



# Drainage Work Order Request For Repair

## Hardin County

**Date:** 4/15/2020  
**Work Order #:** W000000291  
**Drainage District:** DDs\DD 14 (51027)  
**Sec-Twp-Rge:** 34-88-22      **Qtr Sec:** E1/2 NE NE  
**Location/GIS:** 88-22-34-200-003  
**Requested By:** James Sweeney/Cynthia Ioger/Jim & Ron Vierkandt  
**Contact Phone:** (641) 847-3273  
**Contact Email:** jsweeney@cgaconsultants.com  
**Landowner (if different):** Ron/Jim Vierkandt/Cynthia Ioger      641-323-4051 <sup>RonJ</sup>

**Description:** DD 14- Sweeney reports plugged main tile in Jim & Ron's parcels, Sheldahl called in to pothole/explore tile on S side of D41, likely main tile. Intake further E of D41 & S27 intersection where tile goes under road needs repair. See Add'l Req in docs- lack of drg downstream of intersection of Lat 2/main tile. Last 3 years, Lat 2 has lacked enough drg to effectively farm area it should drain. Potholes dug by landowners in Sects 34/35 do not drain. Also, broken intake @ Lat 2 intersection w D41 in Sect. 35.

**Repair labor, materials and equipment:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Repaired By:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Please reference work order # and send statement for services to:**

Hardin County Auditor's Office  
 Attn: Drainage Clerk  
 1215 Edgington Ave, Suite 1  
 Eldora, IA 50627  
 Phone (641) 939-8111  
 Fax (641) 939-8245

For Office Use Only

**Approved:** \_\_\_\_\_ **Date:** \_\_\_\_\_



# Drainage Work Order Request For Repair

## Hardin County

Date 4/20/2020

Work Order # \_\_\_\_\_

District # #14

Lateral Lat 2 & Main

Fund # \_\_\_\_\_

Township \_\_\_\_\_

Section 27, 34, 35wp 88

Rge 22 Qtr Sec \_\_\_\_\_

Repair Requested By Cynthia loerger, Ronald Vierkandt, James Vierkandt

Address 15898 Co Hwy D41 Phone \_\_\_\_\_

Landowner Same

Address Same Phone \_\_\_\_\_

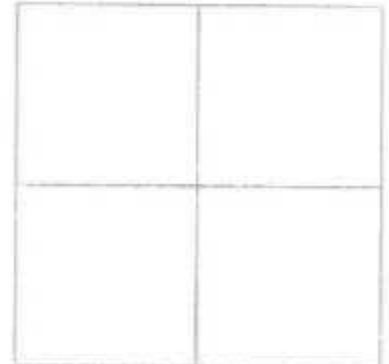
Request Taken By \_\_\_\_\_

Available for Repair Now?  Yes

Date Available \_\_\_\_\_

Problem Description **There is a lack of drainage somewhere downstream of the intersection of Lateral 2 and the main tile. Last three or so years the Lateral 2 tile has lacked enough drainage effectively farm the area it is supposed to drain. Pot-holes were dug by the landowners in sections 34 and 35, and water just sits in said holes without draining.**

**Also, there is a broken intake where Lateral 2 intersects D41 in section 35**



Repair labor, materials and equipment \_\_\_\_\_

Potential Wetlands?  Yes-Repair existing tile only

No-Repair and maintain tile

Repaired By \_\_\_\_\_

Date: \_\_\_\_\_

Please send statement for services to:

Phone (641) 939-8111

Fax (641) 939-8245

Hardin County Auditor's Office

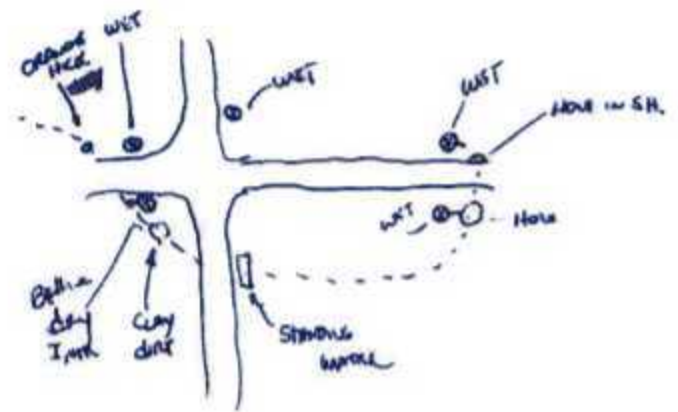
Attn: Tina Schlemme

1215 Edgington Ave. Suite 1

Eldora, IA 50627

For Office Use Only

Approved: \_\_\_\_\_ Date: \_\_\_\_\_



226310002

D. No. 42

23100002

225100003



## Drainage District:

#14 Main and Lateral 2

### Investigation and Repair Summary:

- Per the earlier recommendations and authorization of the previous investigation Summary, inspected the Main Tile and Lateral 2 Tile in the NE¼ of Section 34 and NW¼ of Section 35, Township 88 North, Range 22 West.
- Used beehive intake located approximately 300 ft west of County Highway S27 and in the south ditch of County Highway D41, inserted tile locator and hit obstruction approximately 180 ft downstream from said intake. Excavated hole at said obstruction and found nothing, water was flowing good. Drainage problem is farther upstream from beehive intake.
- Excavated on Lateral 2 Tile where the Iowa Rural Water Associations (IRWA) watermain crosses drainage district tile approximately 400 ft west of County Highway S27 on the north side of County Highway D41. Found 14" VCP flowing with no obstructions. However, watermain only clears the Lateral 2 Tile by approximately 1/4 feet. Repaired tile with 15" DW HDPE and concrete collars. Drainage problem is farther upstream.
- Visually observed standing water on the east side County Highway S27 approximately 330 ft south of County Highway D41. Excavated a hole on west side of County Highway S27, found Lateral 2 Tile – 4" SW HDPE tile to inspect condition of tile and water started surcharging into hole. Problem is farther downstream. Repaired tile with 2 HDPE couplers.
- Found Lateral 2 Tile on the south side of County Highway D41 at approximately 32 ft from the centerline of said County Highway D41. Removed section of 8" VCP Lateral 2 tile, used push tile locator to locate tile. Hit obstruction approximately 21 ft upstream from inspection hole. CCTV upstream from inspection hole and found two 5" HDPE private laterals directly across from each other protruding into Lateral 2 Tile 19 ft from said inspection hole. The private laterals are completely blocking the flow in the Lateral 2 Tile. Permanently repaired private tile connections to Lateral 2 tile with two 5"x8"x8" HDPE tees, one 4"x5"x5" HDPE tee, 3 HDPE couplers of varies sizes, 4" SW HDPE, 5" SW HDPE, and 8" DW HDPE. Rock bedding was used and concrete collars at all connections.
- Also, CCTV downstream from inspection hole on south side of County Highway D41 for approximately 70 ft to the Lateral 2 Tile connection with the Main Tile. Lateral 2 Tile appears to be in adequate physical condition.
- Inspected beehive intake approximately 540 ft east of County Highways S27 and on the south side of County Highway D41. Intake appears to be near the end of Lateral 2 Tile and has a sinkhole on the east side between intake and Lateral 2 tile. Excavated at sinkhole and found 6" VCP tile from intake to 6" HDPE tee on Lateral 2 tile. VCP tile connection with Lateral 2 Tile appears to be damaged. Replaced damaged VCP tile connection tile with 6" SW HDPE tile and concrete collars at both ends.
- There also appears to be another sinkhole by County Highway D41, but it appears to be caused by the 18" RCP culvert under the road.
- Also, the hickenbottom intake on the north side of County Highway D41 at approximately 375 ft from County Highway S27 appears to be full of dirt/debris and was not repaired at this time.
- After all repairs where done, the water on the east side of County Highway S27 appears to have down gone now that the restriction has been removed.



### Contractor Time and Materials (spent while CGA was on-site):

See attached Tabulated Contractor Time and Materials sheet.

### Additional Actions Recommended:

1. Verify that contractor performed fine grading and seeding of the south and north ditch of County Highway D41, the west ditch of County Highway S27, and wetland area that was disturbed by these repairs.
2. Inform Secondary Roads that the hickenbottom intake on the north side of County Highway D47 may need to be repaired as it currently has dirt/ debris in it.
3. Inform Secondary Roads that the sink hole over the 18" Culver needs repaired.
4. If desired by the District Trustees, inform IRUA that their watermain appears not to meet the original permit requirements.
5. As noted on the Tabulated Contractor Time and Materials, Crop damage was incurred. It is recommended that the District Trustees pay any damage claim brought forth.



## Tabulated Contractor Time and Materials

Date	Totals	7/7/2020	7/8/2020	7/9/2020	7/13/2020
Workman (hrs)	82 2/3	20	21 3/4	36 1/4	4 2/3
Mini Excavator (hrs)	25 1/3	6 1/3	7	9	3
Skidloader (hrs)	26	6 1/3	7 3/4	9	3
CCTV inspection (ft.)	90		90		
4" Single Wall HDPE Tile (ft.)	162/5			162/5	
5" Single Wall HDPE Tile (ft.)	82/3			82/3	
6" Single Wall HDPE Tile (ft.)	22/5				22/5
8" Dual Wall HDPE Tile (ft.)	71/2			71/2	
15" Dual Wall HDPE Tile (ft.)	23/5			23/5	
4"x5"x5" HDPE Tee (ea.)	1			1	
5"x8"x8" HDPE Tee (ea.)	2			2	
4" Coupler (ea.)	3			3	
5" Coupler (ea.)	2			2	
6" Coupler (ea.)	1				1
Rock Bedding	Yes				
Concrete Collars	Yes				
Rock Bedding	Yes				
Crop Damage (ac.)	1/2			1/2	





## Tabulated Defects

	Total	GPS #254 UPSTREAM	GPS #255 DOWNSTREAM	GPS #255 UPSTREAM
Total Length Televised (ft)	69.9	18.5	9.5	41.9
Date:		7/8/2020	7/8/2020	7/8/2020
Top crack (ft)	2.1	0.8	0	1.3
Side crack (ft)	0	0	0	0
Bottom crack (ft)	0	0	0	0
Partial or imminent collapse (#)	0	0	0	0
Full collapse (#)	0	0	0	0
Debris (ft)	5	4	0	1
Offset Joint (#)	21	7	3	11
Soil/voids visible in offset joint (#)	9	7	2	0
Single Wall HDPE (non-deformed) (ft)	1.5	1.5	0	0
Dual Wall HDPE (ft)	0	0	0	0
CMP (rusty) (ft)	0	0	0	0
Holes (non-fixed) (#)	0	0	0	0
Holes (fixed) (#)	0	0	0	0
Alligator Cracks (ft)	0	0	0	0
Radial Cracks (# of tile)	0	0	0	0





CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE:

07/07/2020

PROJECT NUMBER: HARDIN DD W0#292

DAYS OF WEEK:

S M  W T F S

COUNTY, ROUTE, ROAD: 6844.5/DD#14  
INTERSECTION OF CO HWY  
S-27 & CO HWY D41

SHEET NO.

1 OF 4

LOCATION: SE 1/4 SE 1/4 27-88-22, NE 1/4 NE 1/4 34-88-22,  
& NW 1/4 NW 1/4 35-88-22 INVESTIGATE  
FOR PLUGGED TILE DD14 MAIN OR LAT 2

LOW 70'S TO LOW 90'S SUNNY  
WITH LIGHT WINDS

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB  
NAME, ITEM NO. AND LOCATION

JOB# 6844 DD14 SURVEY

2:40 P.M. OBSERVER AND CREW ARRIVED  
ON SITE. CREW STARTED UNLOADING EQUIPMENT WITH ADAM,  
PERRY, & DYLAN ON SITE AND KOLBELCO SK85CS MINI EXCAVATOR  
& CASE TR 340 TRACKED SKIDLOADER FOR EQUIPMENT. OBSERVER  
SET GPS BASE ON GPS #23 3/4"  $\phi$  IRON REOD 0.2'S DEEP  
SW CORNER OF FIELD DRIVE IN SE QUADRANT OF CO HWY D-41 &  
CO HWY S-27.

3:00 P.M. GPS BASE WAS SET UP WITH OBSERVER LOOKING OVER  
INFORMATION FOR A GOOD PLACE TO START CHECKING.  
CREW WAS NOW @ INTERSECTION OF <sup>CO HWY D41</sup>  
& CO HWY S27 WITH EQUIPMENT.  
OBSERVER TOLD CREW TO CHECK INTAKES TO SEE IF THEY ARE DRY OR  
WET & THEN START RUNNING LOCATOR CABLE THROUGH  
INTAKES TO FIND OBSTRUCTION.

3:10 P.M. RON VIERKANDT STOPPED AND CHECKED HOW INVESTIGATION  
WAS GOING. OBSERVER TOLD RON THAT WE JUST ARRIVED ON SITE  
AND WERE CHECKING WHICH INTAKES ARE STILL WET THEN TRY  
RUNNING LOCATE CABLE DOWN INTAKES TO FIND POSSIBLE  
OBSTRUCTION.

3:20 P.M. FOUND BEE HIVE INTAKE IN SOUTH DITCH OF CO HWY D-41  
297'  $\pm$  WEST OF  $\&$  CO HWY S-27 WITH 6" CLAY TILE OUTLET TO WEST  
WAS DRY. CREW WILL TRY RUNNING LOCATE CABLE INTO  
TILE FROM THIS LOCATION.

3:30 P.M. OBSERVER CHECKED GPS INTO GPS # 21 SURVEY MARK NAIL  
FLUSH IN AGE IN CO HWY S-27 ABOUT 2632'  $\pm$  SOUTH OF <sup>CO HWY D41</sup> WITH  
BOTH HORIZONTAL AND VERTICAL POSITION CHECKING GOOD.

3:35 P.M. OBSERVER NOTICED A HOLE STILL OPEN ON EAST SIDE OF EAST  
ROW FENCE FOR CO HWY S-27 322'  $\pm$  SOUTH OF CO HWY D-41. EXCAVATED

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature:

Dean Penning

Date Prepared:

07/07/2020

Reviewed by:

Engineer

Date Reviewed



CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE: 07/07/2020

PROJECT NUMBER: HARDIN DD WO# 292

DAYS OF WEEK: S M  W T F S

COUNTY, ROUTE, ROAD: 6844.5 / DD#14

SHEET NO: 2 OF 4

LOCATION: SE 1/4 SE 1/4 27-88-22, NE 1/4 NE 1/4 34-88-22,

LOW 70'S TO LOW 90'S SUNNY WITH  
LIGHT WINDS

& NW 1/4 NW 1/4 35-88-22 INVESTIGATE  
FOR PLUGGED TILE DD 14 MAIN OR LAT 2

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB NAME, ITEM NO. AND LOCATION

JOB# 6844 DD14 SURVEY  
HOLE HAS 2.0' TO 2.5' OF WATER SITING IN  
HOLE. OBSERVER ALSO NOTICED THAT FL OF DITCH ON BOTH EAST  
& WEST SIDES OF CO HWY 527 IN SAME AREA WAS SATURATED  
BUT NO WATER STANDING IN DITCH. OBSERVER CALLED ADAM  
THAT HOLE THAT SOMEONE PREVIOUSLY EXCAVATED HAS  
WATER SITING IN IT AND BOTH DITCHES ARE SATURATED SO  
I WOULD SAY TILE IS PLUGGED DOWN STREAM.

3:44 P.M. PICTURE #404B SEE PICTURE FOR DETAILS.

3:50 P.M. OBSERVER AND CREW STARTED PUSHING LOCATE CABLE  
THROUGH BEEHIVE INTAKE. LOCATE CABLE HIT A SPOT WHILE  
PUSHING WITH SOME RESISTENCE BUT PUSHED THROUGH THIS  
AREA (GPS# 235 @ 65.7') (OFFSET JOINT?). OBSERVER LOCATED  
THIS SPOT FOR DOCUMENTATION, OBSERVER CONTINUED TO  
PUSH LOCATE CABLE UNTIL IT HIT SOMETHING HARD. THIS TIME  
CABLE COULD NOT PUSH ANY FURTHER DOWNSTREAM.

5:20 P.M. OBSERVER HAD LOCATING DEVICE HOOKED UP AGAIN AND STARTED  
TO LOCATE TILE IN FIELD AND SHOOTING WITH GPS. SINCE  
LOCATING END WAS NOT CABLE OBSERVER GUESSED WHERE HOLE  
WAS LOCATED BY SIGNAL STRENGTH. OBSERVER TAPED CABLE AT  
INSIDE EDGE OF INTAKE ABOUT TOP OF 6" CLAY TILE OUTLET AND  
PULLED CABLE OUT OF TILE. OBSERVER LAYED CABLE ALONG  
GRAVEL SHOULDER AND SHOT LENGTH WITH GPS FROM TAPE  
TO END OF CABLE. OBSERVER CREATED A POINT ON POLYLINE  
AT THIS FOOTAGE.

6:00 P.M. CREW ASKED OBSERVER WHICH WAY WAS SHORTER TO GET  
OUT IN FIELD TO EXCAVATE AT OBSTRUCTION. OBSERVER SAID  
ALONG LOCATES FROM N ROW OF CO HWY 0-47. OBSERVER

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature: Dean Penning Date Prepared: 07/07/2020

Reviewed by: \_\_\_\_\_  Engineer \_\_\_\_\_

Date Reviewed: \_\_\_\_\_



CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE:

07/07/2020

PROJECT NUMBER: HARDIN DD WO # 292  
6844.5 / DD # 14  
COUNTY, ROUTE, ROAD: INTERSECTION OF CO HWY  
S-27 & CO HWY D41  
LOCATION: SE 1/4 S84 27-88-22, NE 1/4 NE 1/4 34-88-22,  
& NW 1/4 NW 1/4 35-88-22 INVESTIGATE  
FOR PLUGGED TILE DD 14 MAIN OR LAT 2

DAYS OF WEEK:

S M  W T F S

SHEET NO.

3 OF 4

LOW 70'S TO LOW 90'S SUNNY WITH  
LIGHT WINDS

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB  
NAME, ITEM NO. AND LOCATION

JOB # 6844 DD14 SURVEY

HELD UP POLE ABOVE CORN FOR THEM TO  
SEE WHERE CABLE LOCATE ENDED, RON VIERKANDT ALREADY  
TOLD CONTRACTOR HE COULD MAKE A PATH IN CORN TO FIX TILE  
SINCE IT NEEDS TO BE FIXED. CREW CAME THROUGH FROM JIM VIERKANDT.  
DRIVE OFF CO HWY D-41. OBSERVER ASKED THE REASON FOR  
THIS WAY (DAMAGED A LOT MORE CROPS) WAS IT WOULD BE  
BETTER TO GET ROCK OUT TO REPAIR.

6:30 P.M. CREW STARTED EXCAVATING TO EXPOSE TILE @  
OBSTRUCTION (GPS # 246) 159.1' INTO FIELD.

7:10 P.M. CREW HAD TILE EXPOSED AT POSSIBLE OBSTRUCTION.  
TILE LOOKED GOOD UPSTREAM AND DOWNSTREAM WITH 3"  
OF GOOD FLOW. TILE LOCATE CABLE MUST HAVE HIT AN OFFSET JOINT.

7:15 P.M. PICTURE # 4049 & PICTURE # 4050 SEE PICTURE FOR DETAIL

7:30 P.M. FINISHED REELING LOCATE CABLE BACK ONTO REEL.

8:00 P.M. PERRY AND DYLAN LEFT SITE FOR DAY.

8:15 P.M. OBSERVER & ADAM PUSHED LOCATE CABLE 100' DOWNSTREAM  
FROM GPS # 247 & 100' UPSTREAM FROM GPS # 248 WITH NO OBSTRUCTION  
SINCE TILE IS FLOWING GOOD THEN OBSTRUCTION MUST BE FURTHER UPSTREAM.

8:20 P.M. ADAM STARTED EXCAVATING IN NORTH DITCH OF HWY D-41 TO  
FIND TILE AND EXCAVATED AROUND 6" HICKEN BOTTOM. ADAM FOUND  
6" CLAY TILE <sup>OUTLET WAS</sup> BROKEN & COMPLETELY FULL OF SOIL (BOTTOM OF HICKEN BOTTA  
WAS COMPLETELY FULL OF SOIL TOO.

8:50 P.M. ADAM STARTED EXCAVATING FOR TILE NEAR WM/TILE CROSSING  
BUT IRUA WILL NOT BE ON SITE UNTIL TOMORROW @ 8:00 AM. TO CHECK  
IF WATER MAIN IS CAUSING AN ISSUE. PROBED DOWN TO TILE BY WATER MAIN AND TILE  
IS IN GOOD SHAPE.

9:00 P.M. OBSERVER AND ADAM LEFT SITE.

QUANTITIES ADAM 2:40 - 9 6 1/3 HOURS KOLBELO SK85 CS MINI EXCAVATOR 6 1/3 HOURS  
PERRY 2:40 - 8 5 1/3 HOURS CASE TR340 TRACKED SKIDDER 6 1/3 HOURS  
DYLAN 2:40 - 8 5 1/3 HOURS

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature:

Dean Penning

Date Prepared:

07/07/2020

Reviewed by:

Engineer

Date Reviewed



CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE:

07/07/2020

PROJECT NUMBER: HARDIN DD WO # 292  
6844.5 / DD # 14  
 COUNTY, ROUTE, ROAD: INTERSECTION OF CO HWY  
S-27 & CO HWY D41  
 LOCATION: SE 1/4 SE 1/4 27-88-22, NE 1/4 NE 1/4 34-88-22,  
& NW 1/4 NW 1/4 35-88-22. INVESTIGATE  
FOR PLUGGED TILE DD 14 MAIN OR LAT 2

DAYS OF WEEK:

S M  W T F S

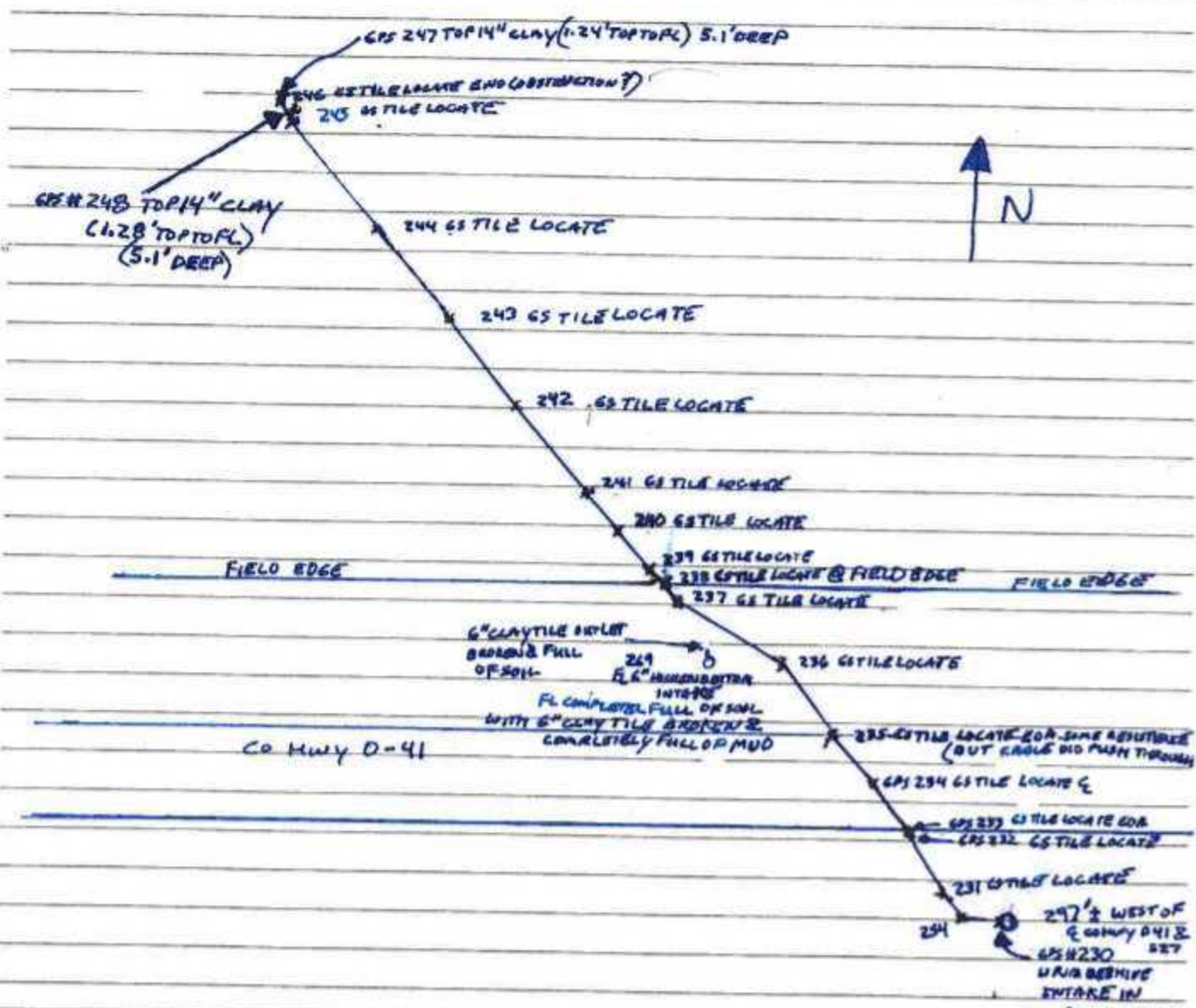
SHEET NO.

4 OF 4

LOW 70'S TO LOW 90'S SUNNY  
WITH LIGHT WINDS

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB  
NAME, ITEM NO. AND LOCATION

JOB # 6844 DD14 SURVEY



I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature: Dean Penning Date Prepared: 07/07/2020

Reviewed by: \_\_\_\_\_ Engineer \_\_\_\_\_ Date Reviewed: \_\_\_\_\_



PICTURE # 4048 IS LOOKING NORTH ALONG EAST ROW FENCE  
322'± SOUTH OF CO HWY D-41 SHOWING WATER SITING IN HOLE



PICTURE # 4049 IS LOOKING NW UPSTREAM INSIDE 14" CLAY  
TILE (GPS# 248 1.28' TOPTOFL). TILE IS IN GOOD SHAPE  
WITH 3" FLOW (5.1" DEEP)

PICTURE # 4050 IS LOOKING NW, DOWN STREAM INSIDE 14" CLAY  
(5.1'±DEEP)  
TILE (GPS# 247 1.24' TOPTOFL) TILE IN GOOD SHAPE  
WITH 3" FLOW TILE HAS A LONGITUDINAL CRACK @ 12 O'CLOCK BUT  
NOT CAVING DOWN



NOT  
CAVING  
DOWN





CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE: 07/08/2020

PROJECT NUMBER: HARDIN DD WO# 292  
6844.5 / DD#14  
COUNTY, ROUTE, ROAD: INTERSECTION OF CO HWY  
S-27 & CO HWY D41  
LOCATION: SE 1/4 SE 1/4 27-88-22, NE 1/4 NE 1/4 34-88-22,  
& NW 1/4 NW 1/4 35-88-22 INVESTIGATE  
FOR PLUGGED TILE DD 14 MAIN OR LAT 2

DAYS OF WEEK: S M T W T F S

SHEET NO. 1 OF 5

LOW 70'S TO MID 90'S SUNNY  
WITH LIGHT WINDS

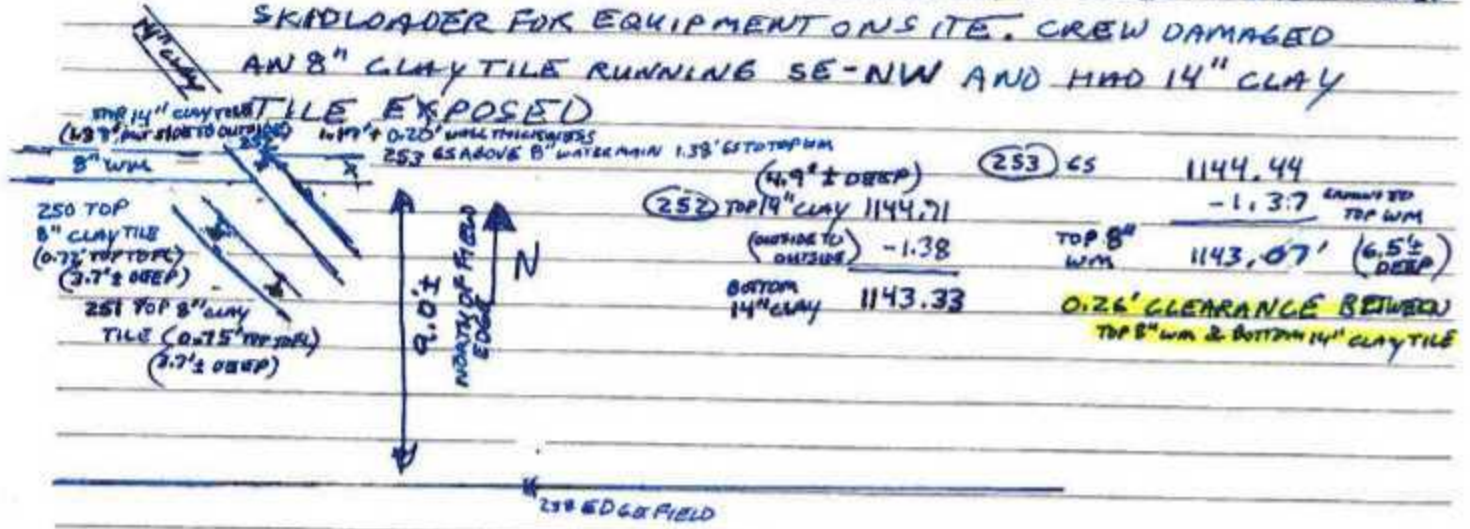
DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB  
NAME, ITEM NO. AND LOCATION JOB# 6844 DD14, SURVEY

7:35 A.M. OBSERVER LEFT OFFICE FOR JOBSITE.  
8:05 A.M. ADAM CALLED THAT JASON WITH IOWA RURAL UTILITIES ASSOCIATION  
WAS ON SITE AND WANTED TO START DIGGING FOR TILE. OBSERVER  
SAID GO AHEAD SINCE I AM ABOUT 7 MINUTES AWAY FROM  
SITE.

8:12 A.M. OBSERVER ARRIVED ON SITE AND SET GPS BASE ON GPS#23  
3/4" FROM ROAD 0.12' DEEP SW CORNER FIELD DRIVE IN SE QUADRANT OF  
CO HWY D-41 & CO HWY S-27.

8:30 A.M. OBSERVER HAD GPS BASE SET UP AND CHECKED INTO GPS#21 SURVEY  
MARK NAIL FLUSH IN ACC IN CO HWY S-27 ABOUT 2632' SOUTH OF  
CO HWY D-41 WITH BOTH HORIZONTAL AND VERTICAL POSITION CHECKING  
GOOD

8:35 A.M. OBSERVER ARRIVED AT WATERMAIN/TILE CROSSING WITH  
ROWVERKANT, JASON WITH IRTUA, ADAM, DYLAN, PERRY ON SITE  
AND KOLBELCO SK 85CS MINIEXCAVATOR & CASE TR340 TRACKED  
SKIDLOADER FOR EQUIPMENT ON SITE. CREW DAMAGED  
AN 8" CLAY TILE RUNNING SE-NW AND HAD 14" CLAY



I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature: Dean Penning Date Prepared: 07/08/2020

Reviewed by: \_\_\_\_\_ Engineer  Date Reviewed: \_\_\_\_\_



CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE:

07/08/2020

PROJECT NUMBER:

ROADWAY DDW# 252

6844.5/DDW#14

DAYS OF WEEK:

S M T W T F S

COUNTY, ROUTE, ROAD:

INTERSECTION OF CO HWY  
5-27 & CO HWY 041

SHEET NO.

2 OF 5

LOCATION:

SE 1/4 SE 1/4 27-88-22, NE 1/4 NE 1/4 24-88-22,  
& NW 1/4 NW 1/4 25-88-22 INVESTIGATE  
FOR PLUGGED TILE DDW# 14 MAIN DRAIN

LOW 70'S TO MID 90'S SUNNY WITH LIGHT  
WINDS

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB  
NAME, ITEM NO. AND LOCATION

JOB# 6844 DDW# 14 SURVEY

8:51 A.M. PICTURE # 4051, 8:52 A.M. PICTURE # 4052  
& PICTURE # 4053 SEE PICTURES FOR DETAILS.

9:00 AM. OBSERVER THOUGHTS ARE HOLE SHOULD HAVE FILLED UP  
WITH WATER IF TILE WAS PLUGGED DOWNSTREAM FURTHER & NW  
HOLE WHERE TILE EXPOSED FLOW IS GOOD. OBSERVER WILL  
CHECK BEEHIVE INTAKE IN DITCH NORTH OF HWY 0-41 & WEST  
OF S-27. THIS BEEHIVE INTAKE OUTLET TILE TO SOUTH WAS  
DRY. OBSERVER WILL HAVE CREW EXCAVATE & EXPOSE  
TILE WEST OF BEEHIVE INTAKE SO LOCATE CABLE CAN  
BE RAN UPSTREAM IN TILE TO SEE TO CHECK IF PLUGGED

9:56 A.M. PICTURE # 4054 SEE PICTURE FOR DETAILS.

10:15 A.M. LATERAL # 2 8" CLAY TILE WAS EXPOSED NW  
OF BEEHIVE INTAKE WITH A SECTION OF 8" TILE REMOVED.

10:16 AM. PICTURE # 4055 & PICTURE # 4056 SEE PICTURE FOR DETAILS.

10:25 A.M. CREW RAN LOCATE CABLE UPSTREAM INSIDE 8" CLAY TILE  
FROM GPS # 254 UNTIL IT HIT SOMETHING IN TILE @ 21.3' ±  
CABLE IS UNABLE TO PUSH THROUGH THIS LOCATION.

10:35 A.M. CREW WAS HEADING TO WEST DITCH OF CO HWY 527  
330' ± SOUTH OF E CO HWY 041 TO CHECK CONDITION & FLOW  
IN TILE BEFORE EXCAVATING IN FIELD IN CASE JUST A JOINT CRACK.

10:40 A.M. MID COUNTRY EQUIPMENT ON SITE & OBSERVER TRYING  
TO RUN LOCATOR CABLE THROUGH INTAKE TO FIND OBSTRUCTION  
IN LATERAL # 2. OBSERVER IS UNABLE TO MAKE BEND WITH  
LOCATE CABLE INTO LATERAL # 2. CREW WILL EXCAVATE TO  
FIND LATERAL # 2 TO RUN LOCATE CABLE DOWNSTREAM  
TO PLUG. ADAM

11:03 A.M. PICTURE # 4058 SEE PICTURE FOR DETAILS.

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature:

Dean Penning

Date Prepared:

7/08/2020

Reviewed by:

Engineer

Date Reviewed



CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE:

07/08/2020

PROJECT NUMBER: HARDEN DOWNS # 252  
6844.5/DDH/4  
COUNTY, ROUTE, ROAD: INTERSECTION OF HWY  
5-27 & CO HWY/D41  
LOCATION: SE 1/4 SE 1/4 27-88-22, NE 1/4 NE 1/4 34-88-22,  
& NW 1/4 NW 1/4 35-88-22 INVESTIGATE  
FOR PLUGGED TILE DD14 MAIN OR LATER

DAYS OF WEEK:

S M T W T F S

SHEET NO.

3 OF 5

LOW 70'S TO MID 90'S SUNNY WITH LIGHT  
WINDS

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB  
NAME, ITEM NO. AND LOCATION

JOB# 6844 DD14, SURVEY

11:15 A.M. BEFORE CREW COULD GET DOWN TO  
TILE WATER WAS SQUIRTING OUT OF CRACK IN SOIL & FILLING HOLE UP.  
CREW DECIDED TO CHECK TILE ON WEST SIDE OF WATER MAIN/  
TILE CROSSING.

11:26 A.M. PICTURE # 4059 SEE PICTURE FOR DETAILS.

11:35 A.M. CREW CUT A 4" HOLE SW PER TILE RUNNING N-S  
IN FIELD. BEFORE CREW REACHED TILE, WATER WAS  
SQUIRTING OUT OF GROUND.

11:45 A.M. DUE TO WATER PRESSURE AT THIS LOCATION, RESTRICTION  
IS FURTHER DOWNSTREAM AND CREW WILL EXCAVATE  
AT LOCATION WHERE CABLE COULD NOT PUSH THROUGH  
21.3' ± SE OF BEEHIVE INTAKE IN SOUTH DITCH OF HWY  
D-41. ADAM HAD PAUL SCHEDULED TO COME TELEVISION  
TILE TO PINPOINT ISSUE AT 1:00 P.M. SINCE NO ISSUE FOUND YET.

11:50 P.M. OBSERVER MARKED OUT EXACT LOCATION OF POSSIBLE OBSTRUCTION,  
IN TILE. RON LEFT SITE AND ASKED TO LET HIM KNOW  
WHEN PAUL WAS ON SITE TO TELEVISION TILE.

12:05 P.M. CREW ROLLED ONE OF TRACKS OFF <sup>MINI</sup> EXCAVATOR HEADING BACK  
TO EXCAVATE AT POSSIBLE OBSTRUCTION.

12:15 P.M. ADAM LEFT SITE TO GET A BAR TO HELP PUT TRACK BACK  
ON. PERRY AND DYLAN LEFT FOR LUNCH. OBSERVER SHOT  
LOCATION OF POSSIBLE OBSTRUCTION.

12:45 P.M. DYLAN AND PERRY BACK ON SITE FROM LUNCH

12:50 P.M. PAUL ON SITE WITH CAMERA EQUIPMENT TO TELEVISION  
UPSTREAM AND DOWNSTREAM FROM GPS #254 & #255 WEST  
OF BEEHIVE INTAKE IN SOUTH DITCH OF HWY D41. CREW WAS UNABLE  
TO GET POSSIBLE OBSTRUCTION EXCAVATED & EXPOSED BEFORE PAUL ARRIVED  
DUE TO EQUIPMENT ISSUES. OBSERVER NOTIFIED RON PAUL WAS ON SITE

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature:

Dean Penny

Date Prepared:

7/08/2020

Reviewed by:

Engineer

Date Reviewed







CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE:

07/08/2020

DAYS OF WEEK:

S M T W T F S

SHEET NO.

5 OF 5

PROJECT NUMBER:

HARDW DO W0 # 292

COUNTY, ROUTE, ROAD:

6844.5/00114  
INTERSECTION OF CONWAY  
S-27 & CO HWY 041

LOCATION:

SE 1/4 SE 1/4 27-33-22, NE 1/4 NE 1/4 34-33-22  
& NW 1/4 NW 1/4 35-33-22 SURVEYED  
FOR PLUGGED TIE DDL4 MAIN OR LAT 2

LOW 70'S TO MID 90'S SUNNY WITH  
WINDS

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB  
NAME, ITEM NO. AND LOCATION

JOB # 6844 DDL4 SURVEY

3:25 P.M. RON & JIM VIERKANDT LEFT SITE.

3:45 P.M. PICTURE # 4066 & 3:46 P.M. PICTURE # 4067 SEE PICTURE FOR DETAILS.  
3:45 P.M. CREW WAS GETTING 5" HDPE SW PERF TILE AREA PREPPED  
FOR MAKING CONNECTIONS

4:15 P.M. PERRY AND DYLAN LEFT SITE

4:30 P.M. ADAM LEFT SITE. CREW NEED TO GET SUPPLIES  
FOR 5" HDPE SW PERF TILE CONNECTIONS TO 8" CLAY TILE.

5:00 P.M. OBSERVER LEFT SITE AFTER SHOOTING EXISTING 4" & 5" HDPE  
SW PERF TILE FOR NEW TIE IN CONNECTION TO 8" CLAY TILE  
LAT 2 CONNECTION.

QUANTITIES

ADAM 8-12:15 1:45-4:30 7 HOURS 12:15-1:15 HOUR GETTING BAR  
TO RIG OUTRIG  
1:15-1:45 1/2 HOUR LETTING TRACK BACK ON MINI EXCAVATOR  
PERRY 8-12:15, 12:45-4:15 7 3/4 HOUR  
12:15-12:45 1/2 LUNCH  
DYLAN 8-12:15, 12:45-4:15 7 3/4 HOUR  
12:15-12:45 1/2 HOUR

PAUL WITH CAMERA EQUIPMENT 2 1/3 HOURS

KOLBELCO SK 850S MINI EXCAVATOR 7 HOURS

CASE TR 340 TRACKED SKIDLOADER 7 3/4 HOURS

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature:

Dean Penning

Date Prepared:

07/08/2020

Reviewed by:

Engineer

Date Reviewed



**Clapsaddle-Garber Associates, Inc.**  
 16 East Main Street, Marshalltown, Iowa 50158, ph 641-752-6701  
 1523 South Bell Avenue, Suite 101, Ames, Iowa 50010, ph 515-232-1784  
 5106 Nordic Drive, Cedar Falls, Iowa 50613, ph 319-266-0258  
 739 Park Avenue, Ackley, Iowa 50601, ph 641-847-3273  
 511 Bank Street, Webster City, Iowa 50595, ph 515-832-1876  
 800-542-7681, www.cgaconsultants.com

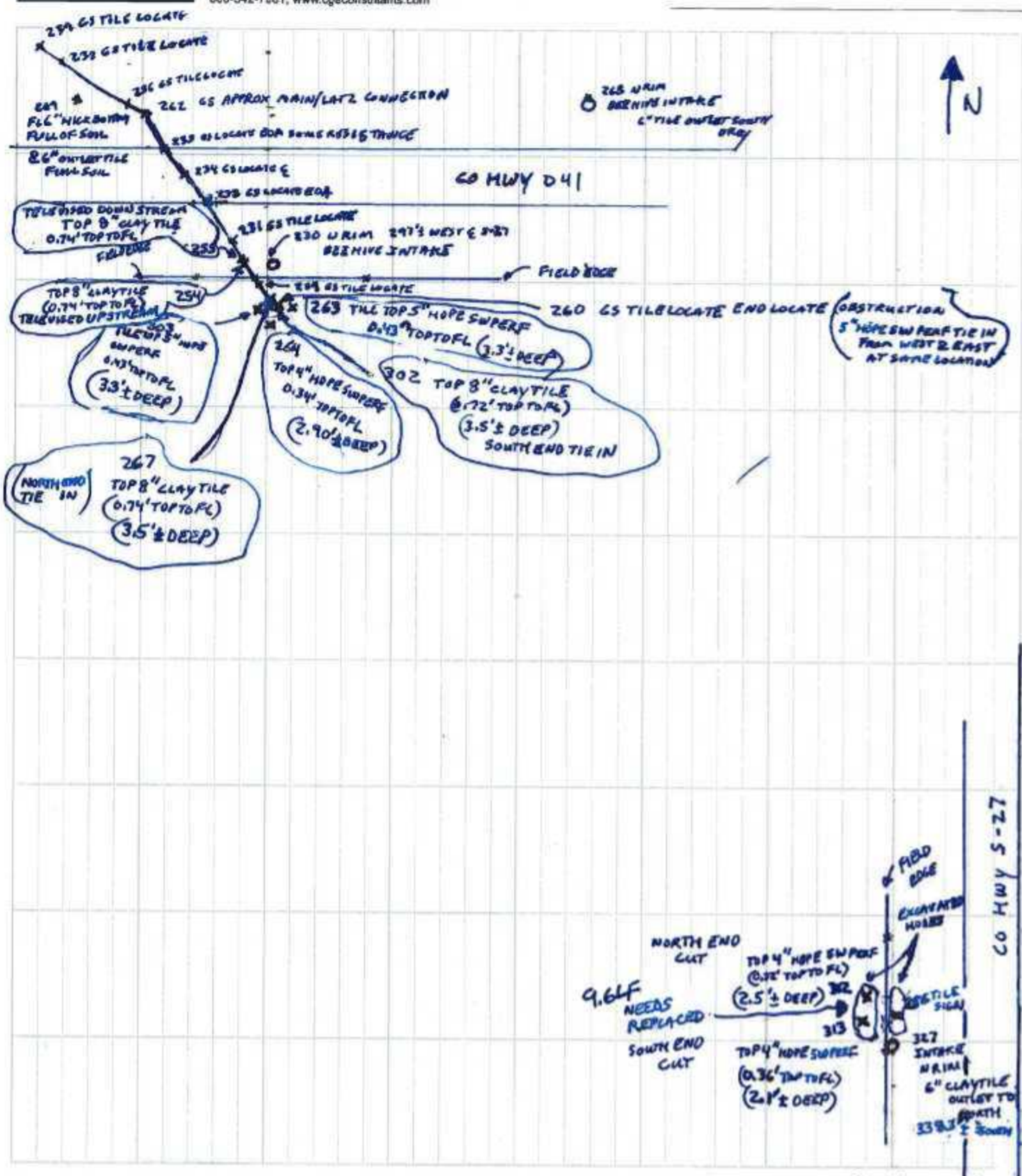
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CS44.5/00#14

07/08/2020

D.A.P.

PN \_\_\_\_\_ Date \_\_\_\_\_  
 Computed By \_\_\_\_\_ Date \_\_\_\_\_  
 Checked By \_\_\_\_\_ Date \_\_\_\_\_  
 Subject \_\_\_\_\_





PICTURE# 4051 IS LOOKING SW SHOWING 8" CLAY TILE THAT WAS DAMAGED WHILE EXCAVATING TO EXPOSE 14" CLAY @ LOCATION WHERE WATERMAIN GOES UNDER TILE



GPS# 250 TOP 8" CLAY TILE (6.75' TOP OF) (3.7' ± DEEP)

GPS# 251  
TOP 8" CLAY  
TILE  
(6.75' TOP OF)  
3.7' ± DEEP

07/08/2020  
08:51

GPS# 252 TOP 14" CLAY TILE  
(4.9' ± DEEP)



N

07/08/2020  
08:52

PICTURE# 4052 IS LOOKING NW UPSTREAM INSIDE 8" CLAY TILE WITH 2" ± OF MUD IN FLOWLINE FROM GPS# 250. TILE IS IN GOOD SHAPE WITH FEW FINE ROOTS AND A FEW OFFSET JOINTS

PICTURE # 4053 IS LOOKING SE DOWNSTREAM INSIDE 8" CLAY TILE  
WITH 2"± OF MUD IN FLOWLINE FROM GPS # 251. TILE HAS A  
LITTLE POPOUT AT NEXT JOINT AND IS IN GOOD SHAPE WITH 2" MUD  
IN FLOWLINE AND COMPLETELY FULL DOWNSTREAM. RON



THINKS  
THIS TILE  
IS  
ABANDONED.



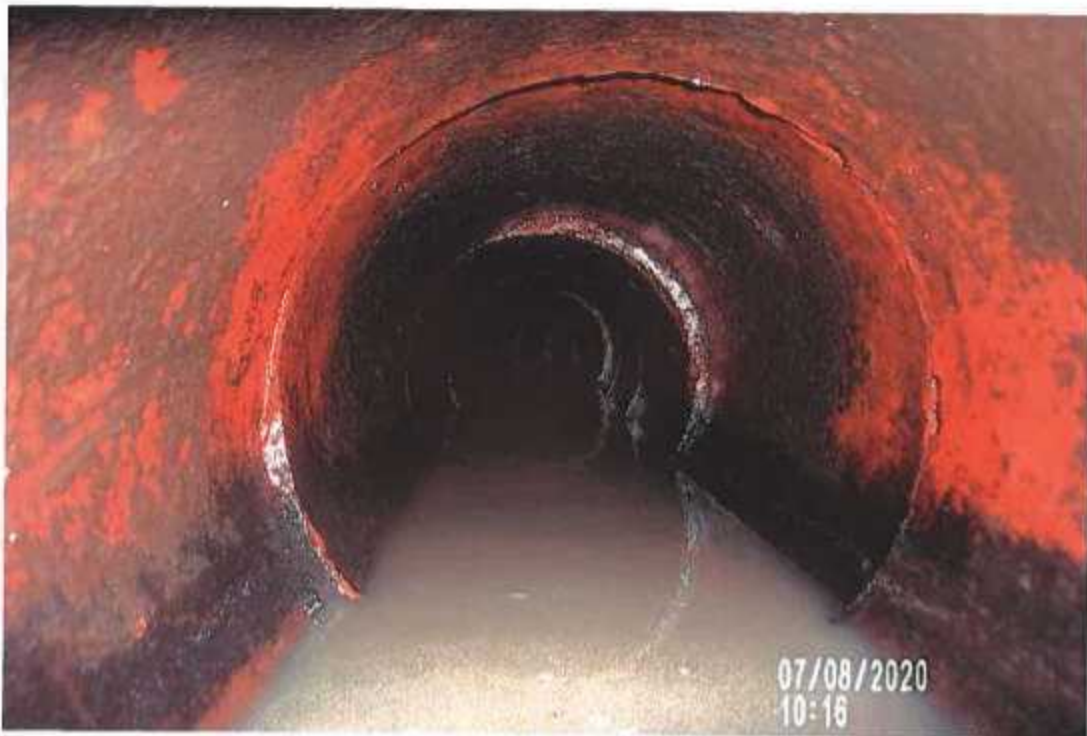
07/08/2010  
08:52



PICTURE # 4054 IS LOOKING EAST IN SOUTH DITCH CO HWY 04/  
297'± WEST OF E CO HWY 5-27 SHOWING CREW EXPOSING LATZ TILE  
WEST OF BEEHIVE INTAKE SO CREW CAN RUN LOCATE CABLE UPSTREAM  
TO CHECK FOR PLUGGED TILE.



↖ N



↖ N

PICTURE # 4055 IS LOOKING <sup>NW</sup> DOWNSTREAM INSIDE 8" CLAY TILE  
FROM GPS # 255' SHOWING TILE IN GOOD CONDITION WITH 3/4" OF  
WATER AND NOT MUCH FLOW. TILE IS 3.1'± DEEP.



PICTURE# 4056 IS LOOKING SE UPSTREAM INSIDE 8" CLAY TILE  
SHOWING TILE IN GOOD CONDITION WITH 3/4" WATER IN FL &  
NOT MUCH FLOW. TILE IS 3.1' ± DEEP.  
↑ 6" CLAY TILE INLET FROM BEEHIVE INTAKE.



PICTURE# 4057 IS LOOKING NW SHOWING SECTION OF 8" CLAY  
TILE ROLLED OUT IN SOUTH DITCH OF CO HWY 041 NW OF BEEHIVE INTAKE  
FOR CREW TO RUN LOCATOR CABLE UPSTREAM TO FIND PLUG  
IN TILE.



PICTURE# 4058 IS LOOKING NORTH - SHOWING CREW EXCAVATING  
ALONG FIELD EDGE IN WEST DITCH OF HWY-27 TO EXPOSE  
TILE TO CHECK CONDITION, FLOW AND RUN LOCATE CABLE  
THROUGH IT.



WATER  
FILLING  
UP  
IN  
HOLE,  
EXCAVATED  
ON EAST  
SIDE OF  
WATER MAIN

PICTURE# 4059 IS LOOKING NORTH SHOWING CREW NOW  
EXCAVATING ON WEST SIDE OF WATER MAIN TO CHECK IF  
WATER MAIN IS THE CAUSE.



PICTURE # 4060 IS LOOKING UPSTREAM INSIDE 8" CLAY TILE @ 2 1/3' UPSTREAM FROM BEEHIVE INTAKE SHOWING 5" PERF SW HOPE TILE FROM EAST & FROM WEST CONNECTING AT SAME LOCATION WITH SIDES CRACKED AND TOP CAVING DOWN WITH TILE PLUGGED UPSTREAM WITH SOIL & ROOTS



WITH SOIL & ROOTS



PICTURE # 4061 IS LOOKING SW AT EXPOSED LOCATION WHERE 5" HOPE SW PERF TILE FROM EAST & FROM WEST TIE INTO 8" CLAY TILE LATERAL 2



PICTURE # 4062 IS LOOKING SE AT TOP VIEW OF 5" HDPE  
SW PERF TILE FROM WEST & EAST TIEING INTO SAME LOCATION  
INTO BROKEN 8" CLAY TILE AND PLUGGED LINE



PICTURE # 4064 IS LOOKING SW SHOWING WATER GUSHING FROM  
UPSTREAM END OF 8" CLAY TILE AT 5" HDPE TILE CONNECTIONS  
AFTER BLOCKAGE REMOVED



PICTURE# 4065 IS LOOKING SOUTH SHOWING 5" HOPE TILE CONNECTION WITH 5" HOPE TILE FROM WEST HAVING A SAC OR HUMPE UP IN A SPOT.



PICTURE# 4066 IS LOOKING NORTH SHOWING WATER GONE NOW IN EXCAVATED HOLE IN WEST DITCH OF COMHY 527 ALONG FIELD EDGE EAST OF WATER MAIN N-S



PICTURE#4067 IS LOOKING NORTH SHOWING PREVIOUSLY EXCAVATED HOLE EAST OF EAST ROW FENCE FOR CO. HWY 527 & SOUTH OF CO HWY D41



PICTURE# 4068 IS LOOKING NW SHOWING TILE FLOWING IN SOUTH DITCH OF CO. HWY D41



PICTURE #4069 IS LOOKING EAST SHOWING 5" HOPE SW PERF TILE CONNECTION AREA. 8" CLAY TILE STILL FLOWING GOOD.



5" HOPE SW PERF TILE



6" HICKEN BOTTOM  
FILL FULL OF  
SOIL &  
6" CLAY TILE  
OUTLET  
& ROCK  
& FULL  
OF SOIL

PICTURE #4070 IS LOOKING NW FROM CO HWY 041 SHOWING AREA IN NORTH DITCH EXCAVATED AND MOLE EXCAVATED IN FIELD AT TILE/WATERMAIN CROSSING.



PICTURE # 4071 IS LOOKING SE TOWARDS CO HWY D41  
SHOWING 14" CLAY TILE FLOWING GOOD



GPS#248  
TOP 14" CLAY  
(1.20' TO TOP)



GPS#247 TOP 14" CLAY 1.24' TO TOP



268  
NRIM  
BEEHIVE  
INTAKE



PICTURE # 4072 IS LOOKING WEST SHOWING BEEHIVE  
INTAKE IN NORTH DITCH OF CO HWY D41 170.8' ± WEST OF E  
CO HWY S-27



CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE:

07/09/2020

DAYS OF WEEK:

S M T W Φ F S

PROJECT NUMBER: HARDIN DD WO# 292  
6844.5/00#14  
COUNTY, ROUTE, ROAD: INTERSECTION OF CO HWY  
S-27 & CO HWY D41  
LOCATION: SE 1/4 SE 1/4 27-88-22, NE 1/4 NE 1/4 24-88-22,  
& NW 1/4 NW 1/4 35-88-22 INVESTIGATE  
FOR PLUGGED TILE DD14 MAIN OR LAT Z

SHEET NO. 1 OF 6

MID 60'S TO LOW 80'S CLOUDY  
MID MORNING & MID AFTERNOON RAIN/  
SHOWER WITH SUNSHINE BY LATE AFTERNOON  
& LIGHT WIND JOB# 6844 DD14 SURVEY

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR(S) NAME, ITEM NO. AND LOCATION

- 7:40 A.M. OBSERVER LEFT OFFICE FOR JOBSITE
- 8:20 A.M. OBSERVER ARRIVED ON SITE AND SET GPS BASE ON GPS# 23  
3/4" IRON ROD 0.2' DEEP SW CORNER FIELD DRIVE IN SE QUADRANT  
OF CO HWY D41 & CO HWY S27.
- 8:40 A.M. ADAM ON SITE AND DROPPED OFF CONCRETE MIXER
- 8:45 A.M. OBSERVER HAD GPS BASE SETUP AND CHECKED INTO GPS# 21 SURVEY  
MARK NAIL FLUSH IN AGL IN CO HWY S-27 ABOUT 2632' ± SOUTH OF  
& CO HWY D-41 WITH BOTH HORIZONTAL AND VERTICAL POSITION CHECKING  
GOOD.
- 8:58 A.M. PICTURE# 4088, 9:08 A.M. PICTURE# 4089, & 9:18 A.M. PICTURE# 4090 SEE PICTURE  
FOR DETAILS.
- 9:30 A.M. OBSERVER STARTED SHOOTING CORN DAMAGE ON NORTH SIDE  
OF CO HWY D41. ADAM LEFT SITE TO GET ANOTHER  
LOAD OF 1" CLEAN ROCK WITH TRUCK AND DUMP TRAILER.
- 9:30 A.M. PICTURE# 4091, 9:38 A.M. PICTURE# 4092 SEE PICTURES FOR DETAILS
- 9:40 A.M. RON VIERKANDT STOPPED ON SITE AND OBSERVER INFORMED  
RON THAT CREW WILL BE WORKING ON MAKING TILE TODAY
- 9:45 A.M. PENNY AND DYLAN ARRIVED ON SITE WITH TILE FOR REPAIR.
- 10:00 A.M. OBSERVER FINISHED SHOOTING CORN DAMAGE #1 SHOTS  
(SEE SHEET FOR LOCATION OF CORN DAMAGE #1)  
GPS# 270 TO GPS# 300 0.371 ACRES. ALSO ADAM WAS  
BACK WITH LOAD OF 1" CLEAN ROCK. SITE WAS  
ALSO RECEIVING RAIN (RADAR SHOWED IT WOULD NOT LAST LONG)
- 10:20 A.M. RAIN WAS DONE AT SITE
- 10:55 A.M. PICTURE# 4093 AND PICTURE# 4094 SEE PICTURE FOR DETAILS
- 10:30 A.M. CREW WAS PREPPING 14" CLAY TILE REPAIR 168' ± NORTH  
OF & OF CO HWY D41 IN FIELD.
- 11:56 A.M. PICTURE # 4095, 12:02 PICTURE# 4096, & 12:03 PICTURE# 4097 SEE PICTURE FOR DETAILS
- 11:00 A.M. CARSON ARRIVED ON SITE
- 12:34 P.M. PICTURE # 4098 & 12:43 PICTURE # 4099 SEE PICTURE FOR DETAILS.

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature: Dean Penning

Date Prepared: 07/09/2020

Reviewed by: \_\_\_\_\_  Engineer

Date Reviewed: \_\_\_\_\_



CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE:

07/09/2020

PROJECT NUMBER: HARDIN DD WO# 292  
6844.5/00#14  
COUNTY, ROUTE, ROAD: INTERSECTION OF CO HWY  
S-27 & CO HWY D41  
LOCATION: SE 1/4 SE 1/4 27-88-22, NE 1/4 NE 1/4 34-88-22,  
& NW 1/4 NW 1/4 35-88-22 INVESTIGATE  
FOR PLUGGED TILE DD14 MAIN OR LAT 2

DAYS OF WEEK:

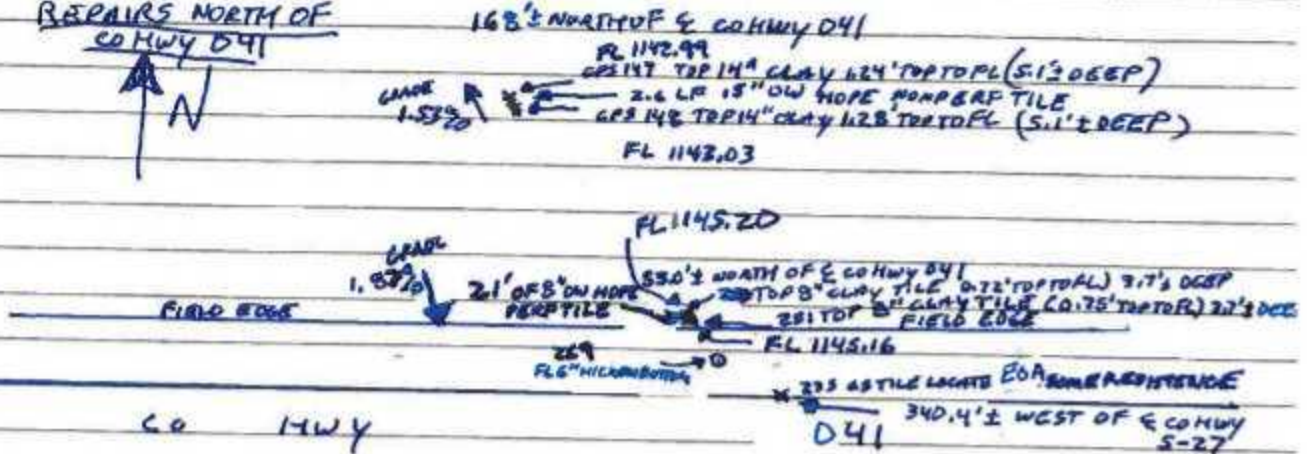
S M T W **TH** F S

SHEET NO.

2 OF 6

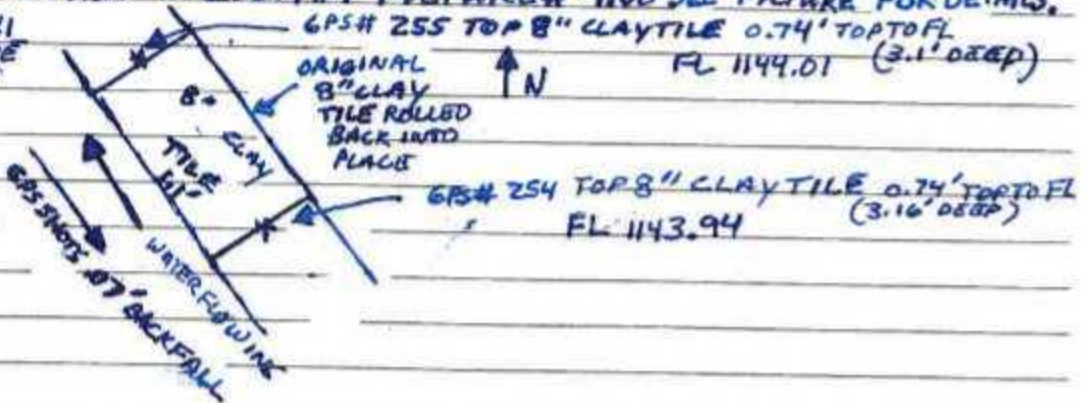
DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB  
NAME, ITEM NO. AND LOCATION 12:52 P.M. PICTURE# 4100 & 12:56 P.M. PICTURE# 4101  
SEE PICTURE FOR DETAILS.

REPAIRS NORTH OF  
CO HWY D41



11:00 P.M. CREW STARTED FIXING TILE ON SOUTH SIDE OF CO HWY D41  
1:20 P.M. PICTURE # 4102, 1:27 PICTURE# 4103 SEE PICTURE FOR DETAILS  
1:58 P.M. PICTURE# 4104 & 2:02 PICTURE# 4105 & PICTURE# 4106 SEE PICTURE FOR DETAILS  
2:08 P.M. PICTURE# 4107 & 2:21 P.M. PICTURE# 4108 SEE PICTURE FOR DETAILS.

SOUTH DITCH CO HWY D41  
9.5' WEST OF BEEHIVE  
INTAKE REPAIR



3:03 P.M. PICTURE# 4109, 3:07 P.M. PICTURE# 4110, 3:20 P.M. PICTURE# 4111, PICTURE#  
4112, & PICTURE# 4113 SEE PICTURE FOR DETAILS.

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature: Dean Penning Date Prepared: 07/09/2020

Reviewed by: \_\_\_\_\_  Engineer \_\_\_\_\_ Date Reviewed: \_\_\_\_\_



CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE:

07/09/2020

DAYS OF WEEK:

S M T W **④** F S

PROJECT NUMBER: **HARDIN DD W0# 292**  
**6844.5/00#14**  
COUNTY, ROUTE, ROAD: **INTERSECTION OF CO HWY**  
**S-27 & CO HWY 041**  
LOCATION: **SE 1/4 SE 1/4 27-88-22 NE 1/4 NE 1/4 24-88-22,**  
**& NW 1/4 NW 1/4 35-88-22 INVESTIGATE**  
**FOR PLUGGED TILE DDI4 MAIN OR LATZ**

SHEET NO.

**3** OF **6**

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB  
NAME, ITEM NO. AND LOCATION **3:26 P.M. PICTURE # 4114 & 3:46 P.M. PICTURE #**

**4115 SEE PICTURE FOR DETAILS**

**CO HWY 041**  
**FIELD**

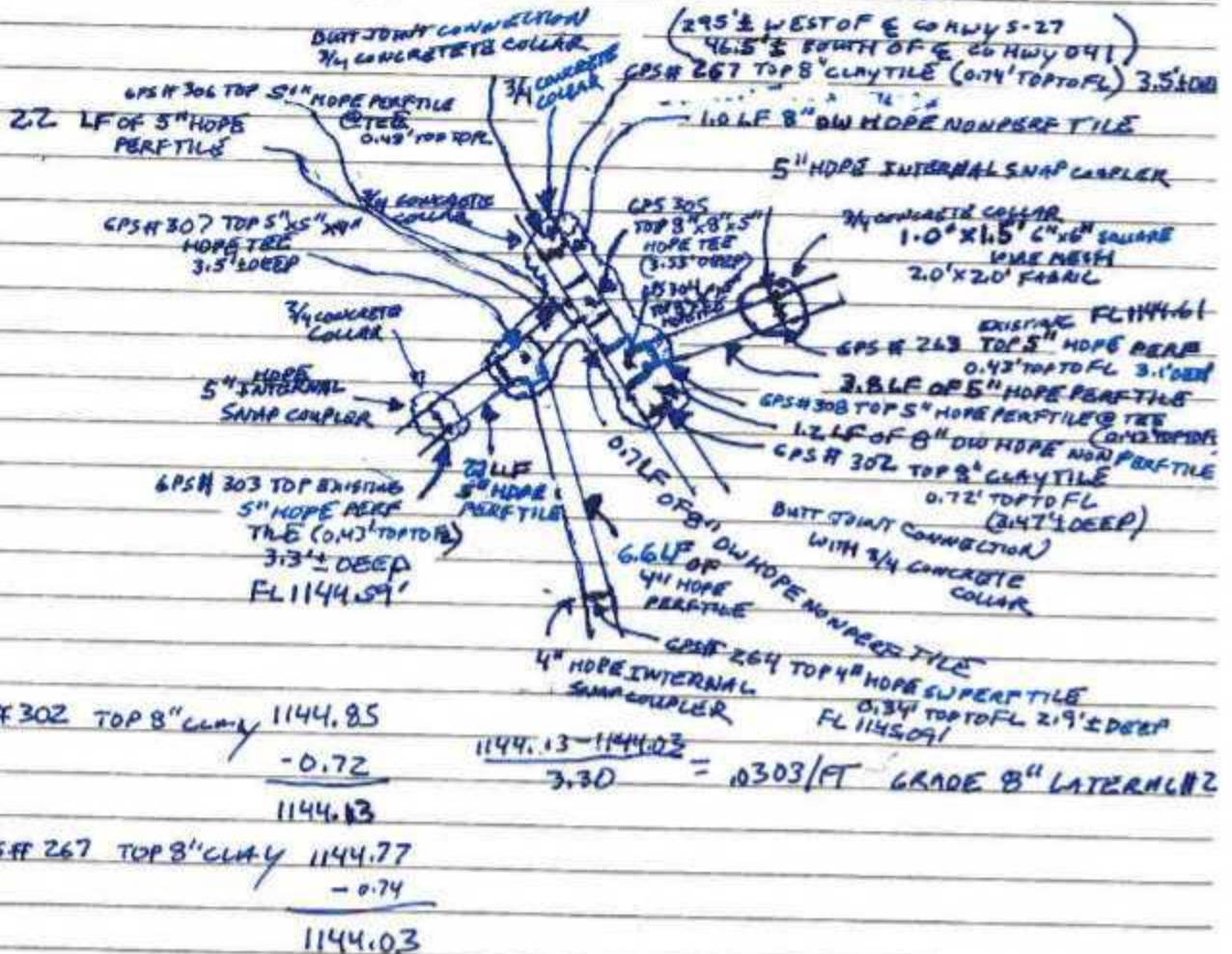
ROW

**5" HDPE SURF**

EDGE

**TIE THE IN**  
**CONNECTIONS TO**  
**LATERAL #2**

**TOTAL 30 - 60 LB BAGS OF QUIKRETE HIGH**  
**STRENGTH CONCRETE USED ON ALL 3/4 CONCRETE COLLARS.**



I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature: Dean Penning

Date Prepared

07/09/2020

Reviewed by:

Engineer

Date Reviewed



CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE: 07/09/2020

PROJECT NUMBER: HARDIN DD W# 292  
6844.5/00#14  
COUNTY, ROUTE, ROAD: INTERSECTION OF CO HWY  
S-27 & CO HWY 041  
LOCATION: SE 1/4 SE 1/4 27-88-22, NE 1/4 NE 1/4 34-88-22,  
& NW 1/4 NW 1/4 35-88-22 INVESTIGATE  
FOR PLUGGED TILE DD14 MAIN OR LAT 2

DAYS OF WEEK: S M T W **Q** F S  
SHEET NO. 4 OF 6

MID 60'S TO LOW 80'S CLOUDY  
MID MORNING & MID AFTERNOON RAIN/  
SHOWER WITH SUNSHINE BY LATE AFTERNOON  
& LIGHT WIND JOB # 6844 DD14 SURVEY

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB  
NAME, ITEM NO. AND LOCATION

3:48 P.M. CREW DONE POURING 3/4" CONCRETE  
COLLARS FOR 5" HOPE PERF TILE TIE IN CONNECTION AND START  
WORKING ON TILE REPAIRS ON EAST & WEST SIDE OF CO HWY  
S-27.

3:51 P.M. PICTURE # 4116 SEE PICTURE FOR DETAILS  
4:00 P.M. PICTURE # 4117 & 4:01 P.M. PICTURE # 4119 SEE PICTURES FOR DETAILS  
4:03 P.M. PICTURE # 4120 & 4:06 P.M. PICTURE # 4121 SEE PICTURE FOR DETAILS  
4:58 P.M. PICTURE # 4122 SEE PICTURE FOR DETAILS  
5:26 P.M. PICTURE # 4123 & 5:36 P.M. PICTURE # 4124 SEE PICTURE FOR DETAILS  
5:56 P.M. PICTURE # 4125 & PICTURE # 4126 SEE PICTURE FOR DETAILS  
6:11 P.M. PICTURE # 4127 & 6:15 PICTURE # 4128 SEE PICTURE FOR DETAILS  
7:40 P.M. PICTURE # 4129, 7:41 P.M. PICTURE # 4130 SEE PICTURE FOR  
7:42 P.M. PICTURE # 4131 & PICTURE # 1 SEE PICTURE FOR DETAILS  
7:00 P.M. CREW LEFT SITE. CREW WILL FINISH BACKFILLING  
TRENCHES TOMORROW.

QUANTITIES

ADAM 8:40-9:30, 10 TO 7 9 3/4 HOURS  
BOB TO DO SETTING LOAD OF 1" CEMENT ROCK WITH DUMP TRAILOR 1/2 HR  
DYLAN 9:45 TO 7 9 1/4 HOURS PERRY 9:45 TO 7 9 1/4 HOURS  
CARSON 11 TO 7 8 HOURS  
KOLBELCO SK 85CS MINI EXCAVATOR 10 TO 7 9 HOURS  
CASE TR 340 TRACKED SKIDLOADER 10 TO 7 9 HOURS  
CONCRETE MIXER ON SKIDLOADER 14" CLAY REPAIR N. OF 041 1/2 HOUR  
8" CLAY REPAIR N. OF 041 1/2 HOUR  
8" CLAY REPAIR S. DITCH 041 1/2 HOUR  
REST OF CONCRETE COLLARS. 1 HOUR

REPAIRS

① 14" CLAY TILE REPAIR (NORTH OF 041) 2.6 LF 15" Ø DW HOPE NON PERF TILE  
2- 2.0 X 3.5' ENGINEERING FABRIC  
11'0" X 4.0' & 1.5' X 4.0' 6" X 6" SQUARE WIRE MESH

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.  
Observer's Signature: Dean Perry Date Prepared: 07/09/2020  
Reviewed by: \_\_\_\_\_  Engineer Date Reviewed: \_\_\_\_\_



CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE:

07/09/2020

PROJECT NUMBER: HARDIN DD WO# 292  
6844.5/00H14  
COUNTY, ROUTE, ROAD: INTERSECTION OF CO HWY  
S-27 & CO HWY D41  
LOCATION: SE 1/4 SE 1/4 27-88-22, NE 1/4 NE 1/4 24-88-22,  
& NW 1/4 NW 1/4 35-88-22 INVESTIGATE  
FOR PLUGGED TILE DD14 MAIN OR LET 2

DAYS OF WEEK:

S M T W **TH** F S

SHEET NO.

5 OF 6

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB NAME, ITEM NO. AND LOCATION

② 8" CLAY TILE REPAIR (NORTH OF D41)

MID 60'S TO LOW 80'S CLOUDY  
MID MORNING & MID AFTERNOON RAIN/  
SHOWER WITH SUNSHINE BY LATE AFTERNOON  
& LIGHT WIND JOB # 6844 DD14 SURVEY

2.0' X 3.0' ENGINEER FABRIC  
1.5' X 2.0' 6" X 6" SQUARE WIRE MESH  
2.1 LF 8" Ø DW HDPE NONPERF TILE  
8- 60LB BAGS OF QUIKRETE HIGH STRENGTH CONCRETE

③ 8" CLAY ROLLBACK IN (SOUTH DITCH OF D41) REPAIR

1.5' X 2.0' 6" X 6" SQUARE WIRE MESH  
2.0' X 2.0' ENGINEERING FABRIC  
5- 60LB BAGS QUIKRETE HIGH STRENGTH CONCRETE

④ 5" HDPE PERF TILE TIE IN REPAIR

(4A) 8" MAIN 1.2 LF 8" Ø DW NONPERF TILE, HDPE 8" X 8" X 5" TEE,  
(TOTAL 5.35 LF) 0.7 LF 8" Ø DW NONPERF TILE, HDPE 8" X 8" X 5" TEE,  
& 1.0 LF 8" Ø DW NONPERF TILE

(4B) EAST 5" PERF TILE TIE IN

5" HDPE INTERNAL SNAP COUPLER  
3.8 LF OF 5" HDPE PERF TILE

(4C) WEST 5" PERF TILE TIE IN

2.2 LF OF 5" Ø HDPE 8W PERF TILE, 5" X 5" X 4" HDPE TEE,  
2.7 LF OF 5" Ø HDPE 8W PERF TILE, 5" Ø HDPE INTERNAL  
SNAP COUPLER, 6.6 LF OF 4" HDPE PERF TILE,  
& 4" HDPE INTERNAL SNAP COUPLER

(4D) 3/4 CONCRETE COLLARS

8" CLAY TO 8" HDPE NONPERF NORTH END 1.5' X 1.5' 6" X 6" WIRE MESH  
2.0' X 2.0' ENGINEER FABRIC  
SOUTH END 1.5' X 1.5' 6" X 6" WIRE MESH  
2.0' X 2.0' ENGINEER FABRIC

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature: Dean Panning

Date Prepared:

07/09/2020

Reviewed by: \_\_\_\_\_

Engineer

Date Reviewed \_\_\_\_\_



CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE:

07/09/2020

PROJECT NUMBER:

MARION DD WO # 292

DAYS OF WEEK:

S M T W 0 F S

COUNTY, ROUTE, ROAD:

6844.5/DD#14  
INTERSECTION OF CO

SHEET NO.

6 OF 6

LOCATION:

SE 1/4 SE 1/4 2788-22 NE 1/4 NE 1/4 2788-22  
2 NW 1/4 NW 1/4 35-38-22 INVESTIGATE  
FOR PLUGGED TILE DD#1 MARION CO ILL

MID 60'S TO LOW 80'S CLOUDY  
MID MORNING & MID AFTERNOON  
RAIN SHOWER WITH SUNSHINE & LATE  
AFTERNOON

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB  
NAME, ITEM NO. AND LOCATION

- 1.5 X 2.0' ENGINEERING FABRIC OVER BOTH 8" X 8" X 1.5" HDPE TEE TO 5" HDPE SW PERF TILE SLID IN CONNECTION
- 1.5 X 2.0' ENGINEER FABRIC OVER BOTH 5" HDPE TO 5" HDPE INTERNAL COUPLER CONNECTIONS.
- 1.5' X 2.0' ENGINEERING FABRIC OVER 4" HDPE TO 4" HDPE INTERNAL COUPLER CONNECTION, 4" HDPE SLID IN CONNECTION ON 5" X 5" X 4" HDPE TEE, & AROUND 5" X 5" X 4" TEE CONNECTIONS
- 26 - 60 LB BAGS OF QUIKRETE HIGH STRENGTH CONCRETE.

⑤ HOLE IN 8" HDPE NONPERF TILE REPAIR

2.0 X 2.0 ENGINEER FABRIC

1.0 X 2.0' 6" X 6" SQUARE WIRE MESH

4 - 60 LB BAGS OF QUIKRETE HIGH STRENGTH CONCRETE.

⑥ 4" HDPE PERF TILE REPAIR

9.8 LF 4" HDPE PERF TILE WITH 2 4" INTERNAL <sup>SNAP</sup> COUPLERS

LOAD #1 MARTIN MARIETTA TICKET # 302243 1" CLEAN ROCK 7.58 TONS

LOAD #2 MARTIN MARIETTA TICKET # 1" CLEAN ROCK TONS

CORN DAMAGE #1 0.371 AC CORN DAMAGE #2 0.043 AC CORN DAMAGE #3 0.051 AC

ADDITIONAL ACTIONS - FINE GRADE & SEED; SOUTH DITCH CO HWY 041,  
NORTH DITCH CO HWY 041, & WEST DITCH CO HWY 527  
WET LAND AREA DISTURBED BY REPAIR

- 14" CLAY TILE REPAIR (N OF D4) SOIL WAS MIXED WITH CORN STALKS  
NOW EXTRA SOIL BUT WILL SETTLE DUE TO STALKS MIXED WITH SOIL.

- 8" CLAY TILE AT GPS# 250 TO GPS# 251 (FIELD ABOVE MAIN TILE) WITH CROSSING NORTH D41 APPEARS TO BE

- 6" HILKEN BOTTOM FULL OF SOIL ALONG WITH OUTLET TILE BEING  
CRACKED AND FULL OF SOIL (MAY NEED REPLACED SOMETIME)

STILL HAVE BEEHIVE INTAKE TO EAST IN NORTH DITCH OF CO HWY 041  
(1/2 MI WEST OF CO HWY 527)

I Certify that the work

in this report was incorporated into this contract unless otherwise noted.

Observer's Signature:

Dean Perry

Date Prepared:

07/09/2020

Reviewed by:

Engineer

Date Reviewed







6844.5/00#14 07/09/2020 CO#14 DANCE #3 (GIVE ME TO 6844#336) 0.051 ACRES

Layers:

- Address
- Corporate Units
- Political Townships
- Geographic Township
- Sections
- Subdivision Annotation
- Subdivisions
- Lot Annotation
- Lot Lines
- Roads
- Road Dimensions
- Road ROW
- Railroad Annotation
- Railroads
- Railroad ROW
- Water
- Parcel Dimensions
- Parcels
- Drainage Tiles
- Drainage Districts
- Cartography
- Landuse
- Soils
- Enterprise Zones
- Conservation Property
- Structures
- Garden Wards Turbines
- Airport Protected
- Airport Surfaces
- Two Mills Boundary
- School Districts
- Voting Districts
- LOMR



Parcel ID	682234200003	Alternate ID	02840100000	Owner Address	Verbank, Ronald R - Trust Verbank, Carol Jean - Trust
Sec/Twp/Rng	34-08-22	Class	AD	Address	15898 - Highway D41
Property Address	15898 CO HWY D41	Average	18.69	Acres	15898 - Highway D41
County	HARDIN				Acres IA 50006-9741
District		13000			
Other Tax Description		E1/2 NE NE			
		SEC34-788N-R22W			

(Notes: Not to be used on legal documents)

Parcel ID: 682234200003  
 Alt ID: 2840100000  
 Address: 15898 CO HWY D41  
 Owner: Verbank, Ronald R - Trust Verbank, Carol Jean - Trust (Donor)  
 Acres: 18.69  
 View Parcel | Estimate Property



PICTURE # 4088 SHOWING PILE OF DEBRIS PULLED OUT OF THE  
(WHERE 8" CLAY TILE SECTION WAS ROLLED OUT IN SOUTH DITCH OF  
CO HWY 041) BEFORE IT WENT DOWNSTREAM AFTER PLUGGED  
TILE WAS OPENED



N ↑

GPS# 88  
PICTURE # 4089 IS LOOKING NE INSIDE TILE WYE ACCESS LID  
ON SOUTH SIDE OF CO HWY 041 1195.6' ± WEST OF E CO HWY 527  
SHOWING TILE IS STILL FLOWING GOOD AT THIS LOCATION



(GPS#269)  
PICTURE# 4090 SHOWING 6" HICKEN BOTTOM WITH TOP COMPLETELY  
BROKE OFF AND FL COMPLETELY FULL OF SOIL WITH 6" CLAY  
TILE OUTLET BROKE AND COMPLETELY FULL OF SOIL. PICTURE  
IS LOOKING WEST IN NORTH DITCH OF CO HWY 041



PICTURE#4091 IS LOOKING EAST FROM GRAVEL DRIVE FOR  
20825 CO HWY 527 OFF OF CO HWY 041 SHOWING CORN DAMAGE  
OUT TO TILE REPAIR.



PICTURE# 4092 IS LOOKING NW FROM SOUTH DITCH  
OF CO HWY D41 SHOWING CORN DAMAGE / OUT TO  
TILE REPAIR.



↑  
N



→  
N

PICTURE# 4093 IS LOOKING WEST SHOWING CORN DAMAGE /  
TO TILE REPAIR - LOOKING TOWARDS 20825<sup>th</sup> CO HWY 527  
GRAVEL DRIVE OFF CO HWY D41.



PICTURE # 4094 IS LOOKING SE TOWARDS CONWY04  
@ CORN DAMAGE / TO TILE REPAIR



PICTURE # 4095 IS LOOKING SE SHOWING 2.6 LF. PIECE  
OF 15" Ø DW HDPE NONPERF TILE IN PLACE FOR REPAIR  
WITH BEDDING ROCK UNDER TILE



PICTURE# 4096 IS LOOKING NW SHOWING FABRIC & MESH OVER NORTH & SOUTH TIE IN JOINTS FOR 14" CLAY TILE REPAIR NORTH OF COMWAY D41

65# 2.0'x3.5' FABRIC WITH 1.0' X 4.0' WIRE MESH OVER JOINT BEFORE COLLARS POURED



65# 2.0'x3.5' FABRIC & 1.5' X 4.0' WIRE MESH OVER JOINT BEFORE COLLARS POURED



PICTURE# 4097 IS LOOK NW SHOWING CREW POURING 3/4 CONCRETE COLLARS FOR 14" CLAY TILE REPAIR FROM QUIKRETE BAGS MIXED IN A CONCRETE MIXER THAT ATTACHES TO A SKIDLOADER.



PICTURE #4098 IS LOOKING SE DOWNSTREAM - FROM GPS #251  
 TOP 8" CLAY TILE (0.75' TOP TO FL) AFTER ANOTHER DAMAGED  
 4.0' SECTION OF TILE WAS REMOVED. 2" MUD IN FL TO COMPLETELY  
 FULL OF MUD. RON SAYS TILE HAS BEEN ABANDONED BUT



WILL CONNECT  
 TOGETHER  
 IN CASE  
 ANY TILE  
 UPSTREAM  
 IS CONNECTED  
 YES  
 N  
 ↓



GPS #251  
 TILE TOP 8" CLAY  
 0.75' TOP TO FL  
 2" MUD IN FL  
 (3.7' ± DEEP)

N  
 ↓

GPS #250  
 TILE TOP 8"  
 CLAY  
 (0.75' TOP TO FL)  
 2" MUD IN FL  
 2.7' ± DEEP

PICTURE #4099 IS LOOKING SE SHOWING 2.1LF 8" DW HOPE PERF TILE  
 IN PLACE WITH 2.0' X 3.0' FABRIC & 1.5' X 2.0' 6" X 6" WIRE MESH  
 OVER JOINTS BEFORE 3/4 CONCRETE COLLAR POURED



PICTURE # 4100 IS LOOKING SW AT FINISHED 3/4 CONCRETE COLLAR FOR 8" CLAY TILE REPAIR 55'± NORTH OF E HWY D41. CREW USED 8-60LB QUIKRETE HIGH STRENGTH CONCRETE BAGS.



PICTURE #4101 IS LOOKING NW AT FINISHED 3/4 CONCRETE COLLAR FOR 14" CLAY TILE REPAIR 168'± NORTH OF E HWY D41. CREW USED 18-60LB QUIKRETE HIGH STRENGTH CONCRETE BAGS FOR CONCRETE COLLARS.



PICTURE #4102 IS LOOKING NW IN SOUTH DITCH OF CO HWY  
 041 9.5'± WEST OF WEST RIM OF BEEHIVE INTAKE  
 SHOWING 8" CLAY TILE SECTION ROLLED BACK IN PLACE.



GPS#253  
 TOP 8" CLAY  
 TILE  
 (0.74' TOP TO FL)  
 3.1'± DEEP

NA

GPS#254  
 TOP 8" CLAY  
 TILE  
 (0.74' TOP TO FL)



PICTURE #4103 IS LOOKING UPSTREAM INSIDE 8" CLAY TILE  
 WITH ABOUT 1" FLOW AT GPS #302 (TOP 8" CLAY TILE) (0.72' TOP  
 TO FL)



PICTURE #4104 IS LOOKING NW SHOWING 2.0'X2.0' ENGINEERING FABRIC & 1.5'X2.0' 6"X6" SQUARE WIRE MESH OVER JOINT FOR 8" CLAY TILE SECTION ROLLED BACK INTO PLACE BEFORE 3/4 CONCRETE COLLAR POURED.



PICTURE #4105 IS LOOKING DOWNSTREAM INSIDE 8" CLAY TILE WITH ABOUT 2"± OF SLOW WATER FLOW.



PICTURE # 4106 IS LOOKING NORTH SHOWING 3/4" CONCRETE COLLAR POURED FOR 8" CLAY TILE SECTION ROLLED BACK INTO PLACE 9'5" WEST OF BEHIND ENTIRE. CREW USED 5-6018 BAGS OF QUIKRETE HIGH STRENGTH.



CONCRETE ON COLLAR

LPSM 254



07/09/2020  
14:02



07/09/2020  
14:08

PICTURE # 4107 IS LOOKING NORTH SHOWING BEDDING ROCK BACK FILLED AROUND 3/4" CONCRETE COLLAR IN SOUTH DITCH OF COUNTY D41 FOR 8" CLAY TILE SECTION ROLLED BACK INTO PLACE.



PICTURE # 4108 IS LOOKING SW SHOWING 8" CLAY TILE REMOVED WITH BEDDING ROCK IN PLACE TO TIE IN 5" SW HOPE PERF TILE LINES INTO 8" CLAY TILE LATERAL



PICTURE # 4109 IS LOOKING WEST AT 8" DW HOPE NONPERF TILE INSTALLED WITH A 8" x 8" x 5" HOPE TEE EAST & WEST & 5" HOPE PERF TILE INSTALLED INTO TEE WITH 5" x 5" x 4" HOPE TEE INSTALLED ON IT WITH BEDDING ROCK UNDER CONNECTION.



PICTURE #4110 IS LOOKING WEST AT NORTH & SOUTH TIES  
IN CONNECTIONS ON 8" LATZ BEFORE 3/4 CONCRETE COLLARS  
POURED

GPS# 307 TOP HOPE 5"X5"X4" HOPE TEE



GPS# 304  
TOP HOPE  
8"X8"X5"  
TEE



GPS# 267  
TOP 8" CLAY  
0.74' TO TOP FL  
1.5' X 11.5'  
6" X 6"  
WIRE MESH  
2.0' X 2.0'  
FABRIC  
OVER JOINT  
BEFORE 3/4  
CONCRETE  
COLLAR  
POURED

GPS# 305  
TOP HOPE  
8"X8"X5"  
TEE

GPS #302  
TOP 8" CLAY 0.85' TO TOP FL  
& 2.0' X 2.0' FABRIC OVER  
JOINT BEFORE 3/4 CONCRETE COLLAR POURED



GPS# 263  
TOP 5" HOPE  
PERF TILE  
0.43' TO TOP FL

302

PICTURE #4111 IS LOOKING NW SHOWING 3/4 CONCRETE COLLARS  
POURED AT CONNECTIONS FOR 5" HOPE SW PERF TILE TIE  
INS. CREW USED 17-60 LB BAGS OF QUIKRETE HIGH STRENGTH



PICTURE #4112 IS LOOKING EAST SHOWING 3/4 CONCRETE COLLARS POWAED (USED 17 QUIKRETE HIGH STRENGTH CONCRETE BAGS



↑  
2

GPS# 264  
TOP 4" HOPE  
PERF  
0.34' TO TOFL  
(2.9' ± DEEP)

GPS# 303 TOP 5"  
HOPE PERF TILE  
0.43' TO TOFL

4" HOPE INTERNAL SNAP COUPLER  
GPS# 264  
TOP 4" HOPE PERF (2.9' ± DEEP)  
0.34' TO TOFL



N  
↓

7.6 LF OF  
4" HOPE SW  
PERF TILE

GPS# 303  
TOP 5" HOPE  
PERF TILE  
0.43' TO TOFL

GPS# 303 TOP OF  
5" x 5" x 4" HOPE  
TBE

2.1 LF OF 5" HOPE PERF TILE

PICTURE # 4113

IS LOOKING SE SHOWING 4" HOPE PERF TILE TIED INTO 5" HOPE PERF TILE TIED INTO 8" HOPE NON PERF LAT 2 WITH 3/4 CONCRETE COLLARS (USED 17 QUIKRETE CONCRETE BAGS)



PICTURE #4114 IS LOOKING NE SHOWING 5" HDPE SW PERF TILE TIE IN CONNECTION INTO 8" HDPE LATERAL #2.

GPS#263 TOP 5" HDPE PERF TILE 0.43' TO TOP FL



5" HDPE INTERNAL SWAMP COUPLER

3.0 LF OF 5" HDPE PERF TILE

07/09/2020  
15:26

GPS# 304 TOP 8" x 8" x 5" HDPE TEE

GPS#263 5" HDPE SW PERF TILE



07/09/2020  
15:46

GPS#304 TOP 8" x 8" x 5" HDPE TEE

PICTURE #4115

IS LOOKING SE AT 5" HDPE SW PERF TILE TIE IN CONNECTIONS  $\frac{3}{4}$  CONCRETE COLLARS. (USED 9-6016 BAGS OF QUIKRETE HIGH STRENGTH CONCRETE)



PICTURE # 4116 IS LOOKING EAST SHOWING HOLE IN TOP OF 8" HOPE NONPERF TILE EXCAVATED BY ANOTHER CONTRACTOR AND LEFT OPEN 322'E SOUTH OF HWY 041 & 9.6'±



EAST OF  
EAST ROW  
FENCE  
HWY  
S-27  
IN WISLAND  
AREA



GPS # 311  
TOP 8" HOPE  
NONPERF



PICTURE # 4117 IS LOOKING DOWNSTREAM (FROM GPS # 311) INSIDE 8" TILE SHOWING CHANGE OF MATERIAL. TILE LOOKS GOOD SHAPE WITH WATER LEVEL AT 4" (SLOW FLOW). ALSO FLOWLINE HAS SOFT MUCK BUT SHOULD PUSH OUT NOW TILE OPEN.



PICTURE # 4119 IS LOOKING UPSTREAM (FROM CPS#311) INSIDE 2" TILE  
SHOWING TILE IN GOOD SHAPE BUT CHANGED TO CLAY WITH  
WATER LEVEL AT 4" (SLOW FLOW). ALSO FLOWLINE HAS SOFT MUCK  
BUT SHOULD FLUSH OUT NOW THAT IT IS  
OPEN.



PICTURE # 4120 IS LOOKING EAST SHOWING FABRIC &  
1.0' X 1.5' WIRE MESH OVER HOLE BEFORE 3/4 CONCRETE  
COLLAR POURED OVER HOLE IN TILE.



PICTURE #4121 IS LOOKING AT FINISHED 3/4 CONCRETE COLLAR OVER HOLE IN 8" SW HOPE NON PERF TILE. CREW USED 4 - 60 LB BAGS OF QUIKRETE HIGH STRENGTH CONCRETE ON COLLAR



PICTURE #4122 IS LOOKING NW SHOWING 4" SW HOPE PERF TILE THAT NEEDS REPLACED AFTER CUTTING TILE WHILE EXCAVATING TO CHECK LAT #2 TILE FLOW STATUS ON EAST SIDE OF CO HWY S-27.



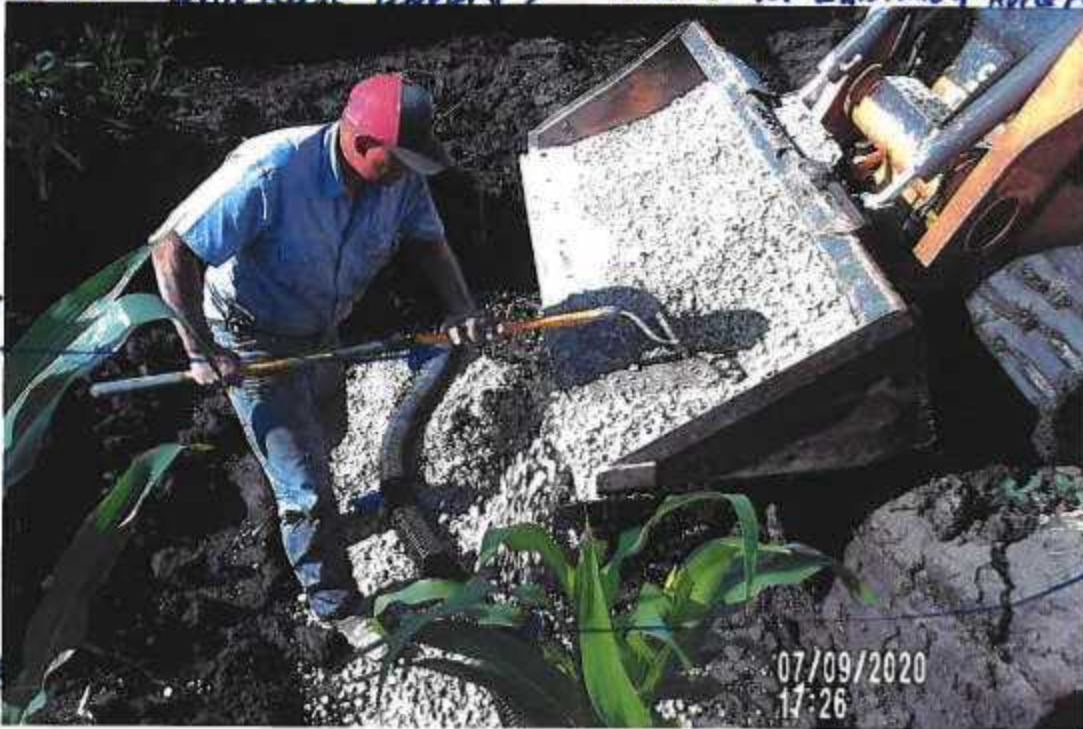
PICTURE # 4123 IS LOOKING NORTH SHOWING 9.8 LF OF 4" HDPE SW PERF TILE INSTALLED WITH 4" HDPE INTERNAL COUPLERS AND OFF TO SIDE SOME FOR FIRMER GROUND & BEDDED WITH ROCK UNDER. GPS # 312 TOP EXISTING 4" HDPE PERF TILE

(0.32' TOP TO FL)  
GRADE ON TILE  
2.02%

↑ N

GPS # 313  
TOP 4" HDPE  
PERF TILE  
0.38' TOP TO  
FL

GPS # 316  
TOP 4" HDPE  
PERF TILE  
0.35' TOP TO FL



GPS # 317  
TOP 4" HDPE  
PERF TILE  
0.38' TOP TO FL

← GPS # 313 TOP EXISTING 4" HDPE PERF TILE 0.36' TOP TO FL



↑

PICTURE # 4124 IS LOOKING NORTH WEST SIDE OF CO HWY 327 SHOWING 4" HDPE PERF TILE REPAIR BEDDED WITH ROCK.



PICTURE#4125 IS LOOKING NORTH SHOWING DITCH WEST SIDE CO HWY S-27 BACK FILLED & GRADED.



PICTURE#4126 IS LOOKING WEST FROM CO HWY S27 ABOUT 330'± SOUTH E CO HWY D41 SHOWING 4" HDPE SUPER TILE REPAIR BACK FILLED & GRADED. ALSO SHOWS 0.043 AC CORN DAMAGE (GPS# 320 - #324) DURING REPAIR.



PICTURE# 4127 IS LOOKING EAST SOUTH OF SOUTH  
ROW OF COM.WY D41 SHOWING A 5" HDPE PERF TILE  
THE INS BEDDED WITH ROCK TO TOP OF TILE



PICTURE# 4128 IS LOOKING NW SHOWING NORTH 14"  
CLAY TILE EXPOSED TRENCH WITH TILE BEDDED  
WITH ROCK TO TOP OF TILE



PICTURE# 4129 IS LOOKING EAST IN NORTH DITCH OF  
CO HWY D41 SHOWING DITCH STILL NEEDS GRADED.



PICTURE# 4130 IS LOOKING EAST SHOWING PILE OF  
EXTRA SOIL THAT WAS USED TO BACKFILL (14" CLAY TILE NORTH OF  
TILE TRENCH. CORN STALKS WERE MIXED WITH SOIL CREATING  
VOIDS AND EXTRA SOIL AREA WILL SETTLE DUE TO THIS. CO HWY D41)



PICTURE#4131 IS LOOKING SE SHOWING 5" HOPE TIE IN  
TRENCH THAT NEEDS BACK FILLED YET. PICTURE  
SHOWS 0.051 ACRES CORN DAMAGE DURING REPAIR

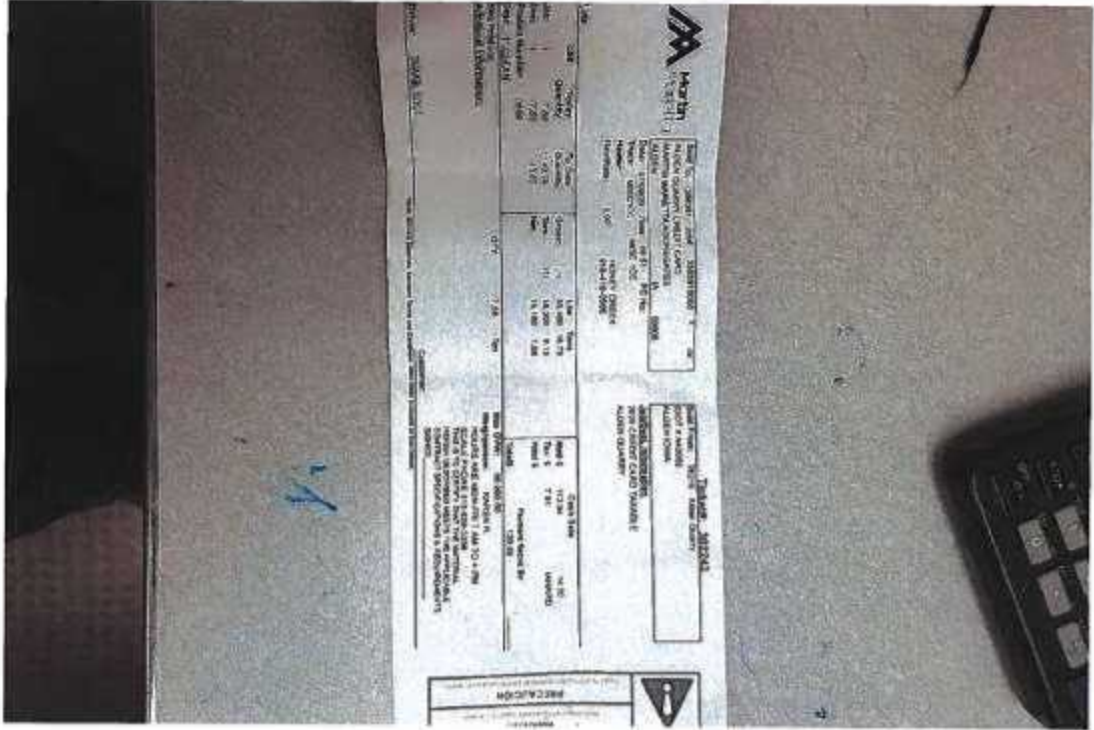


(GPS#331 TO  
GPS#330)

N  
↙



07/09/2020  
 PICTURE # | LOAD # | 1" CLEAN ROCK USED  
 TO BED TILE IN REPAIRS.





CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE:

07/13/2020

PROJECT NUMBER:

HARDIN DD WO# 292

DAYS OF WEEK:

S  M  T  W  T  F  S

COUNTY, ROUTE, ROAD:

6844.5 DD#14  
538.5' ± EAST OF CO HWY  
527 & 42 & SOUTH OF

SHEET NO.

1 OF 2

LOCATION:

35-88-22. NW 1/4 NW 1/4 INVESTIGATE  
BLOWOUT SOUTH DITCH EAST OF  
18" BEEHIVE INTAKE

UPPER 50'S TO MID 80'S  
SUNNY & BREEZY

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB  
NAME, ITEM NO. AND LOCATION

JOB# 6844 DD14 SURVEY  
07/10/2020 PERRY AND TR340 TRACKED SKIDLOADER  
FINISHED BACKFILLING REST OF HOLE LEFT OPEN 2 HOURS

7:15 A.M. ADAM CALLED OBSERVER THAT HE WILL BE ON SITE

AROUND 10:00 A.M. TO REPAIR BLOWOUT IN SOUTH DITCH

OF D41 EAST OF BEEHIVE INTAKE

7:20 A.M. OBSERVER NOTIFIED LEE THAT ADAM'S CREW WOULD BE  
WORKING TODAY

8:40 A.M. OBSERVER LEFT OFFICE FOR JOBSITE

9:10 A.M. OBSERVER ARRIVED ON SITE AND SET GPS BASE ON GPS#23  
3/4" Ø IRON REBAR 0.2' ± DEEP SW CORNER OF FIELD DRIVE  
IN SE QUADRANT OF CO HWY D-41 & CO HWY 5-27.

9:40 A.M. OBSERVER HAD GPS BASE SETUP AND CHECKED INTO  
GPS#21 SURVEY MARK NAIL FLUSH IN ACC IN CO HWY 5-27  
ABOUT 2632' ± SOUTH OF E. CO HWY D41 WITH BOTH HORIZONTAL  
AND VERTICAL POSITIONS CHECKING GOOD

9:45 A.M. OBSERVER STARTED TO LOOK FOR REPAIR AREA.

9:50 A.M. PERRY ARRIVED ON SITE.

10:00 A.M. ADAM ARRIVED ON SITE WITH KOLBELCO SK85 CS MINI  
EXCAVATOR & CASE TR340 TRACKED SKIDLOADER FOR EQUIPMENT  
PERRY WENT TO HELP ADAM UNLOAD EQUIPMENT.

10:01 A.M. PICTURE# 4138 & 10:02 A.M. PICTURE# 4139: SEE PICTURE FOR DETAILS

10:17 A.M. PICTURE# 4140 SEE PICTURE FOR DETAILS.

10:20 A.M. OBSERVER SHOT CULVERT, BEEHIVE INTAKE IN NORTH  
AND SOUTH DITCH OF CO HWY D41 & SINK HOLE IN NORTH  
SHOULDER OF CO HWY D41.

10:25 A.M. UPON FURTHER INVESTIGATION SINK HOLE IN NORTH SHOULDER  
IS DIRECTLY ABOVE 18" RCP ABOUT 11.7' ± SOUTH OF NORTH  
END OF RCP SO SINK HOLE IS A CULVERT ISSUE (COUNTY ROAD  
DEPARTMENT)

I Certify that the work described in this report was incorporated into this contract unless otherwise noted.

Observer's Signature:

*Dean Penning*

Date Prepared:

07/13/2020

Reviewed by:

Engineer

Date Reviewed



CONSTRUCTION ENGINEERING  
OBSERVATION REPORT

DATE:

07/13/2020

PROJECT NUMBER: HARDWOOD L#292  
 COUNTY, ROUTE, ROAD: 6844.5 DDAT4  
538.5' E EAST OF COMPLY  
527 & 42' S SOUTH OF E COMPLY  
 LOCATION: 35-88-22 NW 1/4 NW 1/4 INVESTIGATE  
BLOWOUT SOUTH DITCH EAST OF  
18" BERTHUS INTAKE

DAYS OF WEEK:

S Ⓞ T W T F S

SHEET NO.

2 OF 2

UPPER 50'S TO MID 80'S  
SUNNY & BREEZY

JOB # 68440014. SWR

DESCRIPTION OF WORK AND MATERIAL USED FOR EACH OPERATION, INCLUDING CONTRACTOR/SUB NAME, ITEM NO. AND LOCATION

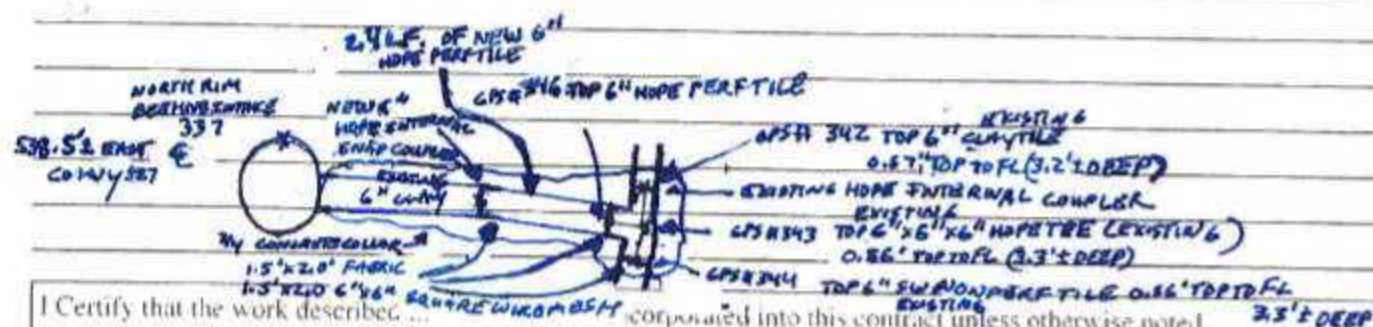
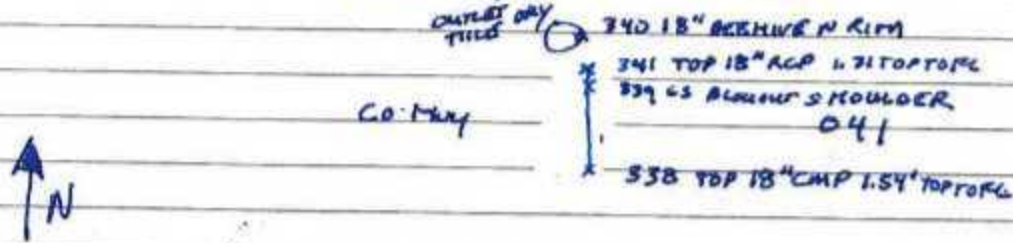
11:06 AM PICTURE #4141 & 11:08 AM PICTURE #4142  
 4142. SEE PICTURE FOR DETAILS.  
 11:30 A.M. CREW LEFT SITE TO GET SUPPLIES FOR REPAIR.  
 11:32 AM PICTURE #4144; 11:45 A.M. PICTURE #4145, 11:46 AM PICTURE #4147 SEE PICTURE FOR DETAILS.  
 11:10 P.M. CREW BACK ON SITE WITH SUPPLIES  
 1:46 P.M. PICTURE #4148, 1:56 PICTURE #4149, 1:59 PICTURE #4150 SEE PICTURE FOR DETAILS.  
 2:15 P.M. PICTURE #4151 & 2:35 PICTURE #4152 SEE PICTURE FOR DETAILS.  
 2:30 P.M. OBSERVER AND CREW LEFT SITE.

QUANTITIES

PERRY, ADAM 9:50 - 11:30 11:10 - 2:30 3 HOURS  
 1 1/2 HOURS GETTING SUPPLIES

KOLBELCO SK 85CS MINEXCAVATOR 3 HOURS  
 CASETR 340 TRACKED SKID LOADER 3 HOURS

2.4 LF OF 6" HOPE SUPER TILE, 6" HOPE INTERNAL SNAP COUPLER,  
 3 - 1.5' X 2.0' ENGINEER FABRIC & 3 - 2.0' X 1.5' 6" X 6" SQUARE  
 WIRE MESH, & 5 - 60 LB BAGS QUIKRETE HIGH STRENGTH CONCRETE  
 MIX



I Certify that the work described... incorporated into this contract unless otherwise noted.

Observer's Signature: Dean Dunning Date Prepared: 07/13/2020

Reviewed by: \_\_\_\_\_ Engineer \_\_\_\_\_ Date Reviewed: \_\_\_\_\_



PICTURE# 4138 IS LOOKING EAST SHOWING SMALL  
SINKHOLE ON EAST SIDE OF BEEHIVE INTAKE PER RANDY'S REPORT  
AREA LOOKED LIKE IT HAD BEEN EXCAVATED AT ONETIME



GPS# 337  
18" BEEHIVE  
INTAKE  
N RIM



N  
DIP IN  
GRAVEL  
SHOULDER  
WITH  
FRESH  
ROCK

PICTURE#4139 IS LOOKING WEST ON NORTH SHOULDER  
OF CO HWY D41 SHOWING SINK HOLE PER RANDY'S REPORT  
WITH A LITTLE DIP IN ALL 2 GRAVEL AND APPEARS SOMEONE HAS  
PUT FRESH ROCK IN SINK HOLE.



PICTURE# 4140 IS LOOKING NORTH TOWARDS S. HWY D41  
 SHOWING 18" CMP OUTLET FOR CULVERT UNDER CO HWY D41  
 & 18" BEEHIVE INTAKE IN SOUTH DITCH OF CO HWY D41 WITH SINKHOLE  
 GPS# 337 NRM BEEHIVE INTAKE / GPS# 338 TOP 18" CMP TO EAST,  
 1.54' TO TOFL



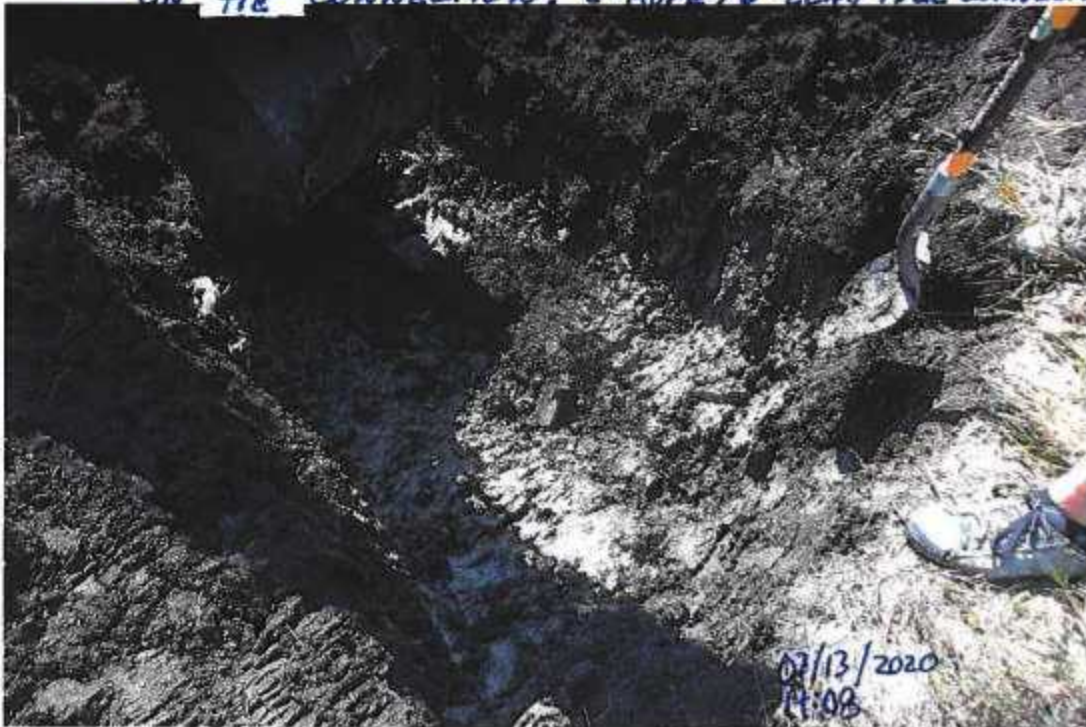
SINKHOLE  
 EAST OF  
 BEEHIVE  
 INTAKE



PICTURE# 4141 IS LOOKING EAST ON EAST SIDE OF  
 BEEHIVE INTAKE SHOWING 6" HDPE PERF TILE CONNECTION  
 TO 6" CLAY TILE OUTLET EAST FROM BEEHIVE INTAKE,



PICTURE# 4142 IS LOOKING SE SHOWING 6" HDPE PERF TILE CONNECTION TO 6" CLAY TILE EAST OF BEEHIVE INTAKE. PICTURE SHOWS CREW EXCAVATING TO CHECK ON TILE CONNECTION. 6" HDPE / 6" CLAY TILE CONNECTION CLAY TILE BROKE & WILL NEED REPLACED.



TILE BROKE & WILL NEED REPLACED.



07/13/2020  
14:08

GPS# 337 18" BEEHIVE INTAKE N RIM



GPS# 345 TOP 6" CLAY TILE (0.57' TOP TO FL) 2.65' DEEP

GPS# 342 TOP 6" CLAY TILE (0.57' TOP TO FL) 3.2' ± DEEP

07/13/2020  
14:25

GPS# 344 TOP 6" SW HDPE NONPERF TILE (0.56' TOP TO FL) 3.3' ± DEEP

GPS# 343 TOP 6" x 6" x 6" HDPE TEE (0.56' TOP TO FL) 3.3' ± DEEP

PICTURE# 4143 IS LOOKING AT 6" x 6" x 6" HDPE TEE CONNECTION WITH 6" HDPE / 6" CLAY CONNECTION DAMAGE AND NEEDS REPLACED



PICTURE # 4144 IS LOOKING WEST SHOWING 6"X6"X6" HOPE TEE CONNECTION & 6" HOPE PER TILE / 6" CLAY TILE WITH ISSUE BETWEEN PLASTIC & CLAY TILE

GPS # 345 TOP 6" CLAY (0.57' TOP TO FC)



GPS # 344 TOP 6" HOPE PER TILE  
GPS # 343 TOP 6"X6"X6" HOPE (0.56' TOP TO FC)  
GPS # 342 TOP 6" CLAY (0.57' TOP TO FC)



PICTURE # 4145 IS LOOKING SW ON SOUTH SIDE OF HWY 041 SHOWING DITCH GRADED TO INTAKE & TRENCH BACKFILL & GRADED. EXTRA SOIL PILED UP. BLEND EXTRA SOIL AROUND



PIICTURE #4147 IS LOOKING WEST SHOWING NORTH DITCH  
GRADED ABOVE TRENCH



↖ NW  
GPS# 345  
TOP 6" CLAY  
TILE  
(0.57'  
TOPTD  
FL.)



GPS# 346  
TOP 6" HDPE  
PERF TILE

PIICTURE # 4148 IS LOOKING NE SHOWING 6" HDPE<sup>PERF</sup> TILE  
SLIDE INTO TEE & TIED UPSTREAM INTO 6" CLAY TILE WITH  
6" HDPE INTERNAL COUPLER. 2.4 LF OF 6" HDPE<sup>PERF</sup> TILE



PICTURE# 4149 IS LOOKING SW SHOWING  $\frac{3}{4}$  CONCRETE COLLAR  
 POURED ON BEEHIVE INTAKE TILE OUTLET TIE IN WITH  
 3 - 20 X 15' 6" X 6" WIRE MESHES OVER JOINTS & 3 - 1.5 X 20'  
 DIMENSION FABRIC OVER JOINTS WITH 5-60 LB BAGS OF HIGH STRENGTH  
 CONCRETE



357  
 N FARM  
 BEEHIVE  
 INTAKE



PICTURE# 4150 IS LOOKING SE SHOWING:  $\frac{3}{4}$  CONCRETE COLLAR  
 POURED OVER BEEHIVE OUTLET TILE TIE IN CONNECTION



PICTURE# 4151 IS LOOKING WEST SHOWING DITCH  
GRADED TO BEEHIVE INTAKE



PICTURE# 4152 IS LOOKING NORTH SHOWING TRENCH  
BACKFILLED EAST OF EAST ROW CORNER 27 & SOUTH 041  
IN WETLAND DUG BY PREVIOUS CONTRACTOR



# Inspection Report

Produced on behalf of – HARDIN CO

Site location – ,

Survey reference –

Date – 080720

WILLIAMS UNDERGROUND SVCS.  
102 INDUSTRIAL DRIVVE, ACKLEY, IOWA  
50601,  
641-485-3925



## Contents

<b>1</b>	<b>Drain / Sewer Survey</b> .....	<b>Error! Bookmark not defined.</b>
1.1	Site information .....	<b>Error! Bookmark not defined.</b>
1.2	Drain / Sewer Details .....	<b>Error! Bookmark not defined.</b>
1.3	Survey Details .....	<b>Error! Bookmark not defined.</b>
1.4	Drain / Sewer Diagram .....	<b>Error! Bookmark not defined.</b>
1.5	Observations .....	<b>Error! Bookmark not defined.</b>
1.6	Photographs.....	<b>Error! Bookmark not defined.</b>
<b>2</b>	<b>Drain / Sewer Survey</b> .....	<b>Error! Bookmark not defined.</b>
2.1	Site information .....	<b>Error! Bookmark not defined.</b>
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2.6	Photographs.....	<b>Error! Bookmark not defined.</b>



# 1 Drain / Sewer Survey

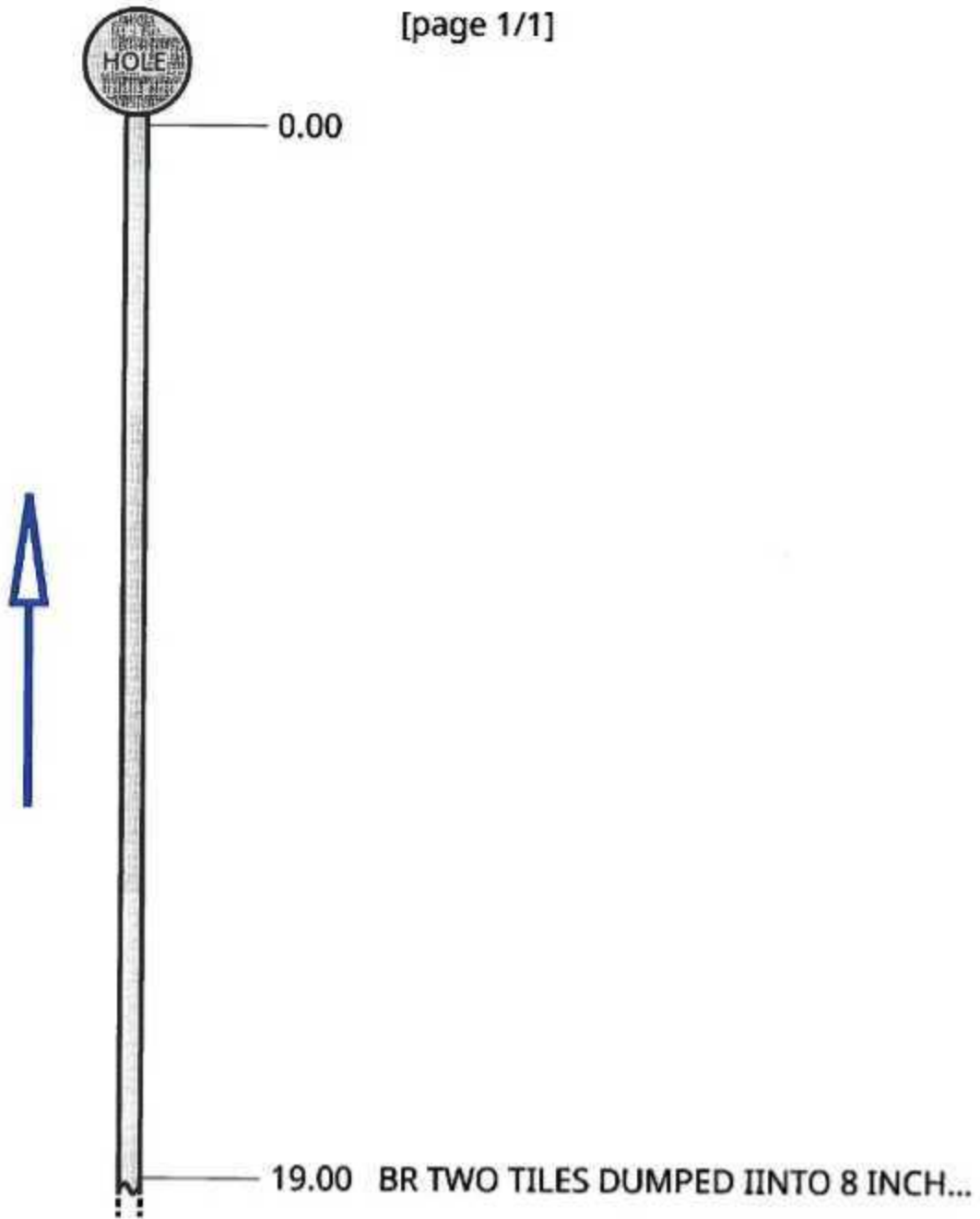
## 1.1 Survey Header

1.1.1	Surveyed by (Operator)	PAUL
1.1.2	Contract no.	
1.1.3	Job no.	
1.1.4	Catchment (Drainage area)	DD14
1.1.5	Division	LAT 2
1.1.6	District	
1.1.7	Pipeline length ref	1000
1.1.8	Date	080720
1.1.9	Time	13:16
1.1.10	Location	
1.1.11	Start manhole no.	HOLE #254
1.1.12	Start depth	m
1.1.13	Start cover level	
1.1.14	Start invert level	
1.1.15	Finish manhole no.	
1.1.16	Finish depth	m
1.1.17	Finish cover level	
1.1.18	Finish invert level	
1.1.19	Use of Drain	
1.1.20	Direction	U
1.1.21	Size 1 (diameter/height)	8mm
1.1.22	Size 2 (width)	mm
1.1.23	Shape	C
1.1.24	Material	VC
1.1.25	Lining	
1.1.26	Pipe length	m
1.1.27	Total length	
1.1.28	Year laid	
1.1.29	Video cassette number	
1.1.30	Comments: General	
1.1.31	Purpose	
1.1.32	Sewer category	
1.1.33	Pre-cleaning	
1.1.34	Weather	
1.1.35	Location code	
1.1.36	Further location details	




1.2 Diagram

[page 1/1]





### 1.3 Observations

Video Ref	Dist (ft)	Cont Defect	Code	Photo Ref	Diameter/ Dimension	Clock		Intrusion		Remarks
						At	To	%	mm	
0:00:00	19.0		BR	2020_07_08- 13_30_01_583.jpg 	4	09	03			TWO TILES DUMPED IINTO 8 INCH CLAY TILE



## 1.4 Photographs

BR 2020\_07\_06-13\_30\_01\_563.jpg





# Inspection Report

Produced on behalf of – HARDIN CO

Site location – ,

Survey reference – W/O 292

Date – 080720

WILLIAMS UNDERGROUND SVCS.  
102 INDUSTRIAL DRIVVE, ACKLEY, IOWA  
50601,  
641-485-3925



## Contents

<b>1</b>	<b>Drain / Sewer Survey .....</b>	<b>Error! Bookmark not defined.</b>
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2.5	Observations .....	Error! Bookmark not defined.
2.6	Photographs.....	Error! Bookmark not defined.



# 1 Drain / Sewer Survey

## 1.1 Survey Header

1.1.1	Surveyed by (Operator)	PAUL
1.1.2	Contract no.	6844.5
1.1.3	Job no.	W/O 292
1.1.4	Catchment (Drainage area)	DD14
1.1.5	Division	
1.1.6	District	LAT 2
1.1.7	Pipeline length ref	1000
1.1.8	Date	080720
1.1.9	Time	13:39
1.1.10	Location	
1.1.11	Start manhole no.	
1.1.12	Start depth	m
1.1.13	Start cover level	
1.1.14	Start invert level	
1.1.15	Finish manhole no.	
1.1.16	Finish depth	m
1.1.17	Finish cover level	
1.1.18	Finish invert level	
1.1.19	Use of Drain	
1.1.20	Direction	D
1.1.21	Size 1 (diameter/height)	8mm
1.1.22	Size 2 (width)	mm
1.1.23	Shape	C
1.1.24	Material	VC
1.1.25	Lining	
1.1.26	Pipe length	m
1.1.27	Total length	
1.1.28	Year laid	
1.1.29	Video cassette number	
1.1.30	Comments: General	
1.1.31	Purpose	
1.1.32	Sewer category	
1.1.33	Pre-cleaning	
1.1.34	Weather	
1.1.35	Location code	
1.1.36	Further location details	



## 1.2 Observations

Video Ref	Dist (ft)	Cont Defect	Code	Photo Ref	Diameter/ Dimension	Clock		Intrusion		Remarks
						At	To	%	mm	



# Inspection Report

Produced on behalf of – HARDIN CO

Site location – ,

Survey reference – W/O 292

Date – 080720

WILLIAMS UNDERGROUND SVCS.

102 INDUSTRIAL DRIVVE, ACKLEY, IOWA

50601,

641-485-3925

# Contents

- 1 Drain / Sewer Survey** .....Error! Bookmark not defined.
  - 1.1 Site information* .....Error! Bookmark not defined.
  - 1.2 Drain / Sewer Details* .....Error! Bookmark not defined.
  - 1.3 Survey Details* .....Error! Bookmark not defined.
  - 1.4 Drain / Sewer Diagram* .....Error! Bookmark not defined.
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- 2 Drain / Sewer Survey** .....Error! Bookmark not defined.
  - 2.1 Site information* .....Error! Bookmark not defined.
  - 2.2 Drain / Sewer Details* .....Error! Bookmark not defined.
  - 2.3 Survey Details* .....Error! Bookmark not defined.
  - 2.4 Drain / Sewer Diagram* .....Error! Bookmark not defined.
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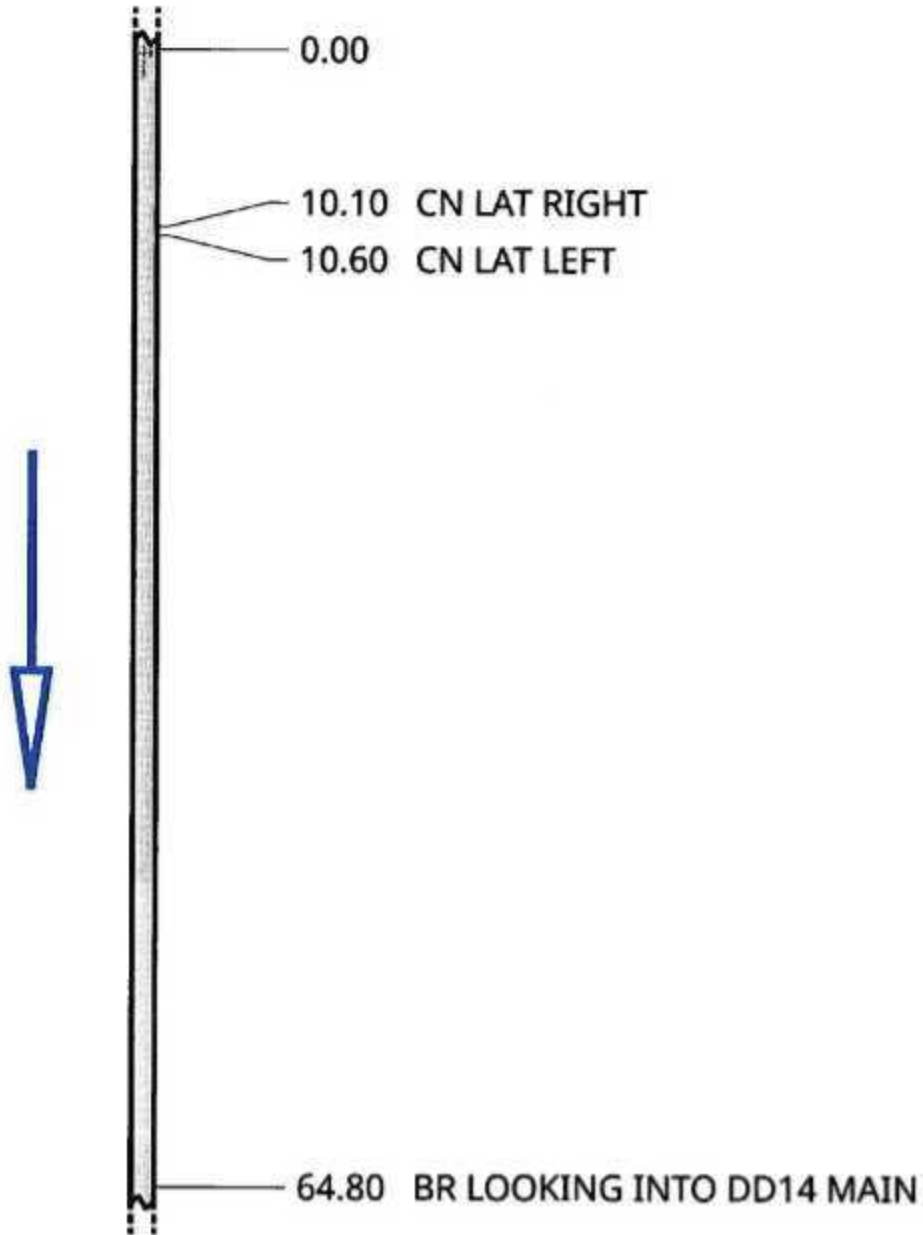
# 1 Drain / Sewer Survey

## 1.1 Survey Header

1.1.1	Surveyed by (Operator)	PAUL
1.1.2	Contract no.	66844.5
1.1.3	Job no.	W/O 292
1.1.4	Catchment (Drainage area)	DD 14
1.1.5	Division	LAT 2
1.1.6	District	
1.1.7	Pipeline length ref	1000
1.1.8	Date	080720
1.1.9	Time	14:00
1.1.10	Location	HOLE 255
1.1.11	Start manhole no.	
1.1.12	Start depth	m
1.1.13	Start cover level	
1.1.14	Start invert level	
1.1.15	Finish manhole no.	
1.1.16	Finish depth	m
1.1.17	Finish cover level	
1.1.18	Finish invert level	
1.1.19	Use of Drain	
1.1.20	Direction	D
1.1.21	Size 1 (diameter/height)	8mm
1.1.22	Size 2 (width)	mm
1.1.23	Shape	C
1.1.24	Material	VC
1.1.25	Lining	
1.1.26	Pipe length	m
1.1.27	Total length	
1.1.28	Year laid	
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1.1.34	Weather	
1.1.35	Location code	
1.1.36	Further location details	




1.2 Diagram

[page 1/1]





### 1.3 Observations

Video Ref	Dist (ft)	Cont Defect	Code	Photo Ref	Diameter/ Dimension	Clock		Intrusion		Remarks
						At	To	%	mm	
0:00:00	10.1		CN	2020_07_08- 14_04_12_399.jpg 	4	02				LAT RIGHT
0:00:00	10.6		CN	2020_07_08- 14_07_01_027.jpg 	4	08				LAT LEFT
0:03:32	84.8		BR	2020_07_08- 14_13_23_027.jpg 	?					LOOKING INTO DD14 MAIN

## 1.4 Photographs

CN 2020\_07\_08-14\_04\_12\_399.jpg



CN 2020\_07\_08-14\_07\_01\_027.jpg



BR 2020\_07\_08-14\_13\_23\_027.jpg





1,3603240.750,4962602.710,1176.370,HC GPSMON 8026  
 2,3603240.750,4962602.710,1176.370,Autonomous Setup  
 3,3618688.957,4946916.051,1169.764,HC GPS 8016  
 4,3605705.123,4952677.153,1135.516, TOP 12"VCP JOINT 1.06'TOP TO FL  
 5,3606415.768,4950139.889,1135.574,GS TILE BLOWOUT N SIDE  
 6,3606436.207,4950151.534,1135.854,GS TILE BLOWOUT N SIDE  
 7,3606433.594,4950154.282,1135.676,GS TILE BLOWOUT N SIDE  
 8,3606806.866,4950366.902,1140.171,FENCE E-W  
 9,3606807.989,4950160.633,1143.206,FENCE E-W  
 10,3606808.684,4950069.741,1147.297,FENCE E-W  
 11,3606418.172,4950139.776,1130.823, TOP 15" VCP TILE JOINT (1.35'TOFTO FL)  
 12,3606416.527,4950138.554,1130.832, TOP 15" TILE (1.35' TOP TO FL  
 13,3606433.374,4950151.026,1130.931, TOP 15" TILE (1.30' TOP TO FL  
 14,3606431.767,4950149.817,1130.912, TOP 15" TILE (1.35' TOP TO FL  
 15,3606430.189,4950148.568,1130.898, TOP 15" TILE (1.33' TOP TO FL  
 16,3605706.138,4952688.229,1139.481,GS  
 17,3605704.925,4952670.361,1139.347,GS  
 18,3605480.270,4952811.838,1148.799,FENCE E-W  
 19,3605485.212,4952217.754,1137.030,FENCE E-W  
 20,3608115.762,4952199.343,1155.903,MAG NAIL  
 21,3605484.284,4952146.915,1142.370,SURVEY MARK NAIL  
 22,3606802.079,4952129.144,1147.964,FENCE S&W  
 23,3608053.507,4952267.497,1152.132,CPT 34 IR 0.2'D  
 24,3607989.169,4950926.173,1140.628, TOP EXISTING 15" CMP  
 25,3608049.542,4950961.076,1141.017, TOP 14" VCP (1.17'TOFTOFL)  
 26,3608053.288,4950963.091,1140.699, TOP 14" VCP (0.96'TOFTOFL)  
 27,3607983.653,4950923.063,1140.661, TOP 14" VCP (1.21'TOFTOFL)  
 28,3608080.752,4950995.945,1141.522, TOP EXISTING 15" SW HDPE TILE  
 29,3608083.253,4950994.402,1141.500, TOP 6"SW CPP (0.49'TOFTOFL)  
 30,3608092.799,4951005.494,1141.648, TOP 15" CMP (1.23' TOP TO FL)  
 31,3608077.605,4950993.300,1145.298,GS  
 32,3608060.368,4950969.312,1145.175,GS  
 33,3608037.548,4950953.803,1145.213,GS  
 34,3608015.699,4950941.810,1145.088,GS  
 35,3607980.101,4950921.322,1144.873,GS  
 36,3608000.481,4950932.767,1140.940, TOP 15" HDPE PERFTILE (0.67'NTOBELL)(1.35'TOFTO FL)  
 37,3608084.607,4950949.402,1145.388,GS FIELD/DITCH  
 38,3608084.599,4950983.584,1145.143,GS FIELD/DITCH  
 39,3608082.212,4951024.307,1146.627,GS FIELD/DITCH  
 40,3608100.133,4950999.532,1145.416,FL 4'\*2'TALL CONC BOX  
 41,3608089.162,4950987.889,1148.373, TOP 6" HICKENBOTTOM INTAKE (6.31' TOP TO FL)  
 42,3608017.662,4950942.112,1141.078, TOP 15" HDPE PERF TILE (1.35'TOFTO FL)  
 43,3608034.233,4950952.510,1141.216, TOP 15" HDPE PERF TILE (1.35'TOP TO FL)  
 44,3608051.197,4950962.357,1141.350, TOP 15" HDPE TILE (1.35'TOFTOFL  
 45,3608033.829,4950950.107,1140.548, TOP 6" PERF TILE (0.51'TOFTO FL)  
 46,3608034.571,4950947.776,1140.544, TOP 6" PERF TILE (0.51'TOFTO FL)  
 47,3608034.608,4950940.382,1140.602, TOP 6" PERF TILE (0.51'TOFTO FL)  
 48,3608034.739,4950934.740,1140.530, TOP 6" PERF TILE (0.51'TOFTO FL)

49,3608034.707,4950928.336,1140.460,T0P 6" PERF TILE (0.51'TOFTO FL)  
 50,3608034.827,4950922.605,1140.417,T0P 6" PERF TILE (0.51'TOFTO FL)  
 51,3608128.896,4949539.459,1151.696,MAG NAIL  
 52,3608060.852,4950968.394,1141.418,TO P 15" HDPE TILE 22.5BEND (1.35'TOFTO FL)  
 53,3608066.056,4950977.043,1141.487,TO P 15" DW HDPE TILE (1.35'TOFTOFL)  
 54,3608077.936,4950992.725,1141.629,TO P 15" DW HDPE TILE (1.35'TOFTOFL)  
 55,3608086.285,4951003.294,1141.742,TO P 15" DW HDPE TILE 22.5 BEND (1.35'TOFTOFL)  
 56,3608091.951,4951005.247,1141.780,TO P 15"\*15"\*15" HDPE WYE  
 57,3608081.157,4950995.861,1141.444,TO P 6" HDPE SADDLE TAP  
 58,3608081.696,4950995.452,1141.576,TO P 6" HDPE EXTERNAL COUPLER  
 59,3608085.434,4951011.982,1145.974,GS  
 60,3608089.265,4950998.392,1145.365,GS  
 61,3608034.172,4950949.577,1140.537,T0P 6" PERF TILE (0.51'TOFTO FL)  
 62,3608033.230,4950951.027,1140.591,T0P 6" DW TILE (0.55'TOFTO FL)  
 63,3608079.348,4951335.208,1151.564,GS BEAN DAMAGE  
 64,3608033.743,4951335.117,1150.834,GS BEAN DAMAGE  
 65,3608046.530,4951310.109,1150.762,GS BEAN DAMAGE  
 66,3608057.991,4951262.988,1149.769,GS BEAN DAMAGE  
 67,3608057.119,4951206.321,1148.555,GS BEAN DAMAGE  
 68,3608053.376,4951189.795,1148.130,GS BEAN DAMAGE  
 69,3608051.635,4951142.339,1147.931,GS BEAN DAMAGE  
 70,3608031.595,4951129.695,1147.612,GS BEAN DAMAGE  
 71,3608031.998,4951105.324,1147.754,GS BEAN DAMAGE  
 72,3608050.176,4951073.771,1147.711,GS BEAN DAMAGE  
 73,3608049.722,4951053.602,1147.324,GS BEAN DAMAGE  
 74,3608036.030,4951011.428,1146.382,GS BEAN DAMAGE  
 75,3608019.553,4951003.326,1146.204,GS BEAN DAMAGE  
 76,3608020.181,4950994.983,1146.039,GS BEAN DAMAGE  
 77,3607959.756,4950955.599,1145.266,GS BEAN DAMAGE  
 78,3607940.555,4950929.442,1144.729,GS BEAN DAMAGE  
 79,3607940.652,4950910.000,1144.641,GS BEAN DAMAGE  
 80,3607979.594,4950877.412,1144.902,GS BEAN DAMAGE  
 81,3608039.390,4950886.414,1145.489,GS BEAN DAMAGE  
 82,3608085.975,4950915.943,1145.790,GS BEAN DAMAGE/DITCH  
 83,3608081.452,4951072.899,1147.693,GS BEAN DAMAGE/DITCH  
 84,3608081.095,4951139.433,1148.235,GS BEAN DAMAGE/DITCH  
 85,3608081.027,4951239.536,1149.007,GS BEAN DAMAGE/DITCH  
 86,3608079.743,4951304.686,1150.586,GS BEAN DAMAGE/DITCH  
 88,3608087.940,4951003.741,1145.460,CENTER ACCESS CASTING  
 89,3608176.604,4951135.886,1148.318,gs wl locate 93"d  
 90,3608176.050,4951076.885,1146.497,gs wl locate 112"d  
 91,3608175.129,4951061.949,1146.637,gs wl locate 108"d  
 92,3608173.187,4951047.397,1146.547,gs wl locate 105"d  
 93,3608172.919,4951040.333,1146.503,gs wl locate 101"d (15" tile)  
 94,3608172.828,4951032.374,1146.529,gs wl locate 108"d  
 95,3608160.046,4951031.601,1145.991,wws ciwa stamp 13N (TILE LINE BELOW)  
 96,3608176.411,4951123.190,1149.042,GS CL 20825 CO HWY S27 GRAVEL DRIVE ABOVE WL  
 100,3608173.775,4951794.097,1142.090,TO P WATERMAIN  
 101,3608172.970,4951806.421,1144.607,TO P 14"CLAY



102,3606801.876,4950336.843,1134.500, TOP 15" CLAY 1.38' TOPTOFL  
 103,3606776.447,4950322.423,1139.240,GS ABOVE TILE  
 104,3606801.246,4950330.369,1139.443,GS  
 105,3606785.751,4950322.663,1139.572,GS  
 106,3606781.230,4950330.843,1139.443,GS  
 107,3606800.988,4950343.062,1139.717,GS  
 108,3606806.097,4950348.422,1140.101,FENCE E-W  
 109,3606806.277,4950329.481,1140.050,FENCE E-W  
 110,3606812.666,4950342.795,1139.661,GS  
 111,3606808.337,4950339.736,1138.919,GS  
 112,3606784.008,4950326.675,1134.306, TOP 15" CLAY 1.31' TOPTOFL  
 113,3606784.164,4950326.703,1134.338, TOP 15" HDPE PERF TILE  
 114,3606798.454,4950335.076,1134.431, TOP 15" HDPE PERF TILE  
 115,3606801.757,4950336.845,1134.463, TOP 15" HDPE PERF TILE  
 116,3605345.937,4950152.361,1122.926,GS ABOVE TILE  
 117,3605340.655,4950146.152,1122.854,GS ABOVE TILE  
 118,3605342.974,4950149.013,1120.006,TILE T0P 14.25\*17.25" SQUAT CLAY (1.25'TOP TO FL)  
 119,3605344.620,4950151.047,1120.026,TILE T0P 14\*17" SQUAT CLAY (1.22'TOP TO FL)  
 120,3605385.960,4950177.421,1123.131,GS ABOVE TILE  
 121,3605379.508,4950173.853,1123.177,GS ABOVE TILE  
 122,3605414.981,4950167.886,1124.101,GS WATERWAY  
 123,3605371.837,4950148.276,1123.621,GS WATERWAY  
 124,3605332.279,4950112.525,1122.863,GS WATERWAY  
 125,3605309.994,4950133.091,1122.804,GS WATERWAY  
 126,3605355.127,4950171.596,1123.269,GS WATERWAY  
 127,3605414.606,4950191.842,1123.890,GS WATERWAY  
 128,3605452.781,4950199.659,1124.464,GS TILE LOCATE  
 129,3605507.884,4950208.120,1125.500,GS TILE LOCATE  
 130,3605566.488,4950211.914,1125.840,GS TILE LOCATE  
 131,3605624.107,4950214.918,1126.524,GS TILE LOCATE  
 133,3605683.158,4950217.229,1126.920,GS TILE LOCATE  
 134,3605750.126,4950216.561,1127.637,GS TILE LOCATE  
 135,3605805.896,4950206.324,1128.247,GS TILE LOCATE  
 136,3605869.322,4950185.200,1128.558,GS TILE LOCATE  
 137,3605907.201,4950164.902,1128.683,GS TILE LOCATE END CAMERA  
 138,3605951.503,4950135.957,1125.608,TILE T0P 12\*19" SQUAT CLAY (1.09'TOP TO FL)  
 REMOVED  
 139,3605948.015,4950138.425,1125.762,TILE T0P 13\*18 SQUAT "CLAY (1.21'TOP TO FL)  
 REMOVED  
 140,3606002.087,4950097.117,1129.897,GS TILE LOCATE  
 141,3606047.969,4950060.252,1130.485,GS TILE LOCATE  
 142,3606093.946,4950024.079,1131.195,GS TILE LOCATE  
 143,3606148.452,4949995.916,1131.594,GS TILE LOCATE  
 144,3606194.832,4949987.959,1131.959,GS TILE LOCATE  
 145,3606198.408,4949987.796,1132.012,GS TILE LOCATE END LOCATE  
 146,3605911.704,4950162.539,1125.405,TILE TOP 15\*17 " CLAY 1.32'TOPTOFL  
 147,3605913.527,4950161.426,1125.261,TILE TOP 12\*19" SQUAT CLAY 1.05'TOPTOFL REMOVED  
 148,3605905.139,4950166.616,1128.680,GS ABOVE TILE

149,3605914.838,4950160.561,1128.801,GS ABOVE TILE  
150,3605945.044,4950140.580,1129.365,GS ABOVE TILE  
151,3605953.724,4950134.445,1129.394,GS ABOVE TILE  
152,3605917.145,4950159.407,1125.461,TILE TOP 15.25\*16" CLAY 1.34'TOFTOFL  
153,3605957.056,4950121.773,1129.527,GS WATERWAY  
154,3605918.162,4950152.972,1128.826,GS WATERWAY  
155,3605846.419,4950191.394,1128.563,GS WATERWAY  
156,3605692.445,4950210.179,1127.221,GS WATERWAY  
157,3605572.291,4950198.841,1126.518,GS WATERWAY  
158,3605481.505,4950182.506,1125.016,GS WATERWAY  
159,3605480.915,4950202.881,1124.880,GS WATERWAY  
160,3605493.194,4950208.150,1125.264,GS WATERWAY  
161,3605492.050,4950234.982,1126.183,GS WATERWAY  
162,3605516.988,4950233.467,1126.920,GS WATERWAY  
163,3605521.214,4950215.654,1126.130,GS WATERWAY  
164,3605535.721,4950214.240,1126.077,GS WATERWAY  
165,3605627.973,4950230.113,1126.487,GS WATERWAY  
166,3605650.168,4950236.977,1126.710,GS WATERWAY  
167,3605705.205,4950290.733,1127.666,GS WATERWAY  
168,3605742.239,4950280.558,1127.890,GS WATERWAY  
169,3605735.245,4950245.369,1127.709,GS WATERWAY  
170,3605735.412,4950240.914,1127.535,GS WATERWAY  
171,3605823.622,4950228.426,1127.666,GS WATERWAY  
172,3605893.923,4950204.258,1128.704,GS WATERWAY  
173,3605948.734,4950172.433,1129.588,GS WATERWAY  
174,3606004.304,4950123.863,1130.051,GS WATERWAY  
175,3605946.237,4950139.603,1125.854,TILE TOP 15\*15.75" CLAY 1.36'TOFTOFL  
176,3605953.253,4950134.826,1125.849,TILE TOP 15.75\*16" CLAY 1.39'TOFTOFL  
177,3605384.208,4950176.364,1120.543,TILE TOP 15\*16.25" squat CLAY 1.35'TOFTOFL  
178,3605382.068,4950175.088,1120.425,TILE TOP 14\*17" squat CLAY 1.24'TOFTOFL  
179,3605308.552,4950098.525,1122.265,GS TILE LOCATE  
180,3605283.080,4950047.286,1121.952,GS TILE LOCATE  
181,3605264.542,4949992.162,1121.779,GS TILE LOCATE  
182,3605246.456,4949937.507,1121.209,GS TILE LOCATE  
183,3605227.996,4949883.706,1120.689,GS TILE LOCATE  
184,3605208.491,4949829.163,1120.112,GS TILE LOCATE  
185,3605187.171,4949775.725,1119.631,GS TILE LOCATE  
186,3605162.969,4949720.465,1119.157,GS TILE LOCATE  
187,3605138.529,4949666.755,1118.794,GS TILE LOCATE  
188,3605115.421,4949616.282,1118.212,GS TILE LOCATE  
189,3605091.558,4949566.464,1118.417,GS TILE LOCATE  
190,3605060.423,4949517.341,1118.346,GS TILE LOCATE  
191,3605044.705,4949495.848,1118.377,GS TILE LOCATE  
192,3605007.736,4949448.293,1116.480,GS TILE LOCATE  
193,3604971.956,4949403.645,1115.997,GS TILE LOCATE  
194,3604933.158,4949356.696,1115.465,GS TILE LOCATE  
195,3604902.280,4949319.604,1115.271,GS TILE LOCATE END  
196,3605007.109,4949493.659,1118.634,FNL N-S  
197,3605066.434,4949494.540,1117.773,FNL N-S



198,3606042.834,4950084.321,1130.491,GS WATERWAY  
199,3606092.572,4950032.226,1130.980,GS WATERWAY  
200,3606145.664,4950000.670,1131.473,GS WATERWAY  
201,3606210.807,4949998.901,1132.203,GS WATERWAY  
202,3606214.261,4949964.616,1132.458,GS WATERWAY  
203,3606132.656,4949976.520,1131.497,GS WATERWAY  
204,3606052.849,4950031.398,1130.741,GS WATERWAY  
205,3605988.156,4950092.948,1129.841,GS WATERWAY  
206,3605267.201,4950069.065,1122.129,GS WATERWAY  
207,3605228.432,4949964.232,1121.465,GS WATERWAY  
208,3605197.938,4949866.193,1120.875,GS WATERWAY  
209,3605163.386,4949760.174,1119.578,GS WATERWAY  
210,3605125.162,4949640.384,1118.926,GS WATERWAY  
211,3605110.716,4949585.173,1118.333,GS WATERWAY  
212,3605100.210,4949499.905,1117.402,GS WATERWAY  
213,3605122.963,4949510.205,1118.127,GS WATERWAY  
214,3605495.092,4949501.521,1129.346,FNL N-S&W  
215,3605133.332,4949555.621,1118.404,GS WATERWAY  
216,3605178.871,4949717.223,1119.920,GS WATERWAY  
217,3605241.192,4949906.375,1121.016,GS WATERWAY  
218,3605271.139,4950005.075,1121.944,GS WATERWAY  
219,3605312.635,4950088.007,1122.763,GS WATERWAY  
220,3605504.519,4950234.224,1126.183,Cogo  
230,3608084.124,4951902.308,1147.445,W RIM BEEHIVE  
231,3608089.801,4951888.318,1147.847,GS TILE LOCATE  
232,3608104.983,4951879.465,1154.112,GS TILE LOCATE  
233,3608106.624,4951878.417,1154.184,GS TILE LOCATE EOA  
234,3608117.917,4951869.070,1154.547,GS TILE LOCATE CL  
235,3608129.210,4951858.971,1154.234,GS TILE LOCATE EOA SOME RESISTENCE  
236,3608146.621,4951845.243,1148.110,GS TILE LOCATE  
237,3608161.933,4951817.422,1149.628,GS TILE LOCATE  
238,3608165.220,4951813.473,1149.904,GS TILE LOCATE FIELD EDGE  
239,3608168.579,4951809.460,1149.604,GS TILE LOCATE  
240,3608178.369,4951801.269,1149.377,GS TILE LOCATE  
241,3608188.241,4951791.528,1149.576,GS TILE LOCATE  
242,3608209.740,4951773.387,1149.698,GS TILE LOCATE  
243,3608231.610,4951755.411,1149.682,GS TILE LOCATE  
244,3608253.737,4951735.679,1149.571,GS TILE LOCATE  
245,3608280.557,4951712.028,1149.410,GS TILE LOCATE  
246,3608284.668,4951708.431,1149.364,GS TILE LOCATE END OBSTRUCTION?  
247,3608285.090,4951708.634,1144.232,TILE TO 14"CLAY 1.24'TOFTOFL  
248,3608283.091,4951710.319,1144.305,TILE TO 14"CLAY 1.28'TOFTOFL  
249,3608289.834,4951703.250,1149.599,GS  
250,3608172.054,4951804.330,1145.918,TILE TOP 8" CLAY 0.72'TOFTOFL  
251,3608170.627,4951805.930,1145.912,TILE TOP 8"CLAY 0.75'TOFTOFL  
252,3608173.804,4951805.527,1144.706,TILE TOP 14" CLAY 1.38'TOFTOFL  
253,3608174.204,4951808.223,1144.440,WM 1.38'GSTOTOP WM  
254,3608084.572,4951892.856,1144.681,TILE TOP 8"CLAY 0.74'TOFTOFL  
255,3608085.478,4951892.193,1144.745,TILE TOP 8"CLAY 0.74'TOFTOFL

256,3607786.141,4952154.305,1148.855,GS SIGN TILE LINE  
259,3608076.855,4951898.654,1148.210,GS TILE LOCATE  
260,3608067.662,4951905.816,1148.319,GS TILE LOCATE OBSTRUCTION?  
261,3608079.284,4951896.646,1149.016,GS EDGE FIELD  
262,3608143.074,4951852.200,1148.498,GS APPROX TILE MAIN LAT 2 CONNECTION  
263,3608067.743,4951910.457,1145.035,TILE TOP 5" HDPE PERF 0.43'TOFTOFL  
264,3608059.621,4951902.767,1145.428,TILE TOP 4" HDPE PERF 0.34'TOFTOFL  
267,3608069.254,4951904.084,1144.770,TILE TOP 8"CLAY 0.74'TOFTOFL  
268,3608151.043,4952028.550,1147.989,INTAKE BEEHIVE N RIM  
269,3608148.458,4951824.752,1145.486,FL 6" HICKENBOTTOM INTAKE  
270,3608356.513,4951135.356,1147.339,GS CORN DAMAGE 1  
271,3608349.998,4951198.416,1147.156,GS CORN DAMAGE 1  
272,3608342.105,4951272.849,1147.785,GS CORN DAMAGE 1  
273,3608337.421,4951324.659,1148.118,GS CORN DAMAGE 1  
274,3608335.119,4951375.990,1148.173,GS CORN DAMAGE 1  
275,3608331.695,4951427.177,1148.383,GS CORN DAMAGE 1  
276,3608329.218,4951534.790,1148.667,GS CORN DAMAGE 1  
277,3608326.276,4951625.404,1149.140,GS CORN DAMAGE 1  
278,3608306.692,4951650.463,1149.366,GS CORN DAMAGE 1  
279,3608279.429,4951677.110,1149.468,GS CORN DAMAGE 1  
280,3608259.987,4951696.313,1149.684,GS CORN DAMAGE 1  
281,3608260.177,4951716.006,1149.489,GS CORN DAMAGE 1  
282,3608166.019,4951798.622,1149.708,GS CORN DAMAGE 1  
283,3608163.719,4951845.257,1149.910,GS CORN DAMAGE 1  
284,3608193.655,4951845.248,1149.929,GS CORN DAMAGE 1  
285,3608195.478,4951803.739,1149.599,GS CORN DAMAGE 1  
286,3608270.710,4951727.264,1149.451,GS CORN DAMAGE 1  
287,3608280.575,4951736.489,1149.435,GS CORN DAMAGE 1  
288,3608292.462,4951732.982,1149.389,GS CORN DAMAGE 1  
289,3608311.870,4951716.945,1149.271,GS CORN DAMAGE 1  
290,3608312.299,4951692.591,1149.298,GS CORN DAMAGE 1  
291,3608344.022,4951684.697,1149.142,GS CORN DAMAGE 1  
292,3608344.617,4951440.966,1148.243,GS CORN DAMAGE 1  
293,3608347.083,4951432.959,1148.166,GS CORN DAMAGE 1  
294,3608349.318,4951400.370,1148.110,GS CORN DAMAGE 1  
295,3608349.618,4951364.090,1148.024,GS CORN DAMAGE 1  
296,3608352.051,4951359.720,1148.086,GS CORN DAMAGE 1  
297,3608352.082,4951310.589,1148.041,GS CORN DAMAGE 1  
298,3608357.674,4951281.382,1147.847,GS CORN DAMAGE 1  
299,3608361.609,4951234.904,1147.412,GS CORN DAMAGE 1  
300,3608368.174,4951167.004,1147.332,GS CORN DAMAGE 1  
301,3608385.227,4951136.275,1147.398,GS CORN DAMAGE 1  
302,3608064.858,4951907.140,1144.848,TILE TOP 8"CLAY 0.72'TOFTOFL  
303,3608065.976,4951899.316,1145.016,TILE TOP 5" HDPE PERF 0.43'TOFTOFL  
304,3608066.325,4951906.090,1144.804,TILE TOP 8"\*8"\*5" HDPE TEE  
305,3608067.955,4951905.120,1144.767,TILE TOP HDPE 8"\*8"\*5" TEE  
306,3608067.368,4951904.522,1144.650,TILE TOP 5" HDPE PERF @ TEE 0.43'TOFTOFL  
307,3608066.483,4951902.291,1144.813,TILE TOP 5"\*5"\*4" HDPE TEE  
308,3608066.794,4951906.637,1144.618,TILE TOP 5" HDPE PERF @ TEE 0.43'TOFTOFL



309,3607822.096,4952238.535,1149.727,FNL N-S  
310,3607798.155,4952237.894,1149.855,FNL N-S  
311,3607793.814,4952247.403,1145.203,TILE TOP 8" HDPE NONPERF (HOLE)  
312,3607794.478,4952141.899,1147.273,TILE TOP 4" HDPE PERF 0.32'TOFTOFL  
313,3607784.928,4952141.448,1147.506,TILE TOP 4" HDPE PERF 0.36'TOFTOFL  
316,3607789.071,4952140.770,1147.444,TILE TOP 4" HDPE PERF 0.38'TOFTOFL  
317,3607786.252,4952141.423,1147.519,TILE TOP 4" HDPE PERF 0.38'TOFTOFL  
318,3607792.952,4952141.702,1147.384,TILE TOP 4" HDPE PERF 0.38'TOFTOFL  
320,3607772.108,4952149.515,1149.663,GS CORN DAMAGE 2  
321,3607765.439,4952132.040,1149.471,GS CORN DAMAGE 2  
322,3607766.323,4952110.312,1149.537,GS CORN DAMAGE 2  
323,3607811.039,4952111.921,1149.513,GS CORN DAMAGE 2  
324,3607818.925,4952152.088,1149.858,GS CORN DAMAGE 2  
325,3607810.601,4952181.593,1154.265,EOA  
326,3607748.957,4952180.166,1154.283,EOA  
327,3607777.446,4952152.857,1148.859,INTAKE BEEHIVE N RIM  
328,3607772.871,4952153.571,1149.545,GS SIGN TILE LINE  
329,3607759.653,4952202.415,1154.498,EOA  
330,3607835.381,4952204.204,1154.372,EOA  
331,3608080.006,4951941.286,1148.184,GS CORN DAMAGE 3  
332,3608057.015,4951932.847,1148.177,GS CORN DAMAGE 3  
333,3608039.389,4951920.646,1148.462,GS CORN DAMAGE 3  
334,3608040.271,4951891.508,1148.649,GS CORN DAMAGE 3  
335,3608056.992,4951872.352,1148.722,GS CORN DAMAGE 3  
336,3608078.679,4951872.507,1148.701,GS CORN DAMAGE 3  
337,3608073.676,4952737.840,1148.917,INTAKE 18" BEEHIVE N RIM  
338,3608084.796,4952746.455,1150.538,CMP TOP 18" 1.54'TOFTOFL  
339,3608124.706,4952745.934,1155.472,GS BLOWOUT SHOULDER  
340,3608147.597,4952746.884,1149.178,INTAKE 18" BEEHIVE N RIM  
341,3608136.448,4952746.150,1151.386,RCP TOP 18" 1.71'TOFTOFL  
342,3608073.094,4952744.578,1145.664,CLAY TOP 6" 0.57'TOFTOFL  
343,3608072.372,4952744.584,1145.604,TEE TOP HDPE 6"\*6"\*4" 0.56'TOFTOFL  
344,3608071.838,4952744.372,1145.598,TILE TOP 6" SW HDPE NONPERF 0.56'TOFTOFL  
345,3608072.542,4952741.735,1146.267,TILE TOP 6" CLAY 0.57'TOFTOFL  
346,3608072.419,4952743.936,1145.716,TILE TOP 4" CLAY 0.38'TOFTOFL