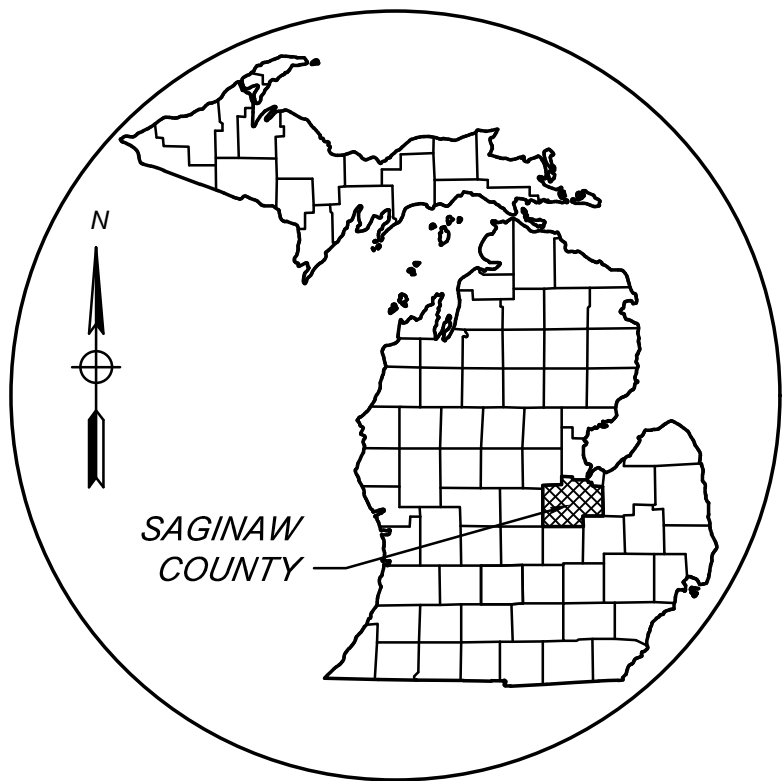
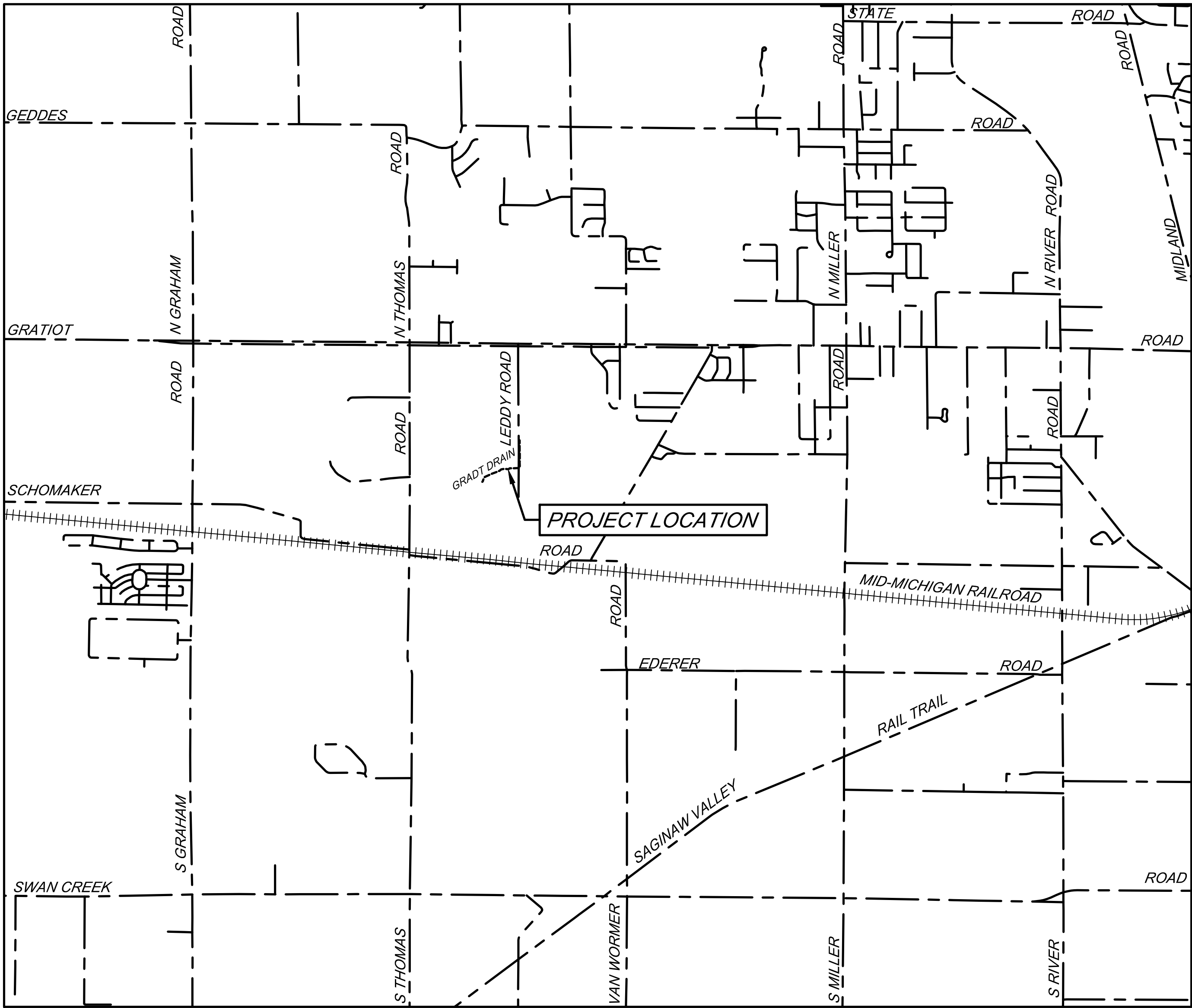


GRADT DRAIN

SAGINAW COUNTY PUBLIC WORKS COMMISSIONER - BRIAN J WENDLING



AREA MAP
NOT TO SCALE



LOCATION MAP
NOT TO SCALE

PLAN INDEX		
FILE NO.	DESCRIPTION	NO.
DR-4120-01	COVER SHEET	1
DR-4120-02	CONTACTS, GENERAL NOTES, LINE TYPE LEGEND, AND SESC MEASURE LEGEND	2
DR-4120-03	PLAN AND PROFILE - STA 0+00 TO STA 12+00	3
DR-4120-04	PLAN AND PROFILE - STA 12+00 TO STA 19+00	4
DR-4120-05	STANDARD DETAILS	5
DW-1556	WATER MAIN - STANDARD DETAILS	

BY	MARK	REVISIONS		DATE	
<small>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.</small>					
GRADT DRAIN SAGINAW COUNTY, MICHIGAN					
COVER SHEET					
		<small>SAGINAW OFFICE 230 S. Washington Ave. Saginaw, MI 48607 Tel: 989-754-4717 Fax: 989-754-4440 www.SpicerGroup.com</small>			
DE BY: CBP/DSV		CH BY: DSV		PROJECT NO. 129011SG2020	
DR BY: CBP		APP BY: RBY			
STDs.		SHEET 01 OF 06		DR 01	
DATE AUGUST, 2021		FILE NO. DR-4120-01			
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 911 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 THIS 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 CONTROL 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 MDOT.

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

ROUND PIPE ON THIS PROJECT MAY BE RCP (C-76 CLIII) OR ADS HP STORM, UNLESS OTHERWISE SPECIFIED ON THE PLANS OR BID FORM.

SYMBOL LEGEND

EXISTING SYMBOLS

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

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
- CC = 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
- EDM = EDGE OF METAL
- EOP = EDGE OF PAVEMENT
- EQ/SP = EQUALLY SPACED
- ESMT = EASEMENT
- EW = EACH WAY
- EX OR EXIST = EXISTING
- FES = FLARED END SECTION
- FF = FINISH FLOOR
- FG = FINISH GROUND
- FL = FLOW LINE
- FS = FINISH SURFACE
- FT = FEET
- GALV = GALVANIZED
- G = GUTTER
- GA = GAUGE
- HOG = 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
- UG = UNDERGROUND
- UNO = UNLESS NOTED OTHERWISE
- WM = WATER MAIN
- WSEL = 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.
6	Catch Basin		Where surface water accumulates and needs an outlet or an open drain discharges to a stream or drain at erosive velocities. Within an enclosed drain system to provide an inlet and a sump.
7	STORM DRAIN INLET PROTECTION		Around the entrance to a catch basin or an inlet that will capture runoff from an earth change activity.
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		
E	ENCLOSED DRAIN 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:

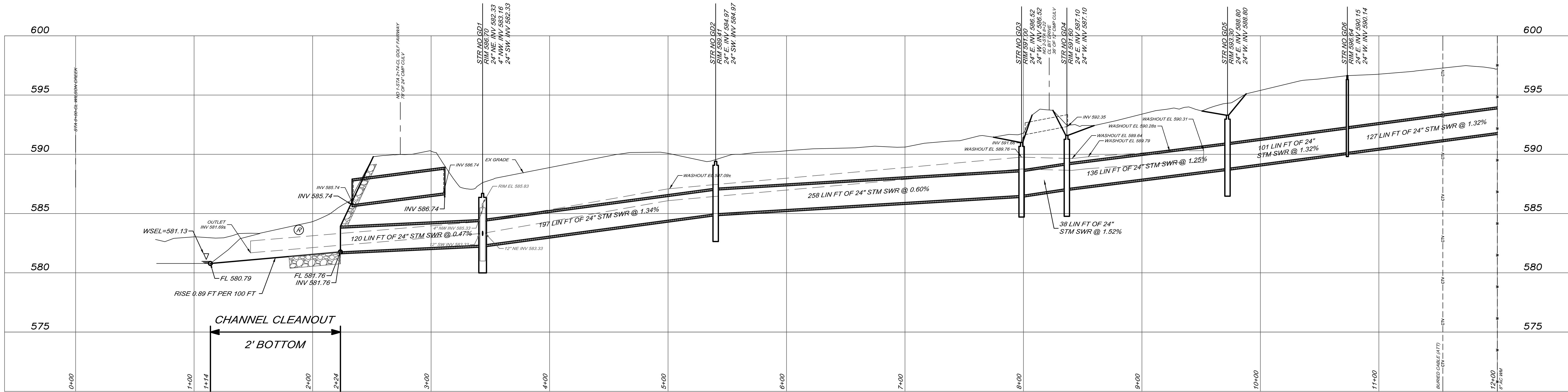
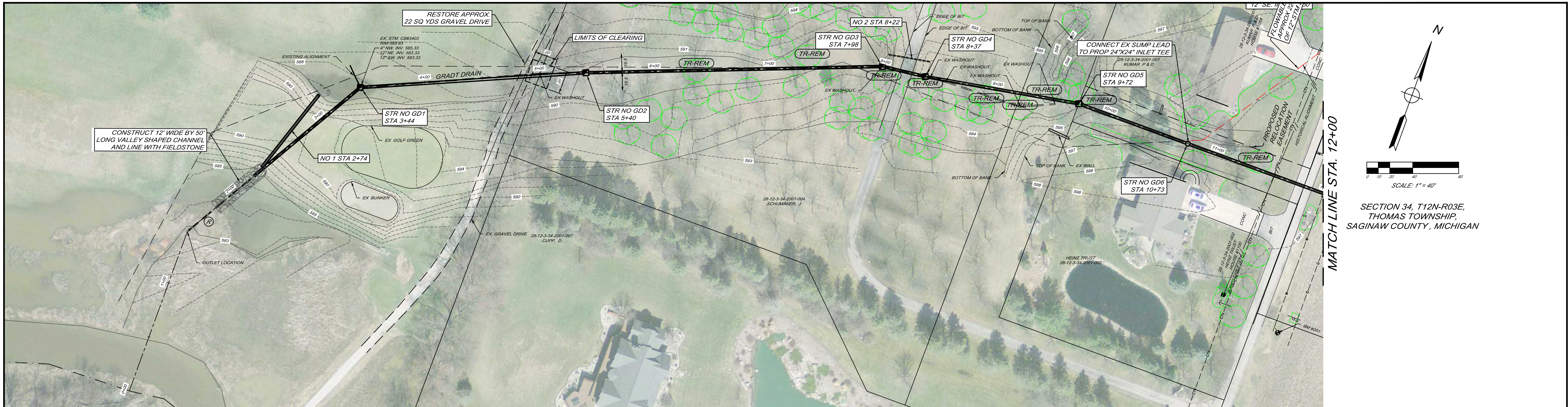
⊕ - PERMANENT MEASURE

⊕ - TEMPORARY MEASURE

CONTACTS

BRIAN J. WENDLING SAGINAW COUNTY PUBLIC WORKS 111 S. MICHIGAN AVENUE SAGINAW, MI 48602 (989) 790-5258	OWNER
DAVE VALLIER SPICER GROUP, INC. 230 S. WASHINGTON AVENUE SAGINAW, MI 48605 (989) 754-4717	ENGINEER
HALEY SHEPARD SCRC 3020 SHERIDAN AVE SAGINAW, MI 48601 (989) 752-6140	ROAD COMMISSION
RICK HOPPER THOMAS TOWNSHIP 249 N. MILLER ROAD SAGINAW, MI 48609 (989) 781-6438	PUBLIC WORKS
KATHY HENDERSON AT&T 309 S. WASHINGTON AVE SAGINAW, MI 48607 MOBILE: (248) 425-1859 OFFICE: (989) 771-5412	CABLE
JOE RODEA CONSUMERS ENERGY 2400 WEISS STREET SAGINAW, MI 48602 (989) 791-5869	GAS
GREG SOJANDA CONSUMERS ENERGY 2400 WEISS STREET SAGINAW, MI 48602 (989) 791-5353	ELECTRIC

PROJECT DATUM			
HORIZONTAL:		STATE PLANE SOUTH MI 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 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.			
GRADT DRAIN SAGINAW COUNTY, MICHIGAN			
CONTACTS, GENERAL NOTES, LINE TYPE 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: CBP/DSV	CH BY: DSV	PROJECT NO. 129011SG2020	
DR BY: CBP	APP BY: RSH		
STDS.	SHEET 02 OF 06	DR 02	
DATE SCALE	AUGUST, 2021 NOT TO SCALE		
	FILE NO. DR-4120-02		



NO 1 - STA 2+74 - VALLEY VIEW FARM GOLF REMOVE EXISTING CROSSING AND INSTALL 80 LIN FT OF 24" HP STORM. MAINTAIN EXISTING INVERTS.

NO 2 - STA 8+22 - SCHUMAKER, J NO WORK

PROPOSED STORM SEWER STRUCTURE TABLE				
STRUCTURE NO.	LOCATION	OFFSET	SIZE/TYPE	EJ FRAME W/ TYPE COVER GRATE
GD1	3+44	0.0' T.	6" DIA MH/CB	1045 W/M2 GRATE
GD2	5+40	0.0' T.	4' DIA MH/CB	1045 W/M OVAL GRATE
GD3	7+98	0.0' T.	4' DIA MH/CB	1045 W/M OVAL GRATE
GD4	8+37	0.0' RT.	4' DIA MH/CB	1045 W/M OVAL GRATE
GD5	9+72	0.0' T.	4' DIA MH/CB	1045 W/M OVAL GRATE
GD6	10+73	0.0' T.	24" INLET TEE	6110N GRATE

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.

- CONSTRUCTION NOTES
- STA 0+00 - STA 5+00 - CONTRACTOR TO COORDINATE WITH VALLEY VIEW FARMS GOLF COURSE WHEN WORKING ON GOLF COURSE PROPERTY.

LEGEND

(R) - REMOVE EXISTING

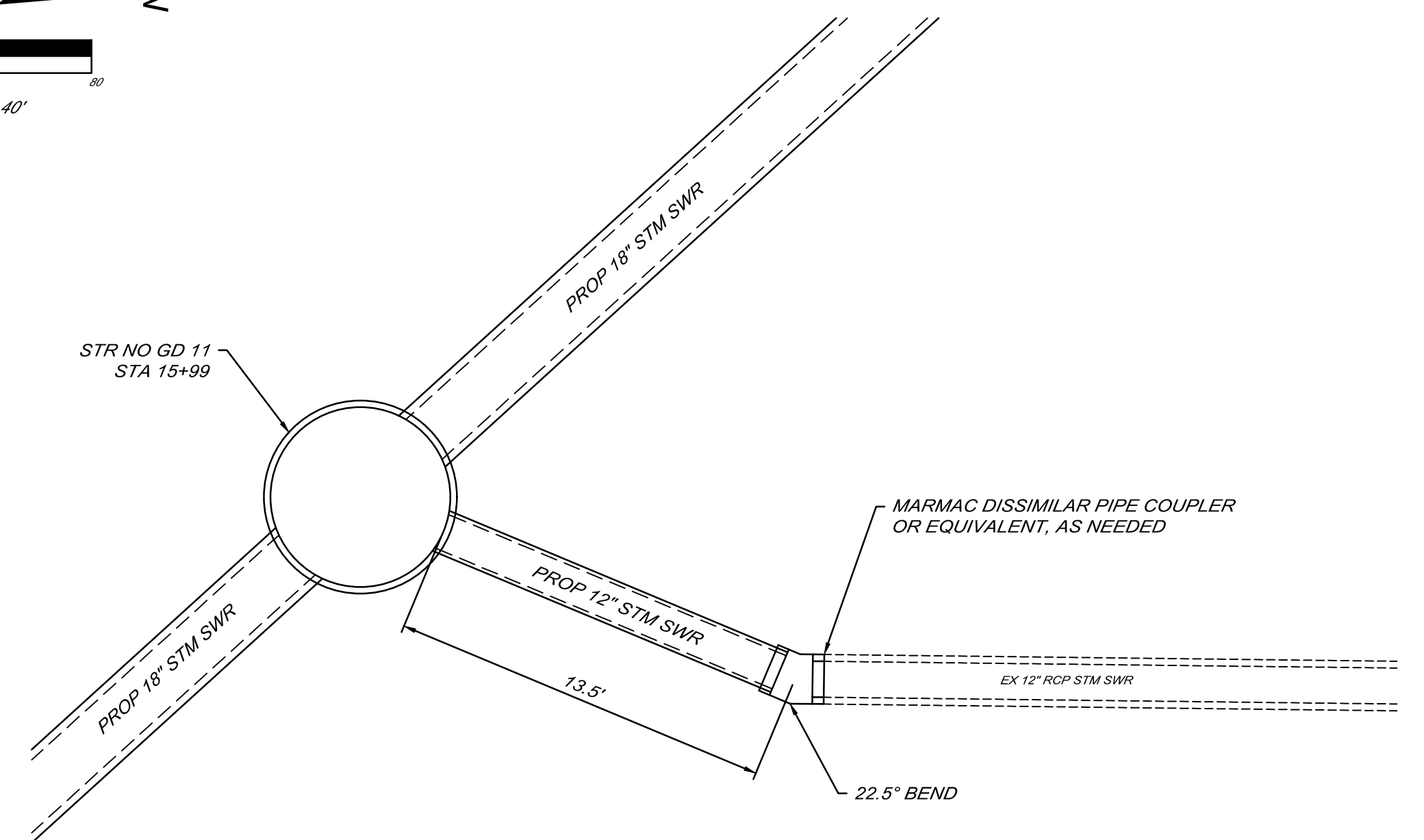
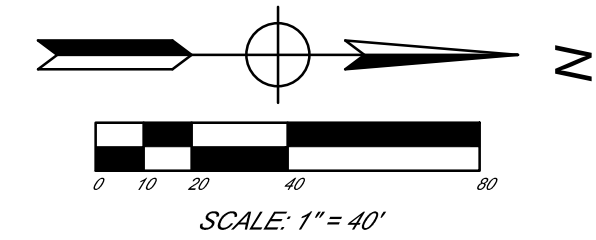
TR-REM - TREE REMOVAL

RIGHT OF WAY






GRADY DRAIN - DRAIN RIGHT-OF-WAY IS 16.5' WIDE ON EACH SIDE OF CENTERLINE OF DRAIN.

BY	MARK	REVISIONS	DATE
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GRADY DRAIN SAGINAW COUNTY, MICHIGAN			
PLAN AND PROFILE STA 0+00 TO STA 12+00			
DE. BY: CBJ/DSV DR. BY: CBJ		CH. BY: DSV APP. BY: RBH	PROJECT NO. 129011SG2020
STDS.		SHEET 03 OF 06	DR 03
DATE: AUGUST 2021 SCALE: H:1"=40' V:1"=4'		FILE NO. DR-4120-03	

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



PROPOSED STORM SEWER STRUCTURE TABLE				
STRUCTURE NO.	LOCATION	OFFSET	SIZE/TYPE	EJ FRAME W/ TYPE COVER GRATE
GD7	12+07	0.0' T.	4' DIA MH/CB	1045 W/N OVAL GRATE
GD8	13+44	1.6' RT.	5' DIA MH/CB	1045 W/N OVAL GRATE
GD9	14+46	2.8' RT.	18" INLET TEE	6115N GRATE
GD10	15+88	4.4' RT.	4' DIA MH/CB	1045 W/N OVAL GRATE
GD11	15+99	5.3' LT.	4' DIA MH	1045 W/A SOLID COVER
GD12	13+71	42.2' LT.	2' DIA CB	6121N GRATE

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

LEGEND

(R) - REMOVE EXISTING
(TR-REM) - TREE REMOVAL

CONSTRUCTION NOTES

1. STA 14+00± TO STA 16+00± - REMOVE EXISTING 12" STM SWR

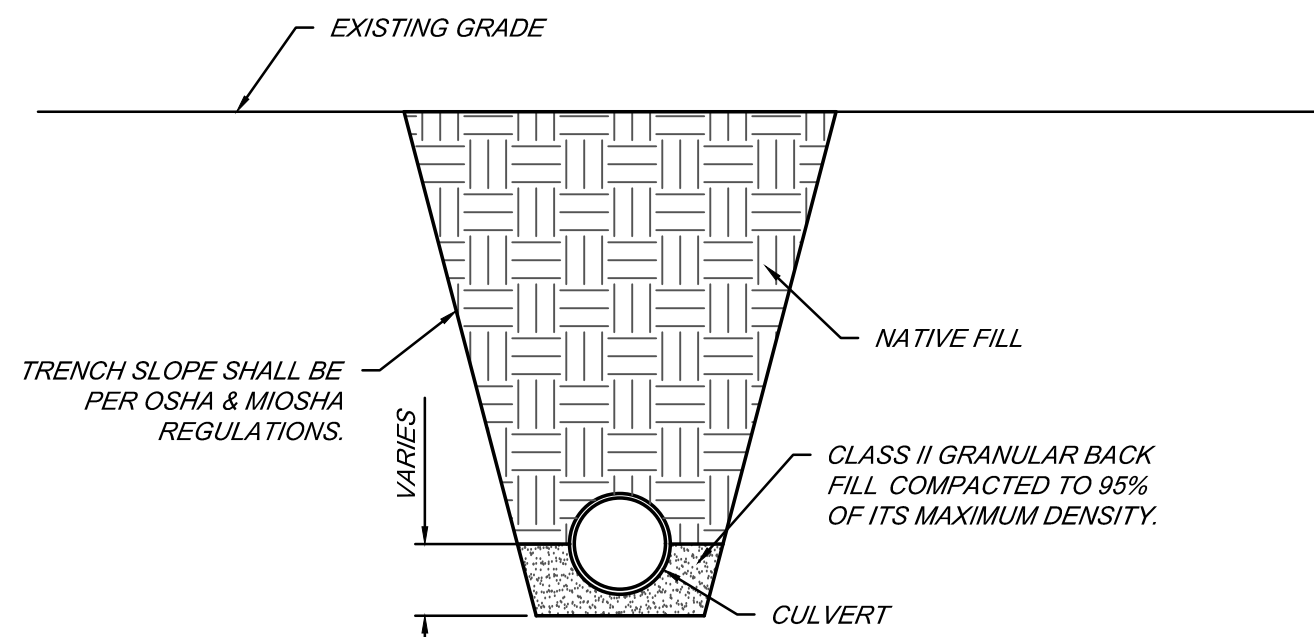
BENCHMARKS

BM #200 - SET GEAR SPIKE IN NW FACE OF POWER POLE IN
DRIVEWAY OF HOUSE #1043 ON THE EAST SIDE OF LEDDY ROAD.
EL 597.47

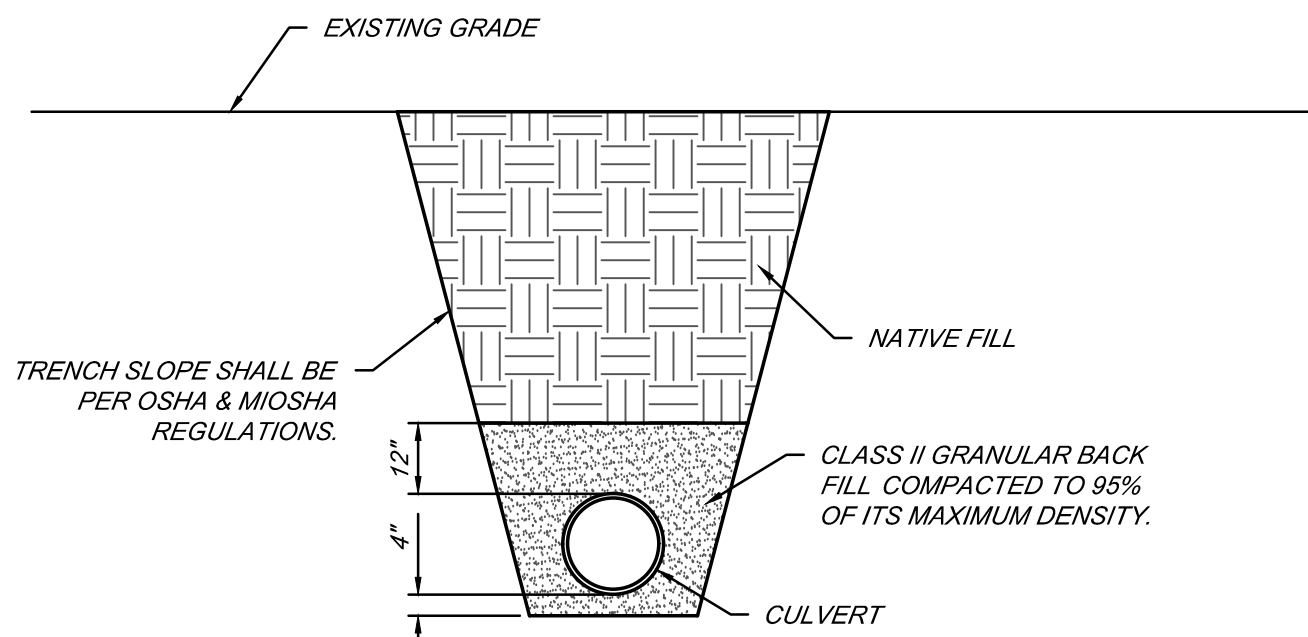
RIGHT OF WAY

GRADT DRAIN - DRAIN RIGHT-OF-WAY IS 16.5' WIDE ON EACH SIDE OF CENTERLINE OF DRAIN.

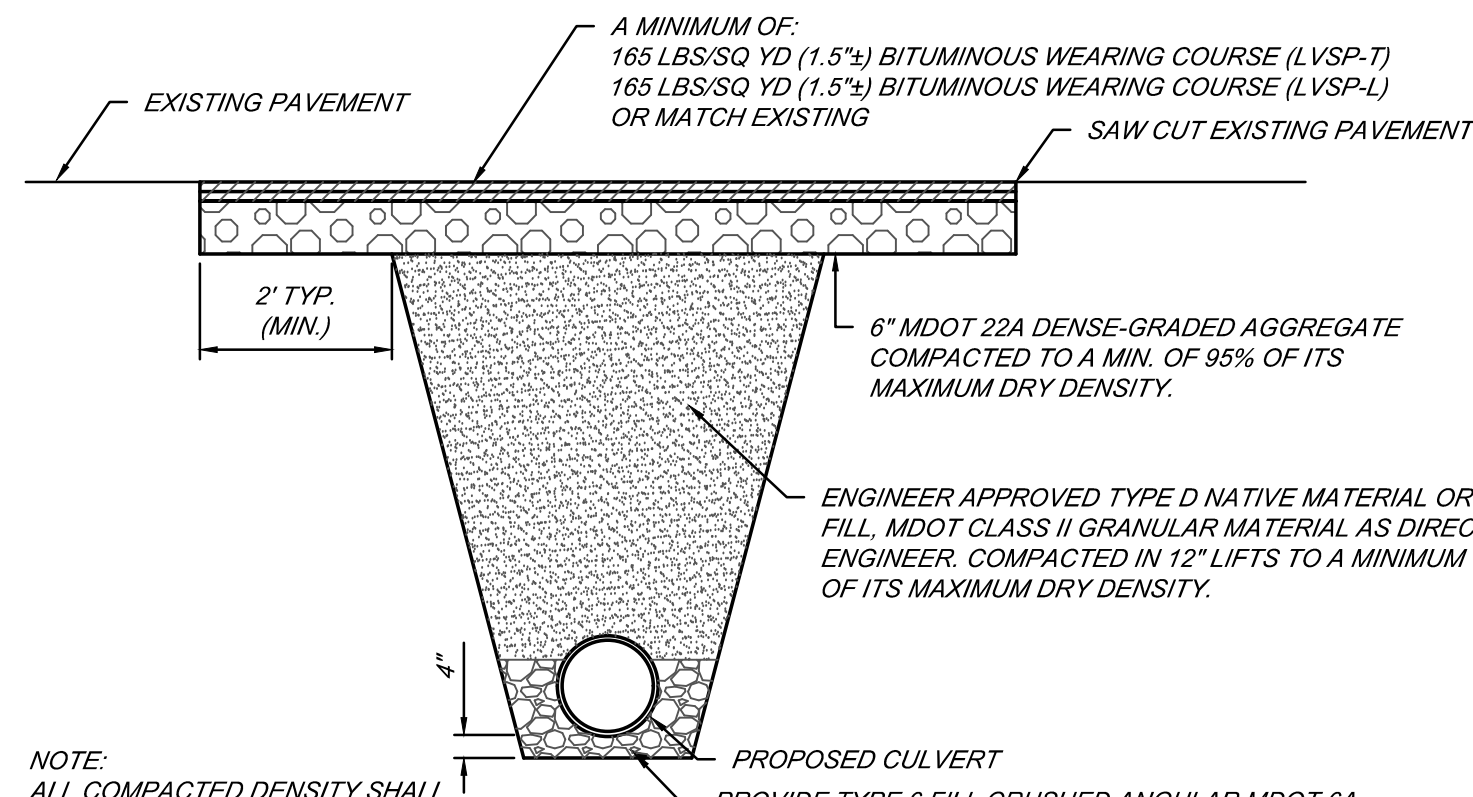
[illegible]



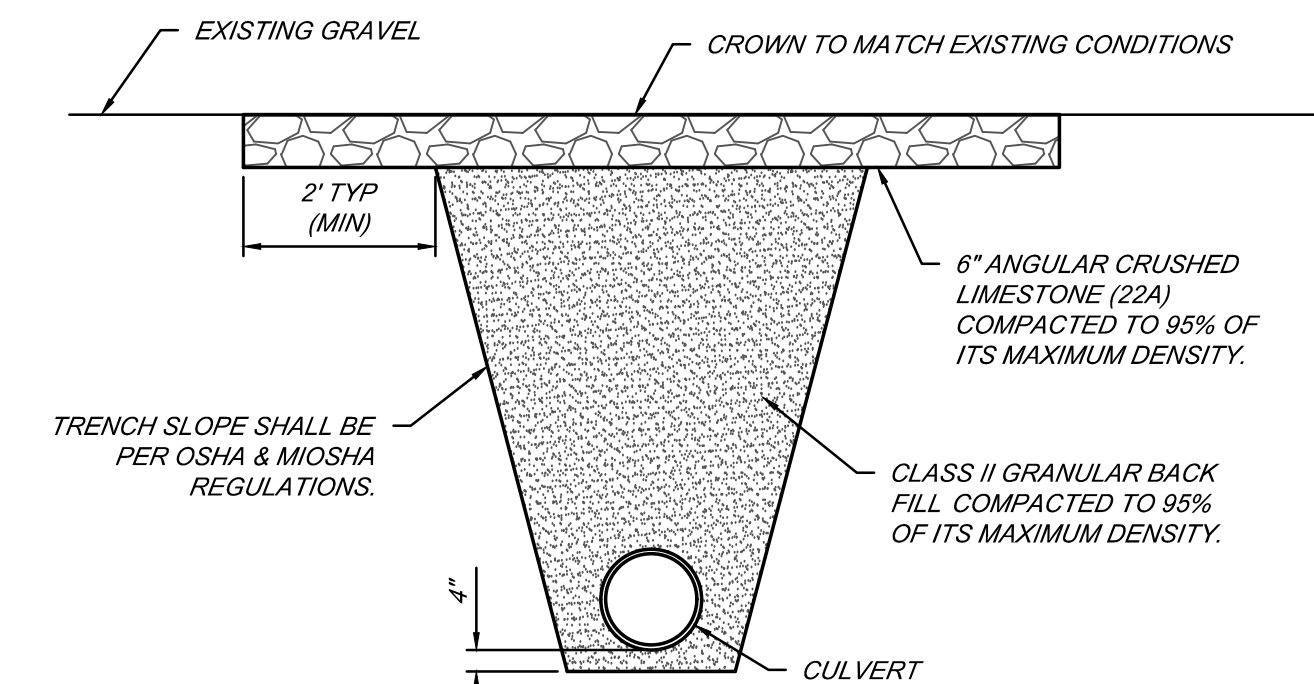
**TYPICAL RCP STORM SEWER
TRENCH DETAIL**
NOT TO SCALE



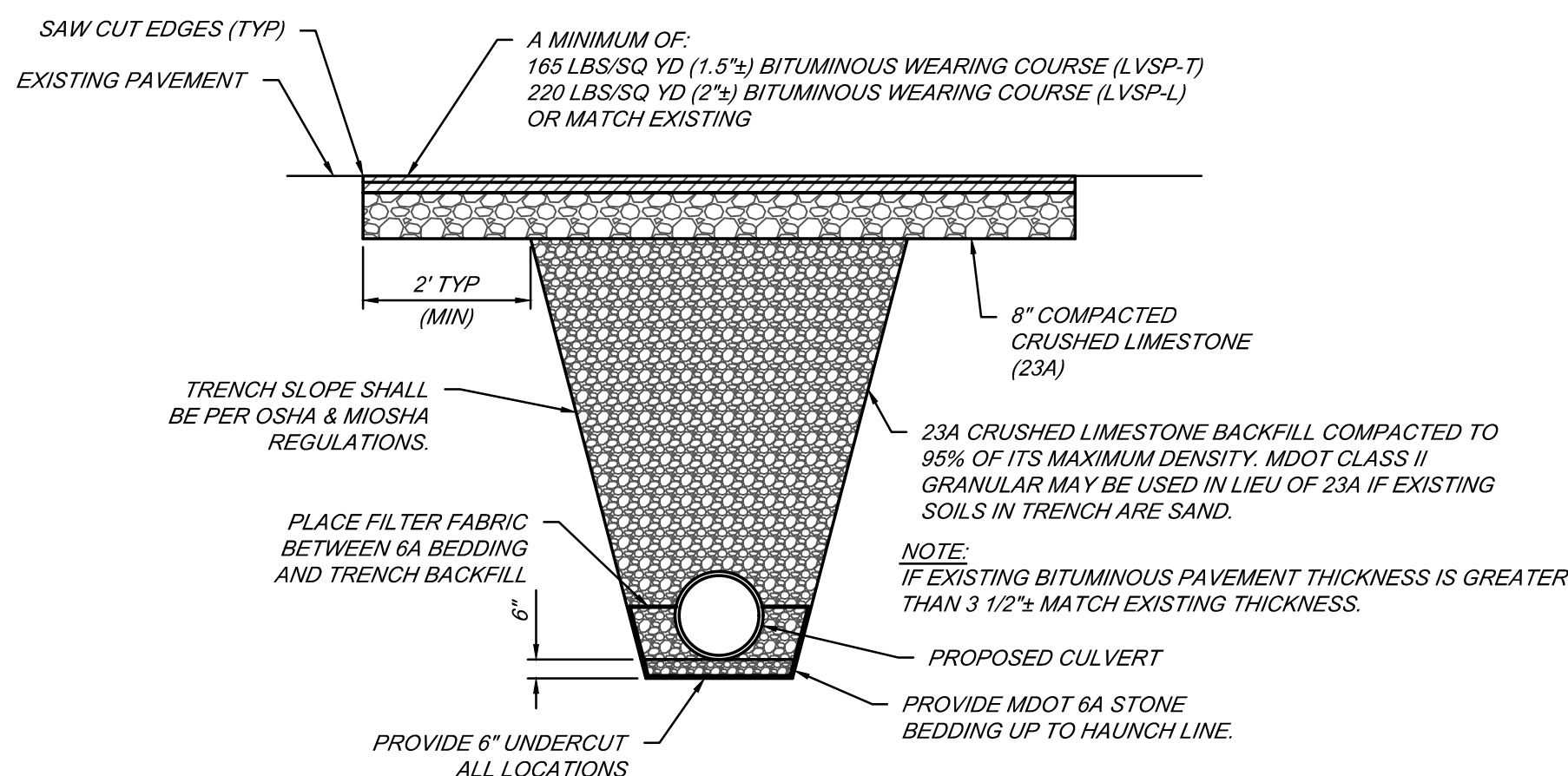
**TYPICAL HP STORM SEWER
TRENCH DETAIL**
NOT TO SCALE



**TYPICAL BITUMINOUS DRIVE
CROSSING DETAIL**
NOT TO SCALE



**TYPICAL GRAVEL DRIVE
CROSSING DETAIL**
NOT TO SCALE



SCRC BITUMINOUS PAVEMENT RESTORATION
NOT TO SCALE

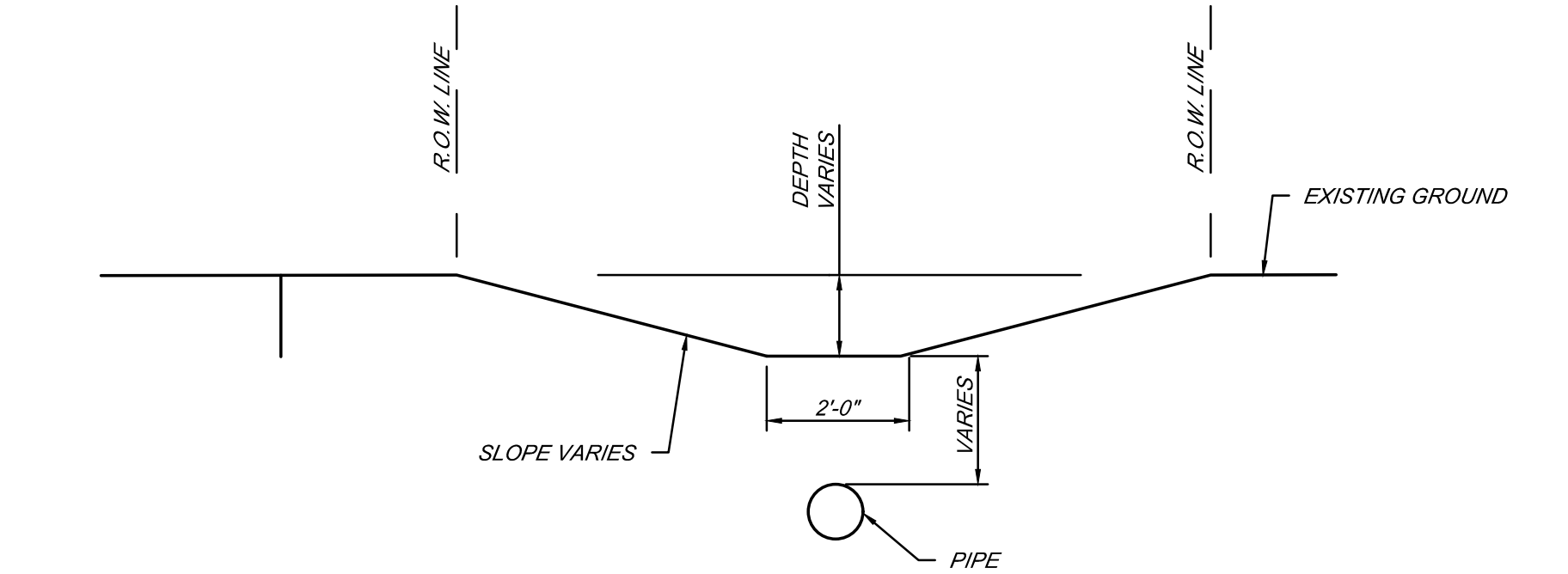
NOTE:
IF EXISTING BITUMINOUS PAVEMENT THICKNESS IS
GREATER THAN 4", MATCH EXISTING THICKNESS.

NOTE:
23A TRENCH BACKFILL SHALL EXTEND UP TO THE FINAL
TRAVELED SURFACE GRADE ON GRAVEL ROAD OR HAVE A
MINIMUM DEPTH OF 10" ON DRIVE SURFACE IF SAND
BACKFILL IS USED.

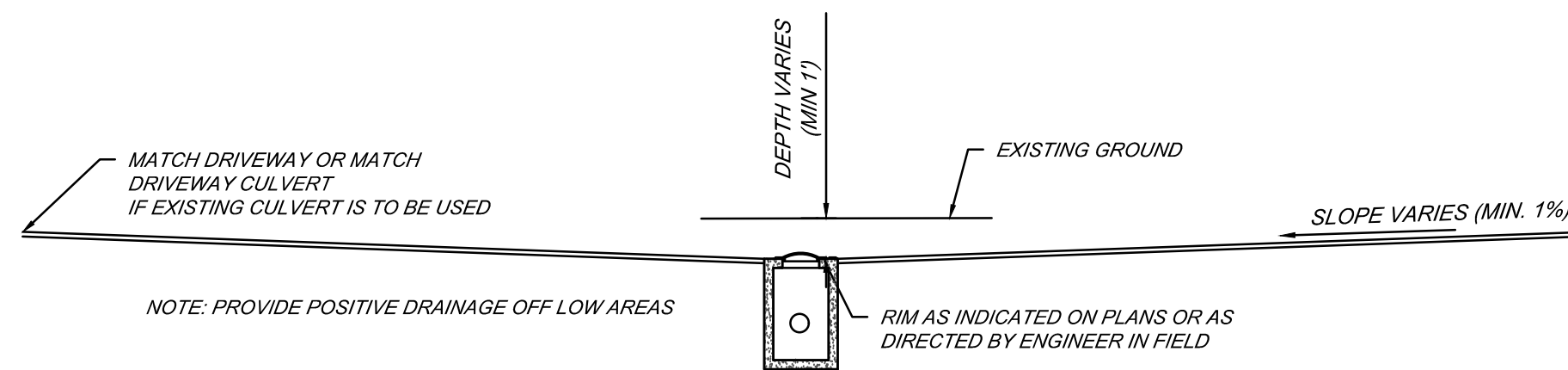
TRENCH WIDTH CHART

PIPE SIZE	MINIMUM	MAXIMUM
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"

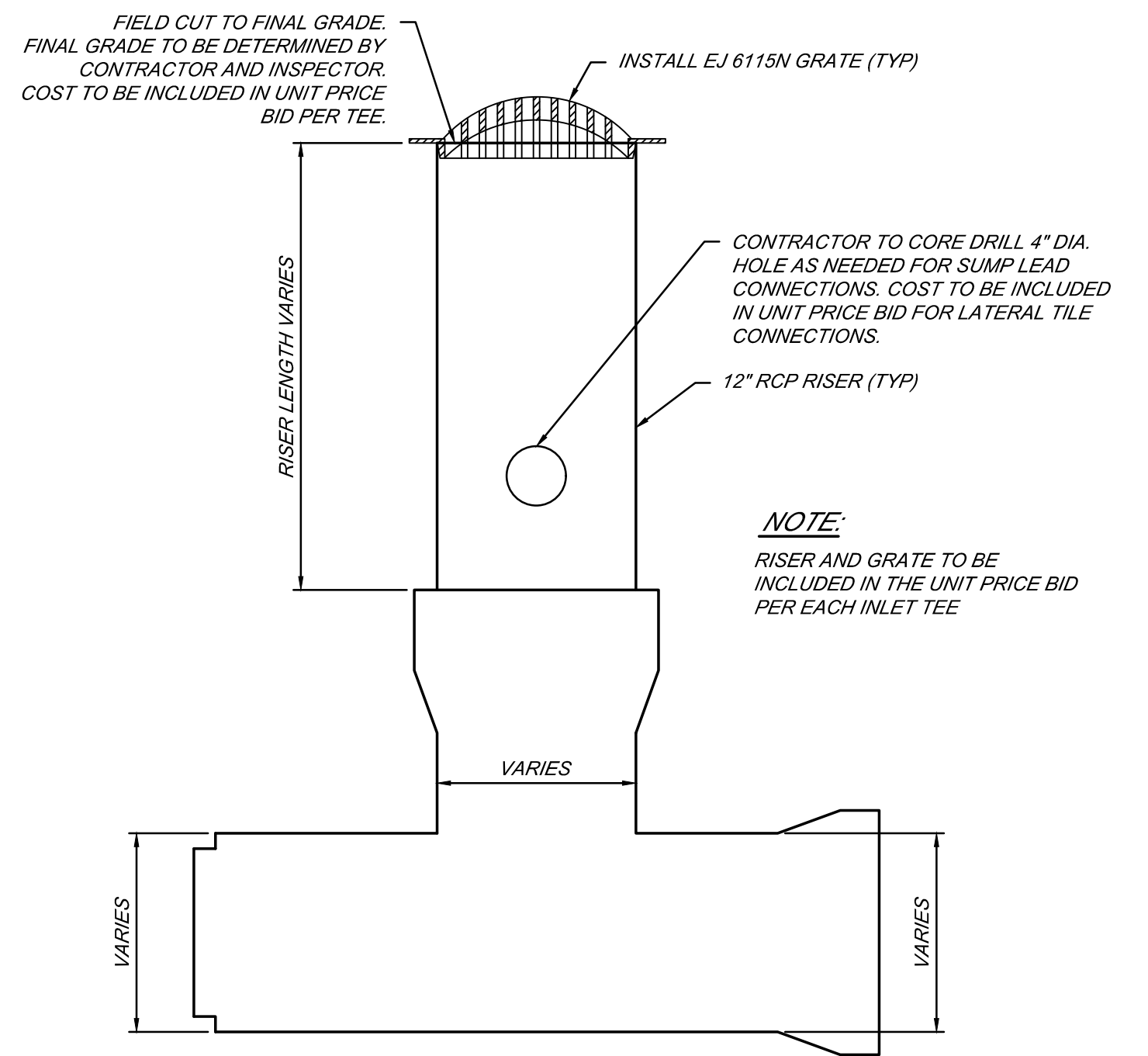
NOTE: CONTRACTOR SHALL USE APPROPRIATE
MEASURES, APPROVED BY THE ENGINEER,
TO PROVIDE A SEALED CONNECTION.



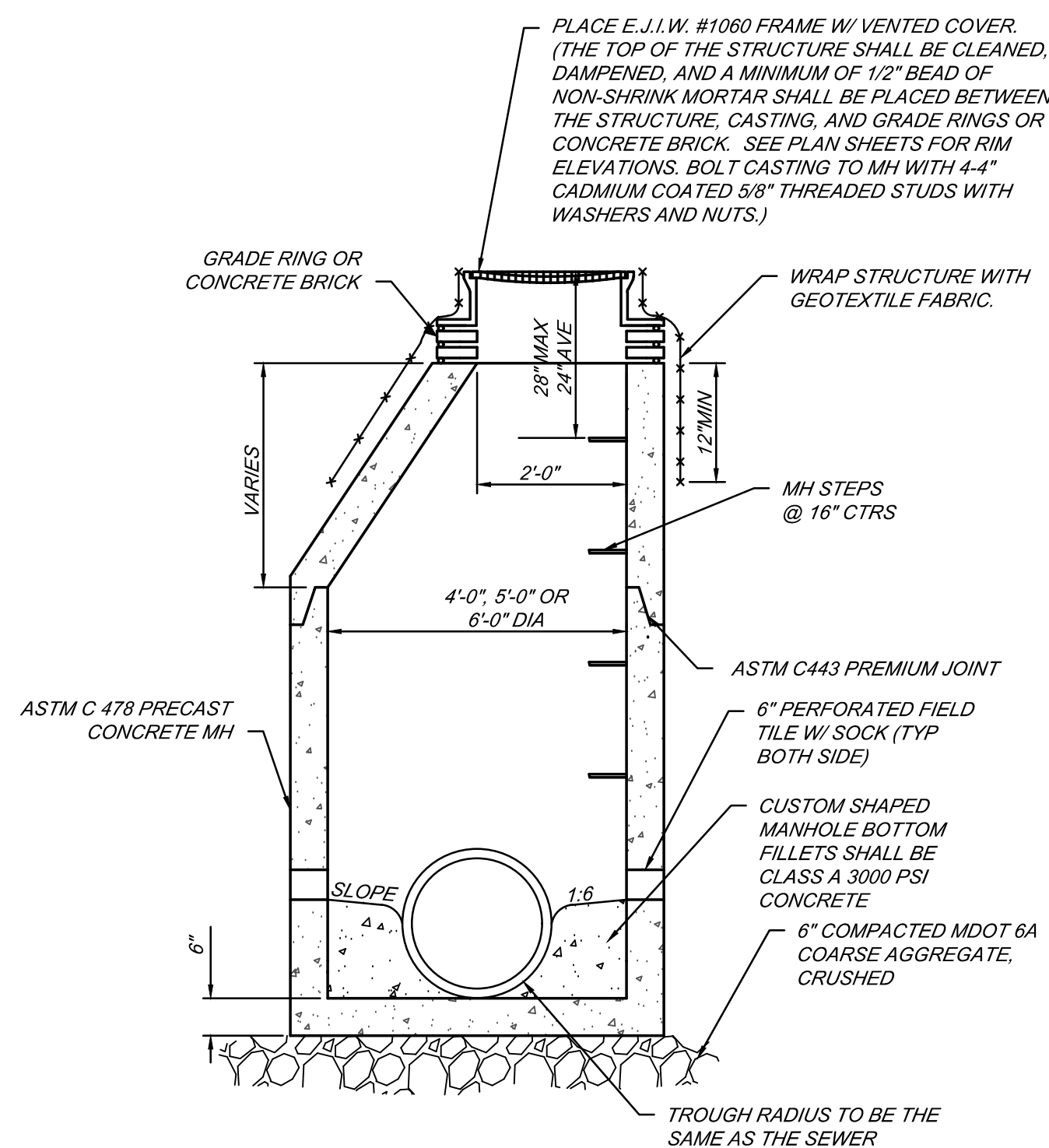
**TYPICAL VALLEY SHAPED
DITCH DETAIL**
NOT TO SCALE



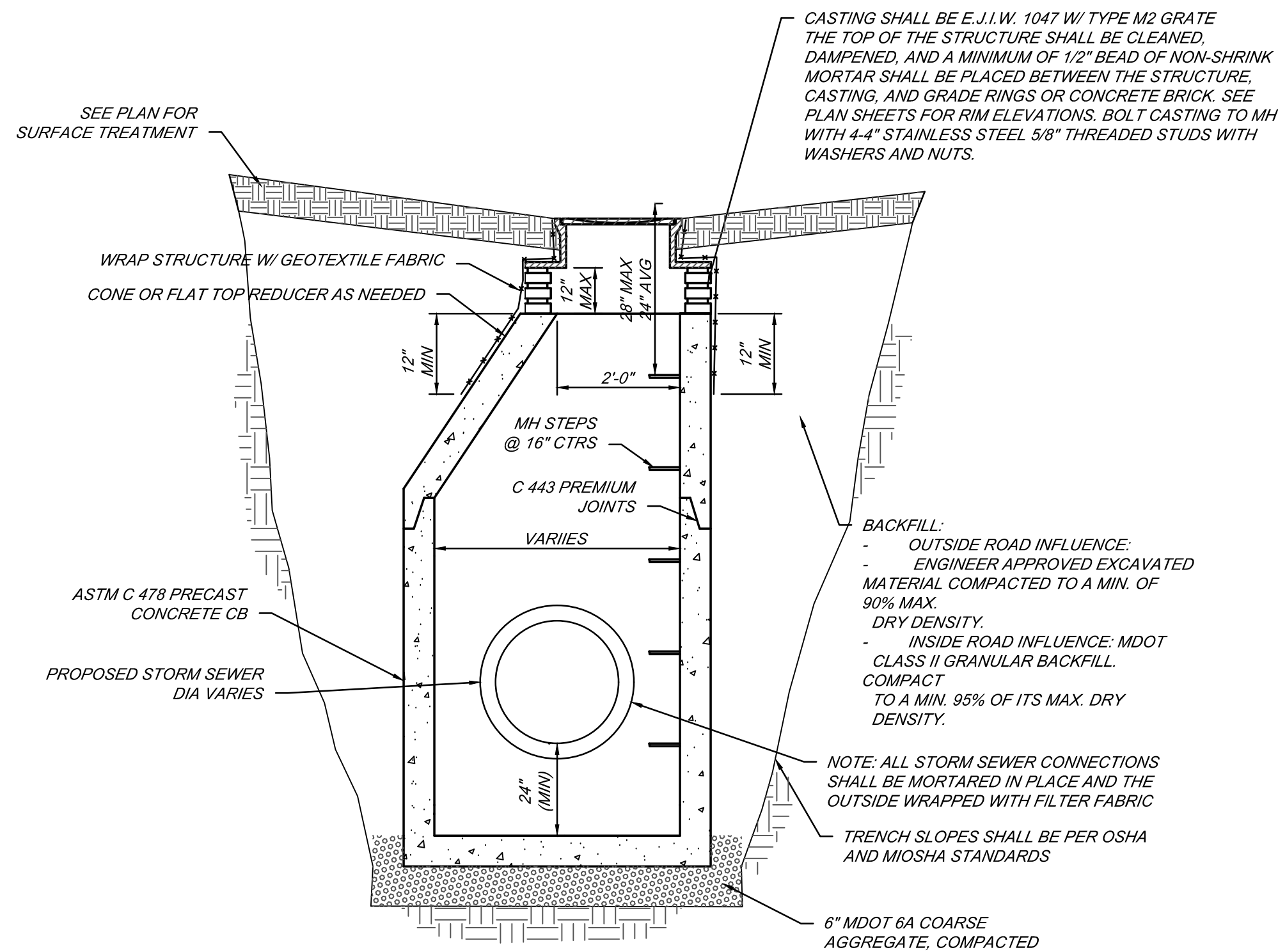
CATCH BASIN GRADING DETAIL
NOT TO SCALE



INLET TEE DETAIL
NOT TO SCALE



4' - 6' DIA. MANHOLE DETAIL



48"-60" DIA. CATCHBASIN DETAIL
NOT TO SCALE

BY	MARK	REVISIONS	DATE
DE. BY:	CBP/DSV	CH. BY:	DSV
DR. BY:	CBP	APP. BY:	RBH
STDS.		SHEET 05 OF 06	DR
DATE	AUGUST 2021	FILE NO.	DR-4120-05
SCALE	AS SHOWN		05

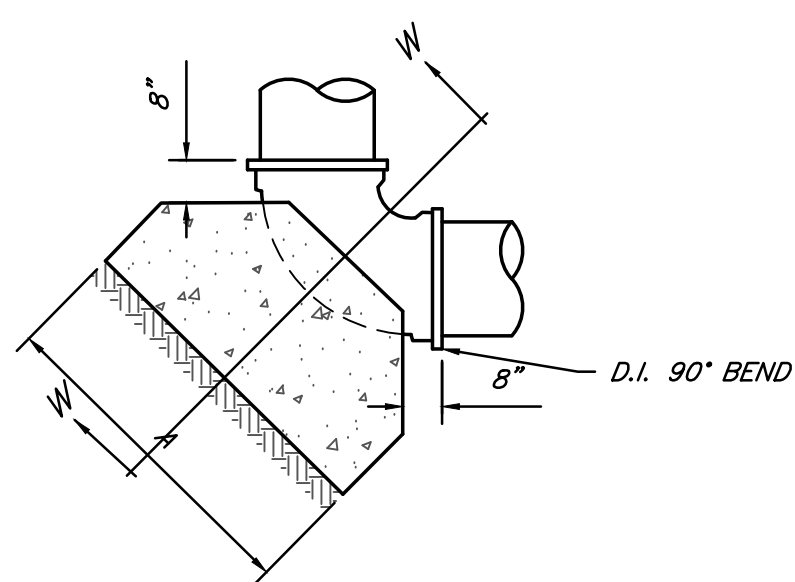
GRADT DRAIN
SAGINAW COUNTY, MICHIGAN

STANDARD DETAILS

Spicer group

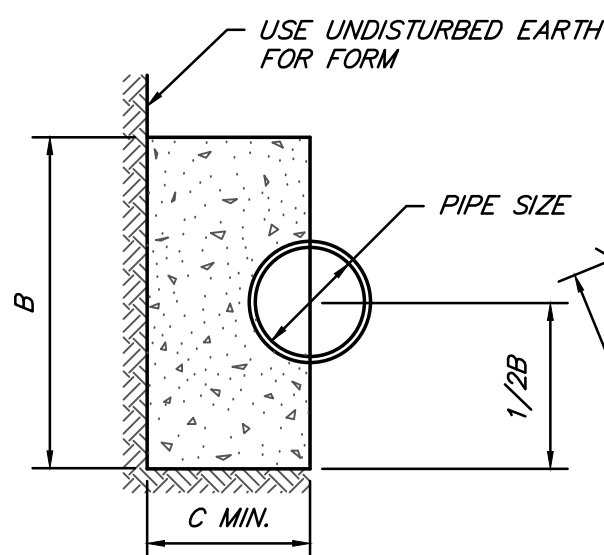
SAGINAW OFFICE
230 S. Washington Ave.
Saginaw, MI 48607 Tel.
989-754-4717 Fax.
989-754-4440
www.SpicerGroup.com

PROJECT NO.
129011SG2020



PLAN

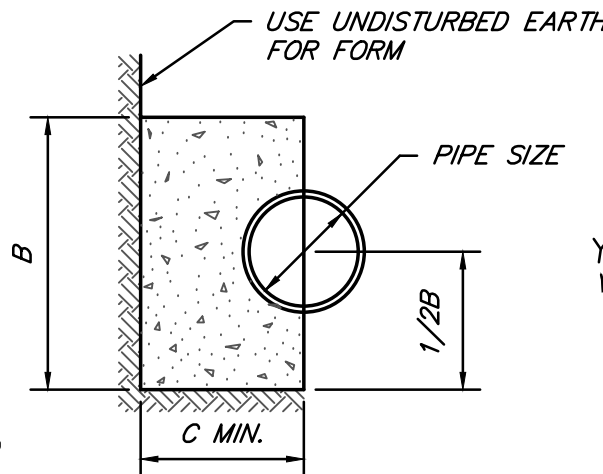
DETAIL OF BLOCK FOR 90° BEND OR TEE
Q - MIN. CU. YD. CONCRETE PER BLOCK



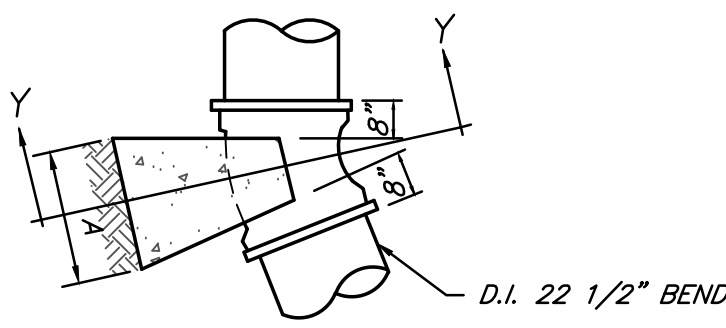
SEC. W-W

PLAN

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

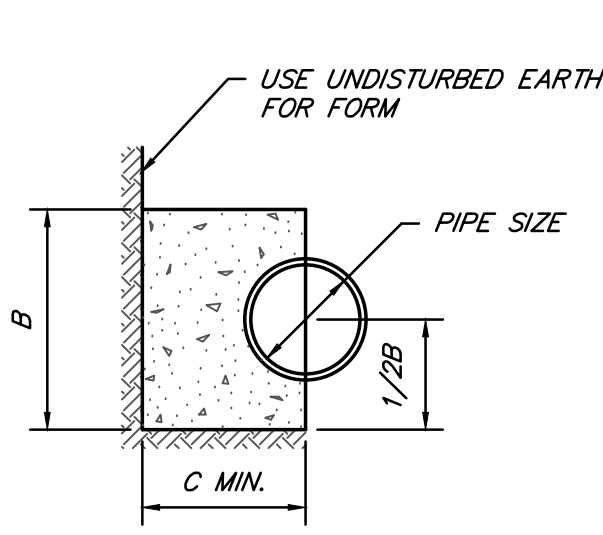


SEC. X-X

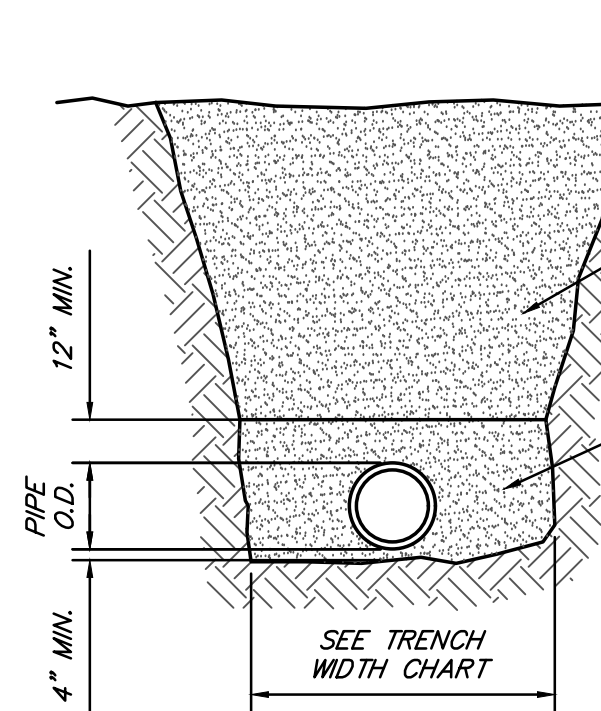


PLAN

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



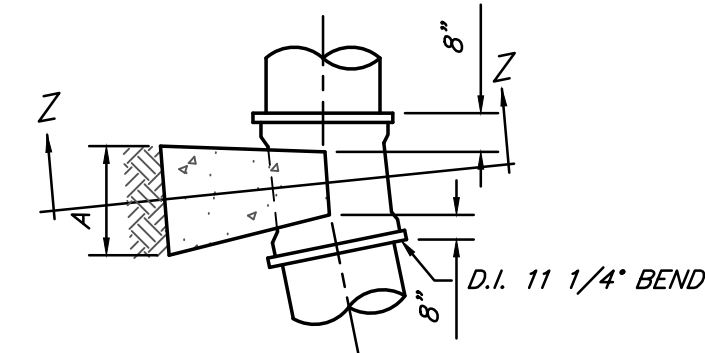
SEC. Y-Y



TRENCH DETAIL

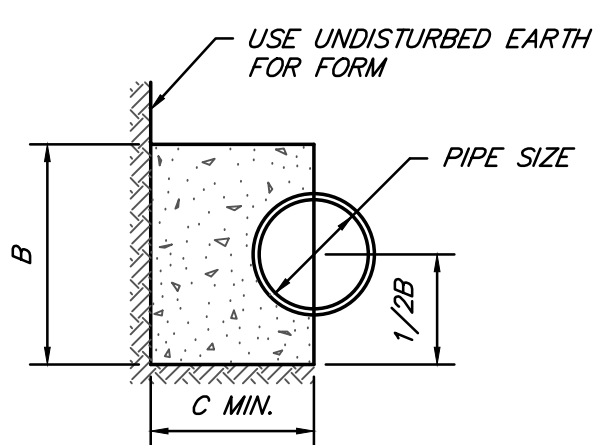
TRENCH SLOPE SHALL BE PER OSHA & MISHA REGULATIONS.
TRENCH SHALL BE BACKFILLED COMPLETELY WITH APPROVED MDOT CLASS II GRANULAR MATERIAL OR ACCEPTABLE EXCAVATED MATERIAL AND COMPACTED AS SPECIFIED.
PROVIDE MDOT CLASS II SAND BACKFILL TO A MIN. OF 12" OVER TOP OF PIPE AND COMPACT TO 95% MAXIMUM DENSITY.

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"

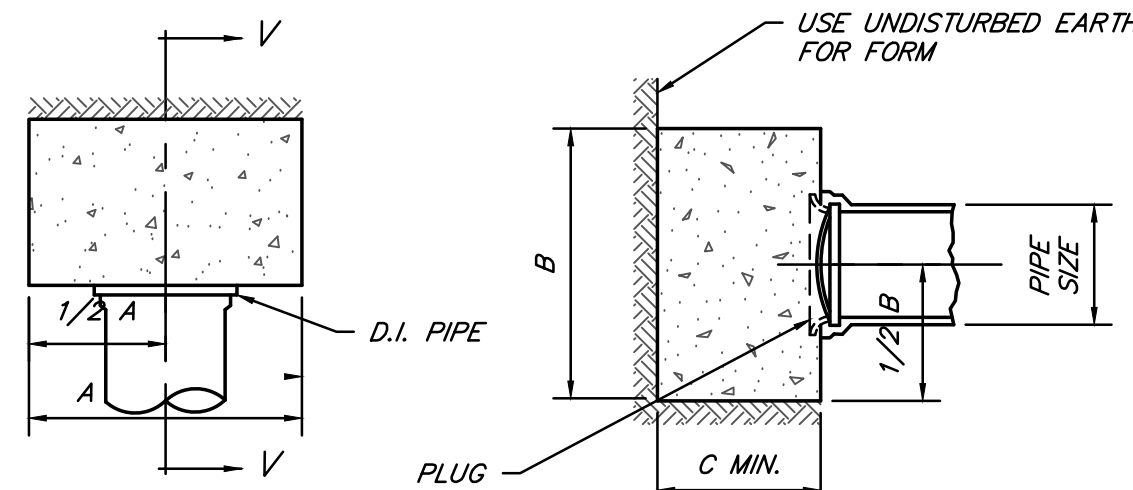


PLAN

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

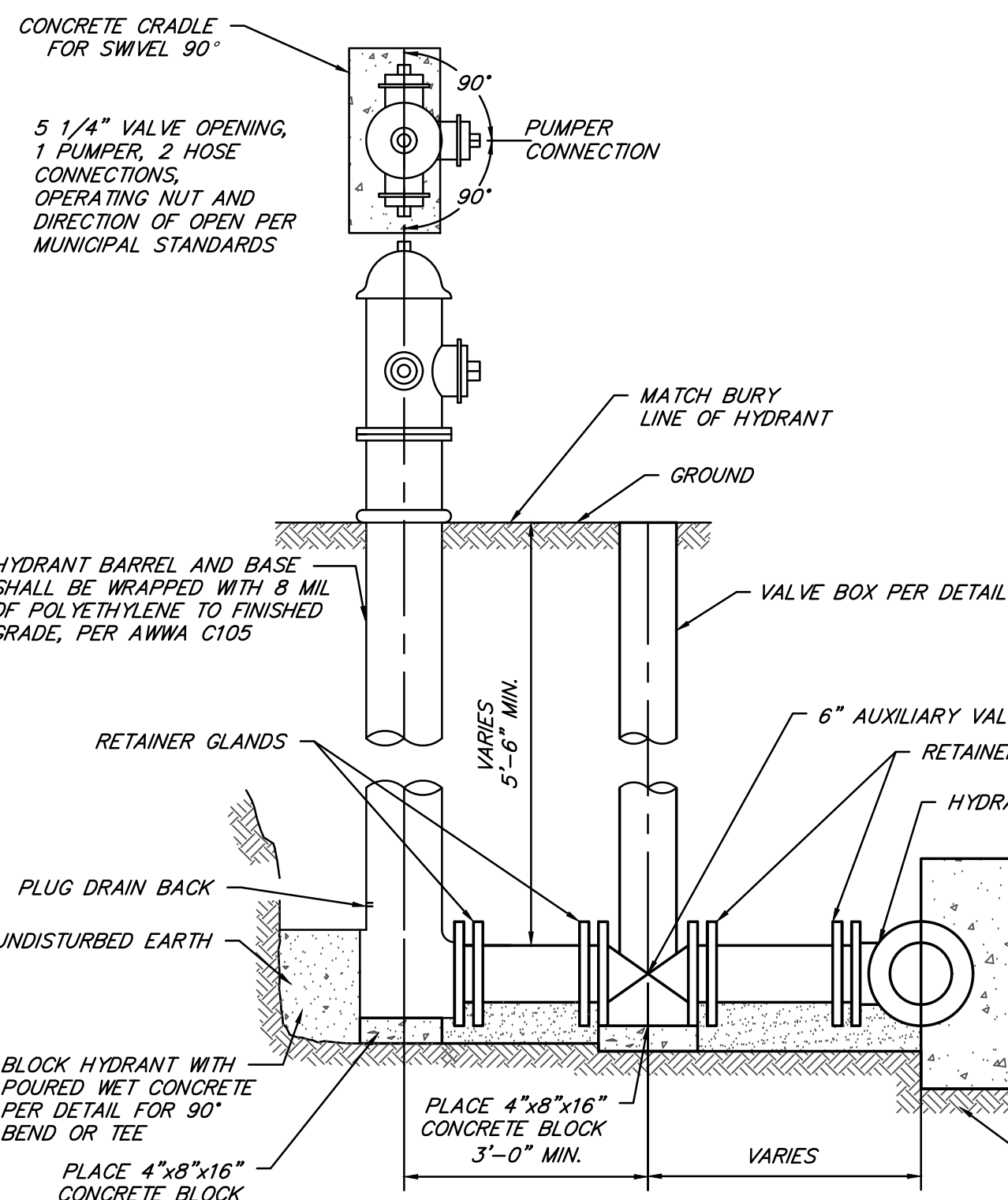
NOTE:

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.

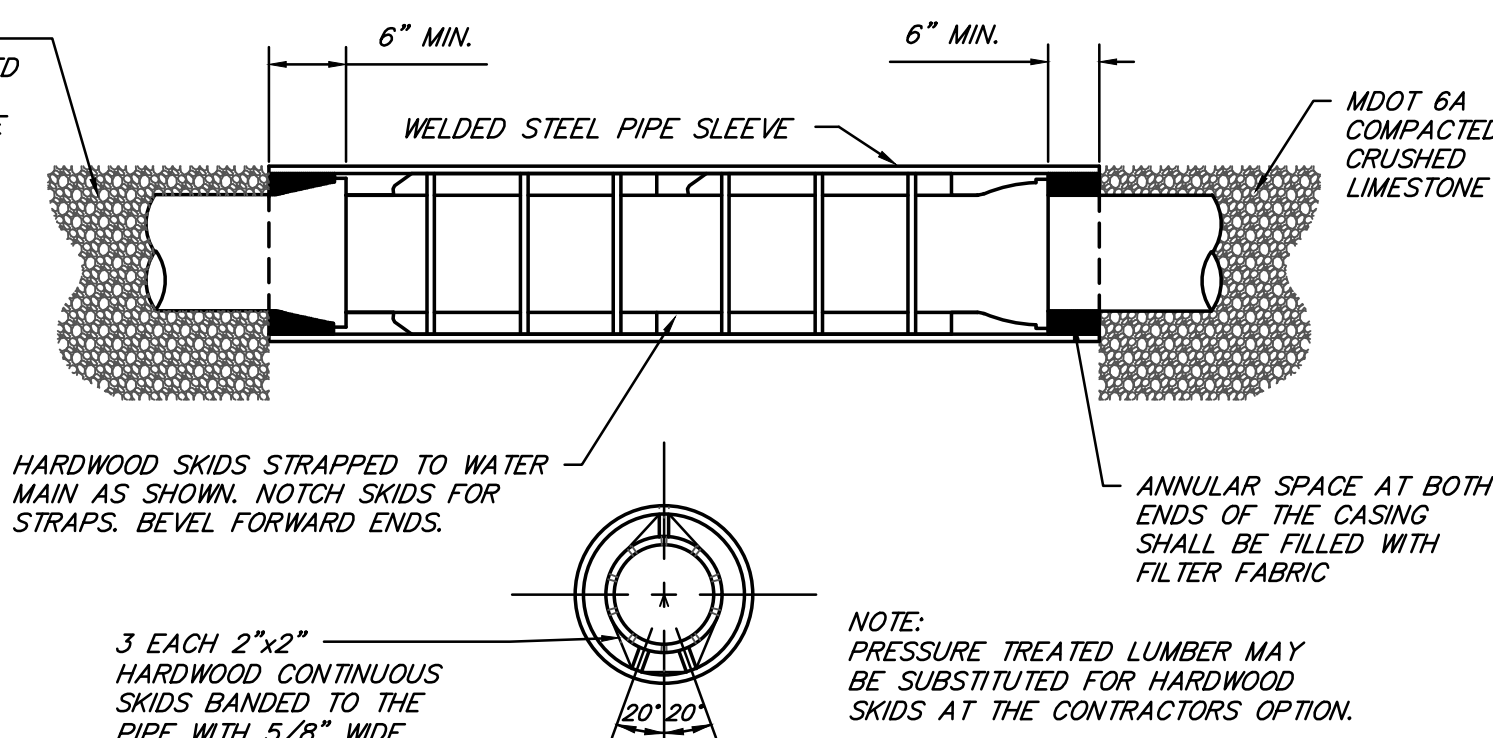
ALTERNATE FOR HYDRANTS: TWO 3/4" THREADED RESTRAINING RODS MAY BE USED AT HYDRANTS IN ADDITION TO ALL BLOCKING. RODS SHALL RECEIVE A MINIMUM DRY FILM OF 15 MILS (DTM) OF COAL TAR EPOXY. ALL COSTS ASSOCIATED WITH THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID PER EACH HYDRANT INSTALLED.

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

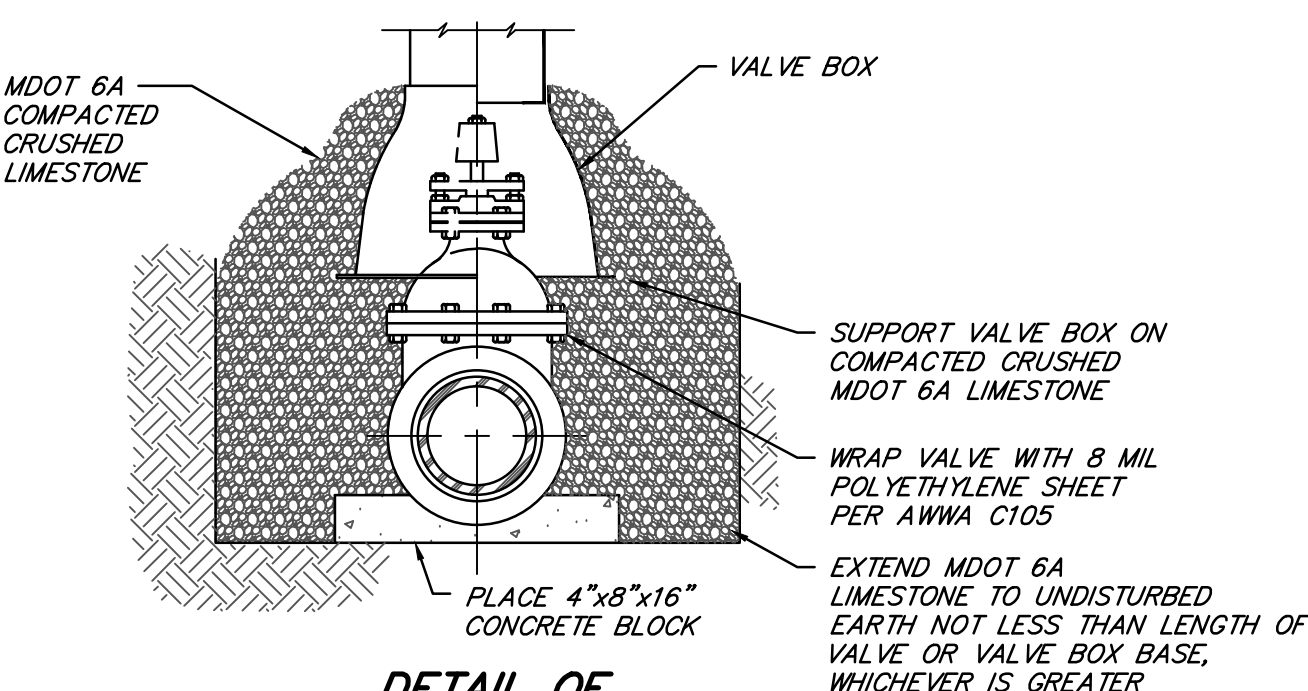
THE CONCRETE USED FOR BLOCKING SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI IN 28 DAYS.



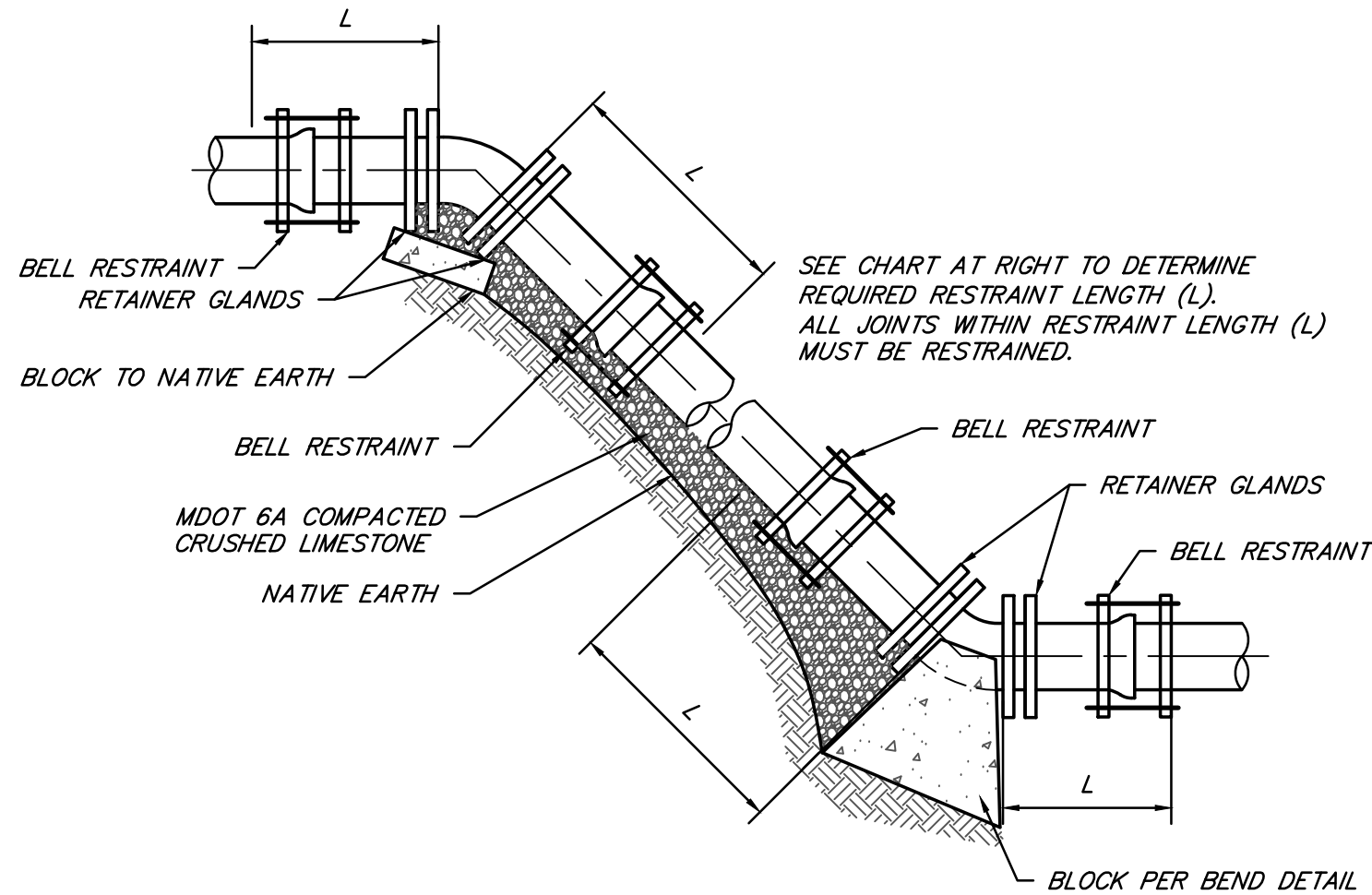
DETAIL OF SETTING HYDRANT



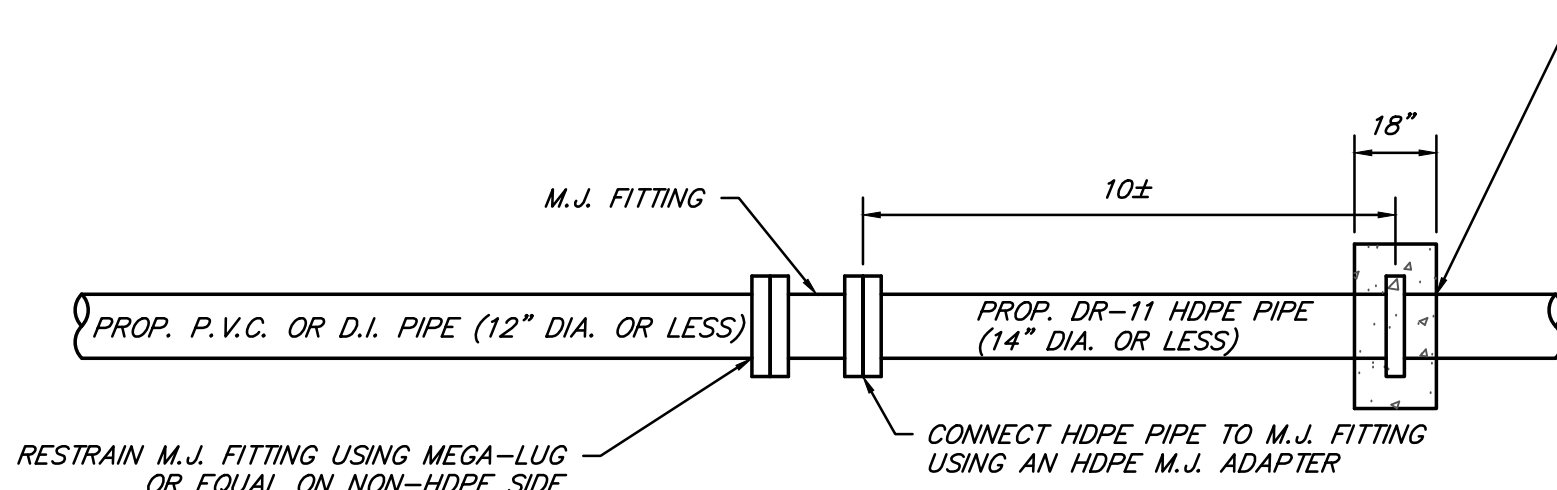
WATER MAIN IN SLEEVE DETAIL



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	