	6	0.0	X
TOTAL		750	2498	136	X	X	X	X	X	19	9	X



**106TH STREET AND DITCH ROAD**

DESIGNED: A.J.S.      DRAWN: A.J.S.  
 CHECKED: L.C.S.      CHECKED: R.A.K.

**HAMILTON COUNTY**

**UNDERDRAIN TABLES**  
**106TH AND DITCH**

HORIZONTAL SCALE	BRIDGE FILE
NONE	
VERTICAL SCALE	DESIGNATION
NONE	
SURVEY BOOK	SHEETS
	18 of 31
CONTRACT	PROJECT
	PR-99-0001