

CONSTRUCTION PLANS FOR ZEHNDER DRAIN IMPROVEMENTS

SAGINAW COUNTY PUBLIC WORKS COMMISSIONER - BRIAN J. WENDLING



PROJECT LOCATION

KEY MAP
NOT TO SCALE

CONTACTS:

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SAGINAW COUNTY ROAD COMMISSION
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CHARTER COMMUNICATIONS
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TRAVERSE CITY, MI 49696
TELEPHONE: (231) 941-3819

CITY OF FRANKENMUTH
ATTN: KEN O'BRIEN
240 W. GENESEE ST
FRANKENMUTH, MI 48734
TELEPHONE: (989) 652-9901

BIRCH RUN TOWNSHIP
ATTN: BRAD THOMAS
8425 MAIN ST
BIRCH RUN, MI 48415
TELEPHONE: (989) 624-9773

ELECTRIC DISTRIBUTION LINES

GAS

FIBER OPTIC CABLE

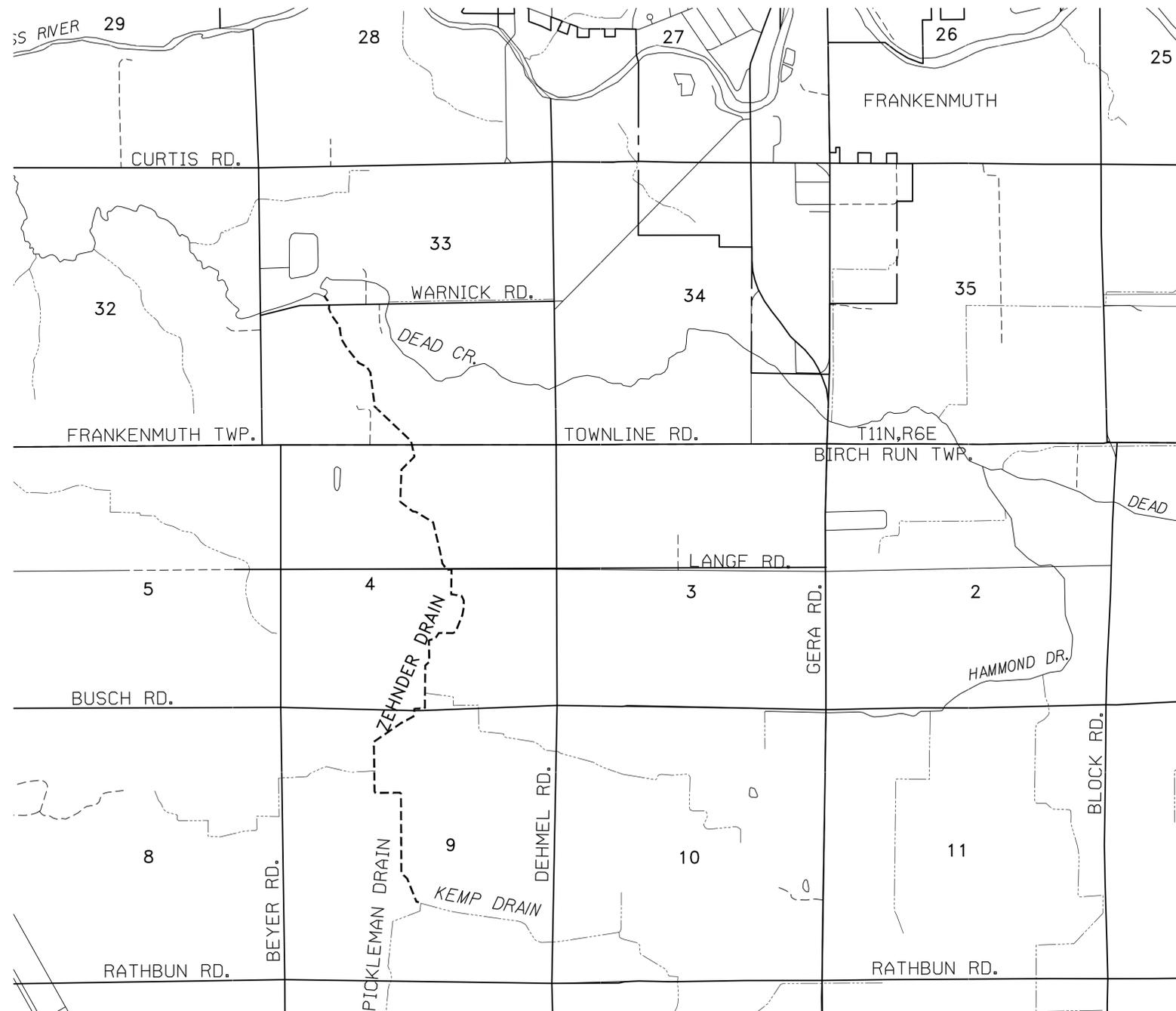
TELEPHONE

ROAD AND STORM SEWER

CABLE

WATER MAIN

WATER MAIN



SHEET INDEX	
GENERAL SHEETS	SHEET NO.
COVER SHEET	1.0
LEGEND SHEET	2.0
GENERAL CONSTRUCTION NOTES AND SOIL EROSION CONTROL DETAILS	3.0
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DISTRICT MAPS	5.0 - 6.0
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ISSUED FOR BID 1/22/16	
JOB NO. SPW2002-01B	SHEET 1.0

WADETRIM
1403 South Valley Center Drive
P.O. Box 580, Bay City, MI 48707
989.686.3100/900.322.4500
FAX: 989.686.4329
www.wadetrim.com

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PREPARED UNDER THE SUPERVISION OF:

Jason Kenyon

SECTIONS 32 & 33, T.11N.-R.6E.
FRANKENMUTH TOWNSHIP AND SECTIONS
3,4,5,8,9,10,15 & 16 T.10N-R.6E.
BIRCH RUN TOWNSHIP

LOCATION MAP
SCALE: 1"=1320'

ISSUED FOR
BID
JANUARY 22, 2016



PROJECT MANAGER: JASON KENYON, PE
C:\PL\WORK\2016\1348\1348-PLS-COVER.DWG - 1.0 - PLOTTED: 1/22/2016 2:56 PM BY: RUGGLES, TIMOTHY

© Wade Trim Group, Inc. ZEHNDER DRAIN IMPROVEMENTS

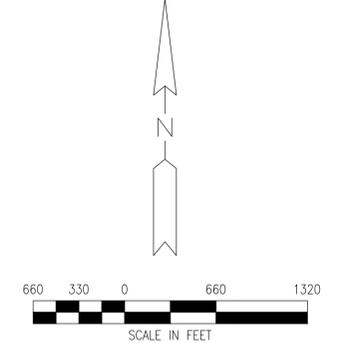
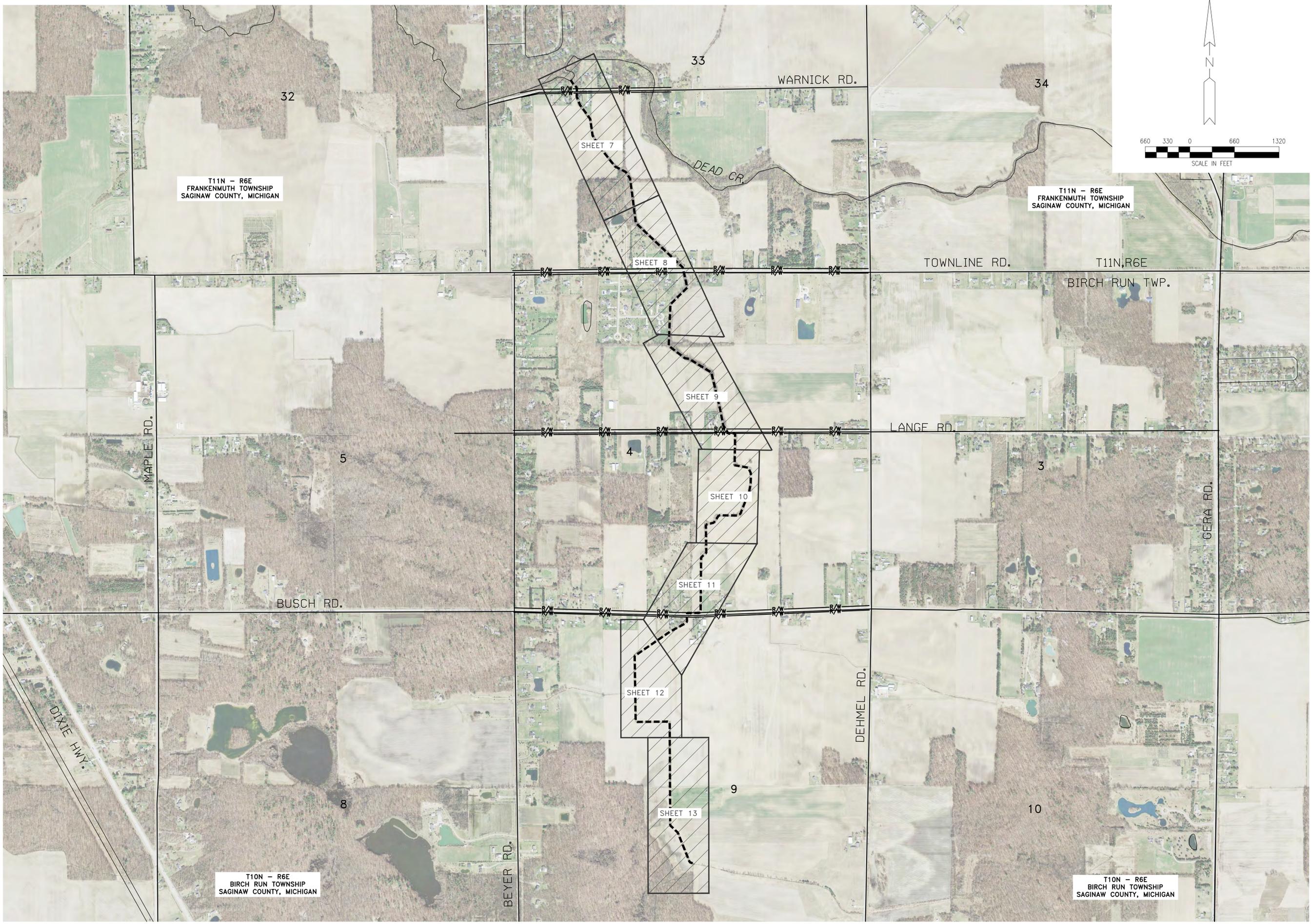
PROJECT MANAGER: JASON HENYON
 CIVIL WORKS: JORDAN GUSTAFSON
 FIELD BOOK INFORMATION:
 C:\PL\WORK\2002\1908\GDT-PLS-LEGEND-NOTES-SCSC-DETAILS.DWG - 2.0 - PLOTTED 1/22/2016 2:56 PM BY: RUGGLES, TIMOTHY

EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED		
CABLE TV CABLE TV POLE CABLE TV PEDESTAL OVERHEAD CABLE TELEVISION UNDERGROUND CABLE TELEVISION		SANITARY SEWER CLEAN OUT PUMPSTATION MANHOLE SANITARY MANHOLE SEPTIC TANK SEWER VENT SEWER VALVE FORCEMAIN SANITARY SEWER		TOPOGRAPHIC FEATURES (CONT.) HIGHWAY DELINEATOR LIGHT POLE BASE MAIL BOX MERRY-GO-ROUND MONITORING WELL NEWSPAPER BOX OIL WELL PARKING METER PIER PILING POST (ROUND) POST (SQUARE) ROCK RAILROAD SIGNAL SATELLITE DISH SIGN POST SLIDE (SPIRAL) SLIDE (STRAIGHT) SLIDE END SLIDE STEPS SPRINKLER HEAD SPRINKLER JUNCTION BOX STATUE SWING SET END TETHER BALL POLE TRAFFIC SIGNAL UNDERGROUND MARKER U/G MARKER CABLE U/G MARKER ELECTRIC U/G MARKER FIBER OPTIC U/G MARKER GAS U/G MARKER TELEPHONE VOLLEY BALL POST WOOD STAKE		WATER (DOMESTIC) BACKFLOW PREVENTER BLOW-OFF VALVE FAUCET FIRE DEPARTMENT CONNECTION FIRE HYDRANT GATE VALVE & BOX GATE VALVE & WELL GATE VALVE & WELL (DETROIT) INDICATOR VALVE POST METER METER PIT VALVE WATER LINE STUB WATER TOWER BASE WELL SHUT OFF VALVE DOMESTIC WATER		PATTERNS CONCRETE GRAVEL PAVEMENT HEAVY DUTY PAVEMENT EARTH (CROSS SECTION) ADA DETECTABLE WARNING ADA RAMP CONCRETE REMOVAL PAVEMENT REMOVAL		OVERHEAD UTILITIES DEADMAN ANCHOR FLOOD LIGHT GUY WIRE ANCHOR GUY POLE LAMP POLE METAL LIGHT POLE ORNAMENTAL LIGHT POLE BOX POWER & LIGHT POLE POWER & TELEPHONE POLE TELE, CTV, PWR & LIGHT POLE TELE, CTV, & POWER POLE TELE, & CTV POLE TELE, CTV, & LIGHT POLE TELE., & LIGHT POLE TELE, POWER, & LIGHT POLE UTILITY POLE OVERHEAD CABLE TV & TELEPHONE OVERHEAD ELECTRIC & CABLE TV OVERHEAD ELECTRIC, CABLE TV AND TELEPHONE	
ELECTRICAL CIRCUIT BREAKER PANEL HANDHOLE MANHOLE OUTLET PEDESTAL TRANSFORMER BOX METER POWER POLE TRANSFORMER TOWER OVERHEAD ELECTRIC UNDERGROUND ELECTRIC		SITE (MISCELLANEOUS) ABANDON ITEM ACCESSIBLE SYMBOL ADJUST ITEM FINISH GRADE FLOW ARROW PARKING COUNT RECONSTRUCT ITEM RELOCATE ITEM REMOVE ITEM SLOPE LABEL SPOT GRADE FLOOD LIGHT LAMP POLE LIGHT POLE (SINGLE LAMP) LIGHT POLE (DOUBLE LAMP 180°) LIGHT POLE (DOUBLE LAMP 90°) LIGHT POLE (THREE LAMP) LIGHT POLE (FOUR LAMP) ORNAMENTAL LIGHT POLE METAL LIGHT POLE		UNDERGROUND UTILITIES UTILITY MANHOLE FIBER OPTIC OIL UNDERGROUND CTV & TELEPHONE UNDERGROUND ELEC. & CABLE TV UNDERGROUND ELEC. & TELEPHONE UNDERGROUND ELECTRIC, CABLE TV AND TELEPHONE		WATER (MISCELLANEOUS) RECLAIM WATER GATE VALVE SPRINKLER HEAD SPRINKLER JUNCTION BOX RECLAIM WATER		LINE WORK BOUNDARY LINE BUILDING BUILDING SETBACK CHAIN LINK FENCE FIELD GARDEN GRAVEL GUARDRAIL LANDSCAPE ORNAMENTAL FENCE PROPERTY LINE RAILROAD TRACK CENTERLINE RIGHT OF WAY SECTION LINE SHORE LINE SILT FENCE TO BE DEMOLISHED TOP OF BANK UTILITY/DRAINAGE EASEMENT WALL WETLAND WOOD FENCE			
GAS VENT BLOW OFF FILLER PIPE MANHOLE METER STOP BOX SHUTOFF VALVE GAS		STORM SEWER/DRAINAGE CATCH BASIN (ROUND GRATE) CATCH BASIN (SQUARE GRATE) CISTERN BOX CULVERT CULVERT HEADWALL CULVERT END SECTION DOWN SPOUT ROUND INLET SQUARE INLET STORM MANHOLE STORM SEWER STUB DITCH CENTERLINE FLOOD PLAIN STORM SEWER		VEGETATION CONIFEROUS BUSH CONIFEROUS TREE DECIDUOUS BUSH DECIDUOUS TREE MULTI-STEM CONIFEROUS TREE MULTI-STEM DECIDUOUS TREE PALM TREE STUMP BRUSH LINE EDGE OF WOODS HEDGE TREE ROW		MONUMENTS IRON (FOUND) IRON (SET) BENCH MARK BRASS PLATE CONCRETE NAIL DRILL HOLE GOVERNMENT CORNER GPS MONUMENT IRON PIPE MONUMENT BOX MONUMENT MERE STONE NGS MONUMENT NAIL & TAG PINCH IRON PK NAIL RAILROAD SPIKE RIGHT-OF-WAY MARKER SPIKE SHIPS SPIKE T-IRON USGS MONUMENT CROSS CUT CROSS CUT IN MONUMENT WOOD STAKE		TELEPHONE TELEPHONE POLE TELEPHONE MANHOLE TELEPHONE PEDESTAL COMMUNICATIONS HANDHOLE FIRE CALL POLICE CALL PHONE BOOTH OVERHEAD TELEPHONE UNDERGROUND TELEPHONE			

BY	
DESCRIPTION	
DATE	
REV#	
 1400 South Valley Center Drive Grand Rapids, MI 49507 888.886.3100 / 616.232.4500 FAX: 616.886.4329 www.wadetrtrim.com	
SAGINAW COUNTY PUBLIC WORKS COMMISSIONER ZEHNDER DRAIN LEGEND SHEET	
ISSUED FOR:	DATE: 1/22/16
BID	JRK
JOB NO:	SPW2002.01B
SHEET	2.0

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PROJECT MANAGER: JASON HENYON
 CA: PL-WORKZ.DWG21908.GCS-TLS-COVER.DWG - 4.0 - PLOTTED: 1/22/2016 2:57 PM BY: RUGGLES, TIMOTHY



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**SAGINAW COUNTY
 PUBLIC WORKS COMMISSIONER
 ZEHNDER DRAIN
 PLAN SHEET INDEX**

ISSUED FOR:	DATE:	BY:
BID	1/22/16	JRK
JOB NO.	SPW2002.01B	
SHEET	4.0	

PROJECT MANAGER: JASON HENYON
 C:\PL\WORK\2\0221908\GCS-PLS-COVER.DWG - 6.1 - PLOTTED 1/22/2016 2:57 PM BY: RUGGLES, TIMOTHY



W20-1
(48"x48")



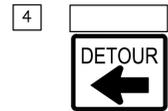
W20-2
(48"x48")



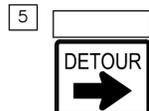
W20-3
(48"x48")

LEGEND - W16-8P

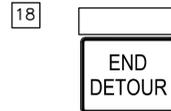
C ON BUSCH RD (48"x18") 6"C



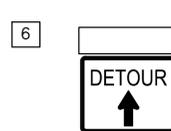
M4-9L (30"x24")



M4-9R (30"x24")



M4-9R (30"x24")



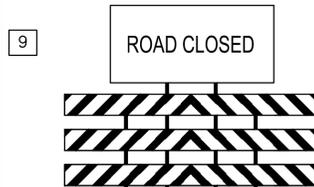
M4-10L
(48"x18")



M4-10R
(48"x18")

LEGEND - W16-8P

- G BUSCH RD (30"x12") 4"C
- H WB BUSCH RD (30"x12") 4"C
- J EB BUSCH RD (30"x12") 4"C
- K WARNICK RD (30"x12") 4"C
- L WB WARNICK (30"x12") 4"C
- M EB WARNICK (30"x12") 4"C



TYPE III BARRICADE (DOUBLE SIDED, LIGHTED)
 WITH R11-2 (48" X 30") ROAD CLOSED SIGN



TYPE III BARRICADE (DOUBLE SIDED, LIGHTED)
 WITH R-11 (60" X 30") ROAD CLOSED TO THRU TRAFFIC SIGN



TYPE III BARRICADE (DOUBLE SIDED, LIGHTED)
 WITH R-11 (60" X 30") ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY SIGN



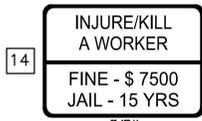
R2-1
(48"x60")



W21-5b
(48"x48")



W3-5b
(48"x48")



R5-18b
(60"x30")



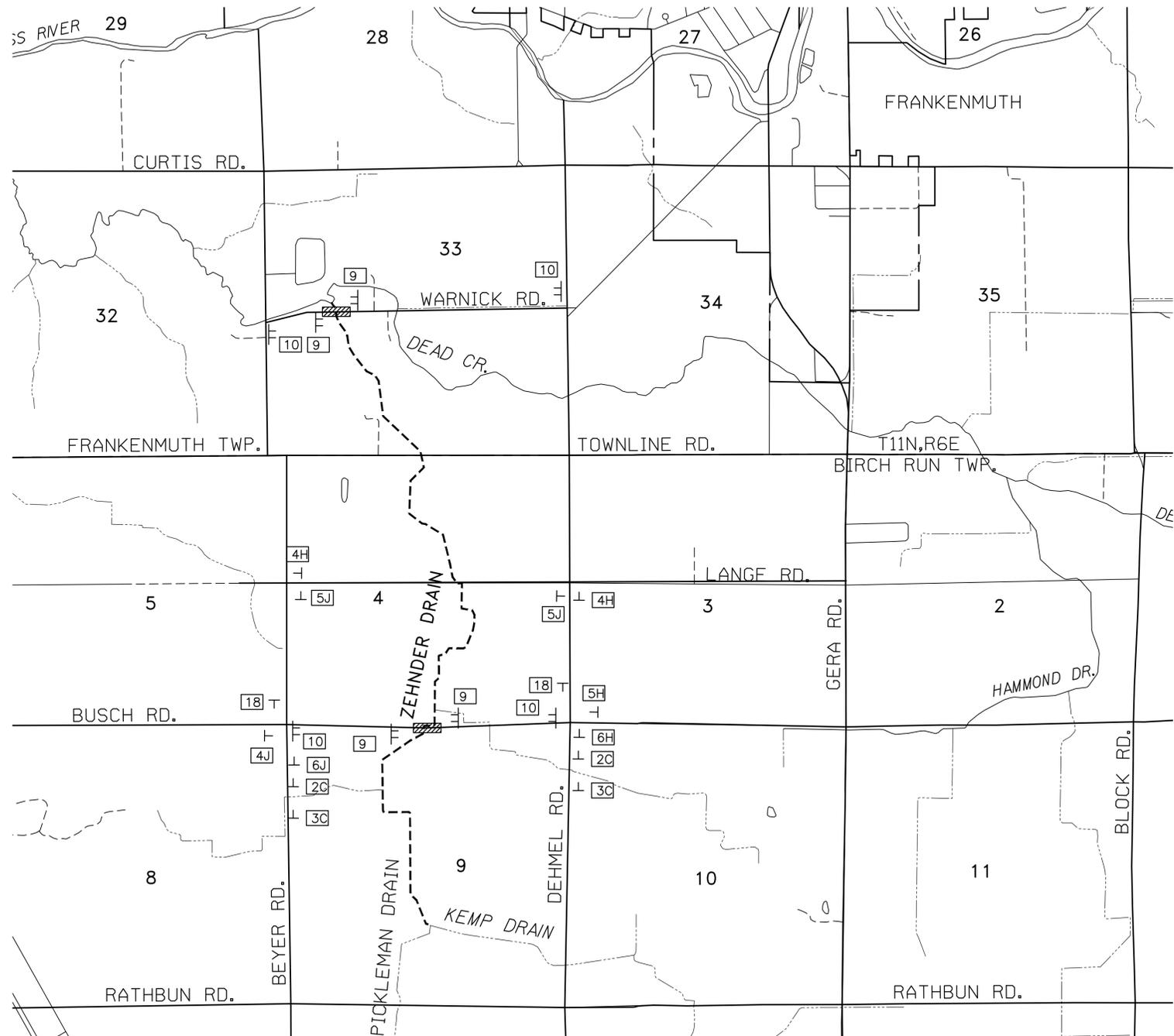
R5-18c
(60"x30")



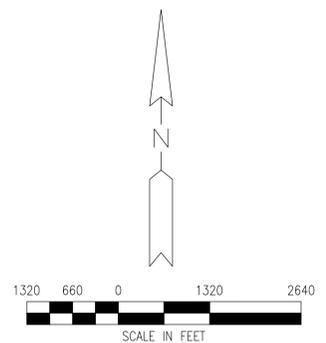
R3-3
(24"x24")



R3-5R
(30"x36")



LOCATION MAP
 SCALE: 1"=1320'



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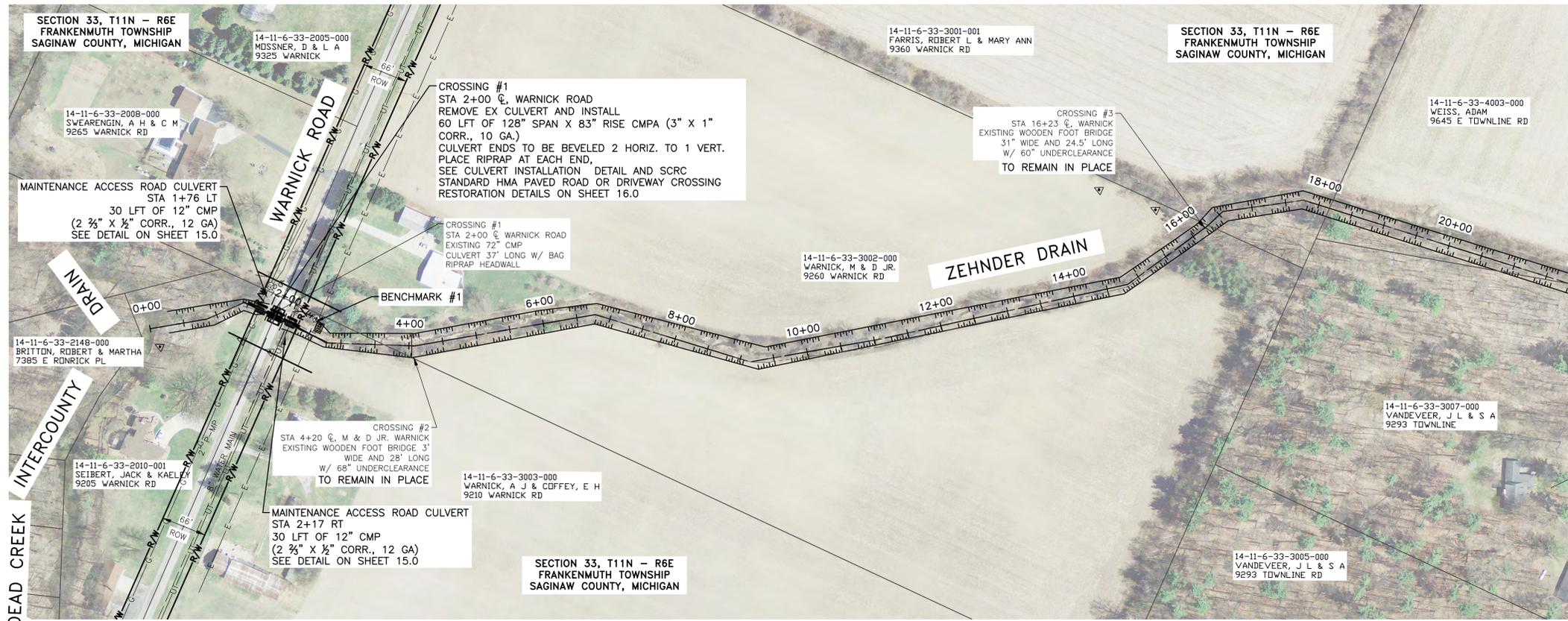
SAGINAW COUNTY
PUBLIC WORKS COMMISSIONER
ZEHNDER DRAIN
 WARNICK RD AND BUSCH RD
 CULVERT REPLACEMENT
 TRAFFIC CONTROL PLAN

ISSUED FOR: DATE: BY:
 BID: 1/22/16 JRK

JOB NO.
 SPW2002.01B

SHEET
6.1

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MATCH LINE STA 22+00 SEE SHEET 8.0

BENCHMARK #1 ELEV 609.63
 NAIL AND CAP IN NORTH FACE OF POWER POLE
 50 FEET SOUTH OF THE CENTERLINE OF WARNICK
 ROAD AND THE FIRST POLE WEST OF HSE#9260

FROM STATION	TO STATION	DETAIL	SIDE TO EXCAVATE FROM
0+00	1+75	TYPE D	LEFT
1+75	2+41	* TYPE A	
2+41	7+00	TYPE A	RIGHT
7+00	22+00	TYPE C	LEFT

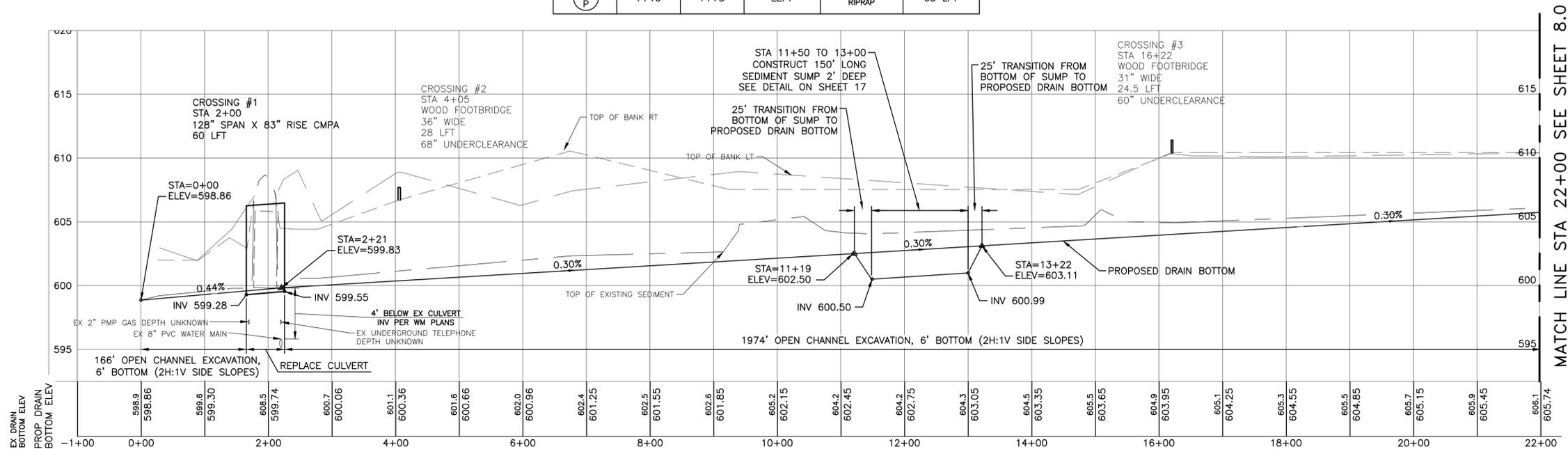
* LEVEL MATERIAL OUTSIDE OF ROAD R.O.W. IN NEARBY NON-RESTRICTED EXCAVATION AREA

FROM STATION	TO STATION	CLEAR AND GRUB LEFT	CLEAR AND GRUB RIGHT
0+00	1+75	CL TO 40'	CL TO T.O.B.
1+75	2+41	AS REQUIRED	AS REQUIRED
2+41	7+00	CL TO T.O.B.	CL TO 40'
7+00	15+50	CL TO 40'	CL TO T.O.B.
15+50	22+00	CL TO 40'	CL TO T.O.B.

KEY	FROM STATION	TO STATION	SIDE	DESCRIPTION	QUANTITY
1 T	0+00	22+00	BOTH	SEEDING OF ALL DISTURBED AREAS	LUMP SUM
2 T	0+00	22+00	BOTH	MULCHING OF ONLY DISTURBED LAWN AREAS	LUMP SUM
15 P	0+00	22+00	BOTH	RIPRAP SPILLWAY WHERE BANK EROSION EXISTS	7 EA
16 P	0+00	22+00	BOTH	GRASS SPILLWAY	4 EA
8 P	1+10	1+75	LEFT	TOE OF SLOPE RIPRAP	65 LFT

KEY	FROM STATION	TO STATION	SIDE	DESCRIPTION	QUANTITY	
9 P			BOTH	ALL EXISTING FIELD TILE OUTLETS	5 EA	
7 P			BOTH	CROSSING 1	INSTALL RIPRAP PROTECTION AT INLET AND OUTLET OF CROSSING	52 SYD

NOTE: COORDINATE INSTALLATION OF EROSION CONTROL MEASURES WITH ENGINEER PRIOR TO CONSTRUCTION. LOCATIONS, QUANTITIES, OR TYPES MAY VARY BASED ON FIELD DECISIONS.



MATCH LINE STA 22+00 SEE SHEET 8.0

STA 0+00 TO 22+00 - 49.5' ON EACH SIDE OF DRAIN CENTERLINE

PROJECT MANAGER: JASON HENSON; FIELD BOOK INFORMATION: 7/22/2016 2:59 PM BY: RUGGLES, TIMOTHY



REV#	DATE	DESCRIPTION

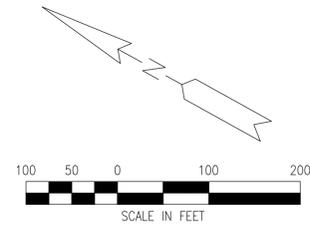
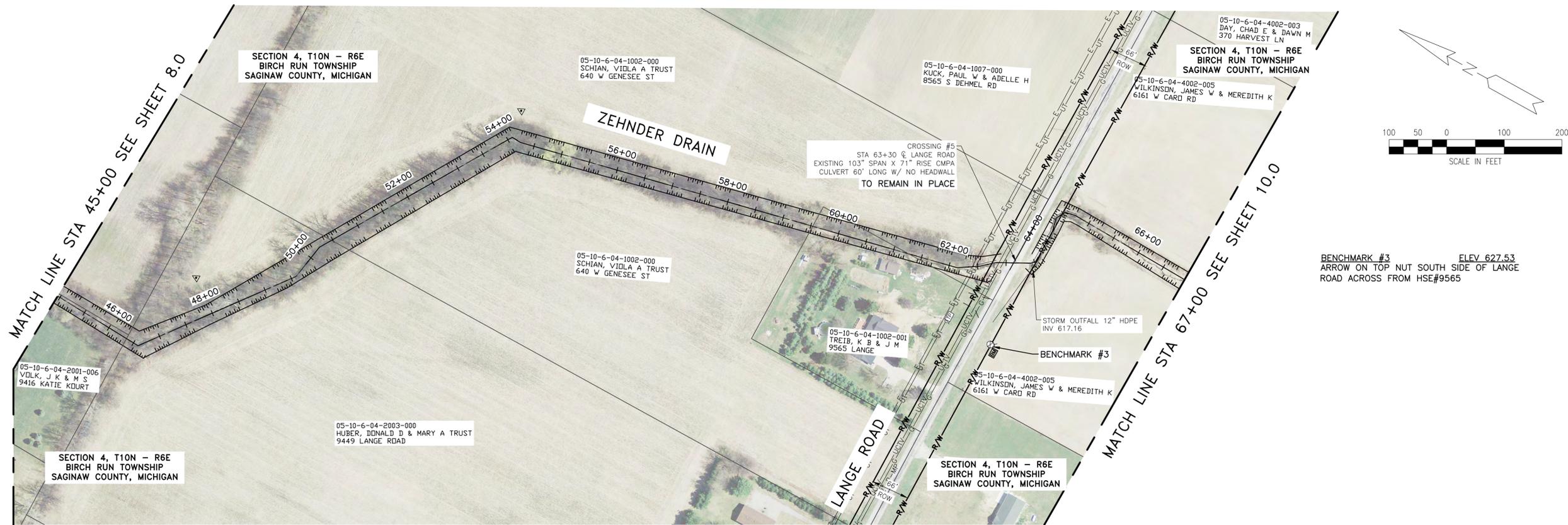
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SAGINAW COUNTY
PUBLIC WORKS COMMISSIONER
ZEHNDER DRAIN

ISSUED FOR: DATE: BY:
 BID: 1/22/16 JRK

JOB NO: SPW2002.01B
 SHEET: 7.0



BENCHMARK #3 ELEV 627.53
 ARROW ON TOP NUT SOUTH SIDE OF LANGE ROAD ACROSS FROM HSE#9565

FROM STATION	TO STATION	DETAIL	SIDE TO EXCAVATE FROM
45+00	62+83	TYPE C	LEFT
62+83	63+49	* TYPE C	

* LEVEL MATERIAL OUTSIDE OF ROAD R.O.W. IN NEARBY NON-RESTRICTED EXCAVATION AREA

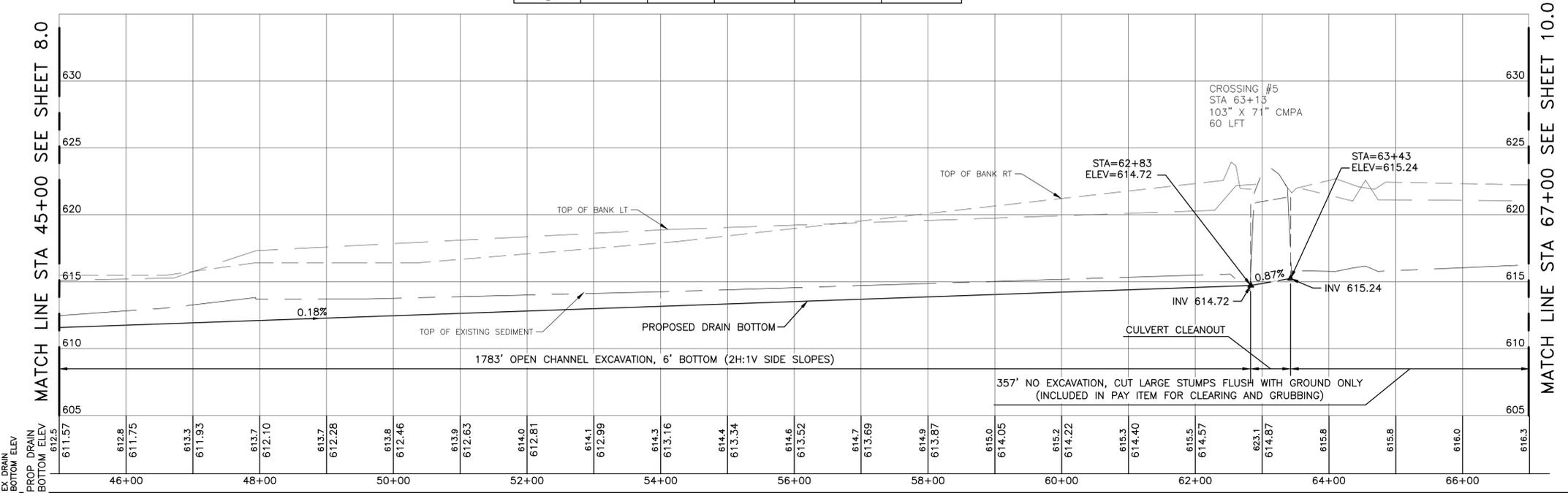
FROM STATION	TO STATION	CLEAR AND GRUB LEFT	CLEAR AND GRUB RIGHT
45+00	62+83	☐ TO 40'	☐ TO T.O.B.
62+83	63+49	AS REQUIRED	AS REQUIRED
63+49	67+00	** CUT STUMPS ONLY	** CUT STUMPS ONLY

** THE AERIAL BACKGROUND IS OUTDATED ON THIS DRAWING AND TREES AND BRUSH THAT APPEARS ON THE AERIAL BETWEEN STA 63+49 TO STA 67+00 HAVE SINCE BEEN REMOVED OTHER THAN A VERY FEW LARGE STUMPS WHICH SHALL BE CUT FLUSH WITH THE GROUND AS PART OF THIS CONTRACT

KEY	FROM STATION	TO STATION	SIDE	DESCRIPTION	QUANTITY
1 T	45+00	67+00	BOTH	SEEDING OF ALL DISTURBED AREAS	LUMP SUM
2 T	45+00	67+00	BOTH	MULCHING OF ONLY DISTURBED LAWN AREAS	LUMP SUM
15 P	45+00	67+00	BOTH	RIPRAP SPILLWAY WHERE BANK EROSION EXISTS	7 EA
16 P	45+00	67+00	BOTH	GRASS SPILLWAY	4 EA
8 P	46+10	47+10	RIGHT	TOE OF SLOPE RIPRAP	100 LFT
8 P	53+60	54+60	LEFT	TOE OF SLOPE RIPRAP	100 LFT

KEY	FROM STATION	TO STATION	SIDE	DESCRIPTION	QUANTITY
8 P	61+70	62+70	RIGHT	TOE OF SLOPE RIPRAP	100 LFT
8 P	63+45	64+05	RIGHT	TOE OF SLOPE RIPRAP	60 LFT
9 P	ALL EXISTING FIELD TILE OUTLETS		BOTH	SPLASH PAD	5 EA
7 P	CROSSING 5		BOTH	INSTALL RIPRAP PROTECTION AT INLET AND OUTLET OF CROSSING	20 SYD

NOTE: COORDINATE INSTALLATION OF EROSION CONTROL MEASURES WITH ENGINEER PRIOR TO CONSTRUCTION. LOCATIONS, QUANTITIES, OR TYPES MAY VARY BASED ON FIELD DECISIONS.



STA 45+00 TO 67+00 - 49.5' ON EACH SIDE OF DRAIN CENTERLINE

PROJECT MANAGER: JASON HENYON; FIELD BOOK INFORMATION: 16; FIELD BOOK INFORMATION: 30; PLOTTED: 7/22/2016 2:59 PM BY: RUGGLES, TIMOTHY; C:\P\WORK\2016\21908\CDP\PLS-ZEHNDER-DRAIN-PLAN-PROFILE.DWG

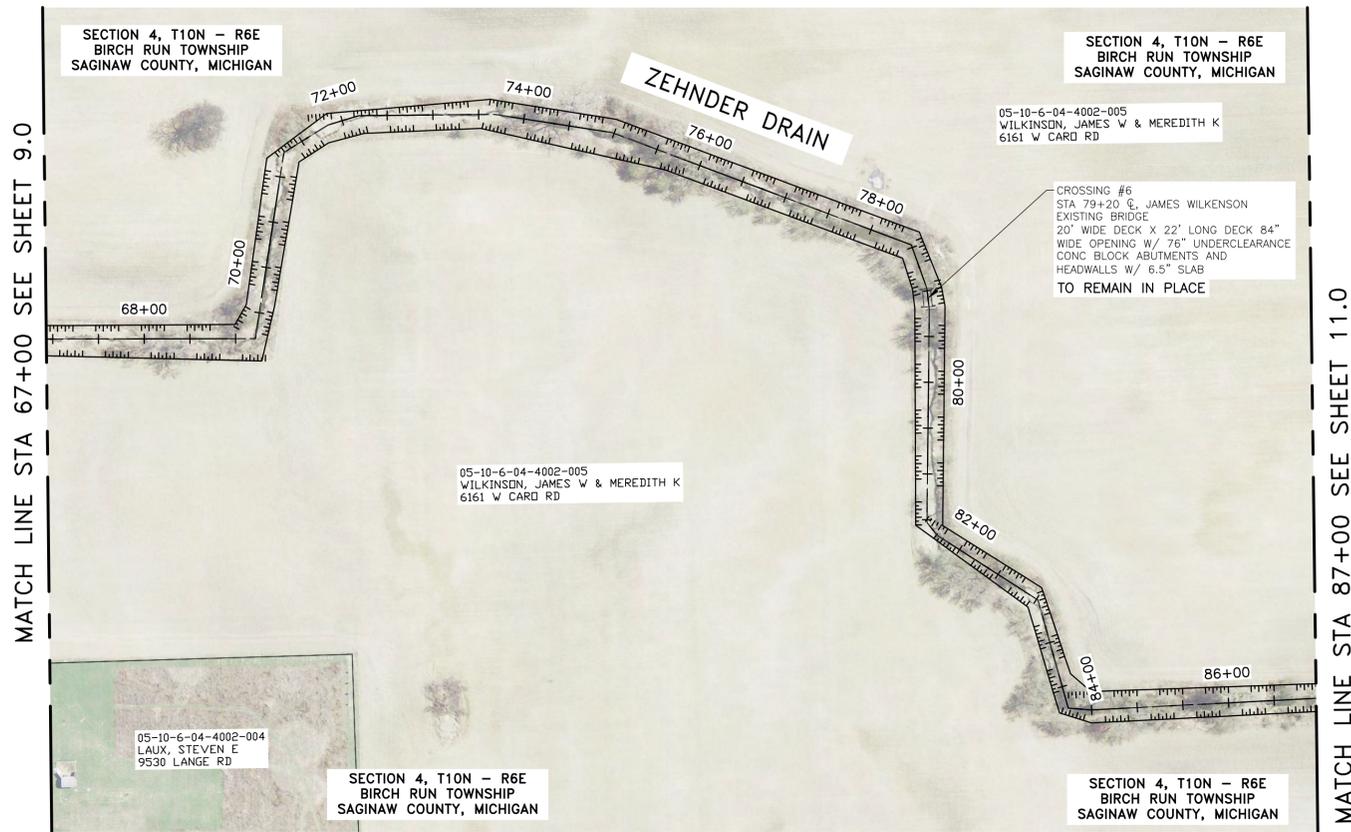


<p>SAGINAW COUNTY PUBLIC WORKS COMMISSIONER ZEHNDER DRAIN</p> <p>ISSUED FOR: DATE: BY: BID: 1/22/16 JRK</p> <p>JOB NO. SPW2002.01B</p> <p>SHEET 9.0</p>	<p>PLAN AND PROFILE: STA 45+00 TO STA 67+00</p> <p>WADETRIM 1405 South Valley Center Drive Okemos, MI 48864 989.886.3222 FAX: 989.886.4329 www.wadetrtrim.com</p> <p>Building relationships on a foundation of excellence</p>
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PROJECT MANAGER, JASON HENYON
 CIVIL WORKS, 10627 190th CDW - PLS - ZEHNDER-DRAIN-PLAN-PROFILE.DWG - 10.0 - PLOTTED 1/22/2016 2:59 PM BY RUGGLES, TIMOTHY
 FIELD BOOK INFORMATION -



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MATCH LINE STA 67+00 SEE SHEET 9.0

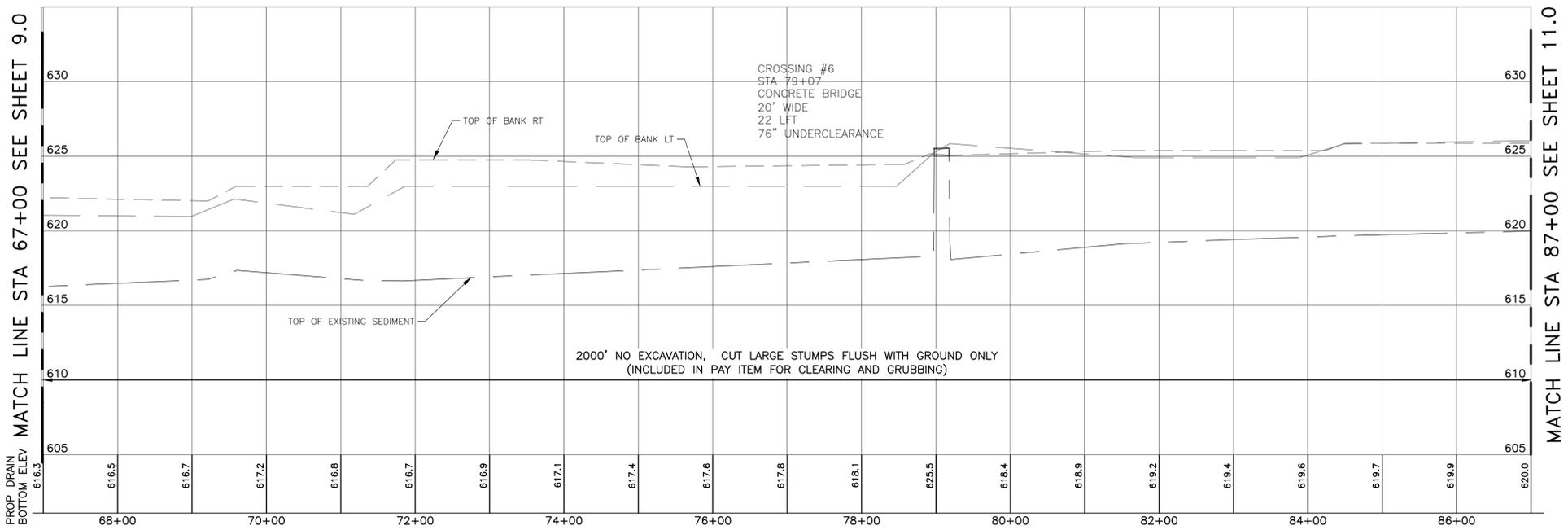
MATCH LINE STA 87+00 SEE SHEET 11.0

FROM STATION	TO STATION	CLEAR AND GRUB LEFT	CLEAR AND GRUB RIGHT
67+00	87+00	** CUT STUMPS ONLY	** CUT STUMPS ONLY

** THE AERIAL BACKGROUND IS OUTDATED ON THIS DRAWING AND TREES AND BRUSH THAT APPEARS ON THE AERIAL BETWEEN STA 67+00 TO STA 87+00 HAVE SINCE BEEN REMOVED OTHER THAN A VERY FEW LARGE STUMPS WHICH SHALL BE CUT FLUSH WITH THE GROUND AS PART OF THIS CONTRACT

KEY	FROM STATION	TO STATION	SIDE	DESCRIPTION	QUANTITY
(I/T)	67+00	87+00	BOTH	SEEDING OF ALL DISTURBED AREAS	LUMP SUM

NOTE: COORDINATE INSTALLATION OF EROSION CONTROL MEASURES WITH ENGINEER PRIOR TO CONSTRUCTION. LOCATIONS, QUANTITIES, OR TYPES MAY VARY BASED ON FIELD DECISIONS.



MATCH LINE STA 87+00 SEE SHEET 11.0

2000' NO EXCAVATION, CUT LARGE STUMPS FLUSH WITH GROUND ONLY (INCLUDED IN PAY ITEM FOR CLEARING AND GRUBBING)

REV#	DATE	DESCRIPTION	BY

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SAGINAW COUNTY
PUBLIC WORKS COMMISSIONER
ZEHNDER DRAIN

PLAN AND PROFILE
 STA 67+00 TO STA 87+00

ISSUED FOR: BID	DATE: 1/22/16	BY: JRK
JOB NO: SPW2002.01B	SHEET	
10.0		

STA 67+00 TO 87+00 - 49.5' ON EACH SIDE OF DRAIN CENTERLINE

05-10-6-04-4002-005
WILKINSON, JAMES W & MEREDITH K
6161 W CARD RD

SECTION 4, T10N - R6E
BIRCH RUN TOWNSHIP
SAGINAW COUNTY, MICHIGAN

05-10-6-04-4002-001
WILKINSON, DANIEL & ROSEMARY
5625 BUSCH RD

BENCHMARK #4

SECTION 9, T10N - R6E
BIRCH RUN TOWNSHIP
SAGINAW COUNTY, MICHIGAN

05-10-6-09-1004-001
KERN, K K & C J
8141 MAPLE RD

CROSSING #7
STA 95+30 C, DANIEL WILKINSON
EXISTING BRIDGE
10.9' WIDE DECK X 21' LONG DECK
17.9' WIDE OPENING W/
75" UNDERCLEARANCE CONC BLOCK
ABUTMENTS AND HEADWALLS W/ 5" SLAB
AND (4) 8"x5" STEEL I BEAM SUPPORTS
TO REMAIN IN PLACE

CROSSING #8
STA 99+70 C BUSCH ROAD
EXISTING 113" SPAN X 72" RISE
ELLIPTICAL RCP CULVERT 55' LONG
W/ NO HEADWALL

CROSSING #8
STA 99+70 C, BUSCH ROAD CULVERT
REMOVE EX ELLIPTICAL RCP CULVERT AND
REINSTALL AT LOWER ELEVATION
PLACE RIPRAP AT EACH END, SEE CULVERT
INSTALLATION DETAIL AND SCRC STANDARD
HMA PAVED ROAD OR DRIVEWAY CROSSING
RESTORATION DETAILS ON SHEET 16.0

EXISTING WATER MAIN TO THE WEST
ENDS AT FIRE HYDRANT

05-10-6-09-2004-000
REINBOLD, KIRK W
9440 BUSCH

SECTION 9, T10N - R6E
BIRCH RUN TOWNSHIP
SAGINAW COUNTY, MICHIGAN

05-10-6-09-2002-003
VEITENGRUBER, PAUL E & KIMBERLY M
9100 E TOWNLINE RD

05-10-6-04-3012-000
TUCKWELL, S H & S E
9495 BUSCH RD

SECTION 4, T10N - R6E
BIRCH RUN TOWNSHIP
SAGINAW COUNTY, MICHIGAN

05-10-6-04-3013-000
KRYSCYNSKI, K M & P
9455 BUSCH



BENCHMARK #4 ELEV 617.58
NAIL AND CAP IN WEST FACE OF POWER POLE
NORTH SIDE OF BUSCH ROAD AND WEST OF
HSE#9625

MATCH LINE STA 87+00 SEE SHEET 10.0

MATCH LINE STA 106+00 SEE SHEET 12.0

SPOIL LEVELING TABLE			
FROM STATION	TO STATION	DETAIL	SIDE TO EXCAVATE FROM
95+13	98+85	TYPE A	RIGHT
98+95	99+50	HAUL	LEFT
99+50	100+08	* TYPE C	
100+08	100+50	TYPE C	LEFT

* LEVEL MATERIAL OUTSIDE OF ROAD R.O.W. IN NEARBY NON-RESTRICTED EXCAVATION AREA

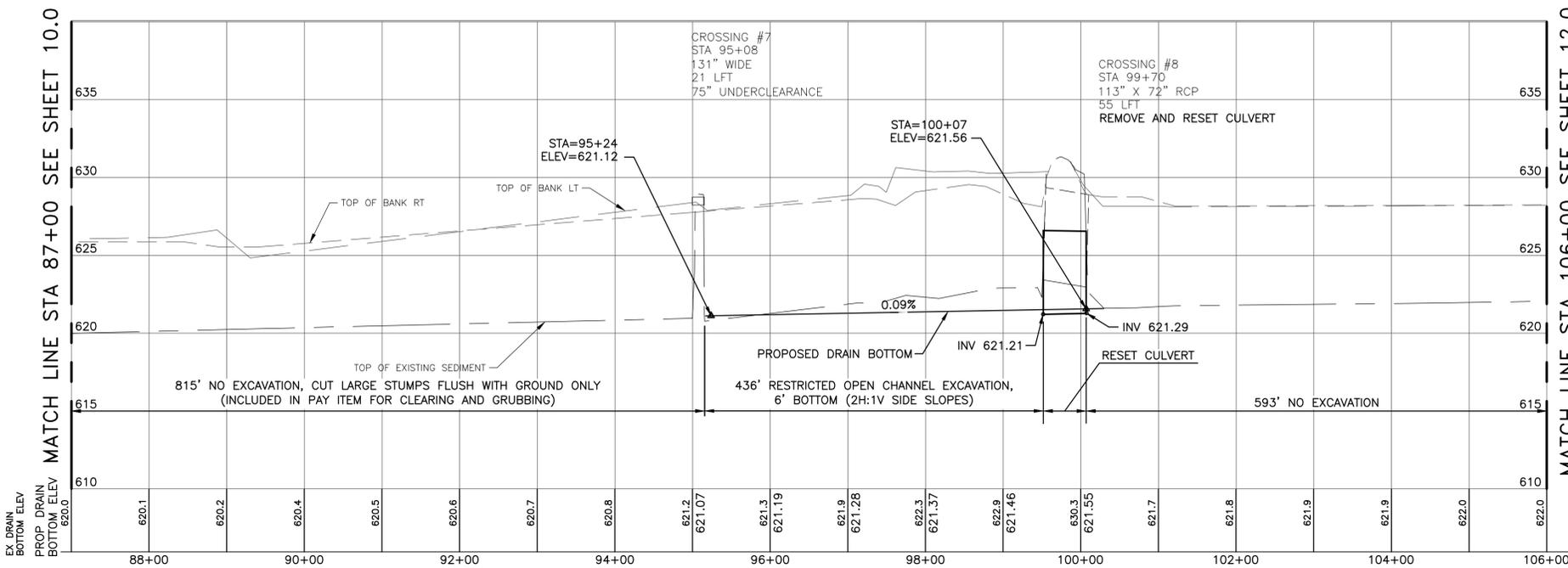
CLEARING AND GRUBBING TABLE			
FROM STATION	TO STATION	CUT FLUSH LEFT	CUT FLUSH RIGHT
87+00	97+50	** CUT STUMPS ONLY	** CUT STUMPS ONLY
97+50	106+00	NONE	NONE

** THE AERIAL BACKGROUND IS OUTDATED ON THIS DRAWING AND TREES AND BRUSH THAT APPEARS ON THE AERIAL BETWEEN STA 87+00 TO STA 97+50 HAVE SINCE BEEN REMOVED OTHER THAN A VERY FEW LARGE STUMPS WHICH SHALL BE CUT FLUSH WITH THE GROUND AS PART OF THIS CONTRACT

EROSION CONTROL TABLE					
KEY	FROM STATION	TO STATION	SIDE	DESCRIPTION	QUANTITY
(1) T	87+00	106+00	BOTH	SEEDING OF ALL DISTURBED AREAS	LUMP SUM
(2) T	87+00	106+00	BOTH	MULCHING OF ONLY DISTURBED LAWN AREAS	LUMP SUM
(15) P	87+00	106+00	BOTH	RIPRAP SPILLWAY WHERE BANK EROSION EXISTS	1 EA

KEY	FROM STATION	TO STATION	SIDE	DESCRIPTION	QUANTITY
(8) P	97+00	98+00	LEFT	TOE OF SLOPE RIPRAP	100 LFT
(8) P	99+00	99+60	RIGHT	TOE OF SLOPE RIPRAP	60 LFT
(9) P	ALL EXISTING FIELD TILE OUTLETS		BOTH	SPLASH PAD	1 EA
(7) P	CROSSING 5		BOTH	INSTALL RIPRAP PROTECTION AT INLET AND OUTLET OF CROSSING	50 SYD

NOTE: COORDINATE INSTALLATION OF EROSION CONTROL MEASURES WITH ENGINEER PRIOR TO CONSTRUCTION. LOCATIONS, QUANTITIES, OR TYPES MAY VARY BASED ON FIELD DECISIONS.



STA 87+00 TO 106+00 - 49.5' ON EACH SIDE OF DRAIN CENTERLINE

PROJECT MANAGER: JASON HENKIN
C:\PL\WORK\2022\1908\CDP-PLS-ZEHNDER-DRAIN-PLAN-PROFILE.DWG - 11.0 - PLOTTED 1/22/2016 3:00 PM BY RUGGLES, TIMOTHY



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PUBLIC WORKS COMMISSIONER
ZEHNDER DRAIN

PLAN AND PROFILE
STA 87+00 TO STA 106+00

ISSUED FOR: DATE: BY:
JOB NO. SPW2002.01B

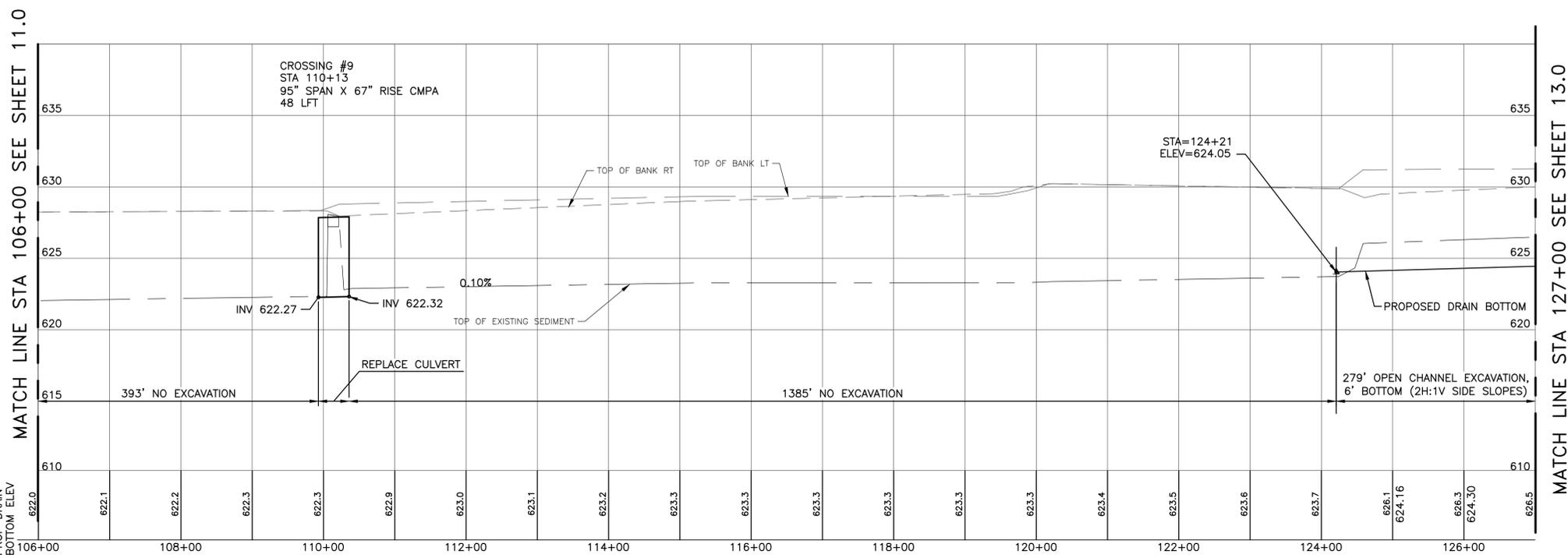
SHEET 11.0

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PROJECT MANAGER: JASON HENKON
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FROM STATION	TO STATION	DETAIL	SIDE TO EXCAVATE FROM
124+21	127+00	TYPE C	RIGHT

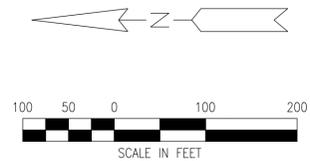
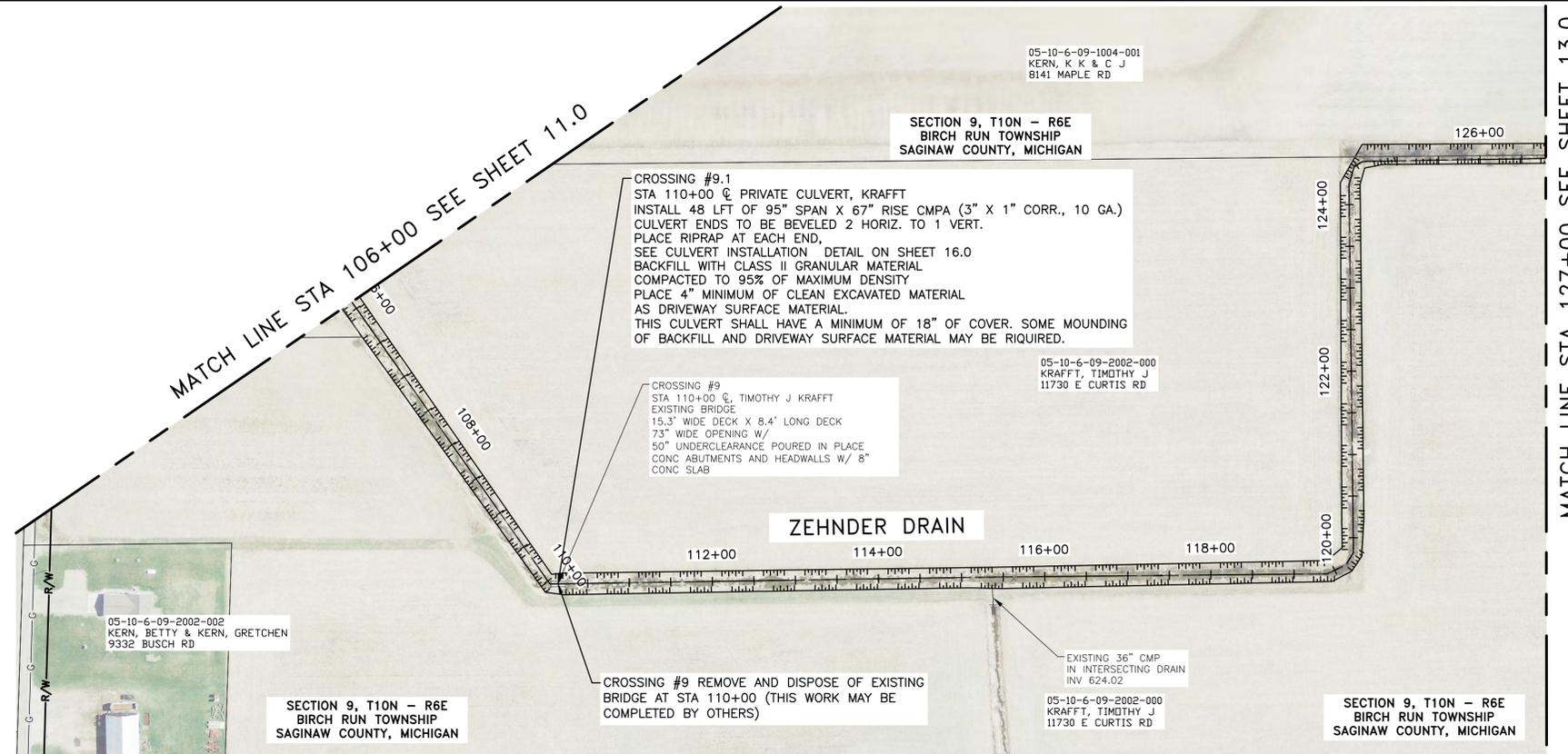
FROM STATION	TO STATION	CLEAR AND GRUB LEFT	CLEAR AND GRUB RIGHT
106+00	124+50	NONE	NONE
124+21	127+00	CL TO T.O.B.	CL TO 40'

KEY	FROM STATION	TO STATION	SIDE	DESCRIPTION	QUANTITY
1 T	106+00	127+00	BOTH	SEEDING OF ALL DISTURBED AREAS	LUMP SUM
2 T	106+00	127+00	BOTH	MULCHING OF ONLY DISTURBED LAWN AREAS	LUMP SUM
15 P	106+00	127+00	BOTH	RIPRAP SPILLWAY WHERE BANK EROSION EXISTS	1 EA

NOTE: COORDINATE INSTALLATION OF EROSION CONTROL MEASURES WITH ENGINEER PRIOR TO CONSTRUCTION. LOCATIONS, QUANTITIES, OR TYPES MAY VARY BASED ON FIELD DECISIONS.

KEY	FROM STATION	TO STATION	SIDE	DESCRIPTION	QUANTITY
9 P			BOTH	ALL EXISTING FIELD TILE OUTLETS	1 EA
7 P			BOTH	CROSSING 9.1	INSTALL RIPRAP PROTECTION AT INLET AND OUTLET OF CROSSING 52 SYD

NOTE: COORDINATE INSTALLATION OF EROSION CONTROL MEASURES WITH ENGINEER PRIOR TO CONSTRUCTION. LOCATIONS, QUANTITIES, OR TYPES MAY VARY BASED ON FIELD DECISIONS.



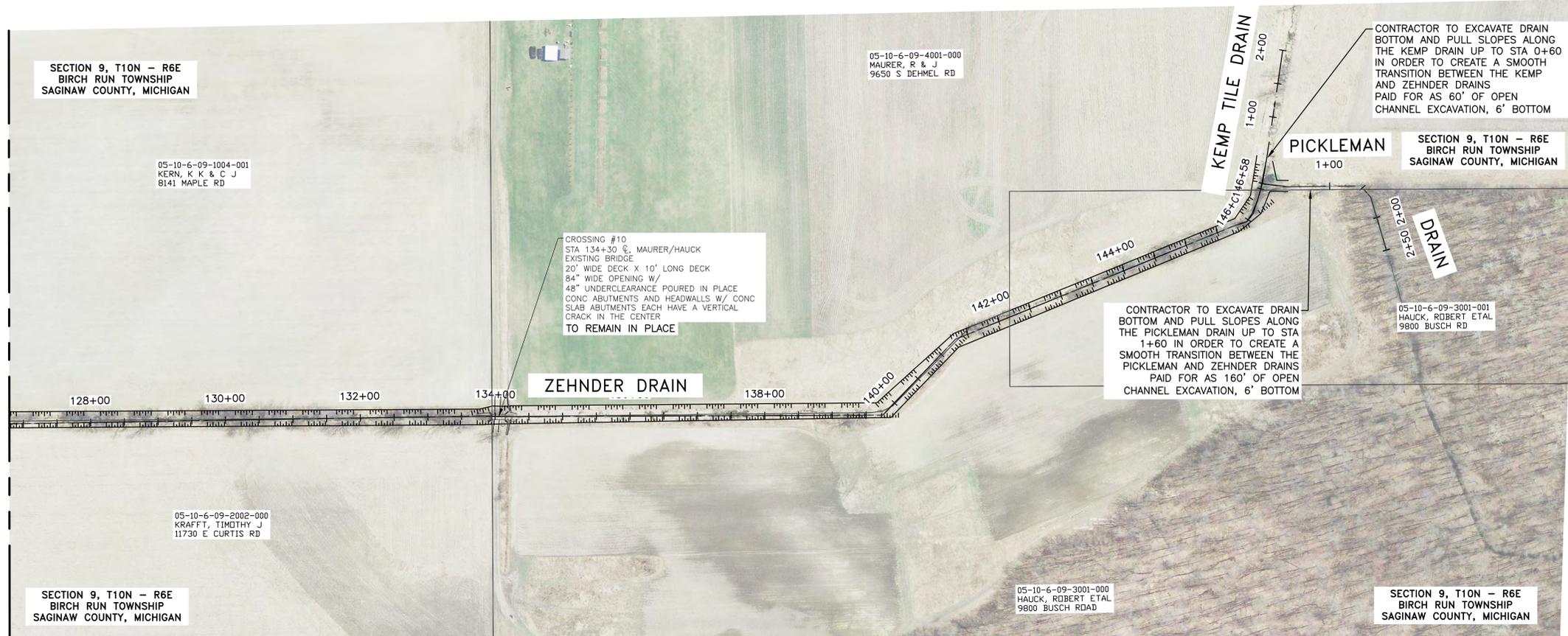
MATCH LINE STA 127+00 SEE SHEET 13.0

MATCH LINE STA 106+00 SEE SHEET 11.0

<p>WADETRIM</p> <p>1400 South Valley Center Drive Okemos, MI 48864 989.886.3100 / 989.886.3224 / 989.886.886 www.wadetrtrim.com</p> <p style="font-size: small;">Building relationships on a foundation of excellence.</p>	<p>SAGINAW COUNTY</p> <p>PUBLIC WORKS COMMISSIONER</p> <p>ZEHNDER DRAIN</p> <p>PLAN AND PROFILE: STA 106+00 TO STA 127+00</p>
<p>ISSUED FOR: _____ DATE: 1/22/16 BY: JRK</p>	<p>JOB NO. SPW2002.01B</p>
<p>SHEET</p>	<p style="font-size: 2em; font-weight: bold; text-align: center;">12.0</p>

STA 106+00 TO 127+00 - 49.5'
 ON EACH SIDE OF DRAIN CENTERLINE

MATCH LINE STA 127+00 SEE SHEET 12.0



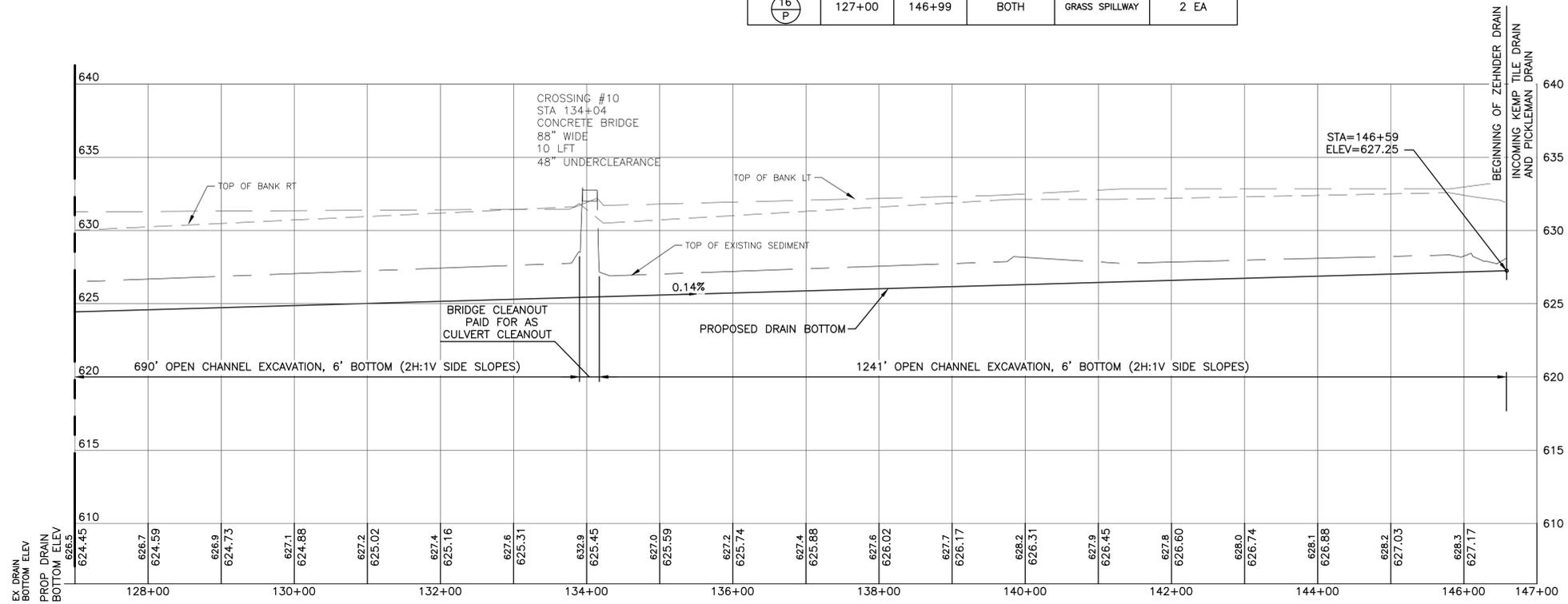
FROM STATION	TO STATION	DETAIL	SIDE TO EXCAVATE FROM
127+00	146+99	TYPE C	RIGHT

FROM STATION	TO STATION	CLEAR AND GRUB LEFT	CLEAR AND GRUB RIGHT
127+00	146+99	℄ TO T.O.B.	℄ TO 40'

KEY	FROM STATION	TO STATION	SIDE	DESCRIPTION	QUANTITY
ⓑ	127+00	146+99	BOTH	SEEDING OF ALL DISTURBED AREAS	LUMP SUM
Ⓒ	127+00	146+99	BOTH	MULCHING OF ONLY DISTURBED LAWN AREAS	LUMP SUM
Ⓓ	127+00	146+99	BOTH	RIPRAP SPILLWAY WHERE BANK EROSION EXISTS	5 EA
Ⓔ	127+00	146+99	BOTH	GRASS SPILLWAY	2 EA

FROM STATION	TO STATION	SIDE	DESCRIPTION	QUANTITY
ALL EXISTING FIELD TILE OUTLETS	BOTH	SPLASH PAD	2 EA	
CROSSING 10	BOTH	INSTALL RIPRAP PROTECTION AT INLET AND OUTLET OF CROSSING	20 SYD	

NOTE: COORDINATE INSTALLATION OF EROSION CONTROL MEASURES WITH ENGINEER PRIOR TO CONSTRUCTION. LOCATIONS, QUANTITIES, OR TYPES MAY VARY BASED ON FIELD DECISIONS.



STA 127+00 TO P.O.E. - 49.5' ON EACH SIDE OF DRAIN CENTERLINE

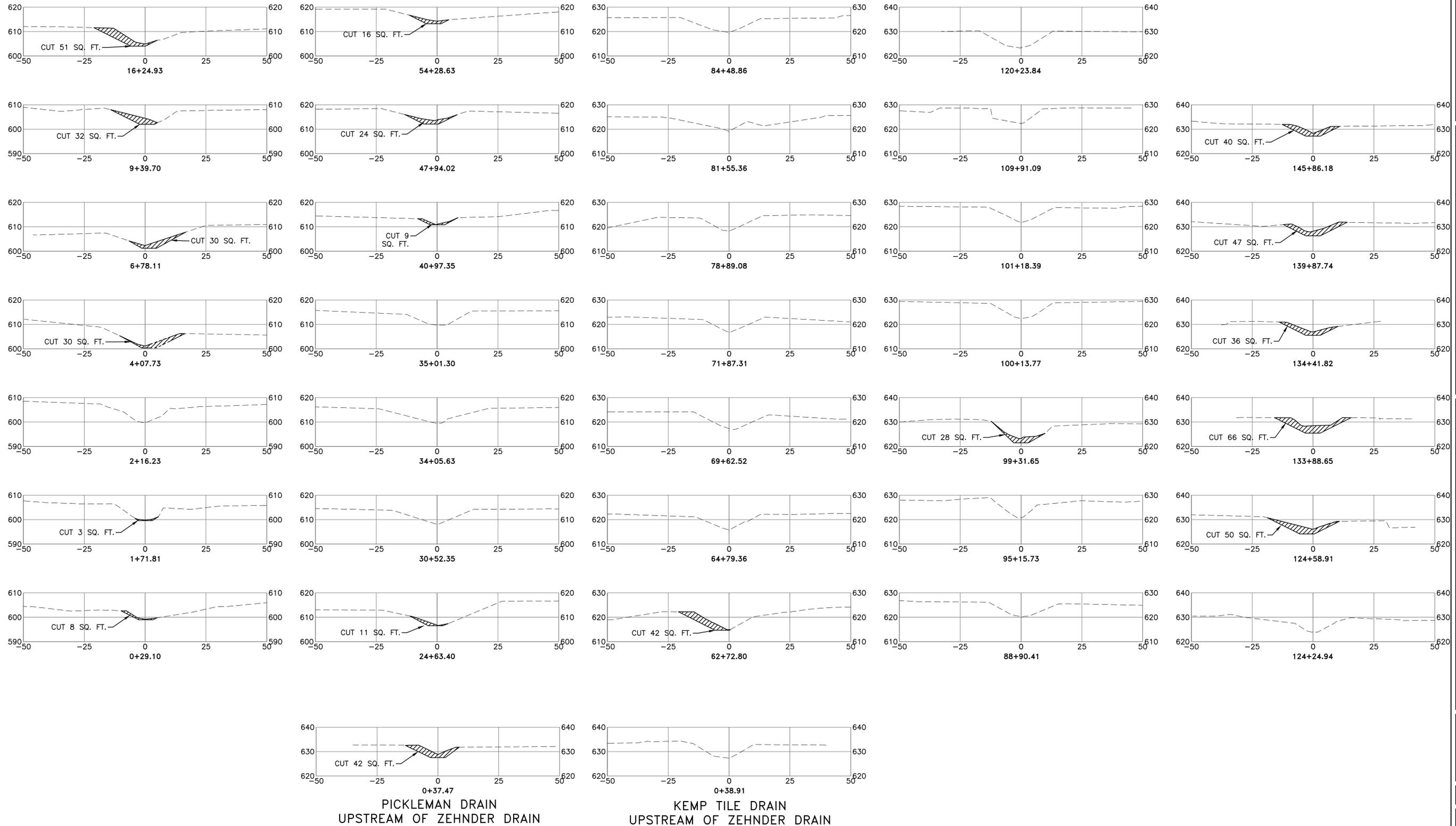
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<p>ISSUED FOR: DATE: BY:</p> <p>BID 1/22/16 JRK</p>	<p>JOB NO. SPW2002.01B</p>
<p>SHEET</p> <p>13.0</p>	<p>DESCRIPTION</p> <p>DATE</p> <p>REV#</p> <p>BY</p>

ZEHNDER DRAIN CROSS SECTIONS



PICKLEMAN DRAIN
UPSTREAM OF ZEHNDER DRAIN

KEMP TILE DRAIN
UPSTREAM OF ZEHNDER DRAIN

PROJECT MANAGER: JASON HENYON
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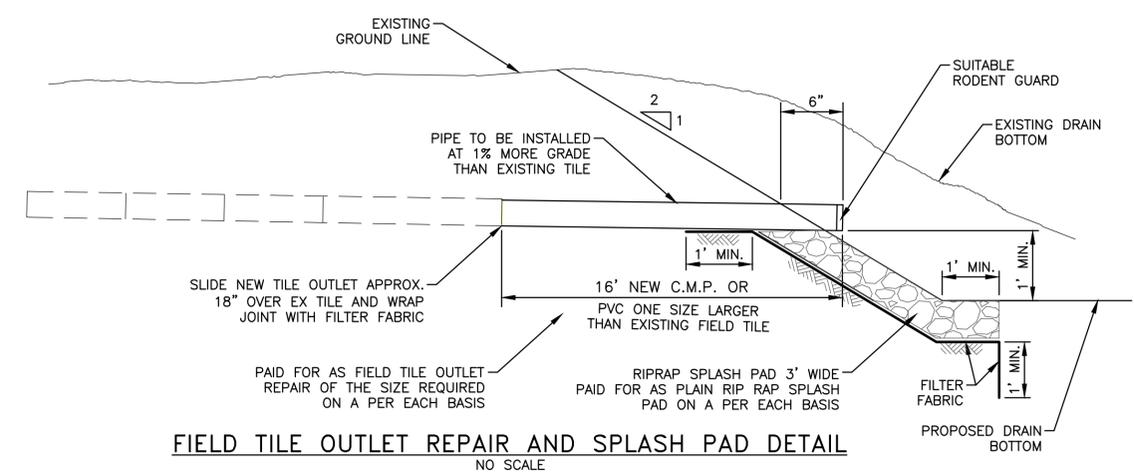
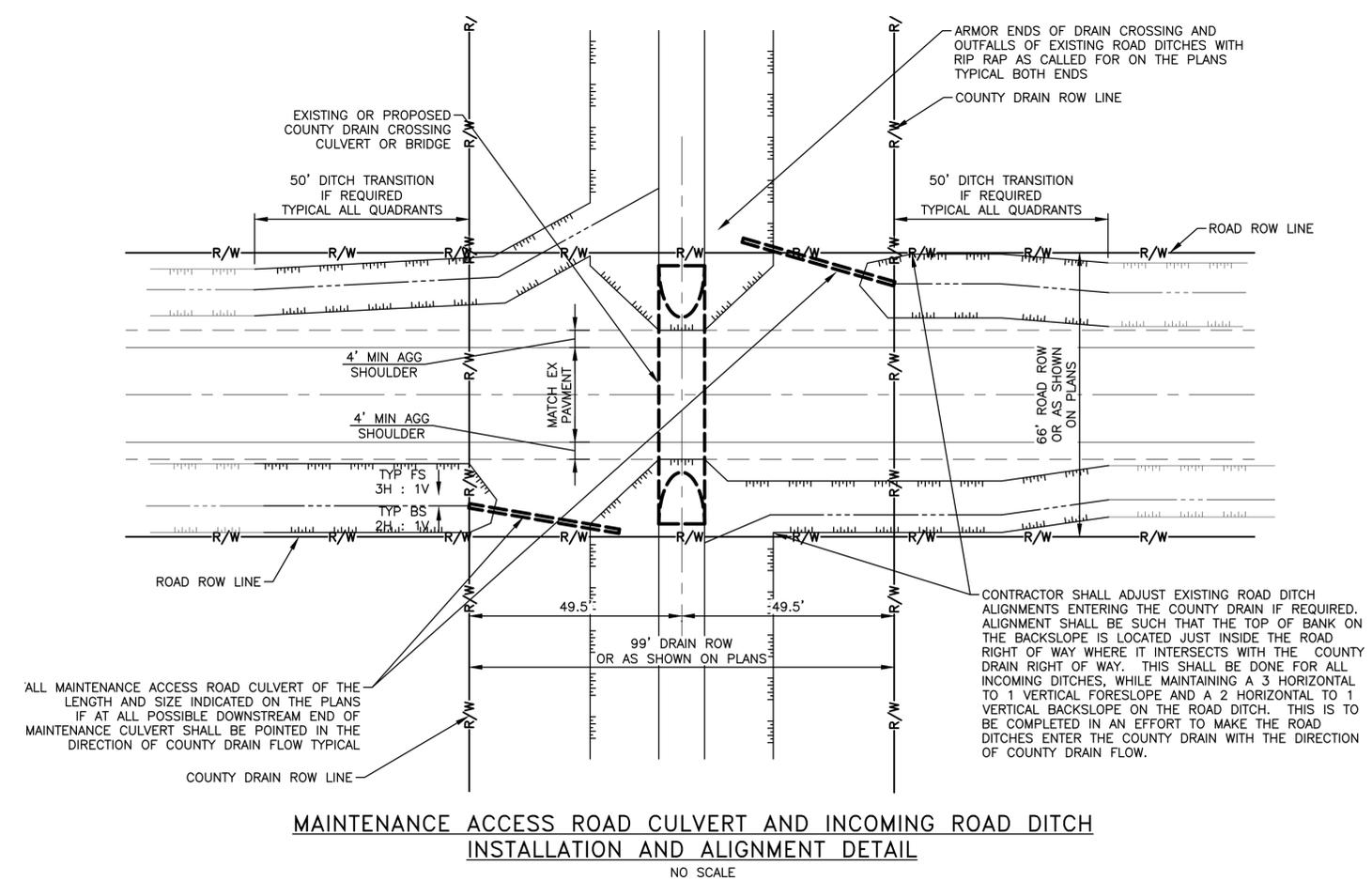
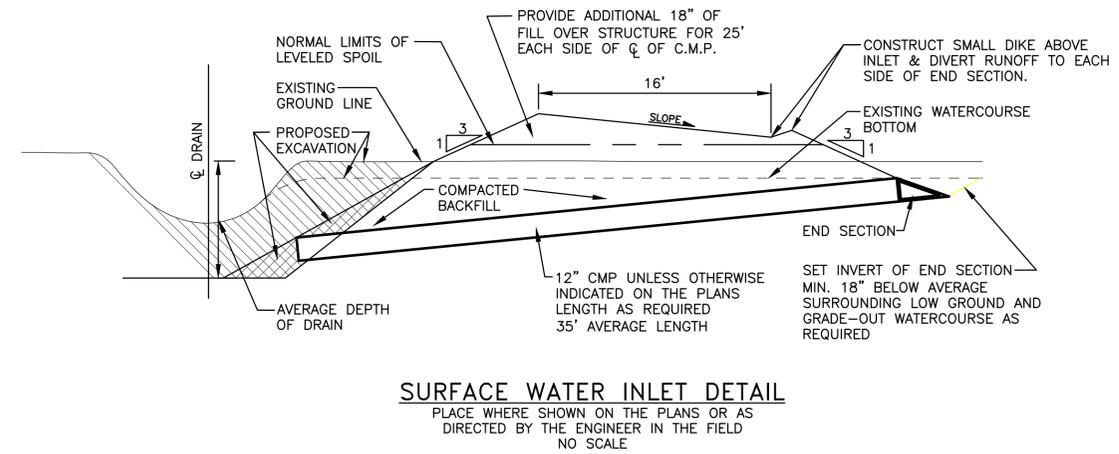
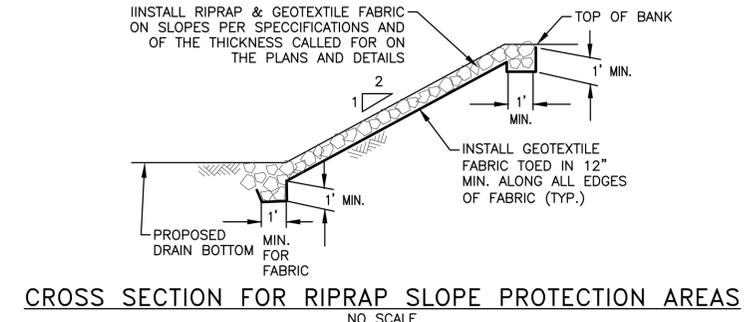
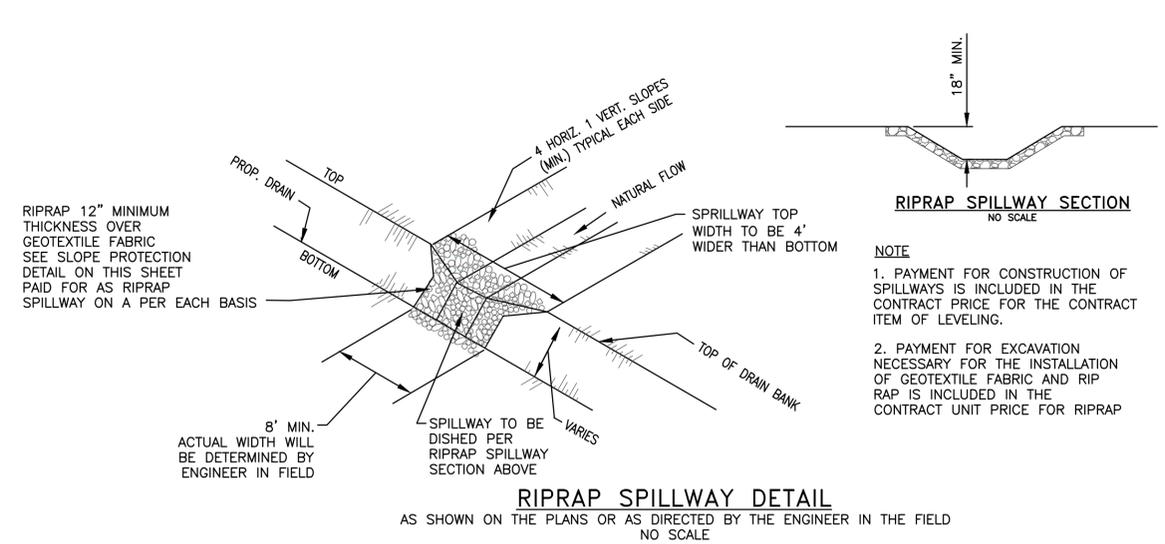
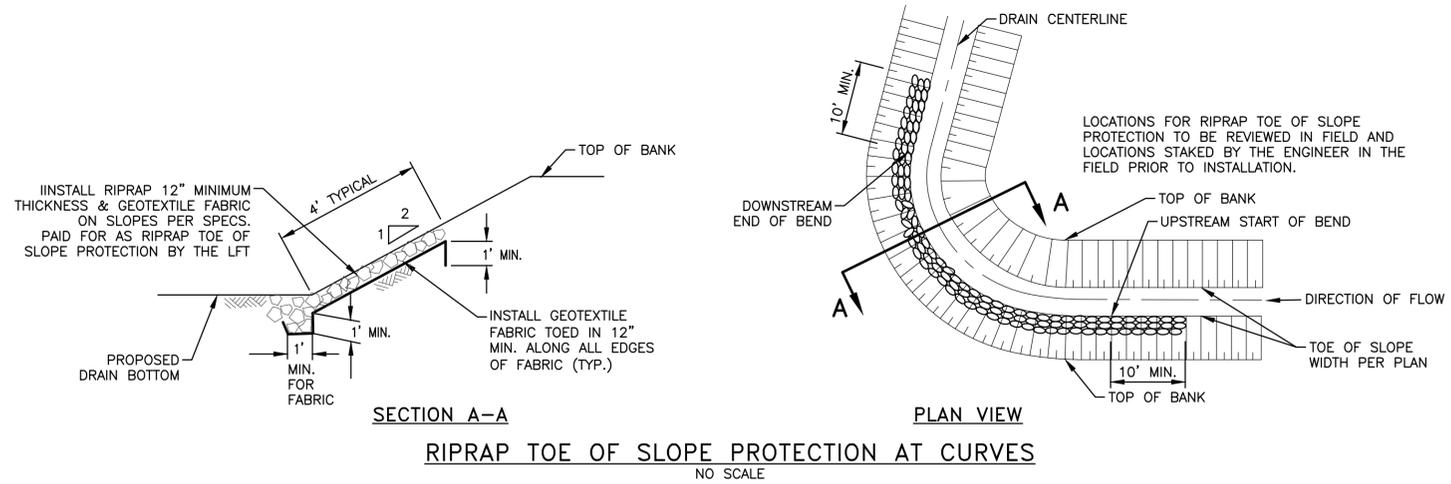
CROSS SECTION SHEET

ISSUED FOR: DATE: BY:
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JOB NO.
SPW2002.01B

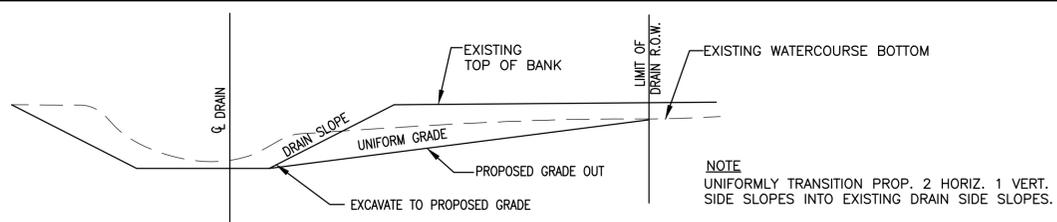
SHEET
14.0

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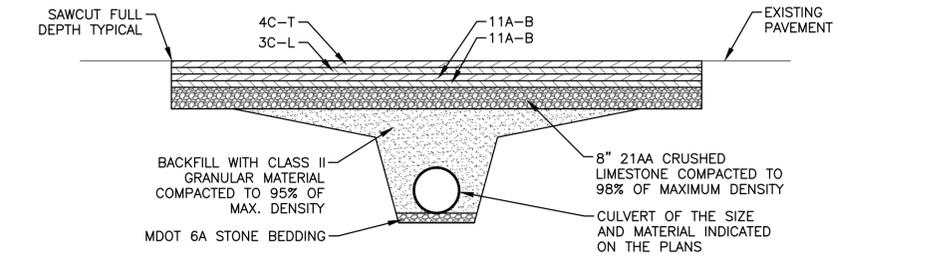
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DESCRIPTION	
DATE	
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<p>WADE TRIM 1400 South Valley Center Drive P.O. Box 46707 98808-0322-4600 FAX: 988-886-4329 www.wadetrims.com</p>	
<p>SAGINAW COUNTY PUBLIC WORKS COMMISSIONER ZEHENDER DRAIN</p>	
<p>ISSUED FOR: DATE: BY: BID: 1/22/16 JRK</p>	
<p>JOB NO. SPW2002.01B</p>	
<p>SHEET 15.0</p>	

PROJECT MANAGER: JASON WENYON
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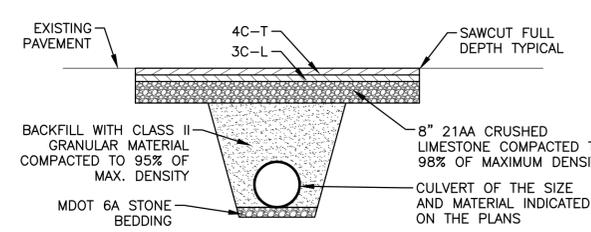


INTERSECTING WATERCOURSE GRADE OUT DETAIL
NO SCALE

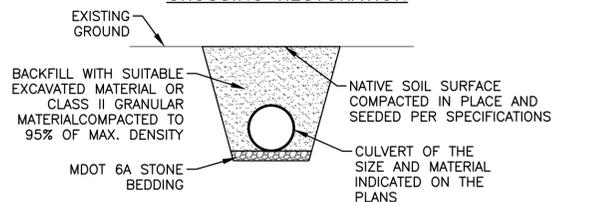
HMA APPLICATION TABLE				
IDENT.	ITEM	RATE PER SYD	THICKNESS	REMARKS
4C-T	HMA, 4C	220#/SYD	2 INCHES	MDOT HMA MIX 4C
3C-L	HMA, 3C	220#/SYD	2 INCHES	MDOT HMA MIX 3C
11A-B	HMA, 11A	275#/SYD	2.5 INCHES	MDOT HMA MIX 11A
11A-B	HMA, 11A	275#/SYD	2.5 INCHES	MDOT HMA MIX 11A



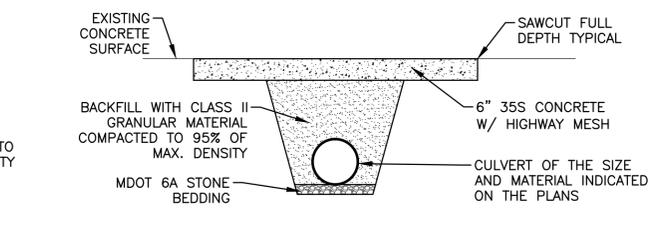
SCRC ALL SEASON HMA PAVEMENT ROAD CROSSING RESTORATION



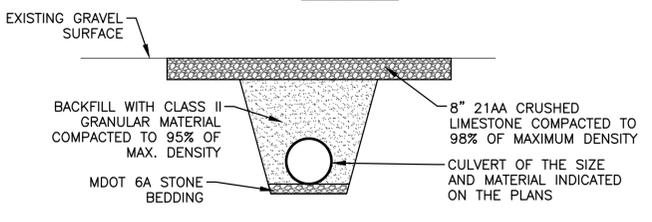
SCRC STANDARD HMA PAVED ROAD OR DRIVEWAY CROSSING RESTORATION



NATIVE MATERIAL DRIVEWAY CROSSING

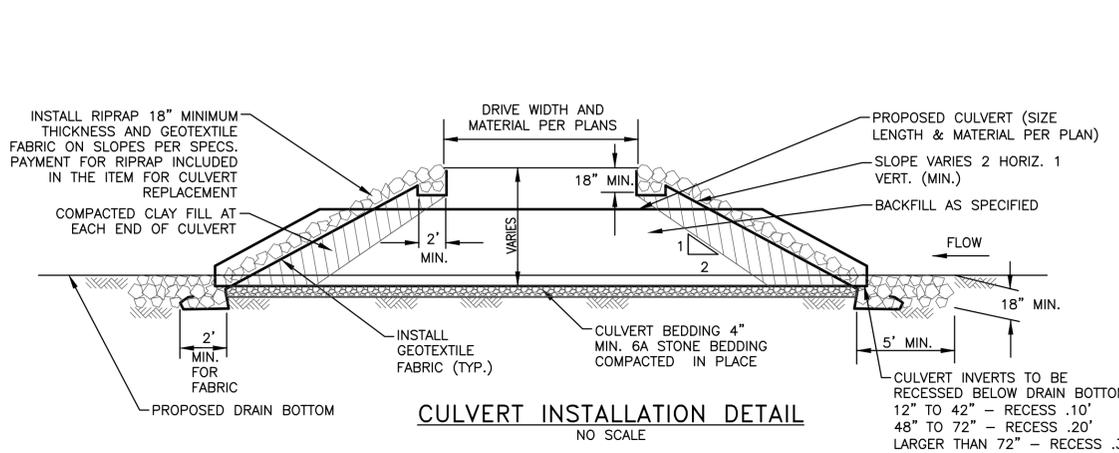


CONCRETE DRIVEWAY CROSSING

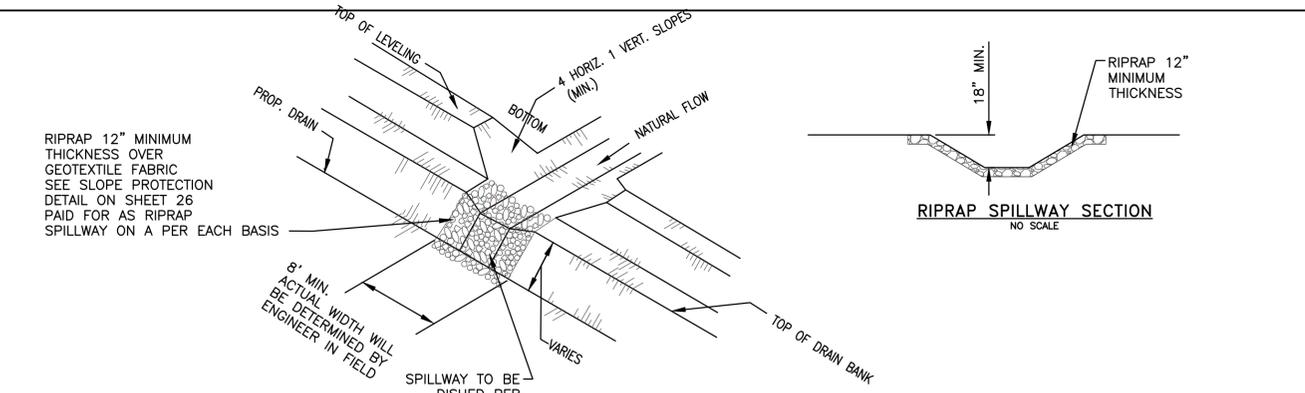


GRAVEL ROAD OR DRIVEWAY CROSSING

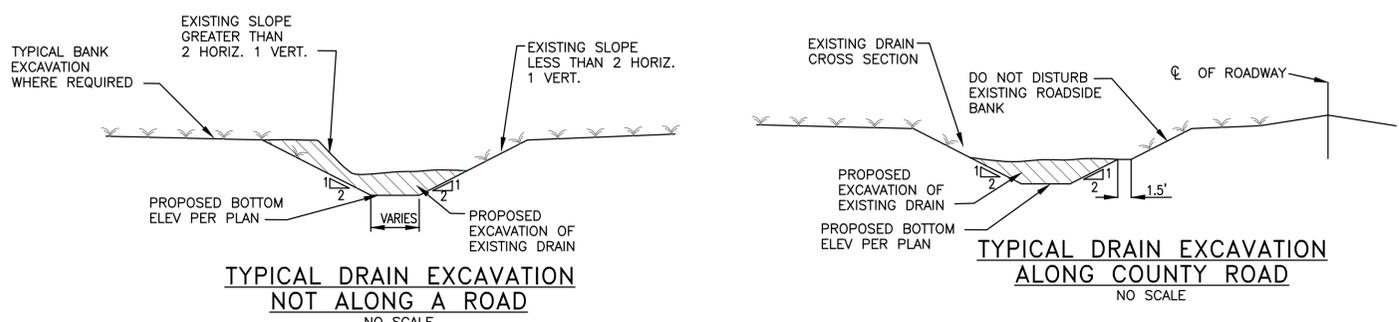
CULVERT INSTALLATION - BEDDING, BACKFILL AND SURFACE RESTORATION DETAILS
NO SCALE



CULVERT INSTALLATION DETAIL
NO SCALE

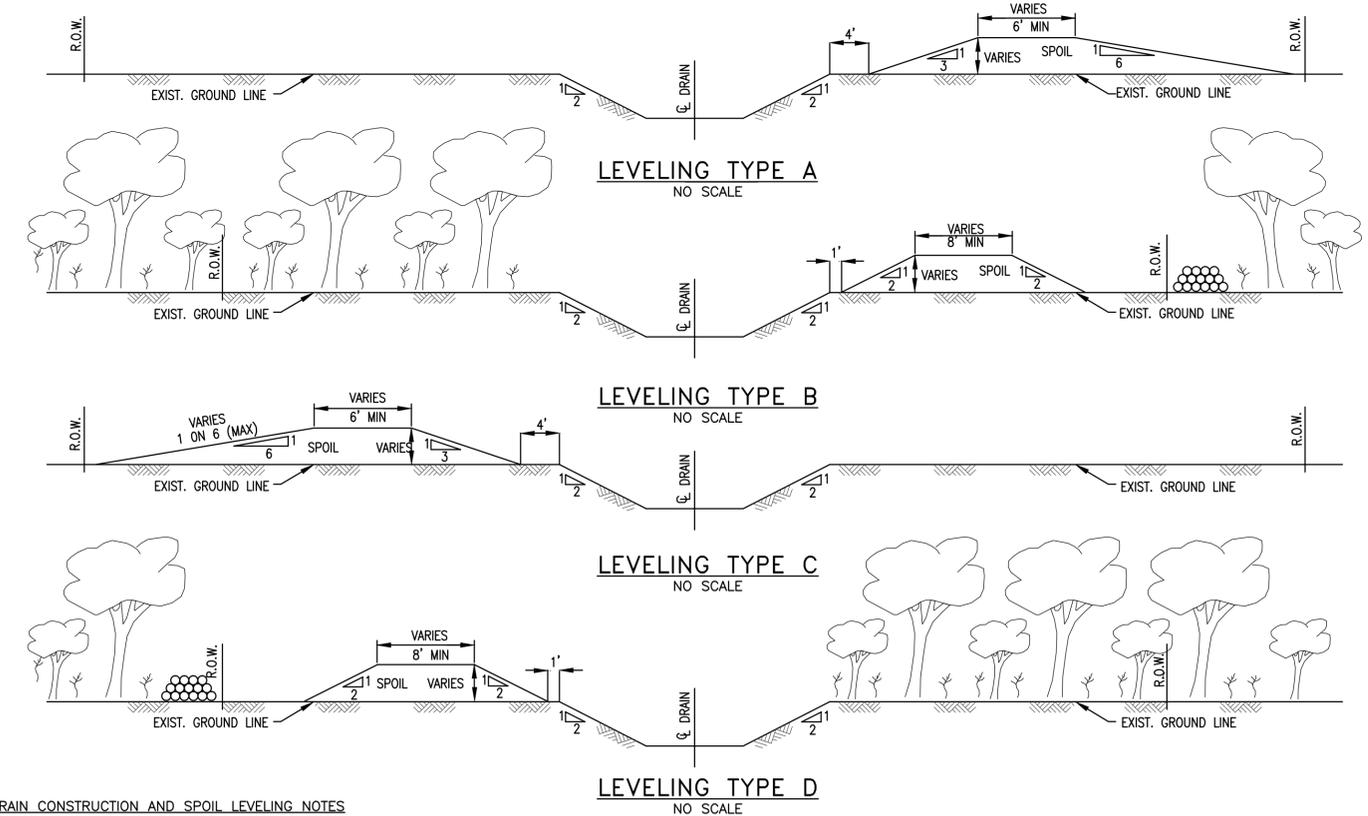


LEVELING SPILLWAY DETAIL
AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER IN THE FIELD
NO SCALE



TYPICAL DRAIN EXCAVATION NOT ALONG A ROAD
NO SCALE

TYPICAL DRAIN EXCAVATION ALONG COUNTY ROAD
NO SCALE



DRAIN CONSTRUCTION AND SPOIL LEVELING NOTES

1. OPENINGS SHALL BE CONSTRUCTED IN SPOIL LEVELING PILES TO ALLOW DRAINAGE OF THE ADJACENT LANDS AT LOCATIONS DESIGNATED BY THE ENGINEER OR PROPERTY OWNER. PAYMENT FOR THE OPENING IS INCLUDED IN THE PRICE PAID FOR THE BID ITEM OF LEVELING. SEE LEVELING SPILLWAY DETAIL THIS SHEET.
2. CONTRACTOR SHALL EXCAVATE FROM THE SIDE OF DRAIN DESIGNATED ON THE PLANS. WHEN EXCAVATING FROM ONE SIDE OF THE DRAIN THE CONTRACTOR SHALL CLEAR THE OPPOSITE SIDE OF THE DRAIN TO THE TOP OF BANK AND MAINTAIN 2 HORIZONTAL TO 1 VERTICAL SIDE SLOPES ON BOTH SIDES OF THE DRAIN.
3. UNLESS OTHERWISE NOTED ON THE PLANS THE CONTRACTOR SHALL NOT LEVEL SPOIL IN LAWN AREAS WITHOUT WRITTEN PERMISSION FROM THE OWNER.
4. IF A LAWN AREA IS DISTURBED FOR ANY REASON, THE CONTRACTOR SHALL PROVIDE 6" OF TOPSOIL AND SEED AND MULCH PER THE SPECIFICATIONS.
5. WHEN WORKING IN A WOODED AREA, IF THE PROPERTY OWNER IS INTERESTED IN THE WOOD, THE CONTRACTOR SHALL CUT LOGS LARGER THAN 6" DIA. INTO 10' LENGTHS AND PILE OUTSIDE OF THE DRAIN RIGHT OF WAY WITH THE OWNERS WRITTEN PERMISSION. IF OWNER IS NOT INTERESTED IN THE WOOD, THE CONTRACTOR SHALL HAUL AWAY AND DISPOSE OF.
6. ALL WOOD LESS THAN 6" DIA. SHALL BE CHIPPED AND SPREAD WITHIN THE DRAIN RIGHT OF WAY OR DISPOSED OF OFF SITE. CONTRACTOR SHALL NOT BURN STUMPS OR DEBRIS IN WOODED AREAS.

PROJECT MANAGER, JASON WENYON; FIELD BOOK INFORMATION; C:\PL\WORK\2002\1908\GDT-PLS-DRAIN-DETAILS.DWG - 16.0 - PLOTTED 1/22/2016 3:00 PM BY: RUGGLES, TIMOTHY

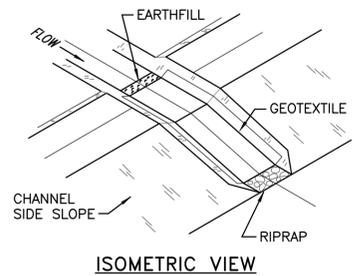
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	DATE
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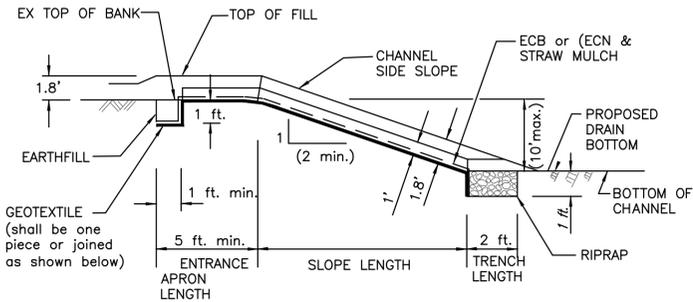
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DETAIL SHEET

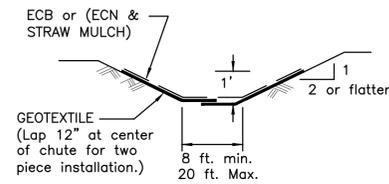
ISSUED FOR:	DATE:	BY:
BID	1/22/16	JRK
JOB NO. SPW2002.01B		
16.0		



ISOMETRIC VIEW



SECTION ON CENTERLINE



TYPICAL CROSS SECTION

CONSTRUCTION SEQUENCE

- EXCAVATE TO FINISHED GRADE OF REQUIRED SECTION AND SLOPE.
- DIG TRENCHES ON UPSTREAM END AND DOWNSTREAM TOE.
- HAND RAKE GRADE TO PREPARE SEEDBED. IF SEEDBED IS DIFFICULT TO RAKE, TOPSOIL MAY BE ADDED. DO NOT USE HERBICIDE CONTAMINATED TOPSOIL. REMOVE ALL ROCKS, CLODS, AND CLUMPS LARGER THAN 1/2 INCH DIAMETER. SPREAD FERTILIZER AND LIME AND RAKE INTO SEEDBED. FERTILIZE ACCORDING TO SOIL TESTS OR AT A MINIMUM RATE OF 2 LBS. OF 12-12-12 FERTILIZER (OR ITS EQUIVALENT) PER 100 SQ. FT.
- PLACE GEOTEXTILE ON PREPARED GRADE. EXTEND GEOTEXTILE INTO TRENCHES FOR ANCHORAGE AT UPSTREAM AND DOWNSTREAM ENDS AS SHOWN ON DETAILS. STAPLE GEOTEXTILE AT ONE TO TWO FOOT INTERVALS ACROSS THE ENTRANCE APRON AND ALONG OVERLAP OF GEOTEXTILE PIECES.
- SEED ONTO GEOTEXTILE AT THE FOLLOWING RATES:

SEED	RATE (LBS./100 SQ.FT.)
PERENNIAL RYE	0.25
TALL FESCUE	0.5
SMOOTH BROME	0.5
CREeping RED FESCUE	0.5
- PLACE EROSION CONTROL BLANKET (ECB) OVER SEED. STRAW MULCH AND EROSION CONTROL NETTING (ECN) MAY BE USED IN LIEU OF ECB. THE ECB OR ECN SHALL EXTEND INTO BOTH TRENCHES AS SHOWN ON DETAILS.
- STAPLE NETTING AND GEOTEXTILE AT 2 FT. INTERVALS STARTING AT THE CENTERLINE OF THE CHANNEL AND WORKING OUT TOWARD EACH SIDE. ADDITIONAL STAPLES SHALL BE PLACED WHERE THE GEOTEXTILE DOES NOT CONTACT THE SOIL.
- FILL UPSTREAM TRENCH WITH EARTH. FILL DOWNSTREAM TRENCH WITH RIPRAP. GEOTEXTILE SHALL HAVE CONSISTENT SOIL CONTACT. STRETCH THE GEOTEXTILE AS LITTLE AS POSSIBLE.

MATERIAL REQUIREMENTS
GEOTEXTILE:

THE GEOTEXTILE SHALL MEET THE REQUIREMENTS OF CONSTRUCTION SPECIFICATION MI-165, NONWOVEN GEOTEXTILE, CLASS III. THE GEOTEXTILE MATERIAL SHALL BE 3.5 TO 5.5 OZ./SQ.YD. THE GEOTEXTILE SHALL BE ONE OR TWO PIECES. A SINGLE PIECE IS PREFERRED.

EROSION CONTROL NETTING (ECN) AND STRAW MULCH:

THE NETTING SHALL BE EXTRUDED ORIENTED POLYPROPYLENE NETTING. THE MESH OPENINGS SHALL BE 1/2 INCH TO 1.0 INCH IN EACH DIRECTION. THE WEIGHT SHALL BE APPROXIMATELY 3 LBS. PER 1,000 SQ/FT. STRAW MULCH SHALL BE SPREAD 1 INCH TO 2 INCHES THICK BEFORE THE NETTING IS PLACED.

EROSION CONTROL BLANKET (ECB):

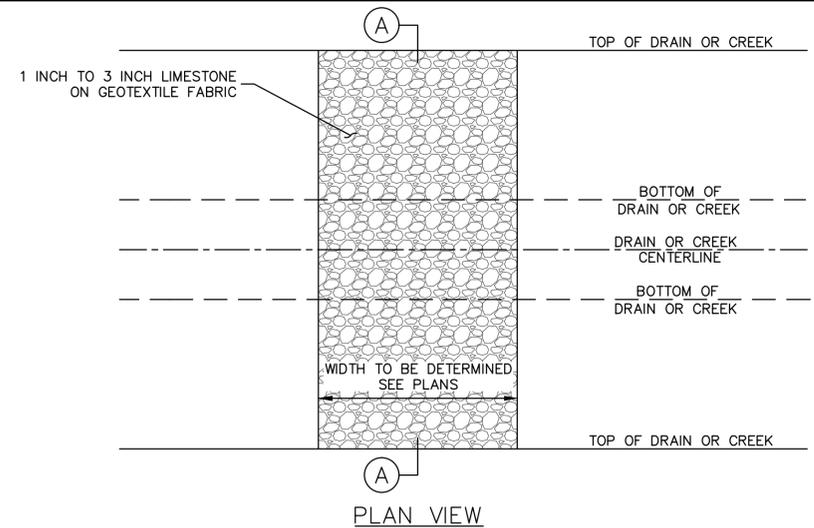
THE EROSION CONTROL BLANKET SHALL USE STRAW OR STRAW/COCONUT MULCH AT THE RATE OF APPROXIMATELY 0.5 LB. PER SQ. YD. ADDITIONAL STRAW MAY BE PLACED BETWEEN THE GEOTEXTILE AND ECB TO PROVIDE FOR BETTER SEED GERMINATION.

FINISH AND CLEANUP

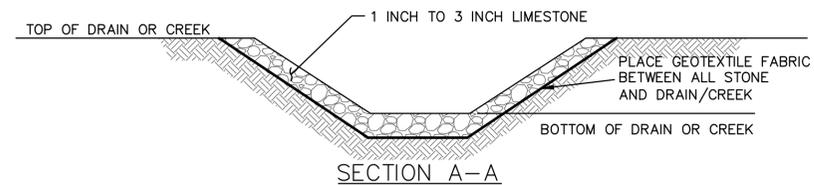
THE SITE AREA AND THE DESIGNATED SPOIL AREAS WILL BE FINISHED IN A RELATIVELY SMOOTH CONDITION READY FOR SEEDING. ALL ROCKS 3 INCHES IN DIAMETER OR LARGER AND ROOTS SHALL BE REMOVED FROM THE DISTURBED AREAS ADJACENT TO THE GEOTEXTILE REINFORCED WATERWAY. ALL DISTURBED AREAS SHALL BE SMOOTHED, FERTILIZED AND SEEDED AT THE SAME RATES AS THE GEOTEXTILE REINFORCED VEGETATED CHUTE.

CONSTRUCTION NOTES

- CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER AND SEQUENCE THAT EROSION AND AIR AND WATER POLLUTION WILL BE MINIMIZED AND HELD WITHIN ACCEPTABLE LIMITS.
- THE COMPLETED JOB SHALL PRESENT AN APPEARANCE OF GOOD WORKMANSHIP AND SHALL CONFORM TO THE LINES, GRADES, AND ELEVATIONS SHOWN ON THE DRAWINGS OR AS STAKED IN THE FIELD.
- ALL OPERATIONS SHALL BE CARRIED OUT IN A SAFE AND SKILLFUL MANNER. SAFETY AND HEALTH REGULATIONS SHALL BE OBSERVED AND APPROPRIATE SAFETY MEASURES USED.
- RIPRAP OF THE SIZE SPECIFIED SHALL BE PLACED AS DETAILED



PLAN VIEW



SECTION A-A

NOTES:

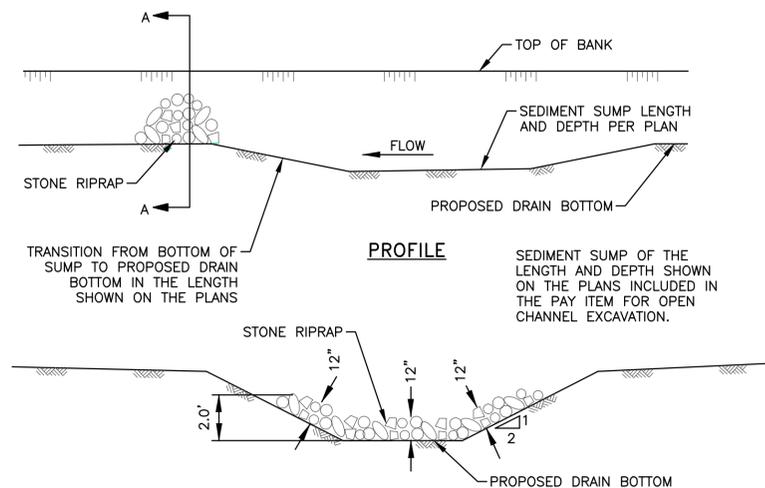
- FORDING, DRIVING OR MOVING CONSTRUCTION EQUIPMENT OR VEHICLES THROUGH THE BED OF A DRAIN OR CREEK IS NOT PERMITTED AT ANY TIME.
- IF TEMPORARY CROSSINGS SHALL BE REMOVED WITHIN TWO WEEKS OF THE WORK REACHING THE NEXT CROSS ROAD.
- THE BOTTOM OR INVERT ELEVATION OF THE DRAIN/CREEK SHALL BE MAINTAINED AFTER STONE PLACEMENT.
- ALL STONE USED FOR ANY TEMPORARY CROSSING SHALL BE REMOVED FROM THE DRAIN/CREEK.
- SEED AND HIGH VELOCITY MULCH BLANKETS SHALL BE USED TO RESTORE DRAIN/CREEK BANKS. 3 TO 6 INCH SIZE STONE SHALL BE USED TO RESTORE THE BOTTOM OF THE DRAIN/CREEK.
- CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR DAMAGE DUE TO WET WEATHER FLOWS.

TYPICAL GRASS SPILLWAY NOTES AND DETAILS

NO SCALE

STONE FORD CROSSING DETAILS

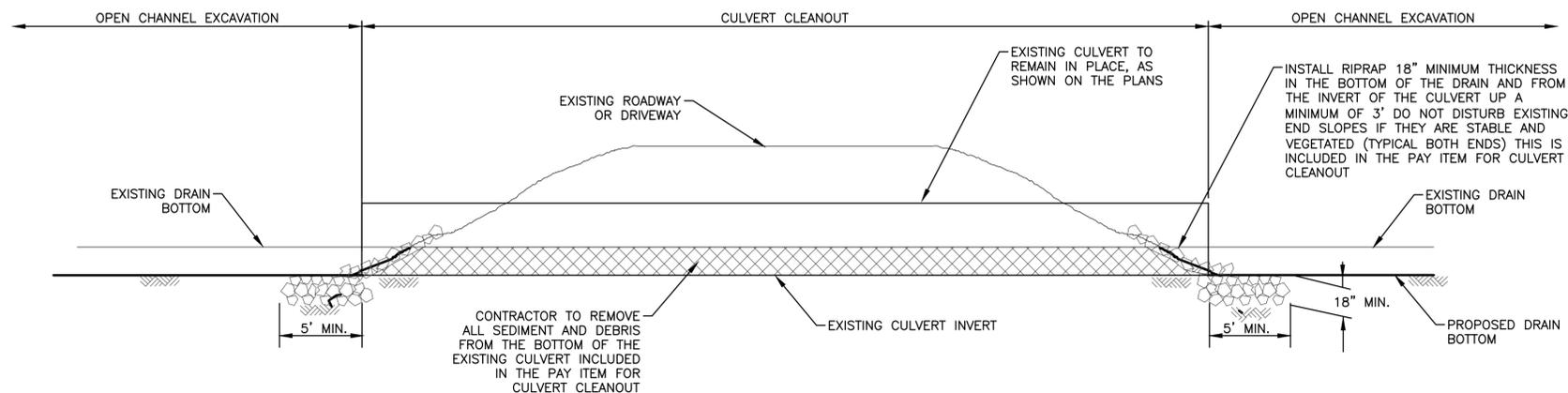
NO SCALE



SECTION A-A

SEDIMENT SUMP DETAIL

NO SCALE



EXISTING CULVERT CROSSING CLEANOUT AND ENDSLOPE RIPRAP REINFORCEMENT

NO SCALE

REV#	DATE	DESCRIPTION	BY

WADE TRIM
1403 South Valley Center Drive
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SAGINAW COUNTY
PUBLIC WORKS COMMISSIONER
ZEHENDER DRAIN

DETAIL SHEET

ISSUED FOR: DATE: BY:
BID: 1/22/16 JRK

JOB NO.
SPW2002.01B

SHEET
17.0

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PROJECT MANAGER: JASON HEYENON
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