

# WOLF CREEK DRAIN

## SAGINAW COUNTY

### BRIAN J. WENDLING

### PUBLIC WORKS COMMISSIONER

## SWAN CREEK TWP & FREMONT TWP, MICHIGAN

## HRC JOB No. 20150005



**BRIAN J. WENDLING**  
**PUBLIC WORKS COMMISSIONER**

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 FAX (2nd. Floor): (248) 338-2592  
 WEB SITE: [http:// www.hrc-engr.com](http://www.hrc-engr.com)

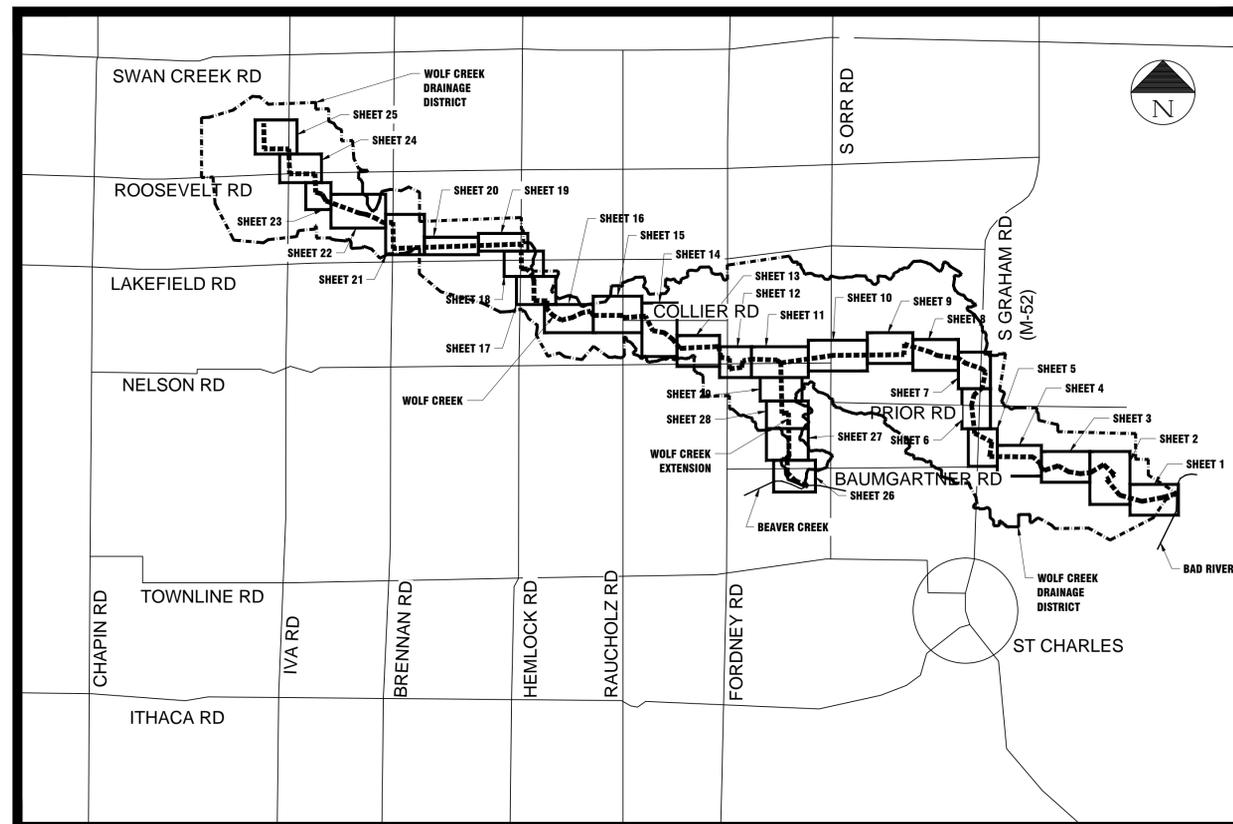
**NOTE:**

ALL EXISTING UTILITIES SHOWN ON THIS TOPOGRAPHICAL SURVEY HAVE BEEN TAKEN FROM VISUAL OBSERVATION, AND RECORD MAPPING WHERE AVAILABLE. NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE UTILITIES SHOWN ON THIS DRAWING. PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS PRIOR TO CONSTRUCTION ACTIVITIES.



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 (3 WORKING DAYS)  
 BEFORE YOU DIG  
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 OR 811  
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**NOTE:**  
 DATA OBTAINED BY GPS NETWORK ROVER  
 MICH S.P.C. SOUTH ZONE (NAD 83)  
 VERTICAL DATUM (NAVD 88)

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DATE	ADDITIONS AND/OR REVISIONS
9/08/15	PROPERTY OWNER REVIEW
8/26/15	OWNER'S REVIEW
7/28/15	OWNER'S REVIEW
6/05/15	ADDING MAINTENANCE ITEMS
5/18/15	MEETING WITH COUNTY

**GENERAL NOTES**

CONTRACTOR SHALL OBTAIN ALL LOCAL AND STATE PERMITS REQUIREMENT TO WORK WITHIN THE UTILITY, ROAD, AND DRAIN RIGHT-OF-WAYS UNLESS OTHERWISE PROVIDED

CONTRACTOR SHALL CONFORM TO THE SOIL EROSION AND SEDIMENTATION CONTROL ACT, PART 91 OF ACT 451 OF 1994

WHEN DEFINING A SIDE OF BANK OF THE DRAIN, RIGHT OR LEFT, SHALL BE WHILE FACING UPSTREAM

ALL WORK SHALL BE WITHIN DRAIN RIGHT-OF-WAY. WORK OUTSIDE RIGHT-OF-WAY MUST BE AGREED UPON BY LANDOWNER AND ENGINEER WITH A SIGNED LANDOWNER AGREEMENT FORM (SEE SPECIFICATION) PRIOR TO WORK ON THAT PROPERTY

CONTRACTOR SHALL FIELD LOCATE ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION AND SHALL NOTIFY THE ENGINEER IF POSSIBLE CONFLICT EXISTS

ANY UTILITIES ENCOUNTERED DURING CONSTRUCTION SHALL BE SUPPORTED, PER THE SPECIFICATIONS OF THE INDIVIDUAL UTILITY COMPANY CLAIMING OWNERSHIP OF THE UTILITY. COST ARE IDENTIFIED AND INCLUDED WITH THE PAY ITEM BEING INSTALLED. ANY UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE

PROTECT ALL BITUMINOUS ROADS, DRIVES, OR PARKING AREAS NOT SPECIFIED TO BE REMOVED DURING CONSTRUCTION. REPAIR ANY UNAUTHORIZED DAMAGE AT CONTRACTOR'S EXPENSE

THE CONTRACTOR SHALL MAINTAIN LOCAL TRAFFIC AND ACCESS TO HOMES AT ALL TIMES DURING THE PROJECT. COST SHALL BE INCLUDED IN THE PAY ITEM FOR MAINTAINING TRAFFIC. 24-48 HOURS NOTICE IS REQUIRED OF ALL IMPACTED AREAS

ALL PAVEMENT JOINTS BETWEEN EXISTING AND NEW PAVEMENT SHALL BE SAW CUT WITH BUTT-JOINTS AND SEALED INCIDENTAL TO THE PROJECT

BROKEN CONCRETE AND DEBRIS SHALL BE CONSIDERED WASTE AND SHALL BE DISPOSED OF BY THE CONTRACTOR OFF SITE. COST SHALL BE INCIDENTAL AND INCLUDED IN THE PAY ITEMS OF THE PROJECT

BROKEN CONCRETE REMOVED FROM EXISTING CROSSINGS CANNOT BE USED AS RIPRAP UNLESS APPROVED BY ENGINEER

THE CONTRACTOR SHALL CAREFULLY REMOVE AND NEATLY STOCKPILE ALL FENCES, LANDSCAPING, ETC. OUTSIDE OF THE DRAIN RIGHT-OF-WAY

WORK HOURS ARE 7 AM TO 7 PM MONDAY THROUGH SATURDAY. WORK ON SUNDAYS AND HOLIDAYS IS NOT PERMITTED WITH OUT OWNER APPROVAL.

ALL EXCAVATED MATERIAL NOT TO BE REUSED OR DISPOSED OF ON SITE SHALL BE REMOVED FROM SITE. THE CONTRACTOR IS RESPONSIBLE FOR DISPOSING OF MATERIALS ACCORDING TO LOCAL AND STATE REQUIREMENTS

ALL RIPRAP SHALL BE LIMESTONE TYPE MATERIAL AS APPROVED BY THE ENGINEER UNLESS OTHERWISE DIRECTED. SUBMIT LIMESTONE SAMPLES TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. OWNER AND ENGINEER RESERVES THE RIGHT TO REJECT ANY AND ALL RIPRAP

CONTRACTORS SHALL FINISH GRADE, SEED, FERTILIZE, AND MULCH DAILY ON ALL DISTURBED AREAS AS DESCRIBED IN THE SPECIFICATIONS. ALL AREAS TO RECEIVE LANDSCAPE SEEDING SHALL HAVE 4" TOPSOIL PLACED AS DETAILED IN THE SPECIFICATIONS. TOPSOIL SHALL BE STRIPPED AND STOCKPILED FOR USE AS TOPSOIL SURFACE AS DIRECTED BY THE ENGINEER

CONTRACTOR SHALL MAINTAIN ACCESS FOR POSTAL AND PARCEL DELIVERY AND GARBAGE AND RECYCLING PICKUP AT ALL TIMES. CONTRACTOR IS RESPONSIBLE FOR TAKING THE NECESSARY ACTIONS IF SERVICE IS INTERRUPTED. CONTRACTOR SHALL PROTECT, REMOVE AND REPLACE ALL MAILBOXES AND POSTS. ANY DAMAGED MAILBOXES AND POSTS SHALL BE REPLACED AT CONTRACTOR'S EXPENSE

CONTRACTOR SHALL PROTECT ALL POWER POLES. POWER POLES WITHIN DRAIN BANKS SHALL BE RELOCATED OR REMOVED BY OTHERS AS SPECIFIED ON PLANS

CONTRACTOR SHALL PROTECT ALL TELEPHONE PEDESTALS & RISERS. TELEPHONE PEDESTALS & RISERS WITHIN DRAIN BANKS SHALL BE RELOCATED OUTSIDE OF DRAIN BANKS BY OTHERS

CONTRACTOR SHALL CLEAN OUT ALL SIDE DITCHES TO LIMITS OF DRAIN RIGHT-OF-WAY

ALL TREES, BRUSH, AND STUMPS SHALL BE CHIPPED, BURNED, OR HAULED FROM SITE. NO TREES, BRUSH, OR STUMPS SHALL BE BURIED

**CONTACTS**

CONSUMER'S ENERGY LANCE BYERS CUSTOMER & SERVICE INFRASTRUCTURE SAGINAW SERVICE CENTER ROOM 216 (989) 791-5665	GAS
CONSUMER'S ENERGY GREG SQUANDA 2400 WEISS STREET SAGINAW, MI 48602 (989) 737-4485	ELECTRIC
FRONTIER COMMUNICATIONS DAVID B. FLERMOEN 860 TERRANCE ST MUSKEGON, MI 49440 (231) 727-1319	TELEPHONE
SAGINAW COUNTY ROAD COMMISSION JOE WISNIEWSKI, P.E. 3020 SHERIDAN AVE SAGINAW, MI 48601 (989) 752-6140	ROAD COMMISSION
CENTURY LINK GLEN ROGERS 100 2ND STREET PINCONNING, MI 48650 (989) 845-3060	INTERNET/TELEPHONE

**PAY ITEMS**

**CLEARING AND SNAGGING**  
THIS WORK WILL CONSIST OF PROVIDING THE LABOR, MATERIALS, AND EQUIPMENT FOR REMOVING FALLEN TREES, LOG JAMS, AND TREES LEANING OVER THE DRAIN AND EITHER CHIPPING ON SITE OR HAULING THE DEBRIS OFF-SITE. STUMPS MAY REMAIN FOR THOSE TREES CUT DOWN. ON SITE DISPOSAL MAY BE PERMITTED OUTSIDE OF THE DRAIN CHANNEL BUT WITHIN THE DRAIN RIGHT OF WAY WITH THE PERMISSION OF THE OWNER. BURYING ON SITE IS NOT PERMITTED. ACCESS TO AREAS OF CLEARING AND SNAGGING MAY BE DIFFICULT. BOATS OR BARGES MAY BE REQUIRED FOR ACCESS.

**SPOIL LEVELING**  
THE PREFERENCE OF THE OWNER IS TO LEAVE ALL EXCAVATED MATERIALS ON-SITE WITHIN THE DRAIN RIGHT OF WAY. SPOIL LEVELING SHALL INCLUDE THE PLACEMENT OF EXCAVATED MATERIALS AS CALLED FOR ON THE PLANS AND DETAILS. GRADING OUT THE SPOILS TO THE DIMENSIONS ON THE PLANS, ENSURING NO TRAPPED WATER BEHIND THE SPOILS, AND DAILY SEEDING THE SPOIL AREAS.

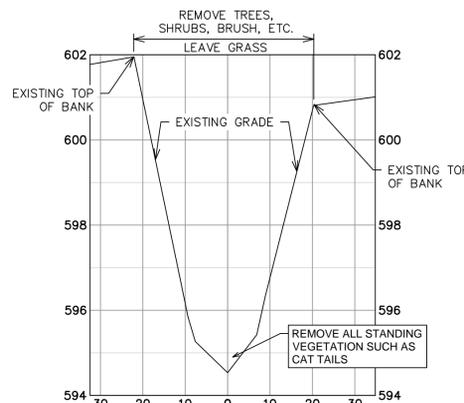
**MAINTENANCE ACCESS**  
THIS WORK WILL CONSIST OF PROVIDING THE LABOR, MATERIALS, AND EQUIPMENT FOR REMOVAL OF TREES INCLUDING STUMPS, BRUSH, AND OTHER VEGETATIVE DEBRIS WITHIN 20 FEET FROM THE TOP OF BANK OR TO THE DRAIN RIGHT-OF-WAY IF LESS, TO PROVIDE A CLEAR AND STABLE ACCESS FOR FUTURE DRAIN MAINTENANCE. TREES, BRUSH, AND STUMPS ARE TO BE CHIPPED AND USED ON-SITE OR PROPERLY DISPOSED OF OFF-SITE IF THE CONTRACTOR ELECTS. EXISTING GRADE TO BE LEVELED OR DRAIN CLEANOUT SPOILS LEVELED IN ACCORDANCE WITH THE PLAN DETAILS. AFTER SPOILS HAVE BEEN SPREAD AND LEVELED (REFERENCE SPOIL LEVELING), MAINTENANCE ACCESS ROUTE SHALL BE MULCHED FROM CHIPPED TREES AND RESTORED PER PLANS AND SPECIFICATIONS.

**SPOIL HAULING**  
THIS WORK WILL CONSIST OF PROVIDING THE LABOR, MATERIALS, AND EQUIPMENT FOR HAULING EXCAVATED MATERIALS AND DEBRIS OFF-SITE. CONTRACTOR SHALL DISPOSE OF PROPERLY IN ACCORDANCE WITH STATE LAWS AND LOCAL REGULATIONS

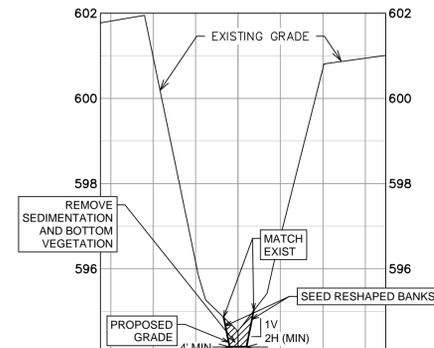
**DRAIN CLEANOUT**  
THIS WORK WILL CONSIST OF REMOVING SEDIMENT FROM THE BOTTOM OF THE DRAIN AND RESHAPING THE BANKS TO LESS THAN 2H:1V PER THE PLAN GRADES AND REPRESENTATIVE CROSS SECTIONS SHOWN ON THE PLANS. DISPOSING OF SPOILS SHALL BE PAID FOR SEPARATELY. EXCAVATION SHALL BE COMPLETED FROM THE SIDE OF THE DRAIN PROPOSED FOR THE MAINTENANCE ACCESS OR FROM THE ROAD SIDE IN SPOIL HAULING LOCATIONS. DRAIN CLEANOUT SHALL INCLUDE RESTORING THE GRADED OR EXCAVATED AREAS WITH SALVAGED OR IMPORTED TOPSOIL AND SEED. SEE SHEET DETAIL ON PLANS.

**SIDE DRAIN (MAINTENANCE ACCESS)**  
THIS WORK WILL CONSIST OF PROVIDING ACCESS ACROSS SIDE DRAINS BY STONE FORD OR CULVERT AND PROVIDING AND PLACING PLAIN RIPRAP ON THE SLOPE OF THE DRAIN BELOW THE INVERT OF THE SIDE DRAIN FOR THE PURPOSE OF MAINTENANCE ACCESS.

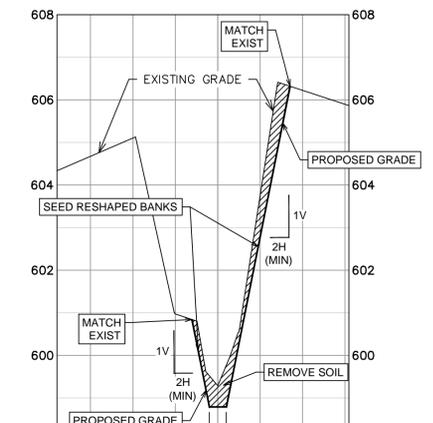
**CLEARING AND GRUBBING**  
THIS WORK WILL CONSIST OF PROVIDING THE LABOR, MATERIALS, AND EQUIPMENT FOR CLEARING AND GRUBBING OF ALL AREAS WHICH INTERFERE WITH EXCAVATION, EMBANKMENT, OR CLEAR VISION. SEE DETAILS ON PLAN SHEETS.



TYPICAL TOP OF BANK TO TOP OF BANK  
CLEARING AND GRUBBING DETAIL  
N.T.S.



DRAIN CLEANOUT DETAIL "A"  
N.T.S.



DRAIN CLEANOUT DETAIL "B"  
N.T.S.

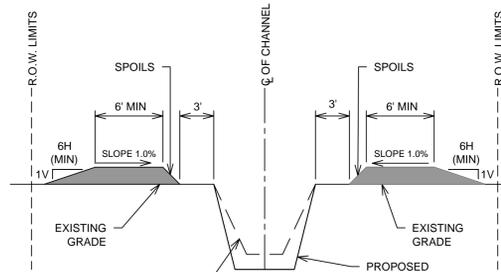
**CLEARING AND GRUBBING NOTES**

CLEARING AND GRUBBING FROM TOP OF DRAIN BANKS TO DRAIN R.O.W. TO BE PAID SEPARATELY UNDER MAINTENANCE ACCESS - LF (IF SHOWN ON PLANS)

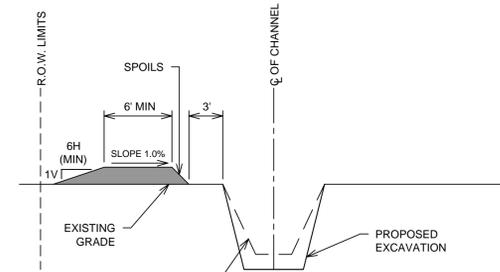
IF NO MAINTENANCE ACCESS IS CALLED FOR AND SPARSE VEGETATION ON TOP OF BANK SHALL BE APPROVED AND PAID FOR UNDER CLEARING AND GRUBBING

**DRAIN CLEANOUT NOTES**

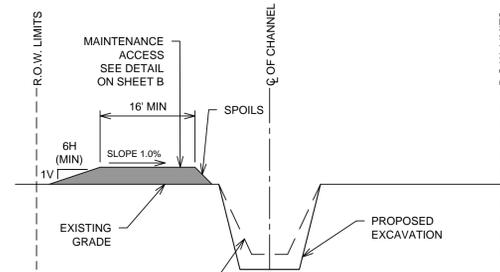
ALL WORK SHOWN SHALL BE INCLUDED IN UNIT BID PRICE FOR DRAIN CLEANOUT - LF  
SIDE SLOPES SHALL BE 2H:1V OR FLATTER



SPOIL LEVELING DETAIL "A"  
N.T.S.



SPOIL LEVELING DETAIL "B"  
N.T.S.



SPOIL LEVELING DETAIL "C"  
N.T.S.

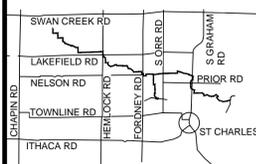
**SPOIL LEVELING NOTES**

- EXCAVATE FROM ONLY ONE SIDE OF DRAIN AS DESIGNATED ON PLANS OR APPROVED BY THE ENGINEER
- FOR EXCAVATION FROM ONE SIDE OF DRAIN, OPPOSITE SIDE OF DRAIN MUST BE CLEARED TO TOP OF BANK
- LEAVE OPENINGS IN DEBRIS PILE AND SPOIL BANK WHERE NECESSARY TO AVOID PONDING OF SURFACE WATER. SIDE SLOPES ON OPENINGS SHALL BE 1 VERT. ON 10 HORIZ. OR FLATTER
- PROVIDE 6" TOPSOIL IN LAWN AREAS. NO SPOILS WILL BE LEVELED IN LAWN AREAS UNLESS INDICATED ON PLAN OR WITH WRITTEN PERMISSION FROM LAND OWNERS
- RAKE, SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS DAILY. SEE SPECIFICATIONS FOR APPLICATION RATES.
- CHIP ALL WOOD LESS THAN 6" DIA AND SPREAD CHIPS OR BURN TREES. NO STUMPS OR WOOD DEBRIS SHALL BE BURIED.
- CONTRACTOR TO LEVEL OLD SPOIL PILES AS NEEDED FOR CONSTRUCTION. COST TO BE INCLUDED IN BID TEM FOR SPOIL LEVELING



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9/08/15	PROPERTY OWNER'S REVIEW
8/26/15	OWNER'S REVIEW
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DRAWN	DVH
CHECKED	AG
APPROVED	JFB



**WOLF CREEK  
SWAN CREEK TWP &  
FREMONT TWP, MICHIGAN**

**PROJECT DETAILS**

HRC JOB NO. 20150005	SCALE HORIZONTAL: 1"=100' VERTICAL: 1"=3'
DATE 05/12/15	SHEET NO. A OF 32



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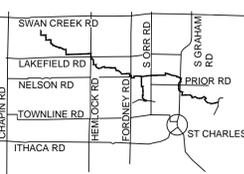
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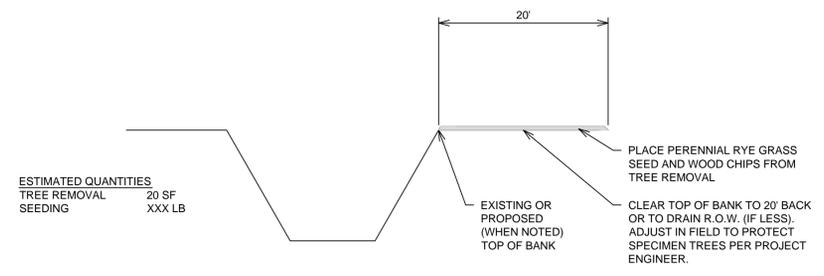
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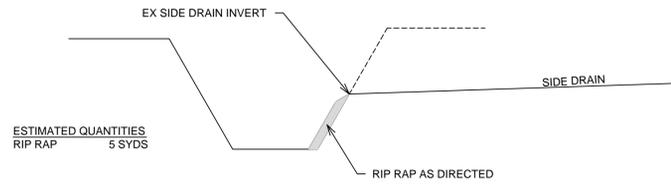
**WOLF CREEK  
SWAN CREEK TWP &  
FREMONT TWP, MICHIGAN**

**PROJECT DETAILS**

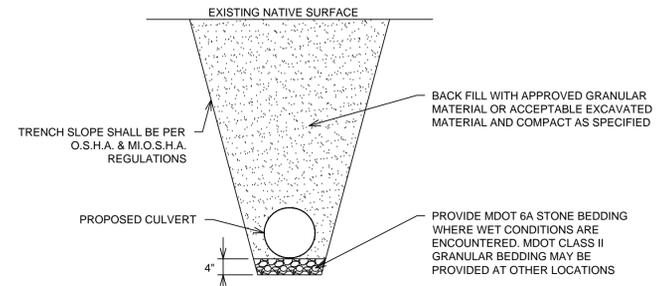
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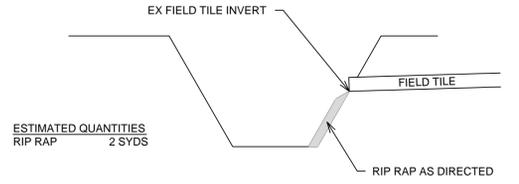
**MAINTENANCE ACCESS DETAIL**  
N.T.S.



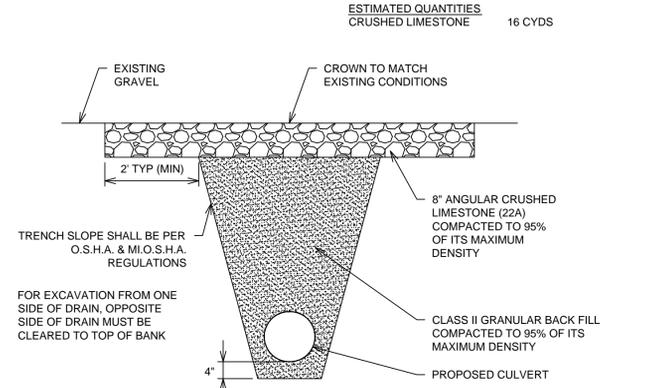
**PLAIN RIP RAP SPILLWAY DETAIL**  
N.T.S.



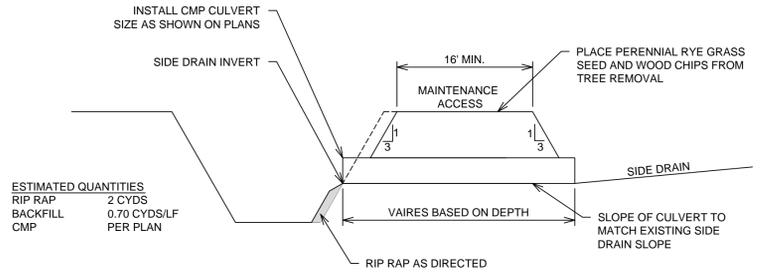
**TYPICAL FARM CROSSING DETAIL**  
N.T.S.



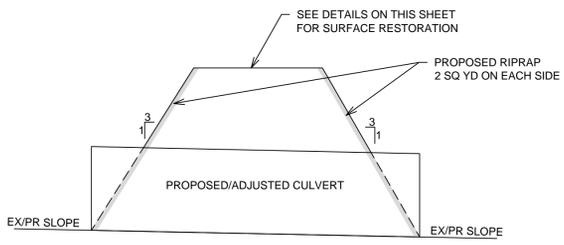
**FIELD TILE OUTLET RIP RAP DETAIL**  
N.T.S.



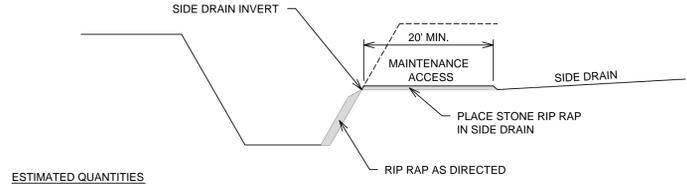
**TYPICAL GRAVEL ROAD AND DRIVE CROSSING DETAIL**  
N.T.S.



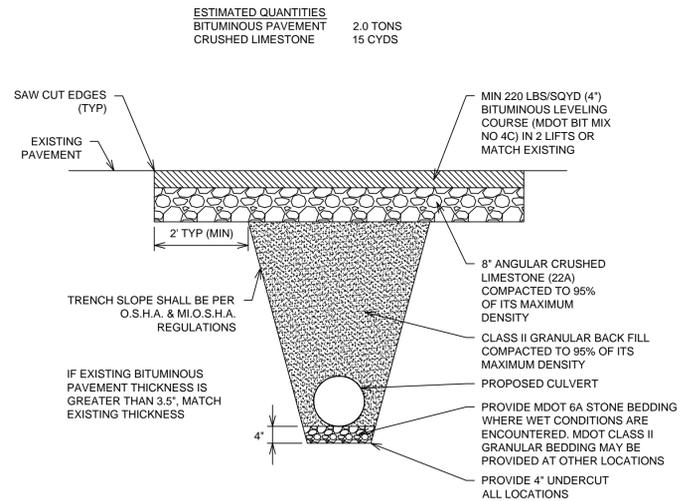
**SIDE DRAIN - CULVERT DETAIL**  
N.T.S.



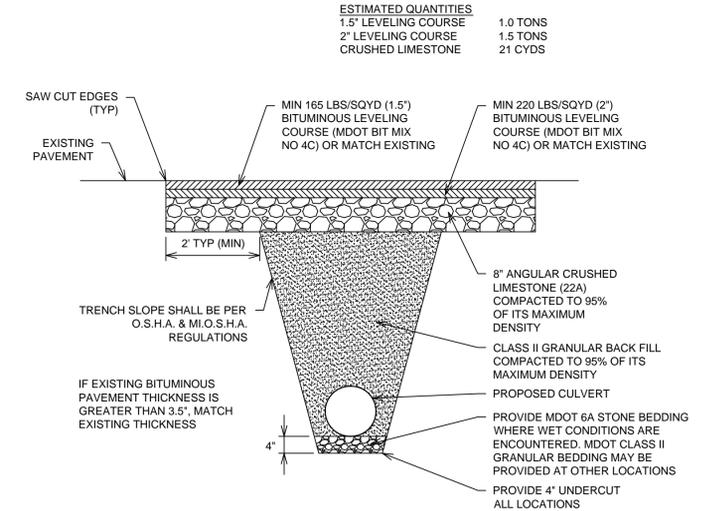
**NEW/ADJUSTED CULVERT DETAIL**  
N.T.S.



**SIDE DRAIN - STONE FORD**  
N.T.S.



**TYPICAL ASPHALT DRIVE CROSSING DETAIL**  
N.T.S.



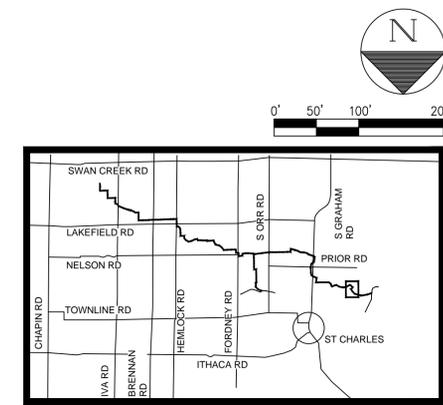
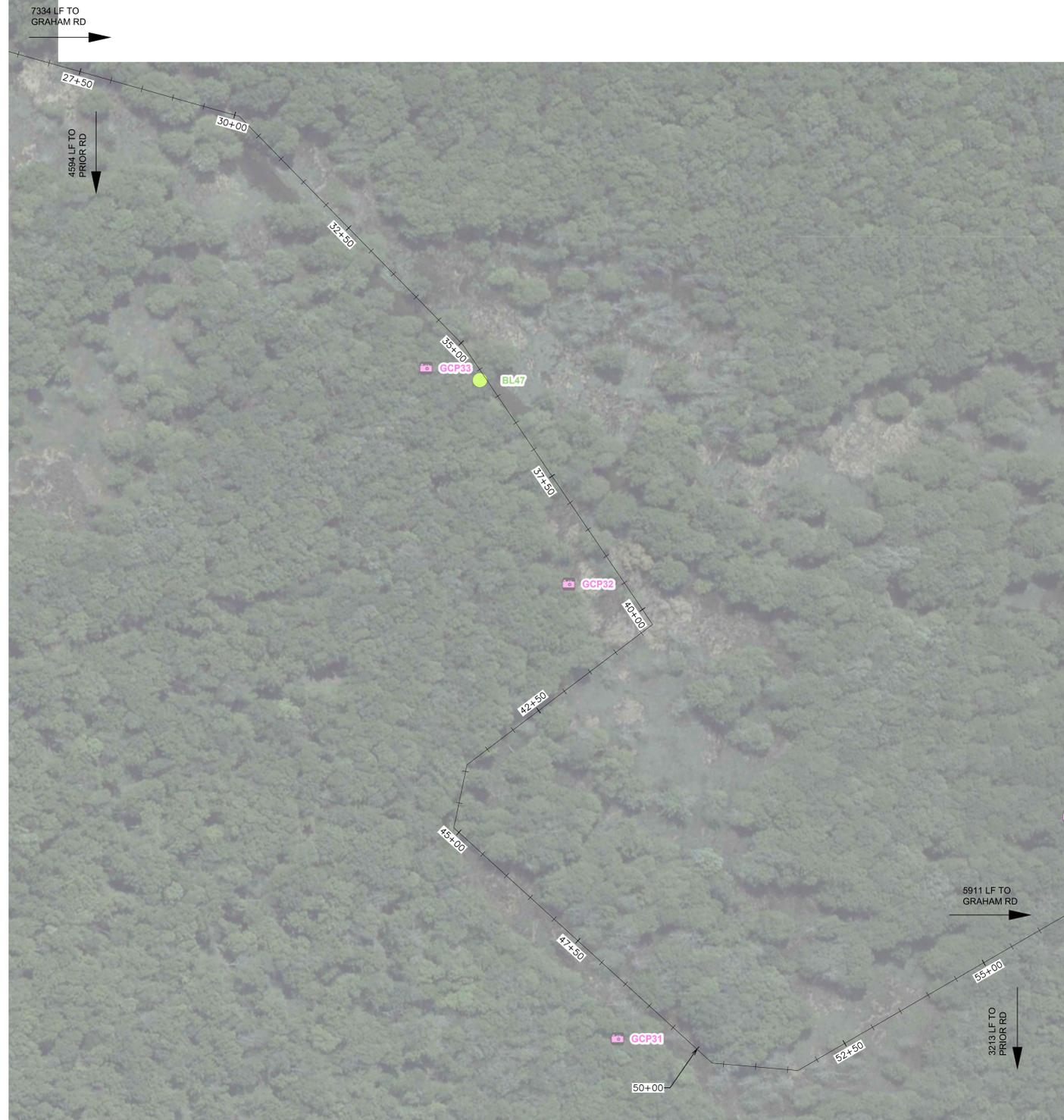
**TYPICAL COUNTY ROAD CROSSING DETAIL**  
N.T.S.



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- Legend**
- Blockage = BL#
- Type
  - Excessive Vegetation
  - Fallen Tree
  - Log Jam
  - Other
  - Sediment Bar
  - Bank\_Erosion = BE#
  - Bridge\_Crossing = BC#
  - Crossing = CR#
  - Field\_Tile\_Outlet = FTO#
  - General\_Condition\_Photo = GCP#
  - Surface\_Outlet\_Pipe = SOP#
  - CS Cross Section
  - Ex. Sediment
  - Ex. Hard Pan
  - Pr. Grade

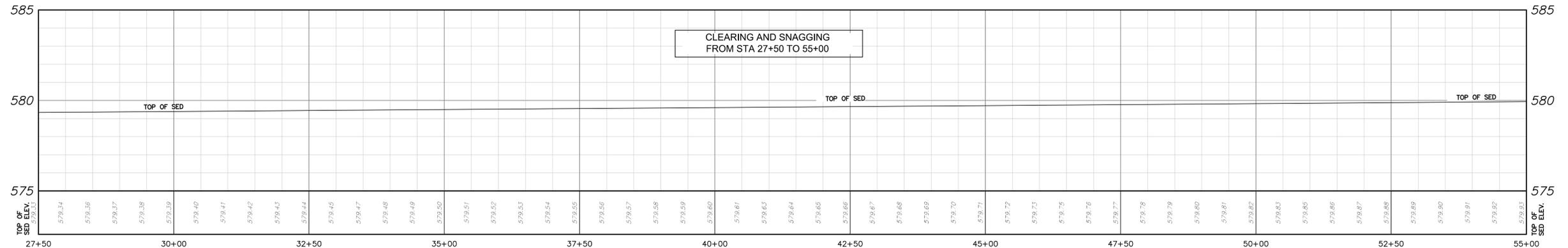
- NOTES:**
- WORK AROUND FOOT BRIDGES
  - REPLACE BRIDGES IF WIDENED BANKS OR REMOVE AT THE DIRECTION OF THE PROJECT ENGINEER OR OWNER
  - ALL VEGETATION TO BE CHIPPED AND SPREAD ON-SITE AND LEVELED
  - SEDIMENTATION TO BE PLACED ON-SITE AND LEVELED. RESTORATION PER PROJECT NOTES AND PROJECT SPECIFICATIONS, EXCEPT BY ROADS

**SHEET QUANTITIES:**

Clearing and Snagging	LF	2,750
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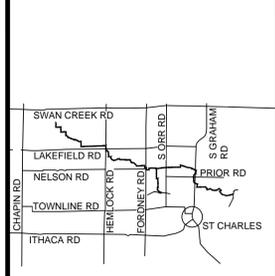


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 FREMONT TWP, MICHIGAN**

STA 27+50 TO STA 55+00

HRC JOB NO. 20150005	SCALE HORIZONTAL: 1"=100' VERTICAL: 1"=3'
DATE 05/12/15	SHEET NO. <b>2</b> OF 32





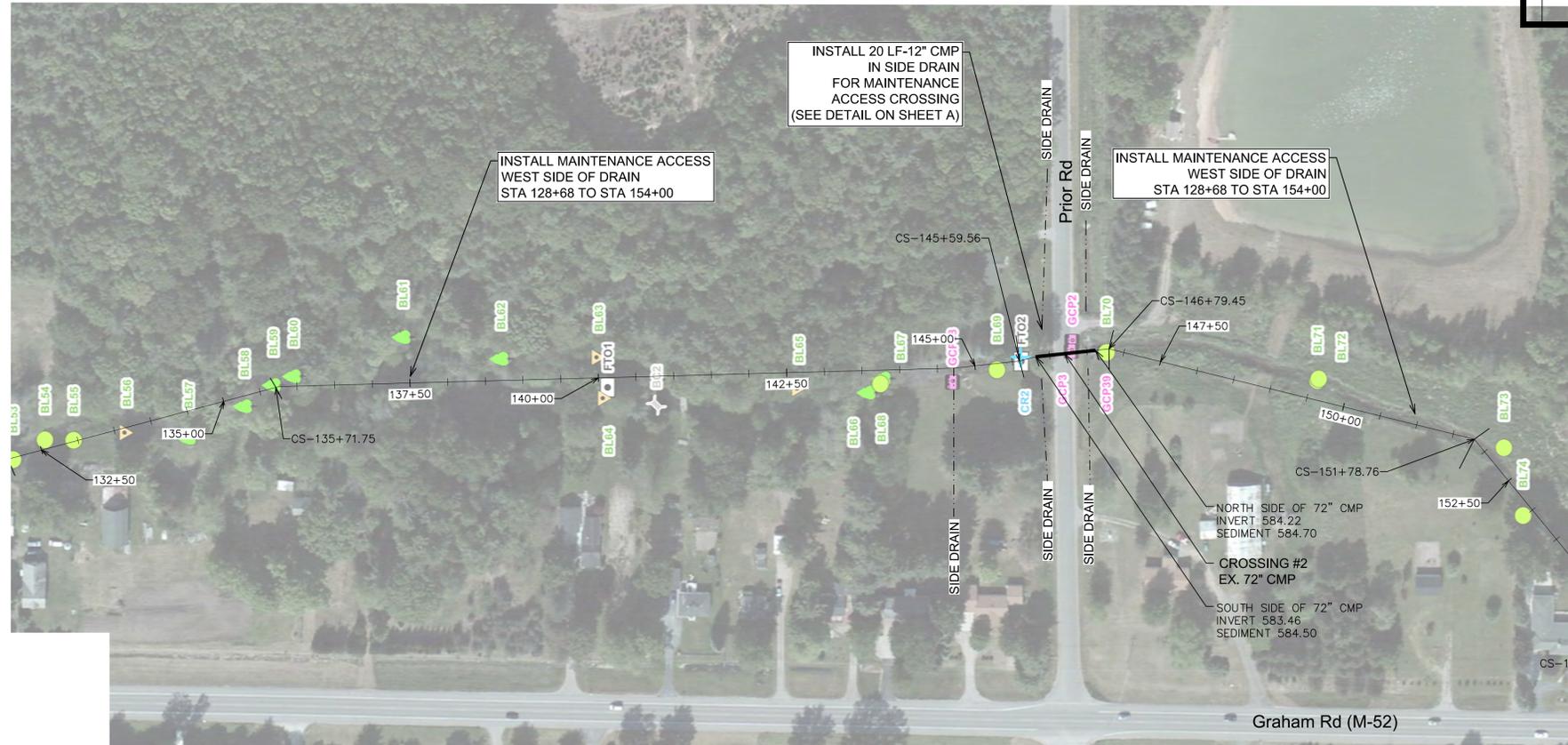
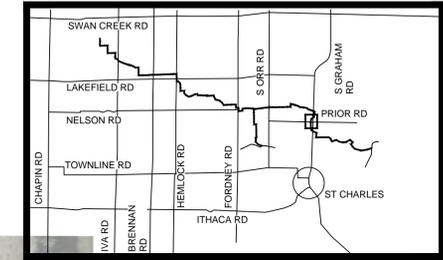
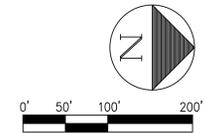


Legend

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- Bridge\_Crossing = BC#
- Crossing = CR#
- Field Tile Outlet = FTO#
- General\_Condition\_Photo = GCP#
- Surface\_Outlet\_Pipe = SOP#
- CS Cross Section
- Ex. Sediment
- Ex. Hard Pan
- Pr. Grade

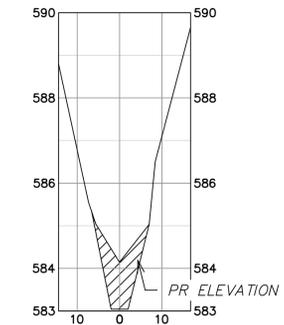
NOTES:

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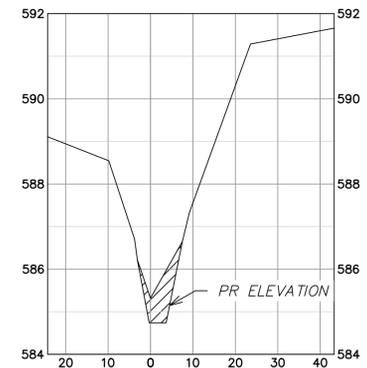


SHEET QUANTITIES:

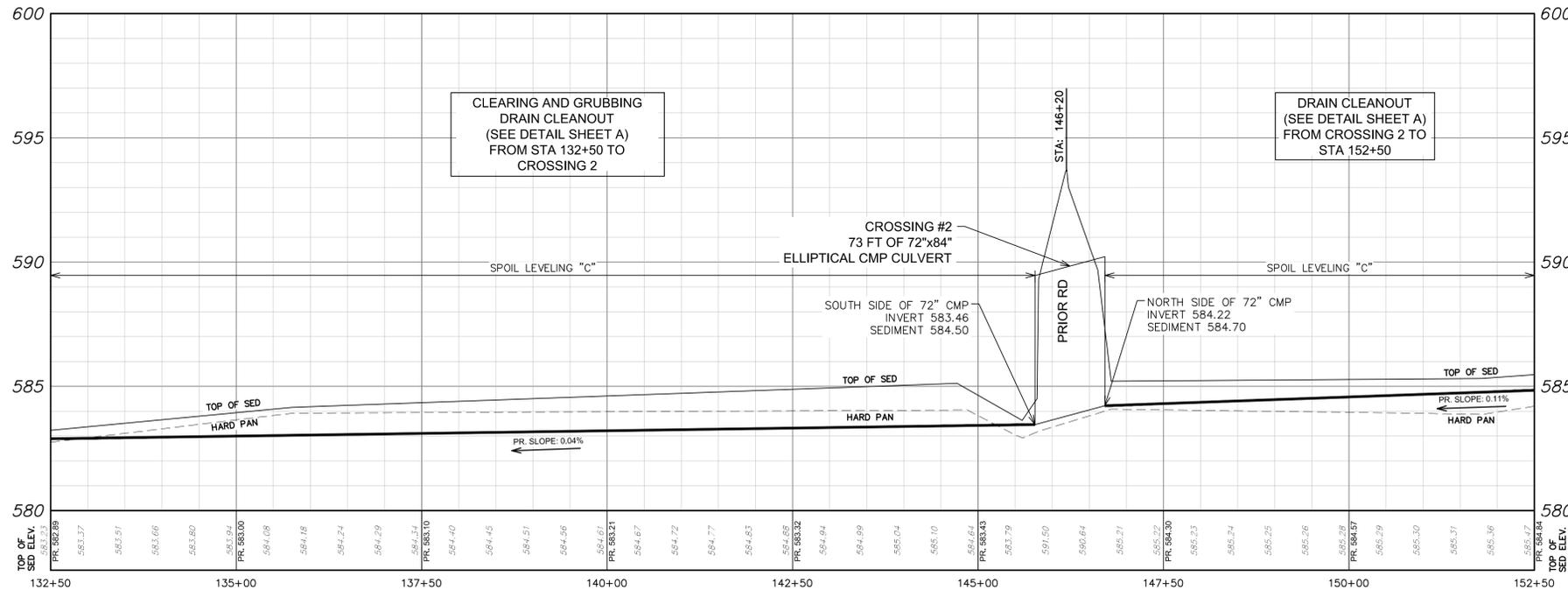
Maintenance Access	LF	1,927
Side Drain Crossing		
Proposed Ford	EA	-
Proposed Culvert		
12" LF		20
18" LF		-
24" LF		-
36" LF		-
48" LF		-
Clearing and Snagging	LF	-
Drain Cleanout	LF	1,927
Clearing and Grubbing	LF	1,330
Spoil Leveling	LF	1,927
Side Drain Rip Rap	EA	2
Field Tile Outlet Rip Rap	EA	2



135+71.75  
SCALE  
H: 1"=20'  
V: 1"=2'

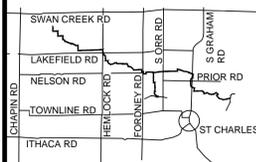


151+78.76  
SCALE  
H: 1"=20'  
V: 1"=2'



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9/08/15	PROPERTY OWNER'S REVIEW
8/26/15	OWNER'S REVIEW
7/28/15	OWNER'S REVIEW
6/05/15	ADDING MAINTENANCE ITEMS
5/18/15	MEETING WITH COUNTY
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	
DRAWN	DVH
CHECKED	AG
APPROVED	JFB



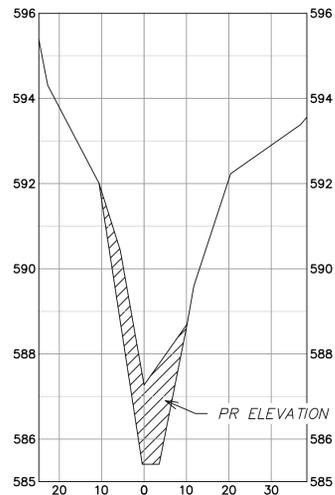
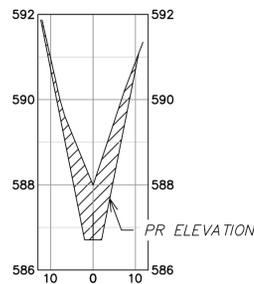
**WOLF CREEK  
SWAN CREEK TWP &  
FREMONT TWP, MICHIGAN**

STA 132+50 TO STA 152+50

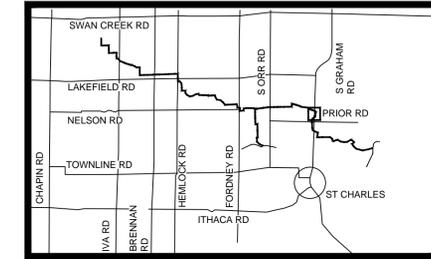
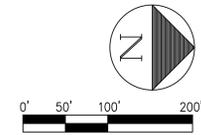
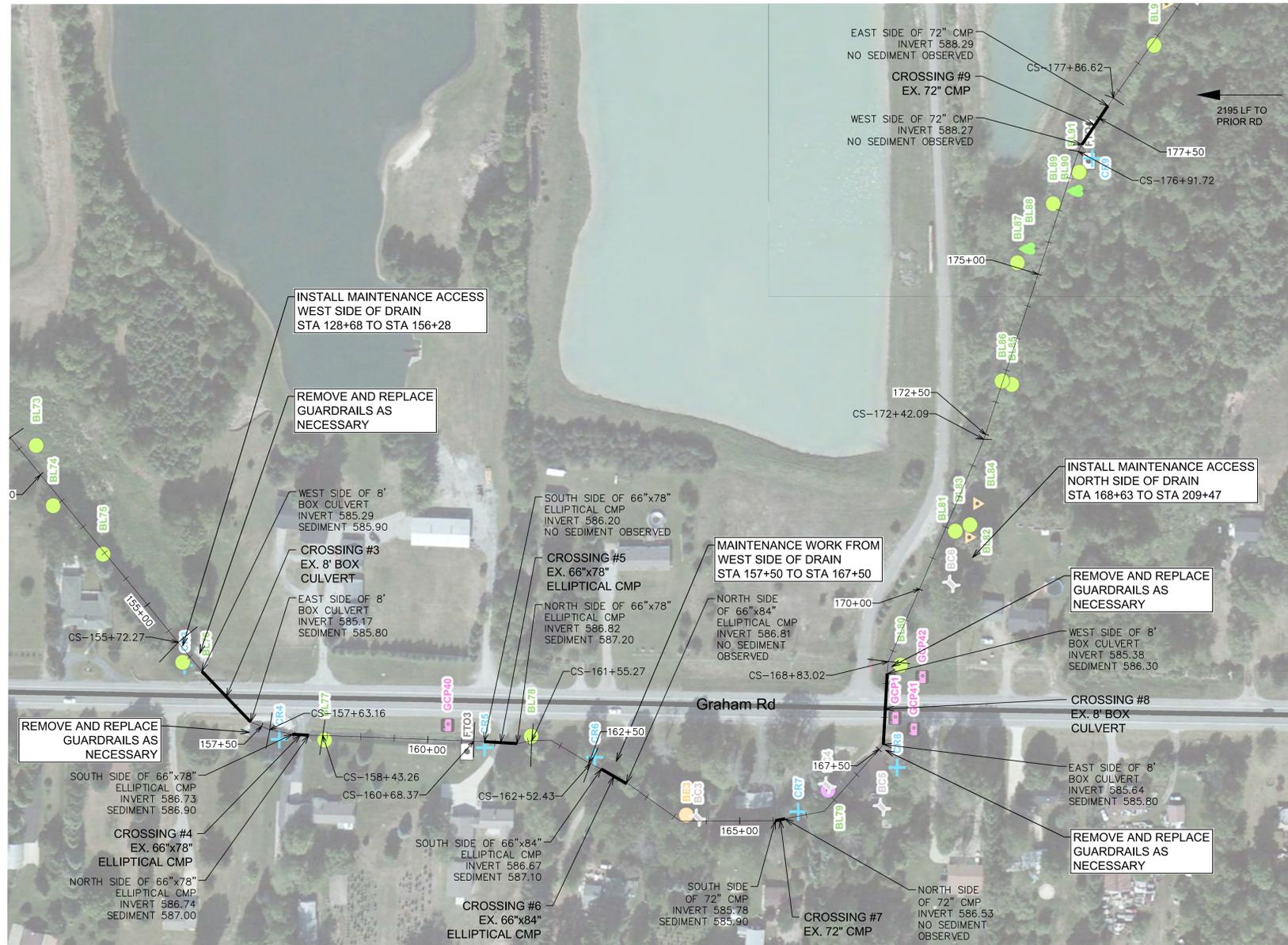
HRC JOB NO.	20150005	SCALE	HORIZONTAL: 1"=100' VERTICAL: 1"=3'
DATE	05/12/15	SHEET NO.	6 OF 32

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**NOTES:**

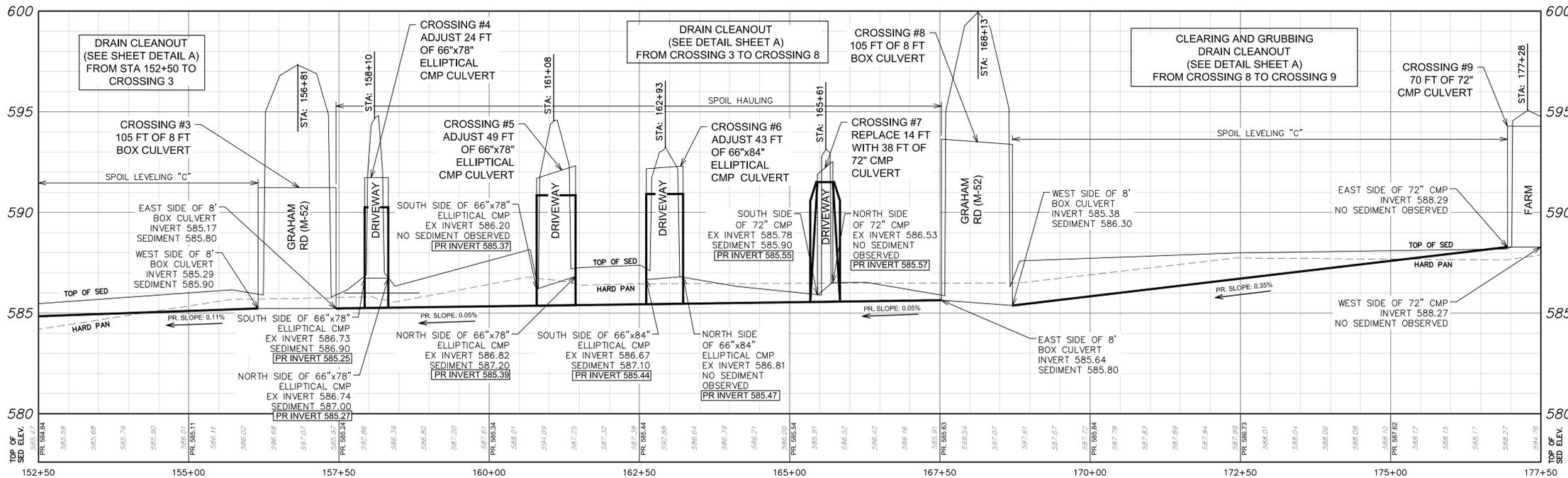
- WORK AROUND FOOT BRIDGES
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**Legend**

- Blockage = BL#
- Type
  - Excessive Vegetation
  - Fallen Tree
  - Log Jam
  - Other
  - Sediment Bar
  - Bank Erosion = BE#
  - Bridge Crossing = BC#
  - Crossing = CR#
  - Field Tile Outlet = FTO#
  - General Condition Photo = GCP#
  - Surface Outlet Pipe = SOPP#
- CS Cross Section
- Ex. Sediment
- Ex. Hard Pan
- Pr. Grade

**CULVERT NOTES:**

- SEE DETAIL B FOR SURFACE RESTORATION
- CROSSING #7
- INSTALL BITUMINOUS PAVEMENT THROUGH PROPOSED BACKFILL
- REMOVE EXISTING HANDRAILS
- BEVEL ENDS OF PROPOSED CULVERT



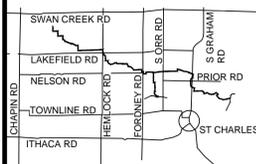
**SHEET QUANTITIES:**

Maintenance Access	LF	1,025
Culverts		
New		
Farm	EA	-
Asphalt	EA	-
County Road	EA	-
Adjusted		
Asphalt	EA	2
Gravel	EA	1
Bridge	EA	1
Clearing and Snagging	LF	-
Drain Cleanout	LF	2,015
Clearing and Grubbing	LF	825
Spoil Leveling	LF	1,190
Spoil Hauling	LF	825
Field Tile Outlet Rip Rap	EA	2
Remove & Replace Guardrails	EA	2



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DESIGNED	
DRAWN	DWH
CHECKED	AG
APPROVED	JFB



**WOLF CREEK  
SWAN CREEK TWP &  
FREMONT TWP, MICHIGAN**

STA 152+50 TO STA 177+50

HRC JOB NO.	20150005	SCALE	HORIZONTAL: 1"=100' VERTICAL: 1"=3'
DATE	05/12/15	SHEET NO.	7

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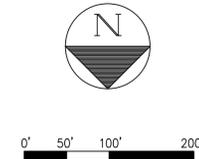
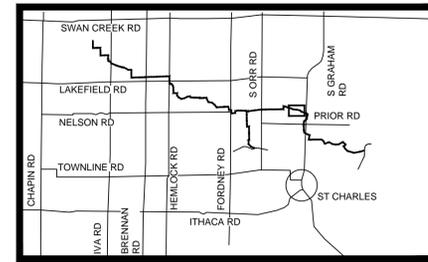
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 BEFORE YOU DIG  
 1-800-482-7171  
 OR 811  
 (TOLL FREE)**

- Legend**
- Blockage = BL#
- Type
  - Excessive Vegetation
  - Fallen Tree
  - Log Jam
  - Other
  - Sediment Bar
  - Bank Erosion = BE#
  - Bridge Crossing = BC#
  - Crossing = CR#
  - Field Tile Outlet = FTO#
  - General Condition Photo = GCP#
  - Surface Outlet Pipe = SOP#
  - CS Cross Section
  - Ex. Sediment
  - Ex. Hard Pan
  - Pr. Grade

- NOTES:**
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**SHEET QUANTITIES:**

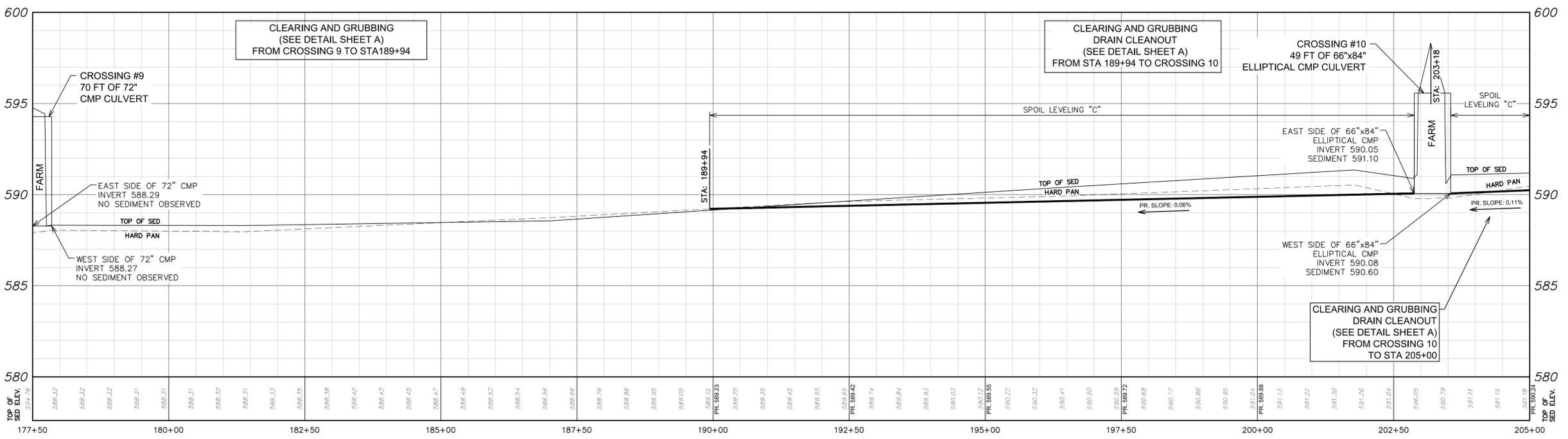
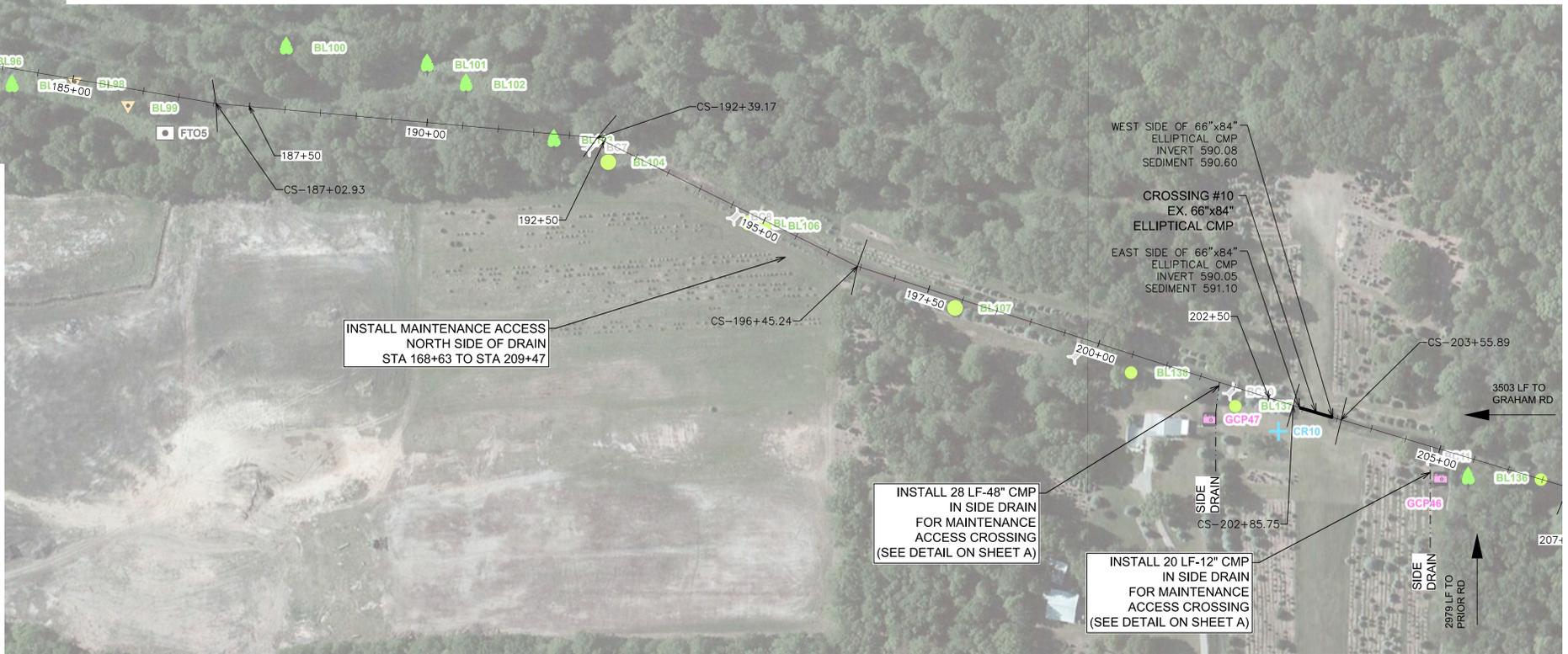
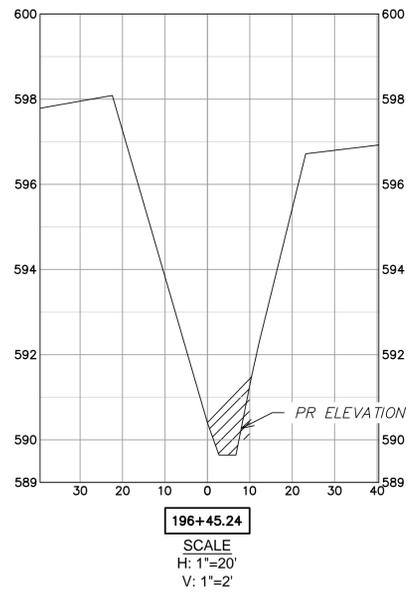
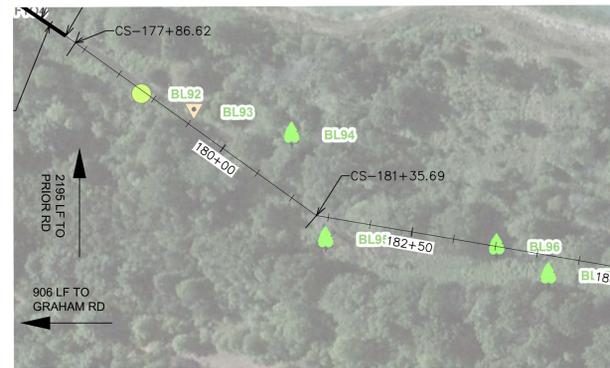
Maintenance Access	LF	2,671
Side Drain Crossing		
Proposed Ford	EA	-
Proposed Culvert		
12"	LF	20
18"	LF	-
24"	LF	-
36"	LF	-
48"	LF	28
Drain Cleanout	LF	1,450
Clearing and Grubbing	LF	2,671
Spoil Leveling	LF	1,450
Field Tile Outlet Rip Rap	EA	1



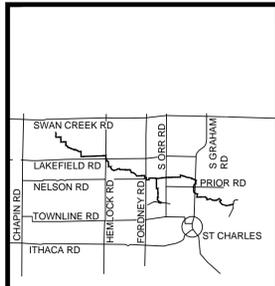
555 HULET DRIVE  
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 48303-0824

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5/18/15	MEETING WITH COUNTY
DATE	ADDITIONS AND/OR REVISIONS
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DRAWN	DVH
CHECKED	AG
APPROVED	JFB



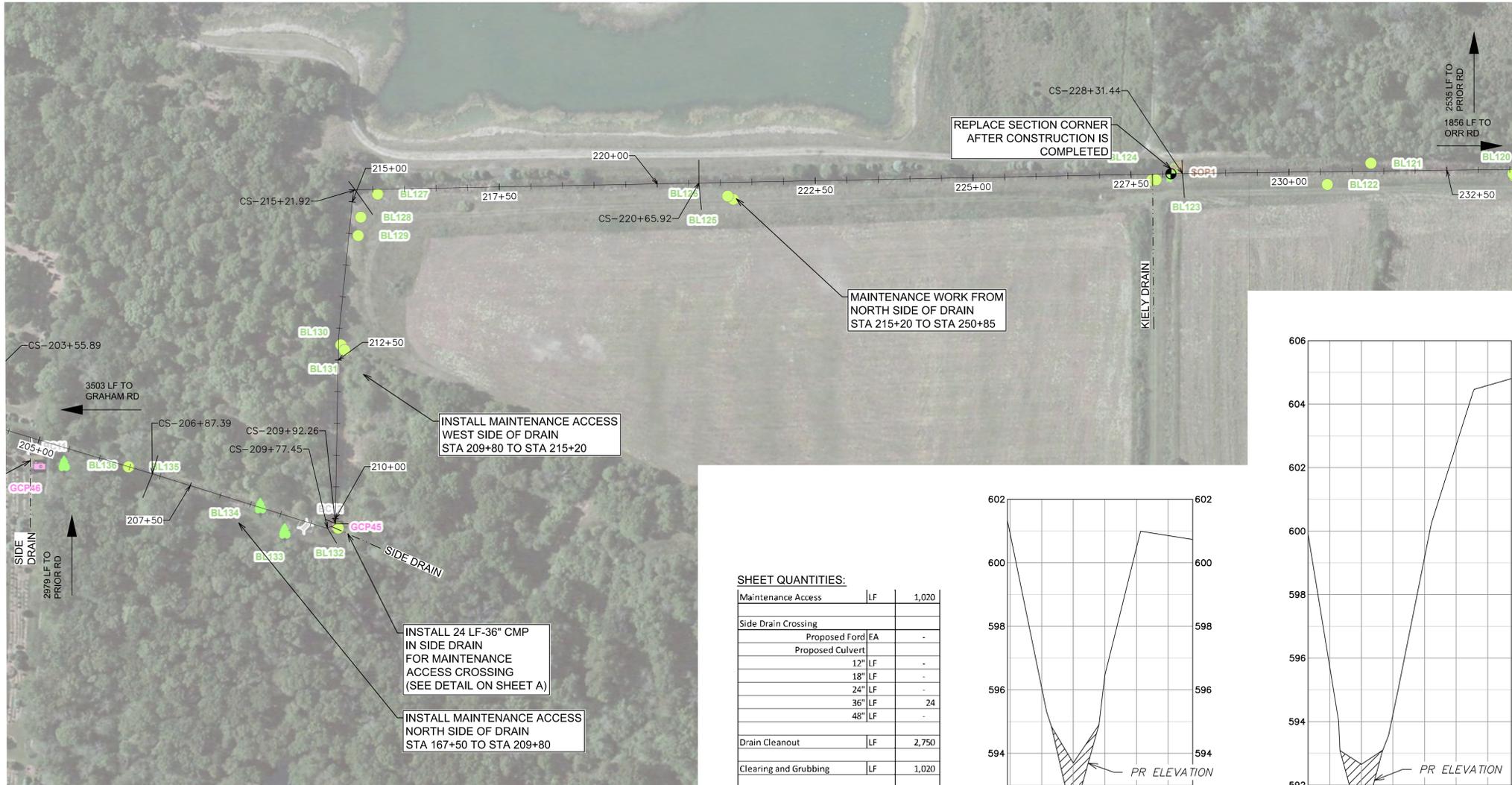
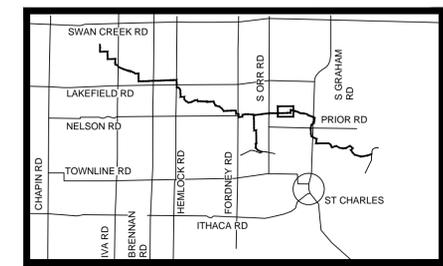
**WOLF CREEK  
 SWAN CREEK TWP &  
 FREMONT TWP, MICHIGAN**

STA 177+50 TO STA 205+00

HRC JOB NO. 20150005	SCALE HORIZONTAL: 1"=100' VERTICAL: 1"=3'
DATE 05/12/15	SHEET NO. 8 OF 32



0' 50' 100' 200'



- Legend**
- Blockage = BL#
  - Type
    - Excessive Vegetation
    - Fallen Tree
    - Log Jam
    - Other
  - Sediment Bar
  - Bank Erosion = BE#
  - Bridge Crossing = BC#
  - Crossing = CR#
  - Field Tile Outlet = FTO#
  - General Condition Photo = GCP#
  - Surface Outlet Pipe = SOP#
  - CS Cross Section
  - Ex. Sediment
  - Ex. Hard Pan
  - Pr. Grade

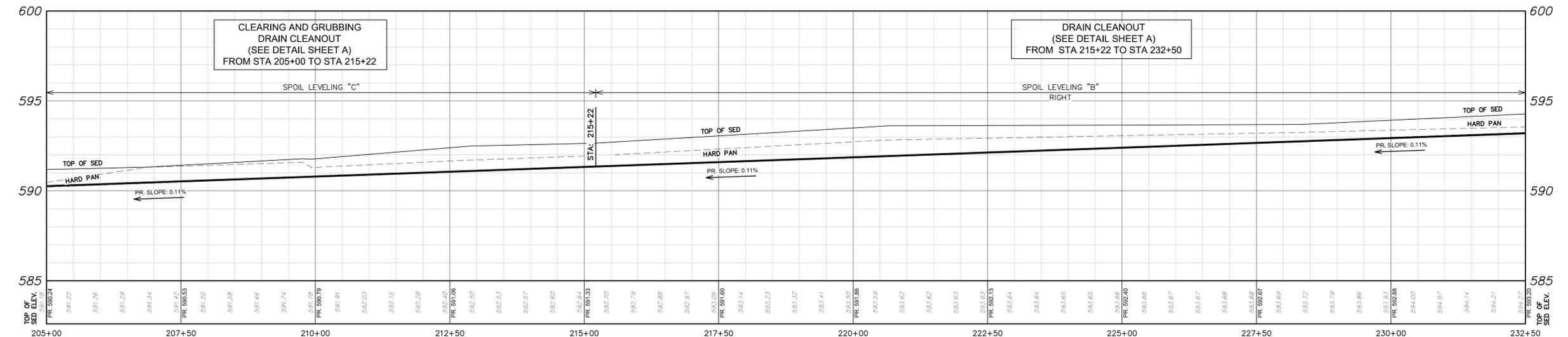
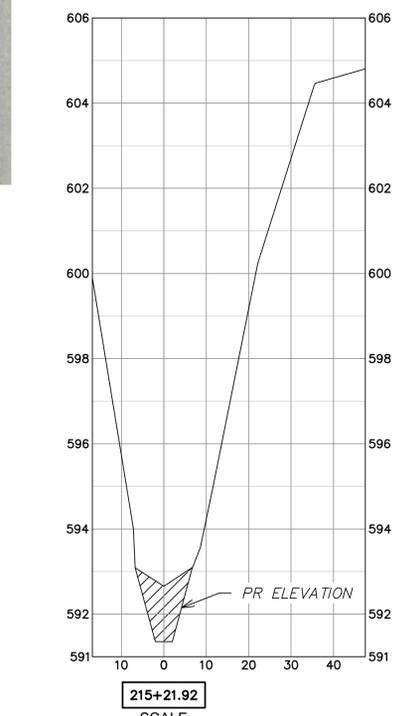
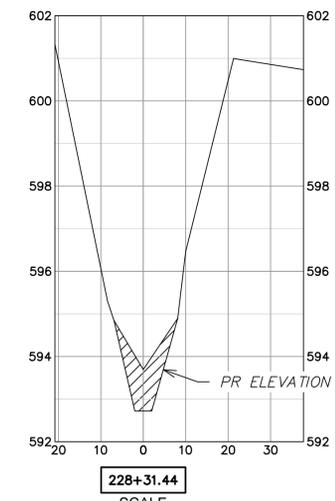
- NOTES:**
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(TOLL FREE)**

**SHEET QUANTITIES:**

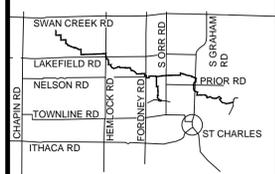
Maintenance Access	LF	1,020
Side Drain Crossing		
Proposed Ford	EA	-
Proposed Culvert		
12" LF		-
18" LF		-
24" LF		-
36" LF		24
48" LF		-
Drain Cleanout	LF	2,750
Clearing and Grubbing	LF	1,020
Spoil Leveling	LF	2,750



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8/26/15	OWNER'S REVIEW
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5/18/15	MEETING WITH COUNTY
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	
DRAWN	DWH
CHECKED	AG
APPROVED	JFB



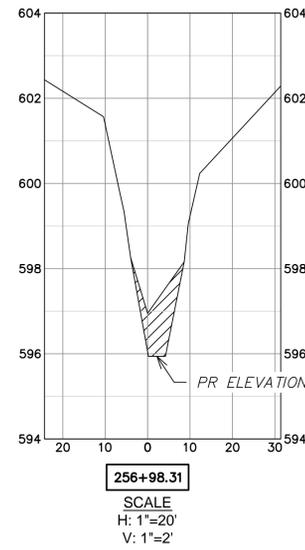
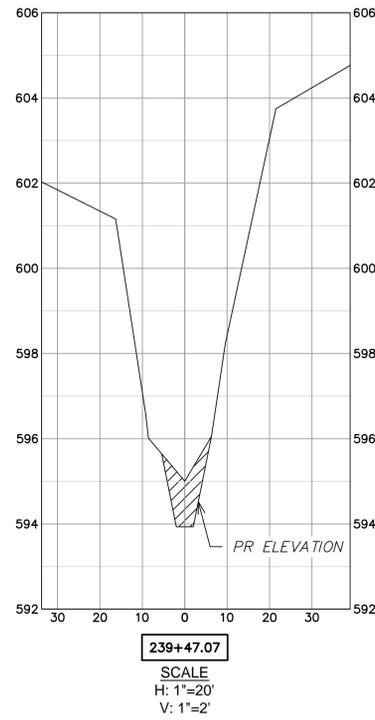
**WOLF CREEK  
SWAN CREEK TWP &  
FREMONT TWP, MICHIGAN**

STA 205+00 TO STA 232+50

HRC JOB NO. 20150005	SCALE HORIZONTAL: 1"=100' VERTICAL: 1"=3'
DATE 05/12/15	SHEET NO. 9 OF 32



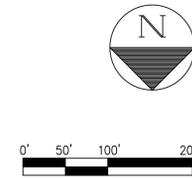
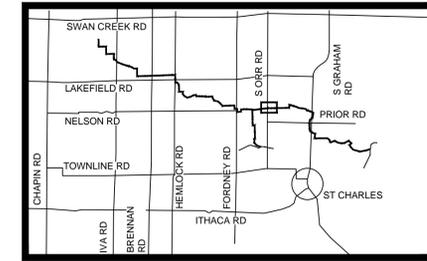
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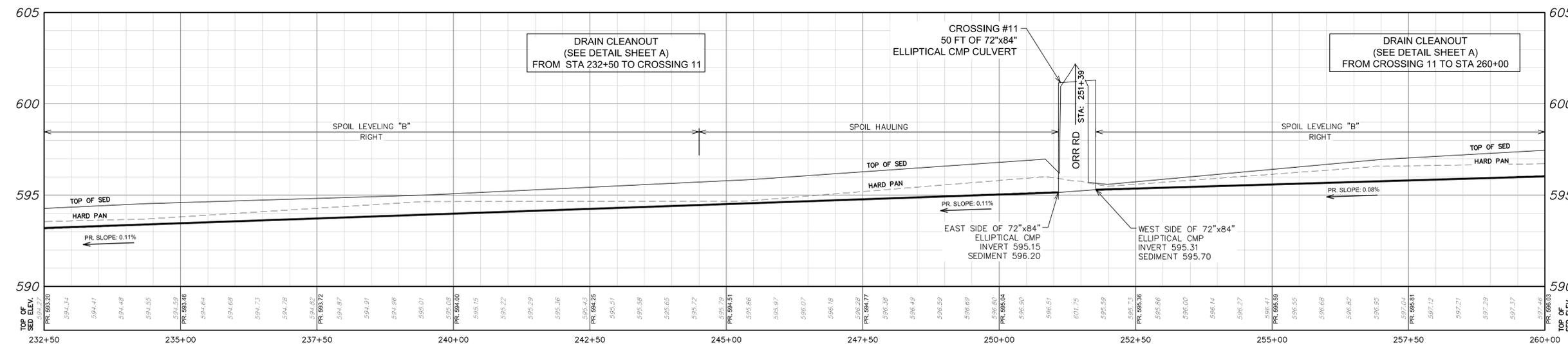
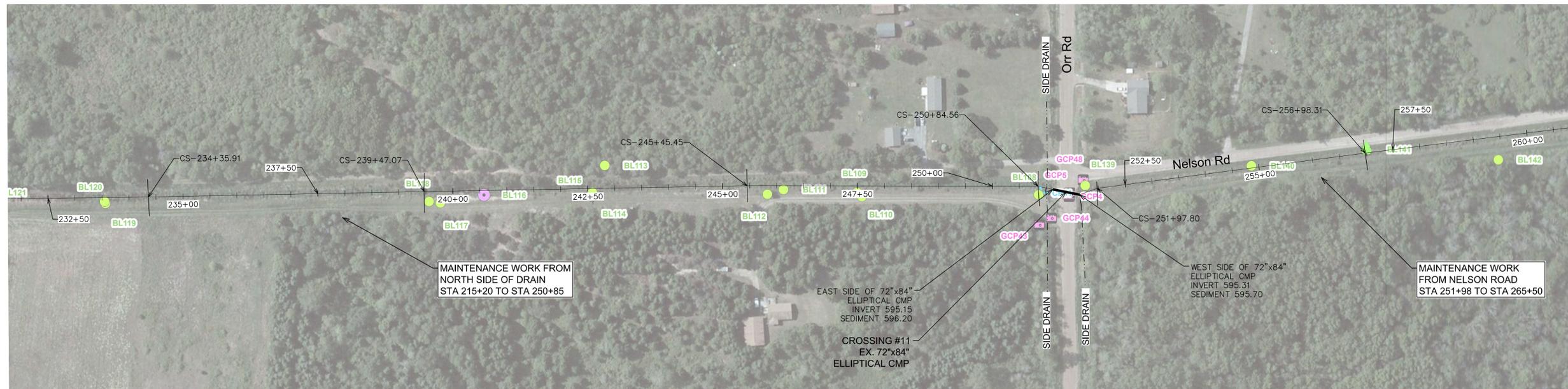
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**SHEET QUANTITIES:**

Drain Cleanout	LF	2,700
Spoil Leveling	LF	2,040
Spoil Hauling	LF	660
Side Drain Rip Rap	EA	3

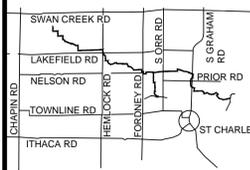


- Legend**
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- Excessive Vegetation
  - Fallen Tree
  - Log Jam
  - Other
  - Sediment Bar
  - Bank Erosion = BE#
  - Bridge Crossing = BC#
  - Crossing = CR#
  - Field Tile Outlet = FTO#
  - General Condition Photo = GCP#
  - Surface Outlet Pipe = SOP#
- CS Cross Section  
Ex. Sediment  
Ex. Hard Pan  
Pr. Grade



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CHECKED	AG
APPROVED	JFB



**WOLF CREEK  
SWAN CREEK TWP &  
FREMONT TWP, MICHIGAN**

STA 232+50 TO STA 260+00

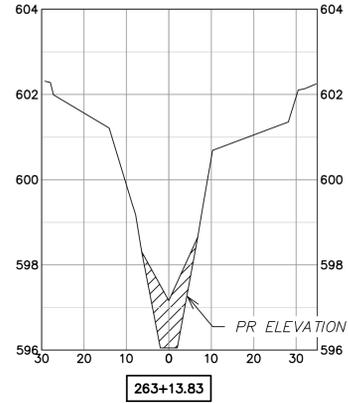
HRC JOB NO. 20150005	SCALE HORIZONTAL: 1"=100' VERTICAL: 1"=3'
DATE 05/12/15	SHEET NO. 10 OF 32



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  - Excessive Vegetation
  - Fallen Tree
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  - Sediment Bar
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  - Ex. Sediment
  - Ex. Hard Pan
  - Pr. Grade



SCALE  
H: 1"=20'  
V: 1"=2'

**SHEET QUANTITIES:**

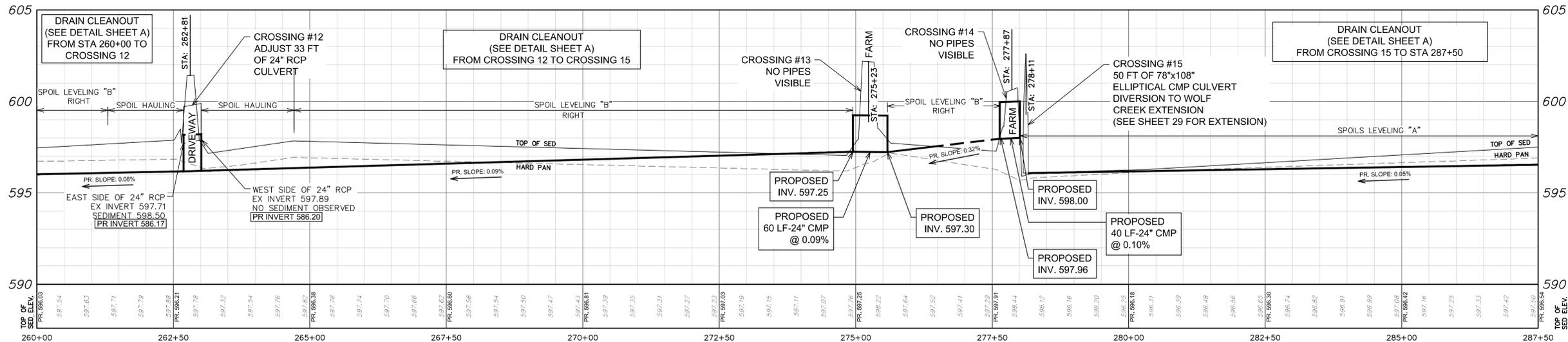
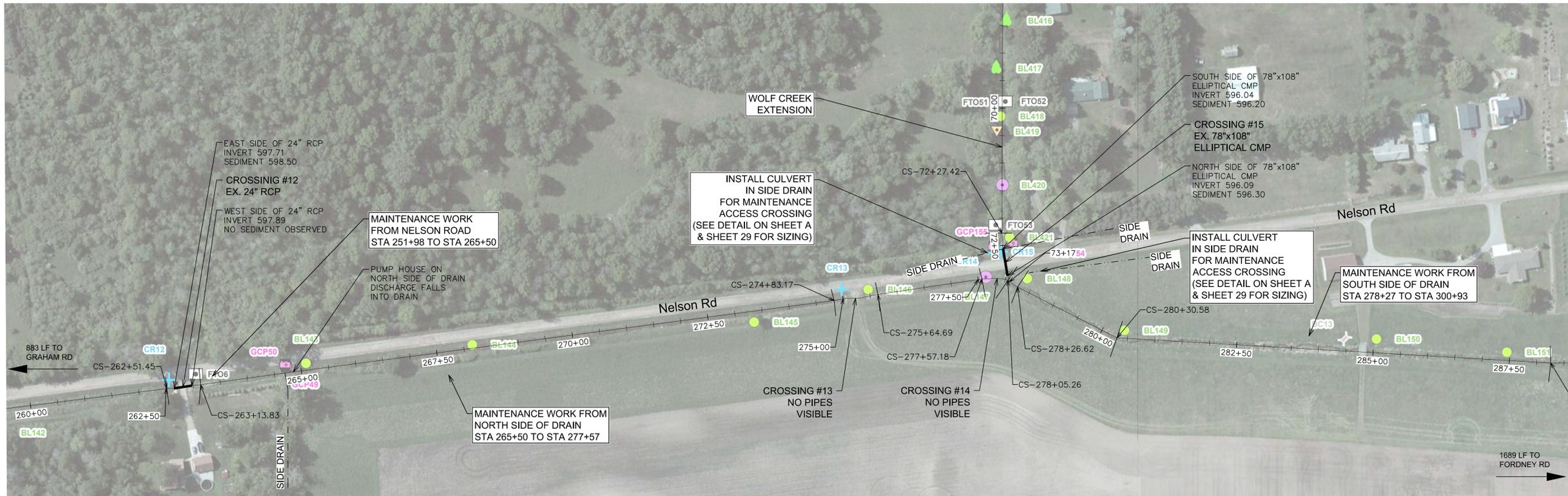
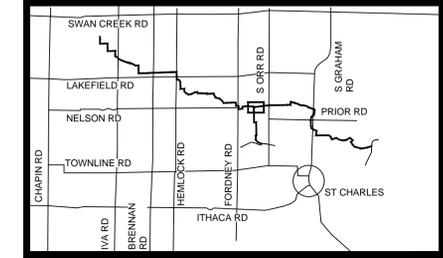
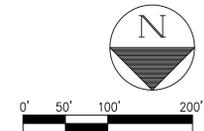
Culverts			
New			
Farm	EA	2	
Asphalt	EA	-	
County Road	EA	-	
Adjusted			
Asphalt	EA	-	
Gravel	EA	1	
Bridge	EA	-	
Drain Cleanout	LF	2,617	
Spoil Leveling	LF	2,310	
Spoil Hauling	LF	307	
Side Drain Rip Rap	EA	2	
Field Tile Outlet Rip Rap	EA	1	

**NOTES:**

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**CULVERT NOTES:**

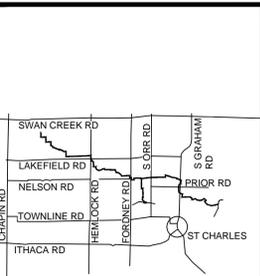
- SEE DETAIL B FOR SURFACE RESTORATION



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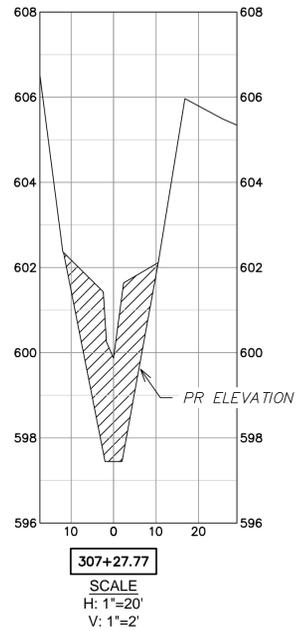
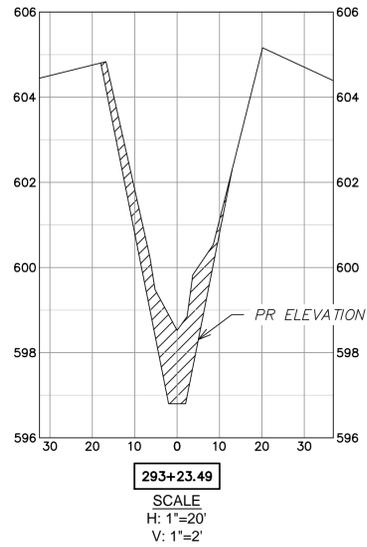
DATE	ADDITIONS AND/OR REVISIONS
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**WOLF CREEK  
SWAN CREEK TWP &  
FREMONT TWP, MICHIGAN**

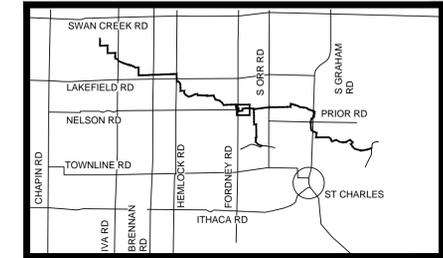
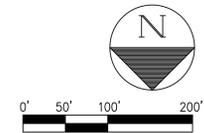
STA 260+00 TO STA 287+50

HRC JOB NO. 20150005	SCALE HORIZONTAL: 1"=100' VERTICAL: 1"=3'
DATE 05/12/15	SHEET NO. 11 OF 32

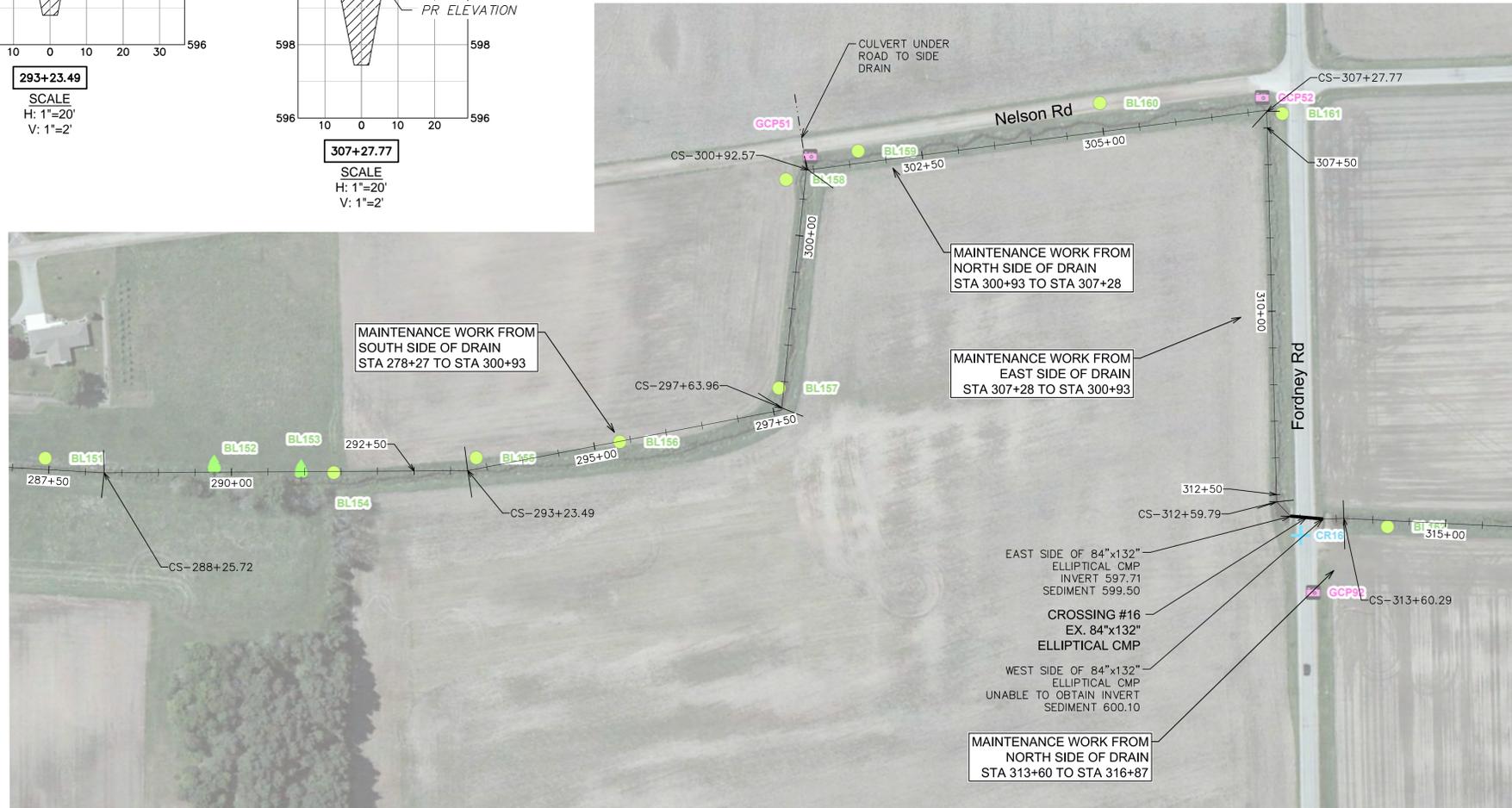


Know what's below  
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CALL811.COM

CALL MISS DIG  
72 HOURS  
(3 WORKING DAYS)  
BEFORE YOU DIG  
1-800-482-7171  
OR 811  
(TOLL FREE)



555 HULET DRIVE  
BLOOMFIELD HILLS, MICH. P.O. BOX 824  
48303 - 0824  
PHONE: (248) 454-6300  
FAX (1st Floor): (248) 454-6312  
FAX (2nd Floor): (248) 336-2592  
WEB SITE: <http://www.hrc-engr.com>



**Legend**

Blockage = BL#

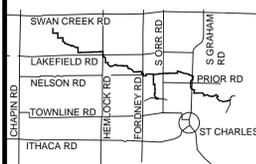
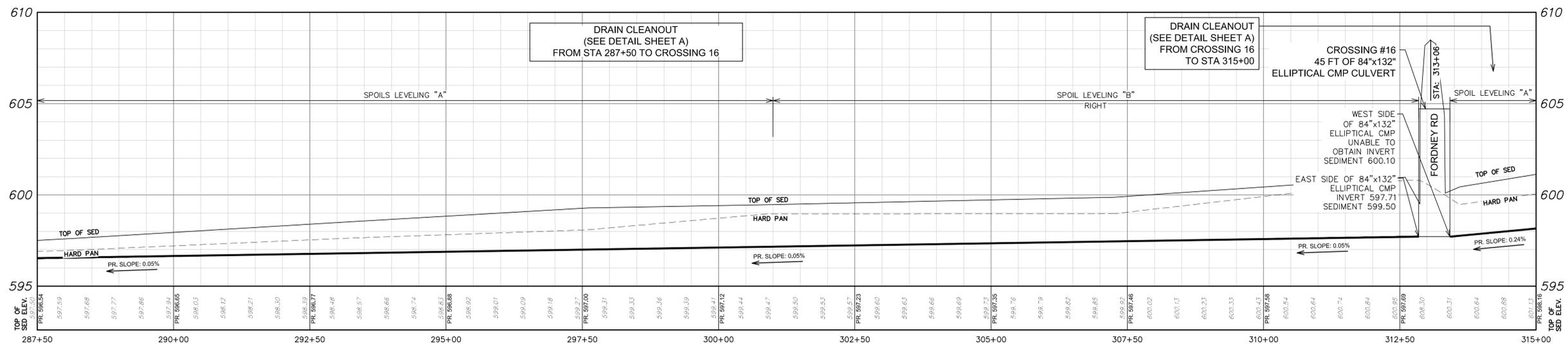
Type

- Excessive Vegetation
- Fallen Tree
- Log Jam
- Other
- Sediment Bar
- Bank\_Erosion = BE#
- Bridge\_Crossing = BC#
- Crossing = CR#
- Field\_Tile\_Outlet = FTO#
- General\_Condition\_Photo = GCP#
- Surface\_Outlet\_Pipe = SOP#
- Cross Section
- Ex. Sediment
- Ex. Hard Pan
- Pr. Grade

- NOTES:**
- WORK AROUND FOOT BRIDGES
  - REPLACE BRIDGES IF WIDENED BANKS OR REMOVE AT THE DIRECTION OF THE PROJECT ENGINEER OR OWNER
  - ALL VEGETATION TO BE CHIPPED AND SPREAD ON-SITE AND LEVELLED
  - SEDIMENTATION TO BE PLACED ON-SITE AND LEVELLED. RESTORATION PER PROJECT NOTES AND PROJECT SPECIFICATIONS, EXCEPT BY ROADS

**SHEET QUANTITIES:**

Drain Cleanout	LF	2,705
Spoil Leveling	LF	2,705



**WOLF CREEK  
SWAN CREEK TWP &  
FREMONT TWP, MICHIGAN**

STA 287+50 TO STA 315+00

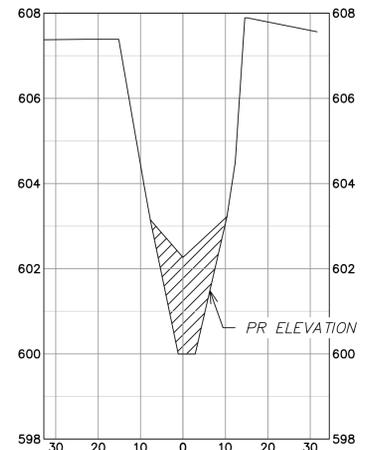
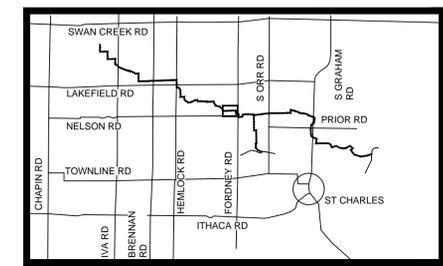
HRC JOB NO. 20150005	SCALE HORIZONTAL: 1"=100' VERTICAL: 1"=3'
DATE 05/12/15	SHEET NO. 12 OF 32



CALL MISS DIG 72 HOURS (3 WORKING DAYS) BEFORE YOU DIG 1-800-482-7171 OR 811 CALL811.COM (TOLL FREE)



0' 50' 100' 200'



- Legend**
- Blockage = BL#
  - Type
    - Excessive Vegetation
    - Fallen Tree
    - Log Jam
    - Other
    - Sediment Bar
    - Bank\_Erosion = BE#
    - Bridge\_Crossing = BC#
    - Crossing = CR#
    - Field\_Tile\_Outlet = FTO#
    - General\_Condition\_Photo = GCP#
    - Surface\_Outlet\_Pipe = SOP#
  - CS Cross Section
  - Ex. Sediment
  - Ex. Hard Pan
  - Pr. Grade

- NOTES:**
- WORK AROUND FOOT BRIDGES
  - REPLACE BRIDGES IF WIDENED BANKS OR REMOVE AT THE DIRECTION OF THE PROJECT ENGINEER OR OWNER
  - ALL VEGETATION TO BE CHIPPED AND LEVELED
  - SEDIMENTATION TO BE PLACED ON-SITE AND LEVELED. RESTORATION PER PROJECT NOTES AND PROJECT SPECIFICATIONS, EXCEPT BY ROADS

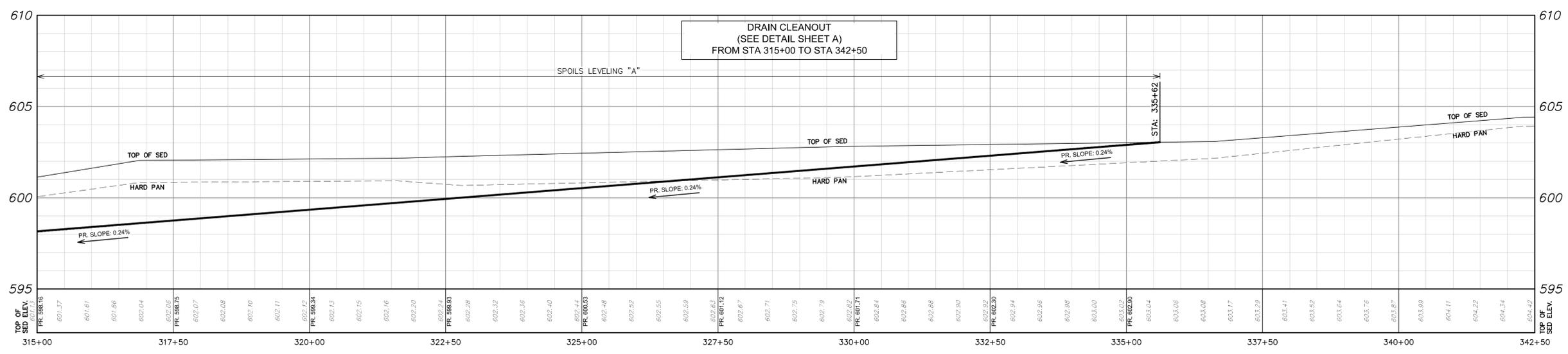
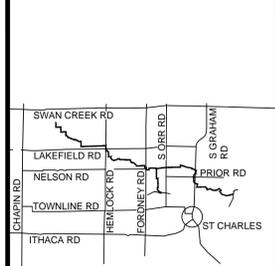
**SHEET QUANTITIES:**

Drain Cleanout	LF	2,750
Spoil Leveling	LF	2,062



555 HULET DRIVE BLOOMFIELD HILLS, MICH. 48303 - 0824  
PHONE: (248) 454-6300  
FAX (1st. Floor): (248) 454-6312  
FAX (2nd. Floor): (248) 338-2592  
WEB SITE: http://www.hrc-enr.com

9/08/15	PROPERTY OWNER'S REVIEW
8/26/15	OWNER'S REVIEW
7/28/15	OWNER'S REVIEW
6/05/15	ADDING MAINTENANCE ITEMS
5/18/15	MEETING WITH COUNTY
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	
DRAWN	DVH
CHECKED	AG
APPROVED	JFB



**WOLF CREEK SWAN CREEK TWP & FREMONT TWP, MICHIGAN**

STA 315+00 TO STA 342+50

HRC JOB NO.	20150005	SCALE HORIZONTAL: 1"=100'	VERTICAL: 1"=3'
DATE	05/12/15	SHEET NO.	13 OF 32