

LASTING IMPRESSIONS NEW FACILITY

FINAL SITE PLAN / FINAL ENGINEERING PLAN



WHITE LAKE TOWNSHIP STANDARD SITE CONSTRUCTION NOTES:

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF WHITE LAKE CHARTER TOWNSHIP.
- THE DEVELOPER SHALL CONTACT THE TOWNSHIP PLANNING DEPARTMENT, AT (248) 698-3300, TO SCHEDULE A PRE-CONSTRUCTION MEETING. THE DEVELOPER'S PRIME SITE CONTRACTOR SHALL ATTEND. A COPY OF ALL PERMITS MUST BE SUBMITTED TO THE PLANNING DEPARTMENT PRIOR TO SCHEDULING THE MEETING.
- THE CONTRACTOR SHALL CONTACT THE TOWNSHIP ENGINEER, AT (248) 681-7800, 48 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION. THE CONTRACTOR SHALL KEEP THE INSPECTOR APPRAISED OF THE NEED FOR INSPECTION ON A DAY BY DAY BASIS. LACKING SPECIFIC SCHEDULING WITH THE INSPECTOR, THE CONTRACTOR SHALL GIVE 48 HOURS NOTICE TO THE TOWNSHIP ENGINEER PRIOR TO RE-COMMENCING WORK REQUIRING INSPECTION. FAILURE TO INFORM THE INSPECTOR OR THE TOWNSHIP ENGINEER OF A WORK CANCELLATION MAY RESULT IN A ONE HALF DAY INSPECTION CHARGE TO THE DEVELOPER. THE CONTRACTOR SHALL CALL (248) 844-5400 TO SCHEDULE SANITARY SEWER MAIN LINE INSPECTION.
- ALL WATER MAIN OR SANITARY SEWER WORK WILL REQUIRE FULL TIME INSPECTION. FULL TIME INSPECTION WILL GENERALLY BE REQUIRED FOR UNDERGROUND STORM SEWER CONSTRUCTION, CONCRETE CURBING, AND PAVING OPERATIONS. SITE GRADING AND DETENTION BASIN CONSTRUCTION WILL GENERALLY BE INSPECTED ON AN INTERMITTENT BASIS.
- THE CONTRACTOR SHALL CONTACT MISS DIG, AT (800) 482-7171, 72 HOURS IN ADVANCE OF CONSTRUCTION TO HAVE EXISTING UNDERGROUND FACILITIES LOCATED. CONTRACTOR SHALL CONTACT THE WHITE LAKE TOWNSHIP WATER DEPARTMENT, AT (248) 698-3300 EXT 165, SEPARATELY 72 HOURS IN ADVANCE OF CONSTRUCTION TO HAVE WATER UTILITIES LOCATED.
- ALL OFF-SITE IMPROVEMENTS WILL BECOME PUBLIC PROPERTY.

PROJECT PARTNERS



ARCHITECT
 J&A ARCHITECTURAL ENGINEERING
 3250 W. BIG BEAVER RD., STE. 510
 TROY, MI 48064J
 PH: 248.282.6475
 CONTACT: AZHER MATTY
 AZHERMATTY@JAARCHENG.COM



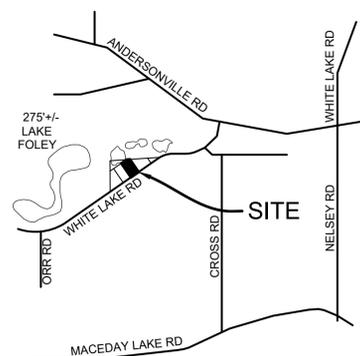
LAND SURVEYOR
 KIEFT ENGINEERING
 5852 S. MAIN ST., STE. 1
 CLARKSTON, MI 48346
 PH: 248.625.5251 x
 CONTACT: WILLIAM (BILL) NORMAN, P.S.
 WVNORMAN@KIEFTENG.COM



SITE LIGHTING
 GASSER BUSH ASSOCIATES
 30984 INDUSTRIAL RD.
 LIVONIA, MI 48150
 PH: 734.266.6705
 CONTACT: DAVID PAUWELS
 DPAUWELS@GASSERBUSH.COM

CIVIL PERMITS/APPROVALS REQUIRED				
AGENCY	DESCRIPTION	PERMIT NUMBER	ISSUED DATE	EXPIRATION DATE
WHITE LAKE TWP. - PLANNING & ENGINEERING	PRE-APPLICATION MEETING	REVIEW ONLY	11/29/2023	
WHITE LAKE TWP. - PLANNING COMMISSION	PRELIMINARY SITE PLAN APPROVAL & SPECIAL LAND USE	BY VOTE	09/05/2024	
WHITE LAKE TWP. - TOWNSHIP BOARD	PRELIMINARY SITE PLAN APPROVAL	BY VOTE	09/17/2024	
WHITE LAKE TWP. - ZONING BOARD OF APPEALS	VARIANCE REQUEST - SURFACING MATERIALS	BY VOTE	10/24/2024	
WHITE LAKE TWP. - DLZ	FINAL ENGINEERING APPROVAL			
WHITE LAKE TWP. - PLANNING COMMISSION	FINAL SITE PLAN APPROVAL			
WHITE LAKE TWP. - BUILDING DEPARTMENT	FENCE PERMIT			
WHITE LAKE TWP. - COMMUNITY DEVELOPMENT DIRECTOR	SIGN PERMIT			
OAKLAND COUNTY - WATER RESOURCE COMMISSIONER (OCWRC)	PART 91 SOIL EROSION & SEDIMENTATION CONTROL PERMIT			
OAKLAND COUNTY - ROAD COMMISSION (RCOC)	SIDEWALK IN ROW PERMIT			
OAKLAND COUNTY - HEALTH DIVISION (OCHD)	TYPE III DRINKING WATER WELL PERMIT			
OAKLAND COUNTY - HEALTH DIVISION (OCHD)	ONSITE SEWAGE DISPOSAL SYSTEM (SEPTIC) PERMIT			
STATE OF MICHIGAN - ENERGY, GREAT LAKES, & ENVIRONMENT (EGLE)	NPDES NOTICE OF COVER			

ALL REQUIRED & APPLICABLE PERMITS & APPROVALS SHALL BE OBTAINED PRIOR TO STARTING CONSTRUCTION.



PROJECT LOCATION
 PARCEL 12-01-127-002
 PART OF SECTION 01, T3N, R8E,
 WHITE LAKE TWP.,
 OAKLAND COUNTY, MICHIGAN
 ZONED: LM, LIGHT MANUFACTURING

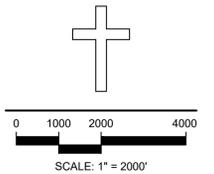
LOCATION MAP
 SCALE: 1" = 2000'

SHEET INDEX	
NO.	SHEET TITLE
G0.01	COVER SHEET
V1.01	TOPOGRAPHIC & BOUNDARY SURVEY (BY KIEFT ENGINEERING)
C0.01	CIVIL GENERAL NOTES & LEGENDS
C1.01	GENERAL SITE PLAN
C1.02	FIRE SAFETY SITE PLAN
C1.21	GRADING & JOINTING PLAN
C1.31	UTILITY PLAN
C1.41	SOIL EROSION CONTROL PLAN
C3.31	STORM SEWER PROFILES & CALCULATIONS
C5.01	DETAILS - PAVING, SIGNS, & WALK
C5.02	DETAILS - DUMPSTER ENCLOSURE & FENCING
C5.31	DETAILS - UTILITIES
C5.32	DETAILS - STORM WATER TREATMENT UNIT
N/A	WHITE LAKE TWP. - STORM SEWER STANDARD DETAILS
1 OF 1	OCWRC SOIL EROSION & SEDIMENTATION CONTROL DETAILS
L1.01	LANDSCAPE PLAN
L5.01	DETAILS - LANDSCAPE
1 OF 1	PHOTOMETRIC PLAN (BY GASSER BUSH ASSOCIATES)
A2.0	NEW FIRST FLOOR PLAN (BY J&A ARCHITECTURAL ENGINEERING)
A3.0	NEW ELEVATIONS (BY J&A ARCHITECTURAL ENGINEERING)
A3.1	NEW ELEVATIONS (BY J&A ARCHITECTURAL ENGINEERING)

REVISION INDEX*				SHEET NO.	G0.01	C0.01	C1.01	C1.02	C1.21	C1.31	C1.41	C3.31	C5.01	C5.02	C5.31	C5.32	L1.01	L5.01
NO.	DATE	DESCRIPTION																
0	04/01/2025	OWNER REVIEW FOR LARGER BUILDING																
1	10/03/2025	FINAL SITE PLAN - FINAL ENGINEERING PLAN																
2	02/06/2026	FINAL SITE PLAN - FINAL ENGINEERING PLAN REVISION 1																

* REVISION INDEX TRACKS LEACH ENGINEERING, PLLC DRAWINGS ONLY. SEE DRAWINGS BY OTHERS FOR PROJECT PARTNERS REVISION TRACKING.

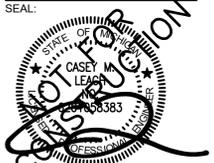
LEACH ENGINEERING
 A PROFESSIONAL SERVICE COMPANY
 PROJECT MANAGEMENT
 CIVIL ENGINEERING
 CONSULTING
 11904 JERSEY COURT
 DAVISBURG, MI 48350
 248.884.8224
 leachpsc.com



811
 Know what's below.
 Call before you dig.
EXISTING UNDERGROUND UTILITY LOCATION AND ELEVATION INFORMATION SHOWN ON THIS DRAWING AND APPROVED ONLY AS INDICATED BY THE 811 SERVICE. THE USER SHALL BE RESPONSIBLE FOR THE ACCURACY OF ANY INFORMATION THEREOF. PARTIES UTILIZING THIS INFORMATION SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF ANY UTILITY INFORMATION SHOWN ON THIS DRAWING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF ANY UTILITY INFORMATION SHOWN ON THIS DRAWING PRIOR TO THE START OF CONSTRUCTION.

CLIENT:
LASTING IMPRESSIONS

2255 PORTER ROAD
 WHITE LAKE, MI 48386
 CONTACT: NICHOLAS HOPSON
 PHONE: (248) 830-2828
 SEAL:



PROJECT:
NEW FACILITY

PARCEL 12-01-127-002

ISSUES / REVISIONS:

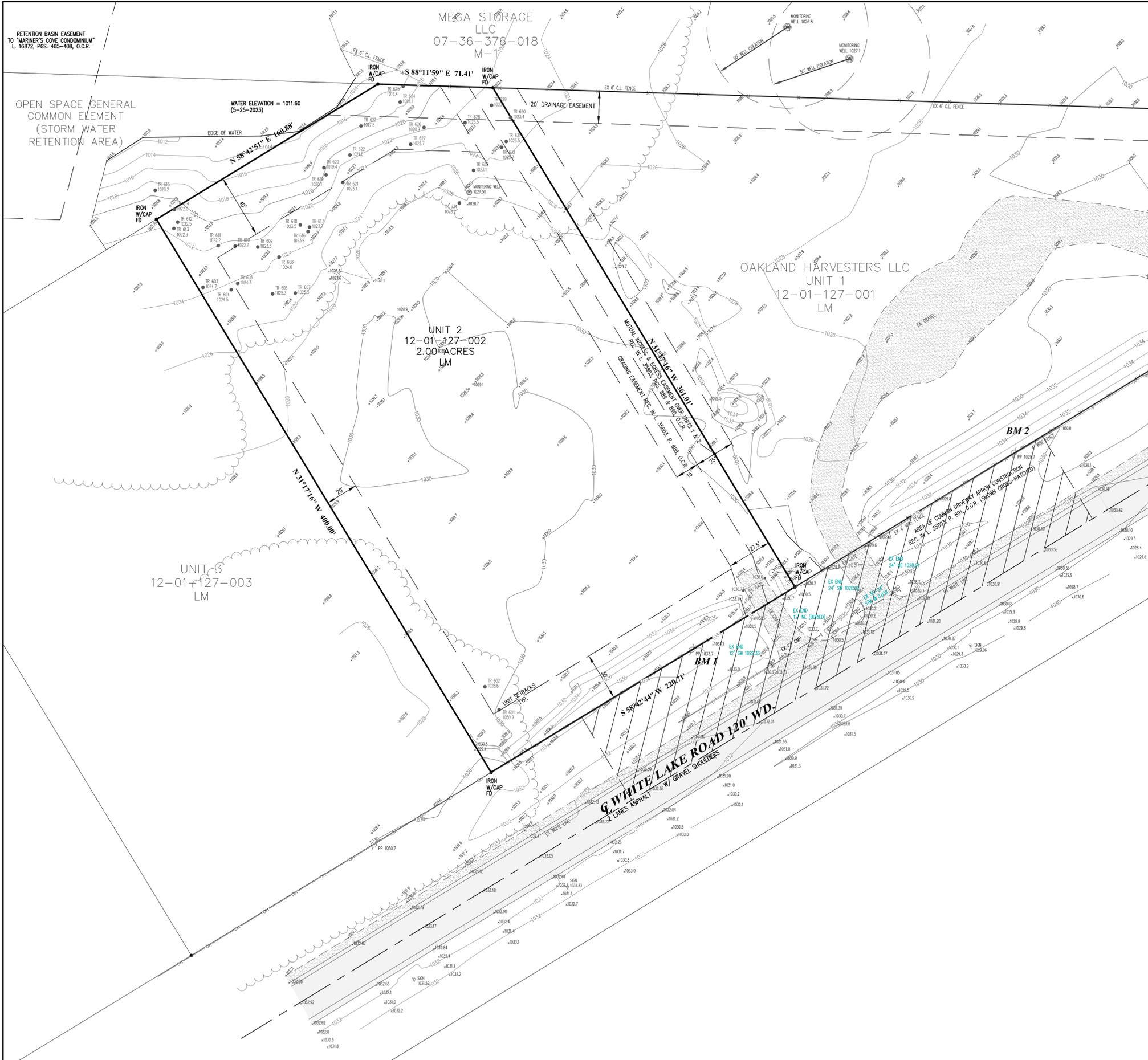
FSP - FEP	10/03/25
FSP - FEP REV. 1	02/06/26

MANAGED **CL**
 DESIGNED **CL**
 DRAWN **CL**

SHEET NAME:
COVER SHEET

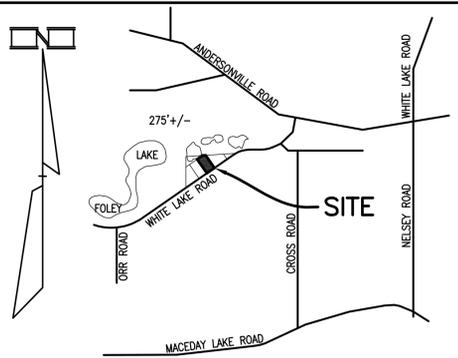
PROJECT NUMBER: 24004
 SHEET NUMBER: **G0.01**

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LEGEND

EXISTING	STORM SEWER
GAS	GAS MAIN
E	ELEC. TELE. CABLE
OH	OVERHEAD WIRES
	STORM MANHOLE
	CATCH BASIN
	INLET
	REARYARD CATCH BASIN
	END SECTION
	CONTOURS
	GRADE



LOCATION MAP
SCALE: 1" = 2000'

TREE LIST:

601	20"	Elm
602	Tw 18"	Poplar
603	26"	Poplar
604	Tw 6"	Box Elder
605	6"	Box Elder
606	7"	Box Elder
607	8"	Box Elder
608	6"	Box Elder
609	8"	Tree of Heaven
610	26"	Poplar
611	6"	Tree of Heaven
612	22"	Poplar
613	30"	Poplar
614	Tw 30"	Poplar
615	36"	Tree of Heaven
616	36"	Poplar
617	36"	Poplar
618	Quad 14-30	Poplar
619	36"	Poplar
620	12"	Poplar
621	Tw 20"	Box Elder
622	36"	Poplar
623	12"	Box Elder
624	12"	Box Elder
625	36"	Willow
626	30"	Poplar
627	12"	Tree of Heaven
628	24"	Poplar
629	Tw 8-12"	Box Elder
630	8"	Tree of Heaven
631	10"	Locust
632	10"	Locust
633	Tw 8"	Tree of Heaven
634	7"	Box Elder

SITE INFORMATION:
LOT GROSS AREA: 2.00 ACRES

ZONING INFORMATION:
ZONING DISTRICT: LM LIGHT MANUFACTURING
MINIMUM LOT SIZE: 43,560 SF (1.00 AC), CONFORMS
MINIMUM LOT WIDTH: 175 FT, CONFORMS
MAXIMUM BUILDING HEIGHT: 2 STORIES OR 40 FT

SETBACKS: PER "PROSPECTORS SQUARE" O.C.C.P. NO. 1315

FRONT	REAR	SIDES	PARKING
30 FT	40 FT	20 FT LEAST, 40 FT TOTAL	10 FT

MAXIMUM LOT COVERAGE: 30%

BENCHMARKS:
BM 1: MAG NAIL IN EAST FACE OF POWER POLE
EL. = 1034.67 NAVD 88

BM 2: BOLT SPIKE ON NORTH FACE PF POWER POLE
EL. = 1030.06 NAVD 88

GENERAL NOTES:

- EXISTING UTILITIES SHOWN HAVE BEEN TAKEN FROM VISUAL OBSERVATION & RECORD MAPPING. WHERE AVAILABLE, NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE UTILITIES SHOWN ON THIS DRAWING. PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY & COMPLETENESS OF OVERHEAD & UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION ACTIVITIES.
- BUILDER/DEVELOPER IS RESPONSIBLE FOR CONFIRMING BUILDING SETBACKS.

WETLAND NOTE:
PART 303 WETLANDS, AS IDENTIFIED ON NW1 & MRS MAPS AS SHOWN ON THE EGLE WETLANDS MAP VIEWER APPEAR NEAR THE NORTH PROPERTY LINE OF THE PARCEL. THE EDGE OF WATER WAS FIELD LOCATED. A WETLAND DETERMINATION & DELINEATION HAS NOT BEEN PERFORMED.

FLOOD HAZARD NOTE:
THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT APPEAR TO LIE WITHIN A SPECIAL FLOOD HAZARD AREA AS DEFINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) BASED ON FLOOD INSURANCE RATE MAP (FIRM) NO. 26125C0329P BARING AN EFFECTIVE DATE OF 9/28/2006.

THIS IS TO CERTIFY THAT I, William J. Norman II, A PROFESSIONAL LAND SURVEYOR, HAVE THIS DATE MADE A SURVEY OF A PARCEL OF LAND DESCRIBED AS FOLLOWS:

LEGAL DESCRIPTION:
UNIT 2, "PROSPECTORS SQUARE" O.C.C.P. NO. 1315, WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN.
PARCEL#: 12-01-127-002
ADDRESS: NOT ASSIGNED



DATE	ISSUE
07/19/23	SURVEY ISSUED
06/21/24	PSP REV. 1

PROPRIETOR:
HOPSON HOLDINGS, LLC
2255 PORTER ROAD
WHITE LAKE, MICHIGAN 48383
(248) 830-2828

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KIEFT ENGINEERING, INC.
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE: 06/30/23	CKD. BY: WJN	DATE: 06/30/23
DRAWN: GF		
DESIGN: CL		
SECTION: 1	T- 3 -N- R- 8 -E-	



BOUNDARY & TOPOGRAPHIC SURVEY
LASTING IMPRESSIONS
PART OF THE NORTH 1/2 OF SECTION 1, T3N, R8E,
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE: 1" = 30'
SHEET NO: V1.01
KE 2023.104

LASTING IMPRESSIONS

GENERAL

- PRIOR TO SUBMITTING PROPOSAL, VERIFY ALL CONDITIONS GOVERNING OR AFFECTING THE WORK; OBTAIN & VERIFY ALL DIMENSIONS TO ENSURE THE PROPER FIT & LOCATION OF THE WORK. TAKE ADDITIONAL DIMENSIONS AS REQUIRED; REPORT TO THE ENGINEER ANY & ALL CONDITIONS WHICH MAY INTERFERE WITH OR OTHERWISE AFFECT OR PREVENT THE PROPER EXECUTION & COMPLETION OF THE WORK; FAMILIARIZE YOURSELF WITH THE ACTUAL CONDITIONS OF THE WORK, ACCESS TO THE SITE, AVAILABLE STORAGE SPACE, FACILITIES & OBSTRUCTIONS THAT MAY BE ENCOUNTERED DURING THE PROGRESS OF WORK.
- CONTRACTOR TO FURNISH ALL NECESSARY LABOR, MATERIAL, EQUIPMENT, & FACILITIES TO FURNISH, FABRICATE & PERFORM THE REQUIRED WORK.
- ANY EXISTING CONSTRUCTION TO BE MODIFIED AS A PART OF THIS CONTRACT SHALL BE REBUILT AS REQUIRED TO THE SATISFACTION OF THE OWNER/ENGINEER.
- EXISTING CONSTRUCTION NOT UNDERGOING ALTERATION IS TO REMAIN UNDISTURBED. WHERE SUCH CONSTRUCTION IS DISTURBED AS A RESULT OF THE OPERATIONS OF THIS CONTRACT, THE EXISTING CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AS REQUIRED & TO THE SATISFACTION OF THE OWNER/ENGINEER.
- ALL WORK SHOWN ON THESE DRAWINGS MAY BE CHECKED BY AN INDEPENDENT TESTING AGENCY RETAINED BY OWNER TO ENSURE COMPLIANCE WITH THE REQUIREMENTS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL PROVIDE ACCESS AS REQUIRED FOR TESTING PURPOSES.
- CONTRACTOR SHALL MAKE ALL NECESSARY FIELD VISITS FOR INSPECTION, MEASUREMENTS & VERIFICATION OF EXISTING CONDITIONS.
- THE GENERAL NOTES ARE INTENDED TO AUGMENT THE DRAWINGS & SPECIFICATIONS. SHOULD CONFLICTS EXIST BETWEEN THE DRAWINGS, SPECIFICATION, &/OR THE GENERAL NOTES, THE STRICTEST PROVISION, AS DETERMINED BY THE ENGINEER, SHALL GOVERN.
- WORK THE CIVIL DRAWINGS IN CONJUNCTION WITH ANY ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, LANDSCAPING, & ELECTRICAL DRAWINGS.
- ALL WORK SHALL CONFORM TO APPLICABLE STATE & LOCAL CODES.
- THE CONTRACTOR SHALL COMPLY WITH THE CONSTRUCTION SAFETY STANDARDS & THE OCCUPATIONAL SAFETY STANDARDS (OSHA) AS ISSUED BY THE U.S. DEPARTMENT OF LABOR & THE MICHIGAN DEPARTMENT OF LABOR (MIOSHA).
- MATERIALS & WORKMANSHIP SHALL COMPLY WITH (CLIENT) STANDARDS & SPECIFICATIONS & OTHER APPLICABLE CODES, SPECIFICATIONS, LOCAL ORDINANCES, INDUSTRY STANDARDS & UTILITY COMPANY REGULATIONS.
- THE CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH ALL THE EXISTING CONDITIONS AT THE SITE INCLUDING UTILITIES, SERVICES, ETC., & SHALL BE FULLY RESPONSIBLE FOR ANY DAMAGES THEY CAUSE TO BOTH EXISTING NEW CONSTRUCTION, PROPERTY & ANY UNAUTHORIZED DISRUPTION TO ADJACENT OWNERS NORMAL USE OF UTILITIES, SERVICES & THE SURROUNDING FACILITIES.
- THE CONTRACTOR SHALL OBTAIN AUTHORIZATION PRIOR TO MAKING CHANGES TO, OR INTERRUPTIONS OF UTILITIES & SHALL COMPLY WITH SPECIAL INSTRUCTIONS FROM THE OWNER TO MINIMIZE THE EFFECT ON THEIR OPERATIONS. PRIOR TO ANY EXCAVATION, EARTH MOVING WORK OR REMOVAL OF ANY PIPE FROM SERVICE, THE CONTRACTOR SHALL REVIEW WITH THE OWNER'S REPRESENTATIVE THE LOCATION OF THE UNDERGROUND UTILITIES, SERVICE & STRUCTURES IN THE AREA WHERE THE WORK IS BEING PERFORMED. PROVIDE FULL TIME SUPERVISION DURING ALL EXCAVATION & EARTH MOVING OPERATIONS & TAKE ALL RESPONSIBLE PRECAUTIONS TO PROTECT EXISTING UTILITIES, SERVICES & OPERATIONS FROM DAMAGE OR DISRUPTION.
- PROVIDE BARRIER PROTECTION FOR VEHICULAR & PEDESTRIAN TRAFFIC AT EXCAVATIONS. TEMPORARY FENCING, BARRICADING & PEDESTRIAN ROUTING SHALL BE COORDINATED WITH & APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
- FOR PROTECTION OF UNDERGROUND UTILITIES THE CONTRACTOR SHALL CALL "MISS DIG" AT 800-482-7171 OR 911, A MINIMUM OF THREE DAYS PRIOR TO EXCAVATION ON THE SITE. ALL "MISS DIG" PARTICIPATING MEMBERS WILL THUS ROUTINELY BE NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF NOTIFYING UTILITY OWNER'S WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.
- DISPOSE OF ALL EXCAVATED SOILS & WASTE MATERIALS (NEW & EXISTING) OFF SITE IN A LEGAL MANNER.
- PERFORM FINAL CLEANUP OF WORK AREAS TO THE SATISFACTION OF THE OWNER.

CLEARING, GRUBBING, & EARTHWORK

- AT THE START OF EARTHWORK OPERATIONS, ALL SURFACE VEGETATION SHALL BE CLEARED & THE EXISTING TOPSOIL & ANY OTHER ORGANIC SOILS SHALL BE REMOVED IN THEIR ENTIRETY FROM BELOW THE PROPOSED BUILDING & PAVEMENT AREAS. EXISTING RANDOM CONCRETE & OTHER DEBRIS SHALL BE REMOVED FROM WITHIN THE BUILDING AREA. REMOVE STUMPS TO 12 INCHES BELOW FINAL GRADE IN FUTURE LAWN AREAS, & REMOVE STUMPS ENTIRELY FROM FUTURE PAVED & BUILDING AREAS. DISPOSE OF VEGETATIVE MATTER & DEBRIS OFFSITE.
- ALL COMPACTED SUBGRADE SHALL BE THOROUGHLY PROOF-ROLLED WITH A HEAVY RUBBER-TIRED VEHICLE SUCH AS A LOADED SCRAPER OR LOADED DUMP TRUCK. ANY AREAS THAT EXHIBIT EXCESSIVE PUMPING & YIELDING DURING PROOF-ROLLING SHALL BE STABILIZED BY AERATION, DRYING & COMPACTION IF WEATHER CONDITIONS ARE FAVORABLE, OR REMOVAL & REPLACEMENT WITH ENGINEERED FILL. ALL COMPACTED SUBGRADE SHALL BE COMPACTED TO 95% OF ITS MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR METHODS (ASTM D-1557).
- ALL EXCAVATIONS ARE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE WHO SHALL BE CONSULTED WHEN POOR SOIL, WATER, OBSTRUCTIONS, PIPING, EXISTING FOOTINGS, EXCAVATIONS, ETC., ARE ENCOUNTERED.
- CONTRACTOR SHALL FURNISH ALL REQUIRED DEWATERING EQUIPMENT TO MAINTAIN A DRY EXCAVATION UNTIL BACKFILL IS COMPLETE.
- MATERIAL FOR BACKFILL OR ENGINEERED FILL REQUIRED TO ACHIEVE DESIGN GRADES SHOULD CONSIST OF NON-ORGANIC SOILS. THE ON-SITE SOILS THAT ARE FREE OF ORGANIC MATTER & DEBRIS MAY BE USED FOR ENGINEERED FILL WITH ENGINEER'S APPROVAL.
- BACKFILL MATERIAL SHALL BE COMPACTED TO 95% OF ITS MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557, IN LIFTS NOT EXCEEDING 8-INCHES IN LOOSE THICKNESS.
- FROZEN MATERIAL SHALL NOT BE USED AS FILL, NOR SHALL FILL BE PLACED ON FROZEN SUB-GRADE.
- DO NOT PLACE BACKFILL AGAINST FOUNDATION WALLS UNTIL BASEMENT FLOOR LEVEL & FIRST FLOOR LEVEL SLABS ARE IN PLACE & HAVE REACHED 75% OF THEIR SPECIFIED DESIGN STRENGTH. SHORE & BRACE WALLS AS REQUIRED IF BACKFILLING OPERATIONS ARE TO BE CARRIED OUT PRIOR TO PLACEMENT OF FLOOR SLABS.
- PLACE BACKFILL AGAINST BOTH SIDES OF GRADE BEAMS & FOUNDATIONS AT EQUAL ELEVATIONS OF FILL, EXCEPT AS SHOWN ON THE DRAWINGS.
- CONSTRUCTION DRAINAGE: STORM WATER ACCUMULATED IN THE PROJECT SITE EXCAVATIONS IS TO DRAIN BY NATURAL PERCOLATION. PROVIDE PUMPING ONLY AS NECESSARY.
- SLOPE SMOOTHLY BETWEEN INDICATED ELEVATIONS TO ACHIEVE POSITIVE DRAINAGE. SLOPE ALL EARTH BANKS 4:1 OR FLATTER.
- NEW GRADES SHOWN ARE FINISHED GRADES & INCLUDES TOP OF TOPSOIL OR SURFACES SUCH AS PAVEMENTS & WALKS.
- PROVIDE 4 INCHES OF TOPSOIL, SEED, & MULCH AT DISTURBED LAWN AREAS, EXCEPT AS NOTED OTHERWISE.
- TREES: TREES NOT INDICATED TO BE REMOVED OR TRANSPLANTED SHALL BE FENCED OFF WITH 4' HIGH ORANGE CONSTRUCTION FENCE 5' FROM THE DRIP LINE OF THE TREE. TREES INDICATED TO BE REMOVED, SHALL BE TRANSPLANTED WHERE SHOWN ON THE PLANS & AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
- GREAT CARE SHALL BE TAKEN BY CONTRACTORS TO AVOID DAMAGE TO VEGETATION OUTSIDE THE LIMITS OF CONSTRUCTION & TO KEEP THE CONSTRUCTION AREAS TO A MINIMUM. DRIVING SHALL NOT BE PERMITTED OUTSIDE THE LIMITS OF CONSTRUCTION.
- TOPSOIL (REUSE EXISTING), SEED, FERTILIZE & MULCH LAWN AREAS DISTURBED BY NEW CONSTRUCTION. ALL NEW LAWN SHALL MATCH EXISTING LAWN SPECIES, OR SEE LANDSCAPING PLANS/SPECS IF AVAILABLE.

GENERAL PAVING & CURBING NOTES

- ALL HOT MIX ASPHALT & CONCRETE PAVEMENT SHALL CONFORM TO THE 2020 MDOT SPECIFICATIONS FOR CONSTRUCTION.
- SURFACE RESTORATION: RESTORE PAVEMENT & OTHER SURFACES DISTURBED BY CONTRACT OPERATIONS TO THEIR ORIGINAL CONDITION OR BETTER.
- PAVEMENT STRIPING: PROVIDE 4 INCH WIDE WHITE PAINT STRIPING FOR STANDARD PARKING STRIPING, & 4 INCH WIDE HANDICAP BLUE FOR ALL ACCESSIBLE PARKING STRIPING. STRIPING SHALL BE DOUBLE STRIPED, MEETING THE ZONING ORDINANCE OF WHITE LAKE TOWNSHIP. ALL PAINT SHALL BE APPLIED PER MANUFACTURERS RECOMMENDATIONS.
- PROVIDE TEMPORARY INTERMITTENT MARKING FOR NEW PARKING AREA WHILE PAVEMENT CURES & SEALING COATING IS APPLIED.
- EXISTING PAVEMENT TO BE REMOVED SHALL BE SAW CUT, FULL DEPTH, & RECTANGULAR.
- WHEN PLACING NEW PAVEMENTS, MAINTAIN SLOPE OF EXISTING SURROUNDING SURFACES.
- ALL NEW CURB SHALL BE PLACED ON 21AA LIMESTONE BASE, COMPACTED TO 95% MAX. DENSITY PER ASTM D1457. THICKNESS OF BASE SHALL MATCH ADJACENT PAVEMENT & IN NO CASE SHALL BE LESS THAN 4". BASE SHALL EXTEND 12" BEYOND BACK OF CURB. SUBGRADE SHALL BE PROOF-ROLLED/COMPACTED TO 95% MAX. DENSITY PER ASTM D-1557.

ASPHALT

- AFTER FINAL ROLLING, PROTECT PAVEMENT FROM VEHICULAR TRAFFIC UNTIL THE SURFACE HAS COOLED SUFFICIENTLY TO ELIMINATE SURFACE ABRASION.
- PAVEMENT SEALER
 - PAVEMENT SEALER SHALL BE TARCONITE BY NEYRA INDUSTRIES, INC. OR APPROVED SUBSTITUTE. SEALER SHALL MEET FS R-P-3556 PITCH, COAL TAR EMULSION (COATING FOR BITUMINOUS PAVEMENTS).
 - PRIMER SHALL BE POLYPRIME PENETRATING PRIMER BY NEYRA INDUSTRIES, INC. OR APPROVED SUBSTITUTE.
 - CLEAN EXISTING SURFACES FREE FROM ALL LOOSE OR FOREIGN MATTER. COAT OIL SPOTS WITH ACRYLIC OIL SPOT PRIMER.
 - APPLY PRIMER AT MINIMUM RATE OF .015 GAL. OF CONCENTRATED POLYPRIMER PER SQUARE YARD. ALLOW PRIMER TO CURE FOR A MINIMUM OF ONE HOUR PRIOR TO APPLICATION OF TARCONITE.
 - SEALER SHALL BE FIELD MIXED WITH 5 POUNDS OF SAND PER 1 GALLON OF TARCONITE TO FORM HOMOGENEOUS SLURRY. SAND SHALL BE WASHED DRY SILICA SAND.
 - APPLICATION SYSTEM FOR MODERATE TRAFFIC: ONE COAT OF POLYPRIME PENETRATING PRIMER & TWO SAND-SLURRY COATS OF TARCONITE. APPLICATION SPECIFICATION JV-52.
 - NEW PAVEMENTS SHALL BE ALLOWED TO CURE AT LEAST 30 DAYS PRIOR TO APPLICATION.
 - APPLICATION OF PAVEMENT SEALER SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
 - BARRICADE COATED AREAS UNTIL COATING IS DRIED SUFFICIENTLY FOR TRAFFIC.

CAST-IN-PLACE CONCRETE & CONCRETE PAVING

- ALL CAST IN PLACE CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 301- LATEST REVISION, "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDING", EXCEPT AS NOTED ON THE DRAWINGS.
- ALL CONCRETE PAVEMENT WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 330- LATEST REVISION, "GUIDE FOR THE DESIGN AND CONSTRUCTION OF CONCRETE PARKING LOTS", EXCEPT AS NOTED ON THE DRAWINGS.
- ALL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 psi.
- ALL EXTERIOR CONCRETE INCLUDING WALLS SHALL BE AIR ENTRAINED 5% +/- 1%.
- ALL EXTERIOR CONCRETE EXPOSED TO WEATHER SHALL HAVE A MAXIMUM WATER TO CEMENTITIOUS RATIO OF 0.45.
- UNLESS NOTED OTHERWISE, MINIMUM CONCRETE COVER SHALL BE:

CONCRETE CAST AGAINST EARTH	3 IN
CONCRETE EXPOSED TO EARTH OR WEATHER	2 IN
- THE CONTRACTOR SHALL FOLLOW THE JOINTING LAYOUT ON THE DRAWINGS, AND SHALL CONFORM TO ACI 330 GUIDE FOR DESIGN & CONSTRUCTION OF CONCRETE PARKING LOTS, LATEST EDITION AS WELL AS WHITE LAKE TOWNSHIP STANDARDS. ALL JOINTS SHALL BE SEALED W/ NON-SAG SILICONE JOINT SEALANT. SEE PAVING DETAILS ON SHEET C5.01 FOR JOINT AND SEALANT DETAILS.
- THE CONTRACTOR SHALL SUBMIT THE CONCRETE MIX DESIGN(S) TO THE ENGINEER FOR REVIEW. PROPORTION MIX DESIGNS AS DEFINED IN ACI 301 SECTION 4. THE SUBMITTAL SHALL INCLUDE AS A MINIMUM CEMENT TYPE & SOURCE, CEMENT CUBE STRENGTH, AGGREGATE GRADATIONS, WATER TESTS, AD-MIXTURE CATALOG INFORMATION & CYLINDER STRENGTH TEST RESULTS FOR THE CONCRETE.
- ALL REINFORCEMENT TO BE DETAILED, FABRICATED & ERECTED ACCORDING TO THE ACI STANDARDS: "DETAILS & DETAILING OF CONCRETE REINFORCEMENT", ACI 315 - LATEST REVISION & "MANUAL OF ENGINEERING & PLACING DRAWINGS FOR REINFORCED CONCRETE STRUCTURES", ACI 315R - LATEST REVISION.
- LAPS, ANCHORAGES & SPLICES SHALL COMPLY WITH THE REQUIREMENTS OF ACI 318-LATEST REVISION, SECTIONS 12.2 & 12.15. LOCATIONS & SPLICES SHALL BE IN ACCORDANCE WITH THE CONSTRUCTION JOINT LOCATIONS, DETAILS & AS SHOWN ON THE REINFORCING STEEL SHOP DRAWINGS.
- ALL CONSTRUCTION JOINTS SHALL BE FURNISHED WITH KEYWAY CENTERED ON MEMBERS. WHERE THE SIZE OF KEY IS NOT SHOWN ON THE DRAWINGS, THE KEY DEPTH SHALL BE 10% OF THE CROSS SECTION DIMENSION OF THE MEMBER - MINIMUM 3/4".
- ANCHOR BOLTS SHALL BE SET USING A TEMPLATE TO WITHIN 1/8" TOLERANCE IN ANY PLAN DIRECTION IN PIERS, FOOTINGS & FOUNDATION WALLS, WITH THE MINIMUM PROJECTION & EMBEDMENT LENGTHS AS INDICATED ON THE DRAWINGS.
- PROVIDE 3/4" CHAMFER STRIP AT ALL EXPOSED CORNERS OF CONCRETE WALLS, INCLUDING EXPOSED CORNERS OF CONCRETE PIERS.
- LOCATE ALL SLEEVES, OPENINGS, EMBEDDED ITEMS, ETC., AS INDICATED ON THE DRAWINGS. THE CONCRETE CONTRACTOR SHALL CHECK WITH ALL OTHER TRADES TO MAKE SURE THE SLEEVES, OPENINGS & EMBEDDED ITEMS THAT ARE TO BE PROVIDED & SET BY THEM ARE IN PLACE PRIOR TO PLACING OF CONCRETE IN THE AREA INVOLVED.
- ALL INTERIOR SLABS ON GRADE SHALL BE PLACED ON A VAPOR BARRIER WITH A MINIMUM OF 4-INCHES MDOT CLASS II GRANULAR MATERIAL (SAND). MINIMUM REINFORCEMENT SHALL BE IN ACCORDANCE WITH CRSI ENGINEERING DATA REPORT NUMBER 37, OR AS DETAILED. ALL EXTERIOR SLABS ON GRADE SHALL BE PLACED ON A MINIMUM OF 4-INCHES CLEAN SAND. MINIMUM REINFORCEMENT SHALL BE IN ACCORDANCE WITH ACI 318 SECTION 7.12 - SHRINKAGE & TEMPERATURE REINFORCEMENT, OR AS DETAILED.
- CONTRACTORS SHALL OBTAIN APPROVAL FROM THE ENGINEER, PRIOR TO PLACING OPENINGS OR SLEEVES, NOT SHOWN ON THE DRAWINGS, THROUGH ANY STRUCTURAL MEMBERS, ROOF, WALLS OR FOUNDATIONS. REVIEW ARCHITECTURAL, MECHANICAL & ELECTRICAL DRAWINGS FOR BASES, OPENINGS, SLEEVES, ANCHORS, INSERTS, CONDUITS, RECESSES & OTHER DEVICES IN CONCRETE WORK BEFORE CASTING CONCRETE.
- PROVIDE POCKETS OR RECESSES IN CONCRETE WORK FOR STEEL COLUMNS & BEAMS AS REQUIRED &/OR AS CALLED FOR IN THE SPECIFICATIONS EVEN IF NOT SHOWN ON THE DRAWINGS. PROVIDE CONCRETE FILL AFTER STEEL ERECTION TO SEAL OPENINGS.
- REFER TO ARCHITECTURAL DRAWINGS FOR SLAB RECESSES &/OR FLOOR FINISH MATERIALS.
- WELDING OF REINFORCING STEEL IS PROHIBITED UNLESS SPECIFICALLY DETAILED. WELDING SHALL CONFORM TO AWS D1.4 SPECIFICATION.
- THE CONCRETE SHALL BE THOROUGHLY COMPACTED BY VIBRATION SUPPLEMENTED BY SPADING, PUDDLING OR AGITATION, TO PREVENT HONEYCOMBING & TO INSURE THE ELIMINATION OF VOIDS. VIBRATION MUST BE DIRECT ACTION IN THE CONCRETE & NOT AGAINST FORMS OR REINFORCEMENT. HONEYCOMBING, VOIDS & LARGE AIR POCKETS WILL NOT BE ACCEPTABLE.

CONTROL

- TOPOGRAPHIC INFORMATION: EXISTING INFORMATION IS BASED ON A TOPOGRAPHIC SURVEY BY KIEFT ENGINEERING, INC. DATED JULY 19, 2023. SUPPLEMENTED BY RECORD DRAWINGS & FIELD OBSERVATIONS.
- VERTICAL CONTROL: ELEVATIONS SHOWN ARE BASED ON NAVD 88 DATUM. THE BENCH MARKS USED ARE SHOWN ON THE TOPOGRAPHIC SURVEY.
- LAYOUT: LOCATE NEW CONSTRUCTION BY MEASUREMENTS FROM CONNECTING AREAS OF EXISTING BUILDINGS, & ENGAGE THE SERVICES OF A PROFESSIONAL SURVEYOR TO ASSIST IN LAYOUT, & CONSTRUCTION STAKING. CONFIRM HORIZONTAL & VERTICAL CONTROL POINTS PRIOR TO CONSTRUCTION.

UTILITIES

- MINIMUM COVER OF UNDERGROUND UTILITIES:

WATER	6.0 FT
NATURAL GAS	2.5 FT
SANITARY SEWERS	4.0 FT
ALL OTHERS	3.5 FT

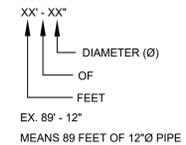
PRESSURE UTILITIES MAY BE LAID APPROXIMATELY PARALLEL TO FINISH GRADE WITH NO HIGH POINTS, EXCEPT AS INDICATED, WITH LOCAL DEEPENING TO AVOID OTHER UTILITIES OR OBSTRUCTIONS. MAINTAIN COVER BELOW DITCHES & SURFACE DEPRESSIONS. PROVIDE TEMPORARY PROTECTION AS REQUIRED UNTIL COVER IS COMPLETED. INFORM OWNER'S REPRESENTATIVE IF AVAILABLE COVER, AT INDICATED ELEVATIONS, IS LESS THAN MINIMUM. VERTICAL CLEARANCE FOR ALL PIPES SHALL BE 18" MINIMUM FROM THE OUTSIDE OF PIPE.
- EXISTING UTILITIES: INFORMATION HAS BEEN OBTAINED FROM EXISTING AVAILABLE DRAWINGS & SURFACE FEATURES SHOWN ON THE TOPOGRAPHIC SURVEY. VERIFY THE INFORMATION BEFORE CONSTRUCTION. NOTIFY THE OWNER'S REPRESENTATIVE OF DISCREPANCIES OR INTERFERENCES.
- EXISTING UNDERGROUND ELECTRICAL LINES: THE CONTRACTOR SHALL BE RESPONSIBLE TO TRACE, FLAG, & MARK ALL UNDERGROUND ELECTRICAL LINES IN THE VICINITY OF THE AREA OF WORK PRIOR TO BEGINNING ANY DEMOLITION, EARTH MOVING, OR EXCAVATION. ALL BUILDING & UNDERGROUND STRUCTURES, ELECTRICAL MANHOLES, HAND HOLES, LIGHTS, PARKING METERS, GATES, SIGNS, MONUMENTS, & ALL OTHER SITE ITEMS THAT CAN REASONABLY BE OBSERVED FROM THE SURFACE SHALL BE INVESTIGATED TO DETERMINE THE PRESENCE OF ELECTRICAL LINES. THE CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR OR REPLACE ANY ELECTRICAL LINES DAMAGED DUE TO CONTRACT OPERATIONS TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
- ADJUST THE FRAME & COVER OF CATCH BASINS & MANHOLES THAT ARE NOT INDICATED TO BE ABANDONED OR REMOVED, TO FINISH GRADE ELEVATION. ADJUSTMENTS SHALL BE MADE USING PRECAST GRADE RINGS.
- THE LOCATIONS & ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS & ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.
- PRIOR TO CONSTRUCTION, EXISTING UTILITIES AT PROPOSED CONNECTIONS & CROSSINGS SHALL BE FIELD EXCAVATED TO VERIFY LOCATIONS, ELEVATION & SIZE. THE OWNER'S REPRESENTATIVE MAY CONFIRM, ADJUST OR REVISE DESIGN ELEVATIONS OF THE PROPOSED UTILITIES.
- UNDERDRAIN: PROVIDE TYPICAL UNDERDRAIN UNDER PAVEMENT AT NEW CATCH BASINS, INLETS & OUTLET CONTROL STRUCTURES RECEIVING SURFACE DRAINAGE. UNDERDRAIN SHALL HAVE A MINIMUM OF 2'-6" COVER & A MINIMUM SLOPE OF 0.5%. SEE DETAIL ON SHEET C5.31.

SOIL EROSION & SEDIMENTATION CONTROL

- COMPLY WITH THE REQUIREMENTS OF THE OAKLAND COUNTY WATER RESOURCE COMMISSIONER EROSION & SEDIMENTATION CONTROL PERMIT ALONG WITH ALL APPLICABLE FEDERAL, STATE, COUNTY, & CITY LAWS, CODES, & REGULATIONS PERTAINING TO THE IMPLEMENTATION, MAINTENANCE, & DOCUMENTATION OF SEDIMENTATION & EROSION CONTROL PRACTICES.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION, MAINTENANCE, & DOCUMENTATION OF SEDIMENTATION & EROSION CONTROL & STORM WATER QUALITY ISSUES RELATED TO THE PROJECT, AS REQUIRED & AS NECESSARY TO COMPLY WITH APPLICABLE LAWS, CODES, & REGULATIONS.
 - TOPSOIL IN A QUANTITY TO COVER DISTURBED AREAS TO A DEPTH OF 3" MUST BE RETAINED ON SITE PER WHITE LAKE TOWNSHIP ENGINEERING DESIGN STANDARDS SECTION B.4.
 - INSPECTIONS SHALL BE MADE WEEKLY & AFTER RAIN EVENTS TO DETERMINE THE EFFECTIVENESS OF EROSION & SEDIMENT CONTROL MEASURES. ANY NECESSARY IMPROVEMENTS OR REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
 - SEDIMENT & EROSION FROM ALL WORK AREAS SHALL BE CONTAINED ON THE SITE. AWAY FROM WETLANDS, OUTFALLS, WATERWAYS, & ENVIRONMENTALLY SENSITIVE AREAS. WATERWAYS INCLUDE BOTH NATURAL & MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES, & PONDS.
 - MAINTAIN EROSION CONTROL MEASURES UNTIL CONSTRUCTION IS COMPLETE & LAWN AREAS ARE FULLY DEVELOPED.
 - PROVIDE JUTE MATTING OR NETTED MULCH ON TEMPORARY SLOPES 2:1 OR STEEPER. SEED & MULCH OTHER SLOPES TO REMAIN UNFINISHED FOR MORE THAN 14 DAYS.
 - REMOVE SEDIMENTATION & EROSION CONTROL MEASURES UPON COMPLETION OF PROJECT.
- SEQUENCE OF EROSION & SEDIMENTATION CONTROL OPERATIONS:**

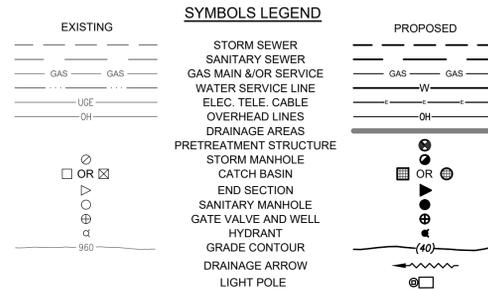
- A PERIMETER DEFENSE WILL BE INSTALLED PRIOR TO CONSTRUCTION TO CONTAIN RUNOFF FROM ALL PROPOSED DISTURBED AREAS. SEDIMENT CONTROL WILL BE INITIATED WHICH WILL CONSIST OF MAINTAINING ALL EXISTING VEGETATION & DIRECTING ALL RUNOFF ON SITE.
- DURING CONSTRUCTION THE ENDS OF ALL OPEN PIPES WILL BE PROTECTED BY FILTER FABRIC, STONE FILTERS OR OTHER APPROVED MEANS.
- ANY REMAINING DENUDE AREA SHALL BE SEEDED & MULCHED DAILY, UPON COMPLETION OF FINAL GRADING.
- AT THE COMPLETION OF THE CONSTRUCTION, TEMPORARY CONTROL MEASURES WILL BE REMOVED & CONVERTED TO PERMANENT CONTROLS. FINAL GRADING WILL BE COMPLETED & THE GROUND WILL BE PERMANENTLY STABILIZED. FILTER FABRIC FENCES SHALL BE REMOVED & ANY BARE SPOTS WILL BE SEEDED. CATCH BASINS & DRAIN INLETS WILL BE CAREFULLY UNCOVERED & ANY SEDIMENT OR DEBRIS WILL BE REMOVED.
- CONTRACTOR IS TO SEED CRITICAL AREAS IDENTIFIED BY OWNER OR OWNER'S REPRESENTATIVE DAILY, WHEN THOSE AREAS ARE SUBJECT TO EARTH CHANGES. CONTRACTOR IS ALSO RESPONSIBLE FOR REGULAR MAINTENANCE OF PLANT COVER IN THESE AREAS. COVER SHALL BE MAINTAINED SO AS TO CONTROL SOIL EROSION.
- AT THE CONCLUSION OF CONSTRUCTION, THE OWNER WILL ASSUME THE RESPONSIBILITY FOR PERMANENT MAINTENANCE OF THE EROSION & SEDIMENTATION CONTROL MEASURES.
- PROVIDE DUST CONTROL WITH AN ON-SITE WATER WAGON. WATER SHALL BE IMPLEMENTED AS NEEDED & AT THE DIRECTION OF THE CITY AGENT.

PIPE SIZE DESIGNATION

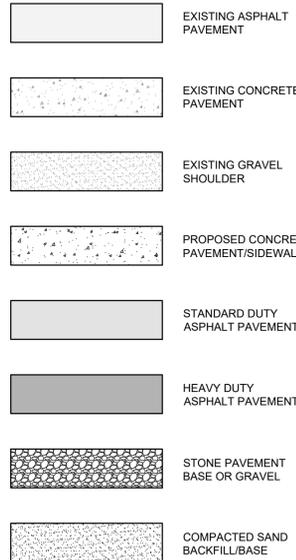


LEGEND OF ABBREVIATIONS

@	- AT	MH	- MANHOLE
~	- APPROXIMATELY	MIN.	- MINIMUM
ASPH.	- ASPHALT	N	- NORTH
B/B	- BACK TO BACK	O.C	- ON CENTER
B/R	- BOTTOM OF RAMP	O.H.	- OVER HEAD
B/W	- BOTTOM OF WALL	P.C.	- POINT OF CURVATURE
B.O.C.	- BACK OF CURB	P.T.	- POINT TANGENT
B.O.P.	- BOTTOM OF PIPE	PR.	- PROPOSED
CB	- CATCH BASIN	PROP.	- PROPOSED
	- CENTERLINE	R.C.P.	- REINFORCED CONCRETE PIPE
CL	- CLASS	R	- RADIUS OR RIM ELEVATION
CMP	- CORRUGATED METAL PIPE	ROW	- RIGHT OF WAY
C.O.	- CLEAN OUT	RR	- RAIL ROAD
CONC.	- CONCRETE	S	- SOUTH
C.A.	- CENTER POINT	s	- ARC LENGTH
CPPP	- CORRUGATED PERFORATED PLASTIC PIPE	SAN	- SANITARY SEWER
DEMO.	- DEMOLITION OR DEMOLISH	S.D.	- SUMP DISCHARGE
D.I.	- DUCTILE IRON	SESC	- SOIL EROSION & SEDIMENTATION CONTROL
DS	- DOWNSPOUT		
E	- EAST	SP.	- SPACED
EL.	- ELEVATION	STN	- ROAD STATION
ELE	- ELECTRICAL	STM	- STORM SEWER
EQ.	- EQUAL	T/W	- TOP OF WALL
ES	- END SECTION	T/C	- TOP OF CURB
E.W.	- EACH WAY	T/P	- TOP OF PAVEMENT
EX.	- EXISTING	T/R	- TOP OF RAMP
EXIST.	- EXISTING	T/S	- TOP OF SIDEWALK
F	- HYDRANT FLANGE BREAK ELEVATION	TD	- TRENCH DRAIN
FF	- FINISHED FLOOR	T.O.P.	- TOP OF PIPE
FF	- FACE TO FACE	TYP.	- TYPICAL
FG	- FINISHED GRADE ELEVATION	U.P.	- UTILITY POLE
F.O.C.	- FACE OF CURB	U.G.	- UNDERGROUND
G	- GUTTER ELEVATION	U.N.O.	- UNLESS NOTED OTHERWISE
GV&W	- GATE VALVE & WELL	W	- WEST
H.P.	- HIGH POINT	WM	- WITH
HYD.	- HYDRANT	WS	- WATER MAIN
IN	- INLET	WS	- WATER SERVICE
I.E.	- INVERT ELEVATION	Ø	- DIAMETER
LOC.	- LOCATION(S)		
L.P.	- LOW POINT		
M	- MATCH EXIST. ELEVATION		
MAX.	- MAXIMUM		



MATERIAL POCHE LEGEND



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PROJECT MANAGEMENT
CIVIL ENGINEERING
CONSULTING
11904 JERSEY COURT
DAVISBURG, MI 48350
248.884.8224
leachpsc.com



SCALE: NONE

SCALE PROJECT: 1"=40' (AS SHOWN) SHALL BE CONSIDERED BASED ON THE DIMENSIONS PROVIDED AND MARKED ON THE FIELD BY A PROFESSIONAL SURVEYOR.



Know what's below.
Call before you dig.

EXISTING UNDERGROUND UTILITY LOCATION AND ELEVATION INFORMATION SHOWN ON THESE DRAWINGS HAS BEEN OBTAINED ONLY AND GUARANTEED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE TO THE ACCURACY OF CLAIMS THAT ARE MADE BY PARTIES UTILIZING THIS INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OR COMPLETENESS OF EXISTING UNDERGROUND OR OVERHEAD UTILITIES. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR OBTAINING THE FINAL UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT:

LASTING IMPRESSIONS

2255 PORTER ROAD
WHITE LAKE, MI 48386
CONTACT: NICHOLAS HOPSON
PHONE: (248) 830-2828
SEAL:



PROJECT:

NEW FACILITY

PARCEL 12-01-127-002

ISSUES / REVISIONS:

FSP - FEP	10/03/25
FSP - FEP REV. 1	02/06/26

MANAGED	CL
DESIGNED	CL
DRAWN	CL

SHEET NAME:

CIVIL GENERAL NOTES & LEGENDS

PROJECT NUMBER: 24004

SHEET NUMBER: **C0.01**

THIS MATERIAL IS THE EXCLUSIVE PROPERTY OF LEACH ENGINEERING, INC. IT IS TO BE USED ONLY FOR THE PROJECT AND NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT THE PRIOR WRITTEN CONSENT OF LEACH ENGINEERING, INC.

RETENTION BASIN EASEMENT
TO "MARNER'S COVE CONDOMINIUM"
L 16872, PGS. 405-408, D.C.R.

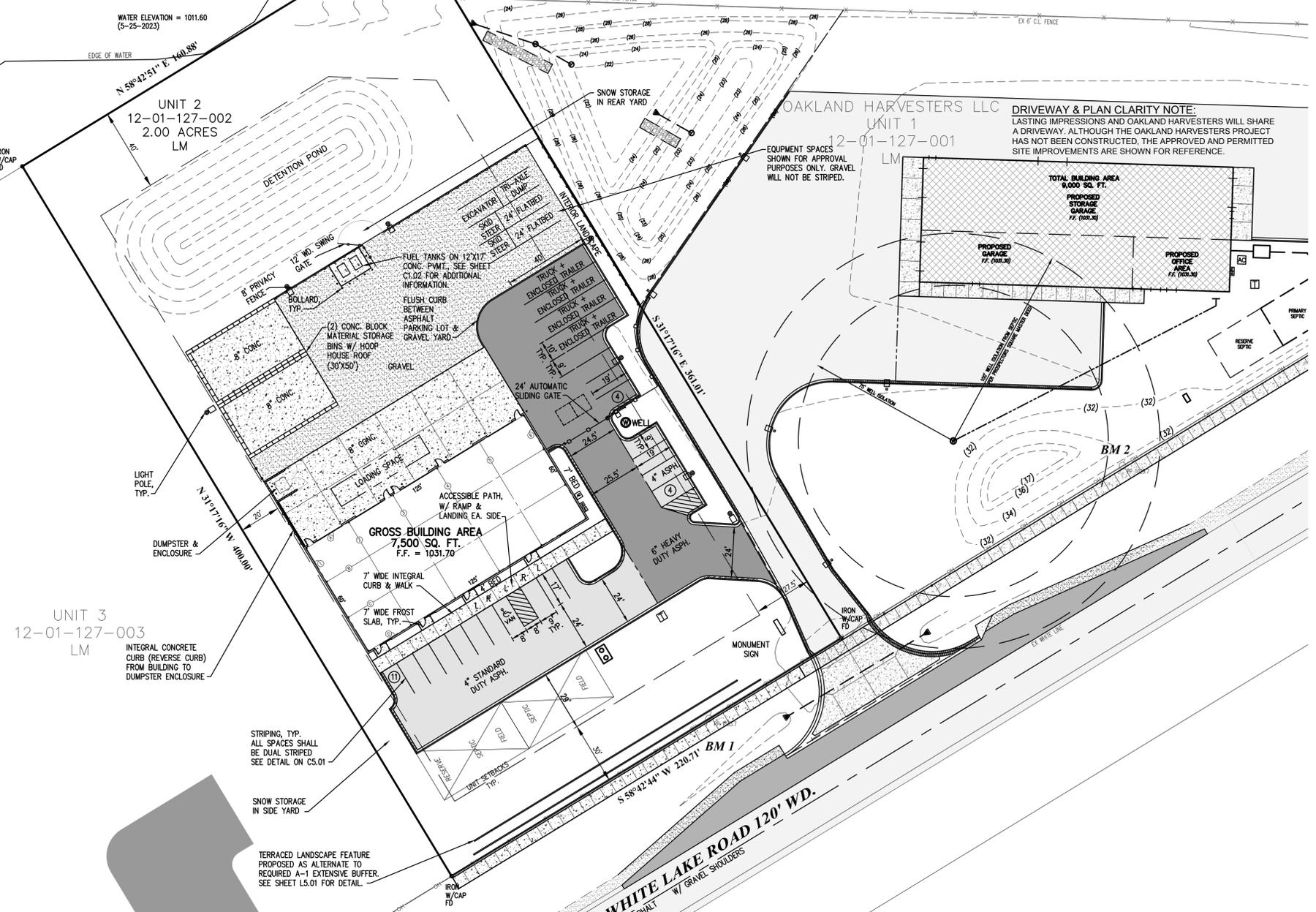
OPEN SPACE GENERAL
COMMON ELEMENT
(STORM WATER
RETENTION AREA)

MEGA STORAGE
LLC
07-36-376-018
M-1

UNIT 2
12-01-127-002
2.00 ACRES
LM

OAKLAND HARVESTERS LLC
UNIT 1
12-01-127-001
LM

UNIT 3
12-01-127-003
LM



SITE INFORMATION:
LOT GROSS AREA: 2.00 ACRES

BUILDING INFORMATION:
BUILDING SHALL BE PRE-ENGINEERED METAL BUILDING
GROSS AREA = 7,500 SF
BUILDING HEIGHT = 20 FT TO EAVE, 25 FT TO PEAK

ZONING INFORMATION:
ZONING DISTRICT: LM LIGHT MANUFACTURING
MINIMUM LOT SIZE: 43,560 SF (1.00 AC), CONFORMS
MINIMUM LOT WIDTH: 175 FT, CONFORMS
MAXIMUM BUILDING HEIGHT: 2 STORIES OR 40 FT, CONFORMS

SETBACKS: PER "PROSPECTORS SQUARE" O.C.P. NO. 1315
FRONT REAR SIDES PARKING
30 FT 40 FT 20 FT LEAST, 40 FT TOTAL 10 FT

MAXIMUM LOT COVERAGE: 30%

PARKING SPACE SIZE: 90' 9 FT X 18 FT W/ 24 FT LAKE
0' 20 FT X 8 FT W/ 12 FT LAKE

REQUIRED PARKING SPACES: 1 SPACE/800 SF USABLE FLOOR AREA + 1 SPACE/2EMPLOYEES

USABLE FLOOR AREA = 7,500 SF (80%) = 6,000 SF
EMPLOYEES SHOWING UP TO THE SITE DAILY = 18 EMPLOYEES
6,000 SF (1 SPACE/800 SF) + 18 EMPLOYEES (1 SPACE/2EMPLOYEES) = 16.5 SPACES REQUIRED
19 TOTAL PARKING SPACES PROVIDED
PER D.O.J. 1-24 SPACES REQUIRES 1 ACCESSIBLE SPACE
1 VAN ACCESSIBLE SPACE PROVIDED

REQUIRED LOADING ZONE: 1 SPACE REQUIRED FOR 2,000 - 20,000 SF OF GROSS FLOOR AREA
6,000 SF REQUIRES (1) 10 FT X 50 FT LOADING SPACE, 1 SPACE PROVIDED AT CONCRETE APRON AT REAR OF BUILDING.

SPECIAL LAND USE GRATED FOR ZONING ORDINANCE SECTION 4.37 OUTDOOR STORAGE OF FLEET VEHICLES & SECTION 4.39 OUTDOOR STORAGE OF PALLETS, CONTAINERS, MATERIALS OF PRODUCTS INCIDENTAL TO THE PRINCIPAL PERMITTED USE BY PLANNING COMMISSION ON SEPTEMBER 5, 2024.

VARIANCE WAS APPROVED FOR GRAVEL SURFACING AT MATERIAL & EQUIPMENT STORAGE AREA BY THE ZONING BOARD OF APPEALS ON OCTOBER 24, 2024.

REQUIRED MINIMUM SCREENING PER ZO SECTION 5.19D:
A-1 EXTENSIVE LANDFORM BUFFER REQUIRED BETWEEN LM & ROAD ROW
PURSUANT TO ZO SECTION 5.19D.iii & v, SITE PLAN REQUESTS THE PLANNING COMMISSION TO PERMIT AN ALTERNATE SCREENING METHOD THAT WILL CONSIST OF TERRACED LANDSCAPE WALLS WITH PLANTINGS. THIS ALTERNATIVE LANDSCAPING WILL BE 6 FEET HIGH, AND INCLUDE THE REQUIRED MINIMUM NUMBER OF PLANTINGS.

REQUIRED INTERIOR LANDSCAPING PER ZO SECTION 5.19E:
REQUIREMENT: 15% OF TOTAL LOT AREA SHALL BE INTERNALLY LANDSCAPED, & 1 TREE + 5 SHRUBS SHALL BE PROVIDED FOR EVERY 300 SF OF REQUIRED INTERIOR LANDSCAPING.
(2.00 ACRES)(43,560 SF/ACRE)(15%) = 13,068 SF INTERIOR LANDSCAPING REQUIRED
43.56 TREES & 217.8 SHRUBS REQUIRED
LANDSCAPING ALONG BUILDING & W SIDE OF GATE = 677 SF
LANDSCAPING AT E SIDE OF GATE & BETWEEN SHARED DRIVE & PARKING = 2,092 SF
LANDSCAPING ALONG WEST PROPERTY LINE & BETWEEN BASIN AND GRAVEL LOT = 10,196 SF
LANDSCAPING BETWEEN ROW BUFFER AND FRONT PARKING LOT = 4,360 SF
677 SF + 2,092 SF + 10,196 SF + 4,360 SF = 17,325 SF (20%) PROVIDED > 13,068 SF (15%) REQUIRED

REQUIRED PARKING LOT LANDSCAPING PER ZO SECTION 5.19G:
REQUIREMENT: INDUSTRIAL 10 SF/ PARKING SPACE
REQUIREMENT: 1 TREE & 3 SHRUBS PER 100 SF OF REQUIRED PARKING LOT LANDSCAPING (19 SPACES)(10 SF/SPACE) = 190 SF PARKING LOT LANDSCAPING REQUIRED
1.9 TREES & 5.7 SHRUBS REQUIRED
361 SF PROVIDED AT SIDEWALK CORNER ISLAND

LANDSCAPING TOTALS

	REQUIRED	PROVIDED
INTERIOR	13,068 SF	17,231 SF
PARKING LOT	190 SF	361 SF
TOTAL	13,258 SF	17,592 SF (32.6% MORE LANDSCAPING IS PROVIDED THAN IS REQUIRED, NOT COUNTING NORTH WOODY AREA)

IRRIGATION NOTES:
1. PROVIDE AUTOMATIC IRRIGATION TO ALL LAWN AND LANDSCAPED AREAS.
1.1. ALL IRRIGATION COMPONENTS SHALL BE LOCATED COMPLETELY WITHIN THE PROPERTY BOUNDARY.
1.2. IRRIGATION COVERAGE SHALL EXTEND TO COVER LAWN WITHIN THE RIGHT-OF-WAY.
2. IRRIGATION SYSTEM SHALL INCLUDE A RAIN SENSOR OR SIMILAR MEASURE TO ENSURE THAT IRRIGATION DOES NOT OCCUR DURING OR SHORTLY AFTER PRECIPITATION EVENTS.

FENCING NOTES:
1. REAR AND SIDE FENCING SHALL BE 6' TALL, DOG-EAR, PRIVACY FENCE PER DETAIL ON SHEET C5.02.
2. FRONT FENCING AND GATE ACROSS DRIVEWAY SHALL BE 8 FT TALL, VINYL (COLOR TBD), PRIVACY FENCE PER DETAIL ON SHEET C5.02.

BENCHMARKS:
BM 1: MAG NAIL IN EAST FACE OF POWER POLE
EL. = 1034.67 NAVD 88
BM 2: BOLT SPIKE ON NORTH FACE PF POWER POLE
EL. = 1030.06 NAVD 88

GENERAL NOTES:
1. SEE SHEET C0.01 FOR GENERAL NOTES & LEGENDS.
2. SEE SHEET L1.01 FOR LANDSCAPE PLAN.

SIGN NOTE:
A FREESTANDING MONUMENT SIGN IS PROPOSED. SIGN WILL BE LIMESTONE BLOCK W/ METAL CUTOFF LOGO/LETTERING, AND BACKLIT. SIGN SHALL CONFORM TO THE ZONING ORDINANCE OF WHITE LAKE TOWNSHIP, AND SHALL BE PERMITTED THROUGH THE COMMUNITY DEVELOPMENT DEPARTMENT. SIGN DETAILS WILL BE PROVIDED AT A LATER TIME.

SITE LIGHTING NOTE:
SITE LIGHTING SHALL MEET THE ZONING CODE OF WHITE LAKE TOWNSHIP.

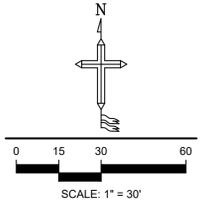
PAVING LEGEND

	PROPOSED	EXISTING
STANDARD CURB		
REVERSE CURB		NOT DESIGNATED
PAVEMENT JOINT		NOT DESIGNATED
CONCRETE PAVEMENT & WALK		
ASPHALT PAVEMENT		
	HEAVY DUTY	STANDARD DUTY
GRAVEL		



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CLIENT:
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WHITE LAKE, MI 48386
CONTACT: NICHOLAS HOPSON
PHONE: (248) 830-2828
SEAL:



PROJECT:
NEW FACILITY

PARCEL 12-01-127-002

ISSUES / REVISIONS:

OWNER REVIEW	DATE
FSP - FEP	04/01/24
FSP - FEP REV. 1	10/03/25
	02/06/26

MANAGED **CL**
DESIGNED **CL**
DRAWN **CL**

SHEET NAME:
GENERAL SITE PLAN

PROJECT NUMBER: 24004
SHEET NUMBER: **C1.01**

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SCALE AS SHOWN
SCALE PROVIDED FOR CONSTRUCTION ONLY. ACTUAL WORK SHALL BE CONDUCTED BASED ON THE DIMENSIONS PROVIDED AND MARKED IN THE FIELD BY A PROFESSIONAL SURVEYOR.



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CLIENT:
LASTING IMPRESSIONS

2255 PORTER ROAD
WHITE LAKE, MI 48386
CONTACT: NICHOLAS HOPSON
PHONE: (248) 830-2828
SEAL:



PROJECT:
NEW FACILITY

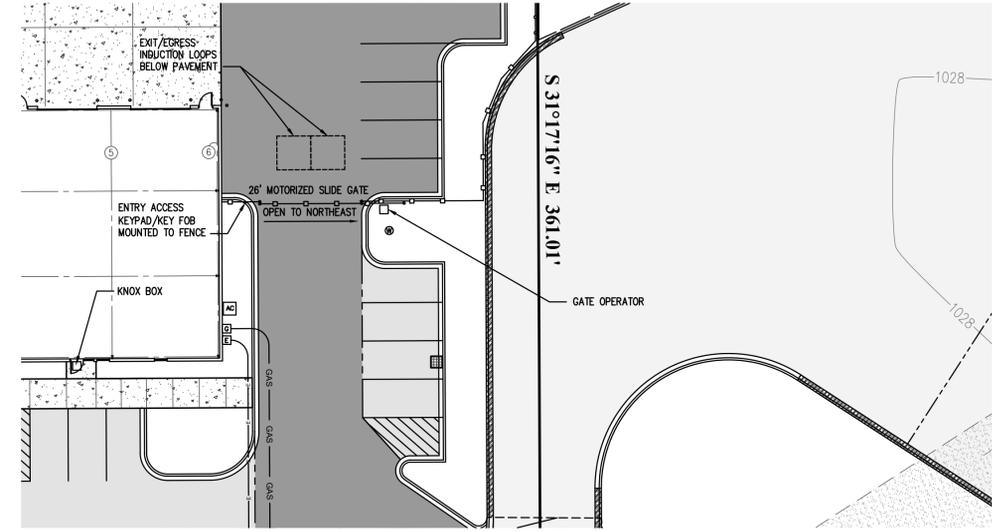
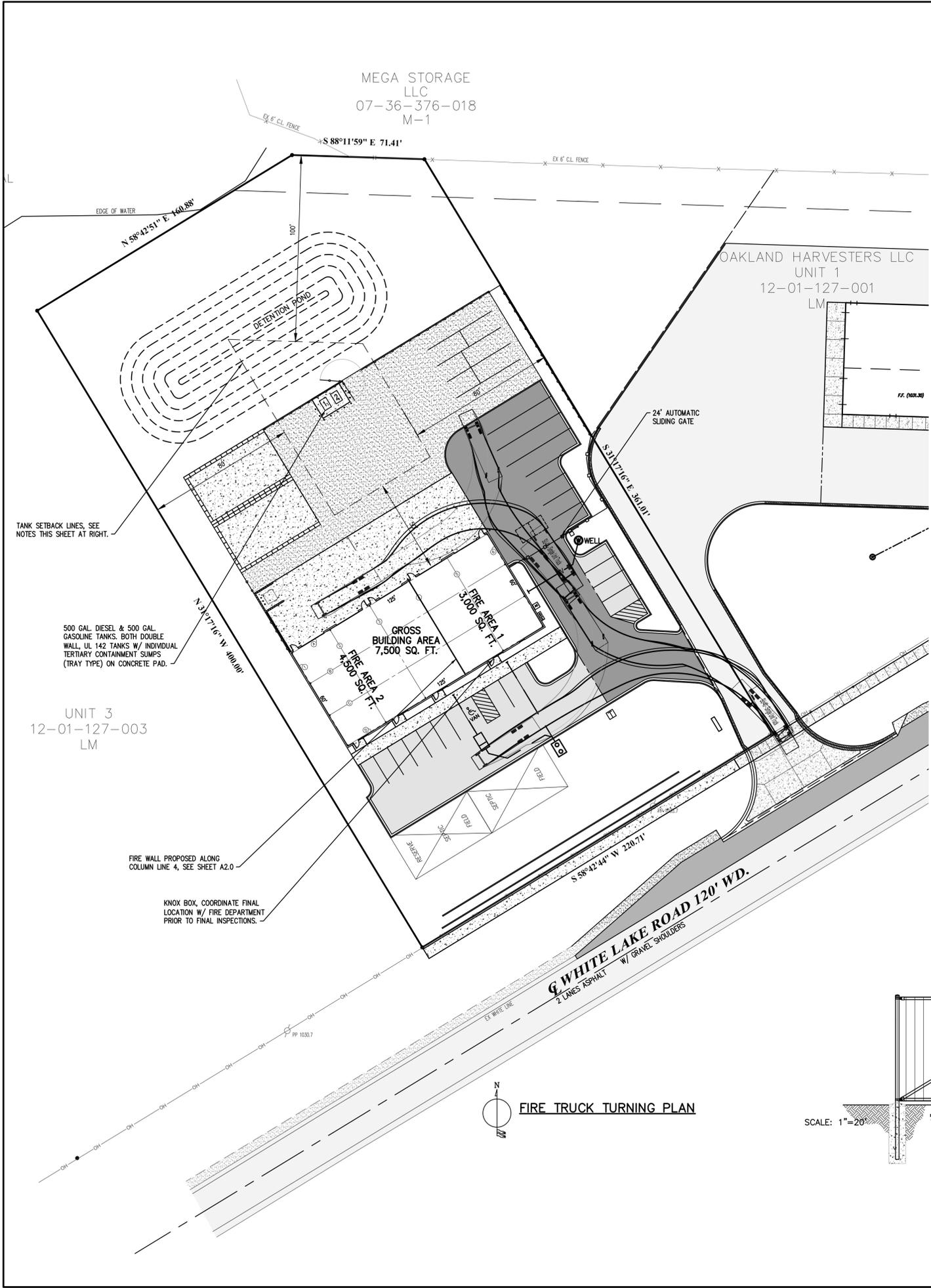
PARCEL 12-01-127-002
ISSUES / REVISIONS:
FSP - FEP 10/03/25
FSP - FEP REV. 1 02/06/26

MANAGED CL
DESIGNED CL
DRAWN CL

SHEET NAME:
FIRE SAFETY SITE PLAN

PROJECT NUMBER: 24004
SHEET NUMBER: **C1.02**

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DRIVEWAY & PLAN CLARITY NOTE:
LASTING IMPRESSIONS AND OAKLAND HARVESTERS WILL SHARE A DRIVEWAY. ALTHOUGH THE OAKLAND HARVESTERS PROJECT HAS NOT BEEN CONSTRUCTED, THE APPROVED AND PERMITTED SITE IMPROVEMENTS ARE SHOWN FOR REFERENCE.

SINGLE SLIDING POWER GATE ENLARGED PLAN
SCALE: 1"=10'

SITE INFORMATION:
LOT GROSS AREA: 2.00 ACRES

BUILDING INFORMATION:
BUILDING SHALL BE PRE-ENGINEERED METAL BUILDING, NON-SPRINKLED
GROSS AREA = 7,500 SF
A FIRE WALL WILL BE CONSTRUCTED ALONG COLUMN LINE 4 SEPARATING THE FIRE AREAS
LARGEST FIRE AREA = 3,000 SF
BUILDING HEIGHT = 20 FT TO EAVE, 25 FT TO PEAK

FUEL TANK NOTES:
FUEL TANK 1 - GASOLINE - 500 GALLON HORIZONTAL, UL-142
FUEL TANK 2 - DIESEL - 500 GALLON HORIZONTAL, UL-142

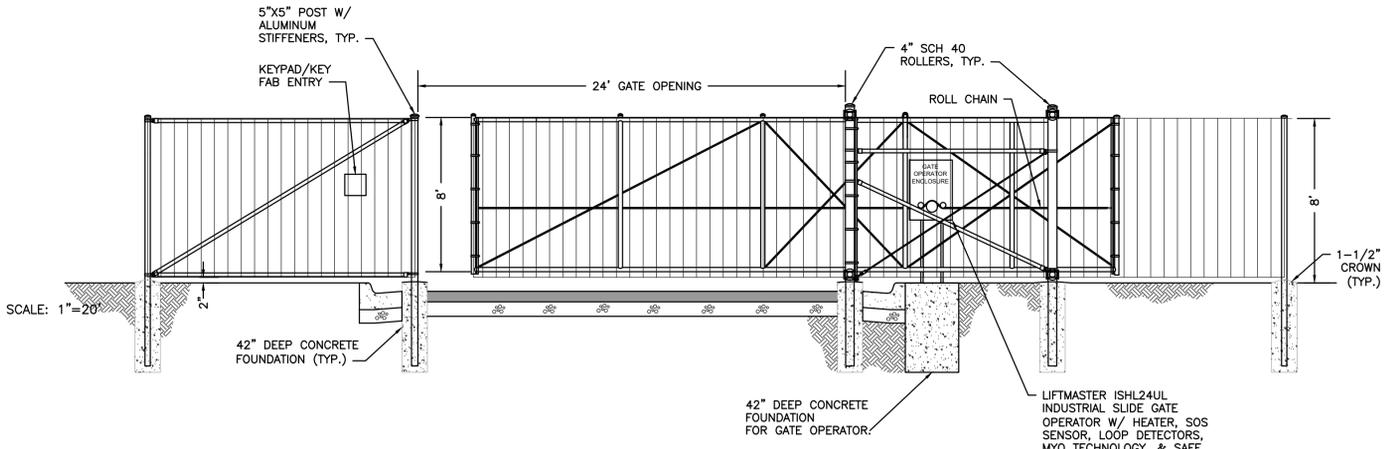
ISOLATION DISTANCES FOR UL-142 FUEL TANKS PER NFPA 30 & 30A:
STRUCTURE/BUILDING: 50 FT
PROPERTY LINE THAT CAN BE BUILT UPON: 100 FT
NOTE: PROPERTY LINE SETBACK SHOWN AS 80 FT DUE TO 20 FT SETBACK ON ADJACENT PARCEL.

UL-142 TANKS ARE DUAL WALL PROVIDING SECONDARY CONTAINMENT. ADDITIONAL SUMPERS ARE PROPOSED THAT WILL PROVIDE TERTIARY CONTAINMENT.

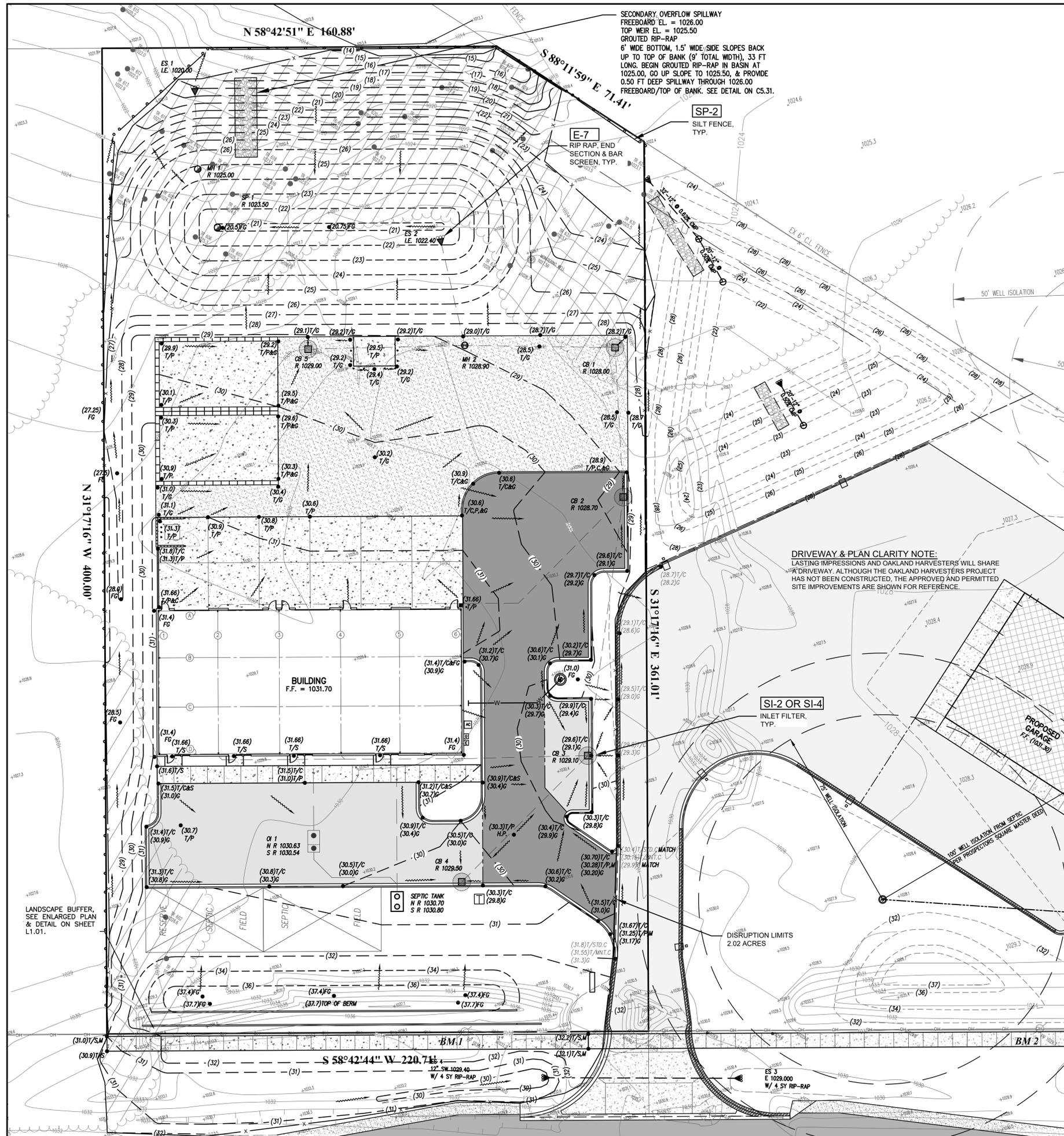
FIRE SAFETY NOTES:
1. FIRE TRUCK TURNING BASED ON AASHTO SU-40 SINGLE UNIT TRUCK.
2. A KNOX BOX SHALL BE PLACED ON THE FRONT OF THE BUILDING. FINAL LOCATION TO BE DETERMINED AND APPROVED BY FIRE INSPECTOR AT A LATER TIME.

AUTOMATIC SLIDING GATE ACCESS NOTES:
1. ACCESS FOR EMPLOYEES SHALL BE REMOTE (E.G. GARAGE DOOR CLICKER) OR PHONE APP WHICH SHALL NOT REQUIRE THE USE OF THE KEYPAD OR KEY FOB STATION.
2. ACCESS SHALL BE PROVIDED TO THE FIRE DEPARTMENT VIA ALL OF THE FOLLOWING:
2.1. KEYPAD USING UNIVERSAL FIRE DEPARTMENT CODE.
2.2. KEY FIB (SAME AS BUILDING FAB) LOCATED IN KNOX BOX AT FRONT DOOR.
2.3. SOS (SIREN) SENSOR.
3. IN THE CASE OF A POWER OUTAGE THE GATE CAN BE OPENED IN THE FOLLOWING WAYS:
3.1. BATTERY BACKUP OPERATION ALLOWS 20 CYCLES AND HAS A STANDBY TIME OF 105 DAYS.
3.2. THE LOCKABLE GATE OPERATOR SHALL HAVE A KEY LOCATED IN THE KNOX BOX. A LEVER DISCONNECT CAN BE PULLED TO DISENGAGE THE DRIVE.

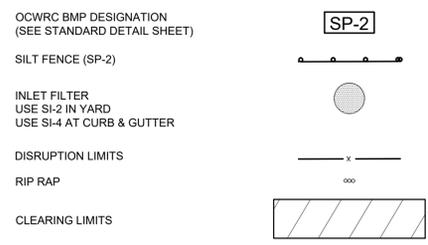
FIRE TRUCK TURNING PLAN



SINGLE SLIDING POWER GATE SOUTH ELEVATION (FROM DRIVE IN SIDE)
N.T.S.



SESC LEGEND



GRADING LEGEND



SESC SO-2 TEMPORARY OUTLET FILTER

C = 0.51
A = 2.00 ACRES

Vr = 4,320 CA = 4379 CF REQ'D

EL (FT)	AREA (SF)	VOLUME (CF)	ΣVOLUME (CF)
1023.50	3,958	1,762	4,906
1023	3,109	2,302	3,143
1022	1,580	842	842
1021	280		

OUTFLOW CALCULATIONS

H = DEPTH OF BASIN ABOVE CL OUTLET PIPE = 1023.50 - [1021 + 1" / 2] = 2.46 FT

$A_m = \frac{V_r}{H} = 1,781 \text{ SF}$ 1" HOLE

$L = \sqrt{A_m} = 42.20 \text{ FT}$ LENGTH OF BASIN BOTTOM IS 93 FT

$a = \frac{0.3988 A_m H^{0.5}}{172,800} = 0.006445 \text{ SF} = 0.928 \text{ IN}^2$

$A_{r1} = \frac{\pi D^2}{4} = 0.785398 \text{ IN}^2$

$a/A_{r1} = 1.18 \rightarrow 2 \text{ 1" HOLE}$

USE (2) 1" HOLES EQ. SP. AROUND STANDPIPE TO OFFSET FOR CLOGGING
SP 1 (SO-2 DETENTION BASING OUTLET FILTER) CALCULATIONS

- NOTES:**
- SEE OCWRC SESC DETAIL SHEET &/OR WHITE LAKE TOWNSHIP STORM SEWER STANDARD DETAILS FOR SO-2 FILTER.
 - SEE SHEET C1.31 UTILITY PLAN SHOWING RIM & INVERT ELEVATIONS FOR THE SO-2 FILTER.
 - SEE SHEET C3.31 STORM SEWER PROFILES SHOWING RIM & INVERT ELEVATIONS FOR THE SO-2 FILTER.
 - AT THE END OF CONSTRUCTION THE SEDIMENT ACCUMULATED IN THE SO-2 FILTER SUMP & THE SETTLING POND IN THE DETENTION BASIN SHALL BE REMOVED. THE SO-2 FILTER SHALL BECOME A PERMANENT OUTLET CONTROL FOR THE DETENTION POND.

SITE INFORMATION:

LOT GROSS AREA: 2.00 ACRES
AREA OF DISRUPTION: 1.92 ACRES (INCLUDES OFFSITE ROW AREA)

SOIL CHARACTERISTICS:

THE USDA WEB SOIL SURVEY INDICATES THE FOLLOWING SOIL TYPES:
50B - UDIPSAMMENTS, UNULATING - HYDROLOGIC SOIL GROUP A (0.1%)
50D - UDIPSAMMENTS, ROLLING TO STEEP - HYDROLOGIC SOIL GROUP A (99.5%)
WATER - (0.4%)

A GEOTECHNICAL INVESTIGATION HAS NOT BEEN PERFORMED AT THIS TIME.

GENERAL NOTES:

- SEE SHEET C0-01 FOR GENERAL NOTES & LEGENDS. SEQUENCE OF SOIL EROSION & SESC NOTES ON THIS SHEET.
- SEE OAKLAND COUNTY WATER RESOURCE COMMISSIONER (OCWRC) SOIL EROSION & SEDIMENTATION CONTROL STANDARD DETAIL SHEET 1 OF 1.
- OBTAIN A SOIL EROSION PERMIT FROM OCWRC PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSPECTION, MAINTENANCE, AND REPAIRS TO SESC MEASURES DURING CONSTRUCTION.
- ANY CORRECTIVE ACTIONS OR FINES ASSOCIATED WITH THE SESC PERMIT SHALL BE PAID BY THE CONTRACTOR.
- THIS PROJECT WILL BE CONSTRUCTED CONCURRENTLY WITH OAKLAND HARVESTERS PARCEL 12-01-127-001. SOIL EROSION PERMIT 000515-2024-CO WHICH INCLUDES A TEMPORARY STONE CONSTRUCTION ENTRANCE FOR THE SHARED DRIVEWAY.

BENCHMARKS:

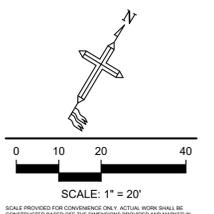
BM 1: MAG NAIL IN EAST FACE OF POWER POLE
EL. = 1034.67 NAVD 88

BM 2: BOLT SPIKE ON NORTH FACE PF POWER POLE
EL. = 1030.06 NAVD 88



ENGINEERING
A PROFESSIONAL SERVICE COMPANY

PROJECT MANAGEMENT
CIVIL ENGINEERING
CONSULTING
11904 JERSEY COURT
DAVISBURG, MI 48350
248.884.8224
leachpsc.com



CLIENT:
LASTING IMPRESSIONS

2255 PORTER ROAD
WHITE LAKE, MI 48386
CONTACT: NICHOLAS HOPSON
PHONE: (248) 830-2828
SEAL:



PROJECT:
NEW FACILITY

PARCEL 12-01-127-002

ISSUES / REVISIONS:

FSP - FEP	10/03/25
FSP - FEP REV. 1	02/06/26

MANAGED	CL
DESIGNED	CL
DRAWN	CL

SHEET NAME:
SOIL EROSION & SEDIMENTATION CONTROL PLAN

PROJECT NUMBER: 24004

SHEET NUMBER: **C1.41**

100 YEAR DETENTION BASIN CALCULATION (I.E. WITH OUTLET)

ONSITE CONTRIBUTING AREA	=	2.00
OFFSITE CONTRIBUTING AREA	=	0.00
TOTAL CONTRIBUTING AREA	A	= 2.00

RUNOFF AREAS

PAVEMENT @	0.95	20,585 SF	=	0.47 AC
BUILDING @	0.95	7,500 SF	=	0.17 AC
GRAVEL @	0.6	7,185 SF	=	0.16 AC
LAWN @	0.25	45,005 SF	=	1.03 AC
POND @	1.0	6,845 SF	=	0.16 AC
TOTAL		87,120 SF	=	2.00 AC

WEIGHTED C = 0.51

$Q_A = 0.20 \text{ CFS/ACRE} \times 2.00 \text{ ACRES} = 0.40 \text{ CFS}$

$Q_0 = \frac{Q_A}{(A)(C)} = \frac{0.40}{2.00 \times 0.51} = 0.39 \text{ CFS ACRE IMPERVIOUSNESS}$

100-YEAR DETENTION BASIN

$T_{100} = -25 + \sqrt{10,312.5} = 137.79 \text{ MINUTES}$

$V_{S100} = \frac{16,500 T}{T + 25} = \frac{16,500 \times 137.79}{137.79 + 25} = 11,821.3 \text{ CF ACRE}$

$V_{100} \text{ REQ'D} = V_0 CA = 12,152 \text{ CF REQ'D}$

EL (FT)	AREA (SF)	VOLUME (CF)	ΣVOLUME (CF)
1025	6,845	5,826	12,924
1024	4,864	3,954	7,097
1023	3,109	2,302	3,143
1022	1,580	842	842
1021	280		

TOTAL VOLUME PROVIDED = 12,924 CF OK

OUTFLOW CALCULATIONS

ORIFICE FORMULA

$Q_A = 0.62 (AO)(2gh)^{1/2}$

$A_0 = \text{AREA ORIFICE PIPE}$

$g = 32.2 \text{ FT/SEC}^2$

$H = \text{DEPTH OF BASIN ABOVE CL OUTLET PIPE} = \frac{\text{TOP } 1025 - \text{CL OUTLET } [1021 + 3' / 2]}{1} = 3.88 \text{ FT}$

$A_0 = \frac{Q_A}{0.62 (2gh)^{1/2}} = 0.04 \text{ SF}$

$D_0 = \text{DIAMETER OF ORIFICE}$

$D_0 = \sqrt{\frac{4A_0}{\pi}} = 0.23 \text{ FT} = 2.74 \text{ INCH} \rightarrow \text{USE } 3" \text{ RESTRICTION IN STANDPIPE SP 1 OUTLET PIPE TO PREVENT CLOGGING}$

10 YEAR OUTLET PIPE SIZING

$Q_{10} = \frac{C_{10} A}{T_c + 25} = \frac{175}{4.38 + 25} = 4.38 \text{ IN/HR}$

$Q_{10} = 4.50 \text{ CFS}$

A 12" PIPE @ 1.52% W/ n = 0.012 CAN PASS 4.77 CFS

100-YEAR SECONDARY OVERFLOW SPILLWAY

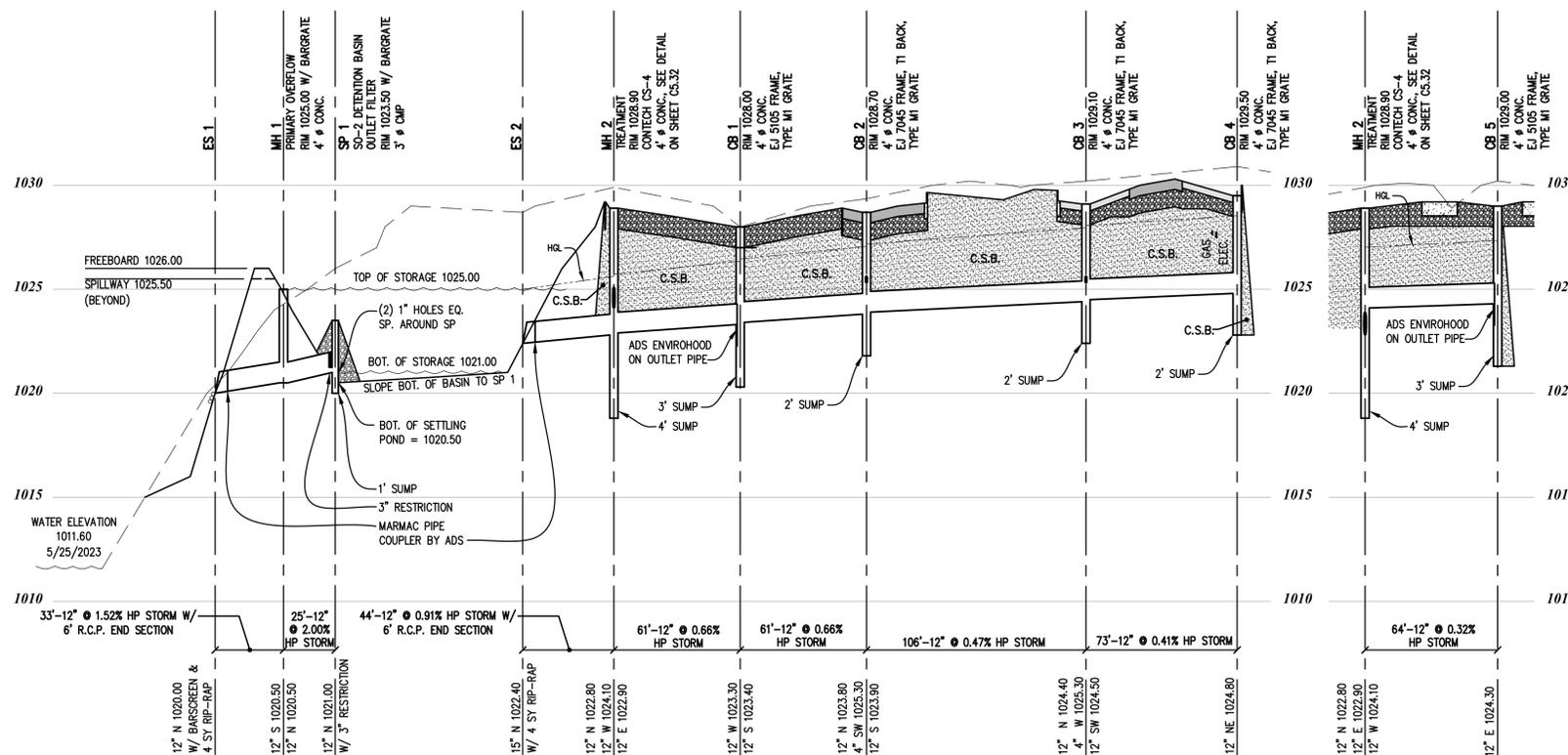
$Q_{100} = \frac{C_{100} A}{T_c + 25} = \frac{275}{6.88 + 25} = 6.88 \text{ IN/HR}$

$Q_{100} = 7.07 \text{ CFS}$

$H_{WEIR} = 0.50 \text{ FT}$

$Q_{100} = Q_{WEIR} = (3.33) L_{WEIR} H_{WEIR}^{3/2}$

$L_{WEIR} = \frac{Q_{100}}{3.33 H_{WEIR}^{3/2}} = \frac{7.07}{3.33 \times 0.50^{3/2}} = 6.00 \text{ FT} \rightarrow \text{USE } 6 \text{ FT WEIR}$



STORM SEWER PROFILE – ES 1 THRU BASIN TO CB 4

SCALE: V: 1" = 4'
H: 1" = 40'

STORM SEWER PROFILE

MH 2 TO CB 5

SCALE: V: 1" = 4'
H: 1" = 40'

C.S.B. SHALL INDICATE COMPACTED SAND BACKFILL. PLACE C.S.B. IN ALL AREAS UNDER THE INFLUENCE OF PAVEMENT LOADING.

STORM SEWER CALCULATIONS

BASED ON RATIONAL FORMULA & MANNING'S EQUATIONS FOR OPEN CHANNEL FLOW

LE PROJECT NO:	24004
PROJECT NAME:	LASTING IMPRESSIONS
CLIENT:	LASTING IMPRESSIONS
DATE:	1/22/2026
TIME:	12:32 PM
STORM SEWER DESIGN	
LOCATION:	WHITE LAKE TOWNSHIP, MICHIGAN
STARTING TIME:	15.00
MANNING'S "n":	0.012
10-YR STM "I":	175
T+25.00	
	0.010 FOR PVC

Upst Str. #	Dnst Str. #	Pipe Len (L) Ft	Added Area			Time of Conc. (T) Min	Intensity (i) In/HR	Intensity (ACI) (Q) Cfs	PIPE DIA (D) Inches	PIPE SLP (S) %	V Full (V) Fps	FI Time Min	INVERT ELEV.		Q (capacity) Cfs	RIM OR GRADE	STR NO.	
			Acres	C	AC								SUM AC	Upst #				Dnst #
DS 6	DS 5	52	0.03	0.95	0.033	0.03	15.00	4.38	0.14	4	0.77	2.5	0.35	1028.40	1028.00	0.22	1031.66	DS 6
DS 5	DS 4	49	0.03	0.95	0.033	0.07	15.35	4.34	0.28	4	1.43	3.4	0.24	1028.00	1027.30	0.30	1031.66	DS 5
DS 4	CB 3	50	0.02	0.95	0.016	0.08	15.59	4.31	0.35	4	4.00	5.7	0.15	1027.30	1025.30	0.50	1031.66	DS 4
DS 3	DS 2	52	0.03	0.95	0.033	0.03	15.00	4.38	0.14	4	0.77	2.5	0.35	1028.40	1028.00	0.22	1031.66	DS 3
DS 2	DS 1	49	0.03	0.95	0.033	0.07	15.35	4.34	0.28	4	1.43	3.4	0.24	1028.00	1027.30	0.30	1031.66	DS 2
DS 1	CB 2	83	0.02	0.95	0.016	0.08	15.59	4.31	0.35	4	2.41	4.4	0.31	1027.30	1025.30	0.39	1031.66	DS 1
CB 5	MH 2	64	0.23	0.83	0.187	0.19	15.00	4.38	0.82	12	0.32	2.8	0.38	1024.30	1024.10	2.19	1029.00	CB 5
CB 4	CB 3	73	0.34	0.62	0.208	0.21	15.00	4.38	0.91	12	0.41	3.2	0.39	1024.80	1024.50	2.48	1029.50	CB 4
CB 3	CB 2	106	0.14	0.69	0.094	0.38	15.39	4.33	1.66	12	0.47	3.4	0.52	1024.40	1023.90	2.65	1029.10	CB 3
CB 2	CB 1	61	0.11	0.94	0.102	0.57	15.91	4.28	2.43	12	0.66	4.0	0.25	1023.80	1023.40	3.14	1028.70	CB 2
CB 1	MH 2	61	0.18	0.66	0.118	0.69	16.16	4.25	2.91	12	0.66	4.0	0.25	1023.30	1022.90	3.14	1028.00	CB 1
MH 2	ES 2	44	0.00	0.00	0.000	0.87	16.42	4.23	3.69	12	0.91	4.7	0.16	1022.80	1022.40	3.69	1028.90	MH 2



SCALE AS SHOWN

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PROJECT:

NEW FACILITY

PARCEL 12-01-127-002

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FSP - FEP REV. 1	02/06/26

MANAGED CL
DESIGNED CL
DRAWN CL

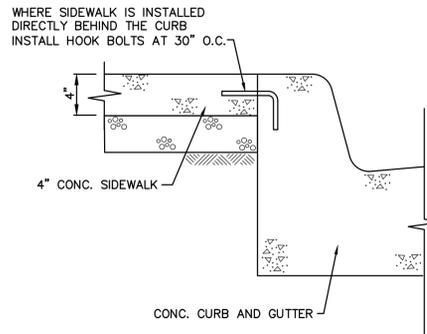
SHEET NAME:

STORM SEWER
PROFILES &
CALCULATIONS

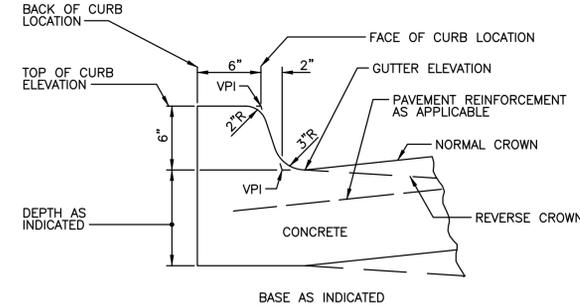
PROJECT NUMBER: 24004

SHEET NUMBER: C3.31

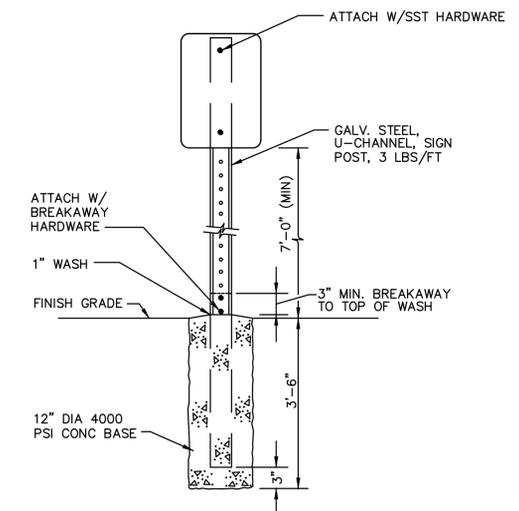
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CURB & GUTTER W/ SIDEWALK
N.T.S.



INTEGRAL CONCRETE CURB
N.T.S.

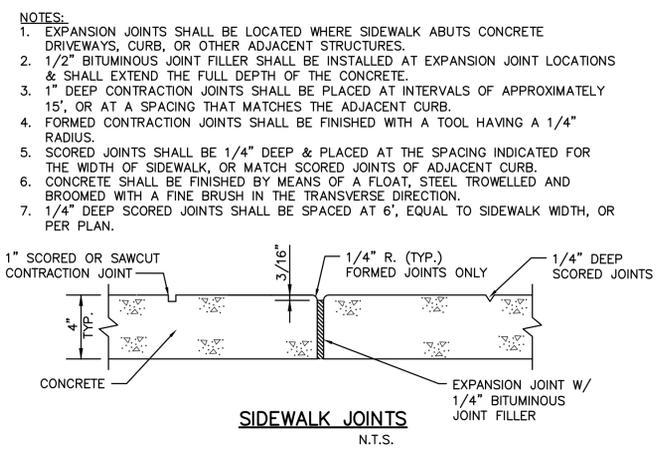


TYPICAL SIGN MOUNTING
N.T.S.

SIGNAGE NOTES:
1. ALL SIGNS SHALL CONFORM TO THE CURRENT EDITION OF THE MUTCD.
2. MOUNT SIGNS TO BUILDING USING STAINLESS STEEL HARDWARE OR PER SIGN MOUNTING DETAIL THIS SHEET. MIN. HGT. 72" ABOVE FINISHED GRADE.

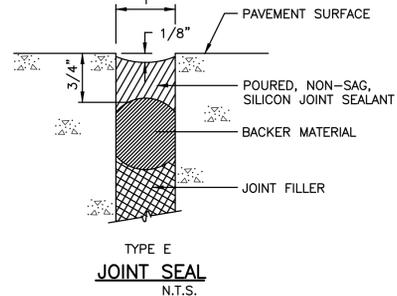


SIGNS
N.T.S.

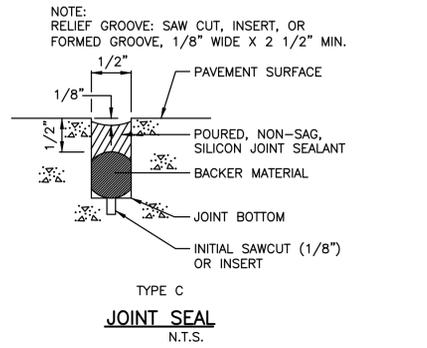


SIDEWALK JOINTS
N.T.S.

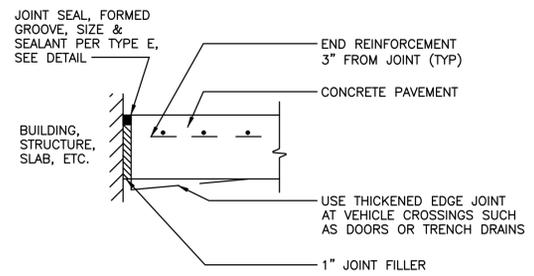
NOTE:
RELIEF GROOVE: SAW CUT, INSERT, OR FORMED GROOVE, 1/8" MAX X 2 1/2" MIN. SAW CUT 1/2" MIN INTO JOINT FILLER.



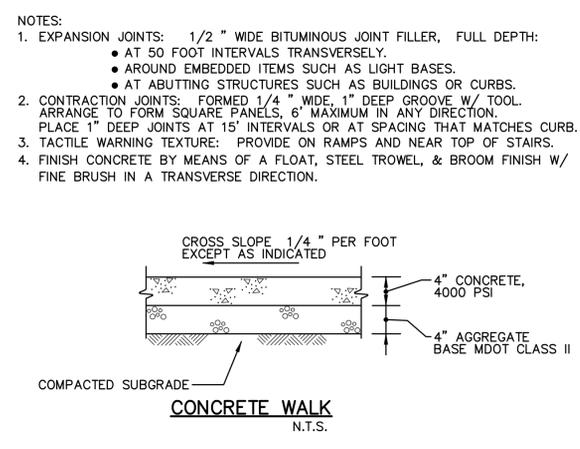
TYPE E JOINT SEAL
N.T.S.



TYPE C JOINT SEAL
N.T.S.

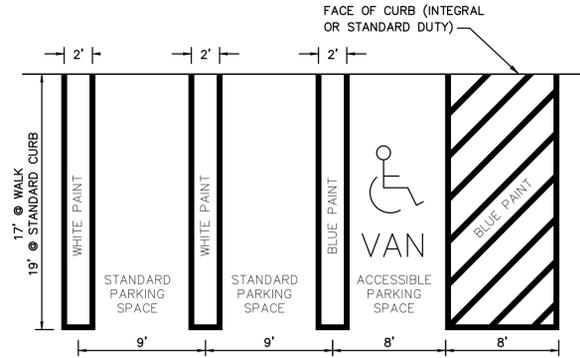


EDGE EXPANSION JOINT
N.T.S.

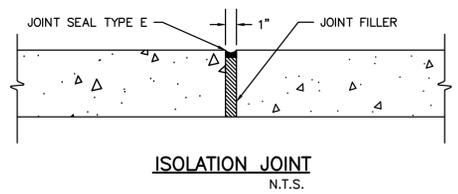


CONCRETE WALK
N.T.S.

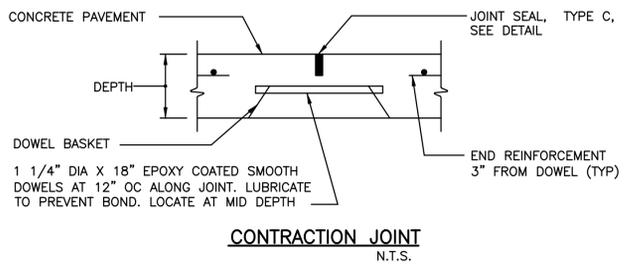
NOTES:
1. PARKING STRIPING FOR STANDARD PARKING SPACES SHALL BE DELINEATED BY FOUR INCH WIDE DUEL STRIPES, TWO FEET APART, CENTERED ON THE DIVIDING LINES, & PAINTED WHITE.
2. ACCESSIBLE SPACES SHALL BE DELINEATED WITH FOUR INCH WIDE LINES, PAINTED HANDICAP BLUE.



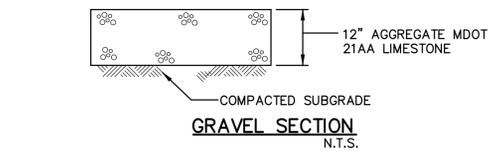
WHITE LAKE TWP. PARKING STRIPING
SCALE: 1"=6'



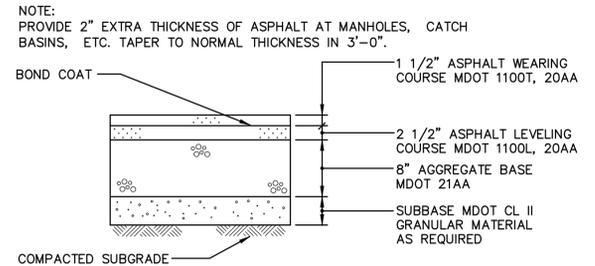
ISOLATION JOINT
N.T.S.



CONTRACTION JOINT
N.T.S.

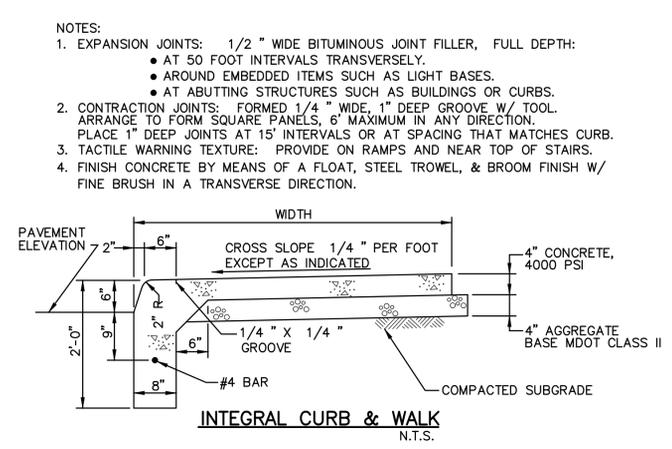


GRAVEL SECTION
N.T.S.



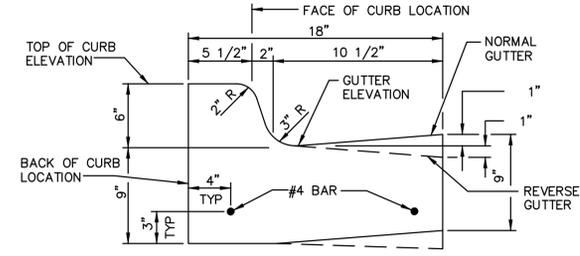
STANDARD DUTY ASPHALT PAVEMENT
N.T.S.

NOTE:
PROVIDE 2" EXTRA THICKNESS OF ASPHALT AT MANHOLES, CATCH BASINS, ETC. TAPER TO NORMAL THICKNESS IN 3'-0".

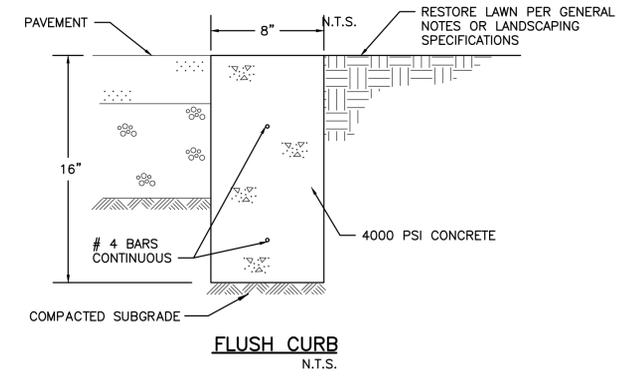


INTEGRAL CURB & WALK
N.T.S.

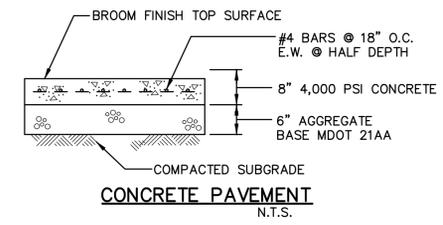
NOTES:
1. USE NORMAL OR REVERSE GUTTER TO EXTEND THE SLOPE OF THE ADJACENT PAVEMENT EXCEPT AS INDICATED.
2. CONCRETE: 4000 PSI
3. PROVIDE CONTROL JOINTS IN CURB AT 10' O.C. & AT ALL RADIUS RETURNS.
4. PROVIDE EXPANSIVE JOINTS EVERY 30'.



18"x6" STANDARD DUTY CURB & GUTTER
N.T.S.

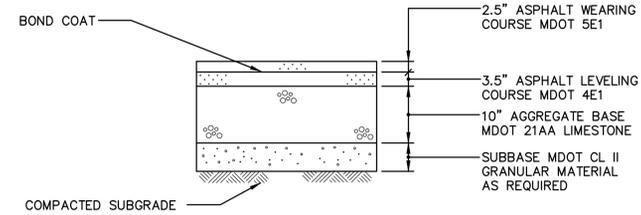


FLUSH CURB
N.T.S.



CONCRETE PAVEMENT
N.T.S.

NOTE:
PROVIDE 2" EXTRA THICKNESS OF ASPHALT AT MANHOLES, CATCH BASINS, ETC. TAPER TO NORMAL THICKNESS IN 3'-0".



HEAVY DUTY ASPHALT PAVEMENT
N.T.S.

NOTE:
PROVIDE 2" EXTRA THICKNESS OF ASPHALT AT MANHOLES, CATCH BASINS, ETC. TAPER TO NORMAL THICKNESS IN 3'-0".



ENGINEERING
A PROFESSIONAL SERVICE COMPANY

PROJECT MANAGEMENT
CIVIL ENGINEERING
CONSULTING
11904 JERSEY COURT
DAVISBURG, MI 48350
248.884.8224
leachpsc.com



SCALE: AS SHOWN

SHALL PROVIDE FOR CONFORMANCE ONLY. ACTUAL WORK SHALL BE CONTROLLED BY THE SUPERVISOR. PROVIDED AND REVIEWED IN THE FIELD BY A PROFESSIONAL SUPERVISOR.



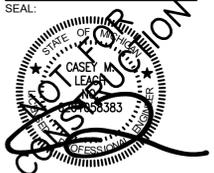
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EXISTING UNDERGROUND UTILITY LOCATION AND ELEVATION INFORMATION SHOWN ON THIS DRAWING WAS OBTAINED FROM 811. LEACH ENGINEERING SHALL BE RESPONSIBLE FOR THE ACCURACY OF THIS INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF THIS INFORMATION BY FIELD SURVEYING AND/OR BY OTHER MEANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES PRIOR TO THE START OF CONSTRUCTION.

CLIENT:

LASTING IMPRESSIONS

2255 PORTER ROAD
WHITE LAKE, MI 48386
CONTACT: NICHOLAS HOPSON
PHONE: (248) 830-2828



PROJECT:
NEW FACILITY

PARCEL 12-01-127-002

ISSUES / REVISIONS:
FSP - FEP 10/03/25
FSP - FEP REV. 1 02/06/26

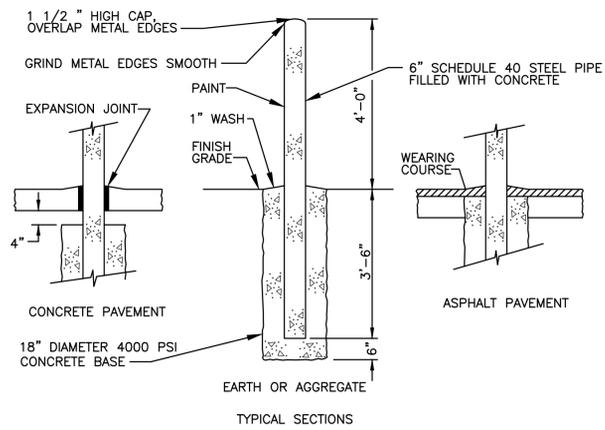
MANAGED: CL
DESIGNED: CL
DRAWN: CL

SHEET NAME:
DETAILS - PAVING, SIGNS, & WALK

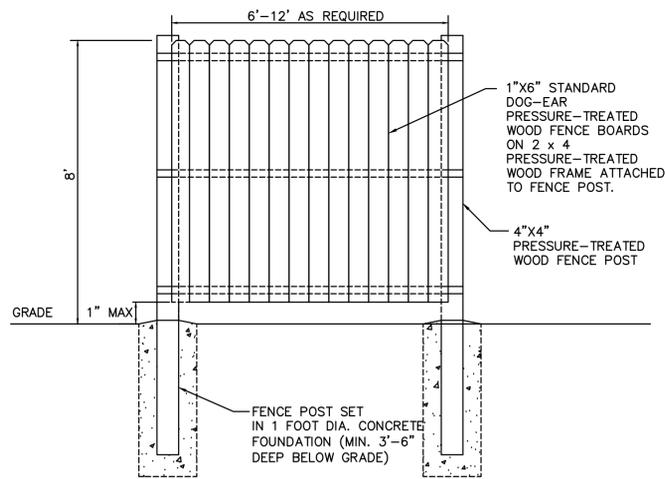
PROJECT NUMBER: 24004

SHEET NUMBER: **C5.01**

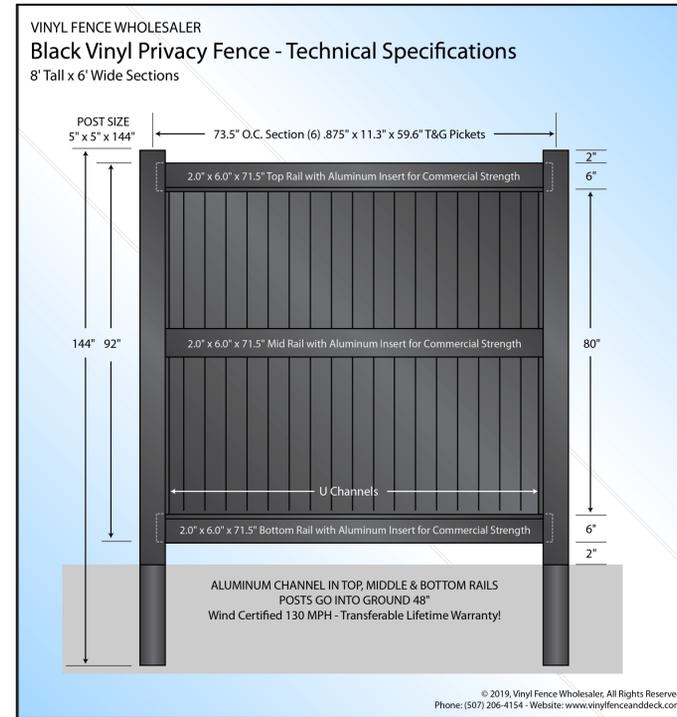
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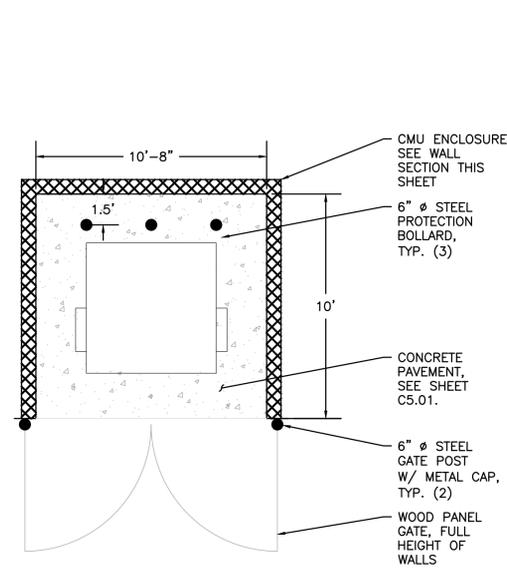
PROTECTION BOLLARD
N.T.S.



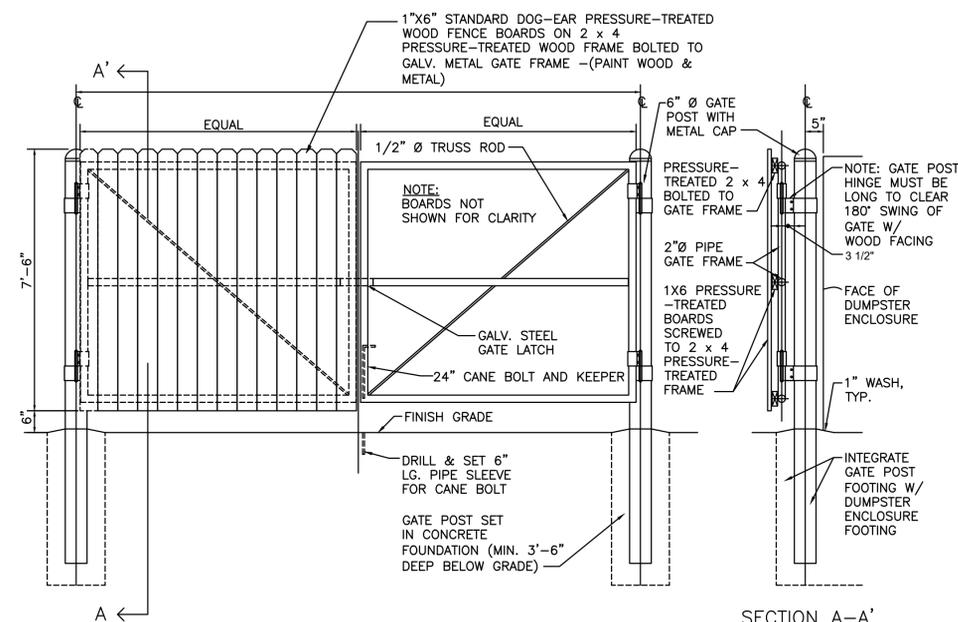
DOG-EAR FENCE
N.T.S.



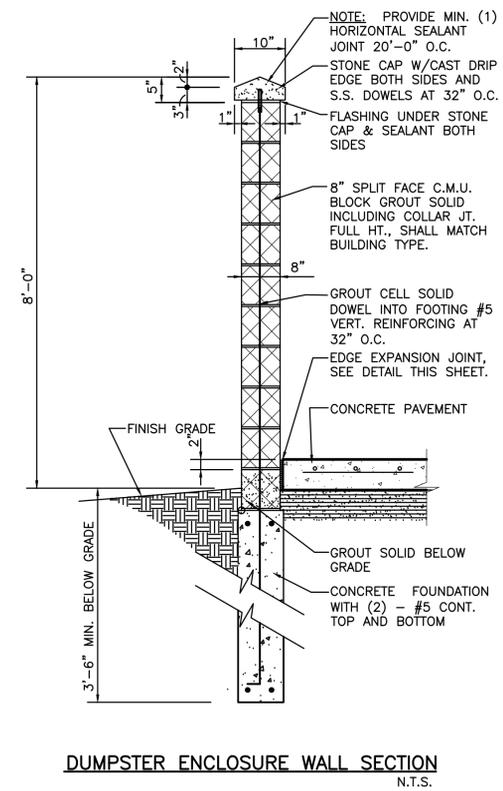
VINYL FENCE
N.T.S.



DUMPSTER ENCLOSURE PLAN
N.T.S.



ELEVATION AT DUMPSTER ENCLOSURE GATES
N.T.S.



DUMPSTER ENCLOSURE WALL SECTION
N.T.S.



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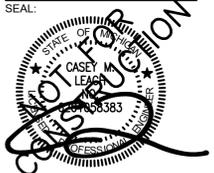
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CLIENT:

LASTING IMPRESSIONS

2255 PORTER ROAD
WHITE LAKE, MI 48386
CONTACT: NICHOLAS HOPSON
PHONE: (248) 830-2828



PROJECT:
NEW FACILITY

PARCEL 12-01-127-002

ISSUES / REVISIONS:
FSP - FEP 10/03/25
FSP - FEP REV. 1 02/06/26

MANAGED CL
DESIGNED CL
DRAWN CL

SHEET NAME:

DETAILS - DUMPSTER ENCLOSURE & FENCING

PROJECT NUMBER: 24004

SHEET NUMBER: **C5.02**

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Call before you dig.

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CLIENT:

LASTING IMPRESSIONS

2255 PORTER ROAD
WHITE LAKE, MI 48386
CONTACT: NICHOLAS HOPSON
PHONE: (248) 830-2828
SEAL:



PROJECT:

NEW FACILITY

PARCEL 12-01-127-002

ISSUES / REVISIONS:

FSP - FEP	10/03/25
FSP - FEP REV. 1	02/06/26

MANAGED	CL
DESIGNED	CL
DRAWN	CL

SHEET NAME:

DETAILS - UTILITIES

PROJECT NUMBER: 24004

SHEET NUMBER: C5.31

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700 Gallon Interceptor - 8' x 4' x 4'

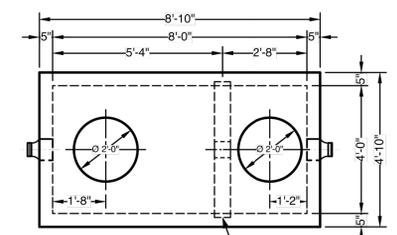
Advance Concrete Products Company

(800) 824-8351 (248) 887-4173 Fax: (248) 887-2755



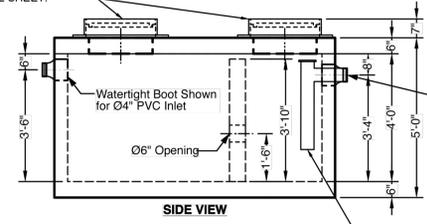
All Concrete Shall Have A 28 Day Compressive Strength Of 4500 PSI. Formula 5
Reinforcing Steel Shall Comply With ASTM A706 Grade 60 Rebar. Bar Bending And Placement Shall Comply With The Latest ACI Standards.
Standard Structural Design Based On AASHTO HS 20 Wheel Loading.
Grout for Divider Wall Keyways Supplied & Installed by Others.
1" Ø Butyl Rope Mastic Is Provided For Placement Between Top And Bottom Sections Of Vault.
(Fuel Resistant Rope Mastic is provided for Oil Interceptors)

Approximate Weight Total: ± 13,700 Lbs.
Bottom Section: ± 9,800 Lbs. Top Slab: ± 2,750 Lbs.
Divider Wall: ± 1,150 Lbs.

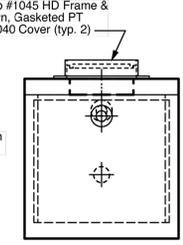


PLAN VIEW (without frames & covers)
Precast Concrete 6" Thick Divider Wall

PROVIDE PRECAST CONCRETE GRADE RINGS AS RISERS (W/ BRICK ADJUSTMENT AS NECESSARY) W/ REDUCER AT TOP (MATERIALS BY ADVANCED CONCRETE PRODUCTS COMPANY). SET EJ 1040 CASTING W/ TYPE B COVER IN MORTAR BED SIMILAR TO OCWRC STANDARD MANHOLE. SEE DETAIL SHEET.



SIDE VIEW

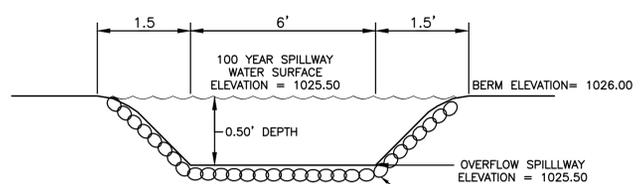


END VIEW

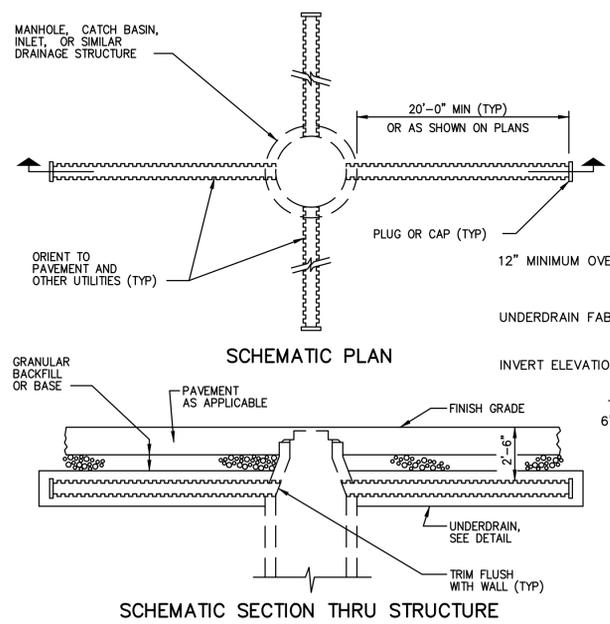
EJ Group #1045 HD Frame & Bolt-Down, Gasketed PT 024" #1040 Cover (typ. 2)

SCH 40 PVC TEE W/ WAFFLE PIPE DOWN TO 1' +/- ABOVE TANK FLOOR W/ REMOVABLE CAP AT TOP TO PROVIDE 18" MIN. WATER SEAL/TRAP. (NOT INCLUDED BY TANK MANUFACTURER)

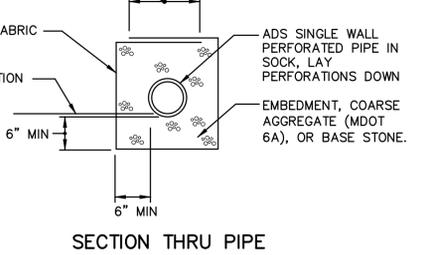
OIL INTERCEPTOR (OI 1)
N.T.S.



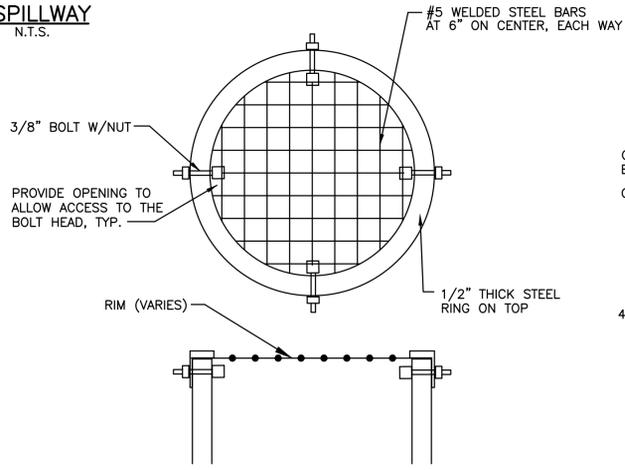
SECONDARY OVERFLOW SPILLWAY
N.T.S.



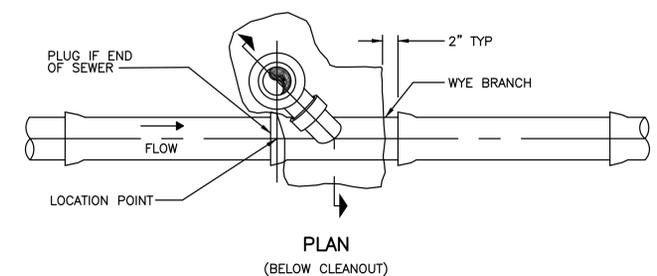
UNDERDRAIN @ CATCHBASINS
N.T.S.



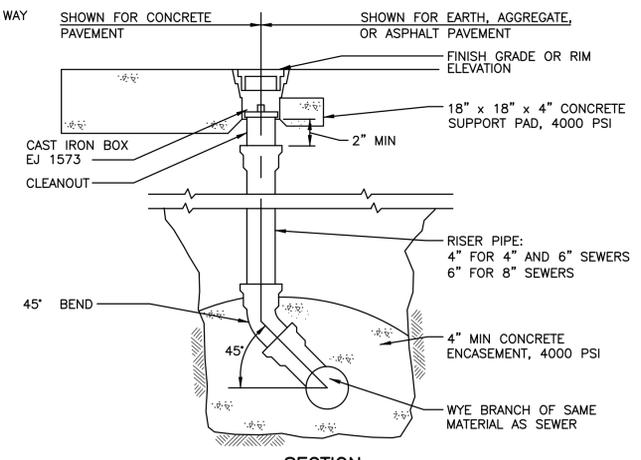
SECTION THRU PIPE



BAR GRATE FOR OVERFLOW STRUCTURES
N.T.S.



PLAN (BELOW CLEANOUT)



SECTION CLEANOUT ASSEMBLY
N.T.S.

**Estimated Net Annual Solids Load Reduction
Based on the Rational Rainfall Method**




**Lasting Impressions
White Lake TWP., MI
MH 2**

AREA	1.10	acres	CASCADE MODEL	CS-4	
WEIGHTED C	0.76		PARTICLE SIZE	110	microns
TC	16.37	minutes	RAINFALL STATION	78	

Rainfall Intensity ¹ (in/hr)	Percent Rainfall Volume ¹	Hydraulic Loading Rate (gpm/ft ²)	Removal Efficiency (%)	Incremental Removal (%)
0.08	34.4%	2.39	100.0	34.4
0.16	18.2%	4.78	100.0	18.2
0.24	9.4%	7.17	100.0	9.4
0.32	5.7%	9.55	100.0	5.7
0.40	3.3%	11.94	100.0	3.3
0.48	3.1%	14.33	98.4	3.1
0.56	2.2%	16.72	96.2	2.1
0.64	3.1%	19.11	93.9	3.0
0.72	2.1%	21.50	91.7	1.9
0.80	1.6%	23.89	89.4	1.4
0.88	2.0%	26.28	87.2	1.8
0.96	1.0%	28.66	85.0	0.9
1.04	1.5%	31.05	82.7	1.2
1.12	1.2%	33.44	80.5	1.0
1.20	1.3%	35.83	78.2	1.0
1.28	1.1%	38.22	76.0	0.9
1.36	1.0%	40.61	73.7	0.7
1.44	0.8%	43.00	71.5	0.6
1.52	0.8%	45.39	69.2	0.6
1.60	0.3%	47.77	67.0	0.2
2.00	2.7%	59.72	55.8	1.5
2.40	1.2%	71.66	44.5	0.5
2.80	0.4%	76.08	36.8	0.2
3.20	0.0%	76.08	32.2	0.0
				93.2

Removal Efficiency Adjustment² = 0.0%

Predicted % Annual Rainfall Treated = 98.3%

Predicted Net Annual Load Removal Efficiency = 93.2%

1 - Based on 5.5 years of 15 minute precipitation data from NCDC station 2102 at Detroit City Airport in Detroit, MI
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

Project: Lasting Impressions
Location: White Lake, MI



Purpose: To calculate the first flush runoff flow rate (WQF) over a given site area. In this situation the WQV to be analyzed is the runoff produced by the first 0.75" of rainfall.

Reference: United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual.

Structure Name	A (acres)	A (miles ²)	Runoff Coefficient	Percent Imp. (%) [*]	t _c (min)	t _c (hr)
MH 2	1.10	0.00172	0.76	76.67	16.4	0.273

* Assumes runoff coefficient of 0.3 for pervious areas and 0.9 for impervious areas.

Procedure: The Water Quality Flow (WQF) is calculated using the Water Quality Volume (WQV). This WQV, converted to watershed inches, is substituted for the runoff depth (Q) in the Natural Resources Conservation Service (formerly Soil Conservation Service), TR-55 Graphical Peak Discharge Method.

1. Compute WQV in watershed inches using the following equation:

$$WQV = P \cdot R$$

where: WQV = water quality volume (watershed inches)
P = design precipitation (inches)
R = volumetric runoff coefficient = 0.05 + 0.009(I)
I = percent impervious cover

Structure Name	Percent Imp. (%)	R	P (in)	WQV (in)	WQV (cf)
MH 2	76.67	0.740	0.75	0.555	2216

2. Compute the NRCS Runoff Curve Number (CN) using the following equation, or graphically using Figure 2-1 from TR-55 (USDA, 1986):

$$CN = 1000 / [10 + 5P + 10Q - 10(Q^2 + 1.25QP)^{1/2}]$$

where: CN = Runoff Curve Number
P = design precipitation (inches)
Q = runoff depth (watershed inches)

Structure Name	Q (in)	CN
MH 2	0.555	98.05

First Flush Calculation (Page 1 of 2)
9/25/2025

Project: Lasting Impressions
Location: White Lake, MI



3. Using computed CN, read initial abstraction (I_a) from Table 4-1 in Chapter 4 of TR-55; compute I_a/P, interpolating when appropriate.

Structure Name	I _a (in)	I _a /P
MH 2	0.041	0.054666667

4. Compute the time of concentration (t_c) in hours and the drainage area in square miles. A minimum t_c of 0.167 hours (10 minutes) should be used.

Structure Name	t _c (hr)	A (miles ²)
MH 2	0.273	0.00172

5. Read the unit peak discharge (q_u) from Exhibit 4-II in Chapter 4 of TR-55 for appropriate t_c for type II rainfall distribution.

Structure Name	t _c (hr)	I _a /P	q _u (csm/in)
MH 2	0.273	0.054666667	705

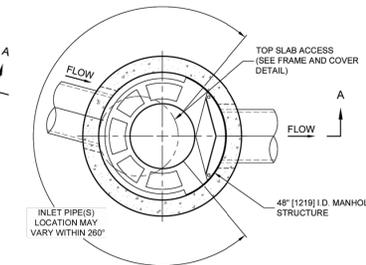
6. Substituting WQV (watershed inches) for runoff depth (Q), compute the water quality flow (WQF) from the following equation:

$$WQF = (q_u)(A)(Q)$$

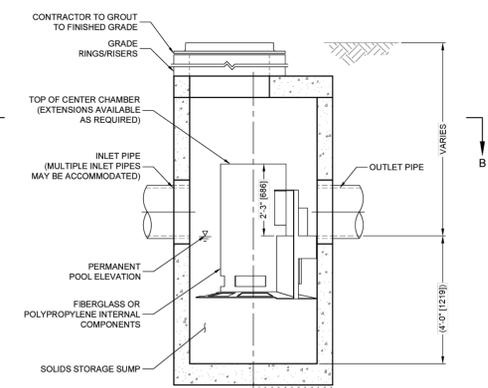
where: WQF = water quality flow (cfs)
q_u = unit peak discharge (cfs/mi²/inch)
A = drainage area (mi²)
Q = runoff depth (watershed inches)

Structure Name	q _u (csm/in)	A (miles ²)	Q (in)	WQF (cfs)
MH 2	705	0.00172	0.555	0.67

First Flush Calculation (Page 2 of 2)
9/25/2025



**PLAN VIEW B-B
NOT TO SCALE**



**ELEVATION A-A
NOT TO SCALE**

CASCADE separator™

CASCADE SEPARATOR DESIGN NOTES

THE STANDARD CS-4 CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION	
GRATED INLET ONLY (NO INLET PIPE)	
GRATED INLET WITH INLET PIPE OR PIPES	
CURB INLET ONLY (NO INLET PIPE)	
CURB INLET WITH INLET PIPE OR PIPES	

SITE SPECIFIC DATA REQUIREMENTS				
STRUCTURE ID	MH 2			
WATER QUALITY FLOW RATE (cfs [L/s])	0.67 CFS			
PEAK FLOW RATE (cfs [L/s])	3.54 CFS			
RETURN PERIOD OF PEAK FLOW (yrs)	10-YEAR			
RIM ELEVATION	1028.90			
PIPE DATA	INVERT	MATERIAL	DIAMETER	
INLET PIPE 1	1024.10	PP	12"	
INLET PIPE 2	1022.90	PP	12"	
OUTLET PIPE	1022.80	PP	12"	

NOTES / SPECIAL REQUIREMENTS:

GENERAL NOTES

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
- CASCADE SEPARATOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
- CASCADE SEPARATOR STRUCTURE SHALL MEET AASHTO H2010 LOAD RATING, ASSUMING EARTH COVER OF 0'-2" (610) AND GROUNDWATER ELEVATION AT OR BELOW THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M206 AND BE CAST WITH THE CONTECH LOGO.
- CASCADE SEPARATOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
- ALTERNATE UNITS ARE SHOWN IN MILLIMETERS [mm].

INSTALLATION NOTES

- ANY SUB-BASE BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CASCADE SEPARATOR MANHOLE STRUCTURE.
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.



CASCADE separator™

CS-4
**CASCADE SEPARATOR
STANDARD DETAIL**

ENGINEERING
A PROFESSIONAL SERVICE COMPANY

PROJECT MANAGEMENT
CIVIL ENGINEERING
CONSULTING
11904 JERSEY COURT
DAVISBURG, MI 48350
248.884.8224
leachpsc.com

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CLIENT:

LASTING IMPRESSIONS

2255 PORTER ROAD
WHITE LAKE, MI 48386
CONTACT: NICHOLAS HOPSON
PHONE: (248) 830-2828

SEAL:

PROJECT:
NEW FACILITY

PARCEL 12-01-127-002

ISSUES / REVISIONS:

FSP - FEP	10/03/25
FSP - FEP REV. 1	02/06/26

MANAGED	CL
DESIGNED	CL
DRAWN	CL

SHEET NAME:

**DETAILS - STORM
WATER TREATMENT
UNIT**

PROJECT NUMBER: 24004

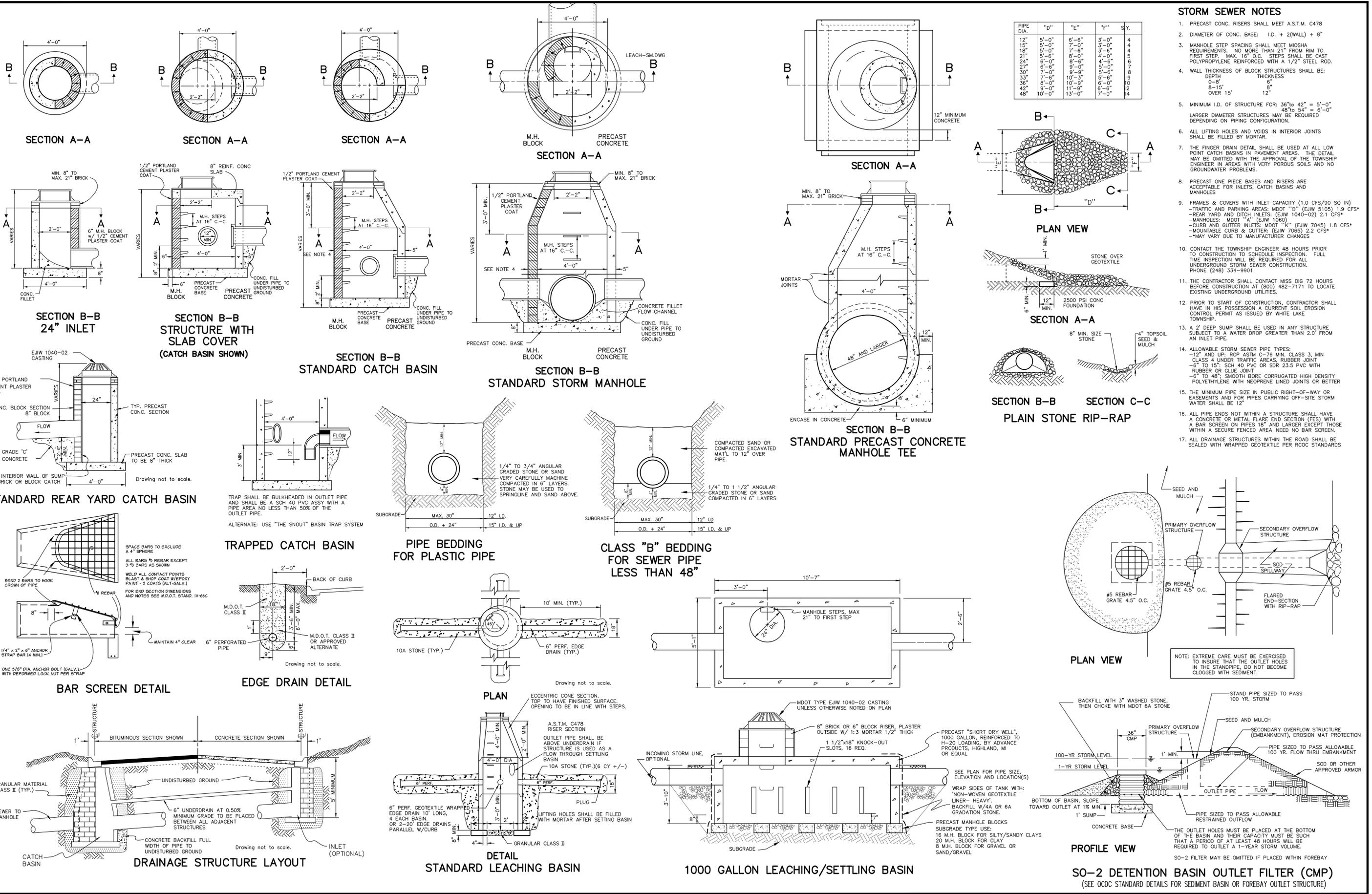
SHEET NUMBER: **C5.32**

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STORM SEWER NOTES

1. PRECAST CONC. RISERS SHALL MEET A.S.T.M. C478
2. DIAMETER OF CONC. BASE: I.D. + 2(WALL) + 8"
3. MANHOLE STEP SPACING SHALL MEET MIOSHA REQUIREMENTS. NO MORE THAN 21" FROM RIM TO FIRST STEP. MAX. 16" O.C. STEPS SHALL BE CAST POLYPROPYLENE REINFORCED WITH A 1/2" STEEL ROD.
4. WALL THICKNESS OF BLOCK STRUCTURES SHALL BE:
DEPTH THICKNESS
0-8' 8"
8-15' 8"
OVER 15' 12"
5. MINIMUM I.D. OF STRUCTURE FOR: 36" to 42" = 5'-0"
48" to 54" = 6'-0"
LARGER DIAMETER STRUCTURES MAY BE REQUIRED DEPENDING ON PIPING CONFIGURATION.
6. ALL LIFTING HOLES AND VOIDS IN INTERIOR JOINTS SHALL BE FILLED BY MORTAR.
7. THE FINGER DRAIN DETAIL SHALL BE USED AT ALL LOW POINT CATCH BASINS IN PAVEMENT AREAS. THE DETAIL MAY BE OMITTED WITH THE APPROVAL OF THE TOWNSHIP ENGINEER IN AREAS WITH VERY POROUS SOILS AND NO GROUNDWATER PROBLEMS.
8. PRECAST ONE PIECE BASES AND RISERS ARE ACCEPTABLE FOR INLETS, CATCH BASINS AND MANHOLES
9. FRAMES & COVERS WITH INLET CAPACITY (1.0 CFS/90 SQ IN) -TRAFFIC AND PARKING AREAS: MDOT "D" (EJW 5105) 1.9 CFS* -REAR YARD AND DITCH INLETS: (EJW 1040-02) 2.1 CFS* -MANHOLES: MDOT "A" (EJW 1060) -CURB AND GUTTER INLETS: MDOT "K" (EJW 7045) 1.8 CFS* -MOUNTABLE CURB & GUTTER: (EJW 7065) 2.2 CFS* *MAY VARY DUE TO MANUFACTURER CHANGES
10. CONTACT THE TOWNSHIP ENGINEER 48 HOURS PRIOR TO CONSTRUCTION TO SCHEDULE INSPECTION. FULL TIME INSPECTION WILL BE REQUIRED FOR ALL UNDERGROUND STORM SEWER CONSTRUCTION. PHONE: (248) 334-9901
11. THE CONTRACTOR SHALL CONTACT MISS DG 72 HOURS BEFORE CONSTRUCTION AT (800) 482-7171 TO LOCATE EXISTING UNDERGROUND UTILITIES.
12. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL HAVE IN HIS POSSESSION A CURRENT SOIL EROSION CONTROL PERMIT AS ISSUED BY WHITE LAKE TOWNSHIP.
13. A 2' DEEP SUMP SHALL BE USED IN ANY STRUCTURE SUBJECT TO A WATER DROP GREATER THAN 2.0' FROM AN INLET PIPE.
14. ALLOWABLE STORM SEWER PIPE TYPES:
-12" AND UP: RCP ASTM C-76 MIN CLASS 3, MIN CLASS 4 UNDER TRAFFIC AREAS, RUBBER JOINT
-6" TO 15": SCH 40 PVC OR SDR 23.5 PVC WITH RUBBER OR GLUE JOINT
-6" TO 48": SMOOTH BORE CORRUGATED HIGH DENSITY POLYETHYLENE WITH NEOPRENE LINED JOINTS OR BETTER
15. THE MINIMUM PIPE SIZE IN PUBLIC RIGHT-OF-WAY OR EASEMENTS AND FOR PIPES CARRYING OFF-SITE STORM WATER SHALL BE 12"
16. ALL PIPE ENDS NOT WITHIN A STRUCTURE SHALL HAVE A CONCRETE OR METAL FLARE END SECTION (FES) WITH A BAR SCREEN ON PIPES 18" AND LARGER EXCEPT THOSE WITHIN A SECURE FENCED AREA NEED NO BAR SCREEN.
17. ALL DRAINAGE STRUCTURES WITHIN THE ROAD SHALL BE SEALED WITH WRAPPED GEOTEXTILE PER ROC STANDARD

PIPE DIA.	"D"	"E"	"F"	S.Y.
12"	5'-0"	6'-6"	3'-0"	4
15"	5'-0"	7'-0"	3'-6"	4
18"	5'-6"	7'-6"	3'-6"	4
21"	5'-6"	8'-0"	4'-0"	5
24"	6'-0"	8'-6"	4'-6"	6
27"	6'-6"	9'-0"	5'-0"	7
30"	7'-0"	9'-6"	5'-6"	8
33"	7'-6"	10'-3"	5'-6"	9
36"	8'-0"	10'-9"	6'-0"	10
42"	9'-0"	11'-9"	6'-6"	12
48"	10'-0"	13'-0"	7'-0"	14



DRAWN: CAD
DESIGN: OA
CHECKED: -

REVISIONS	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE
		FIRST ISSUE	08/16/95		REVISE	10-03-02		REVISE	06-01-07
		ADD SO-1	06-17-96		REVISE	12-17-03		UPDATED TITLE BLOCK	04/30/13
		NEW BAR GRATE	11-03-97		SEC REFERENCE	05-17-05			

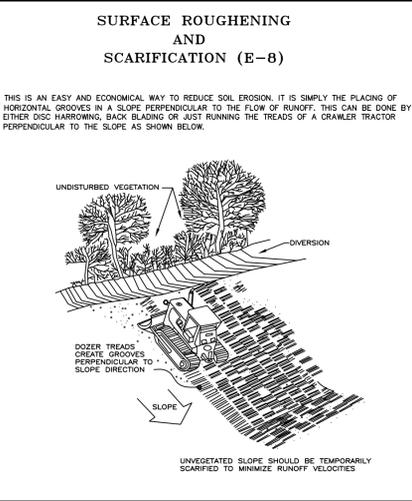
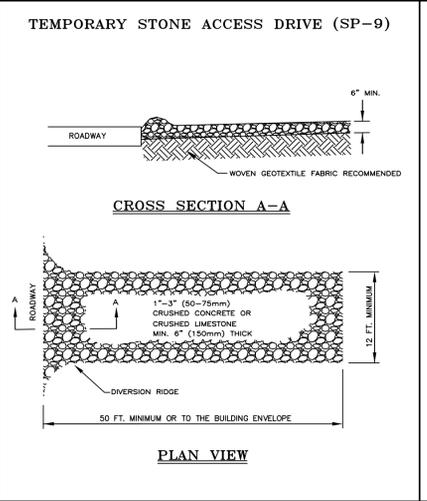
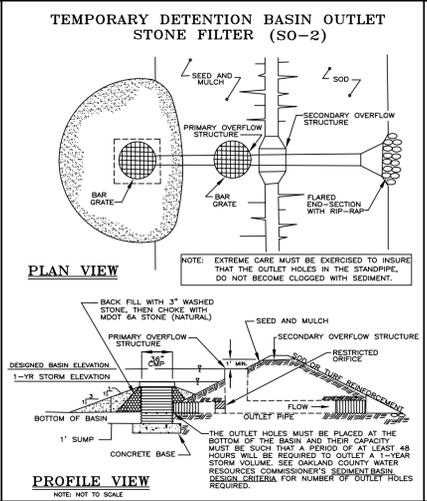
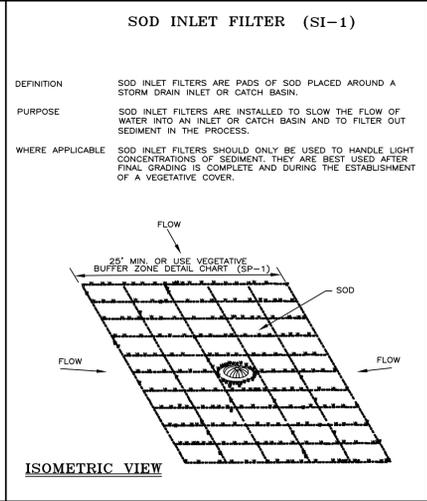
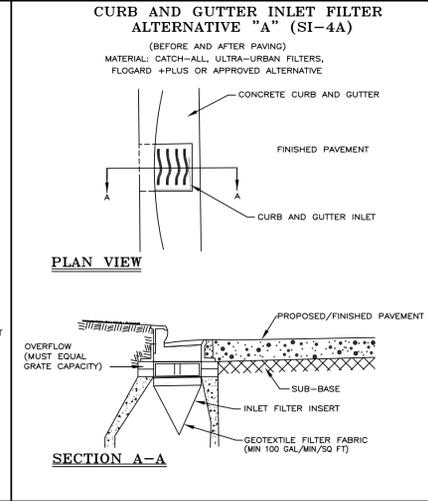
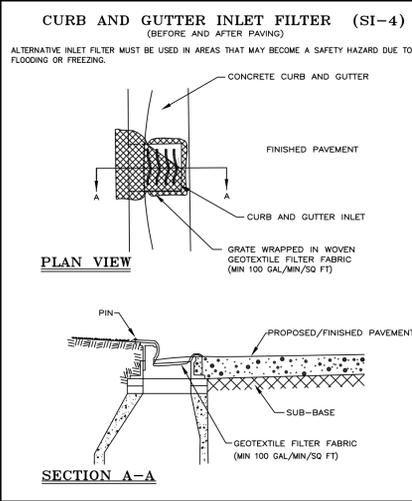
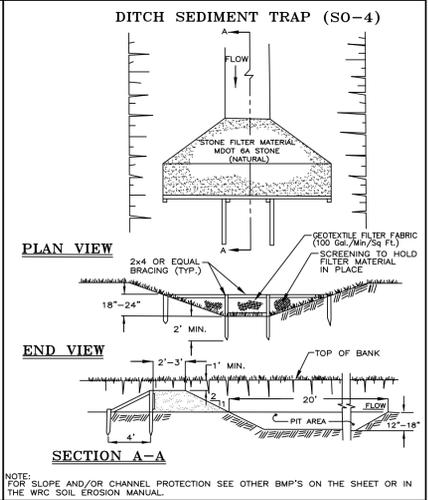
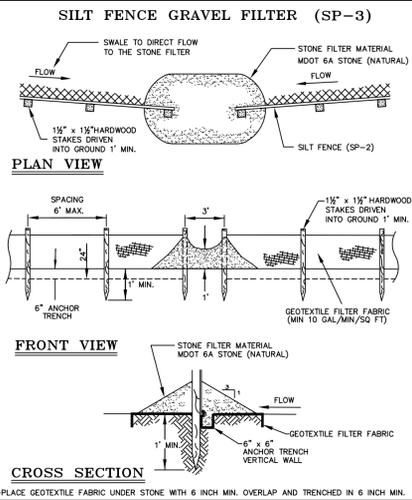
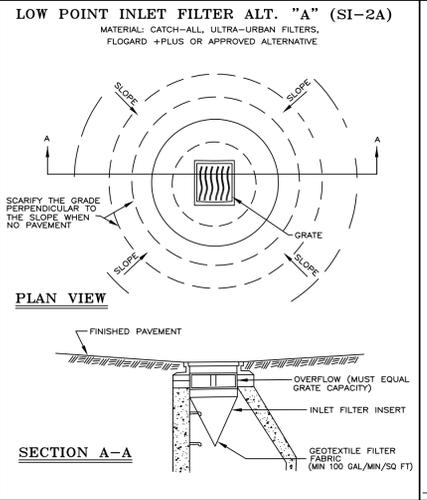
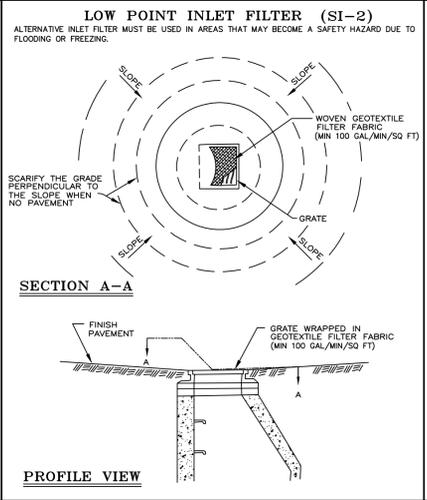
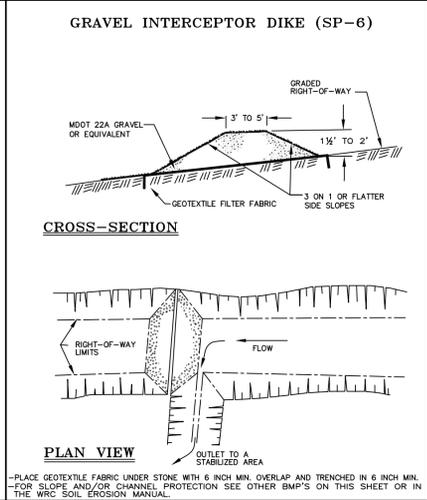
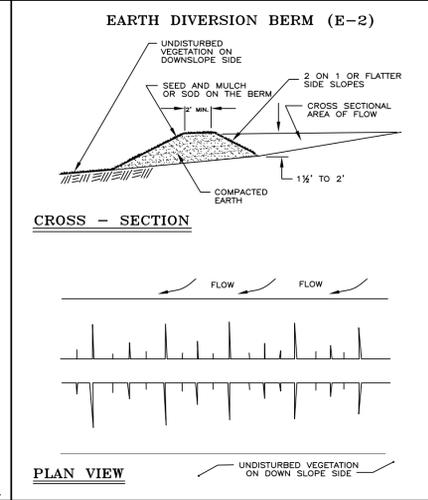
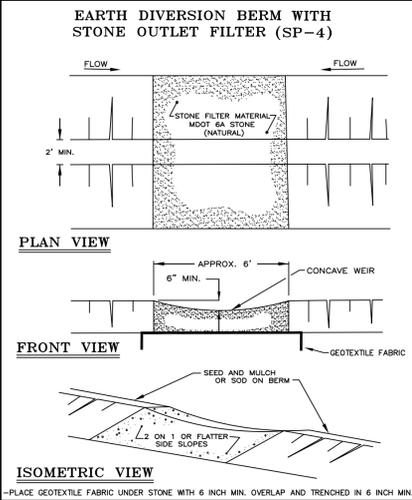
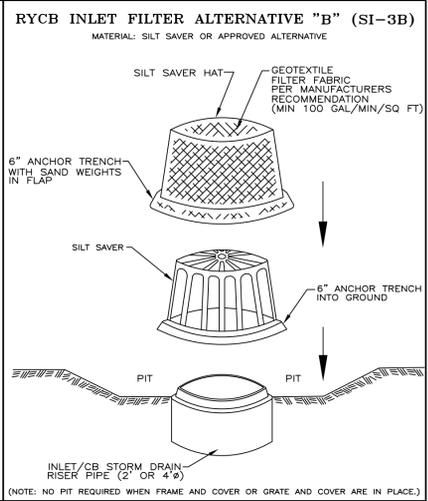
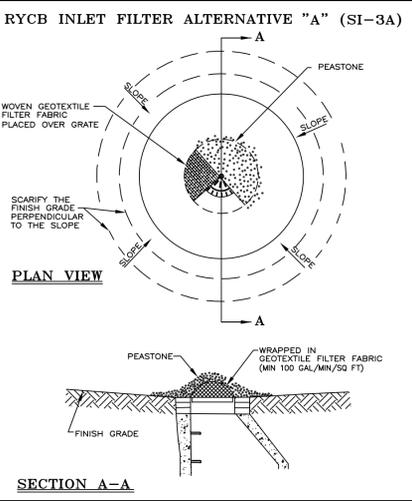
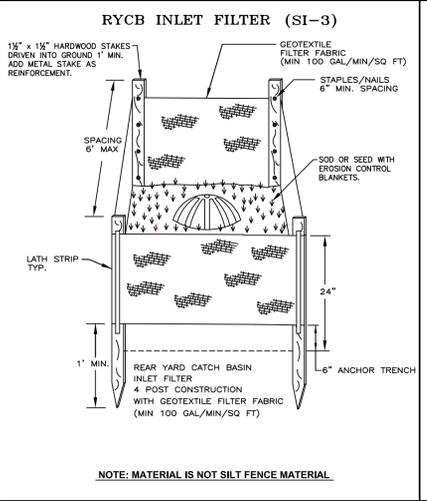
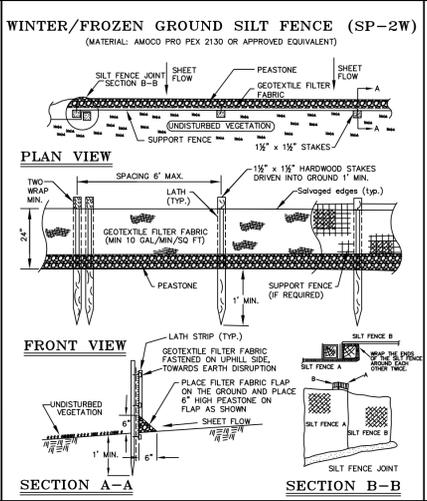
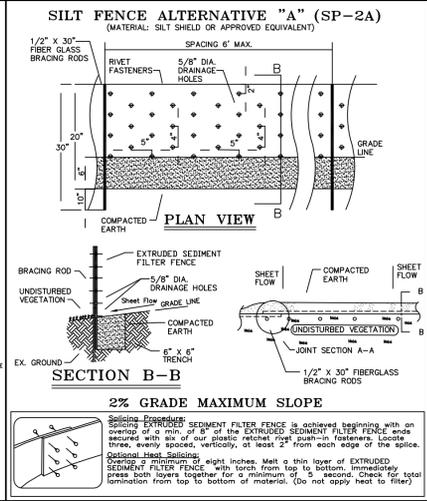
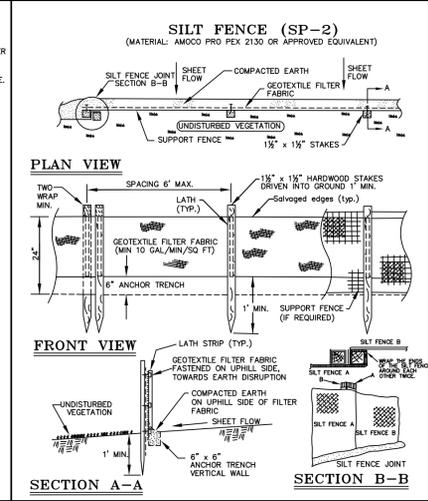
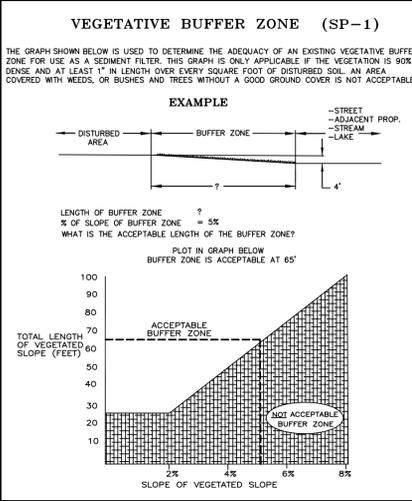
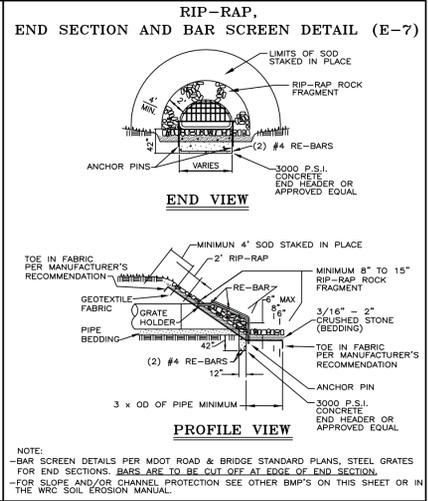
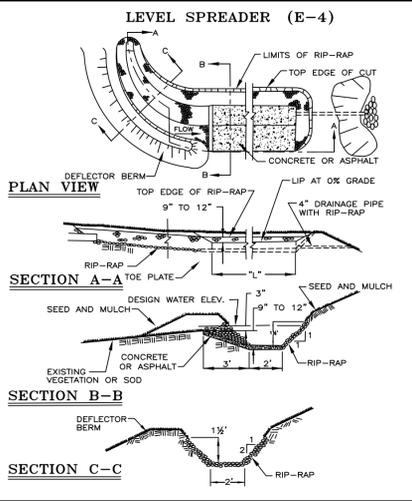
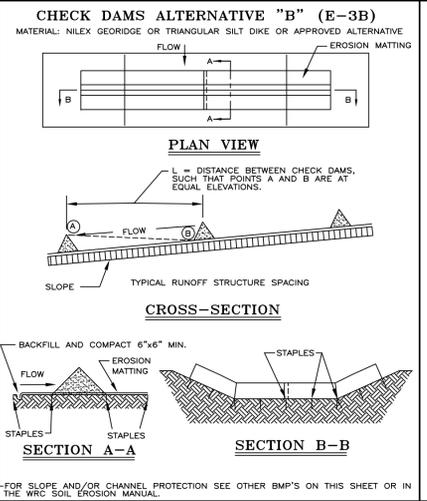
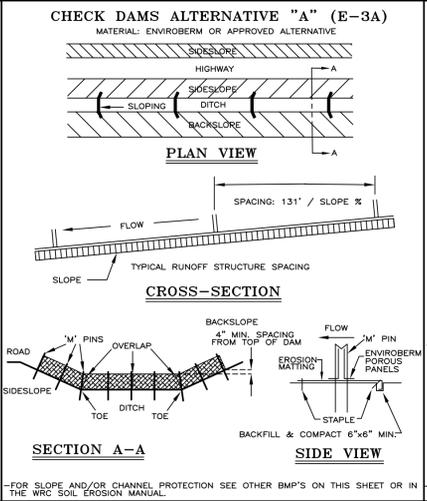
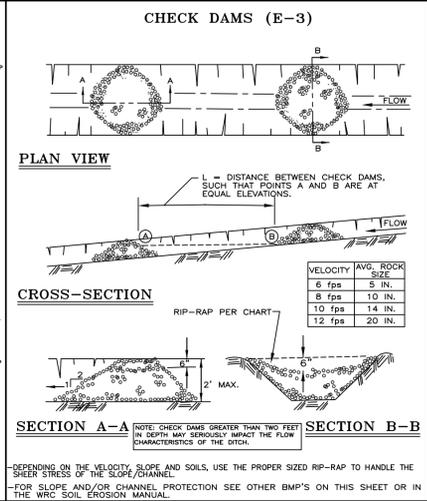
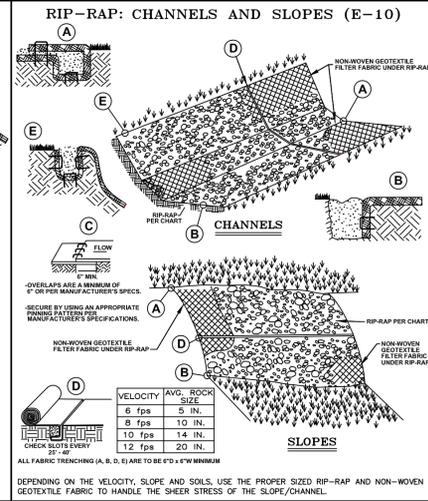
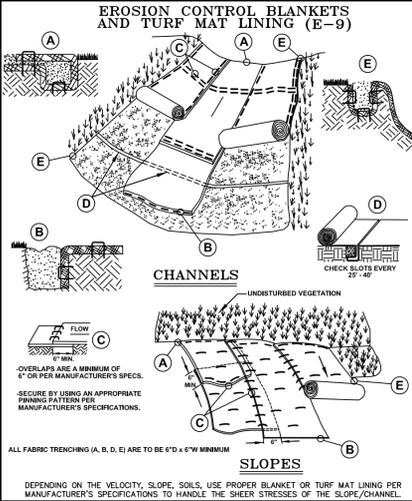
Johnson & Anderson
 4694 Elizabeth Lake Road Waterford, Michigan 48328 tel (248) 681-7800 fax (248) 681-2660
 1060 W. Norton Avenue, Suite 7 Muskegon, Michigan 49441 tel (231) 780-3100 fax (231) 780-3115
 3910 Lapeer Road Port Huron, Michigan 48060 tel (810) 987-7820 fax (810) 987-7895

White Lake Township
 7525 Highland Road (M-59) White Lake, Michigan 48383 248-698-3300

STORM SEWER STANDARD DETAILS

DATE ISSUED: 08/16/95
 SHEET NO. _____

VERT. -
SCALE: _____
HORZ. AS NOTED



NOTE:

WHILE PERFORMING WORK INVOLVING GROUNDS MAINTENANCE AND/OR THE CONSTRUCTION/MAINTENANCE OF ANY INFRASTRUCTURE, INCLUDING ROADS, WATER MAINS, SANITARY SEWERS, STORM DRAINS AND STORM WATER BEST MANAGEMENT PRACTICES (BMPs), CONTRACTORS SHALL MINIMIZE POLLUTION FROM STORM WATER RUNOFF THAT CAN AFFECT WATER QUALITY RELATED TO WORK ACTIVITIES. POLLUTANTS THAT COULD IMPAIR WATER QUALITY MAY INCLUDE FUEL, GREASE AND OIL, NUTRIENTS, BACTERIA AND PATHOGENS, LITTER AND DEBRIS, AND SOIL EROSION AND SEDIMENTATION. APPLICABLE BMPs SHALL BE IMPLEMENTED BY THE CONTRACTOR TO THE MAXIMUM EXTENT PRACTICABLE TO PROTECT WATER QUALITY AND WILDLIFE HABITAT.

SOIL EROSION AND SEDIMENTATION CONTROL DETAILS

REV.	DATE	BY	DESCRIPTION
1			PROPOSED DETAIL
2			FOR CONSTRUCTION APPROVAL, NAME CHANGES
3			FOR CONSTRUCTION APPROVAL, DETAIL REVISIONS
4			FOR CONSTRUCTION APPROVAL, DETAIL REVISIONS

ORIG. DATE: 01/01/01

SCALE: _____

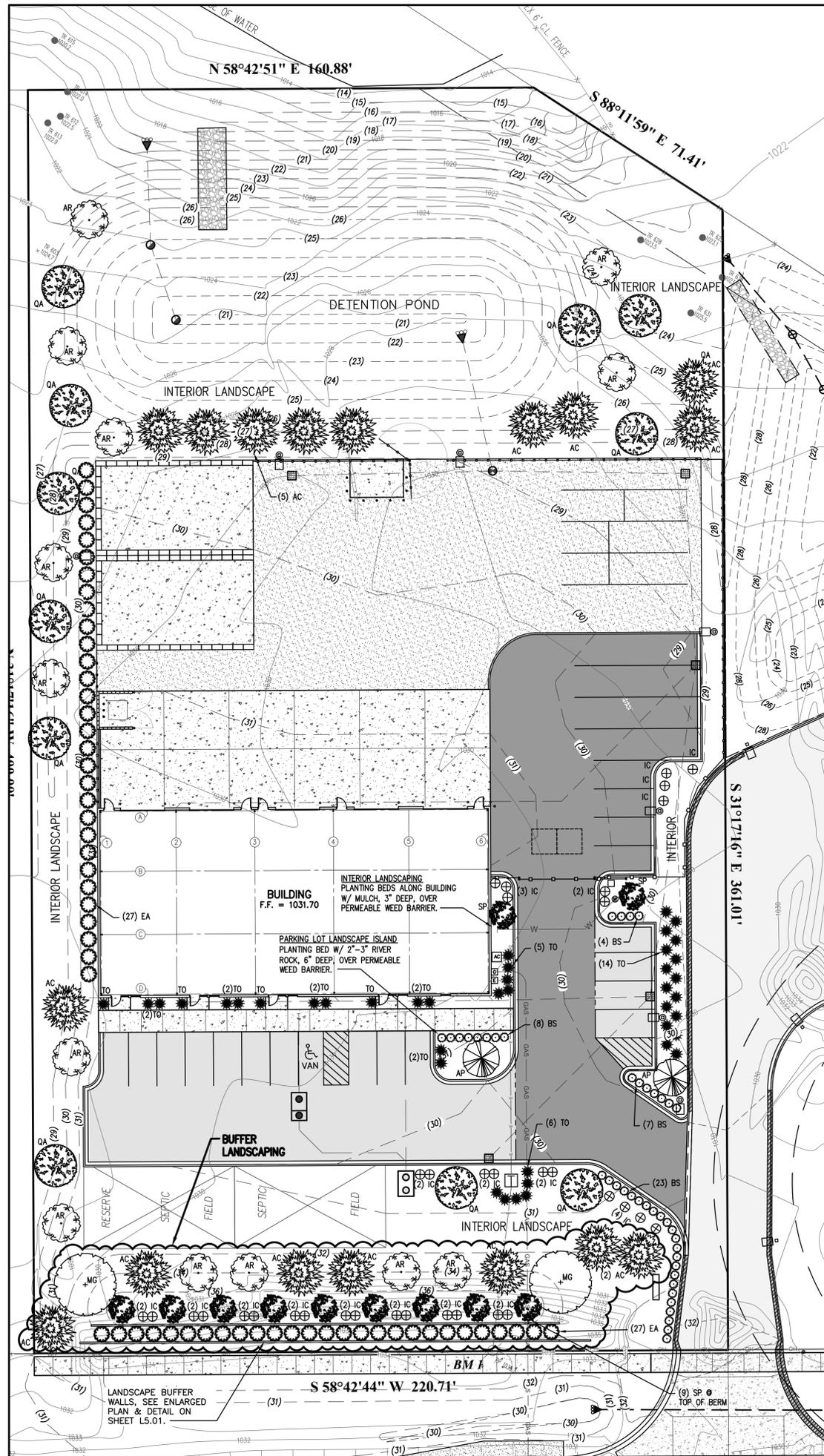
DESIGNED BY: WRC

DRAWN BY: Mapping

WRC WATER RESOURCES COMMISSIONER

ONE PUBLIC WORKS DRIVE, BLDG 905 WEST WATERFORD, MICHIGAN 48320-1907

SHEET NO.: 1 of 1



CALL	QUANTITY	COMMON NAME	SPECIES	INSTALL SIZE	SYMBOL
BS	42 EA	AMERICAN BOXWOOD HEDGE	<i>BUXUS SEMPERVIRENS</i>	24" HT.	⊙
IC	35 EA	SKY PENCIL HOLLY	<i>ILEX CRENATA 'SKY PENCIL'</i>	24" HT.	⊕
EA	57 EA	DWARF BURNING BUSH	<i>EUONYMUS ALATUS 'COMPACTA'</i>	24" HT.	⊗
SP	11 EA	MISS KIM LILAC TREE	<i>SYRINGA PATULA 'MISS KIM'</i>	1.5" CAL. @ 6' B&B	⊗
AP	2 EA	JAPANESE MAPLE 'EMPEROR ONE'	<i>ACER PALMATUM 'EMPEROR ONE'</i>	1.5" CAL. @ 6' B&B	⊗
AR	13 EA	RED MAPLE	<i>ACER RUBRUM</i>	2.5" CAL. DBH B&B	⊗
QA	11 EA	WHITE OAK	<i>QUERCUS ALBA</i>	2.5" CAL. DBH B&B	⊗
TO	41 EA	EMERALD GREEN ARBORVITAE	<i>THUJA OCCIDENTALIS 'EMERALD GREEN'</i>	7' HT. B&B	⊗
MG	2 EA	DAWN REDWOOD TREE	<i>METASEQUOIA GLYPTOSTROBILDES</i>	7' HT. B&B	⊗
AC	17 EA	WHITE FIR	<i>ABIES CONCOLOR</i>	7' HT. B&B	⊗

LANDSCAPE SCHEDULE

SITE INFORMATION:
 LOT GROSS AREA: 2.00 ACRES

ZONING INFORMATION:
 ZONING DISTRICT: LM LIGHT MANUFACTURING

REQUIRED MINIMUM SCREENING PER ZO SECTION 5.19D:
 A-1 EXTENSIVE LANDFORM BUFFER REQUIRED BETWEEN LM & ROAD ROW PURSUANT TO ZO SECTION 5.19D.iii & v. SITE PLAN REQUESTS THE PLANNING COMMISSION TO PERMIT AN ALTERNATE SCREENING METHOD THAT WILL CONSIST OF TERRACED LANDSCAPE WALLS WITH PLANTINGS.

162 LINEAL FEET OF BOTTOM WALL 162/15 = 10.8
 11 DECIDUOUS TREES REQUIRED 13 DECIDUOUS TREES PROVIDED
 11 EVERGREEN TREES REQUIRED 9 EVERGREEN TREES PROVIDED
 A PLANNING COMMISSION WAIVER REQUESTED FOR ALTERNATE TREE COUNT (162/15)⁴ = 43.2
 43 SHRUBS REQUIRED 43 SHRUBS PROVIDED

REQUIRED INTERIOR LANDSCAPING PER ZO SECTION 5.19E:
 REQUIREMENT: 15% OF TOTAL LOT AREA SHALL BE INTERNALLY LANDSCAPED, & 1 TREE + 5 SHRUBS SHALL BE PROVIDED FOR EVERY 300 SF OF REQUIRED INTERIOR LANDSCAPING.
 (2.00 ACRES)(43,560 SF/ACRE)(15%) = 13,068 SF INTERIOR LANDSCAPING REQUIRED
 43.56 TREES & 217.8 SHRUBS REQUIRED
 LANDSCAPING ALONG BUILDING & W SIDE OF GATE = 677 SF
 LANDSCAPING AT E SIDE OF GATE & BETWEEN SHARED DRIVE & PARKING = 2,092 SF
 LANDSCAPING ALONG WEST PROPERTY LINE & BETWEEN BASIN AND GRAVEL LOT = 10,196 SF
 LANDSCAPING BETWEEN ROW BUFFER AND FRONT PARKING LOT = 4,360 SF
 677 SF + 2,092 SF + 10,196 SF + 4,360 SF = 17,325 SF (20%) PROVIDED > 13,068 SF (15%) REQUIRED
 44 TREES & 218 SHRUBS REQUIRED
 76 TREES & 95 SHRUBS PROVIDED
 IF 1 TREE = 5 SHRUBS THAN; AN EXCESS OF 32 TREES = 160 SHRUBS
 A PLANNING COMMISSION WAIVER REQUESTED FOR ALTERNATE PLANTING COUNT

REQUIRED PARKING LOT LANDSCAPING PER ZO SECTION 5.19G:
 REQUIREMENT: INDUSTRIAL 10 SF/ PARKING SPACE
 REQUIREMENT: 1 TREE & 3 SHRUBS PER 100 SF OF REQUIRED PARKING LOT LANDSCAPING (19 SPACES)(10 SF/SPACE) = 190 SF PARKING LOT LANDSCAPING REQUIRED
 1.9 TREES & 5.7 SHRUBS REQUIRED
 361 SF, 3 TREES, & 8 SHRUBS PROVIDED AT SIDEWALK CORNER ISLAND

LANDSCAPING TOTALS

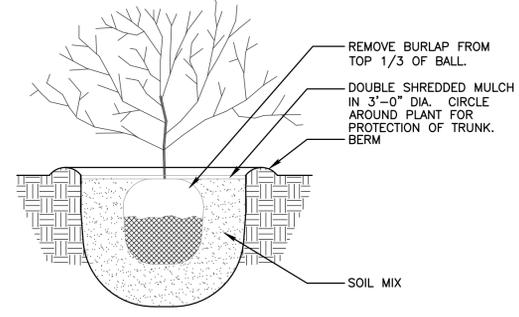
	REQUIRED	PROVIDED
INTERIOR	13,068 SF	17,231 SF
PARKING LOT	190 SF	361 SF
TOTAL	13,258 SF	17,592 SF (32.6% MORE LANDSCAPING IS PROVIDED THAN IS REQUIRED, NOT COUNTING NORTH WOODY AREA)

IRRIGATION NOTES:
 1. PROVIDE AUTOMATIC IRRIGATION TO ALL LAWN AND LANDSCAPED AREAS.
 1.1. ALL IRRIGATION COMPONENTS SHALL BE LOCATED COMPLETELY WITHIN THE PROPERTY BOUNDARY.
 1.2. IRRIGATION COVERAGE SHALL EXTEND TO COVER LAWN WITHIN THE RIGHT-OF-WAY.
 2. IRRIGATION SYSTEM SHALL INCLUDE A RAIN SENSOR OR SIMILAR MEASURE TO ENSURE THAT IRRIGATION DOES NOT OCCUR DURING OR SHORTLY AFTER PRECIPITATION EVENTS.

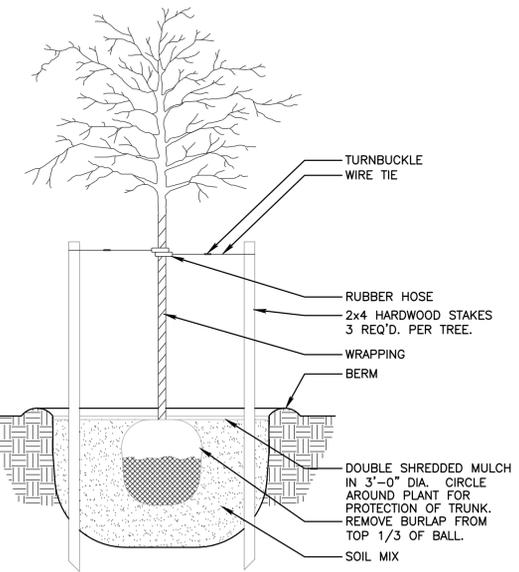
FENCING NOTES:
 1. REAR AND SIDE FENCING SHALL BE 8' TALL, DOG-EAR, PRIVACY FENCE PER DETAIL ON SHEET C5.02.
 2. FRONT FENCING AND GATE ACROSS DRIVEWAY SHALL BE 8 FT TALL, VINYL (COLOR TBD), PRIVACY FENCE PER DETAIL ON SHEET C5.02.

BENCHMARKS:
 BM 1: MAG NAIL IN EAST FACE OF POWER POLE
 EL. = 1034.67 NAVD 88
 BM 2: BOLT SPIKE ON NORTH FACE PF POWER POLE
 EL. = 1030.06 NAVD 88

GENERAL NOTES:
 1. SEE SHEET C0.01 FOR CIVIL GENERAL NOTES & LEGENDS.
 2. SEE SHEET L5.01 FOR ENLARGED BUFFER PLAN & LANDSCAPE SPECIFICATIONS



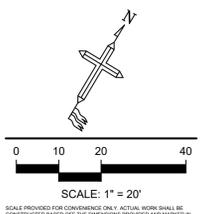
SINGLE SHRUB PLANTING
 N.T.S.



TREE PLANTING
 N.T.S.



ENGINEERING
 A PROFESSIONAL SERVICE COMPANY
 PROJECT MANAGEMENT
 CIVIL ENGINEERING
 CONSULTING
 11904 JERSEY COURT
 DAVISBURG, MI 48350
 248.884.8224
 leachpsc.com



CLIENT:
 LASTING IMPRESSIONS

2255 PORTER ROAD
 WHITE LAKE, MI 48386
 CONTACT: NICHOLAS HOPSON
 PHONE: (248) 830-2828
 SEAL:



PROJECT:
 NEW FACILITY

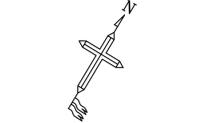
PARCEL 12-01-127-002

ISSUES / REVISIONS:
 FSP - FEP 10/03/25
 FSP - FEP REV. 1 02/06/26

MANAGED: CL
 DESIGNED: CL
 DRAWN: CL

SHEET NAME:
 LANDSCAPE PLAN

PROJECT NUMBER: 24004
 SHEET NUMBER: L1.01



SCALE: AS SHOWN

SCALE PROVIDED FOR CONFORMANCE ONLY. ACTUAL WORK SHALL BE CONSTRUCTED BASED ON THE DIMENSIONS PROVIDED AND SHOWN ON THE FIELD BY A PROFESSIONAL SURVEYOR.



Know what's below.
Call before you dig.

EXISTING UNDERGROUND UTILITY LOCATION AND ELEVATION INFORMATION SHOWN ON THIS DRAWING WAS OBTAINED ONLY AND IS NOT GUARANTEED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF EXISTING UNDERGROUND OR OVERHEAD UTILITIES. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR OBTAINING THE FINAL UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT:

LASTING IMPRESSIONS

2255 PORTER ROAD
WHITE LAKE, MI 48386
CONTACT: NICHOLAS HOPSON
PHONE: (248) 830-2828
SEAL:



PROJECT:
NEW FACILITY

PARCEL 12-01-127-002

ISSUES / REVISIONS:

FSP - FEP	10/03/25
FSP - FEP REV. 1	02/06/26

MANAGED	CL
DESIGNED	CL
DRAWN	CL

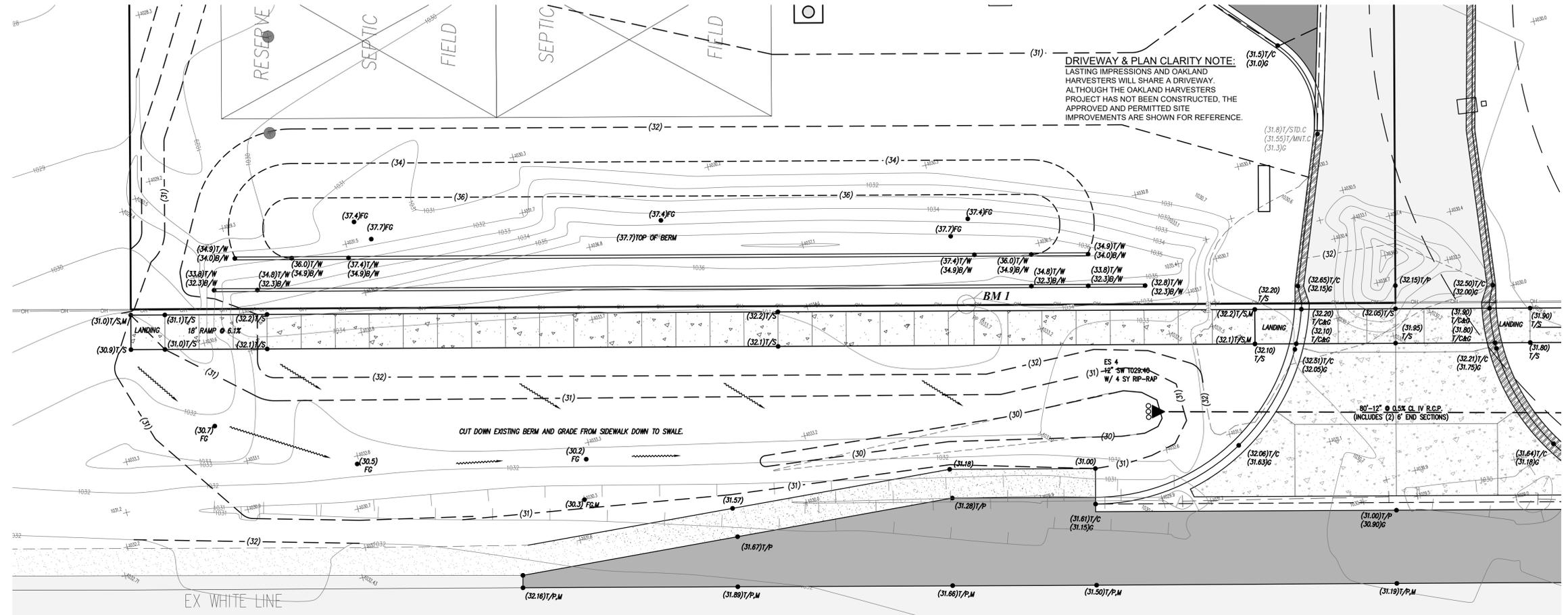
SHEET NAME:

DETAILS - BUFFER & SPECIFICATIONS

PROJECT NUMBER: 24004

SHEET NUMBER: L5.01

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ENLARGED LANDSCAPE BUFFER GRADING PLAN
SCALE: 1" = 10'

LANDSCAPE NOTES & SPECIFICATIONS:

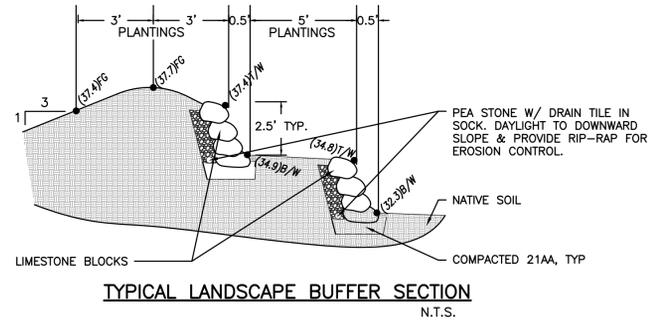
- IMPLEMENT THESE NOTES IN CONJUNCTION WITH THE GENERAL NOTES, & LEGENDS IN THE SITE ENGINEERING PLANS - SEE SHEET C0.01.
- THE CONTRACTOR SHALL VISIT SITE, INSPECT EXISTING CONDITIONS & REVIEW PROPOSED PLANTING AND RELATED WORK. IN CASE OF DISCREPANCY BETWEEN PLAN & PLANT LIST, THE PLAN SHALL GOVERN QUANTITIES. CONTACT THE ENGINEER W/ ANY CONCERNS.
- THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL ON-SITE UTILITIES PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE OR INTERRUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- THE CONTRACTOR SHALL COORDINATE ALL RELATED ACTIVITIES WITH OTHER TRADES, & SHALL REPORT ANY UNACCEPTABLE SITE CONDITIONS TO THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT.
- PLANTS SHALL BE FULL, WELL-BRANCHED, & IN HEALTHY VIGOROUS GROWING CONDITION.
- PLANTS SHALL BE WATERED BEFORE & AFTER PLANTING IS COMPLETE.
- ALL TREES MUST BE STAKED, FERTILIZED & MULCHED & SHALL BE GUARANTEED TO EXHIBIT A NORMAL GROWTH CYCLE FOR AT LEAST ONE (1) YEAR FOLLOWING PLANTING.
- ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED IN THE MOST RECENT EDITION OF THE "AMERICAN STANDARDS FOR NURSERY STOCK".
- CONTRACTOR WILL SUPPLY FINISHED GRADE & EXCAVATE AS NECESSARY TO SUPPLY PLANT MIX DEPTH IN ALL PLANTING BEDS AS INDICATED IN PLANT DETAILS & A DEPTH OF 4" IN ALL LAWN AREAS.
- PROVIDE CLEAN BACKFILL SOIL, USING MATERIAL STOCKPILED ON-SITE. SOIL SHALL BE SCREENED & FREE OF DEBRIS, FOREIGN MATERIAL, & STONE.
- SLOW-RELEASE FERTILIZER SHALL BE ADDED TO THE PLANT PITS BEFORE BEING BACKFILLED. APPLICATION SHALL BE AT THE MANUFACTURERS RECOMMENDED RATES.
- PROVIDE 4 INCHES OF PREPARED TOPSOIL (REUSE EXISTING WHEN POSSIBLE), SEED, FERTILIZE, & STRAW MULCH /W NETTING AT DISTURBED LAWN AREAS, EXCEPT AS NOTED OTHERWISE. SECURE MULCH NETTING BY USING AN APPROPRIATE PINNING PATTERN PER MANUFACTURERS SPECIFICATIONS. PROVIDE IRRIGATION & MAINTENANCE (MOWING, TRIMMING, ETC.) UNTIL 80% OF LAWN IS ESTABLISHED AS DETERMINED BY THE ENGINEER OR OWNER. SEE LANDSCAPING PLANS & SPECIFICATIONS IF AVAILABLE.
- PREPARED TOPSOIL SHALL CONSIST OF 1/3 SCREENED TOPSOIL, 1/3 SAND, & 1/3 "DAIRY DOO" COMPOST, MIXED WELL & SPREAD TO A DEPTH AS INDICATED IN PLANTING DETAILS.

- LAWN IN THE HIGHLAND ROAD FRONT YARD SHALL BE SOD. ALL OTHER LAWN SHALL BE HYDROSEED.
- LAWN SEED MIXTURE SHALL BE COMPRISED OF THE FOLLOWING VARIETIES, MIXED TO THE SPECIFIED PROPORTIONS BY WEIGHT AND TESTED TO MINIMUM PERCENTAGES OF PURITY AND GERMINATION.

IRRIGATED SEED MIXTURE

SEED TYPE	PROPORTION	PURITY	GERMINATION
KENTUCKY BLUEGRASS	50%	90%	75%
PENN LAWN FESCUE	30%	95%	80%
ANNUAL RYEGRASS	20%	95%	80%

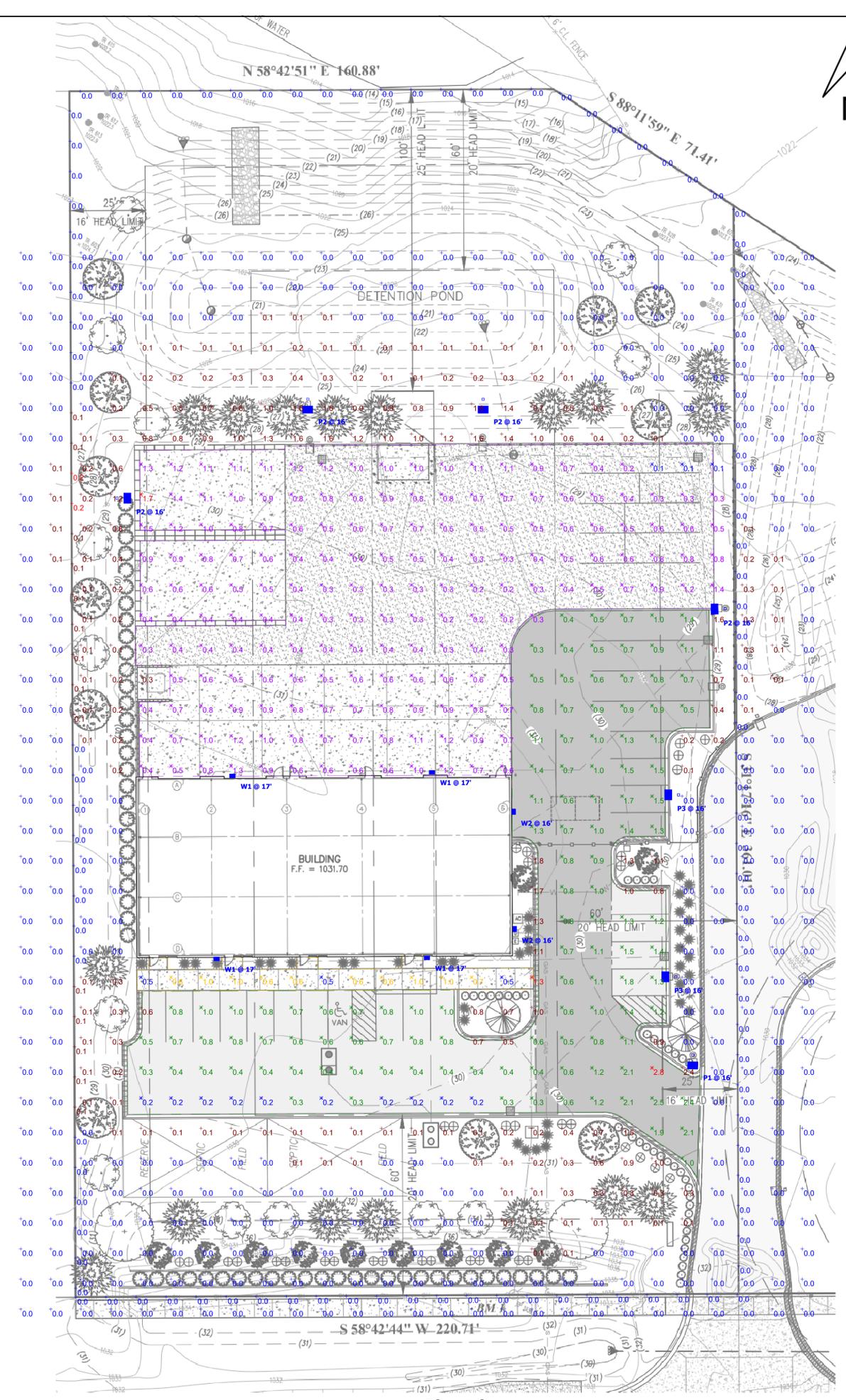
- ALL PLANTINGS SHALL BE MULCHED WITH DOUBLE SHREDDED HARDWOOD BARK, SPREAD TO A DEPTH OF 3" FOR TREES & SHRUBS, & 2" ON ANNUALS, PERENNIALS, & GROUNDCOVER PLANTINGS. MULCH SHALL BE DOUBLE SHREDDED QUALITY, FREE FROM DEBRIS & FOREIGN MATERIAL, & PIECES OF INCONSISTENT SIZE.
- NO SUBSTITUTIONS OR CHANGES OF LOCATION, OR PLANT TYPE SHALL BE MADE WITHOUT THE APPROVAL OF THE ENGINEER OR OWNER'S REPRESENTATIVE.
- THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN THE PLANS & FIELD CONDITIONS PRIOR TO INSTALLATION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL PLANT MATERIAL IN A VERTICAL CONDITION THROUGHOUT THE GUARANTEED PERIOD.
- TREES: TREES NOT INDICATED TO BE REMOVED OR TRANSPLANTED SHALL BE FENCED OFF WITH 4' HIGH ORANGE CONSTRUCTION FENCE 10' FROM THE DRIP LINE OF THE TREE. TREES INDICATED TO BE REMOVED, SHALL BE TRANSPLANTED WHERE SHOWN ON THE PLANS & AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
- GREAT CARE SHALL BE TAKEN BY CONTRACTORS TO AVOID DAMAGE TO VEGETATION OUTSIDE THE LIMITS OF CONSTRUCTION & TO KEEP THE CONSTRUCTION AREAS TO A MINIMUM. DRIVING SHALL NOT BE PERMITTED OUTSIDE THE LIMITS OF CONSTRUCTION.
- AS A CONDITION OF SITE PLAN APPROVAL THE PROPRIETOR AGREES TO REMOVE & REPLACE ALL DISEASED, DAMAGED, OR DEAD MATERIALS FOR A PERIOD OF TWO (2) YEARS IN ACCORDANCE WITH THE WHITE LAKE TOWNSHIP ZONING ORDINANCE.
- TREE STAKES, GUY WIRES, & TREE WRAP SHALL BE REMOVED AFTER 1 YEAR.



TYPICAL LANDSCAPE BUFFER SECTION
N.T.S.

SITE BENCHMARK:
BM 1-MAG NAIL IN EAST FACE OF POWER POLE
EL. = 1034.67 NAVD 88

GENERAL NOTES:
1. SEE SHEET C0.01 FOR GENERAL NOTES & LEGENDS.



Plan View
Scale - 1" = 20ft

Schedule								
Symbol	Label	QTY	Manufacturer	Catalog	Description	Lamp Output	LLF	Input Power
	P1	1	Lithonia Lighting	DSX0 LED P1 40K 80CRI LCCO EGS	D-Series Size 0 Area Luminaire P1 Performance Package 4000K CCT 80 CRI Left Corner Cutoff Extreme Backlight Control External Glare Shield	3199	0.9	33.21
	P2	4	Lithonia Lighting	DSX0 LED P1 40K 80CRI TFTM HS	D-Series Size 0 Area Luminaire P1 Performance Package 4000K CCT 80 CRI Forward Throw Houseside Shield	3768	0.9	33.21
	P3	2	Lithonia Lighting	DSX0 LED P1 40K 80CRI BLC3 EGS	D-Series Size 0 Area Luminaire P1 Performance Package 4000K CCT 80 CRI Type 3 Extreme Backlight Control External Glare Shield	2963	0.9	33.21
	W1	4	Lithonia Lighting	WDGE2 LED P3 40K 80CRI TFTM	WDGE2 LED WITH P3 - PERFORMANCE PACKAGE, 4000K, 80CRI, TYPE FORWARD THROW MEDIUM OPTIC	3166	0.9	32.1375
	W2	2	Lithonia Lighting	WDGE2 LED P1 40K 80CRI T1S	WDGE2 LED WITH P1 - PERFORMANCE PACKAGE, 4000K, 80CRI, TYPE 1 SHORT OPTIC	1215	0.9	11.1658

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Overall/Grade	+	0.4 fc	2.8 fc	0.0 fc	N/A	N/A
Parking & Drive Lanes	X	0.9 fc	2.8 fc	0.2 fc	14.0:1	4.5:1
Property Line	+	0.0 fc	0.2 fc	0.0 fc	N/A	N/A
Rear Lot	X	0.6 fc	1.7 fc	0.1 fc	17.0:1	6.0:1
Sidewalk	X	0.8 fc	1.3 fc	0.5 fc	2.6:1	1.6:1

General Note
 1. SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.
 2. SEE LUMINAIRE SCHEDULE FOR LIGHT LOSS FACTOR.
 3. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: GRADE

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.

UNLESS EXEMPT, PROJECT MUST COMPLY WITH LIGHTING CONTROLS REQUIREMENTS DEFINED IN ASHRAE 90.1 2019. FOR SPECIFIC INFORMATION CONTACT GBA CONTROLS GROUP AT CONTROLS@GASSERBUSH.COM OR 734-266-6705.

Alternates Note
 THE USE OF FIXTURE ALTERNATES MUST BE RESUBMITTED TO THE CITY FOR APPROVAL.

Ordering Note
 FOR INQUIRIES CONTACT GASSER BUSH AT QUOTES@GASSERBUSH.COM OR 734-266-6705.

Drawing Note
 THIS DRAWING WAS GENERATED FROM AN ELECTRONIC IMAGE FOR ESTIMATION PURPOSE ONLY. LAYOUT TO BE VERIFIED IN FIELD BY OTHERS.

Mounting Height Note
 MOUNTING HEIGHT IS MEASURED FROM GRADE TO FACE OF FIXTURE. POLE HEIGHT SHOULD BE CALCULATED AS THE MOUNTING HEIGHT LESS BASE HEIGHT.

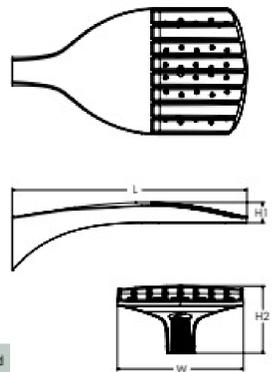


D-Series Size 0 LED Area Luminaire



Specifications

- EPA: 0.44 ft² (0.04 m²)
- Length: 26.18" (66.5 cm)
- Width: 14.06" (35.7 cm)
- Height H1: 2.26" (5.7 cm)
- Height H2: 7.46" (18.9 cm)
- Weight: 23 lbs (10.4 kg)



Catalog Number _____

Notes _____

Type _____

Introduction

The modern styling of the D-Series features a highly refined aesthetic that blends seamlessly with its environment. The D-Series offers the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. D-Series outstanding photometry aids in reducing the number of poles required in area lighting applications, with typical energy savings of 70% and expected service life of over 100,000 hours.

design select

Items marked by a shaded background qualify for the Design Select program and ship in 15 days or less. To learn more about Design Select, visit www.acuitybrands.com/designselect. *See ordering tree for details.

Design Select options indicated by this color background.

Ordering Information

EXAMPLE: DSX0 LED P6 40K 70CRI T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

Series	LEDs	Color temperature ¹	Color Rendering Index ²	Distribution	Voltage	Mounting			
DSX0 LED	Forward optics		(this section 70CRI only)		MVOLT (120V-277V) ⁴ HVOLT (347V-480V) ¹⁵ XVOLT (277V-480V) ¹⁵ 120 ^{16,24} 208 ^{16,24} 240 ^{16,24} 277 ^{16,24} 347 ^{16,24} 480 ^{16,24}	Shipped included SPA Square pole mounting (#8 drilling, 3.5" min. SQ pole) RPA Round pole mounting (#8 drilling, 3" min. RND pole) SPAS Square pole mounting (#5 drilling, 3" min. SQ pole) ¹ RPAS Round pole mounting (#5 drilling, 3" min. RND pole) ¹ SPARN Square narrow pole mounting (#8 drilling, 3" min. SQ pole) WBA Wall bracket ¹⁰ MA Mast arm adapter (mounts on 2 3/8" OD horizontal tenon)			
	P1	P5	30K	3000K			70CRI	AFR Automotive front row	TSM Type V medium
	P2	P6	40K	4000K			70CRI	T15 Type I short	TSLG Type V low glare
	P3	P7	50K	5000K			70CRI	T2M Type II medium	TSW Type V wide
	Rotated optics		27K	2700K			80CRI	T3M Type III medium	BLC3 Type II backlight control ¹
	P10 ¹	P12 ¹	30K	3000K			80CRI	T3LG Type III low glare ¹	BLC4 Type IV backlight control ¹
	P11 ¹	P13 ¹	35K	3500K			80CRI	T4M Type IV medium	LCCO Left corner cutoff ¹
			40K	4000K			80CRI	T4LG Type IV low glare ¹	RCCO Right corner cutoff ¹
			50K	5000K			80CRI	TFTM Forward throw medium	

Control options	Other options	Finish (required)
Shipped installed NLTAIR2 PIRHN nLight AIR gen 2 enabled with bi-level motion / ambient sensor, 8-40" mounting height, ambient sensor enabled at 2K. ^{11, 12, 13, 14} PIR High/low, motion/ambient sensor, 8-40" mounting height, ambient sensor enabled at 2K. ^{11, 12, 13, 14} PER NEMA twist-lock receptacle only (controls ordered separately) ¹⁴ PERS Five-pin receptacle only (controls ordered separately) ^{14, 15}	PER7 Seven-pin receptacle only (controls ordered separately) ^{14, 15} FAO Field adjustable output. ^{15, 19} BL30 Bi-level switched dimming, 30% ^{16, 19} BL50 Bi-level switched dimming, 50% ^{16, 19} DMG 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately) ¹⁷	Shipped installed H5 Houseside shield (black finish standard) ²⁰ L90 Left rotated optics ¹ R90 Right rotated optics ¹ CCE Coastal Construction ²¹ HA 50°C ambient operation ²² BAA Buy America(n) Act and/or Build America Buy America Qualified SF Single fuse (120, 277, 347V) ²⁴ DF Double fuse (208, 240, 480V) ²⁴ Shipped separately EGSR External Glare Shield (reversible, field install required, matches housing finish) BSDB Bird Spikes (field install required)
		DDBXD Dark Bronze DBLXD Black DNAXD Natural Aluminum DWHXD White DOBTD Textured dark bronze DBLBD Textured black DNATD Textured natural aluminum DWHGD Textured white

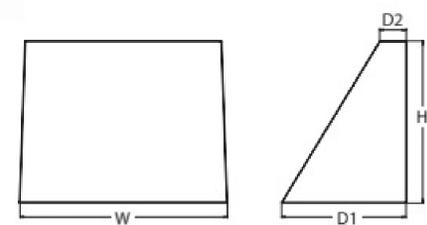


WDGE2 LED Architectural Wall Sconce Precision Refractive Optic



Specifications

- Depth (D1): 7"
- Depth (D2): 1.5"
- Height: 9"
- Width: 11.5"
- Weight: 13.5 lbs (without options)



Catalog Number _____

Notes _____

Type _____

Introduction

The WDGE LED family is designed to meet specifier's every wall-mounted lighting need in a widely accepted shape that blends with any architecture. The clean rectilinear design comes in four sizes with lumen packages ranging from 1,200 to 25,000 lumens, providing a true site-wide solution. Embedded with nLight® AIR wireless controls, the WDGE family provides additional energy savings and code compliance.

WDGE2 with industry leading precision refractive optics provides great uniform distribution and optical control. When combined with multiple integrated emergency battery backup options, including an 18W cold temperature option, the WDGE2 becomes the ideal wall-mounted lighting solution for pedestrian scale applications in any environment.

design select

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WDGE LED Family Overview

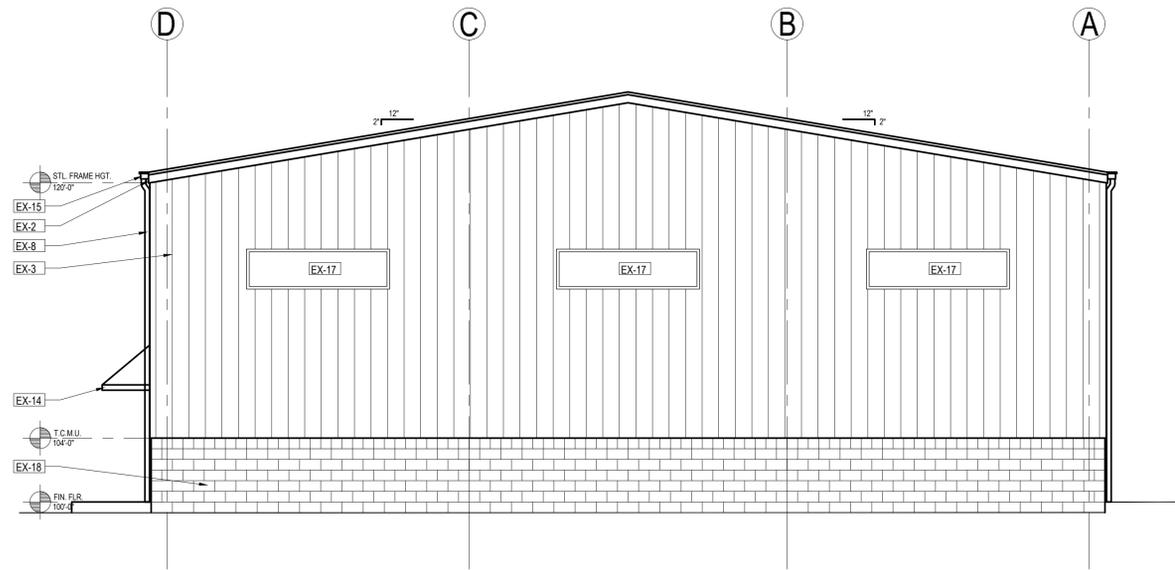
Luminaire	Optics	Standard EM, 0°C	Cold EM, -20°C	Sensor	Approximate Lumens (4000K, 80CRI)						
					P0	P1	P2	P3	P4	P5	P6
WDGE1 LED	Visual Comfort	4W		—	750	1,200	2,000	—	—	—	—
WDGE2 LED	Visual Comfort	10W	18W	Standalone / nLight	—	1,200	2,000	3,000	4,500	6,000	—
WDGE2 LED	Precision Refractive	10W	18W	Standalone / nLight	700	1,200	2,000	3,200	4,200	—	—
WDGE3 LED	Precision Refractive	15W	18W	Standalone / nLight	—	7,500	8,500	10,000	12,000	—	—
WDGE4 LED	Precision Refractive			Standalone / nLight	—	12,000	16,000	18,000	20,000	22,000	25,000

Ordering Information

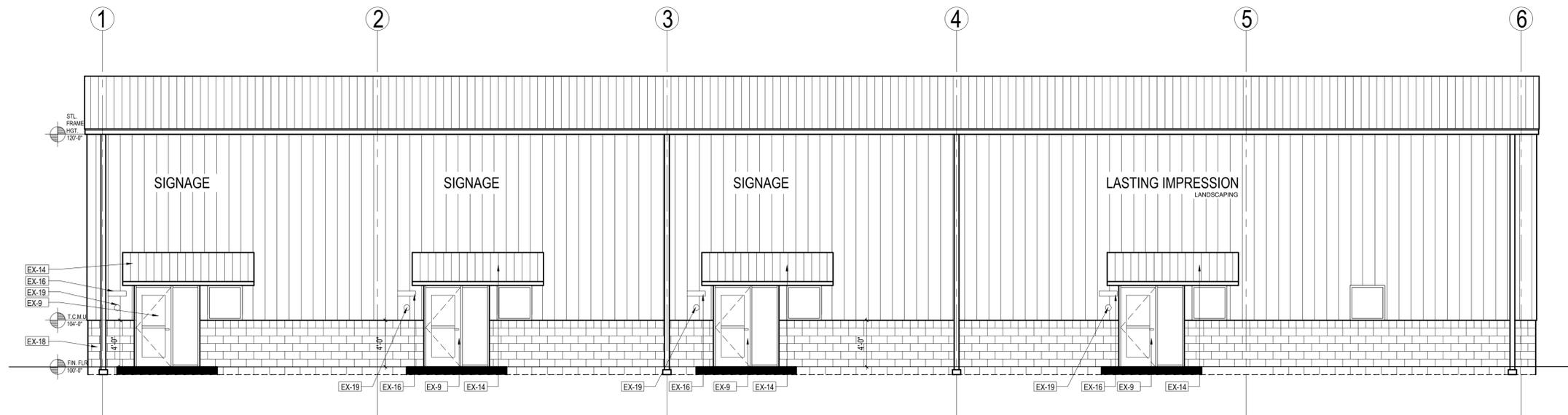
EXAMPLE: WDGE2 LED P3 40K 80CRI T3M MVOLT SRM DDBXD

Series	Package	Color Temperature	CRI	Distribution	Voltage	Mounting
WDGE2 LED	P0 ¹	27K 2700K	40K 4000K	70CRI ²	MVOLT 347 ³ 480 ³	Shipped included SRM Surface mounting bracket ICW Indirect Canopy/Ceiling Washer bracket (dry/damp locations only) ⁶
	P1 ²	30K 3000K	50K 5000K	80CRI		
	P2 ²	35K 3500K	AMB ³ Amber	LW ² Limited Wavelength		
	P3 ²					
	P4 ²					Shipped separately AWS 3/8inch Architectural wall spacer ⁷ PBBW Surface-mounted back box (top, left, right conduit entry). Use when there is no junction box available! ⁸

Options	Finish
E10WH Emergency battery backup, Certified in CA Title 20 MAEDBS (10W, 5°C min) E20WC Emergency battery backup, Certified in CA Title 20 MAEDBS (18W, -20°C min) PE Photocell, Button Type ⁹ DMG 0-10V dimming wires pulled outside fixture (for use with an external control, ordered separately) ¹⁷ BCE Bottom conduit entry for back box (PBBW). Total of 4 entry points. CCE Coastal Construction ⁷	Standalone Sensors/Controls PIR Bi-level (100/35%) motion sensor for 8-15" mounting heights. Intended for use on switched circuits with external dusk to dawn switching. PIRH Bi-level (100/35%) motion sensor for 15-30" mounting heights. Intended for use on switched circuits with external dusk to dawn switching. PIR1FC3V Bi-level (100/35%) motion sensor for 8-15" mounting heights with photocell pre-programmed for dusk to dawn operation. PIR1FC3V Bi-level (100/35%) motion sensor for 15-30" mounting heights with photocell pre-programmed for dusk to dawn operation. Networked Sensors/Controls NLTAIR2 PIR Embedded wireless controls by nLight with Passive Infrared Occ sensor and on/off photocell for 8-15" mounting heights. NLTAIR2 PIRH Embedded wireless controls by nLight with Passive Infrared Occ sensor and on/off photocell for 15-30" mounting heights. NLTAIREM2 PIR Embedded wireless controls by nLight with UL924 listed emergency operation, Passive Infrared Occ sensor and on/off photocell for 8-15" mounting heights. NLTAIREM2 PIRH Embedded wireless controls by nLight with UL924 listed emergency operation, Passive Infrared Occ sensor and on/off photocell for 15-30" mounting heights. See page 4 for out of box functionality
	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DSSXD Sandstone DOBTD Textured dark bronze DBLBD Textured black DNATD Textured natural aluminum DWHGD Textured white DSSXTD Textured sandstone



1 EAST ELEVATION
A3.0 SCALE: 3/16" = 1'-0"



2 SOUTH ELEVATION
A3.0 SCALE: 3/16" = 1'-0"

KEYNOTES:

EX-1	PRE-FINISHED CORRUGATED METAL ROOF
EX-2	PRE ENGINEER METAL FASCIA
EX-3	PRE ENGINEERED METAL WALL PANEL
EX-4	ALUMINUM INSULATED SLIDING WINDOWS
EX-5	GROUND FACE SINGLE SCORE 8" C.M.U.
EX-6	SPLIT FACE 8" C.M.U.
EX-7	14 FEET X 16 FEET OVERHEAD DOOR
EX-8	6" ALUM. DOWNSPOUTS TO DISCHARGE ON CONC. SPLASH BLOCKS ABOVE GRADE
EX-9	ALUM. FRAME ENTRY DOOR
EX-10	REMOTE EMERGENCY EXIT LIGHT
EX-11	12" ROUND CONCRETE BOLLARD FILLED W/ CONC. 48" ABOVE GRADE & 42" BELOW GRADE
EX-12	RIGID STEEL FRAME
EX-13	INSULATED STEEL MAN DOOR
EX-14	CANVAS AWNING ON ALUM. FRAME
EX-15	6" COMMERCIAL ALUM. GUTTER
EX-16	6" TALL ADDRESS NUMBERS VISIBLE FROM THE STREET SHALL E REOD ADDRESS LOCATION IS SUBJECT TO FIRE MARSHAL APPROVAL
EX-17	TRANSOM WINDOWS
EX-18	SMOOTH FACE C.M.U.
EX-19	COACH LIGHT
EX-20	WALL PACK

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PROJECT
PARCEL #12-127-002, UNIT #2,
WHITE LAKE TOWNSHIP
OWNER
NICK HOPSON,
248-930-2828

ISSUED FOR	DATE
S.P.A.	04-19-2024
FLOOR PLAN	10-24-2025
OWNER REVIEW	12-23-2025

NOTES:
1.

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DESIGN PROFESSIONAL IN CHARGE:

SHEET NAME:

ELEVATIONS

DATE :	12-23-2025
DRAWN BY :	JZ HE
CHECKED BY :	AM
JOB NO :	23-207

SHEET:

A3.0

SCALE: 3/16" = 1'-0"

NOT FOR CONSTRUCTION

