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MAPLE HARBOR SEWER DISTRICT

SANITARY SEWER PLANS

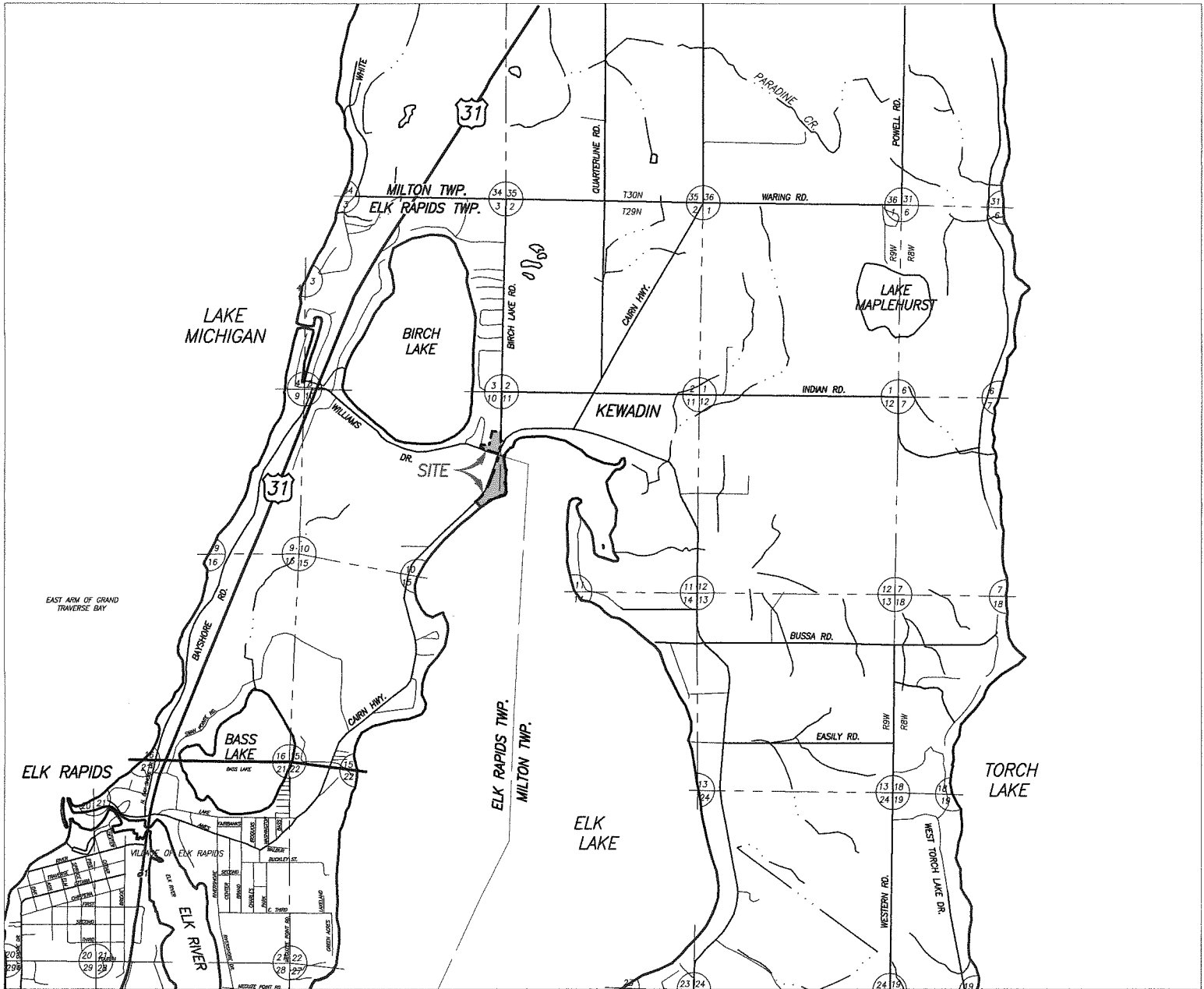
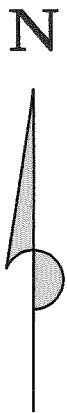
JOB NUMBER: 17-4932

GENERAL NOTES

EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS, OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED HEREIN, ALL MATERIALS AND WORKMANSHIP SHALL BE ACCORDING TO THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION 2012 EDITION, THE MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY CONSTRUCTION PERMIT REQUIREMENTS AND THE CONSTRUCTION STANDARDS OF THE ANTRIM COUNTY ROAD COMMISSION.



COUNTY KEY



1		2	
WATER AND SEWER SYMBOLS		REMOVAL PATTERNS	UNDERGROUND UTILITY LIFESTYLES
ROPOSED CATCH BASIN		<div></div> REMOVING PAVEMENT (HMA)	ST ST EXISTING STORM SEWER
XISTING CATCH BASIN			ST ST PROPOSED STORM SEWER
ROPOSED ROUND CATCH BASIN			SAN SAN PROPOSED SANITARY SEWER
XISTING ROUND CATCH BASIN			SAN SAN EXISTING SANITARY SEWER
ROPOSED STORM MANHOLE			SSFM SSFM PROPOSED SANITARY FORCEMAIN
XISTING STORM MANHOLE		SSFM SSFM EXISTING SANITARY FORCEMAIN	
ROPOSED SANITARY MANHOLE		W W PROPOSED WATER LINE	
XISTING SANITARY MANHOLE		W W EXISTING WATER LINE	
ROPOSED SANITARY CLEANOUT		G G PROPOSED NATURAL GAS LINE	
XISTING SANITARY CLEANOUT		G G EXISTING NATURAL GAS LINE	
ROPOSED WATER MANHOLE		U/E U/E PROPOSED ELECTRIC CONDUIT	
XISTING WATER MANHOLE		U/E U/E EXISTING UNERGROUND ELECTRIC	
ROPOSED FIRE HYDRANT		TEL TEL PROPOSED TELEPHONE	
XISTING FIRE HYDRANT		TEL TEL EXISTING TELEPHONE	
ROPOSED WATER VALVE AND BOX		CTV CTV PROPOSED CABLE TV	
XISTING WATER VALVE		CTV CTV EXISTING CABLE TV	
ROPOSED WATER SHUTOFF		F/O F/O PROPOSED FIBER OPTIC	
XISTING WATER SHUTOFF		F/O F/O EXISTING FIBER OPTIC	
UTILITIES SYMBOLS		PROPERTY/EASEMENT LIFESTYLES	
XISTING TELEPHONE MANHOLE		R R PROPERTY LINE	
XISTING CABLE TV MANHOLE		R/W R/W RIGHT OF WAY	
XISTING NATURAL GAS MANHOLE		SETBACK LINE	
XISTING GAS METER		X X X X X X X PROPOSED FENCE	
XISTING GAS SHUT OFF		X X X X X X X X EXISTING FENCE	
ROPOSED ELECTRICAL MANHOLE		PROPOSED UNIT LINE	
XISTING ELECTRICAL MANHOLE		EXISTING UNIT LINE	
ROP. PRIMARY ELECT. HAND HOLE		TOPO LIFESTYLES	
XIST. PRIMARY ELECT. HAND HOLE		600 600 PROPOSED MAJOR CONTOUR	
ROP. SECONDARY ELECT. HAND HOLE		599 599 PROPOSED MINOR CONTOUR	
XIST. SECONDARY ELECT. HAND HOLE		600 600 EXISTING MAJOR CONTOUR	
XISTING TRANSFORMER		599 599 EXISTING MINOR CONTOUR	
ROPOSED UTILITY POLE		PROPOSED TREE LINE	
XISTING UTILITY POLE		EXISTING TREE LINE	
ROPOSED LIGHT POST (NO ARMS)		PROPOSED SWALE	
XISTING LIGHT POST (NO ARMS)		EXISTING SWALE	
ROPOSED GUY WIRE			
XISTING GUY WIRE			
LANDSCAPING SYMBOLS		ABBREVIATIONS	
ROPOSED TREE		ABS ACRYLONITRILE BUTADIENE STYRENE	
XISTING TREE		ADA AMERICANS WITH DISABILITIES ACT	
ROPOSED CONIFER TREE		ALT ALTERNATE	
XISTING CONIFER TREE		ASPH ASPHALT	
ROPOSED SHRUB		BC BACK OF CURB	
XISTING SHRUB		BLDG BUILDING	
PROPERTY SYMBOLS		BM BENCHMARK	
ONUMENT		CB CATCH BASIN	
W PROPERTY CORNER		CIP CAST IRON PIPE	
ISTING PROPERTY CORNER		CL CENTER LINE	
NCH MARK		CMP CORRUGATED METAL PIPE	
IL SET		CO CLEANOUT	
MISCELLANEOUS SYMBOLS		CONC CONCRETE	
SOIL BORING INDICATOR		CU FT CUBIC FEET	
ADJUST STRUCTURE		CU YD CUBIC YARD	
ADJUST FIRE HYDRANT		DIP DUCTILE IRON PIPE	
ADJUST BY OTHERS		E EAST	
RELOCATE BY OTHERS		EL ELEVATION	
SALVAGE		EP EDGE OF PAVEMENT (PAVING)	
PROPOSED BUILDING		EX EXISTING	
EXISTING BUILDING		FDTN FOUNDATION	
		FFE FINISH FLOOR ELEVATION	
		FH FIRE HYDRANT	
		FC FACE OF CURB	
		G NATURAL GAS	
		GEN GENERATOR	
		GIP GALVANIZED IRON PIPE	
		HC HANDICAP	
		HDPE HIGH DENSITY POLYETHYLENE	
		HDWL HEADWALL	
		HH HAND HOLE	
		HP HORSEPOWER	
		HYD HYDRANT	
		INV INVERT ELEVATION	
		IRR IRRIGATION WATER	
		LCY LOOSE CUBIC YARD	
		LP LIGHT POLE	
		LF/LFT LINEAR FOOT	
		LS LUMP SUM	
		MB MAIL BOX	
		MH MANHOLE	
		N NORTH	
		NTS NOT TO SCALE	
		PC POINT OF CURVE	
		PED PEDESTAL	
		PERF PERFORATED	
		PL PROPERTY LINE	
		PP POWER POLE	
		PRKG PARKING	
		PROP PROPOSED	
		PVC POLYVINYL CHLORIDE (PLASTIC)	
		R RADIUS	
		RCP REINFORCED CONCRETE PIPE	
		RD ROAD	
		REQD REQUIRED	
		ROW RIGHT OF WAY	
		S SOUTH	
		SALV SALVAGE	
		SAN SANITARY	
		SB-xx SOIL BORING-XX (E.G., SB-01)	
		SCHD SCHEDULE (PIPE)	
		SD STORM DRAIN	
		SF/SFT SQUARE FOOT	
		SP EL SPOT ELEVATION	
		STM STORM SEWER	
		ST STREET	
		STA STATION	
		STD STANDARD	
		SW SIDEWALK	
		TBM TEMPORARY BENCHMARK	
		TD TRENCH DRAIN	
		TEL TELEPHONE	
		TOC TOP OF CONCRETE	
		TC TOP OF CURB	
		TOC FTG TOP OF CONCRETE FOOTING	
		TOC WALL TOP OF CONCRETE WALL	
		TP TELEPHONE POLE	
		TR TOP OF RIM	
		TYP TYPICAL	
		UGND UNDERGROUND	
		UP UTILITY POLE	
		UTIL UTILITY	
		VAR VARIES	
		VC VERTICAL CURVE	
		VCP VITRIFIED CLAY PIPE	
		VEH VEHICLE	
		VOL VOLUME	
		W/O WITH OUT	
		W WEST	
		WM WATER MAIN	
		WT EL WATER ELEVATION	
		YD YARD DRAIN	

GENERAL NOTES

STANDARDS

MDOT DESIGNATION REFERS TO THE "STATE OF MICHIGAN DEPARTMENT OF TRANSPORTATION CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND STANDARD PLANS" AND SHALL BE CONSIDERED AS THE STANDARD FOR THE PROJECT UNLESS OTHERWISE MODIFIED BY SPECIAL PROVISION.

EXISTING UTILITIES

EXISTING UTILITIES HAVE BEEN LOCATED TO THE BEST OF THE OWNER'S KNOWLEDGE. FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174, 2013, THE CONTRACTOR SHALL NOTIFY MISS DIG AT 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 CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL UTILITY COMPANIES, INCLUDING BUT NOT LIMITED TO, ELECTRIC, NATURAL GAS, CABLE, TELEPHONE, SEWER, AND WATER.

CONTRACTOR IS ADVISED THAT CONNECTION TO SEWER SUPPLY MUST BE COORDINATED WITH THE VILLAGE OF ELK RAPIDS. NOTIFICATION TO THE UTILITY IS MADE THROUGH MISS DIG., DIRECT CONTACT IS BY: SEWER DEPT., BRAD KLUCZYNSKI - (231) 264-9971.

CONSTRUCTION LIMITS

THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION ACTIVITIES TO BE WITHIN THE RIGHT-OF-WAY LIMITS AS SHOWN ON PLAN SHEETS. CONTRACTOR MAY OBTAIN PERMISSION FROM ADJACENT PROPERTY OWNERS FOR TEMPORARY CONSTRUCTION ACTIVITIES AT THEIR DISCRETION.

SHOULD ANY AREA OUTSIDE THE CONSTRUCTION LIMITS BE IMPACTED BY THE CONTRACTOR'S ACTIVITIES, THE CONTRACTOR SHALL BE REQUIRED TO RESTORE THE PROPERTY TO EXISTING ITS CONDITION AT NO ADDITIONAL COST TO OWNER.

TEMPORARY SOIL EROSION & SEDIMENTATION CONTROL

THE OWNER SHALL PROVIDE A SOIL EROSION CONTROL PERMIT THROUGH THE ANTRIM COUNTY OFFICE OF SOIL EROSION & SEDIMENT CONTROL. CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING SOIL EROSION CONTROLS IN ACCORDANCE WITH THE PERMIT ISSUED THROUGH THE COUNTY.

TEMPORARY DEWATERING

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A STABLE, DRY EXCAVATION FOR THE INSTALLATION OF FACILITIES AND STRUCTURES BELOW THE NATURAL GROUNDWATER LEVEL. THIS MAY REQUIRE THE DESIGN, INSTALLATION, OPERATION, AND MAINTENANCE OF TEMPORARY DEWATERING FACILITIES. WHERE SUCH DEWATERING FACILITIES ARE REQUIRED, THEY ARE THE CONTRACTOR'S RESPONSIBILITY AND ARE INCIDENTAL TO THE CONSTRUCTION ITEM BEING INSTALLED.

GRADING NOTES

CONTRACTOR IS ADVISED TO INVESTIGATE LOCAL CONDITIONS BEFORE BIDDING, IN ACCORDANCE WITH SUBSECTION 102.04 OF THE SPECIFICATIONS.

ALL GRADING FOR EXCAVATION, SHAPING, PREPARATION OF SUBGRADE, INCLUDING PROVIDING A TESTED AND ACCEPTED SUBBASE ON THE STREET RECONSTRUCTION SHALL BE PAID THROUGH THE "ROADWAY GRADING" PAY ITEM. THIS PAY ITEM SHALL ALSO INCLUDE IMPORTING, PLACING, SHAPING, AND COMPACTING FILL TO BRING EXISTING SURFACES UP TO A TESTED AND ACCEPTED PLAN SUBGRADE.

ALL GRADES SHOWN ON THE DRAWINGS ARE FINISH PLAN GRADES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DEDUCT FINISHED CROSS-SECTION THICKNESS TO ESTABLISH SUBGRADE ELEVATIONS.

STRIPPED ASPHALT, GRAVEL, AND TOPSOIL SHALL BE REMOVED & DISPOSED OFF-SITE. UPON COMPLETION OF ROUGH GRADING, NEW SCREENED TOPSOIL MEETING THE MDOT MATERIALS SPECIFICATIONS OF 917.07 SHALL BE PLACED OVER ALL DISTURBED AREAS TO A 3" DEPTH. TOPSOIL SHALL THEN BE FINE GRADED TO 1" BELOW FINISH ELEVATIONS AND GRADED TO DRAIN. TOPSOIL SHALL BE THEN BE RAKED TO REMOVE DEBRIS AND BREAK UP LUMPED SOIL, AND COMPACTED TO REDUCE FUTURE SETTLEMENT (60-90 LB ROLLER OR EQUIVALENT). ALL STONE, DEBRIS, STAKES, BRUSH, WIRE, AND OTHER UNSUITABLE MATERIAL SHALL BE REMOVED AND DISPOSED OFF SITE. TOPSOIL SHALL THEN BE PREPARED FOR SODDING, IN ACCORDANCE WITH SUBSECTION 816.03.D.

EXCAVATION SAFETY

IN ADDITION TO THE 811 UTILITY NOTIFICATION REQUIREMENTS, THE CONTRACTOR IS REQUIRED TO COMPLY WITH ALL US DEPT. OF LABOR, OSHA EXCAVATION SAFETY REQUIREMENTS. NEITHER THE OWNER, NOR THE ENGINEER ARE RESPONSIBLE FOR THE CONTRACTOR'S EXCAVATION SAFETY, DESIGN, OR IMPLEMENTATION. WHERE UNSAFE EXCAVATION CONDITIONS ARE THOUGHT TO BE OBSERVED BY RESIDENT INSPECTION PERSONNEL, THEY WILL BE BROUGHT TO THE CONTRACTOR'S ATTENTION AS A NOTIFICATION ONLY. THIS DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR THE SAFETY OF HIS WORKERS.

WHERE TEMPORARY SHORING IS REQUIRED FOR EXCAVATION SAFETY, IT SHALL BE DESIGNED, INSTALLED, AND MAINTAINED BY THE CONTRACTOR. UPON BACKFILL OF THE EXCAVATION, THE SHORING SHALL BE REMOVED BY THE CONTRACTOR. PAYMENT FOR ALL TEMPORARY SHORING, WHERE NECESSARY, SHALL BE INCIDENTAL TO THE PAY ITEM BEING INSTALLED.

WHERE EXISTING UTILITIES ARE EXPOSED DURING EXCAVATION, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO EITHER SUPPORT THE UTILITY UNTIL PROPER BACKFILL CAN BE PLACED, OR COORDINATE WITH THE UTILITY FOR TEMPORARY (OR PERMANENT) RELOCATION AND/OR REMOVAL. THIS INCLUDES THE SUPPORT OF ADJACENT UTILITY POLES, AS NECESSARY. THERE SHALL BE NO ADDITIONAL PAYMENT TO THE CONTRACTOR FOR THESE ACTIVITIES, WHICH ARE CONSIDERED INCIDENTAL TO THE PAY ITEM BEING INSTALLED.

DAMAGES

ALL STRUCTURES, INCLUDING SIGNS, CURBING, SIDEWALK, PAVING, GRAVEL, ETC., THAT ARE INTENDED TO REMAIN IN PLACE BUT ARE DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE MAINTAINED, REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE. ALL MISCELLANEOUS ITEMS SUCH AS BUSHES, SHRUBS, FENCES, ROCK GARDENS, ETC., THAT ARE DAMAGED OR REQUIRE TEMPORARY RELOCATION TO AVOID DAMAGE SHALL BE REPLACED EQUIVALENT TO THE ORIGINAL ITEM, INCIDENTAL TO THE ITEM REQUIRING THE WORK.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO SUPPORT ALL UTILITY POLES WHERE EXCAVATION ACTIVITIES MAY UNDERMINE THE POLE, OR CONSTRUCTION IS IN CLOSE PROXIMITY TO THE POLE. THIS WORK IS INCIDENTAL TO THE ITEM BEING CONSTRUCTED.

CONSTRUCTION STAKING

A. OWNER STAKING: THE OWNER SHALL ESTABLISH THE HORIZONTAL AND VERTICAL CONTROL AND SET BENCHMARKS, AS INDICATED, PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE SUFFICIENT STAKING TO ESTABLISH LINE AND GRADE FOR THE COMPLETION OF THE PROJECT. THE CONTRACTOR SHALL PROTECT THE OWNER PROVIDED STAKES AND SHALL REPLACE AT HIS EXPENSE ANY STAKES LOST DUE TO THE CONTRACTOR'S ACTIVITIES. THE OWNER WILL PROVIDE THE CONTRACTOR A LIST OF COORDINATES FOR THE CONTROL POINTS AND BENCHMARKS WHERE NECESSARY.

TEMPORARY TRAFFIC CONTROL

CONTRACTOR SHALL COMPLY WITH ALL PERMIT CONDITIONS OF THE ANTRIM COUNTY ROAD COMMISSION FOR WORK WITHIN THE RIGHT-OF-WAY. THE PAY ITEM FOR TRAFFIC CONTROL IS INTENDED TO COVER NOT ONLY THE CONTRACTOR'S TEMPORARY BARRICADES, SIGNS, CONES, & TRAFFIC CONTROL DEVICES, BUT ALSO THE PLACEMENT OF TEMPORARY GRAVEL IN THE CROWN HIGHWAY ROAD CROSSINGS. THE CROSSINGS SHALL BE FILLED WITH THE 6" AGGREGATE BASE AND THEN 4" OF RECLAIMED ASPHALT PRODUCT (RAP) LESS THAN 3/4" AND COMPACTED. OTHER SUITABLY STABLE MATERIALS WILL BE CONSIDERED, BUT IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN A SMOOTH TEMPORARY ROAD CROSSING PATCH UNTIL THE PERMANENT ASPHALT SURFACE IS INSTALLED.

THE CONTRACTOR SHALL ALSO "RAMP" UP GRAVEL TO MEET GRADE DIFFERENCE BETWEEN ALL SAWCUT AND/OR SALVAGED PAVEMENTS AND AGGREGATE BASE UNTIL PERMANENT ASPHALT SURFACE IS INSTALLED.

INSTALLATION AND MAINTENANCE OF THESE TEMPORARY SURFACE TREATMENTS IS COVERED UNDER THE TRAFFIC CONTROL PAY ITEM.

REFER TO MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD) AND THE TEMPORARY TRAFFIC CONTROL (TTC) TYPICAL APPLICATIONS FOR SIGN PLACEMENT & REFERENCE. THE FOLLOWING TYPICAL APPLICATIONS FROM PART 6, SECTION 6H.01 OF THE MMUTCD SHALL APPLY TO THE SPECIFIED SCOPE OF WORK ITEM:

ENTIRE PROJECT: WORK BEYOND THE SHOULDER.....TA-1

NOTES APPLYING TO MDOT STANDARD PLANS

WHERE THE FOLLOWING ITEMS ARE CALLED FOR ON THE PLANS, THEY ARE TO BE CONSTRUCTED ACCORDING TO THE STANDARD PLAN GIVEN BELOW OPPOSITE EACH ITEM UNLESS OTHERWISE INDICATED.

ROAD	
DRIVEWAY OPENINGS & APPROACHES, AND CONCRETE SIDEWALK.....	R-29-I
SOIL EROSION & SEDIMENTATION CONTROL MEASURES .....	R-96-E
SEEDING AND TREE PLANTING .....	R-100-H

SEEDING NOTES

ALL RESTORATION OF LAWN AREAS SHALL BE COMPLETED WITH HYDROSEEDING. BROADCAST SEEDING SHALL NOT BE ALLOWED. CONTRACTOR IS ADVISED THAT SURROUNDING GRASSES ON THE PRIVATE PROPERTY APPEAR TO BE A SUNNY LAWN MIX. A SIMILAR SEED MIXTURE, CONFORMING TO SUBSECTION 917.12 WILL BE REQUIRED TO ENSURE CONTINUITY OF THE LAWN APPEARANCE.

IRRIGATION COORDINATION

PRIVATE PROPERTY WITHIN THE PROJECT LIMITS MAY CONTAIN IRRIGATION SYSTEMS THAT MAY EXTEND INTO THE RIGHT-OF-WAY AND BE IMPACTED BY THE CONSTRUCTION. CONTRACTOR SHALL MAKE A REASONABLE EFFORT TO PROTECT AND PRESERVE ANY PRIVATE IRRIGATION SYSTEM COMPONENTS. WHERE SUCH INTERFERENCE IS UNAVOIDABLE, THE CONTRACTOR SHALL PULL BACK THE IRRIGATION PIPING AND LEAVE IT COILED AT THE PROJECT LIMITS FOR RE-INSTALLATION BY OTHERS.

FINAL CLEAN UP

BEFORE FINAL ACCEPTANCE OF THE WORK, THE CONTRACTOR SHALL REMOVE ALL FALSEWORK, UNUSED MATERIALS, EROSION CONTROL DEVICES AND RUBBISH, UNLESS OTHERWISE PROVIDED IN THE CONTRACT OR ORDERED BY THE ENGINEER. THE CONTRACTOR SHALL REMOVE FROM THE RIGHT-OF-WAY ALL MACHINERY, EQUIPMENT, AND SURPLUS MATERIAL AND LEAVE ALL AREAS OCCUPIED BY THE CONTRACTOR IN CONJUNCTION WITH THE CONTRACT IN A NEAT AND PRESENTABLE CONDITION SATISFACTORY TO THE ENGINEER. THE CONTRACTOR SHALL REPLACE OR REPAIR ALL DAMAGED FENCES. THE CONTRACTOR SHALL RESTORE IN AN ACCEPTABLE MANNER ALL PROPERTY WHICH MAY HAVE BEEN USED OR DAMAGED DURING THE PROSECUTION OF THE WORK. PAVED ROADBEDS SHALL BE CLEANED WITHIN FIVE WORKING DAYS PRIOR TO OPENING THE PAVEMENT SURFACE TO TRAFFIC. CLEANING OF ROADBEDS IN RESIDENTIAL AND URBAN AREAS SHALL BE PERFORMED IN A MANNER THAT WILL NOT CAUSE AIRBORNE DUST.

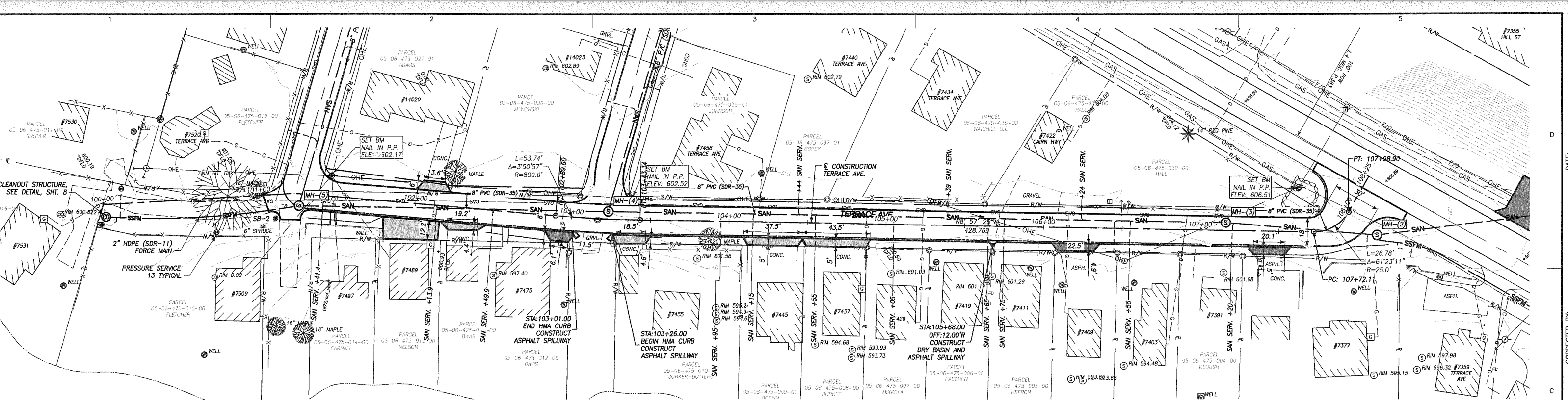
UNLESS OTHERWISE PROVIDED, FULL COMPENSATION FOR REMOVAL AND DISPOSAL OF MATERIALS FOR FINAL CLEAN UP WILL BE CONSIDERED AS INCLUDED IN OTHER ITEMS OF WORK AND NO SEPARATE PAYMENT WILL BE MADE.

DATE: 11/1/17  
CORRECTED BY: C  
CHECKED BY: AEN  
DRAWN BY: PEI  
DATE: 10/23/17  
A  
20NRL.DWG

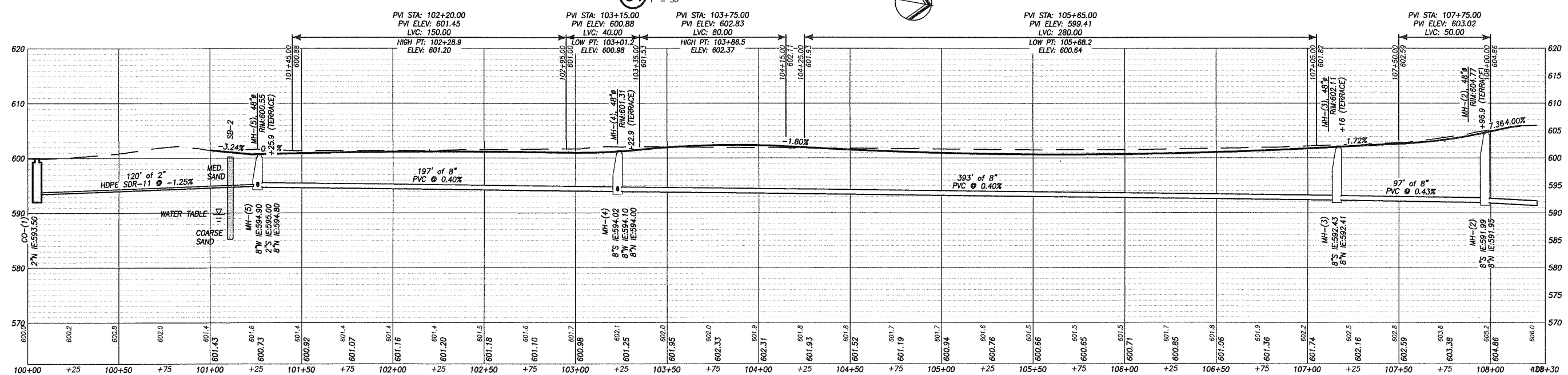








### (C1) TERRACE AVE.



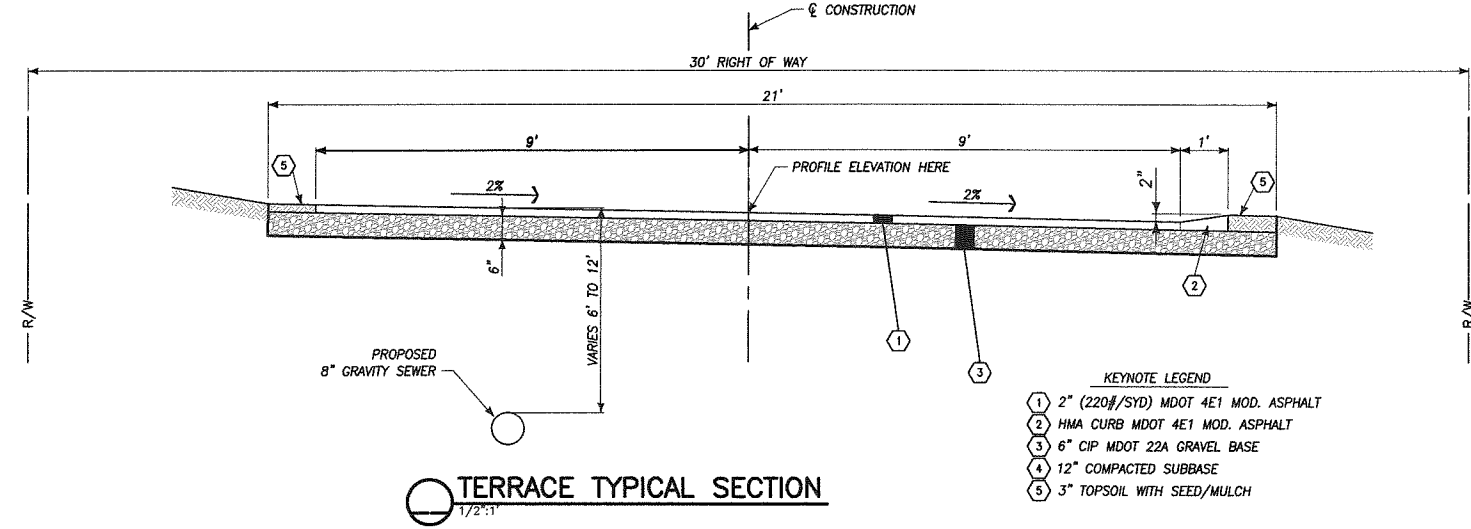
### (B1) TERRACE CENTERLINE PROFILE

HORIZ: 1"=30', VERT: 1"=10'

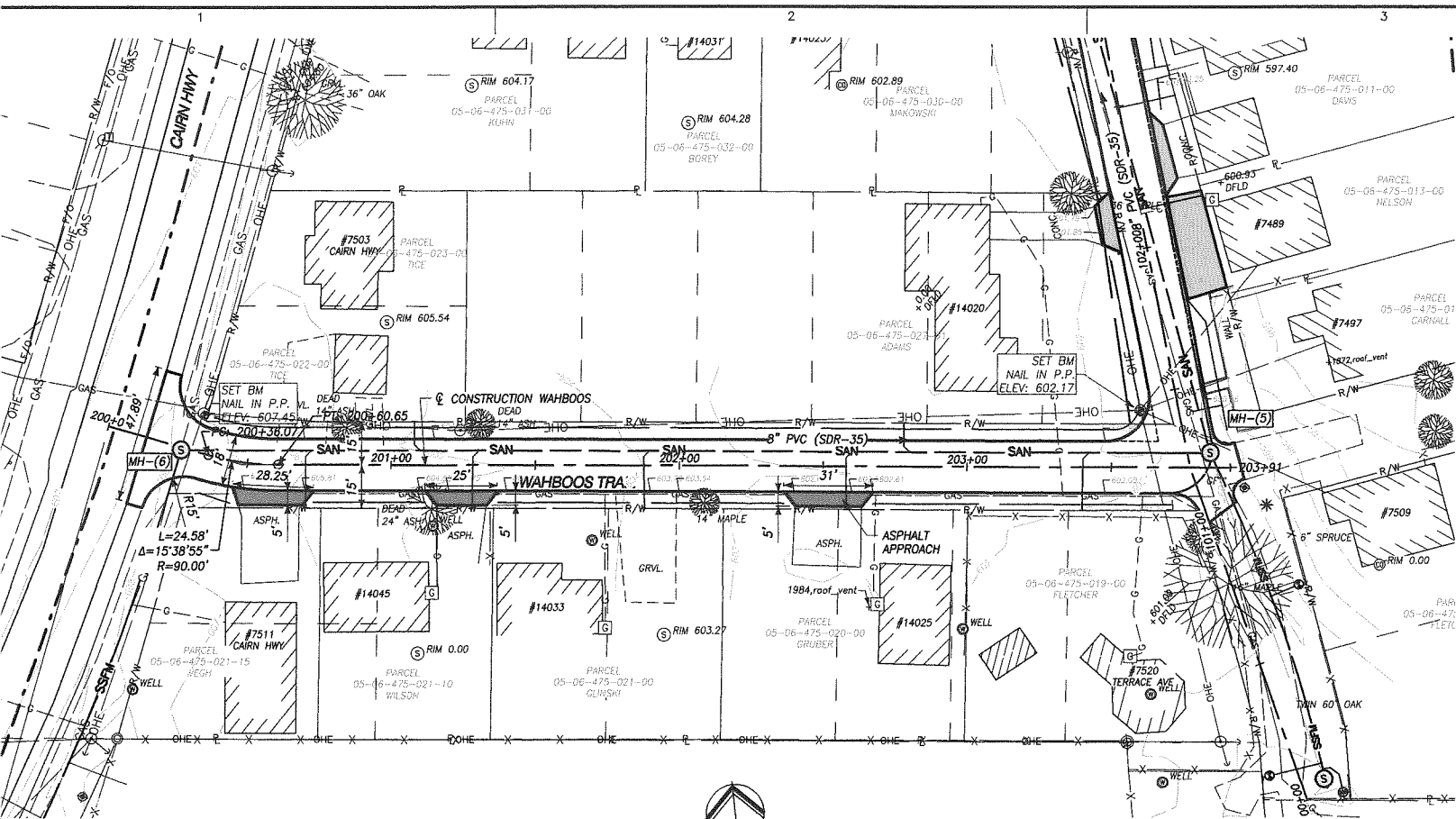
### CONSTRUCTION QUANTITIES THIS SHEET

TOTAL	UNIT	ITEM
1805	SYD	HMA SURFACE, REM
7.15	STA	ROADWAY GRADING
1743	SYD	AGGREGATE BASE, 6 INCH
180	TON	HMA, 4E1 MOD
675	FT	CURB SLOPED, HMA
65	FT	SEWER, HPDE (SDR-11), 1 1/2 INCH
120	FT	SEWER, HPDE (SDR-11), 2 INCH
3	EA	SAN SERVICE, PRESSURE
240	FT	SEWER, PVC (SDR-35), 4 INCH
688	FT	SEWER, PVC (SDR-35), 8 INCH
4	EA	SAN STRUCTURE, 48 INCH DIA.
1	EA	SAN STRUCTURE, CLEANOUT
1	EA	DR STRUCTURE, 48 INCH DIA., DRYWELL
9	TON	HMA APPROACH
130	SYD	DRIVEWAY, NONREINF CONC, 6 INCH
454	SYD	MULCH
33	LB	SEEDING, MIXTURE TDS
454	SYD	TOPSOIL SURFACE, FURN, 3 INCH

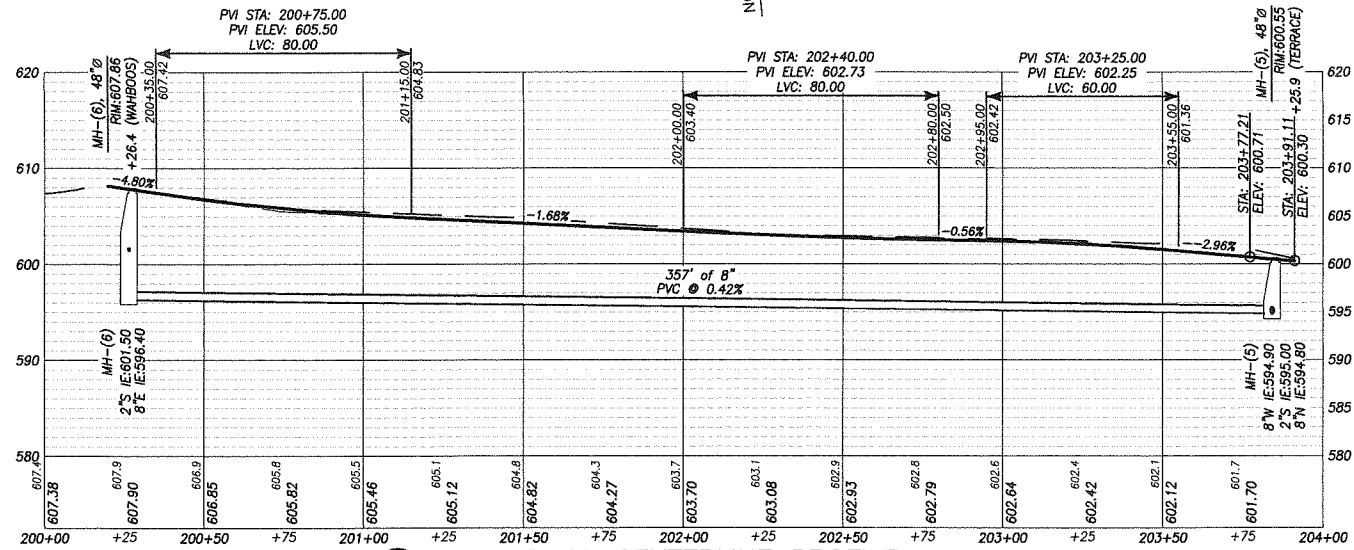
SANITARY SEWER STRUCTURE INFORMATION					
STRUCT NO	STATION	OFFSET *	RIM ** ELEV	PIPES IN:	PIPES OUT
CO-(1)	100+05.00, TERRACE	7.85 RT	599.96		2" N IE 593.50
MH-(5)	101+25.88, TERRACE	7.74 RT	600.55	8" W IE 594.90 2" S IE 595.00	8" N IE 594.80
MH-(4)	103+22.88, TERRACE	4.78 LT	601.31	8" S IE 594.02 8" W IE 594.10	8" N IE 594.00
MH-(3)	107+15.99, TERRACE	4.97 LT	602.11	8" S IE 592.43	8" N IE 592.41
MH-(2)	107+96.88, TERRACE	23.04 RT	604.77	8" S IE 591.99	8" N IE 591.95



- KEYNOTE LEGEND**
- 1 2" (220#/SYD) MDOT 4E1 MOD. ASPHALT
  - 2 HMA CURB MDOT 4E1 MOD. ASPHALT
  - 3 6" CIP MDOT 22A GRAVEL BASE
  - 4 12" COMPACTED SUBBASE
  - 5 3" TOPSOIL WITH SEED/MULCH



**(C1) WAHBOOS TRAIL PLAN**  
1" = 30'



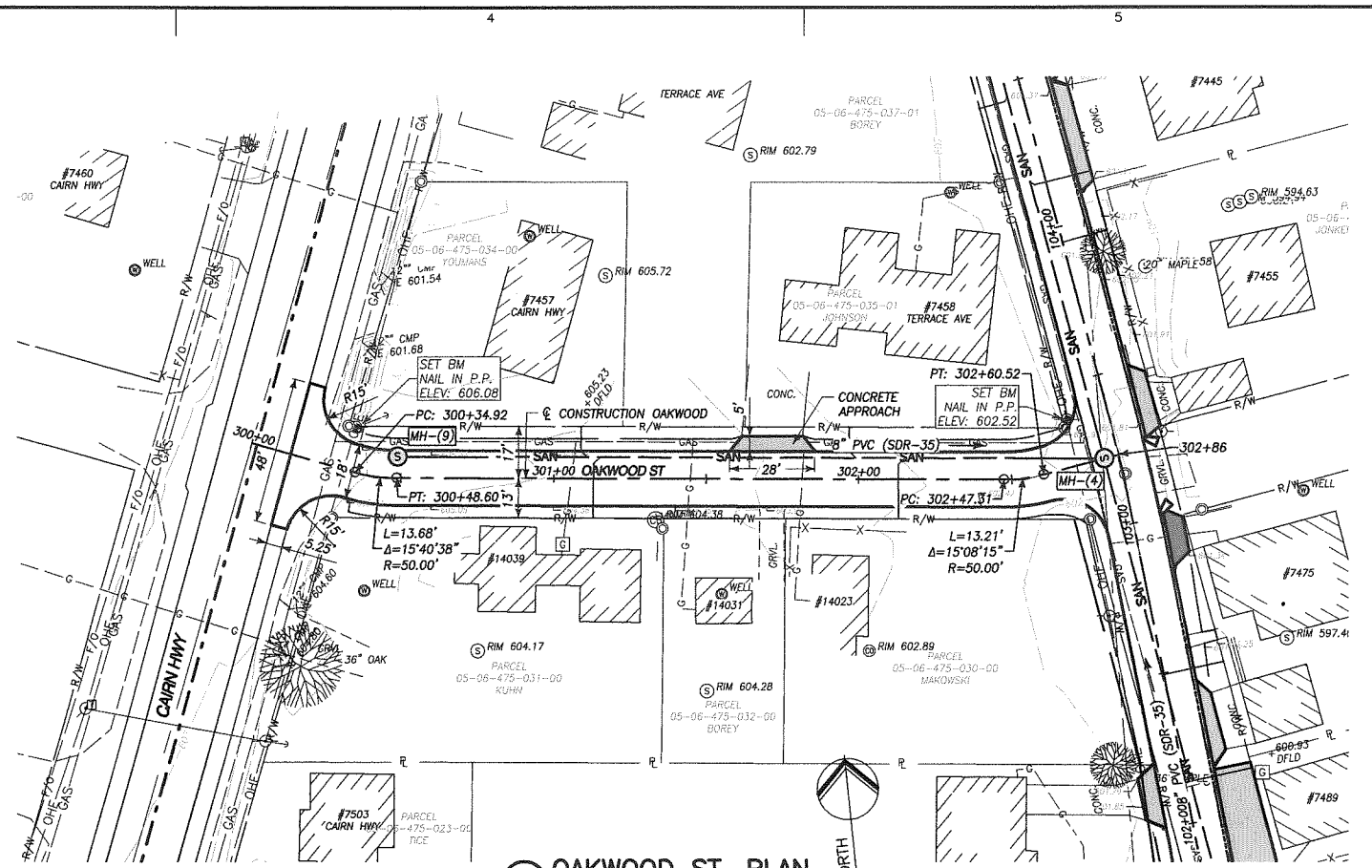
**(B1) WAHBOOS CENTERLINE PROFILE**  
HORIZ: 1"=30', VERT: 1"=10'

**SANITARY SEWER STRUCTURE INFORMATION**

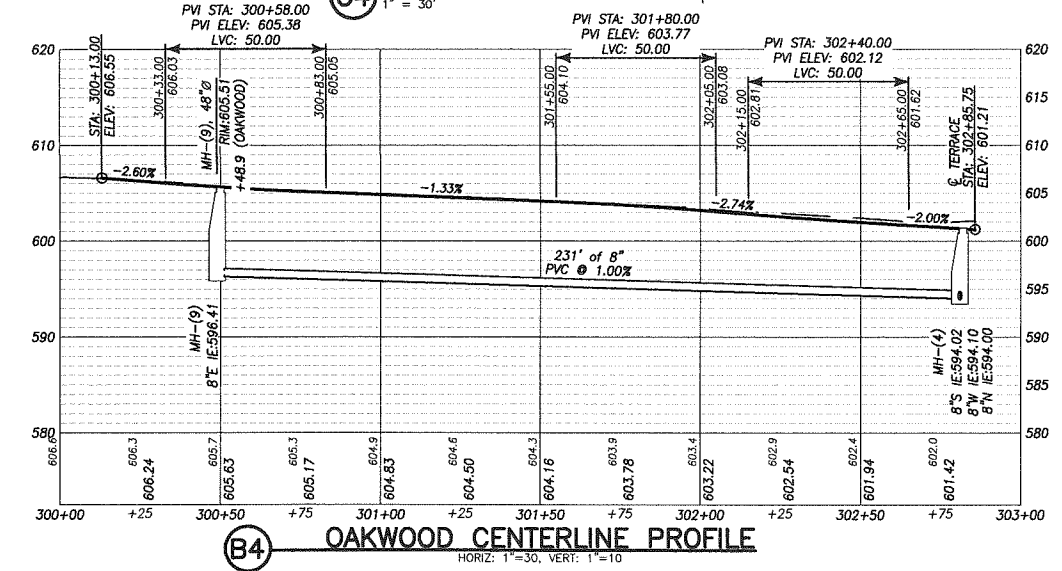
STRUCT NO	STATION	OFFSET *	RIM ** ELEV	PIPES IN:	PIPES OUT
MH-(6)	200+26.38, WAHBOOS	0.99 RT	607.86	2" S IE 601.50	8" E IE 596.40
MH-(9)	300+48.85, OAKWOOD	6.99 LT	605.51		8" E IE 596.41

**CONSTRUCTION QUANTITIES THIS SHEET**

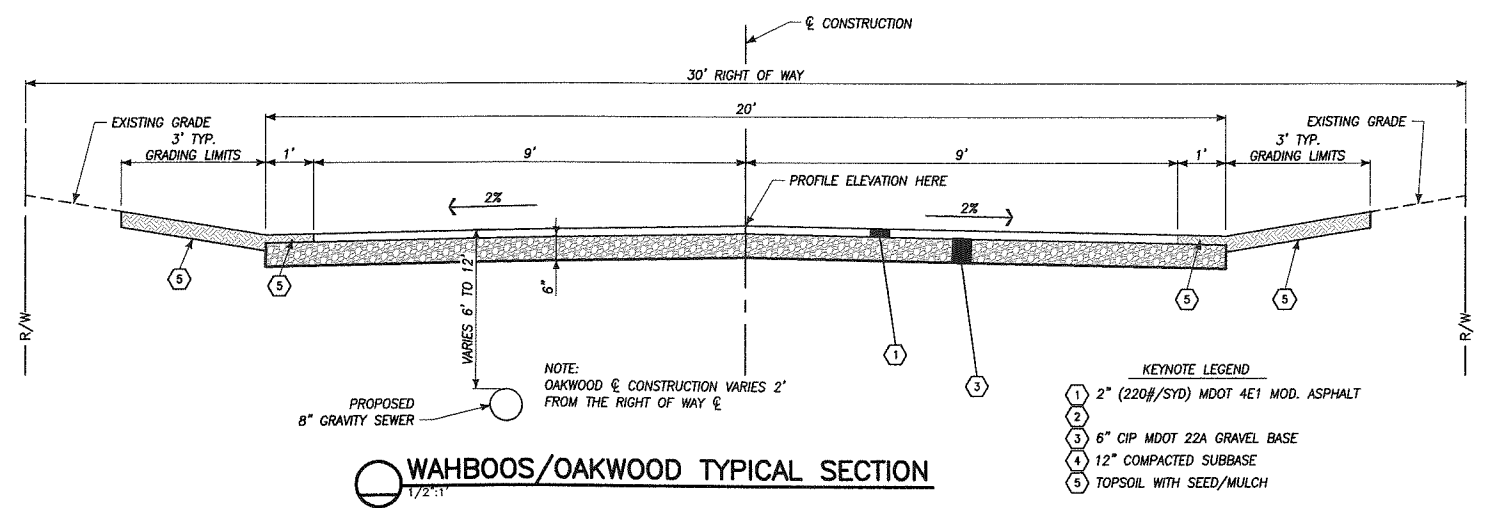
TOTAL	UNIT	ITEM
1362	SYD	HMA SURFACE, REM
6.05	STA	ROADWAY GRADING
1504	SYD	AGGREGATE BASE, 6 INCH
148	TON	HMA, 4E1 MOD, TOP
150	FT	SEWER, PVC (SDR-35), 4 INCH
590	FT	SEWER, PVC (SDR-35), 8 INCH
2	EA	SAN STRUCTURE, 48 INCH DIA.
6	TON	HMA APPROACH
16	SYD	DRIVEWAY, NONREINF CONC, 6 INCH
367	SYD	MULCH
27	LB	SEEDING, MIXTURE TDS
367	SYD	TOPSOIL SURFACE, FURN, 3 INCH



**(C4) OAKWOOD ST. PLAN**  
1" = 30'



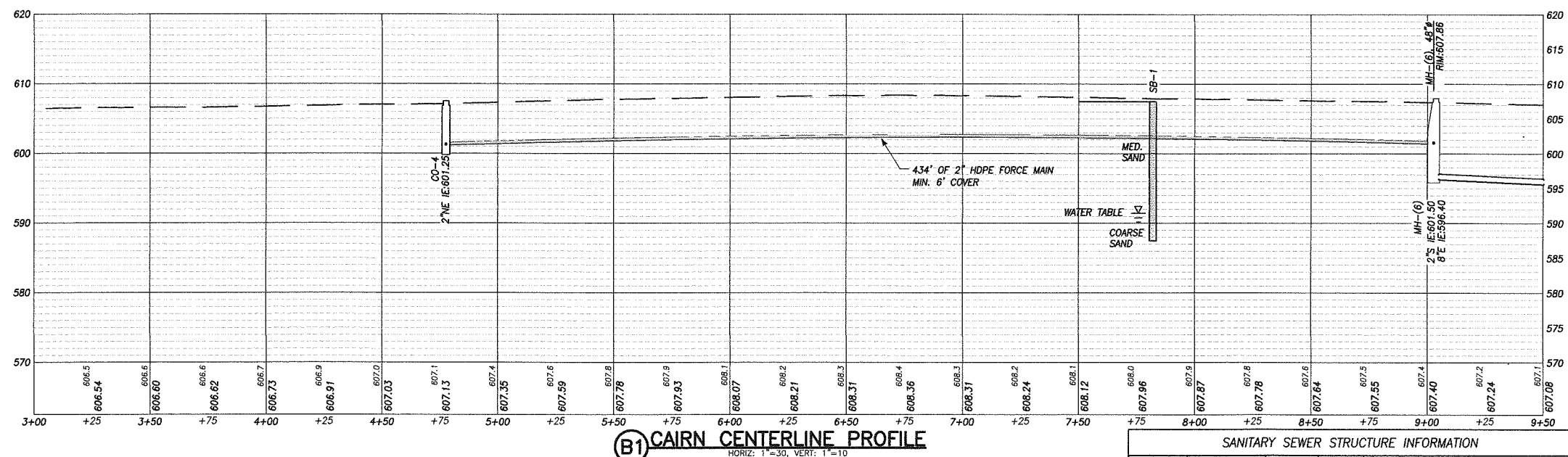
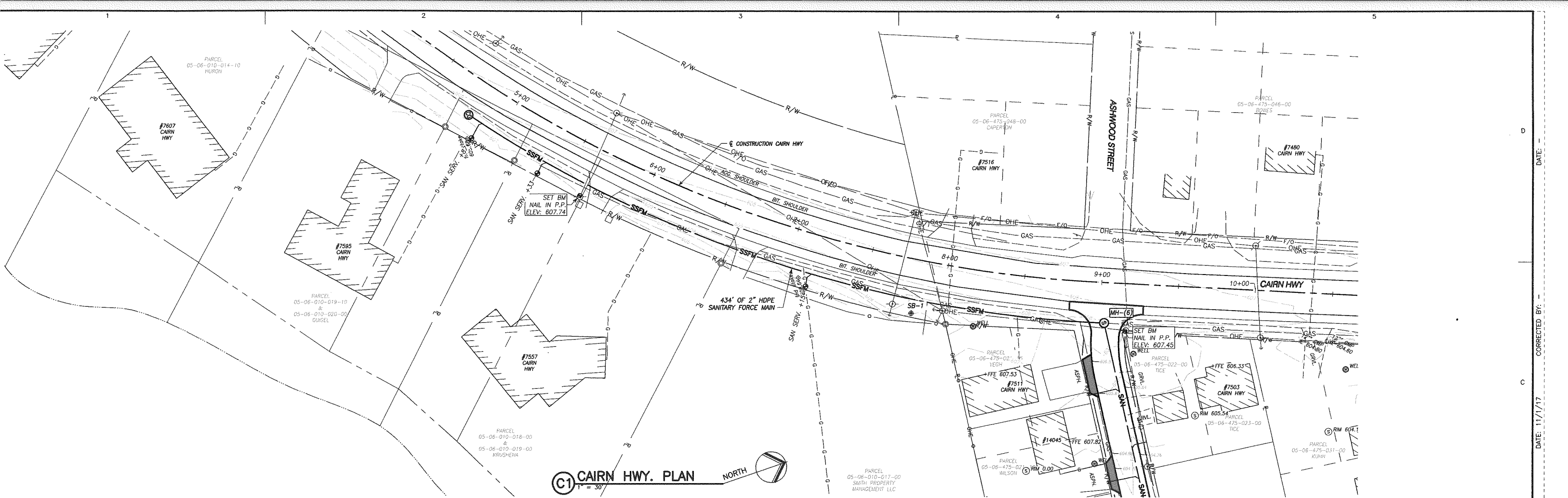
**(B4) OAKWOOD CENTERLINE PROFILE**  
HORIZ: 1"=30', VERT: 1"=10'



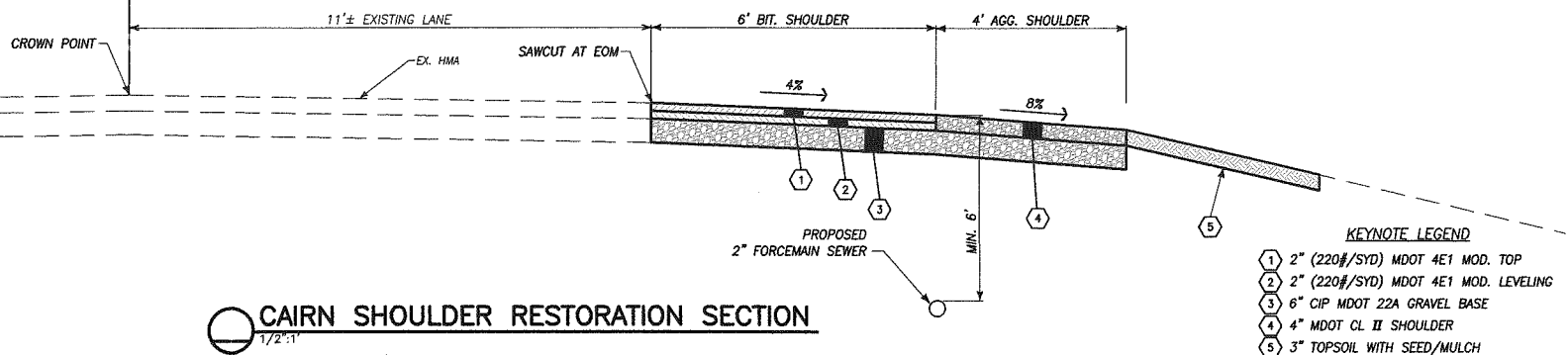
**WAHBOOS/OAKWOOD TYPICAL SECTION**  
1/2" = 1'

- KEYNOTE LEGEND**
- 1 2" (220#/SYD) MDOT 4E1 MOD. ASPHALT
  - 2 6" CIP MDOT 22A GRAVEL BASE
  - 3 12" COMPACTED SUBBASE
  - 4 TOPSOIL WITH SEED/MULCH

DATE: 11/17/17 CHECKED BY: AEN DRAWN BY: PEI



SANITARY SEWER STRUCTURE INFORMATION				
STRUCT NO	STATION	OFFSET ±	RIM ** ELEV	PIPES IN: PIPES OUT
CO-4	4+77.5, CAIRN	23.8' RT	607.47	2" NE IE 601.25



CONSTRUCTION QUANTITIES THIS SHEET		
TOTAL	UNIT	ITEM
0	SYD	HMA SURFACE, REM
70	SYD	AGGREGATE BASE, 6 INCH
10	SYD	SHOULDER CLII, 4 INCH
6	TON	HMA, 4E1 MOD, TOP
6	TON	HMA, 4E1 MOD, LEVELING
40	FT	SEWER, HPDE (SDR-11), 1 1/2 INCH
434	FT	SEWER, HPDE (SDR-11), 4 INCH
0	FT	SEWER, PVC (SDR-35), 8 INCH
0	EA	SAN STRUCTURE, 48 INCH DIA.
1	EA	SAN STRUCTURE, CLEANOUT
3	EA	SAN SERVICE, PRESSURE
5	TON	HMA APPROACH
60	SYD	MULCH
5	LB	SEEDING, MIXTURE TDS
60	SYD	TOPSOIL SURFACE, FURN, 3 INCH





ALL MANHOLES TO BE PRECAST REINFORCED CONC WITH PREMIUM JOINTS. SEE SPECIFICATIONS FOR BASE SLAB AND PIPE OPENINGS & CONNECTIONS.

MANHOLE CONES SHALL BE THE ECCENTRIC TYPE.

PROVIDE 6" OF COMPACTED GRANULAR MATERIAL UNDER ALL BASE SLABS.

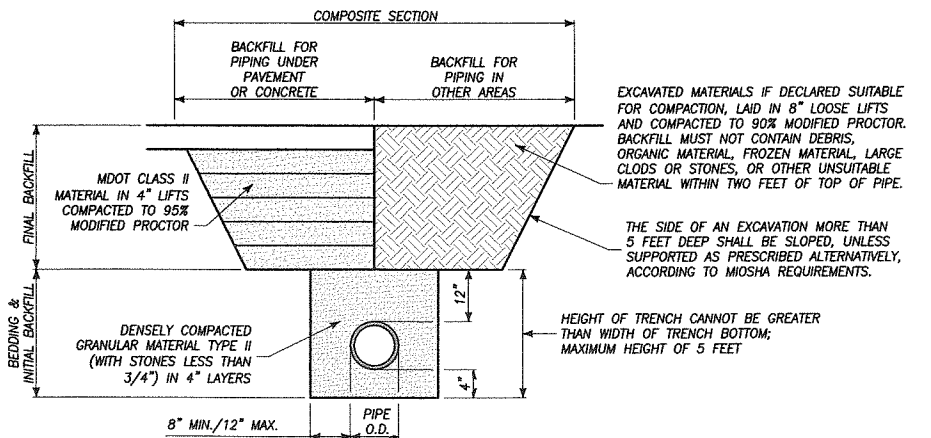
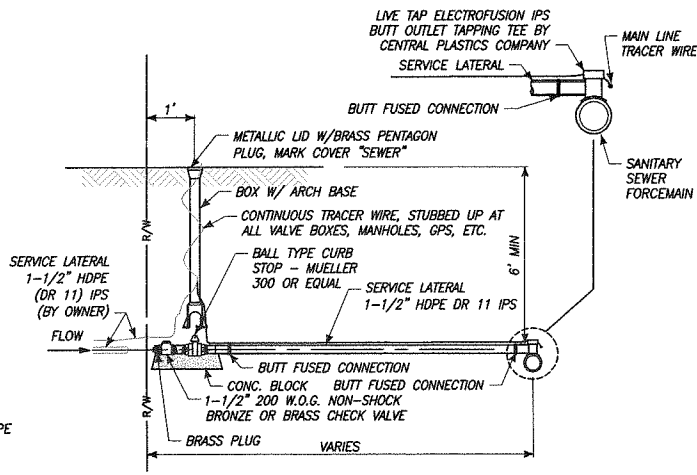
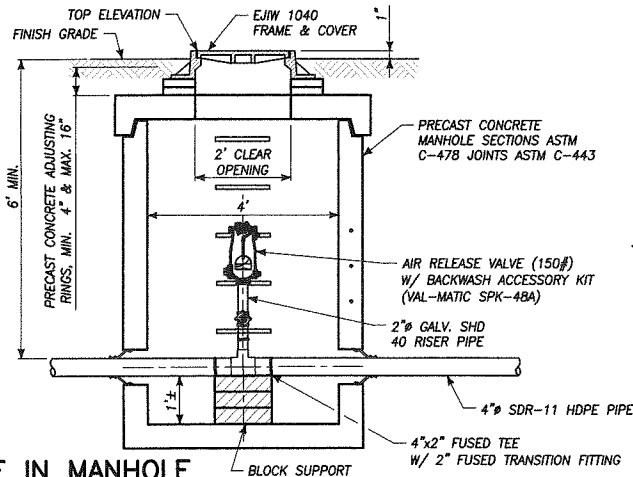
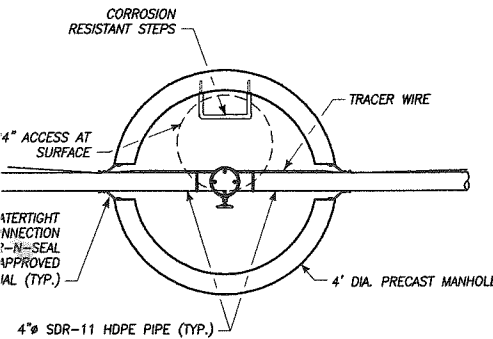
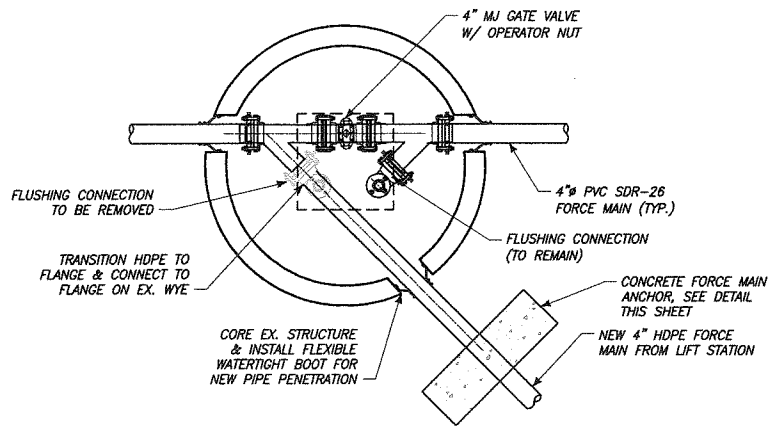
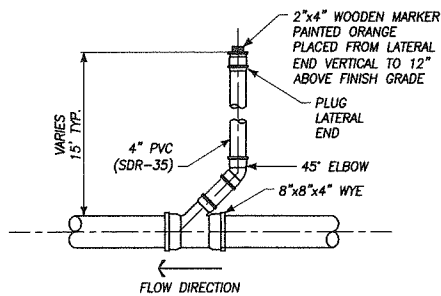
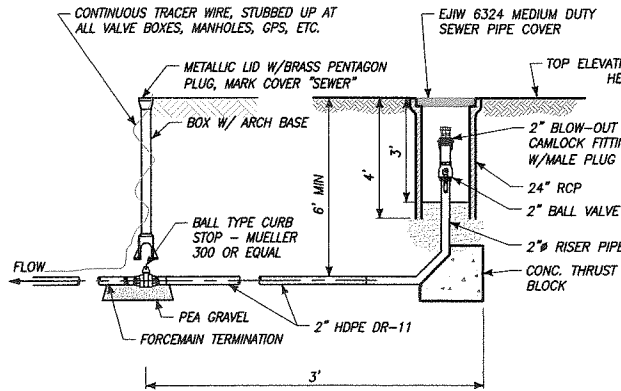
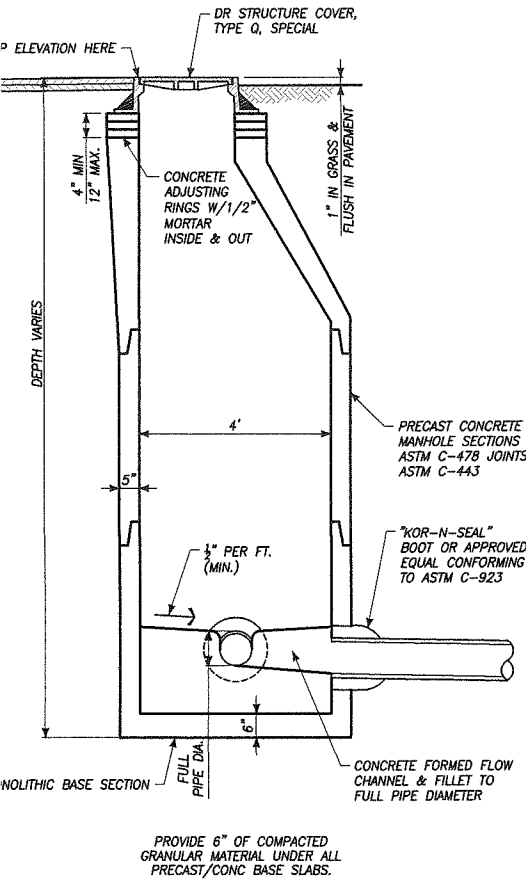
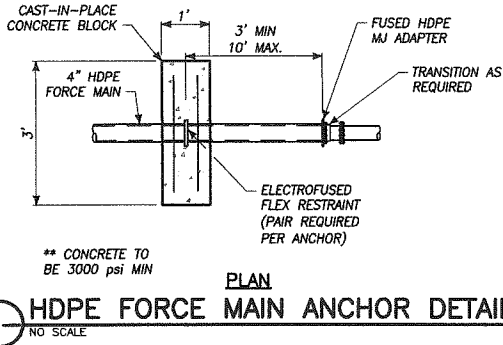
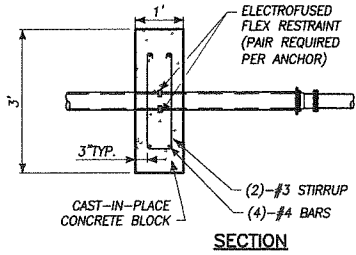
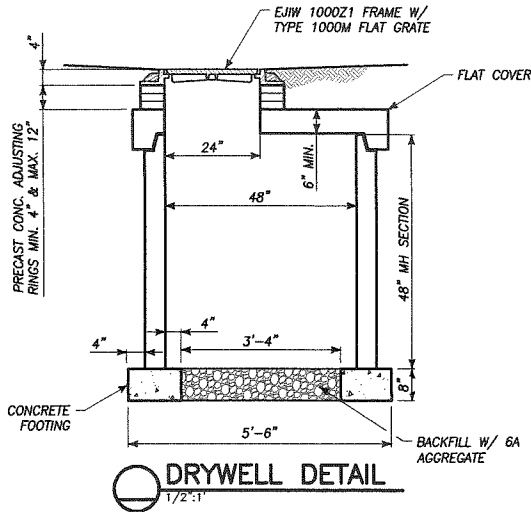
CONTRACTOR TO PROVIDE KOR-N-SEAL WATER TIGHT FLEXIBLE BOOTS (OR APPROVED EQUAL) CONFORMING TO ASTM C-923 AT ALL PIPE CONNECTIONS TO SANITARY MANHOLES.

ALL MANHOLES SHALL INCLUDE CORROSION RESISTANT STEPS, CENTERED ON THE ACCESS COVER.

ALL HOLES REQUIRED IN EXISTING SANITARY MANHOLES SHALL BE CORED. NEW MANHOLES SHALL HAVE HOLES CORED OR CAST BY THE MANUFACTURER. NO SAW CUT, GROUTED OR OTHER OPENINGS WILL BE ACCEPTED IN ANY MANHOLE.

CASTINGS SET IN ROADWAYS SHALL BE SET AS CLOSE TO FLUSH WITH THE ASPHALT SURFACE AS POSSIBLE. IN NO CASE WILL THE CASTING BE ALLOWED TO PROTRUDE ABOVE THE ASPHALT SURFACE, AND NO MORE THAN A 1/2" DIFFERENTIAL BELOW THE SURFACE BE ACCEPTED.

ALL FRAMES AND ADJUSTING RINGS SHALL BE GROUTED INSIDE AND OUT.



#### CROSSINGS & CONNECTIONS TO EXISTING UTILITIES

THE CONTRACTOR SHALL FIELD VERIFY INVERT ELEVATIONS SHOWN AT ANY CONNECTION POINTS BEFORE EXTENDING GRADE TO OR FROM ANY STRUCTURE.

IF IT IS DETERMINED THAT THE ELEVATION OF AN EXISTING UTILITY TO BE CONNECTED, DIFFERS FROM THE PLAN ELEVATION OR RESULTS IN A CHANGE IN THE PLAN PIPE SLOPE, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED PIPING WHICH WILL BE AFFECTED BY THE VARIANCE IN THE EXISTING ELEVATIONS.

IF IT IS DETERMINED THAT A PROPOSED PIPE WILL INTERSECT AN EXISTING SEWER OR UNDERGROUND UTILITY IF CONSTRUCTED AS SHOWN ON THE PLAN, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED PIPING WHICH WOULD BE AFFECTED BY THE INTERFERENCE WITH AN EXISTING UTILITY.

PAYMENT FOR ALL THE OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE ITEM BEING INSTALLED.

#### INSTALLATION NOTES

CONTRACTOR TO COORDINATE WITH THE VILLAGE OF ELK RAPIDS PRIOR TO ANY CUTTING, TAPPING OR CONNECTION TO ANY EXISTING SEWER FACILITIES.

THE LOCATION OF THE EXISTING SEWER MAIN SHOWN IS BASED ON BEST AVAILABLE INFORMATION AND MAY NOT ACCURATELY REPRESENT THE LOCATION AT ALL STATIONS. THE NEW SEWER MAIN CONSTRUCTION MUST MAINTAIN A MINIMUM 10-FOOT HORIZONTAL AND 18 INCH VERTICAL ISOLATION FROM ALL WATER PIPING.

#### SERVICE INSTALLATION NOTES

SANITARY SERVICE LOCATIONS SHOWN ARE BASED UPON THE BEST AVAILABLE INFORMATION AT THE TIME OF DESIGN. CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND ENSURE THAT EVERY HOME IS PROVIDED A CONNECTION TO THE NEW MAINS. THIS WORK IS INCIDENTAL TO THE SERVICE INSTALLATION. ALL TRANSITION FITTINGS REQUIRED TO MAKE CONNECTIONS FROM NEW SERVICE MATERIALS TO EXISTING SERVICE MATERIALS AND/OR SIZES IS INCIDENTAL TO THE SERVICE INSTALLATION (BY OTHERS).

SANITARY SERVICES MAY BE ROUTED AROUND TREES WITH ADDITIONAL 6" PVC PIPING TO BE PAID AT INSTALLED LENGTHS, ALONG WITH ADDITIONAL CLEANOUTS AS NEEDED.

#### STRUCTURE REMOVALS

EXISTING SANITARY STRUCTURES TO BE REMOVED SHALL BE COMPLETELY EXCAVATED AND DISPOSED OF OFF SITE. ALL EXCAVATIONS SHALL BE FILLED WITH MDOT CLASS III FILL MATERIAL AND COMPACTED ACCORDING TO THE SPECIFICATIONS, PAYMENT SHALL BE INCLUDED IN THE REMOVAL ITEM. ALL EXISTING CASTINGS SHALL BE CAREFULLY REMOVED AND DELIVERED TO THE STREET DEPT. GARAGE.

#### REMAINING STRUCTURES

EXISTING MANHOLES, CATCH BASINS, VALVE BOXES, MONUMENT BOXES, OR OTHER STRUCTURES WITHIN THE ROADWAY THAT ARE INTENDED TO REMAIN, SHALL BE PROTECTED AGAINST DAMAGE DURING CONSTRUCTION. CONTRACTOR SHALL ADJUST CASTINGS, BOXES, RIMS, ETC. TO MATCH NEW PAVEMENT.



- ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CURRENT REQUIREMENTS OF THE MDEQ. INSTALLATION OF PVC PIPING SHALL BE PERFORMED IN ACCORDANCE WITH ASTM D2321, THE PLANS AND SUPPLEMENTAL SPECIFICATIONS PROVIDED.
- THE VILLAGE OF ELK RAPIDS WILL PROVIDE THE CONTRACTOR WITH REQUIRED MDEQ PERMIT FOR THE SANITARY SEWER CONSTRUCTION. CONSTRUCTION IS NOT TO BEGIN UNTIL THIS PERMIT HAS BEEN OBTAINED.
- ALL GRAVITY SANITARY SEWER PIPING SHALL BE PVC SDR-26 WITH GASKET JOINTS, PIPING LESS THAN 24-INCH DIA. SHALL BE SET BY LASER ALIGNMENT.
- ALL FORCE MAIN SANITARY SEWER PIPING SHALL BE HDPE DR-11 WITH TRACER WIRE INSTALLED BY DIRECTIONAL DRILLING METHODS TO MAINTAIN ALIGNMENT AND PROFILE INDICATED, WITH SURFACE MARKING PROVIDED DURING DRILLING FOR WITNESS BY ENGINEER.
- NEW SANITARY SEWER CONSTRUCTION SHALL PROGRESS SUCH THAT THE NEW FACILITIES, INCLUDING THE PUMPING STATION ARE COMPLETE, INSPECTED, TESTED AND FULLY OPERATIONAL BEFORE CONNECTION OF ANY SERVICES.
- THE CONTRACTOR SHALL BE REQUIRED TO COORDINATE FOR 100% CONSTRUCTION INSPECTION BY THE ENGINEER AND THEN PROVIDE EITHER A VIDEO INSPECTION OF THE COMPLETED GRAVITY PIPING SYSTEM, OR LOW PRESSURE AIR TESTING. DEFLECTION TESTING SHALL ALSO BE REQUIRED NOT LESS THAN 30 DAYS AFTER INSTALLATION WITH A MANDREL OF 95% OF THE PIPE DIAMETER. FORCE MAIN PIPING SHALL BE HYDROSTATICALLY PRESSURE TESTED (AIR TESTING SHALL NOT BE ALLOWED) AND TRACER WIRE SHALL PASS A CONTINUITY TEST. ALL TESTING COSTS, INCLUDING VIDEO INSPECTION, ARE TO BE INCLUDED IN THE UNIT PRICE OF THOSE ITEMS MOST CLOSELY ASSOCIATED WITH THE WORK.
- CONSTRUCTION OF SANITARY SERVICES INCLUDES INSTALLATION OF A CLEAN-OUT AT THE RIGHT-OF-WAY, AND COORDINATION FOR ALIGNMENT WITH EXISTING FACILITIES. THE CONTRACT DOES NOT INCLUDE ABANDONMENT OF EXISTING FACILITIES, NOR CONNECTION TO THE NEW SERVICE. HOWEVER, THE CONTRACTOR PERFORMING WORK UNDER THIS CONTRACT IS HIGHLY ENCOURAGED TO CONTACT HOMEOWNERS AND FACILITATE THIS WORK THROUGH INDIVIDUAL CONTRACTS TO COINCIDE WITH CONSTRUCTION UNDER THIS CONTRACT.
- PAYMENT FOR ALL THE OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICE FOR THE PIPE BEING INSTALLED.

DATE: 11/1/17

CHECKED BY: AEN

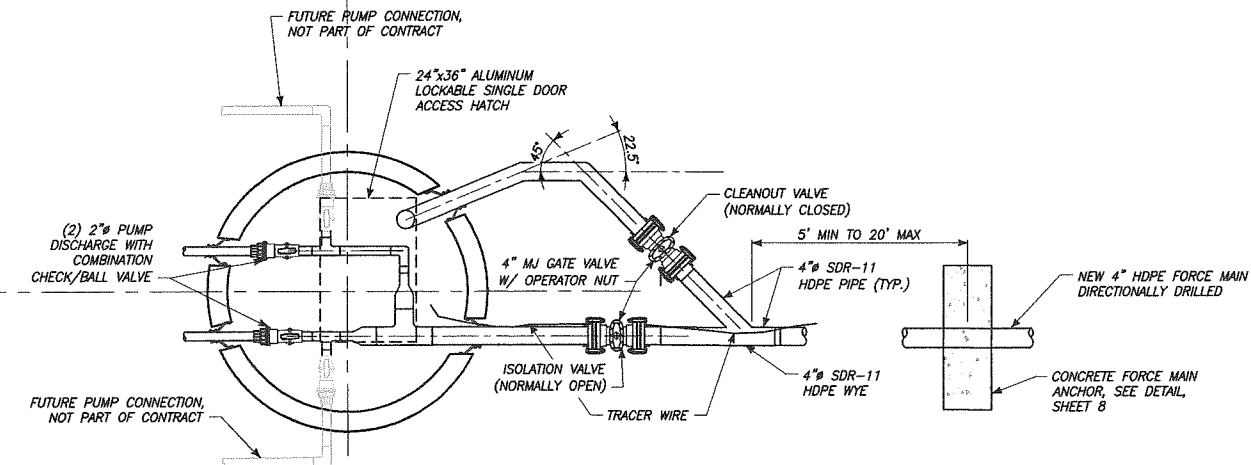
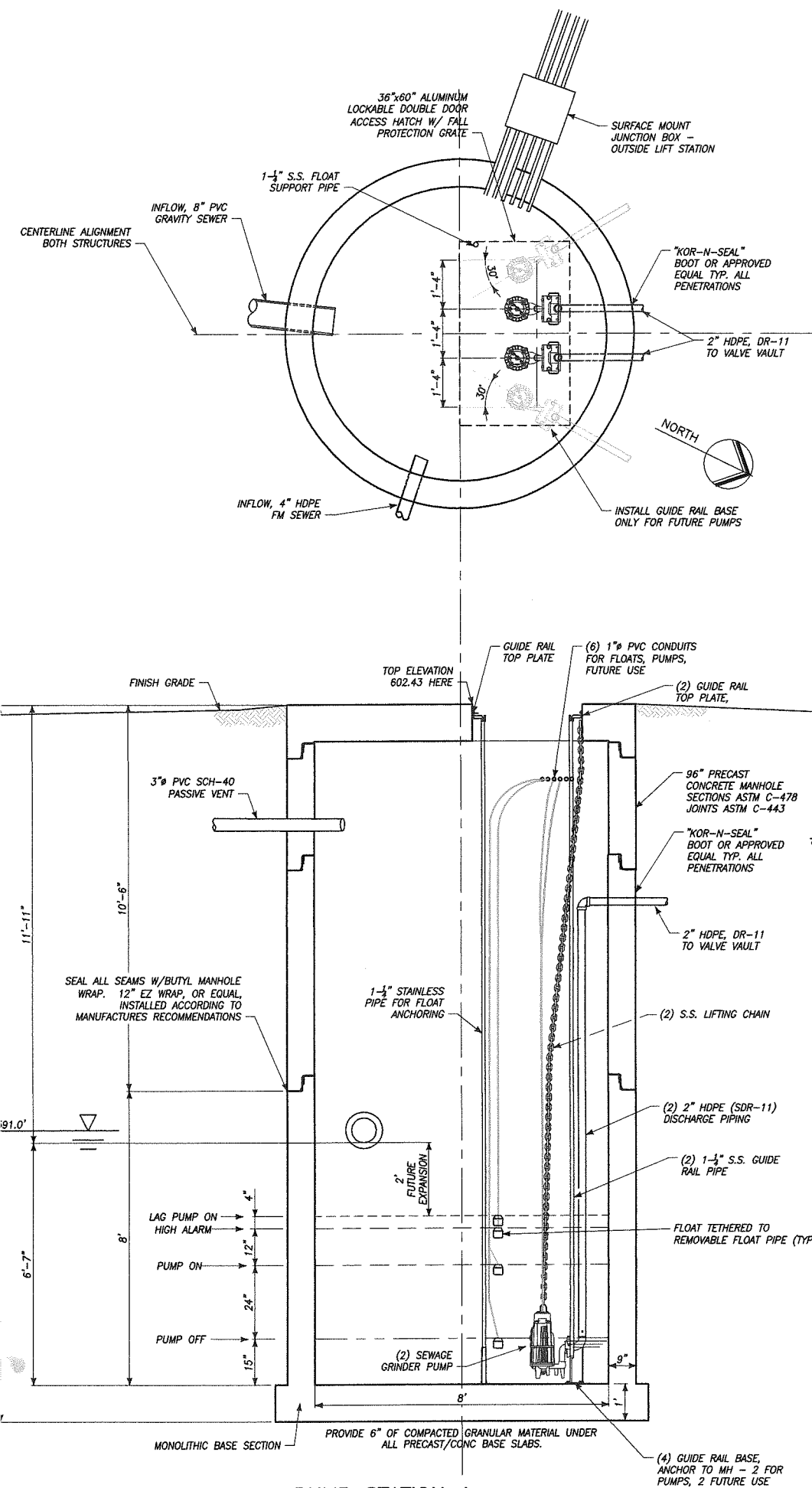
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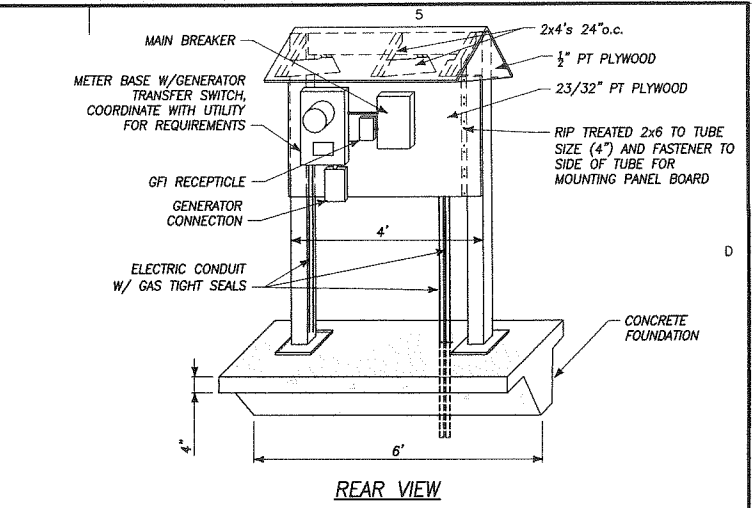
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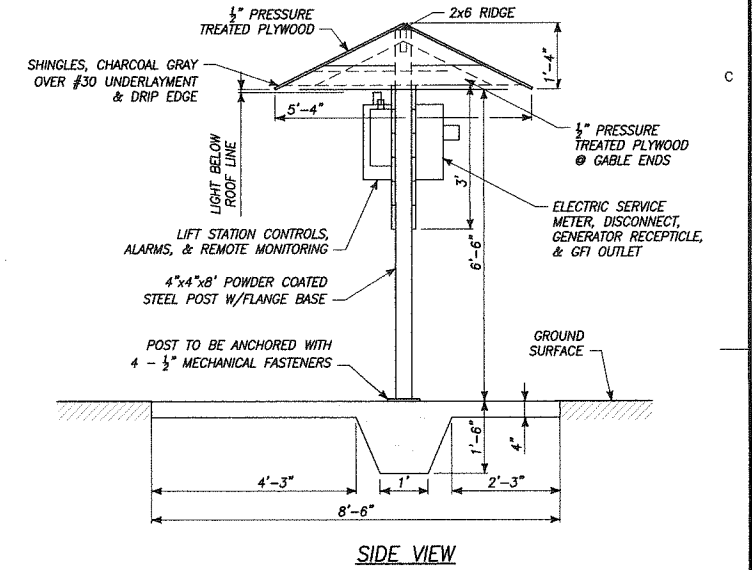


LIFT STATION EQUIPMENT LIST	
QNTY	DESCRIPTION
1	96" DIA. CONCRETE WET WELL
1	36"x60" ALUMINUM ACCESS HATCH, DOUBLE DOOR
1	ACCESS HATCH FALL PROTECTION GRATE
1	3" PASSIVE VENT WITH CARBON FILTER
2	LIBERTY MODEL XL5GX202M EXPLOSION PROOF SUBMERSIBLE GRINDER PUMP
2	LIBERTY MODEL GR20NS GUIDE RAIL BASE, TOP PLATE & 1-1/4" S.S. GUIDE PIPE
2	COMBINATION BALL/CHECK VALVE W/ UNION DISCONNECT
1	1-1/4" S.S. FLOAT TREE PIPE, BRACKET, & FLOAT CLIPS
4	LEVEL CONTROL FLOATS FOR 4-FLOAT OPERATION: OFF, LEAD, ALARM, LAG
1	CONTROL PANEL CONCRETE PAD & MOUNTING STRUCTURE
1	LIBERTY PUMPS MODEL ISD INTRINSICALLY SAFE DUPLEX CONTROL PANEL W/ ALARM LIGHT & GRILLE HORN
	CYCLE COUNTERS & HOUR METERS (LEAD/LAG)
	HAND/OFF/AUTO OPERATION SWITCH
	RUN STATUS LIGHT (LEAD/LAG)
	ALARM SILENCE/TEST SWITCH
	PUMP START ALTERNATOR
1	REMOTE MONITOR, OMNISITE MODEL XR50
1	METER BASE WITH GENERATOR TRANSFER SWITCH
1	MAIN BREAKER (SERVICE DISCONNECT)
1	GFI ELECTRICAL RECEPTACLE IN WEATHERPROOF ENCLOSURE

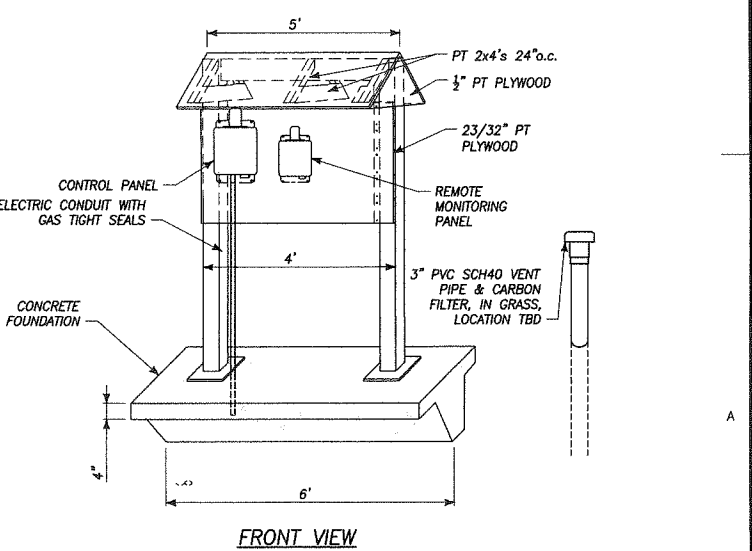
**EQUIPMENT LIST**  
NO SCALE



NOTE: 1. ALL STEEL & WOOD FINISHES TO BE PAINTED (COLOR TBD BY OWNER)  
2. ALL MATERIALS AND PRODUCTS INDICATED MAY BE SUBSTITUTED FOR EQUAL PRODUCTS AND/OR MATERIALS, SUBJECT TO ENGINEER'S APPROVAL



**A4 LIFT STATION CONTROL PANEL DETAIL**  
1/2" = 1'



NOTE: SEE EQUIPMENT LIST FOR SPECIFIC EQUIPMENT TO BE INSTALLED. ALL PRODUCTS AND MATERIALS INDICATED MAY BE SUBSTITUTED FOR EQUAL PRODUCTS OR MATERIALS, SUBJECT TO ENGINEER'S APPROVAL

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