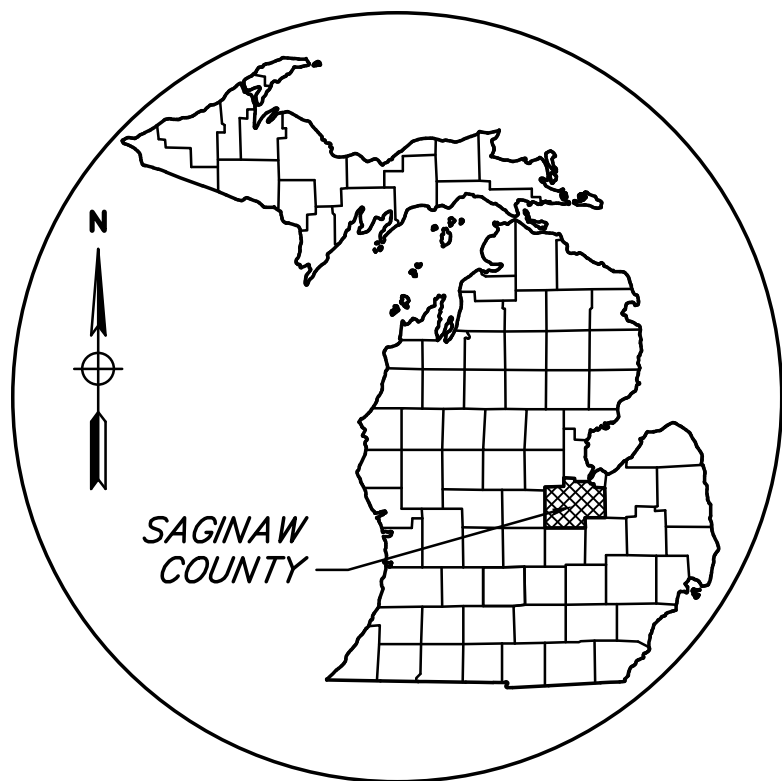
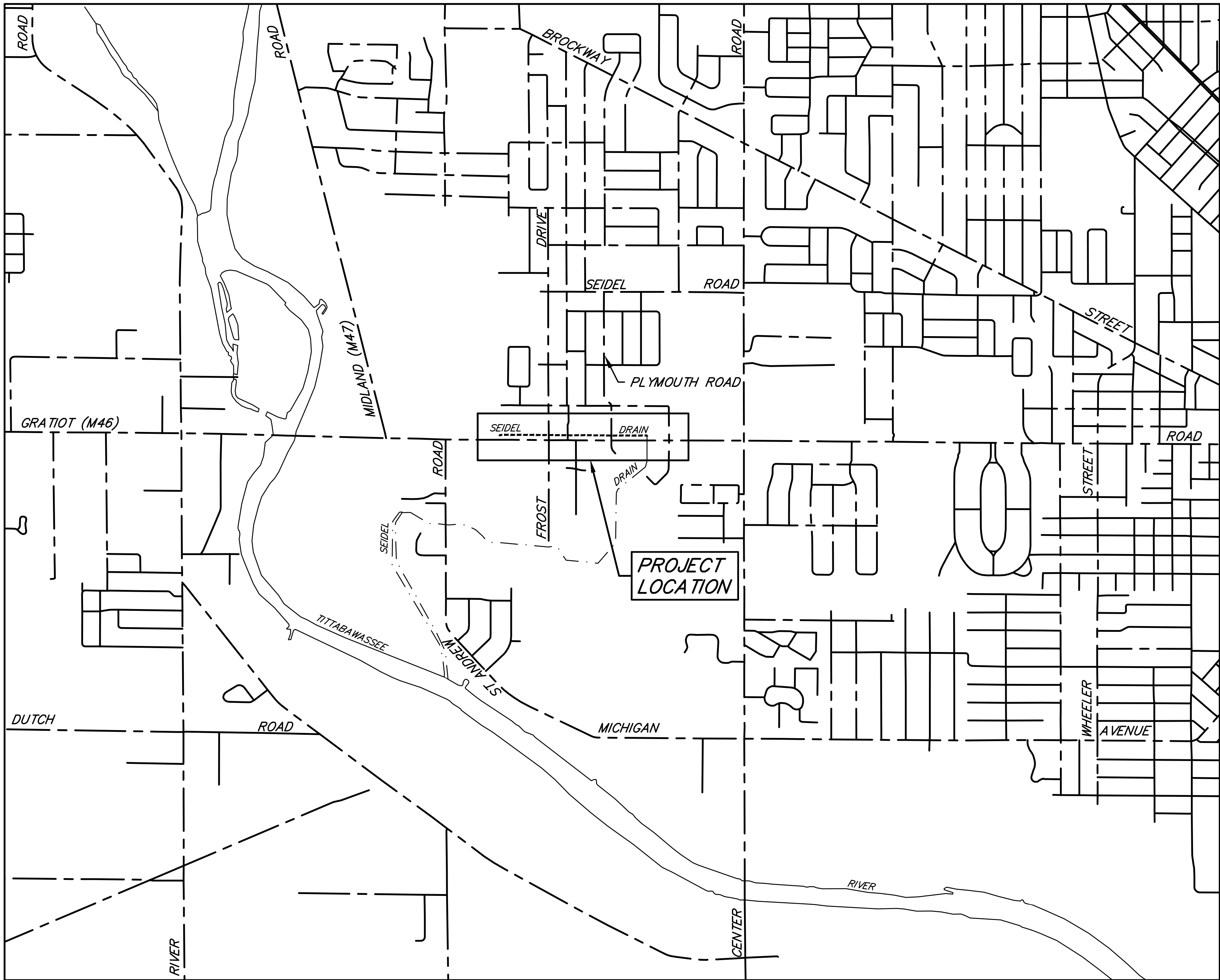


SEIDEL DRAIN

SAGINAW COUNTY DRAIN COMMISSIONER - BRIAN J. WENDLING



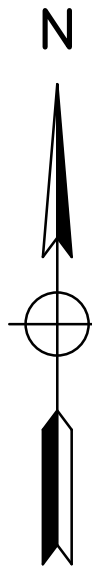
AREA MAP
NOT TO SCALE



LOCATION MAP
NOT TO SCALE

PLAN INDEX		
FILE NO.	DESCRIPTION	NO.
DR-4021-01	COVER SHEET	1
DR-4021-02	CONTACTS, GENERAL NOTES, LINE TYPES LEGEND, AND SESC MEASURE LEGEND	2
* DR-4021-03	DRAINAGE DISTRICT MAP	3
DR-4021-04	PLAN AND PROFILE - STA 0+00 TO STA 10+00	4
DR-4021-05	PLAN AND PROFILE - STA 10+00 TO STA 20+00	5
DR-4021-06	PLAN AND PROFILE - STA 20+00 TO STA 28+00	6
DR-4021-07	STANDARD DETAILS	7
DR-4021-08	GRATIOT ROAD (M-46) - LANE CLOSURE OVERVIEW	8
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DW-1556	WATER MAIN - STANDARD DETAILS	

* NOT INCLUDED IN CONSTRUCTION PLANS.



SECTION 29-32, T12N-R04E,
SAGINAW CHARTER TOWNSHIP,
SAGINAW COUNTY, MICHIGAN

BY		MARK		REVISIONS		DATE	
THE WORK REPRESENTED BY THIS DRAWING WAS DESIGNED BY THE ENGINEER FOR THIS SPECIFIC APPLICATION AND SPECIFIC LOCATION DESCRIBED HEREON IN ACCORDANCE WITH THE CONDITIONS PREVALENT AT THE TIME THE DESIGN WAS DONE. THE ENGINEER DOES NOT GUARANTEE AND WILL NOT BE LIABLE FOR ANY OTHER LOCATION, CONDITION, DESIGN OR PURPOSE.							
SEIDEL DRAIN SAGINAW COUNTY, MICHIGAN							
COVER SHEET							
				SAGINAW OFFICE 230 S. Washington Ave. Saginaw, MI 48607 Tel. 989-754-4717 Fax. 989-754-4440 www.SpicerGroup.com			
DE. BY: POC/DSV		CH. BY: DSV		PROJECT NO.		122584SG2020	
DR. BY: CBS		APP. BY: RBH		SHEET 01 OF 09		DR 01	
STDs.		DATE MARCH, 2021		FILE NO. DR-4021-01			
SCALE NOT TO SCALE							

GENERAL NOTES

NO WORK SHALL BE PERFORMED BEFORE 7:00 AM OR AFTER 7:00 PM MONDAY THROUGH SATURDAY. NO WORK SHALL HAPPEN ON SUNDAYS OR HOLIDAYS. UNLESS AUTHORIZED BY THE OWNER.

CONTRACTOR SHALL NOTIFY ENGINEER 72 HOURS PRIOR TO START OF CONSTRUCTION, CONSTRUCTION STAKING AND INSPECTION.

CONTRACTOR SHALL MAINTAIN ACCESS FOR MAIL DELIVERY AND GARBAGE PICKUP AT ALL PARCELS. IF THESE SERVICES CANNOT BE PERFORMED CONTRACTOR IS RESPONSIBLE FOR TAKING THE NECESSARY MEASURES TO CARRY THEM OUT.

CONTRACTOR TO PROVIDE DUST CONTROL AND SWEEP ROADS DAILY.

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

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

RESTORE ALL LAWN AREAS WITH 4" OF TOPSOIL, SEED, AND MULCH.

CONTRACTOR TO RESTORE INCIDENTAL DAMAGES ON THE PROJECT AS DIRECTED BY OWNER AND ENGINEER AT CONTRACTORS EXPENSE.

ALL DRAIN SIDE SLOPES SHALL BE 2H:1V OR FLATTER, UNLESS SPECIFIED OTHERWISE.

THE WORDS "RIGHT SIDE" OR "LEFT SIDE" IMPLY A REFERENCE TO THE DRAIN FACING UPSTREAM.

CLEAR AND GRUB TREES AS INDICATED FOR CONSTRUCTION WITHIN DRAIN RIGHT-OF-WAY. REMOVE ALL TREES, STUMPS AND DEBRIS FROM SITE.

REMOVE EXISTING FENCES, LANDSCAPING, AND OTHER STRUCTURES IN DRAIN RIGHT-OF-WAY AS NEEDED FOR CONSTRUCTION. REINSTALLATION OF FENCES MUST BE COORDINATED WITH THE LAND OWNER AT THE LAND OWNER'S EXPENSE, UNLESS STATED OTHERWISE IN THE PLANS. COST TO BE INCLUDED IN SITE CLEARING.

CONTRACTOR SHALL COORDINATE REMOVAL OF TREES WITHIN THE LIMITS OF CONSTRUCTION WITH THE PROPERTY OWNER AND ENGINEER.

TOPSOIL SHALL BE STRIPPED AND STOCKPILED FOR USE AS TOPSOIL SURFACE AS DIRECTED BY THE ENGINEER.

ALL SPRINKLER SYSTEMS DAMAGED SHALL BE REPAIRED BY CONTRACTOR. COST TO BE INCLUDED IN OTHER WORK ITEMS OF THE PROJECT.

CONTRACTOR TO CLEAR TREES WITHIN THE DRAIN R.O.W. AS NECESSARY TO CONSTRUCT DRAIN AND LEVEL SPOILS AS SHOWN IN DETAILS. COORDINATE REMOVALS WITH LANDOWNER, ENGINEER, AND OVERHEAD UTILITIES.

UNDERGROUND UTILITIES/MISS DIG

FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174, 2013, THE CONTRACTOR SHALL DIAL 1-800-482-7171 OR 811 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

THE EXISTING UTILITIES ON THESE DRAWINGS HAVE BEEN SHOWN ACCORDING TO THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD LOCATE ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION AND SHALL NOTIFY THE ENGINEER AS TO WHERE POSSIBLE CONFLICT EXISTS.

ALL CONSTRUCTION UNDER EXISTING UTILITIES, INCLUDING HOUSE SERVICES, SHALL BE COMPLETELY BACKFILLED WITH SAND, IN 12" LAYERS, AND COMPACTED TO NOT LESS THAN 95% OF THE MAXIMUM UNIT WEIGHT.

ANY UTILITIES ENCOUNTERED DURING CONSTRUCTION SHALL BE SUPPORTED, PER THE SPECIFICATIONS OF THE INDIVIDUAL UTILITY COMPANY CLAIMING OWNERSHIP OF THE UTILITY.

SOIL EROSION AND SEDIMENTATION CONTROL MEASURES

APPROPRIATE SOIL EROSION AND SEDIMENTATION MEASURES SHALL BE IN PLACE PRIOR TO EARTH-DISTURBING ACTIVITIES. PLACE TURF ESTABLISHMENT ITEMS AS SOON AS POSSIBLE ON POTENTIAL ERODABLE SLOPES AS DIRECTED BY THE ENGINEER. CRITICAL DITCH GRADES SHALL BE PROTECTED WITH EITHER SOD OR SEED/MULCH OR MULCH BLANKET AS DIRECTED BY THE ENGINEER.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT SOIL EROSION AND SEDIMENTATION CONTROL MEASURES ARE IN PLACE AND MAINTAINED UNTIL THE CONTRACT HAS BEEN COMPLETED AND ACCEPTED. MEASURES SHALL ONLY BE PAID FOR ONCE.

ALL CATCHBASINS AND SEDIMENTATION TRAP/BASIN SHALL BE CLEANED OUT UPON COMPLETION OF THE PROJECT.

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

SOIL EROSION SEDIMENT CONTROL

GROUNDWATER SEEPAGE AND STORMWATER RUNOFF IS ANTICIPATED TO BE A FACTOR DURING CONSTRUCTION. WATER CONTROL AND DEWATERING METHODS MAY BE NECESSARY. ALL WATER CONTROL AND DEWATERING REQUIRED IS THE CONTRACTOR'S RESPONSIBILITY AND COST SHALL BE INCLUDED IN THE PAY ITEM BEING INSTALLED. THE METHODS SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.

ALL DEWATERING REQUIRED FOR CONSTRUCTION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR UTILITY BEING INSTALLED.

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

CONTRACTORS SHALL FINISH GRADE, SEED, FERTILIZE, AND MULCH DAILY ON ALL DISTURBED AREAS AS DESCRIBED IN THE SPECIFICATIONS.

HAND SEED, FERTILIZE, AND MULCH DITCH BANKS AND SPOILS DAILY.

ALL DISTURBED WETLAND AREA SHALL BE SEEDED WITH NATIVE WETLAND SEED AS SPECIFIED BY ENGINEER.

PROPERTY OWNERS

PROPERTY OWNERS' NAMES AND PARCEL LINES, WHERE SHOWN, ARE FOR INFORMATION ONLY, AND THEIR ACCURACY IS NOT GUARANTEED.

PROPERTY CORNER MONUMENT VISIBILITY OBSERVED ON SITE SHALL BE PROTECTED. DAMAGED PROPERTY CORNER WILL BE RESET AT CONTRACTORS EXPENSE.

ADJUSTING MONUMENT BOXES

ALL GOVERNMENT CORNERS ON THIS PROJECT SHALL BE PRESERVED, WHETHER SHOWN OR NOT. IT MAY BE NECESSARY TO PLACE OR ADJUST MONUMENT BOXES, AS REQUIRED.

TRAFFIC

THE CONTRACTOR SHALL MAINTAIN LOCAL TRAFFIC AT ALL TIMES. SIGNAGE MUST BE IN ACCORDANCE WITH THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND SHALL BE COORDINATED WITH THE ENGINEER AND GOVERNING ROAD AGENCY. PERMITS MAY BE REQUIRED.

PERMITS

PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED BY THE APPROPRIATE AGENCIES.

CONSTRUCTION PROCEDURES SHALL CONFORM TO THE REQUIREMENTS OF THE APPROPRIATE AGENCIES.

MAILBOXES

CONTRACTOR SHALL REMOVE AND TEMPORARILY RELOCATE ALL EXISTING MAIL BOXES AS NEEDED FOR CONSTRUCTION. COSTS TO BE INCLUDED IN THE UNIT PRICE BID FOR SITE CLEARING.

CONTRACTOR COORDINATE MAIL BOX RELOCATION WITH LANDOWNERS A MINIMUM OF ONE DAY IN ADVANCE.

ALL TEMPORARILY RELOCATED MAIL BOXES, STREET AND TRAFFIC SIGNS TO BE REINSTALLED TO ORIGINAL LOCATIONS AS CONSTRUCTION ALLOWS. COSTS TO BE INCLUDED IN THE UNIT PRICE BID FOR CLEANUP AND RESTORATION.

GENERAL NOTES

ROADS, DRIVEWAYS AND SIDEWALKS

COORDINATE DRIVEWAY CLOSURES WITH LANDOWNERS A MINIMUM OF ONE DAY IN ADVANCE.

ALL JOINTS AT INTERSECTION APPROACHES AND DRIVEWAYS SHALL BE SAW-CUT WITH BUTT-JOINTS. COST TO BE INCLUDED IN UNIT PRICE BID THAT INCLUDES ROAD AND DRIVEWAY REPAIRS.

FOR OPEN CUT PAVEMENT REMOVAL CONTRACTOR SHALL SAW CUT THE EXISTING PAVEMENT FULL DEPTH PRIOR TO REMOVAL.

ALL DRIVING SURFACES ARE TO BE RESTORED TO IN KIND DEPTH AND MATERIAL UNLESS OTHERWISE SPECIFIED ON THE PLANS. COST TO BE INCLUDED IN THE BID PRICE FOR WORK PERTAINING TO EACH CROSSING.

PROTECT ALL BITUMINOUS ROADS NOT SPECIFIED TO BE REMOVED DURING CONSTRUCTION. REPAIR ANY UNAUTHORIZED DAMAGE AT CONTRACTORS EXPENSE.

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

MATCH EXISTING TYPE FOR CONCRETE CURB AND GUTTER RESTORATION.

CONTRACTOR SHALL REMOVE ALL STREET AND TRAFFIC SIGNAGE AS NECESSARY FOR CONSTRUCTION. ALL COSTS TO BE INCLUDED IN THE LUMP SUM PRICE BID FOR SITE CLEARING. REPLACE SIGNAGE AS CONSTRUCTION ALLOWS. COST TO BE INCLUDED IN THE UNIT PRICE FOR CLEANUP AND RESTORATION.

CONTRACTOR SHALL COORDINATE LOCATION OF ANY ACCESS ROADS WITH THE LANDOWNER AND THE ENGINEER. ANY ACCESS ROAD SHALL BE REPAIRED TO THE LANDOWNERS AND OWNERS APPROVAL.

ALL WORK WITHIN THE ROAD RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND GENERAL SPECIFICATIONS OF THE COUNTY ROAD COMMISSION, CITY, VILLAGE, AND MDO.

UTILITIES

ELECTRIC, GAS AND TELEPHONE UTILITIES LOCATED IN THE ROAD AND DRAIN RIGHT-OF-WAYS REQUIRING RELOCATION WILL BE RELOCATED BY OTHERS.

WHEN RELOCATING UTILITIES AS REQUIRED FOR CONSTRUCTION OF DRAIN IMPROVEMENTS A MINIMUM CLEARANCE OF 36" BELOW THE BOTTOM OF PROPOSED DRAIN CROSSING MUST BE ACHIEVED UNLESS OTHERWISE SPECIFIED.

ALL WATER VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADE. COST SHALL BE INCLUDED IN THE PAY ITEM BEING INSTALLED.

ANY UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

ALL MANHOLE RIMS IN ROADWAYS AND DRIVES SHALL BE ADJUSTED PRIOR TO FINAL PAVING TO BE FLUSH WITH FINISHED GRADE.

GRADING AROUND MANHOLES/CATCHBASINS, FLARED END SECTIONS, AND OTHER INLETS DETERMINED BY THE ENGINEER SHALL BE SMOOTH AND SHAPED TO PROVIDE POSITIVE DRAINAGE INTO THE INLETS.

ALL CORRUGATED METAL PIPE SHALL BE TYPE II ALUMINIZED UNLESS OTHERWISE NOTED.

DEMOLISH EXISTING STRUCTURE(S) AND DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS. COST TO BE INCLUDED WITH THE ITEM BEING INSTALLED AS DIRECTED BY OWNER/ENGINEER.

CONTRACTOR SHALL CONNECT ANY AND ALL FIELD TILE OUTLETS AND OTHER STORM LEADS TO PROPOSED STORM SEWER WITH PREMANUFACTURED TEES, WYES, GASKETS, SEALS, COUPLERS, BOOTS, ETC. COST TO BE INCLUDED IN UNIT BID PRICE FOR STORM SEWER INSTALLATION.

PROJECT CONSTRUCTION NOTES

- ANY SIGNAGE IN CONFLICT WITHIN WORK AREA SHALL BE REMOVED AND REPLACED. COST TO BE INCLUDED IN UNIT BID COST OF CLEAN UP AND DRAIN RESTORATION.
- EXISTING CONNECTIONS TO PROPOSED DRAINAGE STRUCTURES WILL BE PAID BY THE LIN FT FOR PILE SIZES 12" AND ABOVE IN DIAMETER. EXISTING CONNECTIONS LESS THE 12" IN DIAMETER WILL BE INCLUDED IN THE UNIT PRICE BID FOR EACH DRAINAGE STRUCTURE.

SYMBOL LEGEND

EXISTING SYMBOLS

- | | | | |
|----|--------------------------|-----|-----------------------|
| ○ | MANHOLE | △ | SPRINKLER |
| ⊗ | CATCH BASIN | ⚡ | RAILROAD SIGNAL |
| ⊠ | CURB CATCH BASIN | ⓧ | ANTENNA |
| ☼ | FIRE HYDRANT | ⓧ | SATELLITE DISH |
| ⊕ | GAS VALVE | ⓧ | AIR CONDITIONING UNIT |
| ⊕ | WATER VALVE | ⓧ | SOIL BORING |
| □ | TELEPHONE PEDESTAL | ⊕ | BENCH MARK |
| ● | POWER POLE | ⊕ | FOUND SURVEY CORNER |
| ○ | TELEPHONE POLE | ○ | SET 1/2" IRON ROD |
| ⊕ | POWER AND TELEPHONE POLE | ● | 1/4 SECTION CORNER |
| ☼ | LIGHT POLE | — — | BREAK IN LINE |
| ←○ | GUY ANCHOR AND POLE | — — | EXISTING SIGN-1 POST |
| ⓧ | MAIL BOX | — — | EXISTING SIGN-2 POST |
| ⓧ | WATER METER | ⓧ | STUMP |
| ⊕ | TELEPHONE MANHOLE | ⓧ | WETLANDS |
| ⊕ | ELECTRIC MANHOLE | ⓧ | PINE |
| ⊕ | MONITORING WELL | ⓧ | BUSH |
| ⓧ | HAND HOLE | ⓧ | TREE |
| ⓧ | TRANSFORMER | | |
| ■ | ELECTRICAL PEDESTAL | | |
| ⓧ | BARRIER FREE PARKING | | |

WATERSHED

LINE TYPE LEGEND

- | | |
|-------|-------------------------------------|
| ----- | EXISTING PROJECT DRAIN |
| ----- | EXISTING DRAINS (OTHER) |
| ----- | EXISTING DRAINAGE DISTRICT LINE |
| ----- | PROPOSED DRAINAGE DISTRICT LINE |
| ----- | PROPOSED SUB-DRAINAGE DISTRICT LINE |

LINE TYPE LEGEND

- | | |
|-------|--------------------------------------|
| ----- | EXISTING ROAD CENTERLINE |
| ----- | EXISTING WATER MAIN |
| ----- | EXISTING SANITARY SEWER OR FORCEMAIN |
| ----- | EXISTING STORM SEWER |
| ----- | EXISTING TELEPHONE |
| ----- | EXISTING GAS MAIN |
| ----- | EXISTING ELECTRIC |
| ----- | EXISTING FIBER OPTIC |
| ----- | EXISTING CABLE/TV |
| ----- | PROPOSED UTILITY |
| ----- | EXISTING CURB & GUTTER |
| ----- | PROPOSED CURB & GUTTER |
| ----- | FENCE LINE |
| ----- | OVERHEAD UTILITY |
| ----- | RAILROAD TRACKS |
| ----- | STATION LINE |
| ----- | LIMITS OF RIGHT OF WAY |
| ----- | EASEMENT |
| ----- | SILT FENCE |
| ----- | REVERSE PAN CURB & GUTTER |
| ----- | TREE LINE |
| ----- | |
| ----- | EXISTING CONTOURS |
| ----- | PROPOSED CONTOURS |

ABBREVIATIONS

BC = BACK OF CURB
BM = BENCH MARK
CB = CATCH BASIN
C/C = CENTER TO CENTER
CJ = CONSTRUCTION JOINT
CL = CENTERLINE
CMP = CORRUGATED METAL PIPE
CONC = CONCRETE
CORR = CORRUGATED
CSP = CORRUGATED STEEL PIPE
DI = DUCTILE IRON PIPE
EF = EACH FACE
ELEC = ELECTRIC
EL OR ELEV = ELEVATION
EOM = EDGE OF METAL
EOP = EDGE OF PAVEMENT
EQ/SP = EQUALLY SPACED
ESMT = EASEMENT
EW = EACH WAY
EX OR EXIST = EXISTING
FF = FINISH FLOOR
FG = FINISH GROUND
FL = FLOW LINE
FS = FINISH SURFACE
FT = FEET
GALV = GALVANIZED
G = GUTTER
GA = GAUGE
HDG = HOT DIP GALVANIZED
HDPE = HIGH DENSITY POLYETHYLENE
HMA = HOT MIX ASPHALT
HOR = HORIZONTAL
HP = HIGH POINT
HYD = HYDRANT
INV = INVERT
LP = LOW POINT
OC = ON CENTER
OH = OVERHEAD
MH = MANHOLE
MIN = MINIMUM
MON = MONUMENT
NFL = NOT FIELD LOCATED
NTS = NOT TO SCALE
PROP = PROPOSED
PVC = POLYVINYL CHLORIDE
RCP = REINFORCED CONCRETE PIPE
ROW = RIGHT OF WAY
SAN = SANITARY
SB = SOIL BORING
SS = STAINLESS STEEL
STA = STATION
STM = STORM
SWR = SEWER
T/B = TOP AND BOTTOM
TC = TOP OF CURB
TOB = TOP OF BANK
TOS = TOE OF SLOPE
TELE = TELEPHONE
TRW = TOP OF RETAINING WALL
TW = TOP OF WALK
UNO = UNLESS NOTED OTHERWISE
WM = WATER MAIN
WS = WATER SURFACE ELEVATION

PROPOSED SYMBOLS

- | | |
|---|-----------------------|
| ○ | MANHOLE |
| ⊗ | CATCHBASIN |
| ⊕ | FIRE HYDRANT |
| ⊕ | WATER VALVE |
| ⓧ | BARRIER FREE PARKING |
| ⓧ | LIGHT POLES |
| ⇒ | DRAINAGE FLOW |
| ⓧ | SPOT ELEVATION LABELS |
| | G = GUTTER |
| | TW = WALK |
| | TC = TOP OF CURB |
| | FS = FINISH SURFACE |

MICHIGAN ASSOCIATION OF COUNTY DRAIN COMMISSIONERS SOIL EROSION AND SEDIMENTATION CONTROL KEYING SYSTEM

KEY	SESC MEASURE	SYMBOL	WHERE USED
1	SEEDING		When bare soil is exposed, temporarily or permanently, to erosive force from wind and or water on flat areas, mid slopes, grassed waterways and spillways, diversion ditches and dikes, barrow and stockpile areas, and spoil piles.
2	MULCH		On flat areas, slopes, grassed waterways and spillways, diversion ditches and dikes, barrow and stockpile areas, and spoil piles when areas are subject to raindrop impact, and erosive force from wind or water.
15	RIPRAP		Riprap and toe of slope protection is used in areas where velocities are causing drain bank erosion and are too high to stabilize using other methods
16	RIPRAP TOE OF SLOPE		Along drain banks, shorelines, or where concentrated flows occur. Slows velocity, reduces erosion and sediment load.
18	REINFORCED VEGETATED SPILLWAY		When slope failure at eroded outfalls are observed or are likely to occur from concentrated runoff on very shallow slopes (where flow velocities will be low enough not to undermine the reinforced grass root structure).
19	ARMORED SPILLWAY		When concentrated flow must be conveyed down a drain bank or slope or discharge into another drain. Where slope failure or channel scour is observed or is likely to occur, or when runoff must be redirected around work in the drain.
23	OUTFALL STABILIZATION		In the stream or drain bank usually above the ordinary high water marker where an enclosed drain or tile discharges to an open drain.
26	DUST CONTROL		As a temporary measure on exposed and unstabilized areas that must be protected from wind or water erosion.
A	DEBRIS REMOVAL		
B	SEDIMENT REMOVAL		
D	DRAIN CROSSING MAINTENANCE		

DETAILED DRAWINGS AND SPECIFICATIONS ARE LOCATED IN THE MICHIGAN ASSOCIATION OF COUNTY DRAIN COMMISSIONERS SOIL EROSION AND SEDIMENTATION CONTROL AUTHORIZED PUBLIC AGENCY PROCEDURES MANUAL.

SYMBOLGY FOR INSERTION INTO CONSTRUCTION DRAWINGS:

⊕ = PERMANENT MEASURE

⊕ = TEMPORARY MEASURE

CONTACTS

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WATER

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SAGINAW COUNTY
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ELECTRIC

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GAS

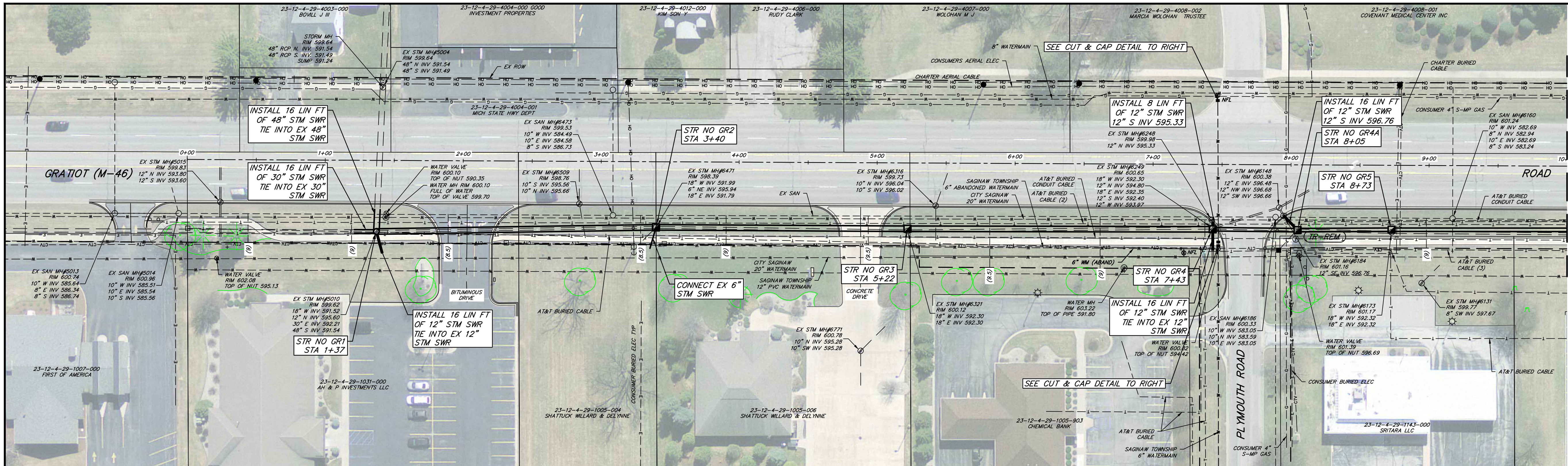
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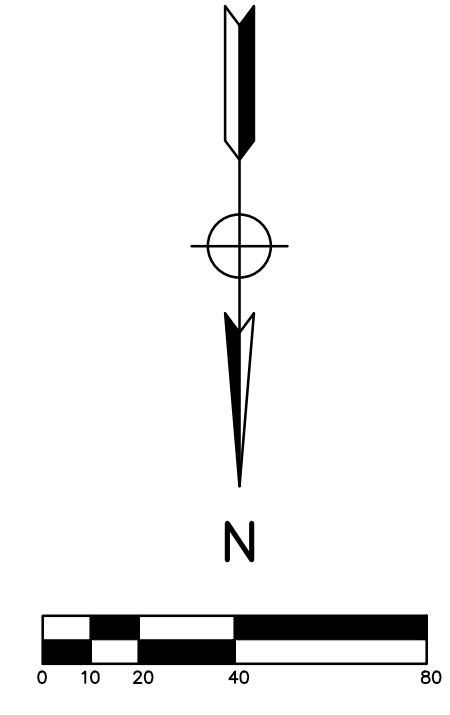
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(989) 233-9404
MARK.KELLY@CHARTER.COM

CABLE

PROJECT DATUM			
HORIZONTAL:		STATE PLANE SOUTH M '83 2113	
VERTICAL:		NORTH AMERICAN VERTICAL DATUM '88	
BY	MARK	REVISIONS	DATE
THE WORK REPRESENTED BY THIS DRAWING WAS DESIGNED BY THE ENGINEER FOR THIS SPECIFIC APPLICATION AND SPECIFIC LOCATION DESCRIBED HEREIN IN ACCORDANCE WITH THE CONDITIONS PREVALENT AT THE TIME THE DESIGN WAS DONE. THE ENGINEER DOES NOT GUARANTEE AND WILL NOT BE LIABLE FOR ANY OTHER LOCATION, CONDITION, DESIGN OR PURPOSE.			
SEIDEL DRAIN SAGINAW COUNTY, MICHIGAN			
CONTACTS, GENERAL NOTES, LINE TYPES, LEGEND AND SESC MEASURE LEGEND			
		SAGINAW OFFICE 230 S. Washington Ave. Saginaw, MI 48607 Tel. 989-754-4717 Fax. 989-754-4440 www.SpicerGroup.com	
DE. BY: POC/DSV CH. BY: DSV DR. BY: CBS APP. BY: RBH		PROJECT NO. 122584SG2020	
STDS.		SHEET 02 OF 09	
DATE MARCH, 2021 SCALE NOT TO SCALE		FILE NO. DR-4021-02	
			DR 02



MATCH LINE STA 10+00

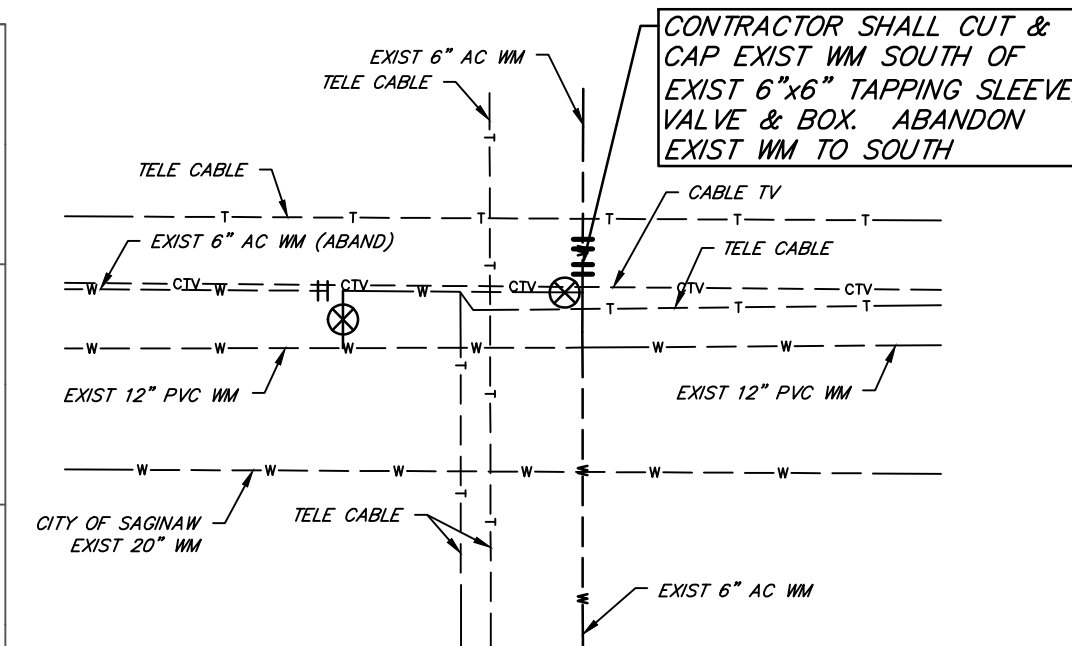


SECTION 29, T12N-R04E,
SAGINAW CHARTER TOWNSHIP,
SAGINAW COUNTY, MICHIGAN

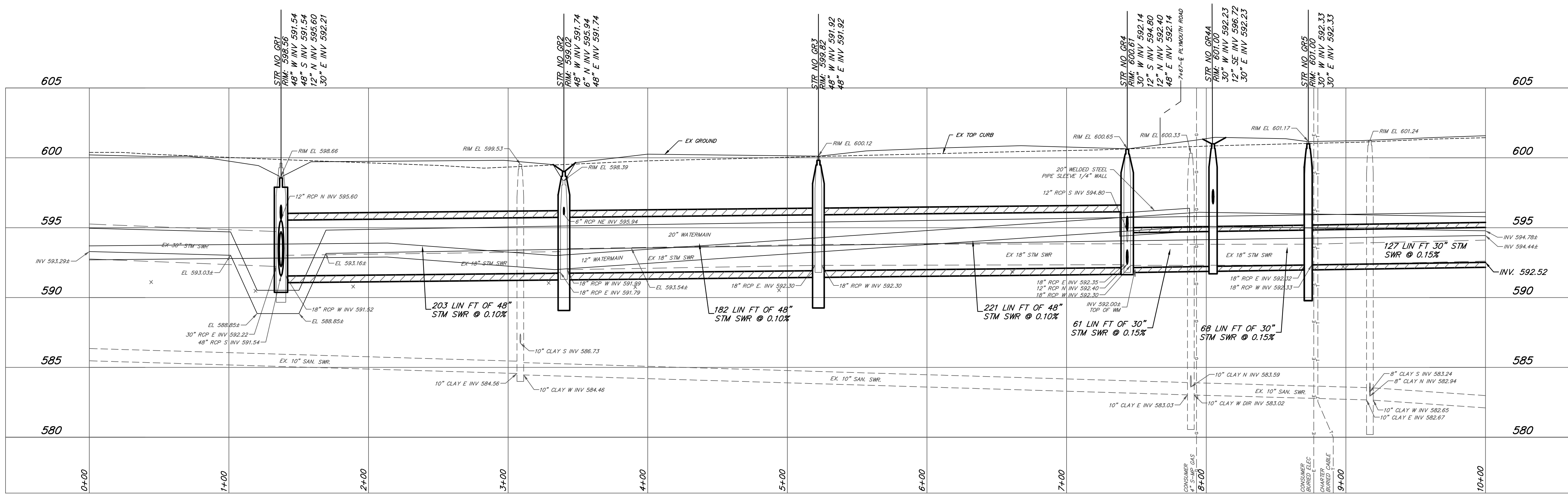
CONTRACTOR SHALL REMOVE THE EXISTING 8" VALVE, AND INSTALL A BLIND FLANGE ON THE EXISTING TAPPING SLEEVE.

CONTRACTOR SHALL CUT & CAP ABANDONED 6" AC WATER MAIN

CUT & CAP DETAIL SOUTH SIDE OF GRATIOT AT PLYMOUTH DRIVE
NOT TO SCALE



CUT & CAP DETAIL NORTH SIDE OF GRATIOT AT PLYMOUTH ROAD
NOT TO SCALE



PROPOSED STORM SEWER STRUCTURE TABLE				
STRUCTURE NO.	LOCATION	OFFSET	SIZE/TYPE	E.I. FRAME W/ TYPE COVER GRATE
GR1	1+37	51.6' RT	9' DIA MH	1045 W/N OVAL GREAT
GR2	3+40	47.6' RT	7' DIA MH/CB	1045 W/N OVAL GRATE
GR3	5+22	47.7' RT	7' DIA MH/CB	1045 W/N OVAL GRATE
GR4	7+43	47.0' RT	8' DIA MH/CB	1045 W/A SOLID COVER
GR4A	8+05	47.3' RT	5' DIA MH/CB	1045 W/A SOLID COVER
GR5	8+73	46.7' RT	5' DIA MH/CB	1045 W/N OVAL GRATE

QUANTITIES THIS SHEET			
ITEM	UNIT	QTY.	
5' DIA MH/CB	EACH	2	
7' DIA MH/CB	EACH	2	
8' DIA MH	EACH	1	
9' DIA MH	EACH	1	
12" STORM SEWER	LIN FT	56	
30" STORM SEWER	LIN FT	272	
48" STORM SEWER	LIN FT	622	

EROSION CONTROL TABLE		
KEY*	DESCRIPTION	LOCATION
1 P	SEEDING	ALL GRASS AREAS DISTURBED DURING CONSTRUCTION
2 T	MULCH	ALL GRASS AREAS DISTURBED DURING CONSTRUCTION
2B T	DUST CONTROL	ALL DISTURBED AREAS
41 P	CATCH BASIN	AS SHOWN
60 T	STORM DRAIN INLET PROTECTION	ALL CATCH BASINS AND DRAIN BASINS AFFECTED BY PROJECT, BOTH EXISTING AND PROPOSED

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

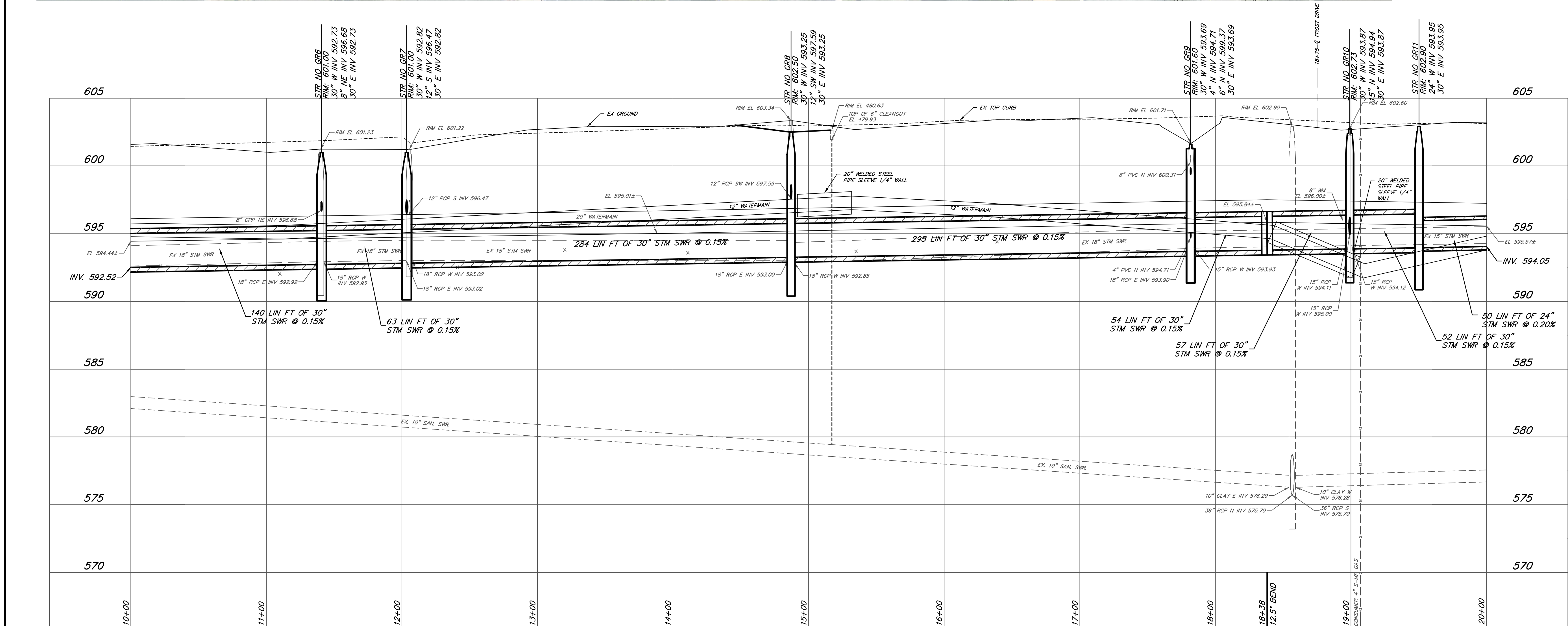
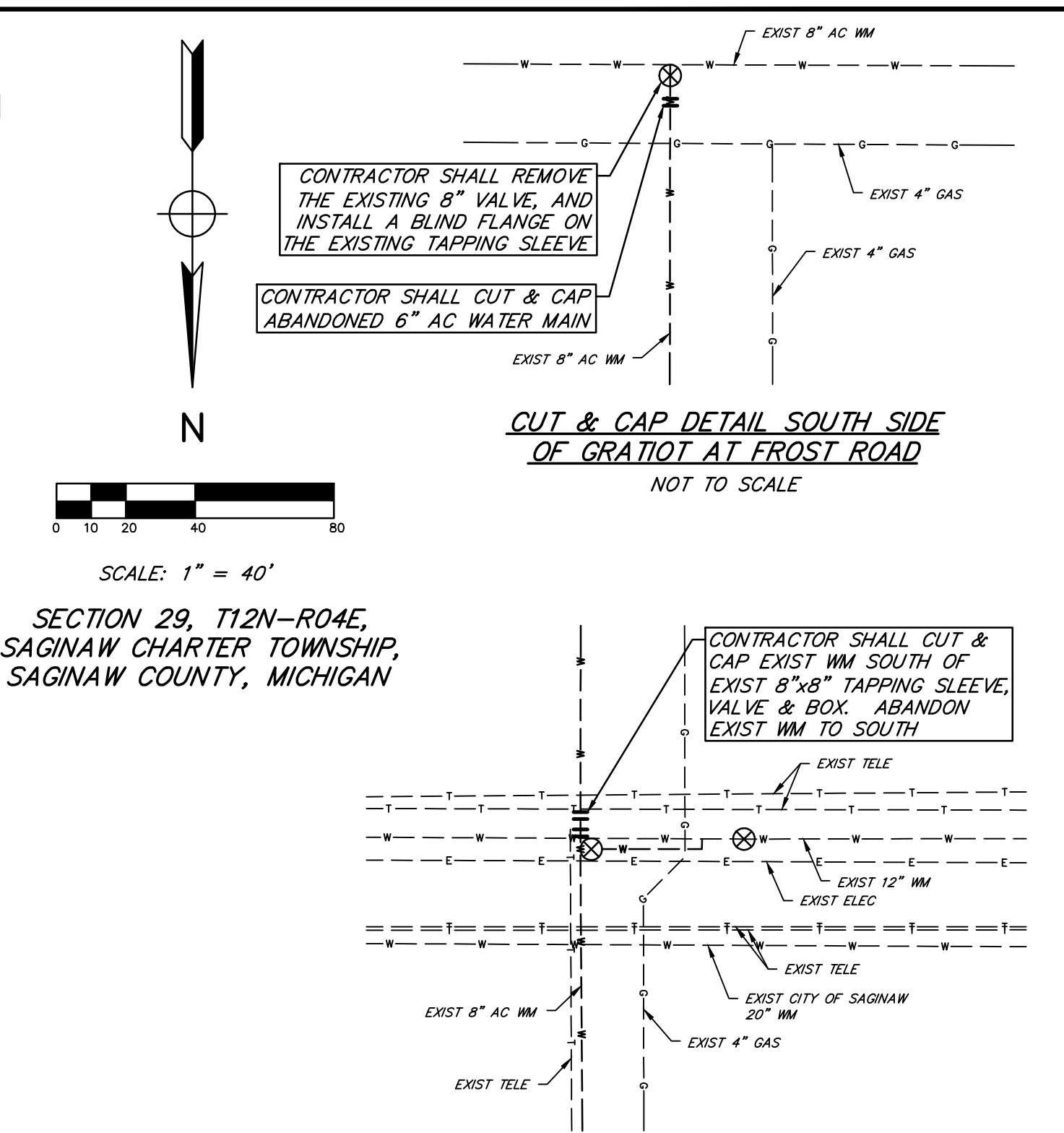
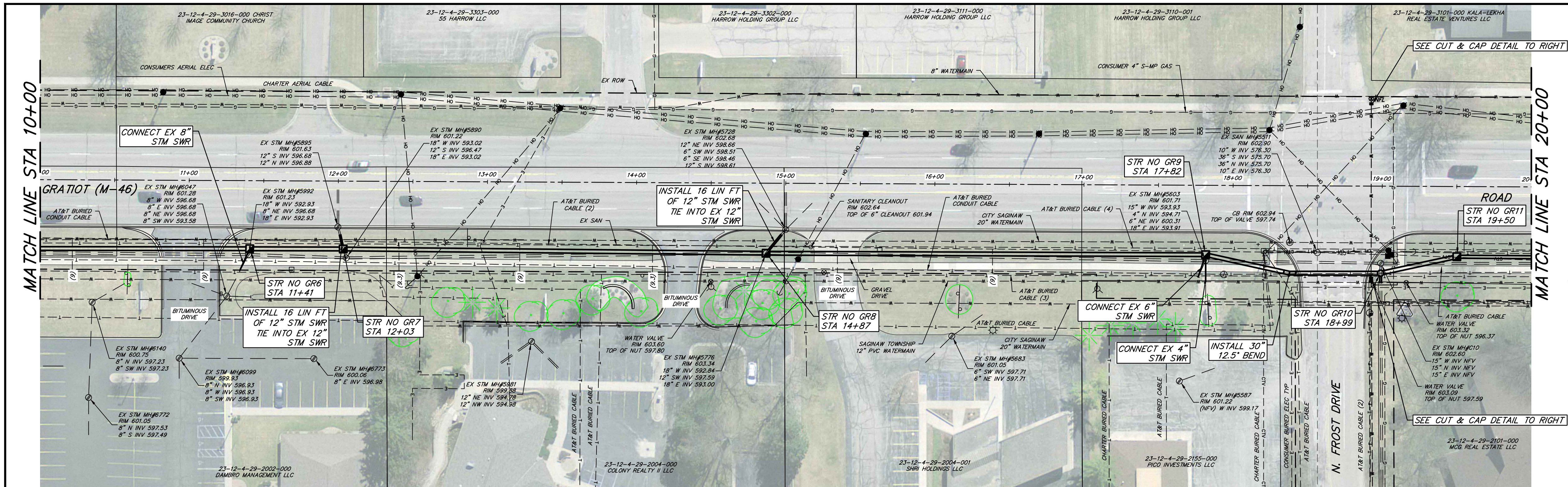
- LEGEND**
- (R) - REMOVE EXISTING STORM SEWER, AS PAY ITEM
 - PROPOSED CUT
 - PROPOSED FILL
 - PROPOSED 4' DIAMETER CONCRETE MANHOLE COLLAR
 - SUP-P - SUPPORT POLE
 - REL-P B/O - RELOCATE POLE (BY OTHERS)
 - REL-GA B/O - RELOCATE GUY ANCHOR (BY OTHERS)
 - TR-REM - TREE REMOVAL
 - R/R-HYD - RELOCATE/RESET HYDRANT
 - x - SANITARY LEADS EL ±

BENCHMARKS

BM 213 - SET GEAR SPIKE IN NORTH FACE OF POWER POLE ACROSS FROM PNC BANK AT JOHN BOVILL ATTORNEY BUILDING
EL 601.30

BM 212 - CHISELED 'X' ON TOP FLANGE BOLT OF HYDRANT AT NORTHWEST QUADRANT OF PLYMOUTH AND GRATIOT.
EL 603.44

BY	MARK	REVISIONS	DATE
THE WORK REPRESENTED BY THIS DRAWING WAS DESIGNED BY THE ENGINEER FOR THIS SPECIFIC APPLICATION AND SPECIFIC LOCATION DESCRIBED HEREIN IN ACCORDANCE WITH THE CONDITIONS PREVALENT AT THE TIME THE DESIGN WAS DONE. THE ENGINEER DOES NOT GUARANTEE AND WILL NOT BE LIABLE FOR ANY OTHER LOCATION, CONDITION, DESIGN OR PURPOSE.			
SEIDEL DRAIN SAGINAW COUNTY, MICHIGAN			
PLAN AND PROFILE STA 0+00 TO STA 10+00			
SAGINAW OFFICE 230 S. Washington Ave. Saginaw, MI 48607 Tel. 989-754-4717 Fax. 989-754-4440 www.SpicerGroup.com		PROJECT NO. 122584SG2020	
DE. BY: POC/DSV CH. BY: DSV DR. BY: CBS APP. BY: RBH		SHEET 04 OF 09	
STDS. DATE: MARCH, 2021 SCALE: H: 1"=40' V: 1"=4'		FILE NO. DR-4021-04	
		DR 04	



CUT & CAP DETAIL NORTH SIDE OF GRATIOT AT FROST ROAD
NOT TO SCALE

EROSION CONTROL TABLE		
KEY*	DESCRIPTION	LOCATION
1 P	SEEDING	ALL GRASS AREAS DISTURBED DURING CONSTRUCTION
2 T	MULCH	ALL GRASS AREAS DISTURBED DURING CONSTRUCTION
26 T	DUST CONTROL	ALL DISTURBED AREAS
41 P	CATCH BASIN	AS SHOWN
60 T	STORM DRAIN INLET PROTECTION	ALL CATCH BASINS AND DRAIN BASINS AFFECTED BY PROJECT, BOTH EXISTING AND PROPOSED

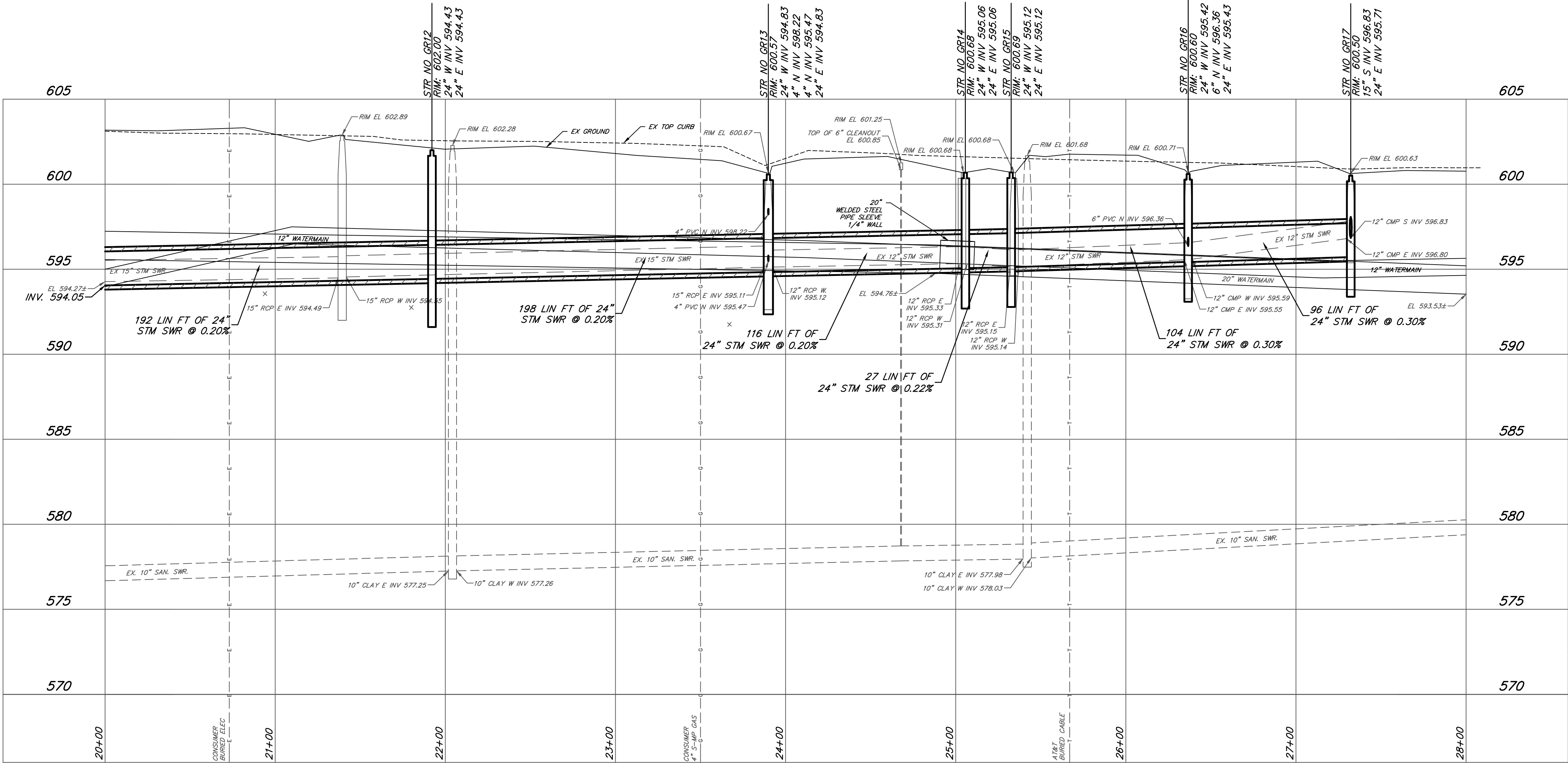
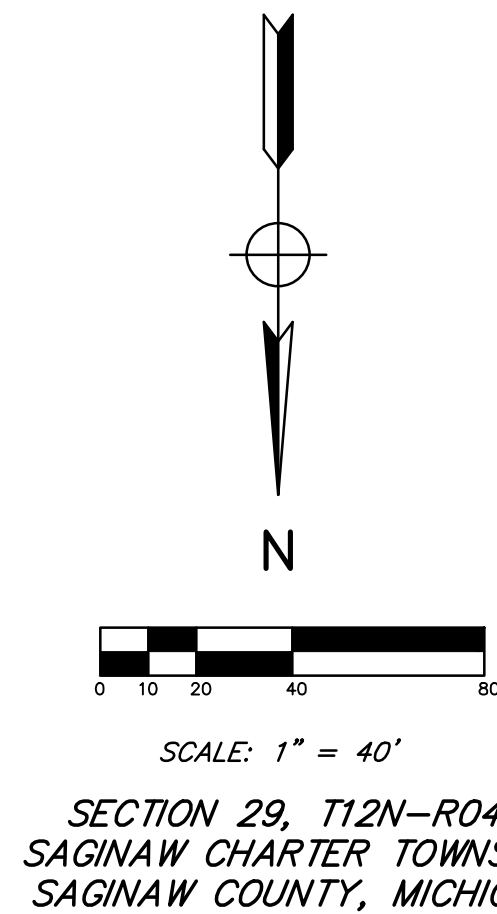
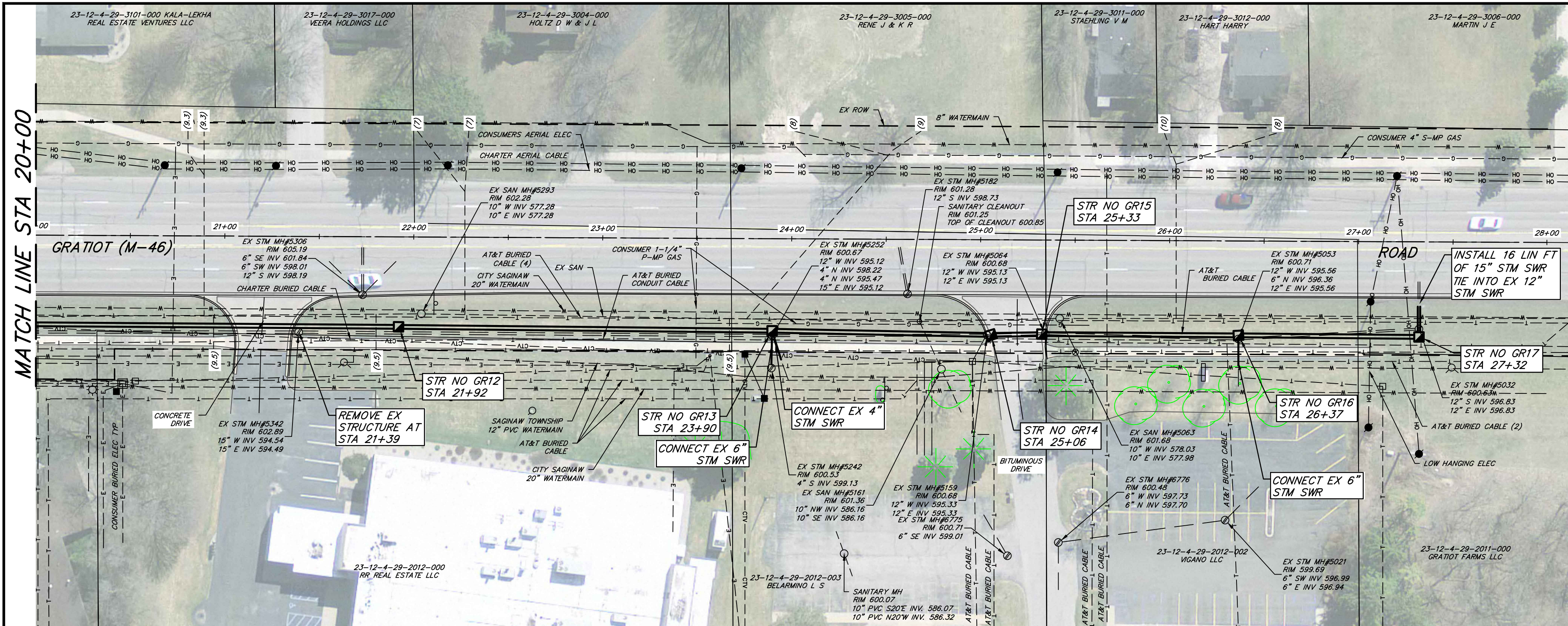
NOTE: COORDINATE INSTALLATION OF EROSION CONTROL STRUCTURES WITH ENGINEER PRIOR TO CONSTRUCTION. LOCATIONS, QUANTITIES, OR TYPES MAY VARY BASED ON FIELD DECISIONS.

PROPOSED STORM SEWER STRUCTURE TABLE				
STRUCTURE NO.	LOCATION	OFFSET	SIZE/TYPE	E.J. FRAME W/ TYPE COVER GRATE
GR6	11+41	45.7' RT	6' DIA MH/CB	1045 W/N OVAL GRATE
GR7	12+03	45.5' RT	6' DIA MH/CB	1045 W/N OVAL GRATE
GR8	14+87	47.0' RT	5' DIA MH/CB	1045 W/N OVAL GRATE
GR9	17+82	46.5' RT	6' DIA MH/CB	1045 W/N OVAL GRATE
GR10	18+99	58.3' RT	5' DIA. M.H.	1045 W/A SOLID COVER
GR11	19+50	47.1' RT	5' DIA MH/CB	1045 W/N OVAL GRATE

QUANTITIES THIS SHEET		
ITEM	UNIT	QTY.
5' DIA MH/CB	EACH	3
6' DIA MH/CB	EACH	3
5' DIA MH	EACH	1
30\" DIA 12.5\" BEND	EACH	1
12\" STORM SEWER	LIN FT	32
24\" STORM SEWER	LIN FT	50
30\" STORM SEWER	LIN FT	953

- LEGEND
- (R) - REMOVE EXISTING STORM SEWER, AS PAY ITEM
 - PROPOSED CUT
 - PROPOSED FILL
 - PROPOSED 4' DIAMETER CONCRETE MANHOLE COLLAR
 - SUP-P - SUPPORT POLE
 - REL-P B/D - RELOCATE POLE (BY OTHERS)
 - REL-GA B/D - RELOCATE GUY ANCHOR (BY OTHERS)
 - TR-REM - TREE REMOVAL
 - R/R-HYD - RELOCATE/RESET HYDRANT

BY	MARK	REVISIONS	DATE
THE WORK REPRESENTED BY THIS DRAWING WAS DESIGNED BY THE ENGINEER FOR THIS SPECIFIC APPLICATION AND SPECIFIC LOCATION DESCRIBED HEREIN IN ACCORDANCE WITH THE CONDITIONS PREVALENT AT THE TIME THE DESIGN WAS DONE. THE ENGINEER DOES NOT GUARANTEE AND WILL NOT BE LIABLE FOR ANY OTHER LOCATION, CONDITION, DESIGN OR PURPOSE.			
SEIDEL DRAIN SAGINAW COUNTY, MICHIGAN			
PLAN AND PROFILE STA 10+00 TO STA 20+00			
SAGINAW OFFICE 230 S. Washington Ave. Saginaw, MI 48607 Tel. 989-754-4717 Fax. 989-754-4440 www.SpicerGroup.com		PROJECT NO. 122584SG2020	
DE. BY: POC/DSV CH. BY: DSV DR. BY: CBS APP. BY: RBH		SHEET 05 OF 09	
STDS. DATE: MARCH, 2021 SCALE: H: 1\"=40' V: 1\"=4'		DR 05	



EROSION CONTROL TABLE		
KEY*	DESCRIPTION	LOCATION
$\frac{1}{P}$	SEEDING	ALL GRASS AREAS DISTURBED DURING CONSTRUCTION
$\frac{2}{T}$	MULCH	ALL GRASS AREAS DISTURBED DURING CONSTRUCTION
$\frac{26}{T}$	DUST CONTROL	ALL DISTURBED AREAS
$\frac{41}{P}$	CATCH BASIN	AS SHOWN
$\frac{60}{T}$	STORM DRAIN INLET PROTECTION	ALL CATCH BASINS AND DRAIN BASINS AFFECTED BY PROJECT, BOTH EXISTING AND PROPOSED

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

- LEGEND**
- $\textcircled{R}$ - REMOVE EXISTING STORM SEWER, AS PAY ITEM
 - $\textcircled{X}$ - PROPOSED CUT
 - $\textcircled{F}$ - PROPOSED FILL
 - $\textcircled{4"}$ - PROPOSED 4" DIAMETER CONCRETE MANHOLE COLLAR
 - $\textcircled{SUP-P}$ - SUPPORT POLE
 - $\textcircled{REL-P B/O}$ - RELOCATE POLE (BY OTHERS)
 - $\textcircled{REL-GA B/O}$ - RELOCATE GUY ANCHOR (BY OTHERS)
 - $\textcircled{TR-REM}$ - TREE REMOVAL
 - $\textcircled{R/R-HYD}$ - RELOCATE/RESET HYDRANT

BENCHMARKS

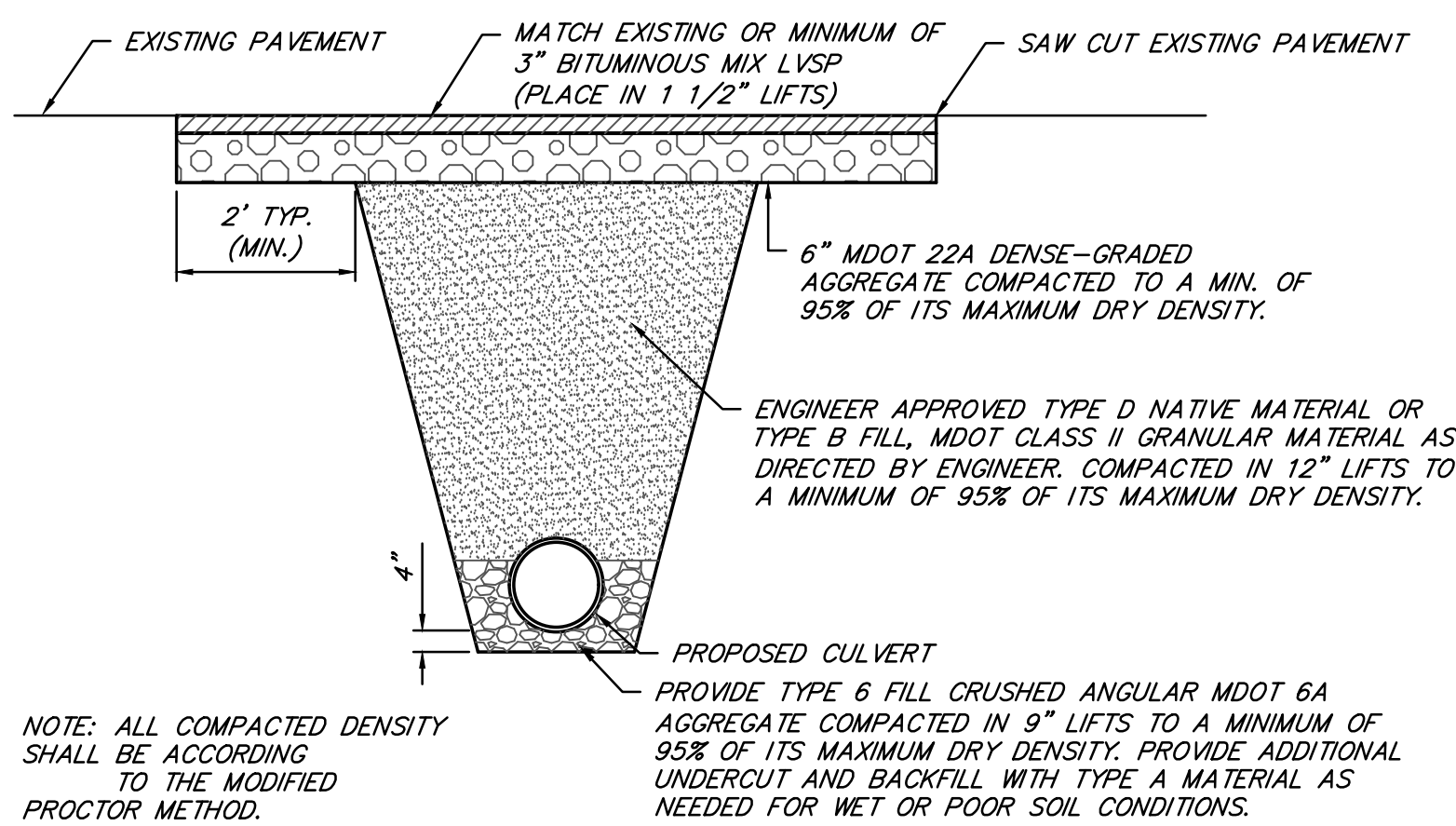
BM 210 - SET GEAR SPIKE IN NORTH FACE OF POWER POLE ON SOUTH SIDE OF GRATIOT ACROSS FROM WILLOW DAY SPA.

EL 601.98

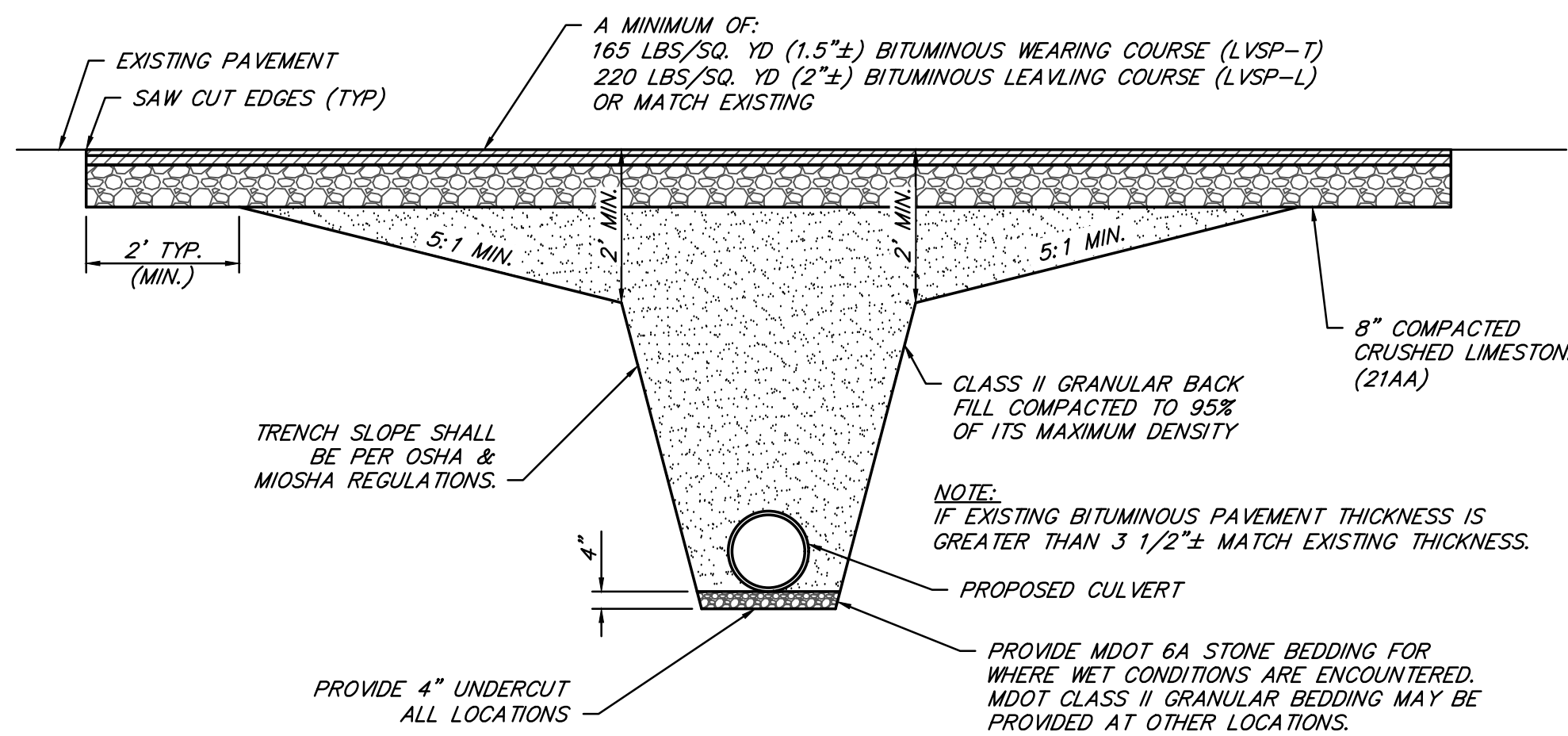
PROPOSED STORM SEWER STRUCTURE TABLE				
STRUCTURE NO.	LOCATION	OFFSET	SIZE/TYPE	E.I. FRAME W/ TYPE COVER GRATE
GR12	21+92	47.6' RT	4' DIA MH/CB	1045 W/A SOLID COVER
GR13	23+90	48.7' RT	5' DIA MH/CB	1045 W/N OVAL GRATE
GR14	25+06	50.4' RT	4' DIA MH/CB	7045 W/M1 GRATE & T1 BACK
GR15	25+33	49.8' RT	4' DIA MH/CB	7045 W/M1 GRATE & T1 BACK
GR16	26+37	50.0' RT	4' DIA MH/CB	1045 W/N OVAL GRATE
GR17	27+32	50.3' RT	4' DIA MH/CB	1045 W/N OVAL GRATE

QUANTITIES THIS SHEET		
ITEM	UNIT	QTY.
4' DIA. MH/CB	EACH	5
5' DIA. MH/CB	EACH	1
15" STORM SEWER	LIN FT	16
24" STORM SEWER	LIN FT	733

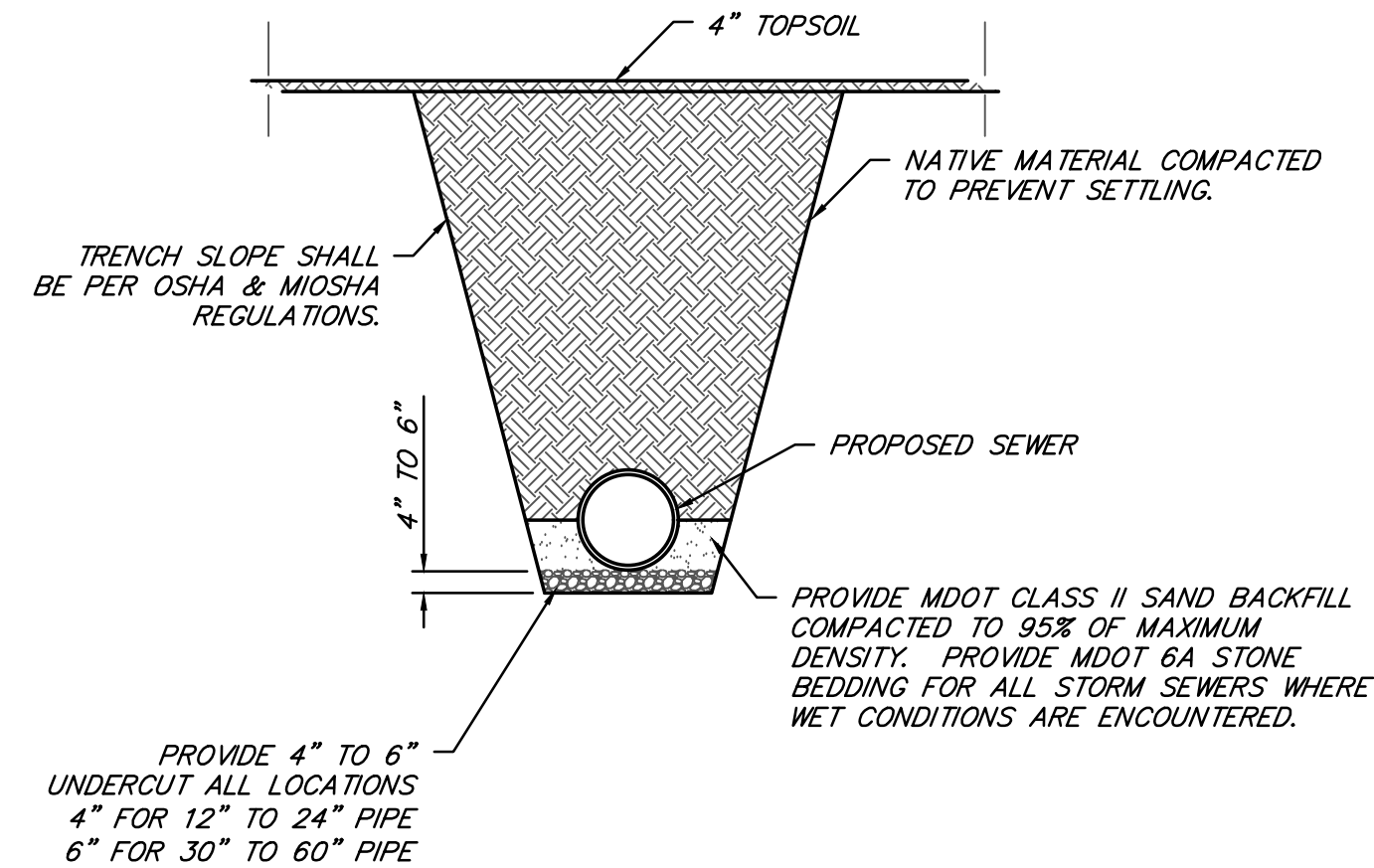
BY	MARK	REVISIONS	DATE
THE WORK REPRESENTED BY THIS DRAWING WAS DESIGNED BY THE ENGINEER FOR THIS SPECIFIC APPLICATION AND SPECIFIC LOCATION DESCRIBED HEREON IN ACCORDANCE WITH THE CONDITIONS PREVALENT AT THE TIME THE DESIGN WAS DONE. THE ENGINEER DOES NOT GUARANTEE AND WILL NOT BE LIABLE FOR ANY OTHER LOCATION, CONDITION, DESIGN OR PURPOSE.			
SEIDEL DRAIN SAGINAW COUNTY, MICHIGAN			
PLAN AND PROFILE STA 20+00 TO STA 28+00			
SAGINAW OFFICE 230 S. Washington Ave. Saginaw, MI 48607 Tel. 989-754-4417 Fax. 989-754-4440 www.SpicerGroup.com		PROJECT NO. 122584SG2020	
DE. BY: POC/DSV CH. BY: DSV DR. BY: CBS APP. BY: RBH		SHEET 06 OF 09	
STDS. DATE: MARCH, 2021 SCALE: H: 1"=40' V: 1"=4'		DR 06	



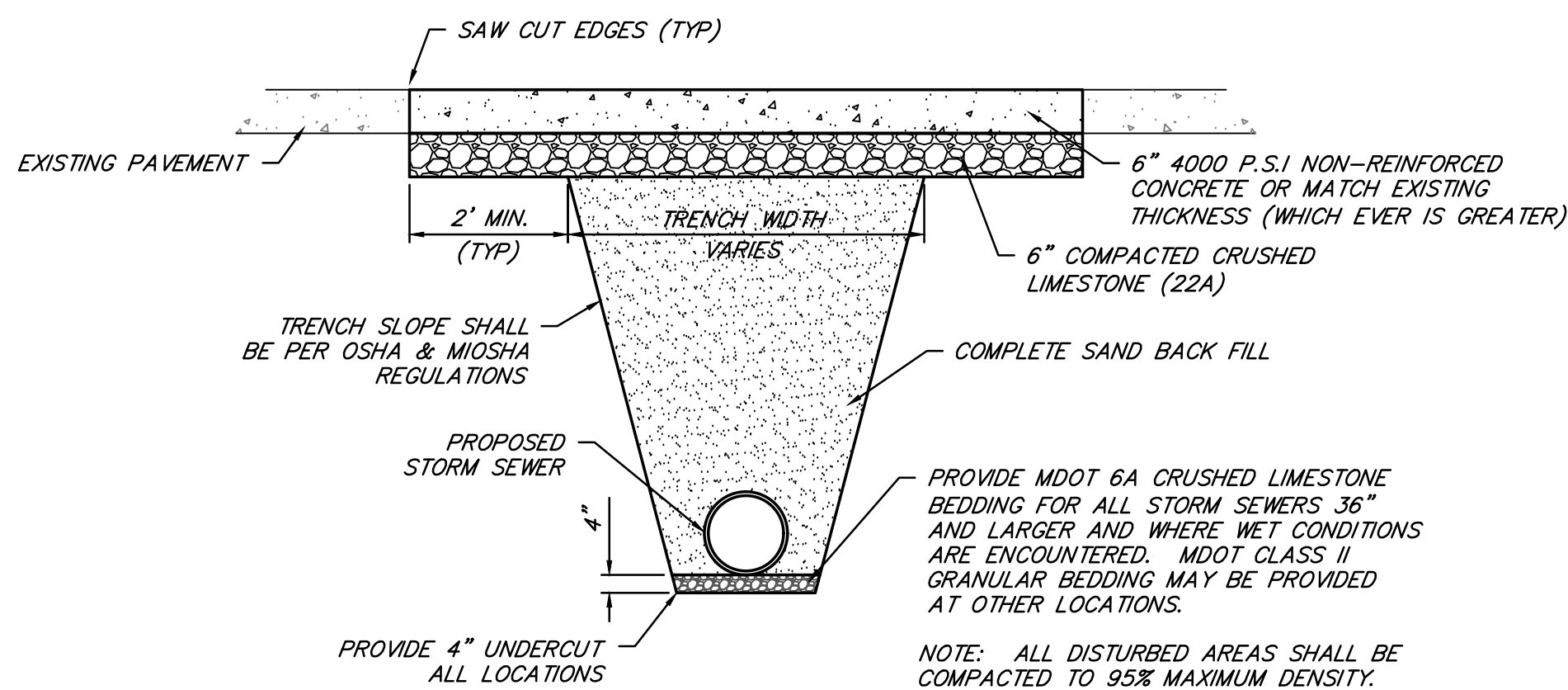
TYPICAL BITUMINOUS DRIVE CROSSING DETAIL
NOT TO SCALE



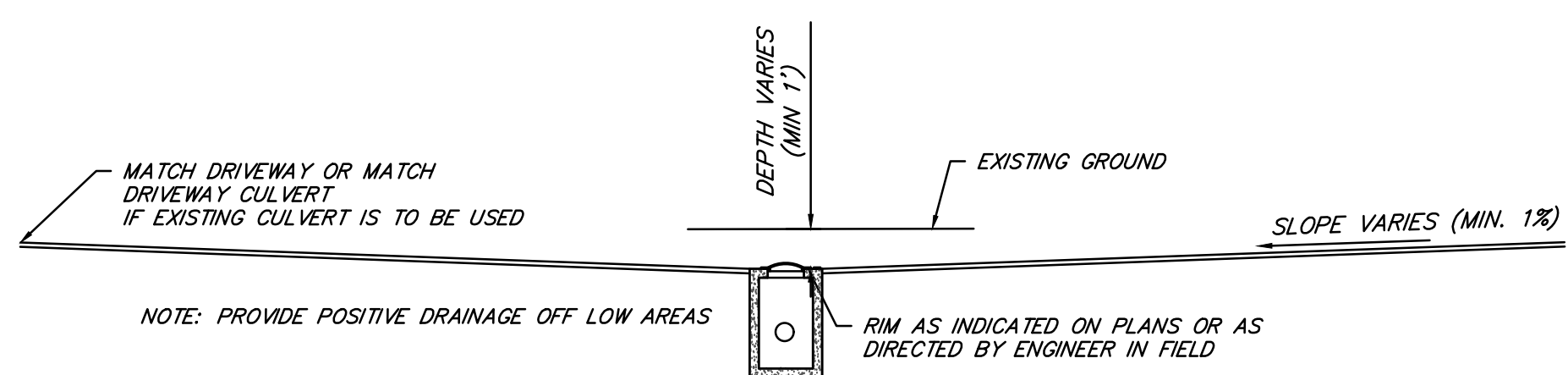
SCRC BITUMINOUS PAVEMENT RESTORATION
NOT TO SCALE



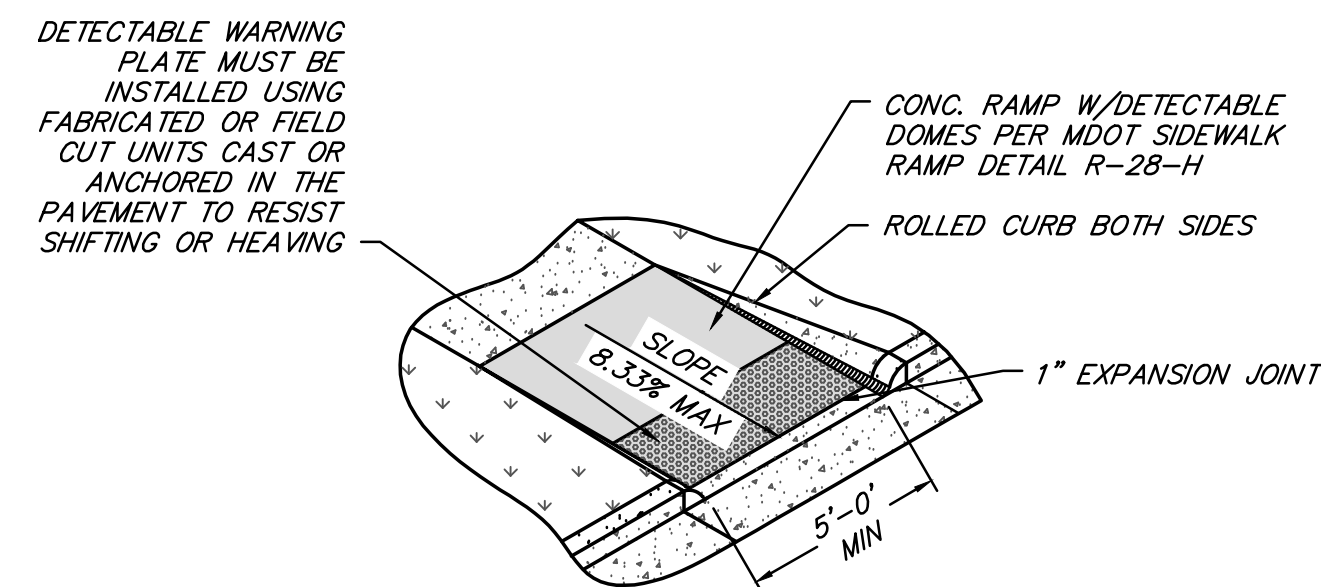
TYPICAL R.C.P. STORM SEWER TRENCH DETAIL OUTSIDE OF INFLUENCE OF ROAD OR IMPROVED SURFACE
NOT TO SCALE



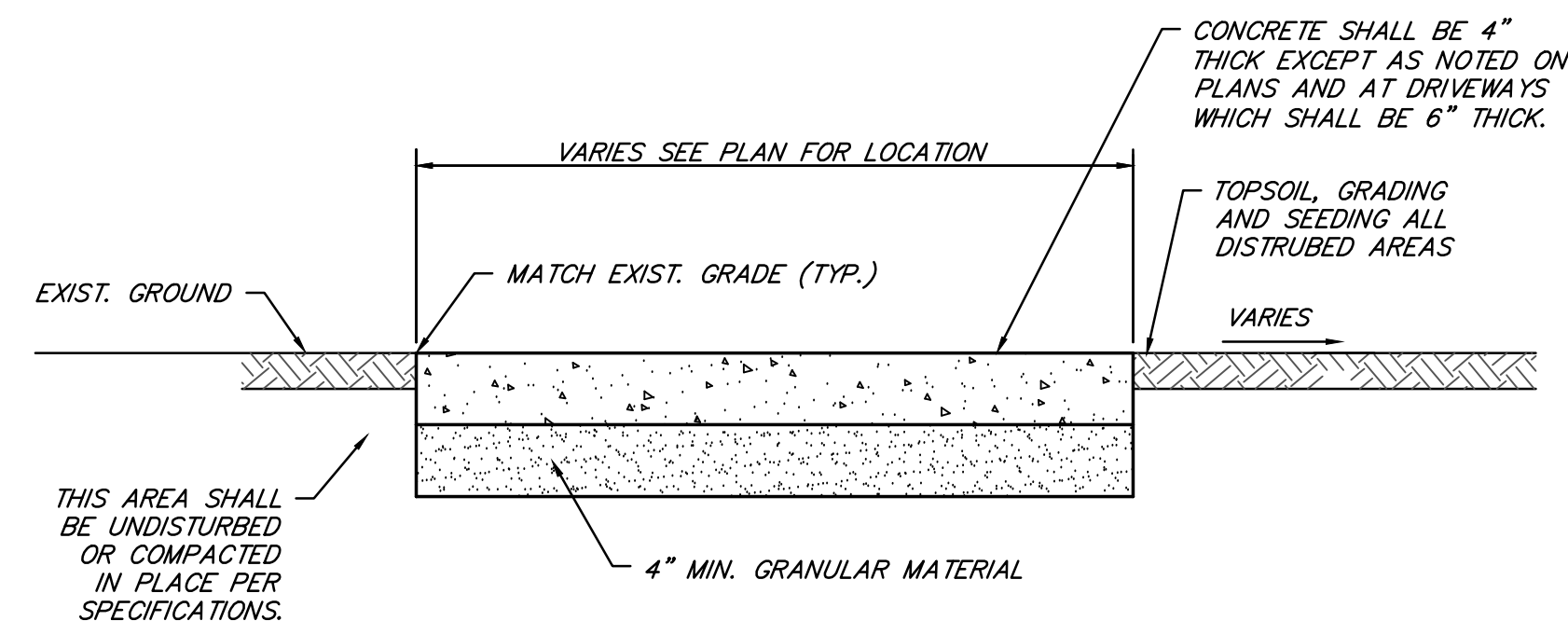
TYPICAL CONCRETE DRIVEWAY REPAIR DETAIL
NOT TO SCALE



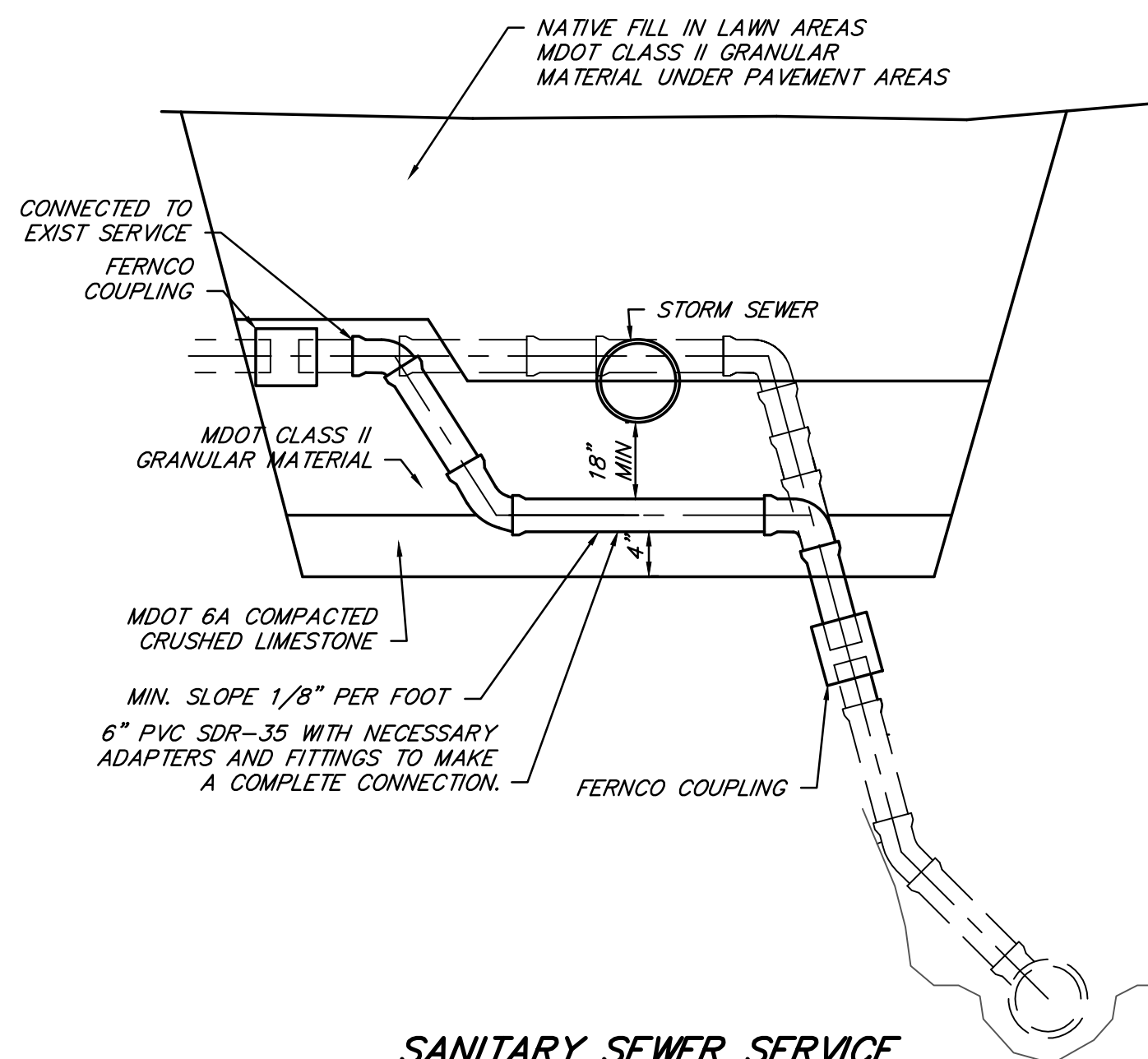
CATCH BASIN GRADING DETAIL
NOT TO SCALE



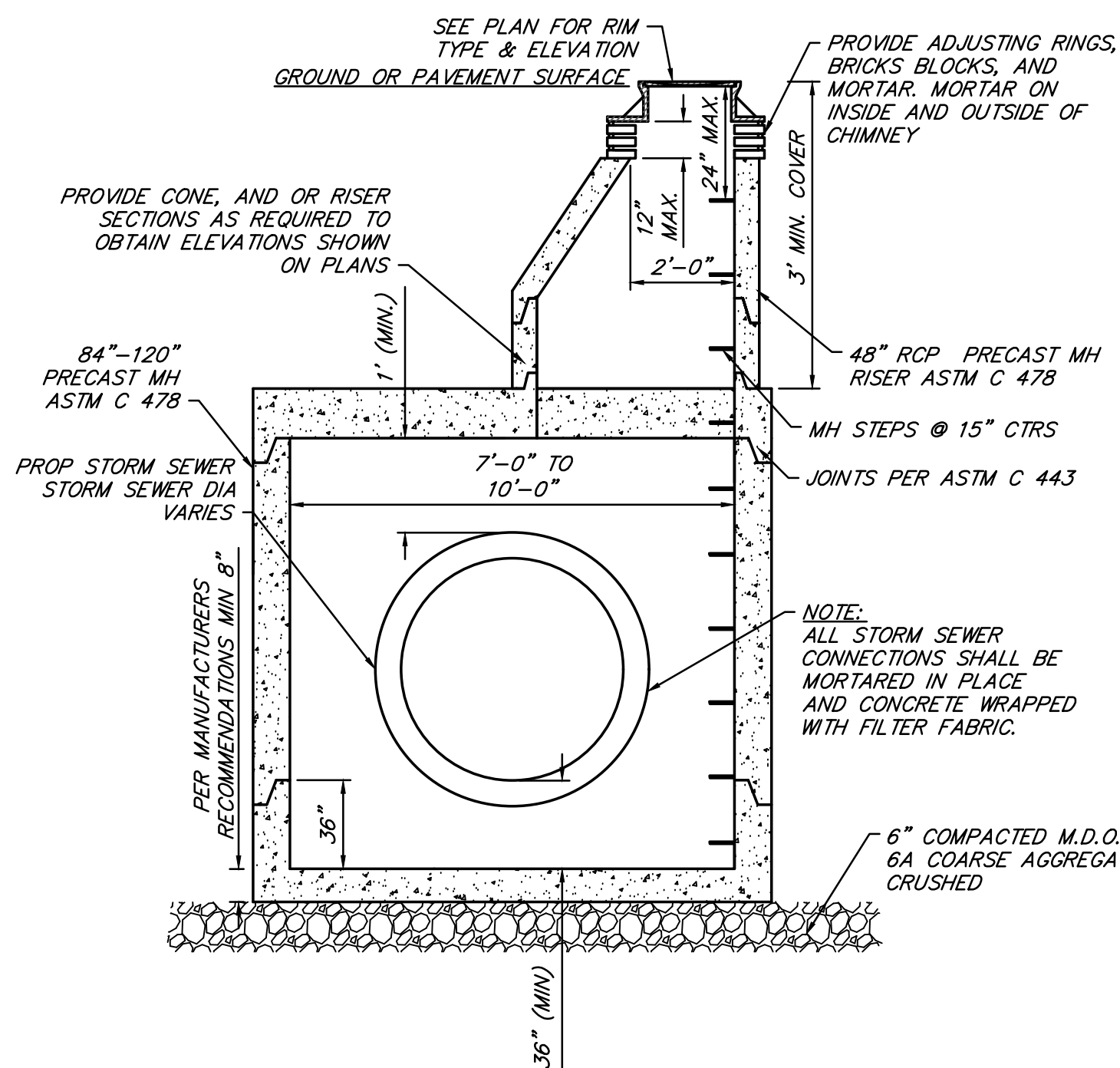
SIDEWALK RAMP - MDOT TYPE R
NOT TO SCALE



CONCRETE SIDEWALK
NOT TO SCALE
MDOT DETAIL R-29-I

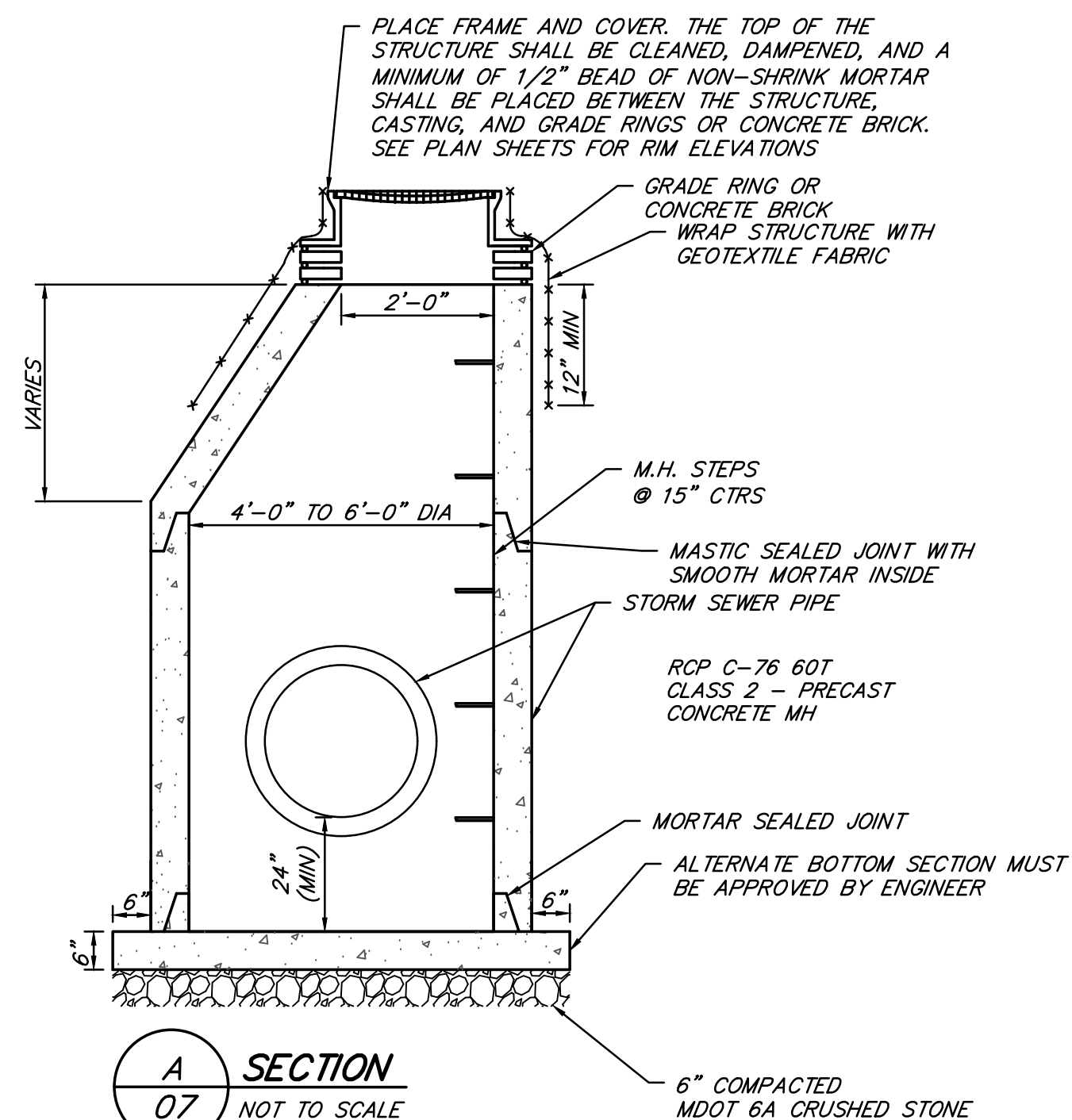


SANITARY SEWER SERVICE RELOCATION DETAIL
NOT TO SCALE

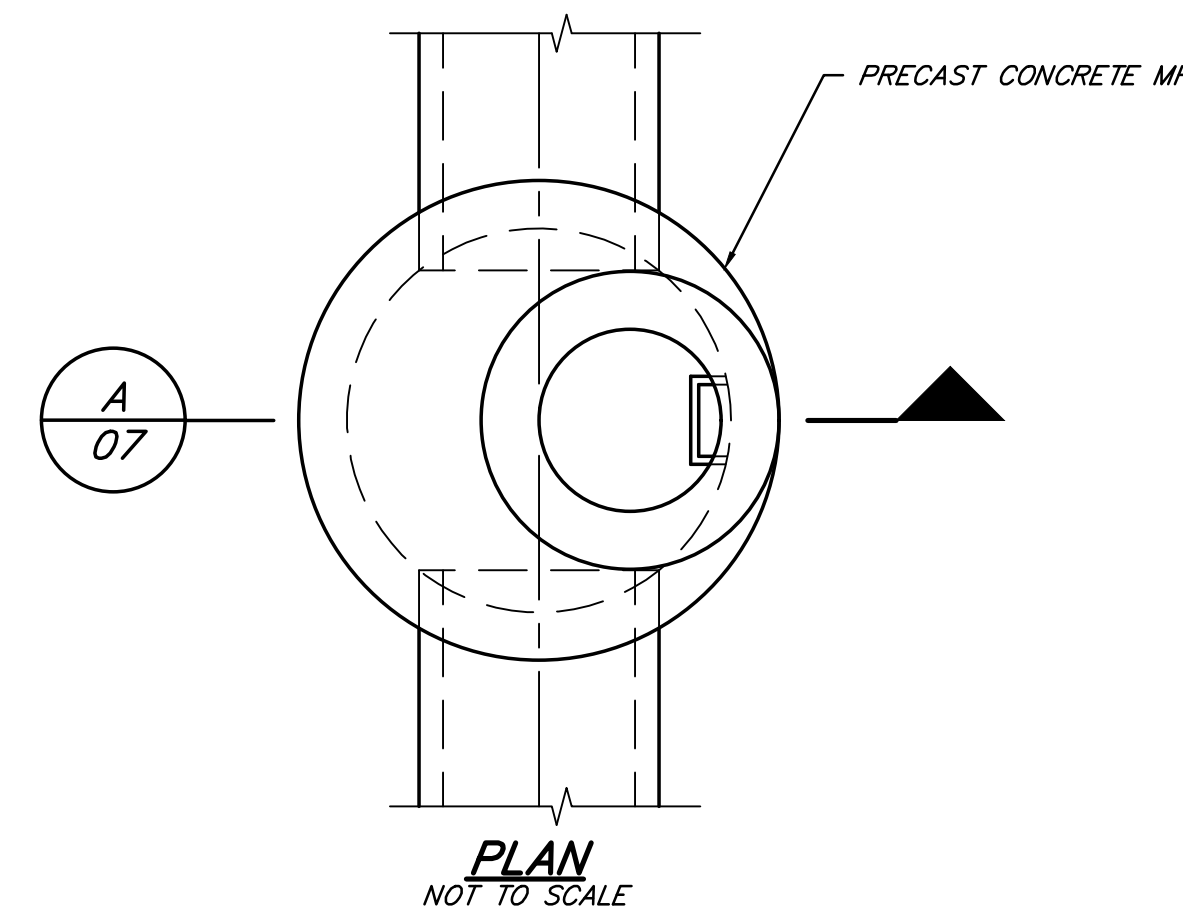


8'-10' DIA. COMBINATION MH/CB
NOT TO SCALE

NOTE: STORM SEWER LENGTHS IN STRUCTURES 7' DIA. OR LARGER SHALL BE MEASURED AND PAID FOR TO THE INSIDE WALL OF THE STRUCTURE.



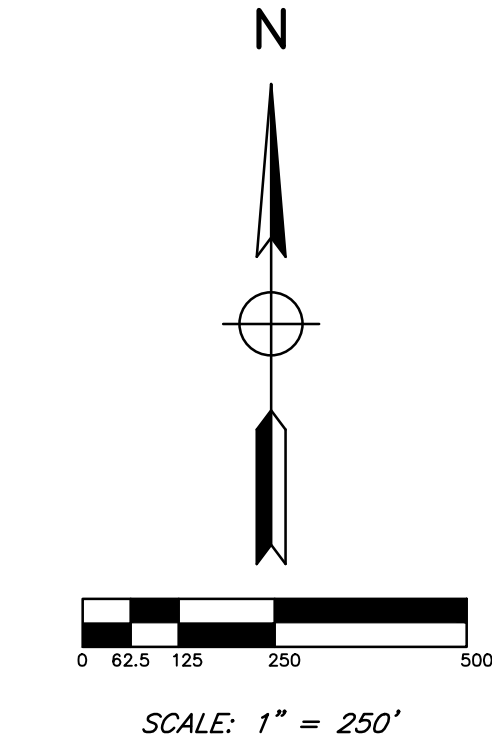
4' - 6' DIA. COMBINATION M.H.-C.B.
NOT TO SCALE



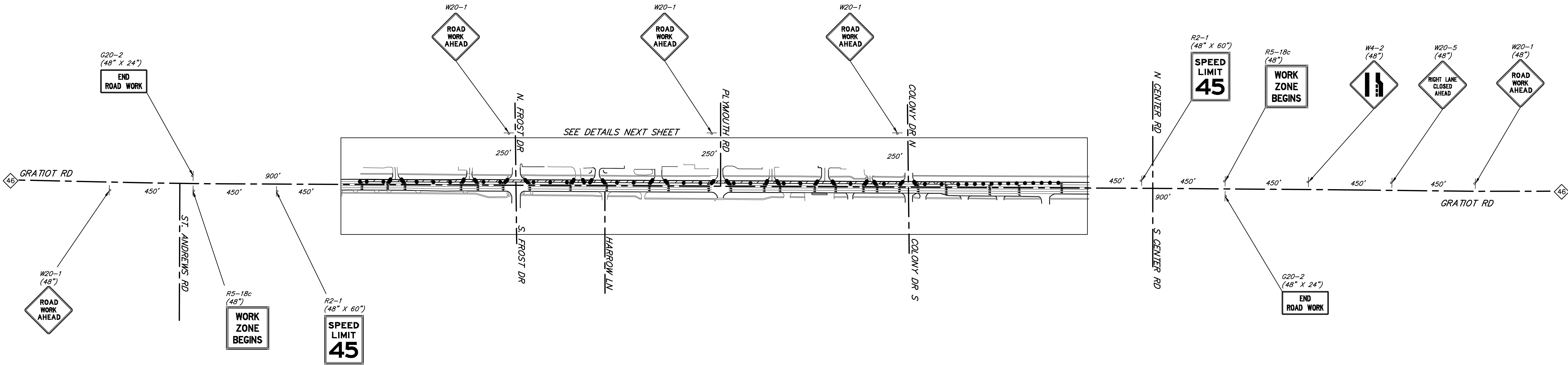
BY	MARK	REVISIONS	DATE
THE WORK REPRESENTED BY THIS DRAWING WAS DESIGNED BY THE ENGINEER FOR THIS SPECIFIC APPLICATION AND SPECIFIC LOCATION DESCRIBED HEREON IN ACCORDANCE WITH THE CONDITIONS PREVALENT AT THE TIME THE DESIGN WAS DONE. THE ENGINEER DOES NOT GUARANTEE AND WILL NOT BE LIABLE FOR ANY OTHER LOCATION, CONDITION, DESIGN OR PURPOSE.			
SEIDEL DRAIN SAGINAW COUNTY, MICHIGAN			
STANDARD DETAILS			
		SAGINAW OFFICE 230 S. Washington Ave. Saginaw, MI 48607 Tel. 989-754-4717 Fax. 989-754-4440 www.SpicerGroup.com	
DE. BY: POC/DSV	CH. BY: DSV	PROJECT NO. 122584SG2020	
DR. BY: CBS	APP. BY: RBH		
STDS.	SHEET 07 OF 09	DR 07	
DATE: MARCH, 2021	FILE NO. DR-4021-07		
SCALE: NOT TO SCALE			

TOTAL SIGN QUANTITIES -- FOR INFORMATION ONLY

SIGN	SIZE	AREA PER SIGN (SFT)	NUMBER	TOTAL AREA (SFT)
G20-2	48"x24"	8	2	16
R2-1	48"x60"	20	2	40
R5-18c	48"x48"	16	2	32
W4-2	48"x48"	16	1	16
W20-1	48"x48"	16	5	80
W20-5	48"x48"	16	1	16
SIGN, TYPE B, TEMP, PRISMATIC				200
BARRICADE, TYPE III, HIGH INTENSITY, DOUBLE SIDED, LIGHTED				24
LIGHTED ARROW, TYPE C				1
PLASTIC DRUM, FLUORESCENT				102



SECTION 29, T12N-R04E,
SAGINAW CHARTER TOWNSHIP,
SAGINAW COUNTY, MICHIGAN



TRAFFIC CONTROL PLAN

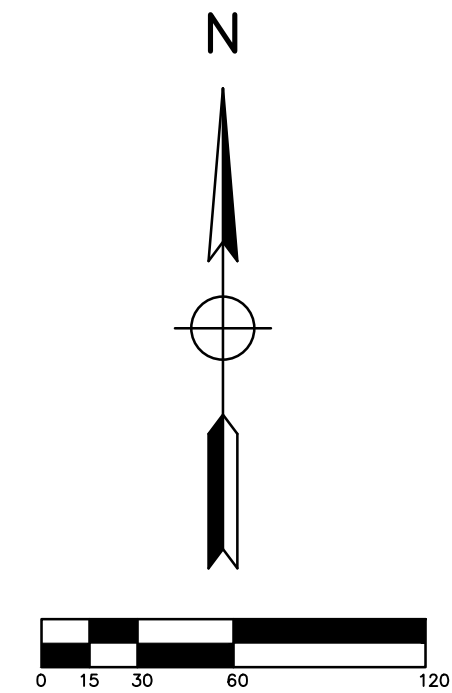
NOTES

1. THIS TRAFFIC CONTROL PLAN IS TO BE SET UP AS SHOWN ON MAINTAINING TRAFFIC TYPICAL M0240A.

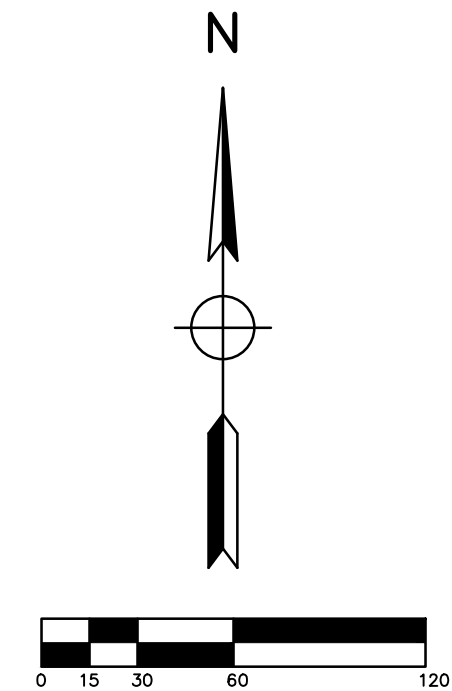
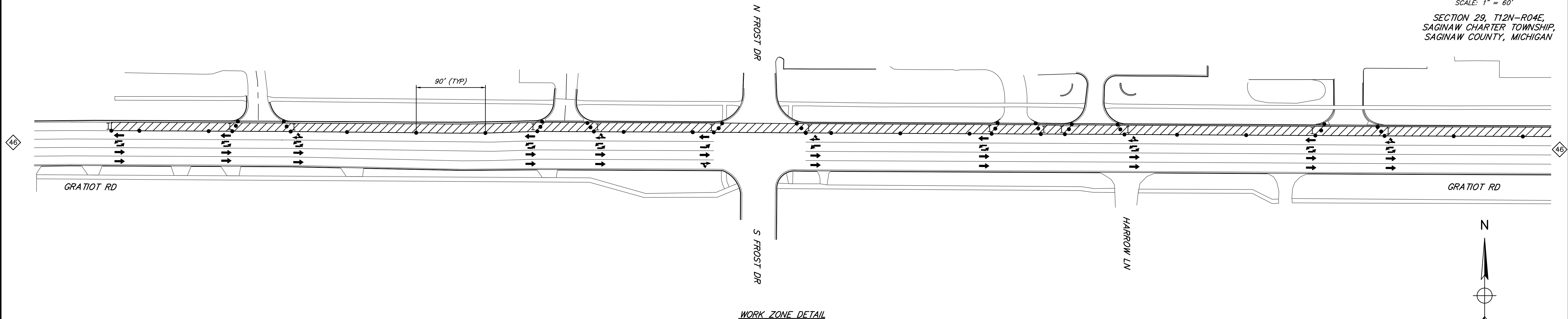
MAINTAINING TRAFFIC LEGEND

- WORK AREA
- BUFFER ZONE
- TEMPORARY SIGN
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- LIGHTED ARROW PANEL
- DIRECTION OF TRAFFIC

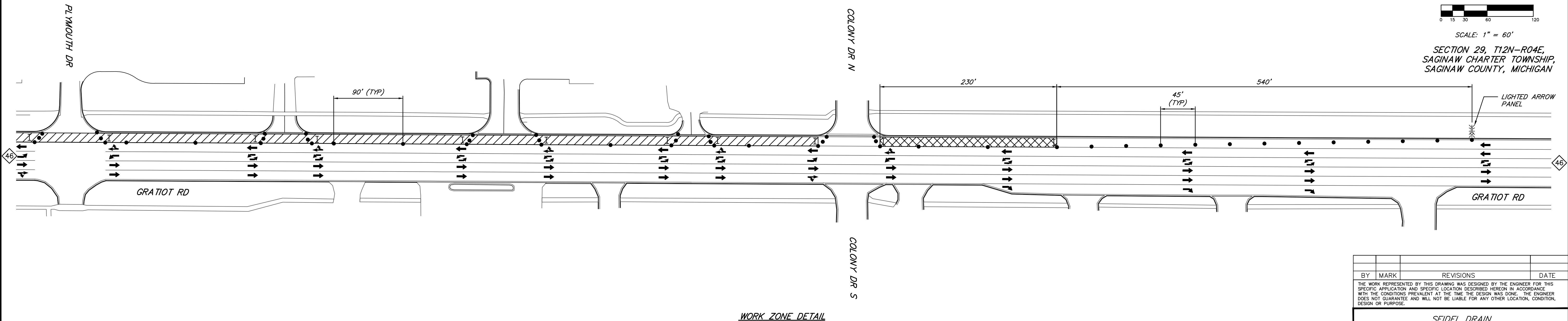
BY		MARK		REVISIONS		DATE	
THE WORK REPRESENTED BY THIS DRAWING WAS DESIGNED BY THE ENGINEER FOR THIS SPECIFIC APPLICATION AND SPECIFIC LOCATION DESCRIBED HEREON IN ACCORDANCE WITH THE CONDITIONS PREVALENT AT THE TIME THE DESIGN WAS DONE. THE ENGINEER DOES NOT GUARANTEE AND WILL NOT BE LIABLE FOR ANY OTHER LOCATION, CONDITION, DESIGN OR PURPOSE.							
SEIDEL DRAIN SAGINAW COUNTY, MICHIGAN							
GRATIOT ROAD (M-46) LANE CLOSURE OVERVIEW							
				SAGINAW OFFICE 230 S. Washington Ave. Saginaw, MI 48607 Tel. 989-754-4717 Fax. 989-754-4440 www.SpicerGroup.com			
DE. BY: MGN		CH. BY: MGN		PROJECT NO. 122584SG2020			
DR. BY: KIP		APP. BY: MGN		SHEET 08 OF 09			
STDs.		DATE		FILE NO.		DR 08	
SCALE		MARCH, 2021		SCALE		DR-4021-08	



SCALE: 1" = 60'
SECTION 29, T12N-R04E,
SAGINAW CHARTER TOWNSHIP,
SAGINAW COUNTY, MICHIGAN



SCALE: 1" = 60'
SECTION 29, T12N-R04E,
SAGINAW CHARTER TOWNSHIP,
SAGINAW COUNTY, MICHIGAN



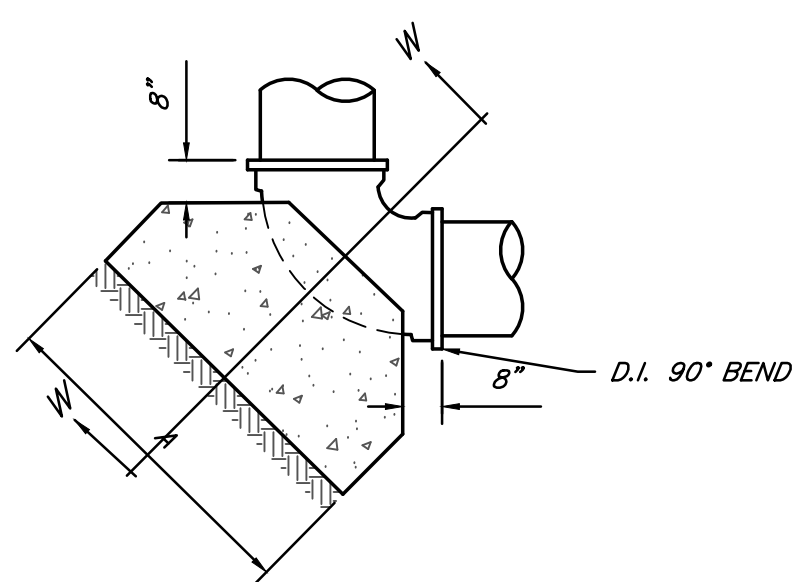
- NOTES**
1. THIS TRAFFIC CONTROL PLAN IS TO BE SET UP AS SHOWN ON MAINTAINING TRAFFIC TYPICAL M0240A.
 2. ALL STORED MATERIALS SHALL BE REMOVED FROM THE CLOSED LANES NIGHTLY. NO STORED MATERIALS ARE ALLOWED IN THE CLOSED LANES AFTER THE CONTRACTOR HAS FINISHED WORK EACH DAY.

- MAINTAINING TRAFFIC LEGEND**
- WORK AREA
 - BUFFER ZONE
 - TEMPORARY SIGN
 - TYPE III BARRICADE
 - CHANNELIZING DEVICES
 - LIGHTED ARROW PANEL
 - DIRECTION OF TRAFFIC

BY MARK REVISIONS DATE			
THE WORK REPRESENTED BY THIS DRAWING WAS DESIGNED BY THE ENGINEER FOR THIS SPECIFIC APPLICATION AND SPECIFIC LOCATION DESCRIBED HEREON IN ACCORDANCE WITH THE CONDITIONS PREVALENT AT THE TIME THE DESIGN WAS DONE. THE ENGINEER DOES NOT GUARANTEE AND WILL NOT BE LIABLE FOR ANY OTHER LOCATION, CONDITION, DESIGN OR PURPOSE.			
SEIDEL DRAIN SAGINAW COUNTY, MICHIGAN			
GRATIOT ROAD (M-46) LANE CLOSURE DETAIL			
DE. BY: MGN DR. BY: KIP		CH. BY: MGN APP. BY: MGN	
STDs.		PROJECT NO. 122584SG2020	
DATE MARCH, 2021		SHEET 09 OF 09 FILE NO. DR-4021-09	
SCALE		DR 09	

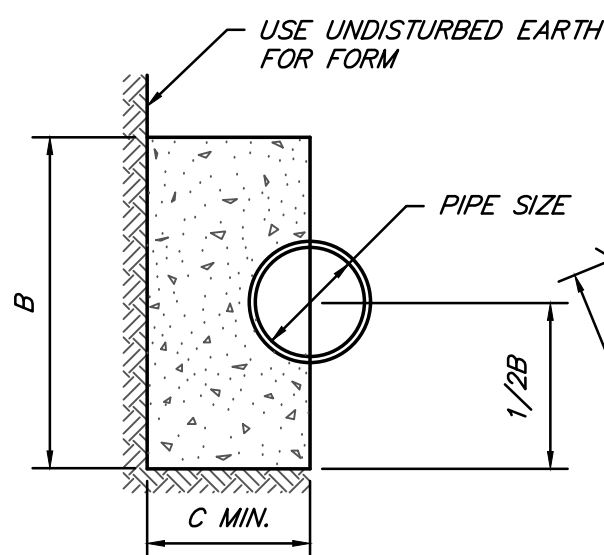


SAGINAW OFFICE
230 S. Washington Ave.
Saginaw, MI 48607
Tel. 989-754-4717
Fax. 989-754-4440
www.SpicerGroup.com



PLAN

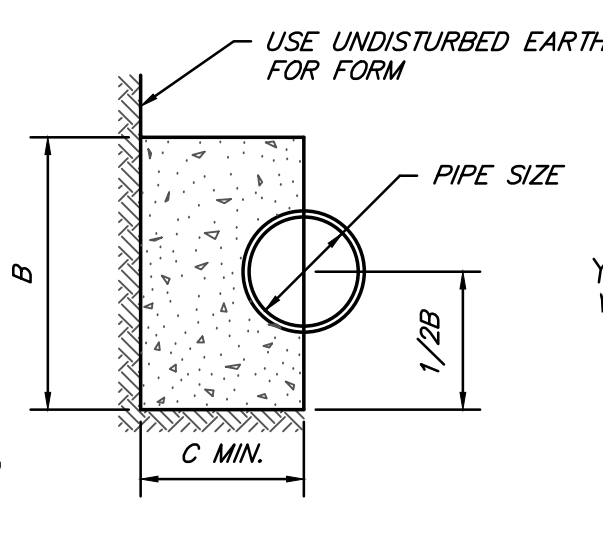
DETAIL OF BLOCK FOR 90° BEND OR TEE
Q - MIN. CU. YD. CONCRETE PER BLOCK



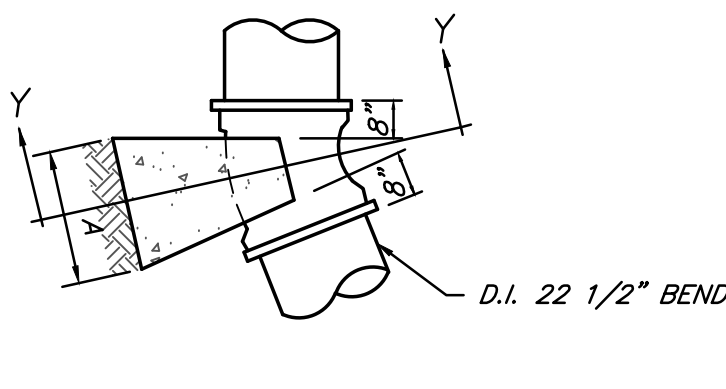
SEC. W-W

PLAN

DETAIL OF BLOCK FOR 45° BEND
Q - MIN. CU. YD. CONCRETE PER BLOCK

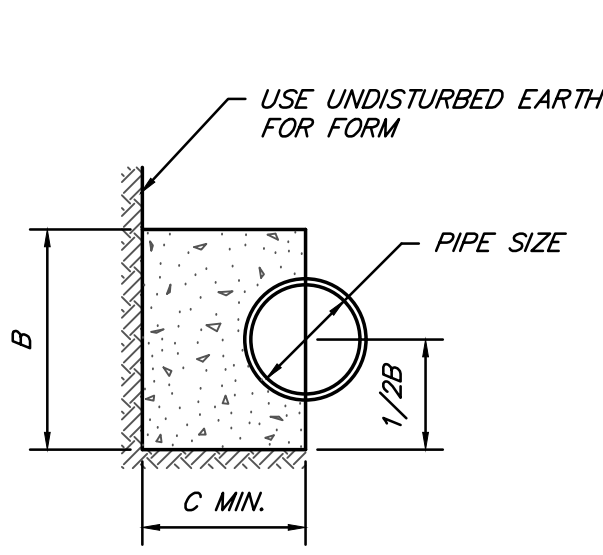


SEC. X-X

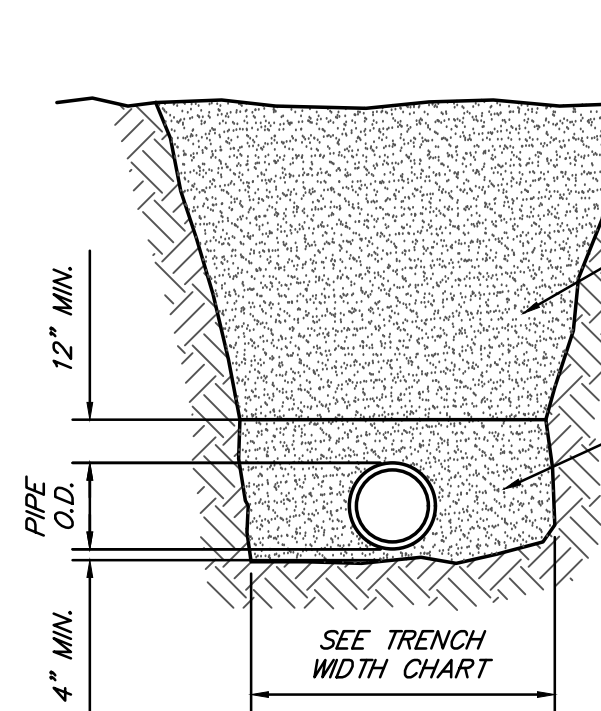


PLAN

DETAIL OF BLOCK FOR 22 1/2° BEND
Q - MIN. CU. YD. CONCRETE PER BLOCK



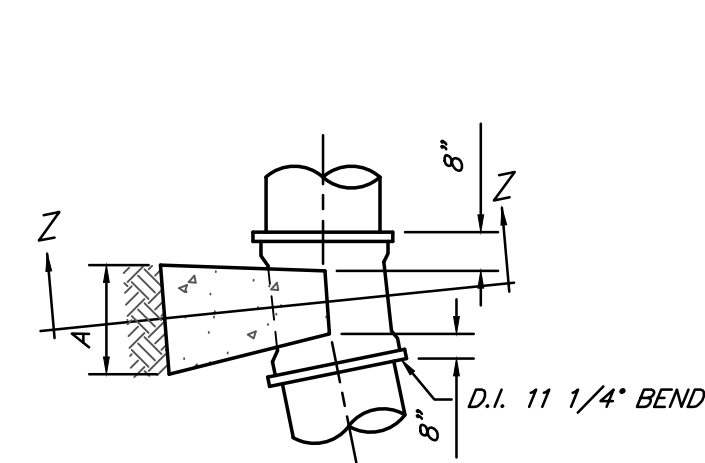
SEC. Y-Y



TRENCH DETAIL

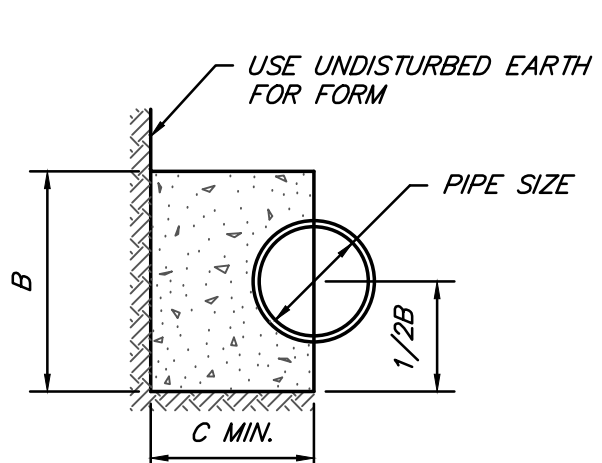
TRENCH SLOPE SHALL BE PER OSHA & MISHA REGULATIONS.
TRENCH SHALL BE BACKFILLED COMPLETELY WITH APPROVED MDOT CLASS II GRANULAR MATERIAL OR ACCEPTABLE EXCAVATED MATERIAL AND COMPACTED AS SPECIFIED.
PROVIDE MDOT CLASS II SAND BACKFILL TO A MIN. OF 12" OVER TOP OF PIPE AND COMPACT TO 95% MAXIMUM DENSITY.

TRENCH WIDTH CHART		
PIPE SIZE	TRENCH WIDTH	
	MINIMUM	MAXIMUM
6"	18"	24"
8" & 10"	24"	30"
12" & 15"	30"	36"
18"	34"	40"
21"	38"	42"
24"	42"	46"
27"	45"	49"
30"	49"	53"
36"	56"	60"
LARGER THAN 36"	I.D.+20"	I.D.+24"

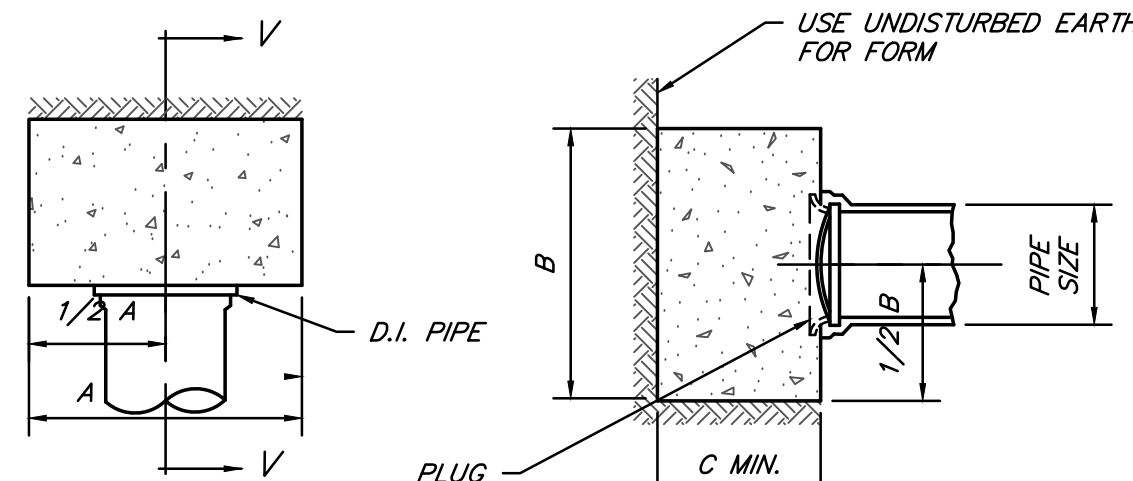


PLAN

DETAIL OF BLOCK FOR 11 1/4° BEND
Q - MIN. CU. YD. CONCRETE PER BLOCK



SEC. Z-Z



PLAN

SEC. V-V

DETAIL OF BLOCK FOR PLUG
Q - MIN. CU. YD. CONCRETE PER BLOCK

PIPE SIZE	90° BEND OR TEE				45° BEND				22 1/2° BEND				11 1/4° BEND				PLUG			
	A	B	C	Q	A	B	C	Q	A	B	C	Q	A	B	C	Q	A	B	C	Q
6", 8" & 10"	3'-0"	2'-0"	1'-3"	0.3	2'-0"	1'-6"	1'-3"	0.1	1'-6"	1'-0"	1'-3"	0.1	1'-0"	1'-0"	1'-3"	0.1	2'-0"	2'-0"	1'-6"	0.2
12"	3'-0"	2'-6"	1'-6"	0.4	2'-0"	2'-0"	1'-6"	0.2	2'-0"	1'-0"	1'-6"	0.1	1'-0"	1'-0"	1'-6"	0.1	2'-0"	2'-6"	1'-6"	0.3
16"	4'-0"	3'-0"	2'-0"	0.9	3'-0"	3'-0"	2'-0"	0.5	2'-0"	2'-0"	2'-0"	0.2	1'-0"	2'-0"	2'-0"	0.1	3'-0"	3'-6"	1'-9"	0.7
20"	5'-0"	4'-6"	2'-6"	1.23	4'-0"	3'-0"	2'-6"	0.82	3'-0"	2'-6"	2'-6"	0.58	2'-0"	1'-10"	2'-6"	0.3	4'-0"	4'-0"	2'-6"	1.45
24"	6'-0"	5'-6"	3'-0"	2.74	4'-0"	4'-0"	3'-0"	1.21	3'-0"	3'-0"	3'-0"	0.8	2'-6"	2'-2"	3'-0"	0.42	5'-0"	5'-0"	3'-0"	2.78
30"	7'-0"	7'-0"	3'-9"	5.39	5'-6"	5'-0"	3'-9"	2.14	4'-0"	3'-0"	3'-9"	1.35	3'-0"	2'-8"	3'-9"	0.98	6'-0"	6'-0"	3'-9"	4.96
36"	8'-0"	7'-6"	4'-6"	8.12	6'-0"	6'-0"	4'-6"	4.03	5'-0"	4'-0"	4'-6"	2.77	3'-0"	3'-2"	4'-6"	1.36	8'-0"	6'-0"	4'-6"	8.00
42"	9'-0"	8'-0"	5'-3"	11.58	7'-7"	7'-0"	5'-3"	6.43	5'-0"	5'-0"	5'-3"	3.85	4'-0"	3'-9"	5'-3"	2.17	8'-0"	8'-0"	5'-3"	12.44

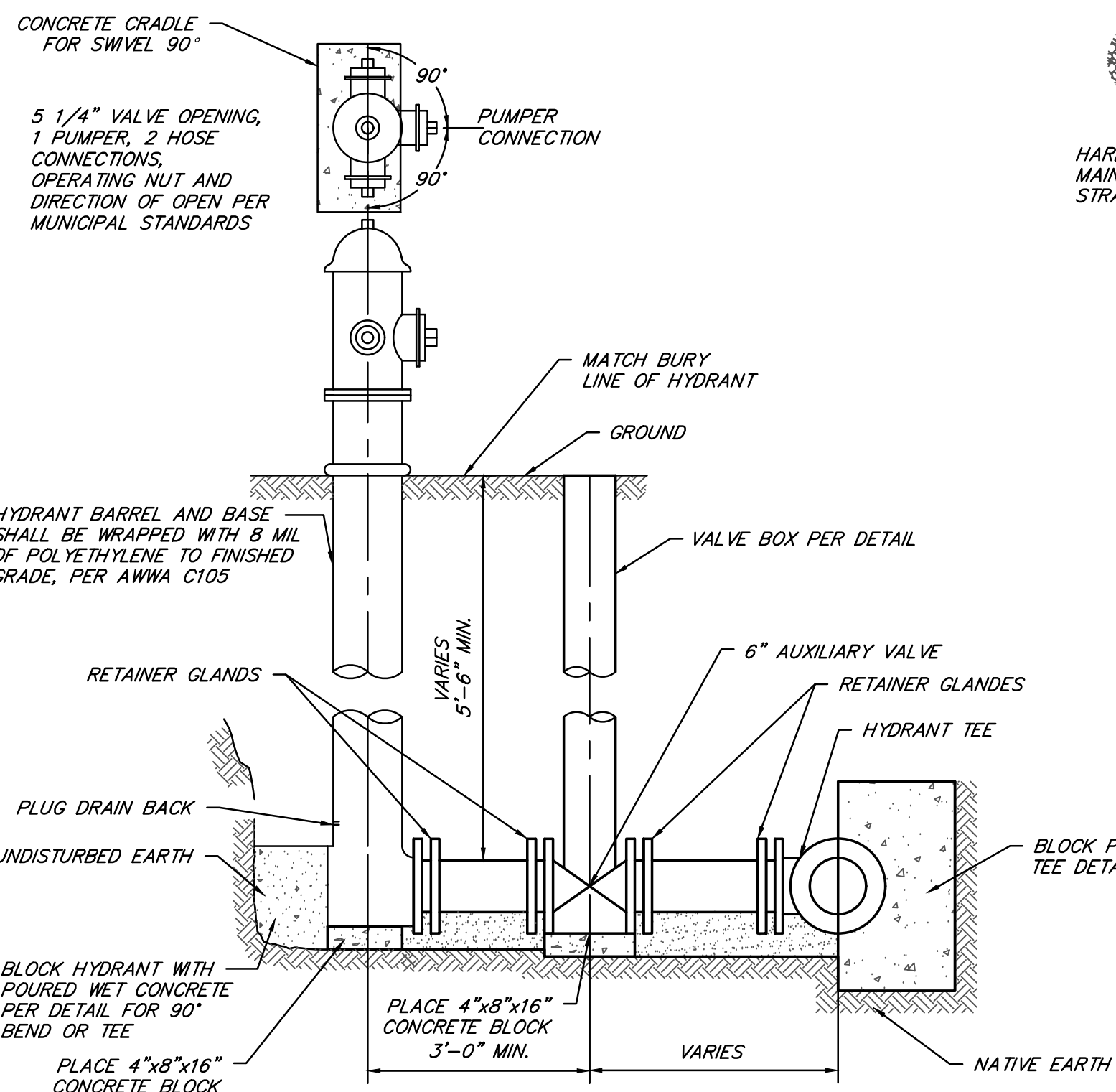
NOTE:

THE CONTRACTOR SHALL SECURE ALL MECHANICAL JOINT FITTINGS WITH RETAINER GLANDS IN ADDITION TO THRUST BLOCKING. RETAINER GLANDS SHALL BE MEGA-LUG AS MANUFACTURED BY EBAA IRON OR APPROVED EQUAL.

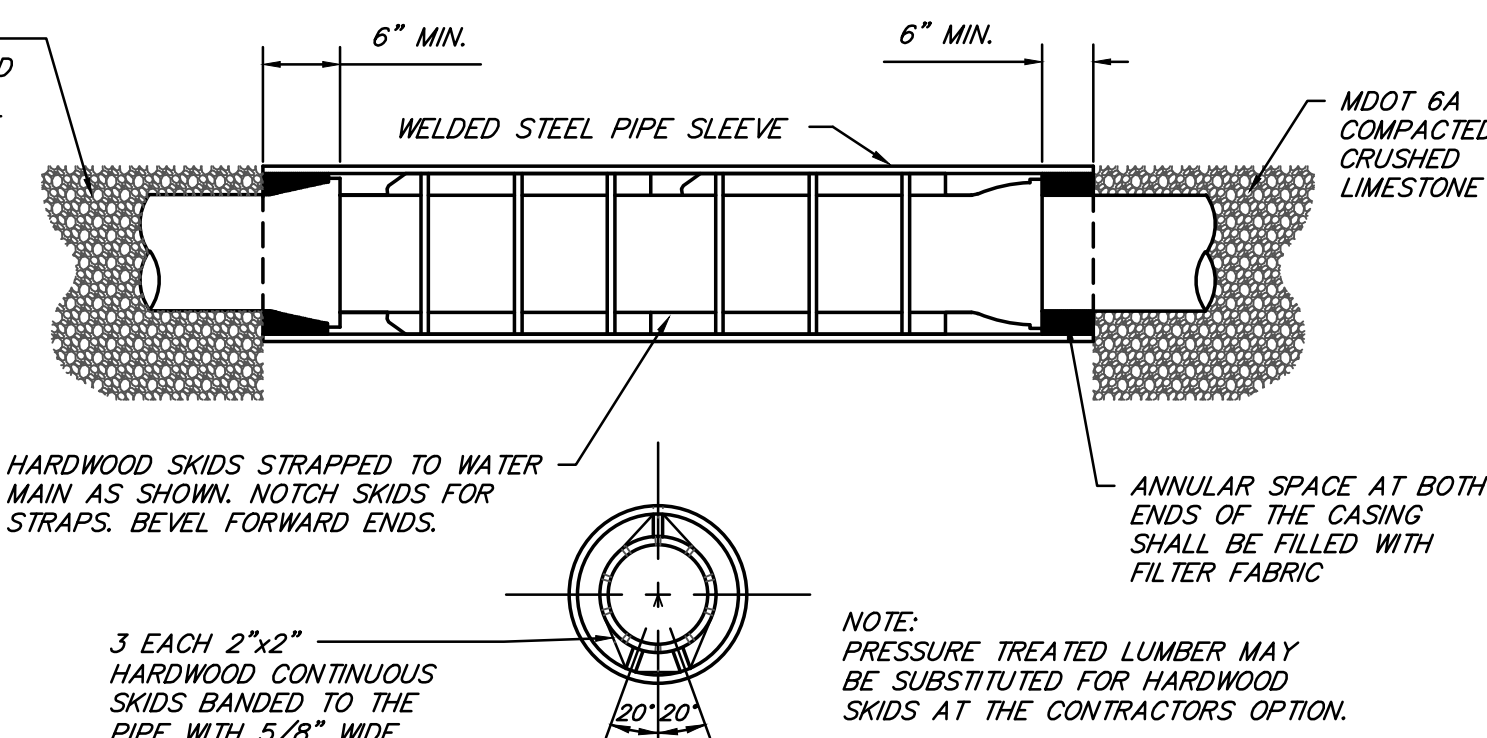
ALTERNATE FOR HYDRANTS: TWO 3/4" THREADED RESTRAINING RODS MAY BE USED AT HYDRANTS IN ADDITION TO ALL BLOCKING. RODS SHALL RECEIVE A MINIMUM DRY FILM OF 15 MILS (DTM) OF COAL TAR EPOXY. ALL COSTS ASSOCIATED WITH THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID PER EACH HYDRANT INSTALLED.

WRAP ALL FITTINGS, VALVES, HYDRANTS, AND ALL D.I. PIPE IN 8 MIL POLYETHYLENE SHEET PER AWWA C105.

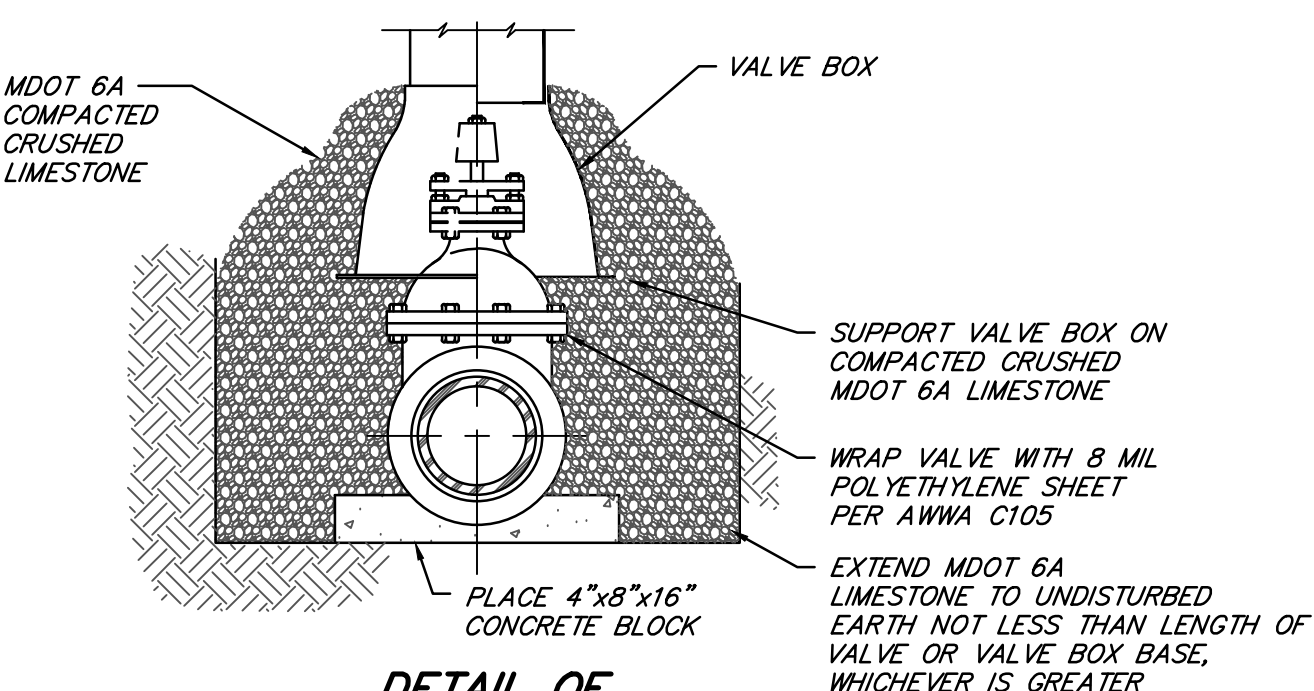
THE CONCRETE USED FOR BLOCKING SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI IN 28 DAYS.



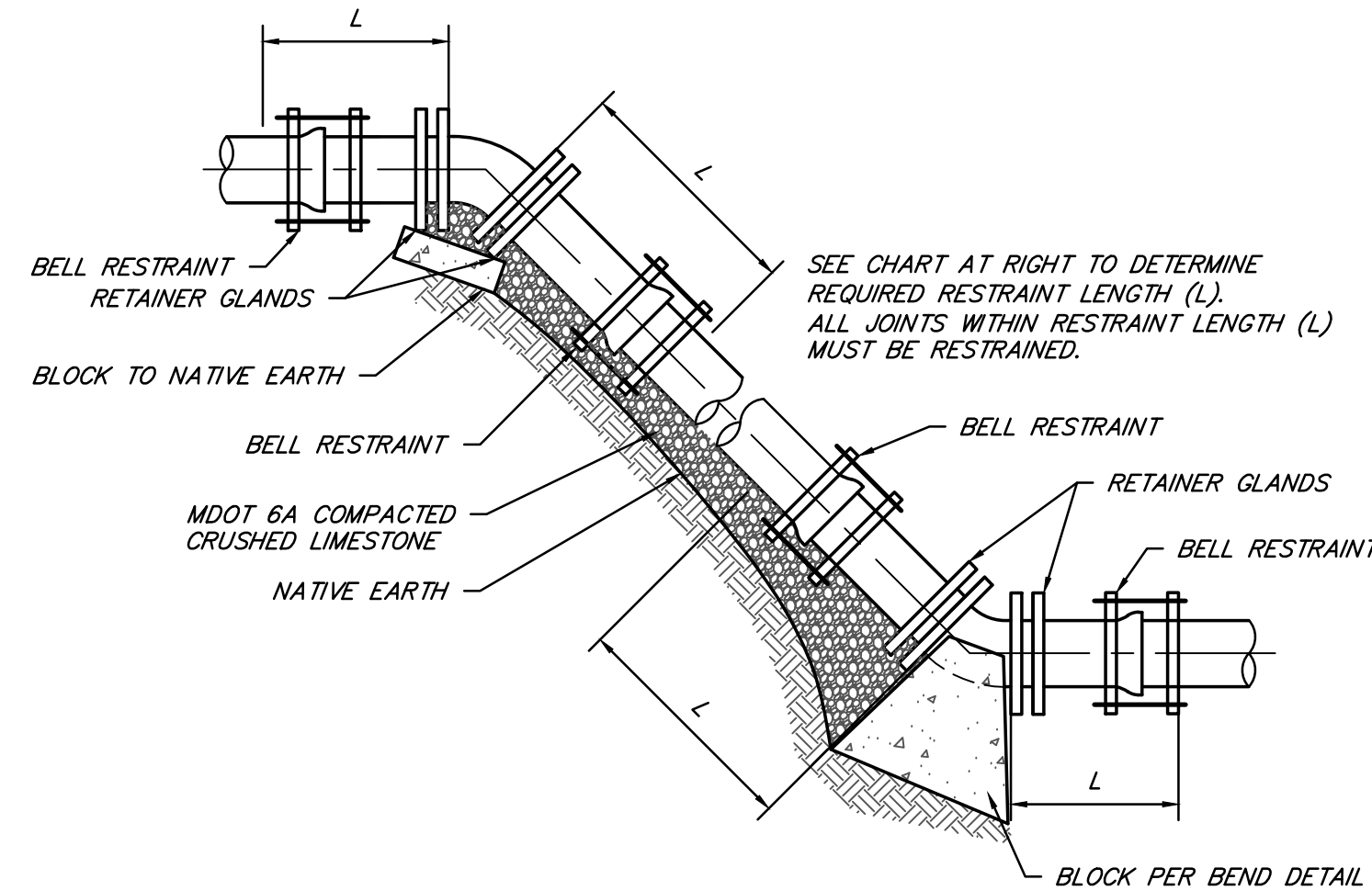
DETAIL OF SETTING HYDRANT



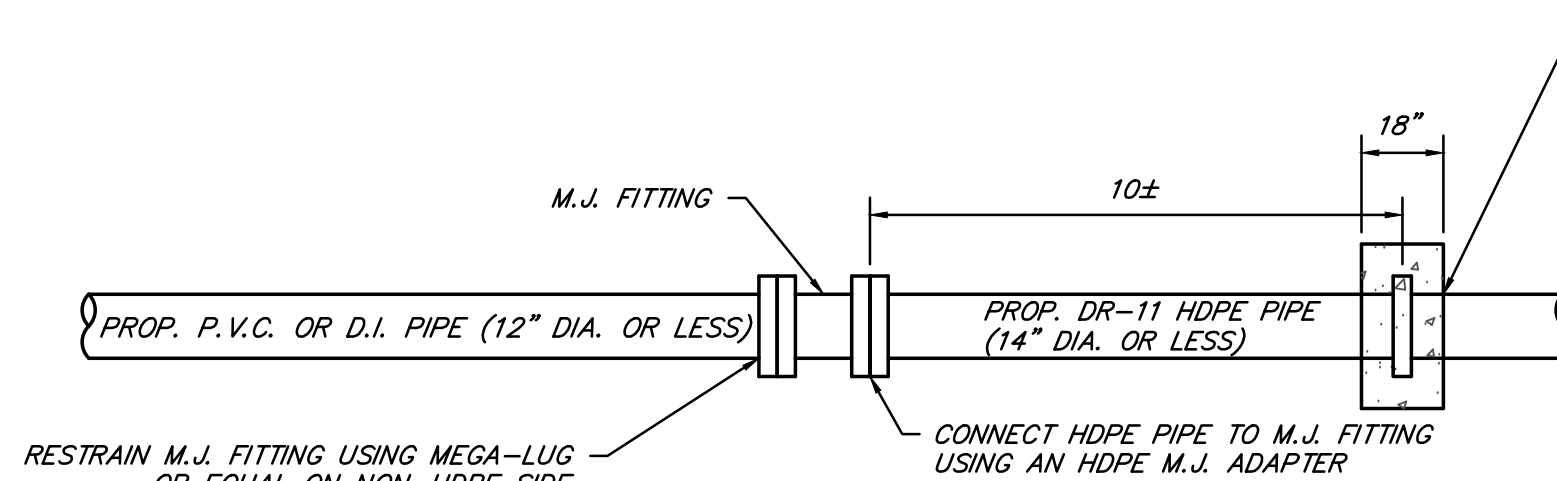
WATER MAIN IN SLEEVE DETAIL



DETAIL OF SETTING OF VALVE BOXES



VERTICAL BEND DETAIL



(14" DIPS OR LESS) HDPE CONNECTION DETAIL

PIPE RESTRAINT SCHEDULE FOR GROUND BURIED PRESSURE PIPES							
LENGTH (L) OF RESTRAINT REQUIRED (IN FEET)							
DEFLECTION ANGLE	11-1/4" AND 22-1/2"	33-3/4"	45°	56-1/4"	67-1/2"	78-3/4"	90°, TEE, OR DEAD END
PIPE							
6"	8	12	16	20	25	31	59
8"	10	15	20	26	33	40	77
10"	12	18	25	32	40	49	93
12"	14	21	29	37	47	57	109
14"	16	24	33	41	54	66	125
16"	18	27	37	47	60	74	141
18"	20	30	41	53	67	82	157
20"	22	33	45	58	73	90	172
24"	25	39	53	68	85	105	202
30"	30	46	63	82	102	126	244
36"	35	54	74	95	119	146	283
42"	40	61	83	107	133	164	320
48"	44	67	92	118	148	181	356

ACAD FILE: DW1556
PLOT SCALE: 1"=1'
REIT: E.B.
PG.

NRP	REVISIONS	8-21-17
BY	MARK	DATE
THE WORK REPRESENTED BY THIS DRAWING WAS DESIGNED BY THE ENGINEER FOR THIS SPECIFIC APPLICATION AND SPECIFIC LOCATION DESCRIBED HEREON IN ACCORDANCE WITH THE CONDITIONS PREVALENT AT THE TIME THE DESIGN WAS DONE. THE ENGINEER DOES NOT GUARANTEE AND WILL NOT BE LIABLE FOR ANY OTHER LOCATION, CONDITION, DESIGN OR PURPOSE.		
STANDARD WATER MAIN DETAILS		
WATER MAIN STANDARD DETAILS		
SAGINAW OFFICE 230 S. Washington Ave. Saginaw, MI 48607 Tel. 989-754-4717 Fax. 989-754-4440 www.SpicerGroup.com		
DE. BY: SG/ DR. BY: SG/	CH. BY: SG/ APP. BY: SG/	PROJECT NO.
STDS.	SHEET 1 OF 1	
DATE: FEBRUARY, 2006 SCALE: NOT TO SCALE	FILE NO. DW-1556	