RE-DEVELOPMENT BIXBY HOSPITAL

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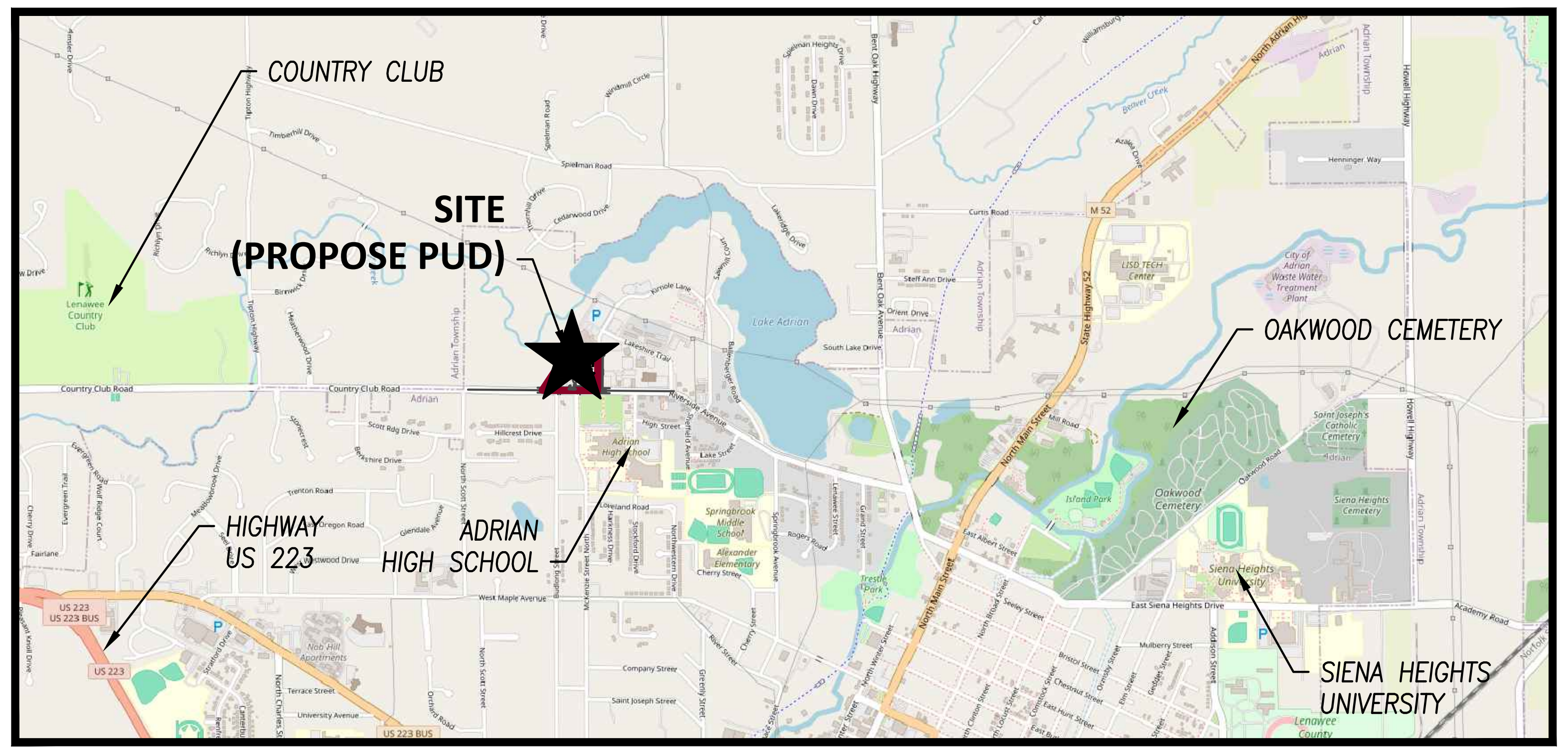


VICINITY MAP

SCALE 1"=2000'

N

SITE ADDRESS

818 RIVERSIDE AVENUE
ADRIAN, MICHIGAN 49221
CITY OF ADRIAN, LENAWEE COUNTY

ZONING: PUD (PLANNED UNIT DEVELOPMENT)

FLOOD ZONE: X (26091C0191D)

PROJECT DESCRIPTION:

THE DEVELOPMENT AND DESIGN OF A 7.45 ACRE PLANNED UNIT DEVELOPMENT. LAYOUT OF ROADS, SANITARY, STORM, WATER, AND GRADING WILL BE COMPLETED IN CONJUNCTION WITH THIS PROJECT.

NOTE

THE PLANNED UNIT DEVELOPMENT WILL BE PRIVATELY OWNED WITH AN HOA UPON COMPLETION OF THE PROJECT.

OWNER

BIXBY MEDICAL OFFICE
LIMITED PARTNERSHIP
818 RIVERSIDE AVENUE
ADRIAN, MI 49221–1446
PHONE: (517) 265–0900

SURVEYOR/CIVIL ENGINEER

DGL CONSULTING ENGINEERS, LLC
3455 BRIARFIELD BLVD. SUITE E
MAUMEE, OHIO 43537
PHONE: (419) 535–1015

LINETYPE LEGEND

EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION
— — 650 — —	—— (650) ——	INDEX CONTOURS	—— FO — — ——	—— FO ——	FIBER OPTIC
— — 649 — —	—— (649) ——	INTERMEDIATE CONTOURS	— — G — — —	—— G ——	GAS
— C — — — —	— C — C — C —	CABLE	—— — T — ——	—— T ——	TELEPHONE
— — — E — — —	—— E ——	ELECTRIC	—— — S — ——	—— S ——	SANITARY
—— OHE — — — ——	—— OHE ——	OVERHEAD ELECTRIC	—— FM — — ——	—— FM ——	FORCE MAIN
—— OHC — — ——	—— OHC ——	OVERHEAD CABLE	— SL - - - SL - - —	— SL —— SL —	SANITARY LATERAL
—— OHE — — — ——	—— OHT ——	OVERHEAD TELEPHONE	—— W — — — —	—— W ——	WATER
— OHU —— —— ——	—— OHU ——	OVERHEAD UTILITIES	WS — — — WS — — —	— WS —— WS —	WATER SERVICE

SYMBOL LEGEND

EXISTING	PROPOSED	DESCRIPTION
	⊕	BENCHMARK (PROPOSED BM–1, OCE)
●		SURVEY CONTROL POINT
	•	⅝" IRON PIN
	✕	PERIMETER MONUMENTATION (CM–1, OCE)
	○	EXISTING MONUMENT FOUND
M	M	MONUMENT BOX (PROPOSED MB–1, OCE)
○ D.H.F.	● D.H.S.	DRILL HOLE
⌀	●	MONUMENT SPIKE
⊡	⊡	TACKED HUB
CB ▨	■ ■ ■	CATCH BASIN
▨	▬	CURB INLET
◎ ◎	◉	STORM MANHOLE
SA SA	SA S	SANITARY MANHOLE
CO	CO	CLEANOUT
E	E	ELECTRIC RISER/PULL BOX
E	E	ELECTRIC METER
E	E	ELECTRIC MANHOLE
⌇⌇	⌇⌇	ELECTRIC TRANSFORMER
G	G	GAS METER
⊣G		GAS MARKER
G	G	GAS VALVE
P	P	POWER POLE
L	L	LIGHT POLE
P L	P L	POWER/LIGHT POLE
T	T	TELEPHONE POLE
ᑕ	ᑕ—	GUY WIRE
T	T	TELEPHONE PEDESTAL
⊹	⊹	FIRE HYDRANT
W	W	WATER GATE VALVE
W	W	WATER METER
W	W	WATER MANHOLE
✲		STUMP
✺ ✿	✹ ✿	SHRUB
✿	✿	TREE–DECIDUOUS
✺	✹	TREE–EVERGREEN
AC		AIR CONDITIONER
MB	MB	MAIL BOX
⬡	⬢	POST
✶		SATELLITE DISH
I	I	SPRINKLER HEAD
⊤	╥ ╥	SIGN
☼	☼	SIGNAL

ABBREVIATION LEGEND

SYMBOL	DESCRIPTION
BLDG	BUILDING
BL	BUILDING LINE
BM	BENCHMARK
CB	CATCH BASIN
CO	CLEANOUT
CONC	CONCRETE
CP	CONTROL POINT
CPP	CORRUGATED POLYETHYLENE PIPE
DE	PERMANENT DRAINAGE EASEMENT
E	EAST, EASTING
ELEV	ELEVATION
EX	EXISTING
FF	FINISHED FLOOR
FO	FIBER OPTIC
FM	FORCE MAIN
FND	FOUNDATION
FT	FOOT, FEET
HW	HEADWALL
IMP	IMPERVIOUS
IPINS	IRON PIN SET
INV	INVERT
LL	LOWER LEVEL
LWUS	LOWER WATER UNDER STORM
MH	MANHOLE
MOD	MODIFIED
MON	MONUMENT
N	NORTH, NORTHING
NE	NORTHEAST
NW	NORTHWEST
OC	ON CENTER
OFF	OFFSET
RCP	ROCK CHANNEL PROTECTION
RCP	REINFORCED CONCRETE PIPE
R/W	RIGHT OF WAY
S	SOUTH
SAN	SANITARY
SE	SOUTHEAST
SS	SUMP SERVICE
STA	STATION
STM	STORM
SW	SOUTHWEST
TBR	TO BE REMOVED
TBSC	TO BE SET IN CONCRETE
TC	TOP OF CURB
T/GR	TOP OF GRATE
T/RIM	TOP OF RIM
TYP	TYPICAL
UD	UNDERDRAIN
UE	UTILITY EASEMENT
VIT	VITREOUS
W	WEST
WM	WATER MAIN
WS	WATER SERVICE

PROJECT CONTROL

MONUMENT TYPE: DGL CONTROL POINTS

VERTICAL POSITIONING

ORTHROMETRIC HEIGHT DATUM: NAVD 88

GEOID: 18

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD83

ELLIPSOID: GRS 80

MAP PROJECTION: LAMBERT CONFORMAL CONIC

COORDINATE SYSTEM: MICHIGAN STATE PLANE (SOUTH ZONE 3401)

COMBINED SCALE FACTOR: 1.000000000

ORIGIN OF COORDINATE SYSTEM: NAD83 MICHIGAN STATE PLANE,
SOUTH ZONE, INTERNATIONAL FOOT
NORTHING = 0.000
EASTING = 131233333.333
UNITS ARE IN U.S. SURVEY FEET.

SCALE OF PLAN SET

SCALE: HORIZONTAL

0 30 60

SCALE: 1" = 30'

PAVEMENT

1. 24' BACK TO BACK OF CURB
   20'PAVEMENT

SANITARY

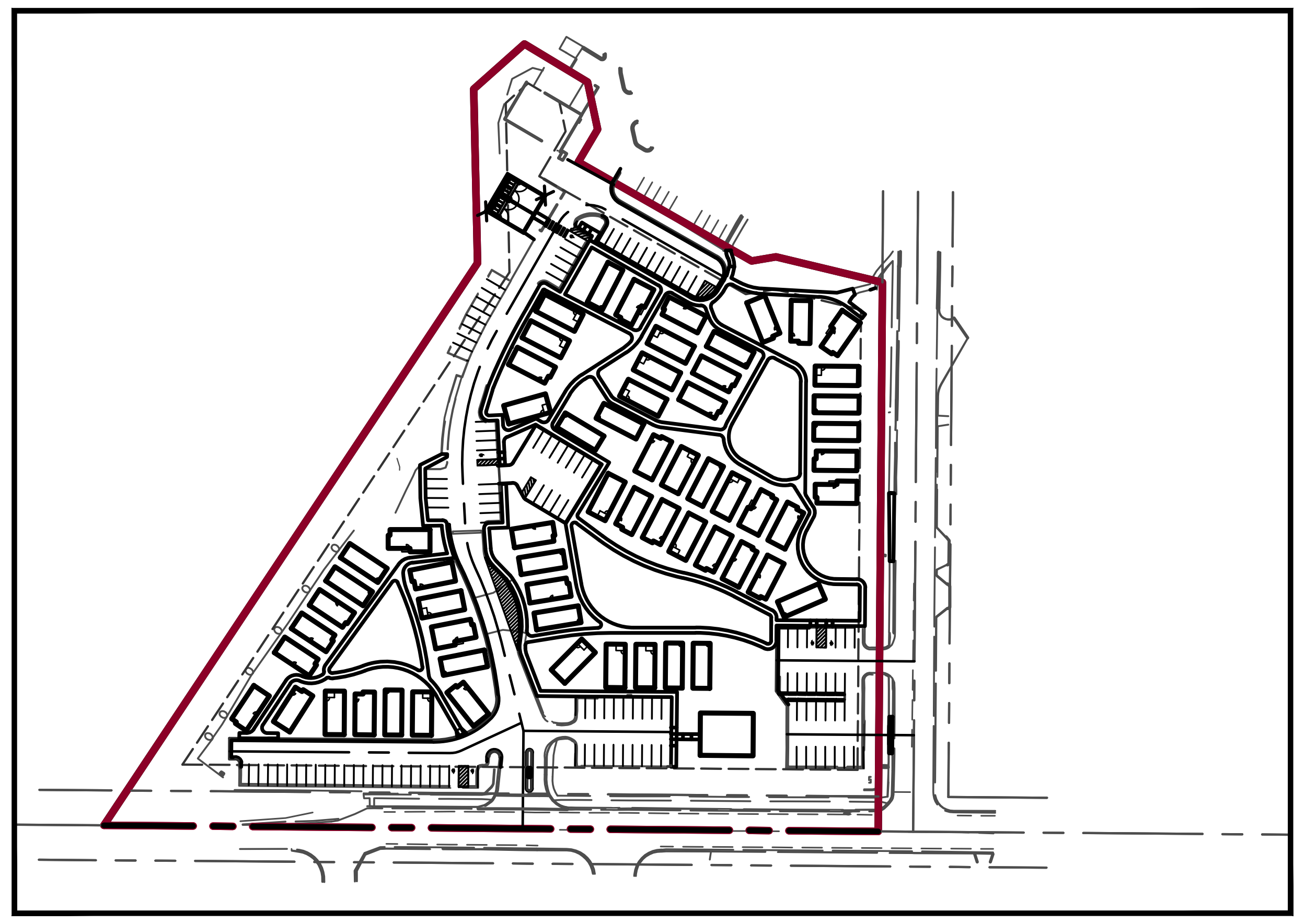
1. 8" SDR 35 MAIN
2. MDOT TYPE 1 MANHOLES

WATER

1. 8" C909 PVC MAIN

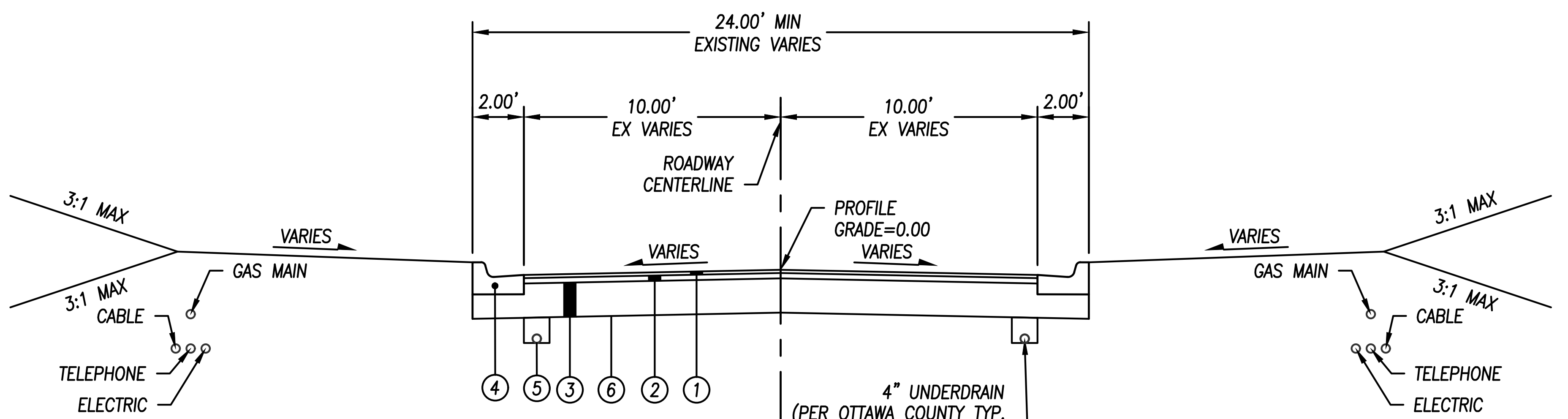
STORM

1. CATCH BASINS AND PIPE NETWORK
2. STORM DESIGN TO MEET CITY REQUIREMENTS



SCHEMATIC PLAN

SCALE 1"=150'



① 1½" HMA, 36A
② 2.5" HMA, 13A
③ 16" AGGREGATE BASE, 22A (BY OTHERS)
④ MDOT "C4" CURB
⑤ 4" UNDERDRAIN (LOCATIONS SHOWN ON PLAN–NEW PAVEMENT ONLY)
⑥ SUBGRADE COMPACTION

NOTE:
1. THE STREET AND STORM SEWER IMPROVEMENTS COVERED BY THESE PLANS SHALL BE IN ACCORDANCE WITH THE M.D.O.T. 2020 STANDARD SPECIFICATIONS FOR THE HIGHWAY CONSTRUCTION.
2. GAS, CABLE, TELEPHONE, AND ELECTRIC TO BE RUN IN SAME TRENCH AND DETERMINED IN FIELD. MINIMUM 3 FOOT COVER.

EXISTING TYPICAL SECTION (DRIVES TO REMAIN)

SCALE: 1" = 5'

811
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MUST BE CALLED DIRECTLY

APPROVED

NAME CITY ENGINEER ________ DATE ________
NAME OF CITY CITY ENGINEER

NAME SAFETY DIRECTOR ________ DATE ________
NAME OF CITY SAFETY SERVICE DIRECTOR

KYLE W.
LAYTON
ENGINEER
No.
6201313424
February 21, 2025

NO	REVISION	DATE
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DGL CONSULTING ENGINEERS
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RE-DEVELOPMENT BIXBY HOSPITAL

818 RIVERSIDE AVENUE
ADRIAN, MICHIGAN 49221
CITY OF ADRIAN, LENAWEE COUNTY
PART OF SECTION 27, TOWN 6 SOUTH, RANGE 3 EAST

TITLE SHEET

FILE:	24191 CD.dwg
JOB NO.:	24191
DRAWN BY:	LMM
ISSUED:	JAN 30, 2025

C1

PLOTTED: Feb 21, 2025 – 7:48am
DRAWING: M:\24191 (Windev – Bixby Hospital Development)\CIVIL\Dwg\24191 CD.dwg: C01 TITLE BIXBY

LEGAL DESCRIPTION:
PROVIDED BY MANNIK SMITH GROUP DATED DECEMBER 27,2023
PART OF THE SOUTHEAST ¼ OF SECTION 27, TOWN 6 SOUTH, RANGE 3 EAST, CITY OF ADRIAN, LENAWEE COUNTY MICHIGAN
"BIXBY HOSPITAL PARCEL"

PLANNED UNIT DEVELOPMENT (PUD)	
EXISTING USE	EXISTING COMMERCIAL MEDICAL CENTER
UNITS	63 TOTAL
PROPERTY LAND	7.45 ACRES
OPEN SPACE (20% REQUIRED) = 1.49 ACRES	1.51 ACRES OPEN SPACE PROVIDED
DENSITY	±8.45 D.U./AC
EXISTING PERVIOUS	2.20 ACRES (30%)
EXISTING IMPERVIOUS	5.25 ACRES (70%)
PROPOSED IMPERVIOUS	3.46 ACRES (46%)
PROPOSED PERVIOUS/GREEN SPACE	3.99 ACRES (54%)
FRONT YARD SETBACK (RIVERSIDE)	25 FT
SIDE YARD SETBACK	20 FT
REAR YARD SETBACK	30 FT
FRONT YARD SETBACK (KIMOLE)	20 FT (REQUESTED VARIANCE)

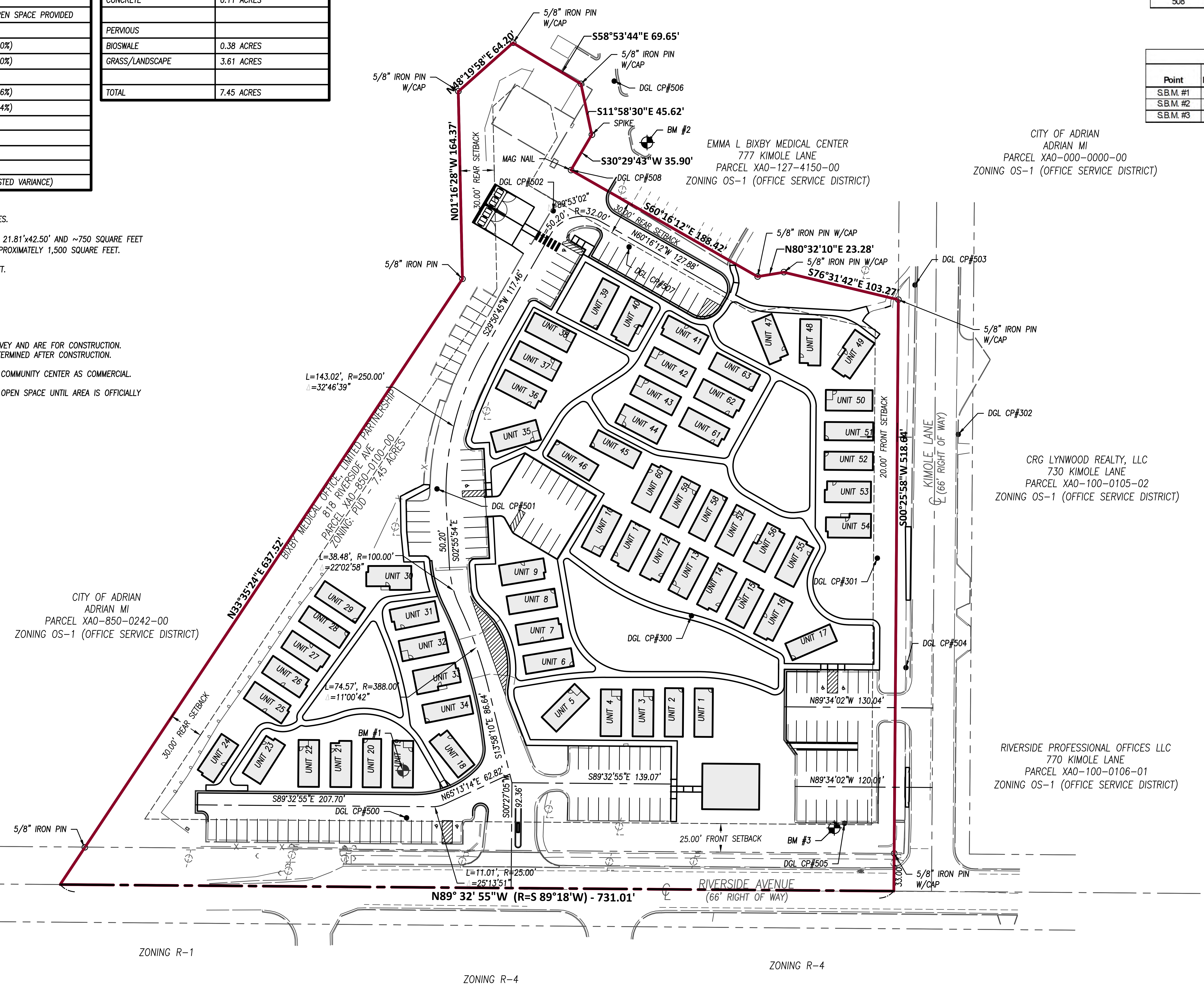
SITE AREA BREAKDOWN	
IMPERVIOUS	
ROOF	1.12 ACRES
SIDEWALK	0.61 ACRES
PAVEMENT	1.62 ACRES
CONCRETE	0.11 ACRES
PERVIOUS	
BIOSWALE	0.38 ACRES
GRASS/LANDSCAPE	3.61 ACRES
TOTAL	7.45 ACRES

NOTES:

1. SEE ARCHITECTURAL DRAWINGS FOR INDIVIDUAL BUILDING SIZES.
2. BUILDINGS VARY RANGING FROM THE LARGEST DIMENSION OF 21.81'x42.50' AND ~750 SQUARE FEET ON A SINGLE LEVEL. ALL BUILDINGS ARE 2 (TWO) STORY APPROXIMATELY 1,500 SQUARE FEET.
3. MINIMUM DISTANCE BETWEEN BUILDINGS SHALL BE 10.00 FEET.
4. ALL BUILDING HEIGHTS LESS THAN 35.00 FEET.
5. SEE LANDSCAPE PLANS FOR PLANTINGS AND SCREENING.
6. SEE LIGHTING PLANS FOR REFERENCE.
7. EXISTING BENCHMARKS SHOWN ARE FROM THE ORIGINAL SURVEY AND ARE FOR CONSTRUCTION. PERMANENT BENCHMARK PRECISE LOCATIONS ARE TO BE DETERMINED AFTER CONSTRUCTION.
8. LAND WITHIN DEVELOPMENT PROPOSED AS RESIDENTIAL WITH COMMUNITY CENTER AS COMMERCIAL.
9. DEVELOPER IS RESPONSIBLE FOR MAINTENANCE OF COMMON OPEN SPACE UNTIL AREA IS OFFICIALLY ACCEPTED INTO HOA.

HORIZONTIAL CONTROL POINTS			
Point	Northing	Easting	Description
301	150861.86	13209976.07	MAG NAIL SET
302	150970.42	13210047.03	MAG NAIL SET
500	150634.12	13209563.23	MAG NAIL SET
501	150922.59	13209589.93	MAG NAIL SET
502	151166.42	13209691.93	MAG NAIL SET
503	151101.37	13210009.08	MAG NAIL SET
504	150765.83	13210001.15	MAG NAIL SET
505	150629.39	13209947.31	MAG NAIL SET
506	151280.19	13209745.32	MAG NAIL SET
507	151134.80	13209758.37	MAG NAIL SET
508	151202.15	13209707.48	MAG NAIL SET

VERTICAL CONTROL POINTS		
Point	Elevation	Description
S.B.M. #1	826.85	CUT "+" ON EAST SIDE OF LIGHT POLE BASE
S.B.M. #2	809.03	MAG NAIL SOUTH SIDE OF LIGHT POLE BASE
S.B.M. #3	819.31	MAG NAIL NORTH SIDE OF LIGHT POLE BASE



N

0 50 100
SCALE: 1" = 50'

KYLE W. LAYTON
No. 6201813474
February 21, 2025

NO	REVISION	DATE
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DGL CONSULTING ENGINEERS
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RE-DEVELOPMENT BIXBY HOSPITAL

818 RIVERSIDE AVENUE
ADRIAN, MICHIGAN 49221
CITY OF ADRIAN, LENAWEE COUNTY
PART OF SECTION 27, TOWN 6 SOUTH, RANGE 3 EAST

SCHEMATIC PLAN

FILE:	24191 CD.dwg
JOB NO.:	24191
DRAWN BY:	LMM
ISSUED:	JAN 30, 2025

C2

PLOTTED: Feb 21, 2025 – 7:48am
DRAWING: M:\24191 (Windev – Bixby Hospital Development)\CIVIL\Dwg\24191 CD.dwg: C02 SCH BIXBY

GENERAL NOTES

EXCEPT AS MODIFIED BY THESE PLANS AND THE DETAIL SPECIFICATIONS PERTAINING THERETO, ALL WORK ON THIS PROJECT SHALL BE GOVERNED AS APPLICABLE BY THE CITY OF ADRIAN AND THE LENAWEE COUNTY CONSTRUCTION STANDARDS AND SPECIFICATIONS AND THE STATE OF MICHIGAN DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2020.

DRAINAGE AND GRADING CHANGES PROHIBITED. CHANGES TO THE SITE GRADING AND STORM DRAINAGE DESIGN ARE PROHIBITED WITHOUT THE APPROVAL OF THE OWNER.

SAFETY REQUIREMENTS

THE CONTRACTOR SHALL AT ALL TIMES FOLLOW ALL FEDERAL, STATE, AND LOCAL SAFETY REQUIREMENTS DURING CONSTRUCTION OF THIS PROJECT. SPECIAL CARE SHALL BE TAKEN DURING ALL TRENCHING OPERATIONS. SHEETING AND BRACING, CRIBBING, ETC., MUST BE INSTALLED AS REQUIRED TO PROVIDE MAXIMUM SAFETY TO THE CONTRACTOR'S WORKERS IN FULL COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)REGULATIONS.

INSURANCE

NO CONTRACTOR OR SUBCONTRACTOR SHALL START ANY WORK UNTIL THE APPROVED CERTIFICATE OF LIABILITY INSURANCE IS FILED WITH THE OWNER.

EXISTING SURVEY POINTS

SURVEY MONUMENTS, BENCH MARKS AND EXISTING CONTROL POINTS DAMAGED OR DISTURBED BY CONSTRUCTION SHALL BE REPLACED BY A REGISTERED LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE. SHOULD THE CONTRACTOR FAIL TO PROPERLY REPLACE THESE POINTS, THE ENGINEER SHALL REPLACE THEM AT THE CONTRACTOR'S EXPENSE AFTER THREE WEEKS NOTICE.

GRADING AND CLEANUP

GRADING AND CLEANUP SHALL FOLLOW CLOSELY BEHIND ANY CONSTRUCTION. THIS WORK SHALL INCLUDE GRADING, TO ACHIEVE POSITIVE DRAINAGE OF WORK LIMITS AND CLEANUP INCLUDING ANY REMOVAL FROM THE SITE OF ANY MATERIALS, SPOIL, ETC. THIS GRADING AND CLEANUP SHALL BE PERFORMED SIMULTANEOUSLY WITH ALL CONSTRUCTION PHASES OF THE PROJECT.

RESTORATION

ALL EXISTING FEATURES THAT ARE DISTURBED DUE TO CONSTRUCTION, SUCH AS SHRUBS, BUSHES, GUARDRAIL, DRIVEWAYS, SWALES, SEWERS, CATCH BASINS, BERMS, SEEDED AREAS, ETC. SHALL BE REPLACED TO THEIR ORIGINAL CONDITION IN ACCORDANCE WITH APPLICABLE MDOT SPECIFICATIONS, AND TO THE SATISFACTION OF THE ENGINEER. RESTORATION SHALL INCLUDE CLEARING OF THE SITE IN ACCORDANCE WITH MDOT DIVISION 2.

SITE AND SUBGRADE PREPARATION

EXCAVATION SHALL INCLUDE STRIPPING OF UNSUITABLE TOPSOIL, FINE GRADING THE SITE, AND PROPER COMPACTION OF PAVEMENT EMBANKMENT/SUBGRADE AREAS. ALL WASTED EXCAVATION SHALL BE PLACED ON THE SITE OR REMOVED FROM THE SITE AS DIRECTED BY THE CONSTRUCTION MANAGER.

WHERE IT IS NECESSARY TO CONSTRUCT PAVEMENT SUBGRADE IN FILL, THE CONTRACTOR SHALL REMOVE THE EXISTING TOPSOIL BENEATH THE PROPOSED SUBGRADE.

SUBGRADE TO BE PREPARED AS CALLED FOR IN MDOT ITEM 301.

ALL NECESSARY TESTS AND OBSERVATIONS TO ASSURE PROPER SUBGRADE PREPARATIONS ARE TO BE DONE.

EROSION CONTROL PLAN

THE SITE EROSION CONTROL SHALL MEET THE REQUIREMENTS STATED IN THE 2020 MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, MDOT ITEM 208 EROSION PROTECTION. TEMPORARY STABILIZATION SHALL OCCUR WHEN CONSTRUCTION ACTIVITY CEASES FOR AT LEAST 14 DAYS WITH TEMPORARY SEEDING AND MULCHING BEING APPLIED NO LATER THAN 7 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY IN THAT AREA. FILTER FABRIC PROTECTION SHALL BE PLACED AROUND EACH CATCH BASIN TO PROTECT AGAINST SILTATION BUILD-UP. THE PLACEMENT OF FILTER FABRIC FENCES AND DITCH CHECKS SHALL BE UTILIZED IN THE SWALES TO PROTECT AGAINST SOIL EROSION UNTIL PERMANENT SOIL EROSION CONTROLS ARE IN PLACE. ALL SOIL EROSION PROTECTION METHODS SHALL REMAIN IN PLACE UNTIL THE SURROUNDING AREAS ARE SEEDED AND HAS DEVELOPED A HEALTHY STAND OF GRASS TO ENSURE SUFFICIENT SOIL EROSION CONTROL.

PARKING LOT STRIPING

PAINTED LINES TO BE 4" WIDE. PAINT SHALL BE "SET-FAST CHLORINATED RUBBER TRAFFIC MARKING PAINT" AS MANUFACTURED BY "SHERWIN-WILLIAMS" OR "APPROVED EQUAL". THE CONTRACTOR SHALL CLEAN ALL VISIBLE LOOSE OR FOREIGN MATERIAL FROM THE SURFACE TO BE MARKED. "WHEEL CHAIR" SYMBOL TO BE DONE WITH STENCIL OF THE SIZE AND SHAPE REQUIRED BY "ADA" AND "APPROVED" BY THE OWNER. PAVEMENT MARKINGS SHALL BE DONE WITH "AIRLESS" SPRAY EQUIPMENT. PAVEMENT MARKINGS SHALL BE FREE OF UNEVEN EDGES, OVERSPRAY OR OTHER READILY VISIBLE DEFECTS WHICH DETRACT FROM THE APPEARANCE OR FUNCTION OF THE PAVEMENT MARKINGS. LINES SHALL BE SHARP, WELL DEFINED AND UNIFORM. FUZZY LINES, EXCESSIVE OVERSPRAY OR NON-UNIFORM APPLICATION ARE UNACCEPTABLE.

BITUMINOUS PAVEMENT

BITUMINOUS PAVEMENT SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS IN ACCORDANCE WITH THE MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE CERTAIN THAT NO DRAINAGE BARRIERS EXIST IN THE FINISHED PRODUCT DUE TO INSUFFICIENT HAND RAKING OR IMPROPER INSTALLATION METHODS, AND WHEREVER SUCH DRAINAGE OBSTRUCTIONS EXIST, THAT IT BE REMEDIED BY THE CONTRACTOR.

CONCRETE

CONCRETE PAVEMENT SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS IN ACCORDANCE WITH THE MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION. FINGER DRAINS SHALL BE INSTALLED AT ALL CATCH BASINS LOCATED WITHIN THE PAVEMENT AREAS TO PROVIDE ADEQUATE SUBBASE DRAINAGE.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE CERTAIN THAT NO DRAINAGE BARRIERS EXIST IN THE FINISHED PRODUCT DUE TO IMPROPER INSTALLATION METHODS, AND WHEREVER SUCH DRAINAGE OBSTRUCTIONS EXIST, THAT IT BE REMEDIED BY THE CONTRACTOR.

THE CONCRETE PAVEMENTS SHALL BE IN ACCORDANCE WITH MDOT ITEM 601. THE CONCRETE SHALL CONSIST OF BLENDED HYDRAULIC CEMENTS, TYPE IS-PORTLAND BLAST-FURNACE SLAG CEMENT CONFORMING TO ASTM C595. THE BLAST-FURNACE SLAG CONTENT SHALL BE A MINIMUM OF 40% BY MASS OF THE BLENDED CEMENT. RECYCLED CRUSHED CONCRETE SHALL BE USED AS THE COURSE AGGREGATE IN THE MIX DESIGN.

SEALANT AT CONCRETE PAVING

EXPANSION AND CONTROL JOINT SEALANT TO BE A (2) COMPONENT POLYURETHANE MATERIAL (THC-901 BY "TREMCO" OR APPROVED EQUAL).

CONTROL JOINTS:
JOINTS MUST BE CLEANED, ROUND CLOSED-CELL BACKER ROD INSTALLED UNDER 30% COMPRESSION, THEN "DECKLINE" PRIMER APPLIED, FOLLOWED BY SEALANT. ALL PER MANUFACTURERS INSTRUCTIONS. WIDTH OF SEALANT AS CALLED FOR ON DRAWINGS, BUT DEPTH TO BE A MINIMUM OF 3/8".

UNDERGROUND UTILITIES

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS HAVE BEEN OBTAINED BY DILIGENT FIELD CHECKS AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THEY ARE ESSENTIALLY CORRECT, BUT THE ENGINEER DOES NOT GUARANTEE THEIR ACCURACY OR COMPLETENESS.

THE EXACT LOCATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGE TO EXISTING UTILITIES BY HIS OPERATIONS.

STORM DRAINAGE NOTES

REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT, AND AGAIN BEFORE FINAL ACCEPTANCE BY THE COUNTY, PROJECT ENGINEER, OWNER AND THE CONTRACTOR SHALL MAKE AN INSPECTION OF THE EXISTING SEWERS WITHIN THE PROJECT LIMITS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCES SHALL BE DETERMINED FROM FIELD OBSERVATIONS.

ALL NEW CONDUITS, INLETS, CATCH BASINS AND MANHOLES CONSTRUCTED AS A PART OF THE PROJECT SHALL BE FREE OF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTABLE.

ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE-MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER.

MDOT DIVISION 4, CONDUIT TYPE B OR C

WHERE TYPE B OR C CONDUIT, 15" DIAMETER OR LESS, IS SPECIFIED, THE CONTRACTOR MAY USE POLYVINYL CHLORIDE (PVC) SEWER PIPE AND FITTINGS, ASTM DESIGNATIONS D-3034-SDR 35 (MDOT 909.06) WITH PREMIUM JOINTS OR APPROVED EQUAL. WHERE 18" DIAMETER TYPE B OR C CONDUIT IS SPECIFIED, THE CONTRACTOR MAY USE POLYVINYL CHLORIDE (PVC) SEWER PIPE AND FITTINGS, ASTM DESIGNATIONS F679 WITH PREMIUM JOINTS OR APPROVED EQUAL. OTHER ACCEPTABLE TYPES OF CONDUIT INCLUDE PVC ASTM F949 (4" -18" DIAMETER) AND PVC ASTM F794 (4" - 18" DIAMETER AND MINIMUM PIPE STIFFNESS 46 LBF/SQ.IN. AS PER ASTM D 2412). WHERE 12" - 36" DIAMETER TYPE B OR C CONDUIT IS SPECIFIED, ASTM DESIGNATIONS D3350 WITH PREMIUM JOINTS OR APPROVED EQUAL.

BEDDING FOR POLYVINYL CHLORIDE PIPE SHALL BE IN ACCORDANCE WITH MDOT ITEM 206.03, EXCEPT THAT THE BEDDING SHALL EXTEND TO ABOVE THE TOP OF THE CONDUIT. THE SANITARY SEWER SHALL BE PVC PIPE, ASTM D-3034-SDR35.

ALL PIPE JOINTS SHALL MEET MDOT ITEM 909 (ASTM F-2390).

CATCH BASINS/MANHOLES

ALL CATCH BASINS AND MANHOLES SHALL BE PRECAST CONCRETE AS DETAILED AND CONSTRUCTED WITHOUT A SUMP.

BEDDING AND BACKFILL

THE BEDDING FOR THE STORM SEWER PIPES SHALL MEET THE REQUIREMENTS OF MDOT ITEM 206.03 BEDDING. ALL TRENCHES AND EXCAVATIONS SHALL BE BACKFILLED IMMEDIATELY AFTER PIPE IS LAID THEREIN. NO MATERIAL SHALL BE USED FOR BACKFILLING THAT CONTAINS STONES, ROCK OR PIECES OF MASONRY, FROZEN EARTH, DEBRIS OR EARTH WITH A EXCEPTIONALLY HIGH VOID CONTENT. THE BACKFILL SHALL MEET THE SPECIFICATIONS OF MDOT ITEM 401.03D.

TYPE B BACKFILL

TRENCHES UNDER PAVEMENT AND TO THE LIMITS OF 5 FEET OUTSIDE THE BACK OF THE CURB OR EDGE OF PAVEMENT SHALL BE BACKFILLED WITH THOROUGHLY TAMPED GRANULAR MATERIAL IN ACCORDANCE WITH MDOT ITEM 902.07 CLASS IIIA, MIN. 12" ABOVE TOP OF PIPE. BACKFILL TO THE PAVEMENT SUBGRADE SHALL BE MDOT ITEM 902 CLASS III.

TYPE C BACKFILL

TRENCHES OUTSIDE THE LIMITS OF 5 FEET FROM THE BACK OF THE CURB OR EDGE OF PAVEMENT SHALL BE BACKFILLED WITH THOROUGHLY TAMPED GRANULAR MATERIAL IN ACCORDANCE WITH MDOT ITEM 902 CLASS III, A MINIMUM OF 12 INCHES ABOVE THE TOP OF PIPE. THE REMAINDER OF THE TRENCH MAY BE FILLED WITH EXCAVATED MATERIAL, INSOFAR AS IT IS OF SUITABLE CHARACTER.

DRAINAGE FACILITIES/EXISTING SEWERS

THE CONTRACTOR SHALL SO CONDUCT HIS OPERATIONS THAT THE FLOW OF ALL SEWERS AND DITCHES WHICH ARE TO REMAIN IN SERVICE SHALL BE MAINTAINED AT ALL TIMES.

WHEN WORKING IN THE AREA ADJACENT TO EXISTING SEWERS, THE CONTRACTOR SHALL PROCEED WITH CAUTION IN ORDER THAT NO DAMAGE IS DONE TO THE EXISTING SEWERS.

ALL EXISTING SEWERS AND DITCHES SHALL BE MAINTAINED AND LEFT IN A CONDITION COMPARABLE TO OR BETTER THAN THEIR ORIGINAL CONDITION.
THE EXISTING SEWERS, MANHOLES, AND CATCH BASINS ARE TO BE REPLACED IMMEDIATELY IF DAMAGED DURING CONSTRUCTION BY CONDUIT OF EQUAL STRENGTH AND A MANHOLE/CATCH BASIN OF EQUAL CONSTRUCTION.

CONNECTIONS TO EXISTING SEWERS

WHERE THE PLANS PROVIDE FOR THE PROPOSED CONDUIT TO BE CONNECTED TO, OR TO CROSS EITHER OVER OR UNDER AN EXISTING SEWER, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE THE EXISTING PIPE BOTH AS TO LINE AND GRADE BEFORE HE STARTS CONSTRUCTION OF THE PROPOSED SEWER.

STORM SEWER REPLACEMENT

ANY STORM SEWER REPLACEMENT IS TO BE EITHER MDOT ITEM 909.04, REINFORCED CONCRETE CIRCULAR PIPE WITH "O" RING JOINTS, MDOT ITEM 909.06 OR POLYVINYL (PVC) A.S.T.M. D-3034, SDR 35.

WATERLINE NOTES

SPECIFICATION FOR MATERIALS

THE SPECIFICATIONS OF THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), AMERICAN WATER WORKS ASSOCIATION (AWWA), AND THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) HEREIN REFERRED TO, UNLESS OTHERWISE NOTED, SHALL BE THE LATEST SPECIFICATIONS OF THE RESPECTIVE ORGANIZATIONS.

THE WATERLINE SHALL BE PVC PLASTIC PIPE MEETING THE REQUIREMENTS OF AWWA C900, CLASS 150 AND DR18. JOINTS SHALL COMPLY WITH ASTM D3139. THE PIPE SHALL BE OF THE INTEGRAL WALL-THICKENED BELL END TYPE INCORPORATING ELASTOMERIC GASKETS TO AFFECT THE PRESSURE SEAL. THE PIPE SHALL HAVE A NOMINAL LAYING LENGTH OF 20 FEET AND SHALL BE ASSEMBLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS USING AN APPROVED JOINT LUBRICANT SO AS TO MAKE WATERTIGHT JOINTS WHEN INSTALLED.

FITTINGS AND SPECIALS FOR WATER MAIN PIPE SHALL BE DUCTILE IRON (COMPACT) IN CONFORMANCE WITH ANSI/AWWA C153/A 21.53, RATED FOR 350 PSI WATER WORKING PRESSURE, AND BE COATED AND CEMENT MORTAR LINED IN ACCORDANCE WITH THE DIP SPECIFICATIONS.

ALL MATERIAL SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.

WEDGE ACTION RESTRAINT SHALL BE USED ON ALL MECHANICAL JOINTS. WEDGE ACTION RESTRAINTS SHALL BE EBAA IRON MEGALUG SERIES 1100, OR EQUAL. ALL T-BOLTS AND NUTS SHALL BE COR-BLUE, XYLAN, OR EQUAL.

ALL PIPE AND FITTINGS SHALL HAVE A CEMENT MORTAR LINING, CONFORMING TO ANSI-A21. (AWWA C104) AND A PETROLEUM-ASPHALTIC OUTSIDE COATING.

ALL PIPE AND FITTINGS SHALL BE LAID WITH A POLYETHYLENE ENCASEMENT. PIPE AND POLYETHYLENE ENCASEMENT SHALL BE INSTALLED IN ACCORDANCE WITH ANSI-A21.5 (AWWA C105).

VALVE MANHOLE FRAMES AND COVERS SHALL BE 22 INCHES, NEENAH R-1765 OR APPROVED EQUAL, ASTM A-48, WITH INTERCHANGEABLE PIECES AND MACHINED HORIZONTAL BEARING SURFACES.

VALVE BOXES SHALL BE THREE (3) PIECE ADJUSTABLE SCREW TYPE, WITH A 5-1/4 INCH SHAFT, WITH CAST IRON FULL FLANGE RING AND LID, AND A BASE CORRESPONDING TO THE SIZE OF THE VALVE. VALVE BOXES IN PAVEMENT SHALL BE TYLER PIPE 6860 SERIES, OR EQUAL, WITH CAST IRON BODY. VALVE BOXES OUTSIDE OF PAVEMENT SHALL BE AMETEK ROADWAY 5-245, OR EQUAL, WITH POLYIRON BODY.

RESILIENT-SEATED GATE VALVES 12-INCH AND SMALLER SHALL BE NON-RISING STEM VALVES LIMITED TO VALVES MADE BY AMERICAN, KENNEDY, MUELLER, US PIPE, EJIW, OR CLOW VALVE COMPANIES MEETING AWWA C509 OR C515 AS PURCHASED BY THE DIVISION OF WATER DISTRIBUTION. RESILIENT-SEATED GATE VALVES SHALL BE DESIGNED FOR 250 PSI WORKING PRESSURE AND TESTED AT 500 PSI HYDROSTATIC PRESSURE. VALVES SHALL BE SUPPLIED WITH O-RING SEALS AT ALL JOINTS. NO FLAT GASKETS WILL BE ACCEPTED. NUTS AND BOLTS EXPOSED TO SOIL SHALL BE 304 STAINLESS STEEL.

DOUBLE-DISC GATE VALVES 12-INCH AND SMALLER SHALL BE NON-RISING STEM VALVES LIMITED TO VALVES MADE BY AMERICAN, MUELLER, OR EJIW MEETING AWWA C500. NO RESILIENT-SEATED VALVES WILL BE ACCEPTED WHERE DOUBLE DISC GATE VALVES ARE CALLED OUT ON THE PLANS. DOUBLE DISC GATE VALVES SHALL BE DESIGNED FOR 200 PSI WORKING PRESSURE AND TESTED AT 400 PSI HYDROSTATIC PRESSURE. VALVES SHALL BE SUPPLIED WITH O-RING SEALS AT ALL JOINTS. NO FLAT GASKETS WILL BE ACCEPTED. NUTS AND BOLTS EXPOSED TO SOIL SHALL BE 304 STAINLESS STEEL.

INSTALLATION AND PRESSURE TESTING SHALL BE AS PER AWWA C-600. DISINFECTION SHALL MEET OR EXCEED AWWA C-651.

INSTALLATION

THE PIPE SHALL BE LAID ON A PROPERLY SHAPED AND FIRM, GRANULAR BEDDING MEETING REQUIREMENTS OF MDOT ITEM 401.03 OF STANDARD SPECIFICATIONS FOR CONSTRUCTION, MICHIGAN DEPARTMENT OF TRANSPORTATION. WHERE CONDITIONS WARRANT, UNSUITABLE MATERIAL SHALL BE REMOVED AND GRANULAR MATERIAL CONFORMING TO THE SPECIFICATIONS SHALL BE USED FOR BEDDING.

ALL PIPE AND APPURTENANCES SHALL BE INSTALLED TRUE TO LINE, GRADE AND LOCATION: WITH JOINTS CENTERED, SPIGOTS HOME; PROPER SUPPORT AND RESTRAINT PROVIDED; AND ALL VALVE STEMS PLUMB. CARE SHALL BE USED TO LAY THE PIPE SO THAT IT IS SUPPORTED BY THE FULL LENGTH OF THE BARREL.

THE PIPE SHALL HAVE APPROXIMATELY 5' OF COVER. WHERE CONFLICTS OCCUR WITH OTHER UTILITIES, A MINIMUM OF 18 INCH VERTICAL SEPARATION IS REQUIRED. WHERE SPECIAL CONDITIONS WARRANT, THE DEPTH OF COVER MAY BE CHANGED.

BACKFILLING

ALL TRENCHES AND EXCAVATIONS SHALL BE BACKFILLED IMMEDIATELY AFTER PIPE IS LAID THEREIN. NO MATERIAL SHALL BE USED FOR BACKFILLING THAT CONTAINS STONES, ROCK OR PIECES OF MASONRY, FROZEN EARTH, DEBRIS OR EARTH WITH AN EXCEPTIONALLY HIGH VOID CONTENT.

TYPE B BACKFILL

TRENCHES WITHIN 5 FEET OF BACK OF THE CURB OR EDGE OF PAVEMENT SHALL BE BACKFILLED WITH THOROUGHLY TAMPED GRANULAR MATERIAL TO THE PAVEMENT SUBGRADE. GRANULAR BACKFILL SHALL CONFORM TO THE GRADATION REQUIREMENTS OF MDOT ITEM 902, MICHIGAN DEPARTMENT OF TRANSPORTATION. (MAXIMUM DRY DENSITY EXCEEDING 105 POUNDS PER CUBIC FEET AND COMPACTION TO 98% OF THE STANDARD PROCTOR TEST.) BACKFILL UNDER PAVEMENT AREAS SHALL MEET CURRENT MDOT SPECIFICATIONS (902 CLASS III) WITH THE RESTRICTION THAT MATERIAL SHALL BE MDOT ITEM 902.

TYPE C BACKFILL

TRENCHES OUTSIDE THE LIMITS OF 5 FEET FROM THE BACK OF CURB SHALL BE BACKFILLED WITH THOROUGHLY TAMPED GRANULAR MATERIAL A MINIMUM OF 12 INCHES ABOVE THE TOP OF THE PIPE. THE REMAINDER OF THE TRENCH MAY BE FILLED WITH EXCAVATED MATERIAL, INSOFAR AS IT IS OF SUITABLE CHARACTER.

DETECTABLE TRACER TAPE AND TRACER WIRE

THE CONTRACTOR SHALL BE REQUIRED TO INSTALL A DETECTABLE TRACER TAPE AND TRACER WIRE DIRECTLY OVER AND ON THE CENTER OF THE PVC AND/OR PE MAIN FOR ITS ENTIRE LENGTH TO PROVIDE A REFLECTION PATH (INDUCTIVE) TO DETERMINE PIPE ALIGNMENT AND LOCATION AFTER INSTALLATION (TRACER TAPE NOT REQUIRED WITH WATER MAIN INSTALLED BY HORIZONTAL DIRECTIONAL BORE).

DETECTABLE TRACER TAPE SHALL CONSIST OF A CONTINUOUS ALUMINUM FOIL CORE INSEPARABLY BONDED TO BOTH SIDES WITH TOUGH HIGH DENSITY CROSS LAMINATED PLASTIC FILMS PIGMENTED IN BLUE WARNING COLORS. BOND STRENGTH OF THE TRACER TAPE MUST PREVENT PITTING OR DEGRADATION AFTER 300 HOURS CONTINUOUS TESTING PER ASTM B-117. TRACER TAPE SHALL HAVE FINAL ELONGATION OF THREE TIMES ITS ORIGINAL LENGTH BEFORE PARTING. DETECTABLE TRACER TAPE ON THE ABOVE PROJECT SHALL BE EQUAL TO ALARMATAPE AS MANUFACTURED BY PAUL POTTER WARNING TAPES, INC., WHEATON, ILLINOIS; OR EQUAL. SPECIFY CATALOG NUMBERS #AT-3100-BW, 3" X 1,000 FOOT ROLLS WITH IDENTIFICATION "BURIED WATERLINE BELOW". IDENTIFYING PRINTING SHALL BE 1 1/2 INCH HIGH BOLD BLACK LETTERS REPEATED EVERY 21 INCHES. THREE INCH (3") WIDE ALARMATAPE IS TO BE BURIED 24 INCHES DEEP.

TRACER WIRE SHALL BE INSTALLED AT THE TOP OF THE PIPE AND SHALL BE COPPER WIRE #6 AWG WITH RHW-2 INSULATION AND SHALL BE STRUNG CONTINUOUSLY ALONG THE WATERLINE AND TERMINATED INSIDE OF ALL VALVE BOXES, INCLUDING FIRE HYDRANT WATCH VALVES, AS SHOWN ON THE DETAILED PLANS.

TRACER TAPE AND TRACER WIRE SHALL BE LAID OVER PIPE FROM VALVE BOX TO VALVE BOX WITH THE TRACER WIRE RUN INSIDE THE VALVE BOX TO THE SURFACE FOR ACCESS BY THE OWNER.

TRACER TAPE SHALL BE EQUAL TO ALARMATAPE AS MANUFACTURED BY POTTER WARNING TAPES, WHEATON, ILLINOIS.

STERILIZATION

THE CONTRACTOR SHALL CHLORINATE ALL PIPE LINES, AND THIS SHALL BE DONE PRIOR TO PRESSURE TESTING. DISINFECTION SHALL MEET OR EXCEED AWWA C-651.

PRESSURE TESTING

THE CONTRACTOR SHALL MAKE PRESSURE AND LEAKAGE TESTS OF ALL PIPE LINES. PRESSURE TESTS SHALL BE MADE IN ALL PIPE LINES OR VALVED SECTIONS THEREOF. THE CONTRACTOR SHALL FURNISH THE PUMP, PIPE CONNECTIONS, TAPS, GAUGES AND ALL OTHER APPARATUS FOR MAKING THE TEST. BEFORE TESTING OF THE MAIN, THE CONTRACTOR SHALL FLUSH THE MAIN TO EXPEL ANY WATER, DIRT, CHLORINE, ETC., IN COMPLIANCE WITH AWWA C-600.

THE OWNER IS RESPONSIBLE FOR SCHEDULING THE FLOW TEST OF THE NEAREST FIRE HYDRANT WITH A PRIVATE CONTRACTOR. TEST RESULTS MUST BE FORWARDED TO ADRIAN FIRE DEPARTMENT. CONTACT STEVE EBERLE AT THE CITY OF ADRIAN UTILITIES DEPARTMENT AT 517-264-4821 TO WITNESS THE TESTING.

MICHIGAN E.P.A. REQUIREMENTS

NOTE: THE MICHIGAN ENVIRONMENTAL PROTECTION AGENCY REQUIRES A CONFORMANCE TO THE AMERICAN WATER WORKS ASSOCIATION (AWWA). THIS STANDARD SHALL BE EQUALED OR EXCEEDED FOR WATER LINES. SPECIAL ATTENTION SHALL BE GIVEN TO THE FOLLOWING:

- MATERIALS CONFORM TO AWWA STANDARDS AND ANSI/NSF STANDARDS
- MINIMUM 6" DIA. FIRE PROTECTION
- MINIMUM 5' GROUND COVER
- PRESSURE TESTING AWWA C-600 OR N.F.P.A. 24*
- DISINFECTION AWWA C-651*
- 10' HORIZONTAL SEPARATION WATER MAIN/SEWER
- 18" VERTICAL SEPARATION WATER MAIN/SEWER
- NO ENTRY AND/OR CONTACT WITH SEWER MANHOLE

ANY DEVIATION FROM THE ABOVE WILL NOT BE PERMITTED UNLESS SPECIFICALLY INCLUDED IN THE GENERAL NOTES OR OTHERWISE SHOWN ON THE PLANS. IN CASES WHERE ONE OR MORE OF THE ABOVE-MENTIONED MICHIGAN EPA STANDARDS FALL SHORT OF THE GOVERNING DEPARTMENT OF PUBLIC UTILITIES STANDARDS, THE LATTER SHALL GOVERN.

NOTE: IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM THIS TEST PROPERLY AND THE RESPONSIBILITY FOR ADEQUATE SUPERVISION AND APPROVAL RESTS WITH THE APPROPRIATE GOVERNMENTAL AGENCY.

SANITARY SEWER NOTES:

SANITARY SEWER PIPE

ALL PIPE FOR SANITARY SEWER SHALL HAVE PREMIUM JOINT AND SHALL BE EITHER REINFORCED PIPE, OR VITRIFIED CLAY PIPE, OR POLYVINYL (PVC) SEWER PIPE AND FITTINGS CONFORMING TO A.S.T.M. D-3034-SDR35.

IF TYPE "B" OR "C" CONDUIT IS SPECIFIED, THE CONTRACTOR MAY USE POLYVINYL (PVC) SEWER PIPE AND FITTINGS, (AMERICAN SOCIETY FOR TESTING AND MATERIALS) D-3034-SDR35. THE PIPE AND FITTINGS SHALL BE MADE OF PVC PLASTIC HAVING A CELL CLASSIFICATION OF 12454-B AS DEFINED IN SPECIFICATION D-1784. COMPOUNDS THAT HAVE DIFFERENT CELL CLASSIFICATIONS BECAUSE ONE OR MORE PROPERTIES ARE SUPERIOR TO THOSE OF THE SPECIFIED COMPOUNDS ARE ALSO ACCEPTABLE.

18" DIAMETER AND LARGER P.V.C. PIPE SHALL BE IN ACCORDANCE WITH A.S.T.M. F-679.

PIPE JOINT

ALL PIPE SHALL BE PREMIUM JOINT IN ACCORDANCE WITH ASTM D-3212.

PIPE SPECIALS

QUANTITIES FOR PIPE BENDS, TEES, WYES, PLUGS AND OTHER FITTINGS ARE LISTED ON THE PLANS FOR THE CONVENIENCE OF THE CONTRACTOR. THE COST OF ALL PIPE SPECIALS FOR ALL TYPES OF PIPE SHALL BE CONSIDERED PAID FOR IN THE UNIT PRICE BID PER LINEAR FOOT FOR THE PERTINENT CONDUIT MDOT ITEM.

INSTALLATION

THE PIPE SHALL BE LAID ON A PROPERLY SHAPED AND FIRM BEDDING OF THE TYPE SPECIFIED AND MEETING REQUIREMENTS OF MDOT ITEM 902.07 OF THE CURRENT CONSTRUCTION AND MATERIAL SPECIFICATIONS, STATE OF MICHIGAN, DEPARTMENT OF TRANSPORTATION. WHERE CONDITIONS WARRANT, UNSUITABLE MATERIAL SHALL BE REMOVED AND GRANULAR MATERIAL CONFORMING TO THE SPECIFICATION SHALL BE USED FOR BEDDING.

ALL PIPE AND APPURTENANCES SHALL BE INSTALLED TRUE TO LINE, GRADE AND LOCATION: WITH JOINTS CENTERED, SPIGOTS HOME AND PROPER SUPPORT AND BLOCKING PROVIDED. CARE SHALL BE USED TO LAY THE PIPE SO THAT IT IS SUPPORTED AND BEDDED THE FULL LENGTH OF THE BARREL.

WHEN NO BEDDING CLASS IS SPECIFIED, THE REQUIREMENTS FOR CLASS "B'" BEDDING SHALL APPLY.

CLASS "A" BEDDING SHALL CONSIST OF A CONTINUOUS CONCRETE CRADLE CONFORMING TO THE PLAN DETAILS.

CLASS "B" BEDDING SHALL CONSIST OF A BED OF GRANULAR STONE MATERIAL (MDOT ITEM 902.07 CLASS II HAVING A THICKNESS OF AT LEAST 6 INCHES BELOW THE BOTTOM OF THE PIPE AND EXTENDING UP AROUND THE PIPE FOR A DEPTH OF NOT LESS THAN 30% OF ITS VERTICAL OUTSIDE DIAMETER. THE LAYER OF BEDDING MATERIAL SHALL BE SHAPED TO FIT THE CONDUIT FOR AT LEAST 10% OF THE VERTICAL DIAMETER OF THE CONDUIT AND SHALL HAVE RECESSES SHAPED TO RECEIVE THE BELL OF BELL-AND-SPIGOT PIPE.

FOR PVC PIPE, THE GRANULAR BEDDING, MDOT ITEM 902 CLASS III. SHALL EXTEND A MINIMUM OF 12" ABOVE THE TOP OF PIPE.

CLASS "C" BEDDING SHALL CONSIST OF BEDDING THE CONDUIT IN ITS NATURAL FOUNDATION TO A DEPTH OF NOT LESS THAN 10% OF ITS TOTAL HEIGHT. THE BED SHALL BE SHAPED TO FIT THE CONDUIT AND SHALL HAVE A RECESSED SHAPED TO RECEIVE THE BELL.

MANHOLES

PRECAST CONCRETE RISER SECTIONS, CONCENTRIC CONES, ECCENTRIC CONES, FLAT TOP SLABS, GRADE RINGS AND TOPS USED FOR MANHOLE CONSTRUCTION SHALL CONFORM TO SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS, ASTM DESIGNATION C-478, UNLESS OTHERWISE SPECIFIED. JOINTS BETWEEN SECTIONS SHALL BE OF THE O-RING TYPE AND SHALL CONFORM TO THE REQUIREMENTS OF MDOT SPEC. 403. FINAL ELEVATION ADJUSTMENT SHALL BE MADE WITH PRECAST TONGUE AND GROOVE ADJUSTING RINGS.

MANHOLE FRAMES AND COVERS SHALL BE NEENAH R1785 WITH SELF SEALING LIDS AS MANUFACTURED BY EAST JORDAN IRON WORKS, OR AN APPROVED EQUAL. MANHOLE COVERS SHALL BE LETTERED "SANITARY SEWER".

MANHOLE STEPS PLACED IN PRECAST CONCRETE PIPE MANHOLES SHALL BE EQUAL TO MDOT MANHOLE REQUIREMENTS. THIS STEP CONSISTS OF POLYPROPYLENE MOLDED AROUND A ½" GRADE 60 STEEL REINFORCING 16 INCHES ON CENTER.

KYLE W. LAYTON
ENGINEER
No. 6201313424
February 21, 2025

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RE-DEVELOPMENT BIXBY HOSPITAL

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CITY OF ADRIAN, LENAWEE COUNTY
PART OF SECTION 27, TOWN 6 SOUTH, RANGE 3 EAST

CIVIL GENERAL NOTES

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SANITARY NOTES CONT'D:

SANITARY SERVICE CONNECTIONS

ALL SANITARY SERVICE CONNECTIONS SHALL BE PROPERLY PLUGGED AND SUITABLY STAKED AT THE END OF THE SERVICE CONNECTION PLUG. STAKE SHALL BE A MINIMUM 4 FEET ABOVE PLUG TO AID IN FUTURE LOCATION OF SERVICE CONNECTION. THE COST OF LABOR AND MATERIALS FOR INSTALLATION TO BE INCLUDED IN THE PRICE BID FOR THE CONDUIT.

EXCEPT AS OTHERWISE NOTED, ALL CROSS-OVER TAPS SHALL HAVE A MINIMUM GRADE OF 1%.
ALL SANITARY SEWER FITTINGS SHALL BE SDR 26.

ALL SERVICE CONNECTIONS SHALL BE PAINTED "GREEN" AT END OF PIPE. COLOR SHALL BE IN ACCORDANCE WITH MIOSHA/OSHA SPECIFICATION 1010.144, APPROVED SAFETY COLOR.

BACKFILLING

ALL TRENCHES AND EXCAVATIONS SHALL BE BACKFILLED IMMEDIATELY AFTER PIPE IS LAID THEREIN. NO MATERIAL SHALL BE USED FOR BACKFILLING THAT CONTAINS STONES, ROCK OR PIECES OF MASONRY, FROZEN EARTH, DEBRIS OR EARTH WITH AN EXCEPTIONALLY HIGH VOID CONTENT.

TRENCHES OUTSIDE THE LIMITS OF 5 FEET FROM THE BACK OF CURB OR EDGE OF PAVEMENT OR PAVED BERM SHALL BE BACKFILLED WITH THOROUGHLY TAMPED GRANULAR MATERIAL A MINIMUM OF 12 INCHES ABOVE THE TOP OF THE PIPE. THE REMAINDER OF THE TRENCH MAY BE FILLED WITH EXCAVATED MATERIAL, INSOFAR AS IT IS OF SUITABLE CHARACTER AND COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY (STANDARD PROCTOR). THIS IS DESIGNATED AS TYPE "C" ON THE PLANS.

TRENCHES UNDER PAVEMENT OR PAVED BERM AND TO THE LIMITS OF 5 FEET OUTSIDE THE BACK OF THE CURB OR EDGE OF PAVEMENT SHALL BE BACKFILLED WITH THOROUGHLY TAMPED GRANULAR MATERIAL TO THE PAVEMENT SUBGRADE. GRANULAR BACKFILL SHALL CONFORM TO THE GRADATION REQUIREMENTS OF THE CURRENT SPECIFICATIONS FOR MDOT ITEM 902 CLASS IIIA OF MICHIGAN DEPARTMENT OF TRANSPORTATION., (MAXIMUM DRY DENSITY EXCEEDING 105 LBS. PER CUBIC FEET AND COMPACTION TO 100% OF THE STANDARD PROCTOR TEST.)

IF BACKFILL IS SAND, A MINIMUM THICKNESS OF 8" GRANULAR BACKFILL, MDOT ITEM 902.07 CLASS IIIA SHALL BE PLACED ABOVE THE PIPE BEDDING.

GRANULAR MATERIAL MAY BE COMPACTED WITH WATER IF SATISFACTORY DRAINAGE IS PROVIDED FOR THE FREE WHEN COMPACTING WITH WATER, THE GRANULAR MATERIAL MAY BE PLACED IN LAYERS NOT TO EXCEED 8 INCHES LOOSE DEPTH AND EACH LAYER THOROUGHLY SATURATED WITH WATER BY FLOODING OR JETTING. PRIOR TO THE PLACEMENT OF SOIL OVER THE GRANULAR MATERIAL THE FREE WATER SHOULD BE DRAINED.

TESTING REQUIREMENTS FOR SANITARY SEWERS

FOR FLEXIBLE SANITARY SEWER PIPE, FIVE PERCENT (5%) IS THE MAXIMUM ALLOWABLE DEFLECTION. THE DEFLECTION TEST CAN BE RUN BY USE OF A RIGID BALL OR MANDREL, WHOSE DIAMETER IS EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE, PULLED THROUGH THE SEWER LINE. DEFLECTION TEST WILL BE PERFORMED THREE TO SIX MONTHS AFTER BACKFILLING. UNLESS OTHERWISE BE TESTED FOR DEFLECTION.

AFTER THE PIPE HAS BEEN LAID, BACKFILLED AND DEFLECTION TEST (WHERE APPLICABLE), COMPLETE LEAKAGE TESTS SHALL BE CONDUCTED ON THE ENTIRE LENGTH OF THE PROJECT BETWEEN MANHOLES, SUCH TESTS SHALL BE CONDUCTED WITH A REPRESENTATIVE OF THE CITY PRESENT. ALSO, PRIOR TO CONDUCTING LEAKAGE TESTS, THE CONTRACTOR SHALL MAKE A DETERMINATION OF GROUND WATER LEVEL BY INSTALLING GROUND WATER GAUGES IN MANHOLES AS SELECTED BY THE ENGINEER. THESE GAUGES SHALL CONSIST OF A RIGID SECTION OF 1/2 INCH DIAMETER PIPE, APPROXIMATELY 10 INCHES LONG, INSERTED HORIZONTALLY THROUGH THE MANHOLE WALL AS NEAR AS POSSIBLE TO THE CROWN OF THE PIPE, WITH ANY OPENING AROUND THE PIPE SEALED SO AS TO BE WATERTIGHT, AND A CLEAR PLASTIC TUBE ATTACHED TO THE PIPE WITHIN THE MANHOLE AND EXTENDED VERTICALLY TO THE TOP OF THE MANHOLE. PRIOR TO CONNECTING THE TUBE, AIR SHALL BE BLOWN THROUGH THE PIPE WITH SUFFICIENT PRESSURE TO CLEAR THE LINE. UPON SATISFACTORY COMPLETION OF THE TESTS, THE GROUND WATER GAUGES SHALL BE REMOVED AND THE OPENINGS IN THE MANHOLE WALLS NEATLY AND PERMANENTLY CLOSED WITH A NON-SHRINK AND NON-METALLIC GROUT.

WHEN THE CROWN OF THE PIPE IS COVERED WITH TWO FEET OR MORE OR WATER AT THE HIGHEST POINT IN THE TEST SECTION, AN INFILTRATION TEST SHALL BE CONDUCTED. SHOULD GROUND WATER NOT PROVIDE SUFFICIENT HEAD, THE CONTRACTOR SHALL FLOOD THE TRENCH WITHIN THE TEST SECTION, BULKHEADING EACH END OF THE SECTION, TO OBTAIN OR MAINTAIN THE SPECIFIED EXTERNAL HEAD, OR AN AIR TEST OR EXFILTRATION TEST SHALL BE CONDUCTED.

IN ADDITION, FOR ALL MAIN LINE SEWERS 8 INCHES THROUGH 30 INCHES IN DIAMETER TESTED BY INFILTRATION OR EXFILTRATION, AIR TESTS SHALL BE CONDUCTED FOR THE PURPOSE OF TESTING SERVICE CONNECTIONS EVEN WHEN THE CROWN OF THE PIPE IS COVERED WITH TWO FEET OR MORE OF WATER. FOR SUCH TESTS, THE INTERNAL AIR PRESSURE SHALL NEVER EXCEED 5.0 PSI, AND THE ACCEPTABILITY OF THE TESTS SHALL BE BASED ON THE MINIMUM HOLDING TIME SUBSEQUENTLY SPECIFIED FOR THE SIZE OF THE MAIN LINE SEWER.

IN ALL CASES, FOR ANY TEST SECTION FAILING TO MEET THE LIMITS OF THE SPECIFICATIONS, THE CONTRACTOR SHALL BE REQUIRED TO LOCATE AND REMEDY THE DEFECTS CAUSING THE FAILURE AND THE SECTION SHALL BE RETESTED AND REPAIRS OR REPLACEMENT CONTINUED UNTIL THE LIMITS OF THE SPECIFICATIONS ARE SATISFIED. FOR SEWERS NOT ACCESSIBLE, SHOULD A TEST FAIL DUE TO OTHER THAN A LEAKING PLUG, A CLOSED CIRCUIT TELEVISION INSPECTION OF THE TEST SECTION SHALL BE CONDUCTED TO DETERMINE THE CAUSE OF THE FAILURE. WHEN THE FAILURE IS THE RESULT OF A LEAKING JOINT(S), THE JOINT MAY BE CHEMICALLY GROUTED. THE TELEVISION INSPECTION AND CHEMICAL GROUTING OF JOINTS SHALL BE IN ACCORDANCE WITH ALL APPLICABLE "RECOMMENDED SPECIFICATIONS FOR SEWER COLLECTION SYSTEM REHABILITATION" OF THE NATIONAL ASSOCIATION OF SEWER SERVICE COMPANIES AND AS APPROVED BY THE ENGINEER. THE COUNTY SANITARY ENGINEER SHALL BE FURNISHED VIDEO TAPES OF ALL TELEVISION INSPECTIONS. THE CONTRACTOR SHALL PAY ALL COSTS FOR INSPECTION AND GROUTING.

ALL VISIBLE LEAKAGE IN SEWERS AND MANHOLES SHALL BE REPAIRED, EVEN THOUGH TESTS MAY HAVE BEEN SATISFACTORY.

ALL PLUGS USED DURING LEAKAGE TESTS SHALL BE OF A LENGTH AT LEAST EQUAL TO THE DIAMETER OF THE PIPE BEING TESTED TO ENSURE A WATERTIGHT SEAL. PNEUMATIC PLUGS FOR AIR TESTING SHALL BE ABLE TO RESIST INTERNAL TEST PRESSURES WITHOUT REQUIRING EXTERNAL BLOCKING.

INFILTRATION TESTS

THE LENGTH OF SEWER SUBJECT TO EACH TEST SHALL BE THE DISTANCE BETWEEN TWO ADJACENT MANHOLES AS A MINIMUM, BUT SHALL BE LEFT TO THE DISCRETION OF THE ENGINEER. NO TEST SHALL EXCEED 900 FEET. THE TEST SECTION SHALL BE ISOLATED AND ALL SERVICE CONNECTIONS AND STUBS WITHIN THE SECTION SHALL BE CAPPED OR PLUGGED TO PREVENT THE ENTRY OF GROUND WATER. THE INFILTRATION SHALL BE MEASURED BY A V-NOTCH WEIR LOCATED IN THE DOWNSTREAM MANHOLE. THE TEST HEAD SHALL BE MAINTAINED FOR NOT LESS THAN 24 HOURS BEFORE A WEIR MEASUREMENT IS MADE. THE MAXIMUM ALLOWABLE LEAKAGE, INCLUDING MANHOLES, SHALL BE 100 GALLONS PER INCH OF DIAMETER PER MILE OF PIPE PER DAY.

EXFILTRATION TESTS

THE LENGTH OF SEWER SUBJECT TO AN EXFILTRATION TEST SHALL BE THE DISTANCE BETWEEN TWO ADJACENT MANHOLES AS A MINIMUM, BUT SHALL BE LEFT TO THE DISCRETION OF THE ENGINEER. NO TEST SHALL EXCEED 900 FEET. THE INLETS OF THE UPSTREAM AND DOWNSTREAM MANHOLES SHALL BE CLOSED WITH WATERTIGHT PLUGS AND THE TEST SECTION FILLED WITH WATER UNTIL THE ELEVATION OF THE WATER IN THE UPSTREAM MANHOLE IS TWO FEET ABOVE THE CROWN OF THE PIPE IN THE LINE BEING TESTED, OR TWO FEET ABOVE THE EXISTING GROUND WATER IN THE TRENCH, WHICHEVER IS HIGHER. A STANDPIPE MAY BE USED INSTEAD OF THE UPSTREAM MANHOLE FOR PROVIDING THE PRESSURE HEAD WHEN APPROVED BY THE ENGINEER. EXFILTRATION SHALL BE MEASURED BY DETERMINING THE AMOUNT OF WATER REQUIRED TO MAINTAIN THE INITIAL WATER ELEVATION FOR ONE HOUR FROM THE START OF THE TEST. WITH ABSORPTIVE PIPE, THE ONE HOUR PERIOD SHALL BEGIN AFTER ALLOWING THE WATER TO STAND FOR A MINIMUM OF 45 MINUTES TO ALLOW FOR SATURATION OF THE PIPE. THE MAXIMUM ALLOWABLE LEAKAGE, INCLUDING MANHOLES, SHALL BE 100 GALLONS PER INCH OF DIAMETER PER MILE OF PIPE PER DAY.

AIR TESTS

AFTER BACKFILLING, AIR TESTS SHALL BE CONDUCTED BETWEEN TWO CONSECUTIVE MANHOLES. PRIOR TO CONDUCTING AIR TESTS ON AIR PERMEABLE PIPE, THE WALLS OF THE PIPE SHALL BE DAMPENED. DAMPENING OF THE PIPE WALLS AND OBSTRUCTION TESTING MAY BE ACCOMPLISHED AT THE SAME TIME BY PROPELLING A SNUG FITTING INFLATED BALL OR OTHER APPROVED DEVICE THROUGH THE PIPE WITH WATER.

FOR SEWERS 27 INCHES IN DIAMETER AND SMALLER, EACH END OF THE SECTION TO BE TESTED AND ALL PIPE OUTLETS IN THE SECTION SHALL BE PLUGGED WITH SUITABLE TEST PLUGS. ONE PLUG USED AT A MANHOLE SHALL HAVE AN INLET TAP OR OTHER PROVISION FOR CONNECTING AN AIR HOSE FROM THE AIR SUPPLY EQUIPMENT. THE EQUIPMENT SHALL INCLUDE VALVES TO CONTROL THE RATE AT WHICH AIR FLOWS INTO THE TEST SECTION AND PRESSURE GAUGES WITH MINIMUM GRADUATIONS OF 0.1 PSI AND AN ACCURACY OF Ñ0.04 PSI TO MONITOR THE AIR PRESSURE WITHIN THE TEST SECTION.

AIR PRESSURE SHALL BE APPLIED SLOWLY TO THE TEST SECTION UNTIL THE PRESSURE REACHES 4.0 PSI, PLUS AN ADJUSTMENT OF 0.433 PSI FOR EACH FOOT OF FOUND WATER ABOVE THE CROWN OF THE PIPE BEING TESTED. INTERNAL AIR PRESSURE, INCLUDING ADJUSTMENT FOR GROUND WATER, SHOULD NEVER EXCEED 5.0 PSI.

WHEN PRESSURE REACHES 4.0 PSI, PLUS ADJUSTMENT FOR GROUND WATER, THE AIR SUPPLY SHALL BE THROTTLED SO THAT THE INTERNAL PRESSURE IS MAINTAINED BETWEEN 4.0 AND 3.5 PSI FOR AT LEAST TWO MINUTES TO PERMIT TEMPERATURE STABILIZATION. WHEN THE PRESSURE HAS STABILIZED AND IS AT OR ABOVE 3.5 PSI, THE AIR SUPPLY SHALL BE DISCONNECTED AND A STOP WATCH STARTED AND ALLOWED TO RUN UNTIL THE PRESSURE HAD DROPPED 1.0 PSI.

THE PERMISSIBLE TIME ALLOCATED FOR THE 1.0 PSI PRESSURE DROP SHALL BE CALCULATED ON THE BASIS OF THE DIAMETER AND LENGTH OF MAIN SEWER TESTED AND NO ADJUSTMENT SHALL BE MADE FOR SERVICE CONNECTIONS INCLUDED IN THE TEST SECTION. THE AIR TEST FOR A SECTION SHALL BE CONSIDERED ACCEPTABLE IF THE TIME ELAPSED FOR THE 1.0 PSI PRESSURE DROP IS EQUAL TO OR GREATER THAN THE TIME INDICATED, AND SHALL BE CONSIDERED UNACCEPTABLE IF THE ELAPSED TIME IS LESS THAN THAT INDICATED IN THE FOLLOWING TABLE:

MINIMUM TEST TIME IN MINUTES REQUIRED FOR 1.0 PSI PRESSURE DROP (MIN:SEC)

PIPE DIAMETER	100'	150'	200'	250'	300'	350'	400'	450'
4"	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6"	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8"	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10"	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12"	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15"	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
18"	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
21"	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31
24"	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33
27"	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48

*TIME FOR INTERMEDIATE LENGTHS SHALL BE INTERPOLATED

MINIMUM TEST TIMES IN SECONDS

MANHOLE DEPTH	MANHOLE DIAMETER*		
	48"	60"	72"
8'	20	26	33
10'	25	33	41
12'	30	39	49
14'	35	46	57
16'	40	52	65
18'	45	59	73
20'	50	65	81
22'	55	72	89
24'	59	78	97
26'	64	85	105
28'	69	91	113
30'	74	98	121

*WHEN THERE IS A TRANSITION, ADD THE TIMES FOR EACH SIZE BASED ON THE DEPTH ASSOCIATED WITH EACH SIZE.

FOLLOWING THE COMPLETION OF THE VACUUM TESTING SPECIFIED, ALL SANITARY MANHOLES SHALL BE PROVIDED WITH INTERNAL CHIMNEY SEALS, SPANNING FROM THE CONE SECTION TO THE CASTING, INCLUDING EXTENSIONS AS REQUIRED. CHIMNEY SEALS SHALL BE A MINIMUM OF THREE-SIXTEENTHS (3/16) INCHES THICK RUBBER CONFORMING TO ASTM C-923, WITH A MINIMUM TENSILE STRENGTH OF 1,500 PSI, A MAXIMUM EIGHTEEN (18) PERCENT COMPRESSION SET AND A HARDNESS OF 48. THE COMPRESSION BANDS SHALL BE INTEGRALLY FORMED FROM SIXTEEN (16) GAUGE STAINLESS STEEL MEETING THE REQUIREMENTS OF ASTM A-240, TYPE 304, AND SHALL HAVE A MINIMUM ADJUSTMENT RANGE OF TWO (2) DIAMETER INCHES. ALL SCREWS, BOLTS OR NUTS SHALL ALSO BE TYPE 304 STAINLESS STEEL. CHIMNEY SEALS SHALL BE AS MANUFACTURED BY CRETEX SPECIALTY PRODUCTS, OR APPROVED EQUAL, AND SHALL BE INSTALLED IN STRICT CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS.

CONNECTIONS TO EXISTING SEWERS

WHERE THE PLANS PROVIDE FOR THE PROPOSED CONDUIT TO BE CONNECTED TO, OR TO CROSS EITHER OVER OR UNDER AN EXISTING SEWER, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE THE EXISTING PIPE BOTH AS TO LINE AND GRADE BEFORE HE STARTS CONSTRUCTION OF THE PROPOSED SEWER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING SEWERS RESULTING FROM HIS OPERATION OR NEGLIGENCE.

UNDERGROUND UTILITIES

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS HAVE BEEN OBTAINED BY DILIGENT FIELD CHECKS AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THEY ARE ESSENTIALLY CORRECT, BUT THE ENGINEER DOES NOT GUARANTEE THEIR ACCURACY OR COMPLETENESS. THE EXACT LOCATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGE TO EXISTING UTILITIES BY HIS OPERATIONS.

UTILITY ADJUSTMENT

ANY AND ALL WORK REQUIRED FOR PUBLIC OR PRIVATE UTILITIES WILL BE DONE BY AND AT THE EXPENSE OF THEIR RESPECTIVE OWNERS, UNLESS OTHERWISE NOTED ON THESE PLANS. UTILITIES THAT ARE IN CONFLICT SHALL SUBMIT DETAILED PLANS OF UTILITY REARRANGEMENT TO THE CITY AND THE CONSULTING ENGINEER. UTILITY REARRANGEMENT PLANS SHALL BE APPROVED AND PERMIT ISSUED PRIOR TO COMMENCING WORK.

UTILITY NOTIFICATION

THE CONTRACTOR SHALL NOTIFY ALL INVOLVED UTILITY COMPANIES AT LEAST FIVE (5) CONSTRUCTION DAYS BEFORE ANY CONSTRUCTION WORK IS PERFORMED IN THE AREA WHERE UTILITIES ARE LOCATED. FOR THE PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174 OF 2013, THE CONTRACTOR SHALL CONTACT MISSDIG SYSTEM, INC. BY PHONE AT 811 OR 800-482-7171, A MINIMUM OF 3 BUSINESS DAYS PRIOR TO EXCAVATING, EXCLUDING WEEKENDS AND HOLIDAYS.

NOTIFY THE DETROIT EDISON SERVICE DISPATCHER AT PHONE: 1-800-477-4747 FORTY-EIGHT (48) HOURS PRIOR TO EXCAVATION.

PERMIT REQUIREMENTS

THE CONTRACTOR SHALL OBTAIN ALL REQUIRED WORK PERMITS. COPIES OF PERMITS SHALL BE SUBMITTED TO THE CONSULTING ENGINEER PRIOR TO CONSTRUCTION. PERMIT SHALL BE OBTAINED FROM THE MODT ONE WEEK PRIOR TO COMMENCING WORK IN THE PUBLIC RIGHT-OF-WAY.

THE CONTRACTOR MAY AIR TEST SECTIONS BEFORE BACKFILLING THE TRENCH AS A CHECK FOR DEFECTS AND WORKMANSHIP. SUCH TESTS ARE AT THE OPTION OF THE CONTRACTOR AND ARE NOT A SUBSTITUTE FOR TESTS REQUIRED AFTER BACKFILLING HAS BEEN COMPLETED.

FOR SEWERS OVER 30 INCHES IN DIAMETER, INDIVIDUAL AIR TESTS AT JOINTS, LIFT HOLES, AND TEE OR WYE CONNECTIONS, ALONG WITH VISUAL INSPECTION SHALL BE CONDUCTED. MINIMUM AIR TEST HOLDING TIME SHALL BE BASED ON A LEAKAGE RATE OF 0.003 CFM LOSS PER SQUARE FOOT OF INTERNAL SURFACE BEING TESTED.

SHOULD ANY SECTION OF THE CONDUIT FAIL TO MEET THE ABOVE TEST REQUIREMENTS, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE TELEVISION INSPECTION AND TO PROVIDE NECESSARY CORRECTIONS. THE COST OF ALL MATERIALS, LABOR AND INCIDENTALS NECESSARY FOR PERFORMING THE TESTS AND MAKING THE CORRECTIONS AND REPLACEMENTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PERTINENT CONDUIT MDOT ITEM, INCLUDING ANY WATER AND ALL EQUIPMENT NECESSARY.

REPAIR/REPLACEMENT

FOR ANY SEWER TEST FAILING TO MEET THE LIMITS OF THE SPECIFICATIONS, LOCATE AND REMEDY THE DEFECTS CAUSING THE FAILURE, RETEST THE SECTION, AND CONTINUE REPAIRS OR REPLACEMENT UNTIL THE LIMITS OF THE SPECIFICATIONS ARE SATISFIED.

ROOF DRAINS

ROOF DRAINS, FOUNDATION DRAINS AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.

SEWER-WATERLINE SEPARATION

SANITARY SEWER AND MANHOLE INSTALLATIONS SHALL BE LAID WITH AT LEAST TEN (10) FEET HORIZONTAL AND EIGHTEEN (18) INCHES VERTICAL SEPARATION FROM ANY WATERLINE MEASURED EDGE TO EDGE.

CONSTRUCTION STAKING

CONSTRUCTION STAKING FOR SANITARY SEWERS WILL BE PERFORMED BY THE CONSULTING ENGINEER. FORTY-EIGHT HOURS PRIOR NOTICE WILL BE REQUIRED FOR CONSTRUCTION STAKES. CONTROL POINTS WILL BE SET BY THE CONSULTING ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT AND PRESERVE THE CONSTRUCTION STAKES AND TO VERIFY THEIR CORRECTNESS PRIOR TO LAYING PIPE. ANY RE-STAKING DUE TO STAKES BEING DESTROYED OR MOVED WILL BE DONE AT THE CONTRACTORS EXPENSE.

SAFETY REQUIREMENTS

THE CONTRACTOR SHALL AT ALL TIMES FOLLOW ALL STATE AND LOCAL SAFETY REQUIREMENTS DURING CONSTRUCTION OF THIS PROJECT. SPECIAL CARE SHALL BE TAKEN DURING ALL TRENCHING OPERATIONS. SHEETING AND BRACING, CRIBBING, ETC., MUST BE INSTALLED AS REQUIRED TO PROVIDE MAXIMUM SAFETY TO THE CONTRACTOR'S WORKERS IN FULL COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS.

DGL GENERAL NOTES

1. BIDDERS SHALL VISIT AND EXAMINE THE SITE AND ALL CONTRACT DOCUMENTS.
2. ITEM NUMBERS REFER TO THE MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) CONSTRUCTION AND MATERIAL SPECIFICATIONS (CURRENT EDITION) AND ALL CONSTRUCTION WORK SHALL BE DONE ACCORDING TO SAID SPECIFICATIONS AND IN ACCORDANCE WITH APPLICABLE STANDARDS OF THE GOVERNING AGENCIES. WHEN IN CONFLICT, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN.
3. ALL CONSTRUCTION DETAILS SHALL CONFORM TO THE CURRENT EDITION OF THE STANDARD CONSTRUCTION DRAWINGS OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) UNLESS OTHERWISE NOTED.
4. WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND ORDINANCES.
5. ALL SIDEWALKS, RAMPS, BUILDING ENTRANCES AND ACCESSIBILITY PARKING SPACES SHALL BE ADA COMPLIANT.
6. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A PERMIT FOR ALL CONSTRUCTION ACTIVITIES ACCORDING TO THE GOVERNING AGENCY REQUIREMENTS, SCHEDULING INSPECTIONS, AND PAYING ALL INSPECTION FEES.
7. CONTRACTOR SHALL CONTACT THE LOCAL GOVERNING AGENCIES A MINIMUM OF SEVEN (7) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION IN RIGHT OF WAY.
8. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL EXISTING CONDITIONS, DIMENSIONS, LOCATIONS, AND MATERIALS.
9. CONTRACTOR SHALL REPAIR OR REPLACE, AT NO ADDITIONAL COST, ANY EXISTING IMPROVEMENTS DAMAGED DURING THE WORK.
10. CONTRACTOR SHALL PROVIDE TEMPORARY SIGNS AND BARRIERS AT LIMITS OF CONSTRUCTION TO ASSURE PUBLIC SAFETY DURING CONSTRUCTION.
11. CONTRACTOR SHALL MAINTAIN A CLEAN PROJECT SITE AND REMOVE ALL WASTE MATERIALS AND RUBBISH FROM THE PROJECT.
12. ALL PAVEMENT DIMENSIONS, STRIPING DIMENSIONS, AND NODES ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
13. ALL EDGE OF PAVEMENT RADII ARE 4.50 FT UNLESS NOTED OTHERWISE.
14. EXISTING EDGE OF PAVEMENT ABUTTING PROPOSED PAVEMENT SHALL BE SAWCUT AND SEALED WITH MDOT BAND COAT PRIOR TO PLACEMENT OF HMA.
15. ALL STANDARD PARKING SPACES ARE A MINIMUM OF 9' X 20'.
16. CONTRACTOR SHALL VERIFY BUILDING DIMENSIONS WITH THE ARCHITECTURAL AND STRUCTURAL DRAWINGS PRIOR TO CONSTRUCTION.
17. THE CONTRACTOR AND OWNER MUST VERIFY, TAKE OFF, AND AGREE TO ALL QUANTITIES, INCLUDING EXCAVATION AND EMBANKMENT QUANTITIES PRIOR TO BEGINNING CONSTRUCTION.
18. CONTRACTOR SHALL VERIFY THAT COORDINATES, IF USED, MATCH PLAN DIMENSIONS. WHEN IN CONFLICT, THE PLAN DIMENSIONS SHALL GOVERN OVER COORDINATES, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

EARTHWORK

1. EXISTING SITE SURVEY, TOPOGRAPHY, AND SUBSURFACE CONDITIONS AS PRESENTED IN THE DRAWINGS, REPORTS, OR SPECIFICATION FORM ARE BELIEVED ACCURATE WITHIN NORMAL INDUSTRY TOLERANCES BUT ARE NOT GUARANTEED. INVESTIGATE, SURVEY, CONFIRM, AND VERIFY ALL CONDITIONS BEARING ON THE WORK BY ANY MEANS NECESSARY BEFORE STARTING ANY WORK THAT CHANGES EXISTING CONDITIONS. REPORT ANY UNACCEPTABLE DISCREPANCIES TO THE ENGINEER IN WRITING BEFORE BEGINNING OPERATIONS.
   - 1.1. WRITTEN CLAIMS OF DIFFERENCE SHALL BE ACCOMPANIED BY SUBSTANTIATING EVIDENCE. CLAIMS OF DIFFERENCE SHALL BE RESOLVED, INCLUDING DETERMINATION OF QUANTITIES AND COSTS, AND METHODS OF CONTRACT MODIFICATION, BEFORE WORK THAT ALTERS SUCH EXISTING CONDITIONS IS STARTED.
   - 1.2. INITIATION OF SITE-CLEARING, SOIL MOVING OPERATIONS, DEMOLITION, OR OTHER ACTIVITY THAT ALTERS EXISTING CONDITIONS SHALL BE EVIDENCE THAT CONTRACTOR HAS MADE ALL INVESTIGATIONS AND EVALUATIONS IT DEEMS NECESSARY AND HAS ACCEPTED ALL EXISTING CONDITIONS PRESENT WHETHER OR NOT THEY CONFORM EXACTLY TO THE DOCUMENTS.
   - 1.3. WITHOUT ADVANCE WRITTEN NOTIFICATION OF UNACCEPTABLE DISCREPANCY, NO CLAIM FOR EXTRA PAYMENT WILL BE CONSIDERED FOR A CLAIM OF DIFFERENCE BETWEEN DOCUMENTS AND ACTUAL CONDITIONS AFTER THE CONTRACTOR HAS ALTERED EXISTING CONDITIONS.
2. ALL SPOT ELEVATIONS ARE TO THE TOP OF FINISHED PAVEMENT/GRADE UNLESS NOTED OTHERWISE. ADD SIX (6) INCHES (0.50 FT) TO FINISHED PAVEMENT GRADES FOR BACK OF CURB GRADES UNLESS OTHERWISE NOTED.
3. ANY DIGITAL SURFACE MODELS PROVIDED FOR THE PROJECT BY THE ENGINEER HAVE BEEN GENERATED FOR THE PREPARATION OF THE CONSTRUCTION DRAWINGS. THE CONTRACTOR SHALL VERIFY THAT THE DIGITAL SURFACE MODEL IS CONSISTENT WITH THE FULL SET OF CONSTRUCTION DOCUMENTS AND IS SUITABLE FOR THEIR PURPOSES. WHEN IN CONFLICT, THE PRINTED DRAWINGS GOVERN UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
4. ANY DETENTION OR RETENTION BASIN ON SITE SHOULD BE CONSTRUCTED PRIOR TO THE CLEARING OF VEGETATION, STRIPPING TOPSOIL, AND GRADING OF THE SITE OR AS SOON AS PRACTICAL TO CONTROL STORMWATER RUNOFF AND SEDIMENTS FROM LEAVING THE SITE.
5. CONTRACTOR SHALL REMOVE ALL TREES AND CLEAR ALL AREAS AS DETERMINED BY THE ENGINEER OR ARCHITECT TO PERFORM ALL GRADING AND UTILITY WORK IN ACCORDANCE WITH THE DRAWINGS, GENERAL NOTES, AND PROJECT SPECIFICATIONS.
6. THE SITE SHALL BE STRIPPED OF ALL VEGETATION, TOPSOIL, AND OTHER ORGANIC MATERIAL AND STOCKPILED PRIOR TO GRADING.
7. EMBANKMENT MATERIAL SHOULD CONSIST OF PLASTIC CLAY MATERIALS, FREE OF ORGANIC MATTER, WHICH CLASSIFY AS CL ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM AND SHALL CONTAIN NO STONES WHOSE LARGEST DIMENSION EXCEEDS FOUR (4) INCHES.
8. BUILDING PAD PREPARATION SHALL BE MADE IN ACCORDANCE WITH GEOTECHNICAL ENGINEER'S AND ARCHITECT'S RECOMMENDATIONS.
9. CONTRACTOR SHALL ENGAGE A QUALIFIED INDEPENDENT GEOTECHNICAL TESTING AGENCY TO PERFORM FIELD QUALITY CONTROL TESTING.
10. A MINIMUM OF SIX (6) INCHES OF TOPSOIL SHALL BE PLACED ON ALL GRASS AREAS UNLESS SPECIFIED OTHERWISE IN THE LANDSCAPE DRAWINGS.
11. ALL SITE EXCAVATION AND EMBANKMENT SHALL BE COMPLETED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND/OR THE PROJECT SPECIFICATIONS. WHEN IN CONFLICT, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN.
12. ANY AREAS THAT APPEAR AS FUTURE BUILDING OR PARKING LOTS SHALL BE GRADED TO DRAIN TO THE NEAREST SWALE, CATCH BASIN, OR OTHER DRAINAGE FEATURE OR PROVISIONS SHALL BE INSTALLED TO DRAIN THE AREAS TO THE NEAREST DRAINAGE FEATURE.
13. CONTRACTOR SHALL PREPARE A PAD CERTIFICATION SURVEY FOR THE PROJECT VERIFYING THE BUILDING PAD AS-BUILT ELEVATIONS. PAD CERTIFICATION SHALL BE PROVIDED TO THE OWNER FOR ANY BUILDING PAD FOR WHICH THE BUILDING IS TO BE BUILT BY ANOTHER CONTRACTOR UNDER SEPARATE CONTRACT. THIS DOES NOT INCLUDE BUILDING PADS FOR FUTURE BUILDINGS WHICH ARE NOT UNDER CONSIDERATION FOR CONSTRUCTION AT THE TIME OF PREPARATION OF THE SITE WORK UNLESS OTHERWISE NOTED.
14. UNLESS OTHERWISE STATED IN A GEOTECHNICAL REPORT OR THE PROJECT SPECIFICATIONS, COMPACTION IN STRUCTURAL FILL FOR BUILDINGS SHALL BE A MINIMUM OF 95% OF THE MODIFIED PROCTOR MAX DRY DENSITY PER ASTM D 1557. FILLS IN OTHER AREAS TO BE COMPACTED TO A MINIMUM OF 90% PROCTOR MAX DRY DENSITY. FINE, SILTY SAND SHALL BE 95% MODIFIED PROCTOR MAX DRY DENSITY. FILLS TO BE PLACED AND COMPACTED WITHIN ±3% OF OPTIMUM MOISTURE CONTENT FOR THE MATERIAL.
15. COMPACTION TESTS SHALL BE PERFORMED PER THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS OR PERFORM 1 TEST/LIFT PER 2,500 SQUARE YARDS. MAX 3"-4" LIFTS UNDER PAVEMENT AND BUILDING PADS. MAXIMUM 8" LIFTS IN LAWN AREAS.

GENERAL UTILITY NOTES

1. A MINIMUM OF 48 HOURS BEFORE COMMENCING WORK, THE CONTRACTOR SHALL CONTACT MISS DIG AT 1-800-482-7171.
2. CONTRACTOR SHALL VERIFY ALL UTILITY AND CONDUIT SIZES AND LOCATIONS WITH THE ARCHITECTURAL, MECHANICAL, AND STRUCTURAL DRAWINGS AND WITH THE UTILITY PROVIDERS PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.
3. ALL UTILITIES TYING INTO THE BUILDING ARE TO BE STUBBED FIVE (5) FT FROM THE BUILDING FOR CONNECTION BY THE INTERIOR CONTRACTORS UNLESS OTHERWISE NOTED.
4. ITEMS THAT PERTAIN TO UNDERGROUND UTILITIES SUCH AS WATER MAIN PIPE, WATER VALVES, SANITARY SEWER PIPE, MANHOLE FRAMES AND COVERS, STORM SEWERS, ETC. WILL REMAIN UNDER THE SPECIFICATIONS OF THE UTILITY SERVING THE AREA AND THE LOCAL CITY OR COUNTY ENGINEER.
5. NO OPEN CUT TRENCHES WILL BE ALLOWED TO REMAIN OPEN OVERNIGHT. OPEN TRENCHES SHALL BE COVERED WITH STEEL PLATES, ¾" PLYWOOD, OR OTHER MEANS FOR TRENCHES WHICH WILL BE CONTINUED WITHIN THE NEXT 72 HOURS. THE OPEN TRENCH AREA SHALL ALSO BE SURROUNDED WITH CAUTION TAPE OUTSIDE OF AREAS OPEN TO TRAFFIC. TRENCHES TO REMAIN INACTIVE LONGER THAN 72 HOURS SHALL HAVE THE PIPE PLUGGED, MARKED, AND THE TRENCH FILLED UNTIL THE WORK PROGRESSES.

CROSSINGS

1. WHENEVER A STORM OR SANITARY SEWER AND WATER MAIN MUST CROSS, THE SEWER SHALL BE AT SUCH AN ELEVATION THAT THE CROWN OF THE SEWER IS AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER MAIN AS MEASURED BETWEEN THE OUTSIDE PIPE WALLS. IF IT IS ABSOLUTELY IMPOSSIBLE TO MAINTAIN THE 18 INCH VERTICAL SEPARATION, THE WATER MAIN SHALL BE RELOCATED OR THE SEWER SHALL BE CONSTRUCTED AS FOLLOWS:
2. A SEWER PASSING OVER OR UNDER THE WATER MAIN SHALL BE ENCASED OR CONSTRUCTED OF MATERIALS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS OF CONSTRUCTION FOR A MINIMUM DISTANCE OF 10 FEET ON EACH SIDE OF THE WATER MAIN.
3. THE SEWER CROSSING SHALL BE CONSTRUCTED SO THAT THE SEWER JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.
4. WHERE A WATER MAIN PASSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT DAMAGE TO THE WATER MAIN.

PLOTTED: Feb 21, 2025 – 7:48am
DRAWING: M:\24191 (Windev – Bixby Hospital Development)\CIVIL\Dwg\24191 CD.dwg: C04 NOTES BIXBY

KYLE W. LAYTON
6201813474
February 21, 2025

NO	REVISION	DATE
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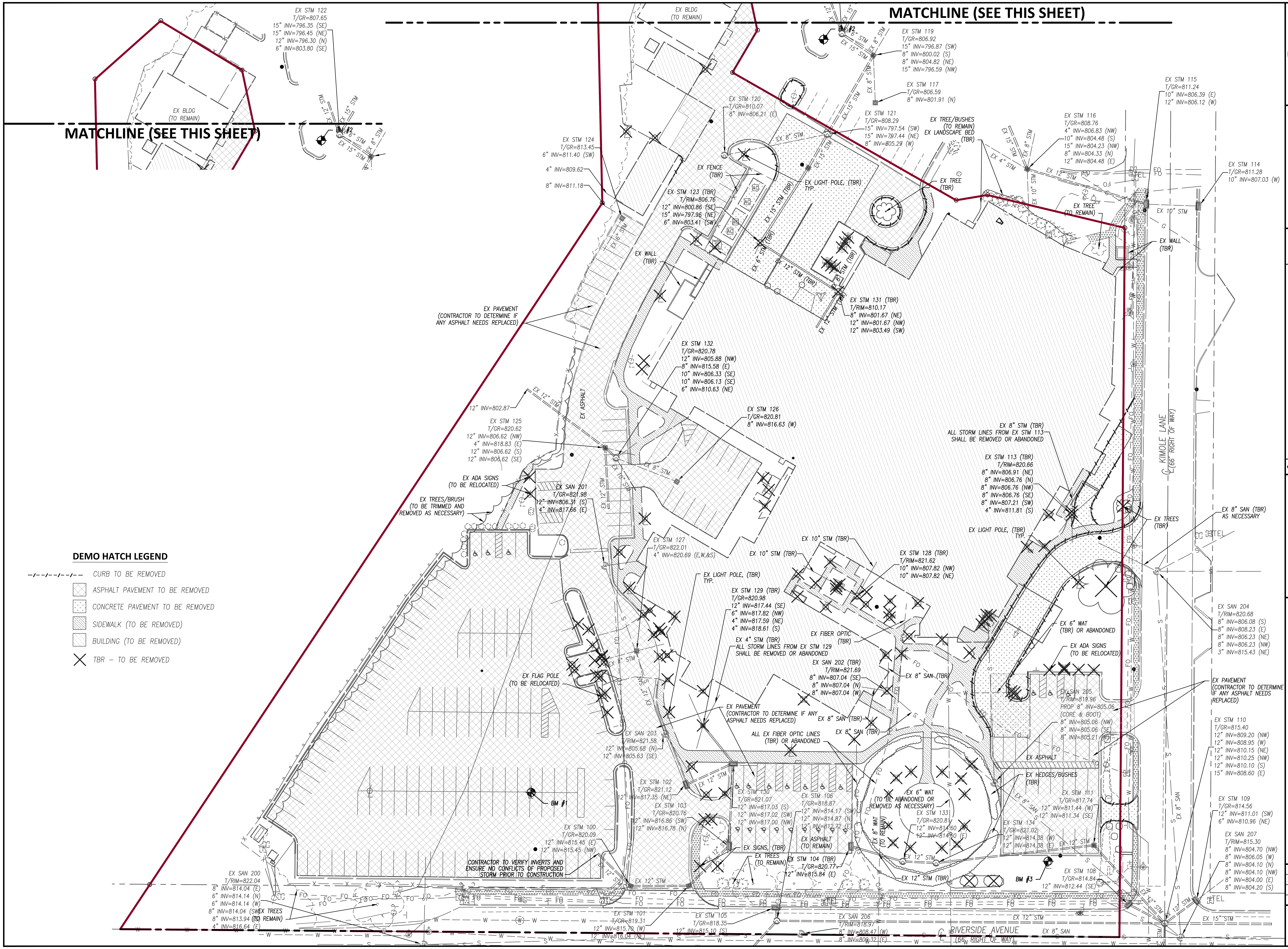
DGL CONSULTING ENGINEERS
DGL CONSULTING ENGINEERS, LLC
3455 BRIARFIELD BLVD. SUITE E
MAUMEE, OH 43537
PHONE: 419.535.1015
www.dgl-ltd.com

RE-DEVELOPMENT BIXBY HOSPITAL
818 RIVERSIDE AVENUE
ADRIAN, MICHIGAN 49221
CITY OF ADRIAN, LENAWEE COUNTY
PART OF SECTION 27, TOWN 6 SOUTH, RANGE 3 EAST

CIVIL GENERAL NOTES

FILE:	24191 CD.dwg
JOB NO.:	24191
DRAWN BY:	LMM
ISSUED:	JAN 30, 2025

C4



DEMO HATCH LEGEND

—/—/—/—/—	CURB TO BE REMOVED
▨	ASPHALT PAVEMENT TO BE REMOVED
▨	CONCRETE PAVEMENT TO BE REMOVED
▨	SIDEWALK (TO BE REMOVED)
▨	BUILDING (TO BE REMOVED)
✕	TBR – TO BE REMOVED

PLOTTED: Feb 21, 2025 – 7:48am
DRAWING: M:\24191 (Windev – Bixby Hospital Development)\CIVIL\Dwg\24191 CD.dwg: C05 DEMO BIXBY

N

0 30 60
SCALE: 1" = 30'

STATE OF MICHIGAN
KYLE W. LAYTON
ENGINEER
No. 6201313424
LICENSED PROFESSIONAL ENGINEER
February 21, 2025

NO	REVISION	DATE
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DGL CONSULTING ENGINEERS
DGL CONSULTING ENGINEERS, LLC
3455 BRIARFIELD BLVD. SUITE E
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RE-DEVELOPMENT BIXBY HOSPITAL

818 RIVERSIDE AVENUE
ADRIAN, MICHIGAN 49221
CITY OF ADRIAN, LENAWEE COUNTY
PART OF SECTION 27, TOWN 6 SOUTH, RANGE 3 EAST

DEMOLITION PLAN

FILE:	24191 CD.dwg
JOB NO.:	24191
DRAWN BY:	LMM
ISSUED:	JAN 30, 2025

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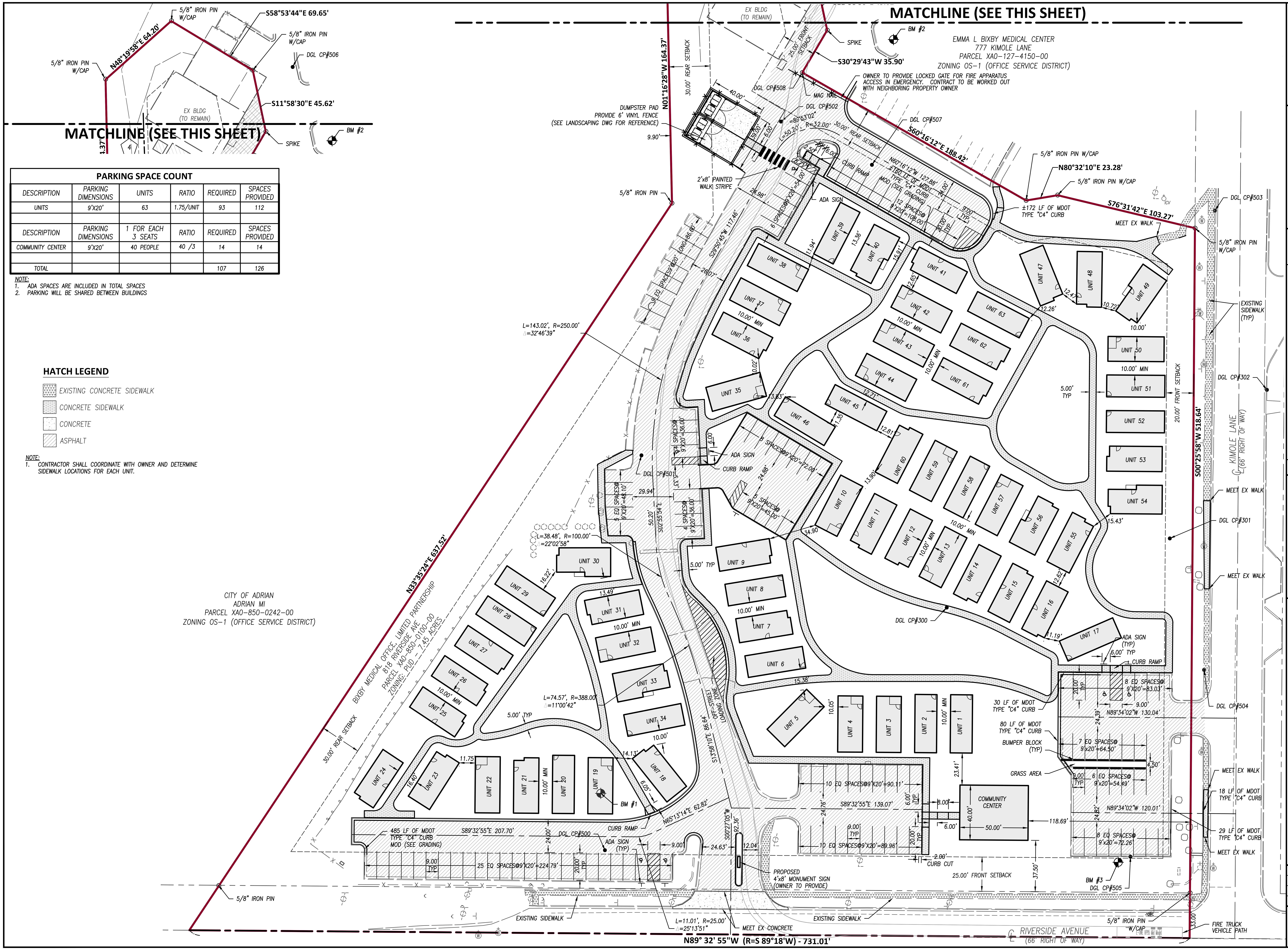

PARKING SPACE COUNT

DESCRIPTION	PARKING DIMENSIONS	UNITS	RATIO	REQUIRED	SPACES PROVIDED
UNITS	9'X20'	63	1.75/UNIT	93	112
DESCRIPTION	PARKING DIMENSIONS	1 FOR EACH 3 SEATS	RATIO	REQUIRED	SPACES PROVIDED
COMMUNITY CENTER	9'X20'	40 PEOPLE	40 /3	14	14
TOTAL				107	126

NOTE:
1. ADA SPACES ARE INCLUDED IN TOTAL SPACES
2. PARKING WILL BE SHARED BETWEEN BUILDINGS

HATCH LEGEND

▨	EXISTING CONCRETE SIDEWALK
▨	CONCRETE SIDEWALK
☐	CONCRETE
▨	ASPHALT

NOTE:
1. CONTRACTOR SHALL COORDINATE WITH OWNER AND DETERMINE SIDEWALK LOCATIONS FOR EACH UNIT.

STATE OF MICHIGAN
KYLE W. LAYTON
ENGINEER
No.
6201813474
LICENSED PROFESSIONAL ENGINEER
February 21, 2025

DATE	REVISION	NO
		9
		8
		7
		6
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3455 BRIARFIELD BLVD. SUITE E
MAUMEE, OH 43537
PHONE: 419.535.1015
www.dgl-ltd.com

RE-DEVELOPMENT BIXBY HOSPITAL

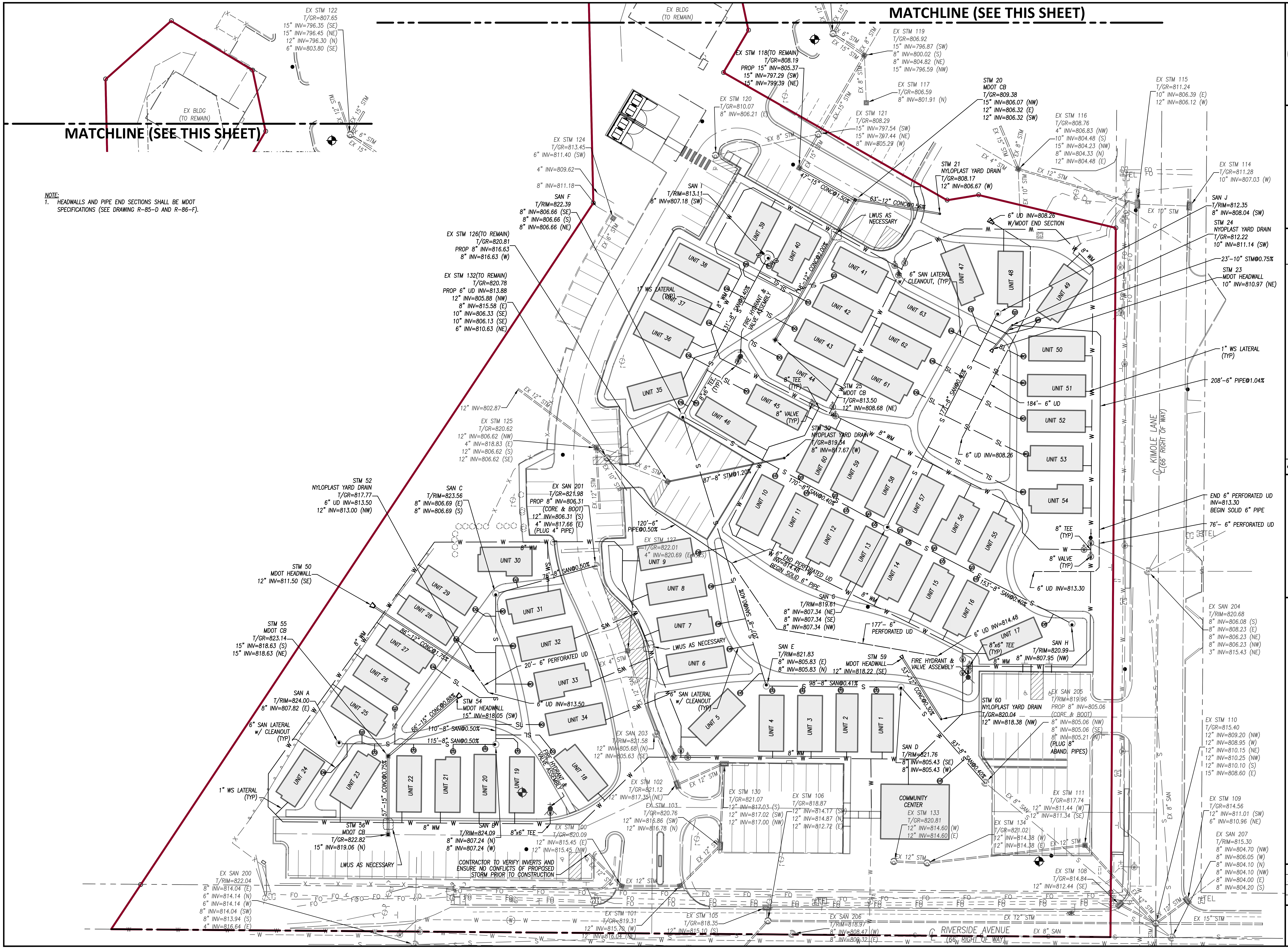
818 RIVERSIDE AVENUE
ADRIAN, MICHIGAN 49221
CITY OF ADRIAN, LENAWEE COUNTY
PART OF SECTION 27, TOWN 6 SOUTH, RANGE 3 EAST

SITE LAYOUT PLAN

FILE:	24191 CD.dwg
JOB NO.:	24191
DRAWN BY:	LMM
ISSUED:	JAN 30, 2025

C6

PLOTTED: Feb 21, 2025 - 7:56am
DRAWING: M:\24191 (Windev - Bixby Hospital Development)\CIVIL\Dwg\24191 CD.dwg C06 LAYOUT BIXBY



NOTE:
1. HEADWALLS AND PIPE END SECTIONS SHALL BE MDOT SPECIFICATIONS (SEE DRAWING R-85-D AND R-86-F).

SCALE: 1" = 30'
0 30 60

STATE OF MICHIGAN
KYLE W. LAYTON
ENGINEER
No. 6201813474
LICENSED PROFESSIONAL ENGINEER
February 21, 2025

NO	REVISION	DATE
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CONSULTING ENGINEERS

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818 RIVERSIDE AVENUE
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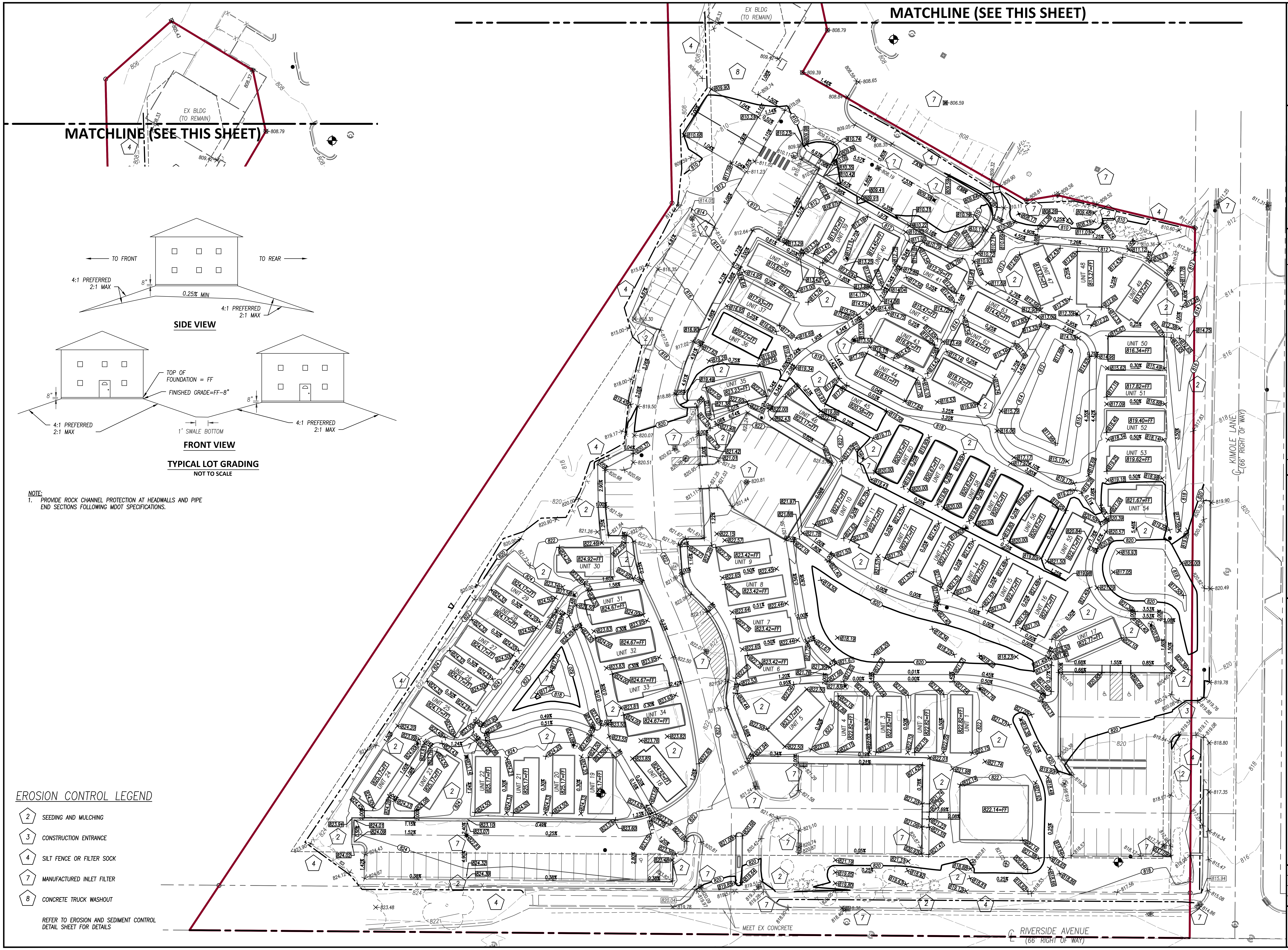
CITY OF ADRIAN, LENAWEE COUNTY
PART OF SECTION 27, TOWN 6 SOUTH, RANGE 3 EAST

UTILITY PLAN

FILE:	24191 CD.dwg
JOB NO.:	24191
DRAWN BY:	LMM
ISSUED:	JAN 30, 2025

C7

PLOTTED: Feb 21, 2025 – 7:49am
DRAWING: M:\24191 (Windev – Bixby Hospital Development)\CIVIL\Dwg\24191 CD.dwg: C07 UTILITY BIXBY



NOTE:
1. PROVIDE ROCK CHANNEL PROTECTION AT HEADWALLS AND PIPE END SECTIONS FOLLOWING MDOT SPECIFICATIONS.

EROSION CONTROL LEGEND

2	SEEDING AND MULCHING
3	CONSTRUCTION ENTRANCE
4	SILT FENCE OR FILTER SOCK
7	MANUFACTURED INLET FILTER
8	CONCRETE TRUCK WASHOUT

REFER TO EROSION AND SEDIMENT CONTROL DETAIL SHEET FOR DETAILS

PLOTTED: Feb 21, 2025 – 7:49am
DRAWING: M:\24191 (Windev – Bixby Hospital Development)\CIVIL\Dwg\24191 CD.dwg: C08 GRADING BIXBY

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0 30 60
SCALE: 1" = 30'

KYLE W.
LAYTON
ENGINEER
No.
6201313424
February 21, 2025

NO	REVISION	DATE
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GRADING PLAN

FILE:	24191 CD.dwg
JOB NO.:	24191
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C8

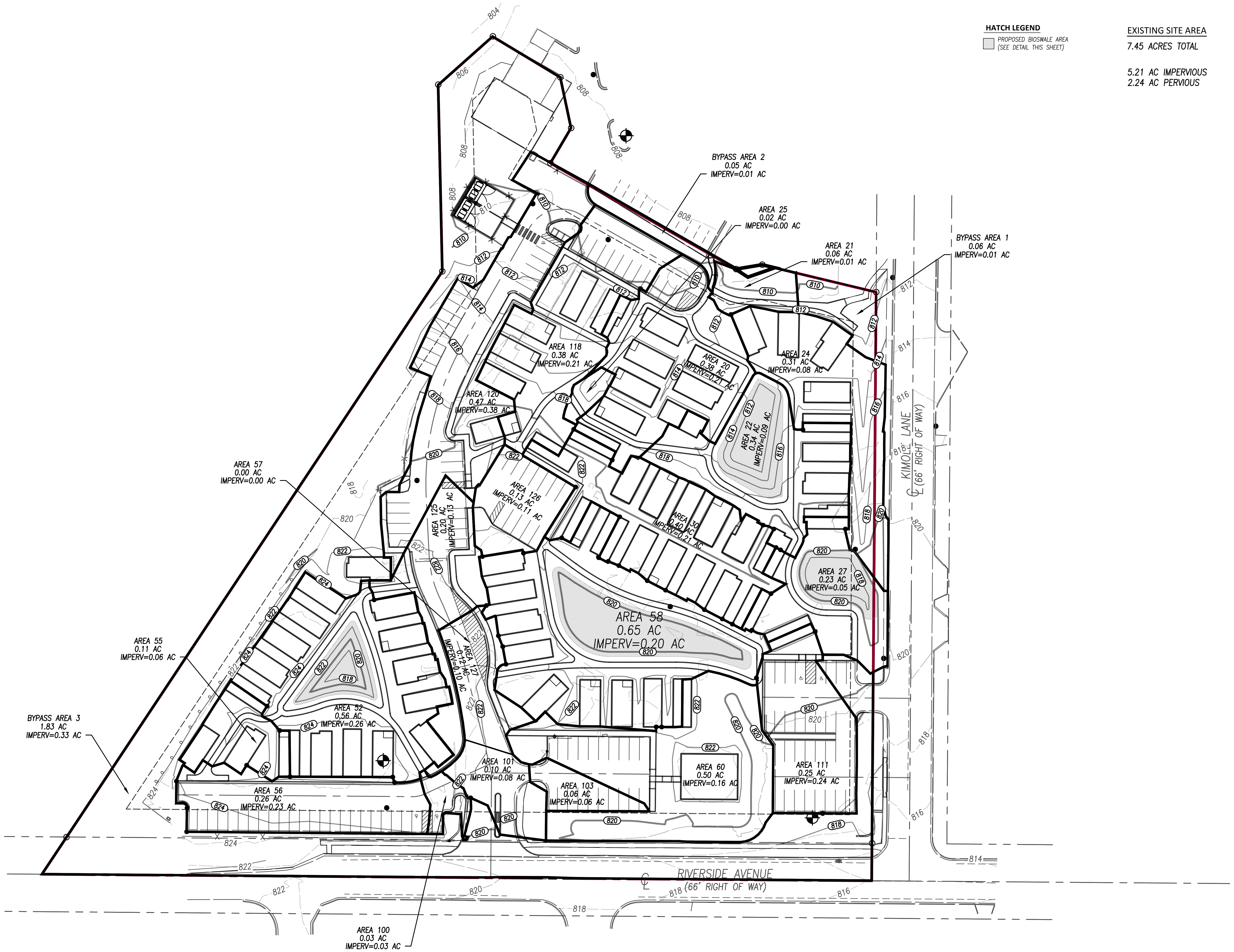
HATCH LEGEND

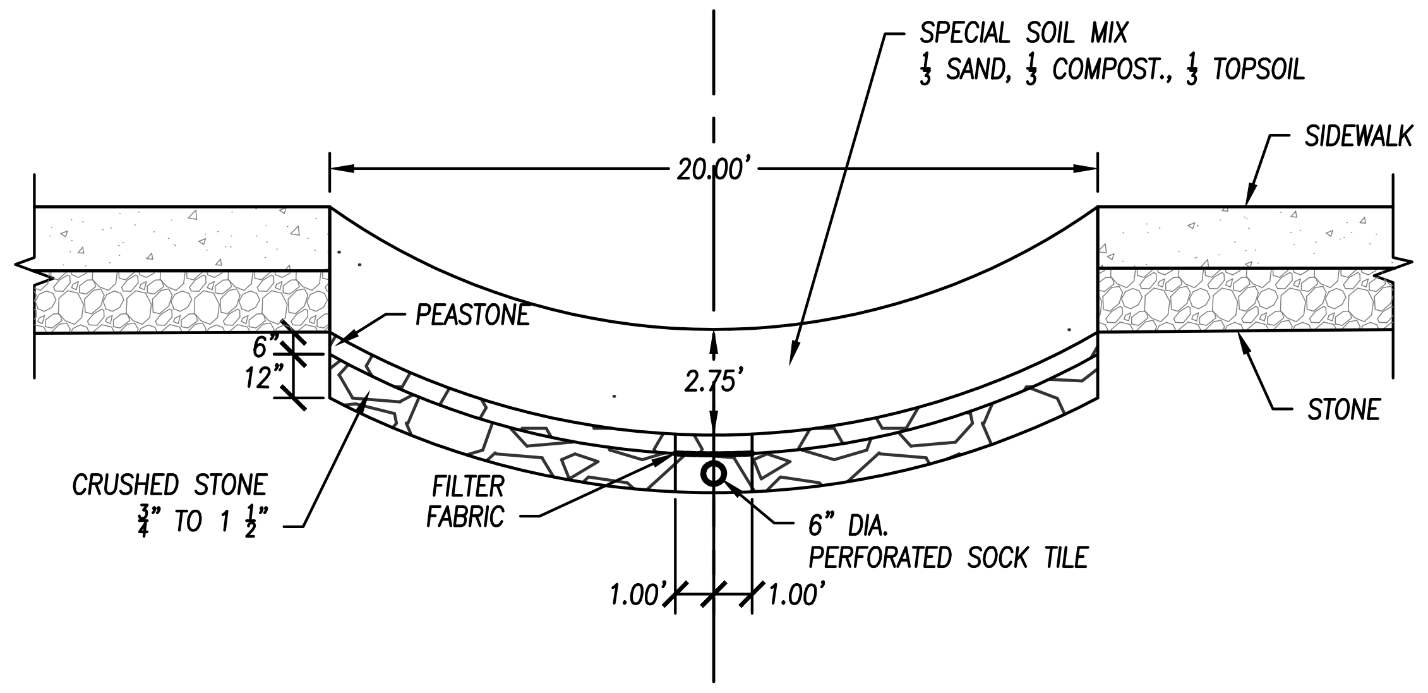
▨ PROPOSED BIOSWALE AREA
(SEE DETAIL THIS SHEET)

EXISTING SITE AREA

7.45 ACRES TOTAL

5.21 AC IMPERVIOUS
2.24 AC PERVIOUS





TYPICAL BIOSWALE

SCALE: 1" = 5'

N

0 50 100

SCALE: 1" = 50'

KYLE W. LAYTON ENGINEER No. 6201313424

February 21, 2025

NO	REVISION	DATE
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PART OF SECTION 27, TOWN 6 SOUTH, RANGE 3 EAST

DRAINAGE MAP

FILE:	24191 CD.dwg
JOB NO.:	24191
DRAWN BY:	LMM
ISSUED:	JAN 30, 2025

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PLOTTED: Feb 21, 2025 – 7:49am
DRAWING: M:\24191 (Windev – Bixby Hospital Development)\CIVIL\Dwg\24191 CD.dwg: C09 DRAIN MAP BIXBY

SEDIMENT AND EROSION CONTROL

1. CONTRACTOR SHALL IMPLEMENT ALL SOIL AND EROSION CONTROL PRACTICES AS PER THE PLAN AND AS REQUIRED BY THE LENAWEE COUNTY DRAIN COMMISSION. THE EROSION CONTROL MEASURES SHALL BE INSTALLED PER THE SOIL EROSION SEDIMENTATION CONTROL PERMIT.
2. BORROW AND WASTE DISPOSAL AREAS SHALL BE SELECTED WITH FULL CONSIDERATION FOR SOIL EROSION AND SEDIMENT CONTROL.
3. PRIOR TO THE START OF ANY CONSTRUCTION, CONTRACTOR SHALL INSTALL SOIL EROSION AND SEDIMENTATION BEST MANAGEMENT PRACTICES (BMPS) AS PER THE PLAN AND AS REQUIRED BY THE LENAWEE COUNTY DRAIN COMMISSION. THE EROSION CONTROL MEASURES SHALL BE INSTALLED PER THE CURRENT EDITION OF THE LOW IMPACT DEVELOPMENT MANUAL FOR MICHIGAN.
4. EROSION CONTROL MEASURES MAY BE IMPLEMENTED AND LOCATIONS ADJUSTED AS NEEDED TO FACILITATE CONSTRUCTION PROVIDED THE INTENT OF THE PLAN IS MET.
5. SOIL EROSION AND SEDIMENTATION BMP MEASURES SHALL BE MAINTAINED AT ALL TIMES UNTIL CONSTRUCTION HAS BEEN COMPLETED, INCLUDING ALL GRASS BEING WELL ESTABLISHED AND/OR PERMANENT EROSION AND SEDIMENTATION BMP MEASURES ARE INSTALLED AND OPERATIONAL.
6. CONTRACTOR SHALL NOTIFY THE LENAWEE COUNTY DRAIN COMMISSION AT (517) 264-4696 THREE (3) DAYS PRIOR TO STARTING CONSTRUCTION FOR PURPOSES OF MONITORING SOIL EROSION AND BMP MEASURES.
7. SEDIMENT AND EROSION CONTROLS SHALL BE INSPECTED ONCE EVERY SEVEN (7) DAYS AND WITHIN 24 HOURS OF EVERY 0.5" OR GREATER RAINFALL AND BE REPAIRED OR REPLACED AS NECESSARY.
8. THE PROJECT HAS BEEN DESIGNED TO CONTROL EROSION AND PREVENT DAMAGE TO OTHER PROPERTY. ALL STRIPPING, EARTHWORK, AND GRADING SHALL BE PERFORMED TO MINIMIZE EROSION. NATURAL VEGETATION SHALL BE RETAINED WHEREVER POSSIBLE. THE PROPOSED PLAN WILL ALLOW MOST ERODED MATERIALS TO BE RETAINED ON SITE.
9. SPECIAL PRECAUTIONS WILL BE TAKEN IN THE USE OF CONSTRUCTION EQUIPMENT TO PREVENT OPERATIONS WHICH PROMOTE EROSION.
10. SOLID, SANITARY, AND TOXIC WASTE MUST BE DISPOSED OF IN A PROPER MANNER IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. IT IS PROHIBITED TO BURN, BURY OR POUR INTO THE GROUND OR INTO STORM SEWERS ANY SOLVENTS, PAINTS, STAINS, GASOLINE, DIESEL FUEL, USED MOTOR OIL, HYDRAULIC FUEL, ANTIFREEZE, CEMENT CURING COMPOUNDS, AND OTHER SUCH TOXIC OR HAZARDOUS WASTES.
11. HAZARDOUS WASTES SHALL BE REMOVED OFF SITE AND PROPERLY DISPOSED OF CONSISTENT WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS.
12. CONTRACTOR SHALL DESIGNATE A SITE DUMP/WASH AREA PRIOR TO STARTING CONSTRUCTION FOR SUCH PURPOSES AS WASHING OUT CONCRETE TRUCKS AND DUMPING NON-HAZARDOUS WASTE MATERIALS.
13. DUMPING OR DISCHARGE OF ANY HAZARDOUS WASTE MATERIALS TO ANY STORM OR SANITARY SEWERS IS PROHIBITED.
14. WASH OUT OF CEMENT TRUCKS SHALL BE IN A DIKED, DESIGNATED AREA OR INTO PORTABLE MANUFACTURED WASHOUT BAGS SUCH AS THE LINED READY MIX BAGS MANUFACTURED BY ENVIRO SYSTEMS, INC., OR EQUIVALENT, WHERE THE WASTEWATER CAN BE COLLECTED AND DISPOSED OF PROPERLY AFTER IT HARDENS.
15. STORAGE TANKS SHOULD BE LOCATED IN DIKED AREAS THAT HOLD A MINIMUM VOLUME OF 110% OF THE LARGEST TANK.
16. LOCATION OF DUMP/WASH LOCATIONS AND CONTRACTOR PROCEDURES ARE SUBJECT TO SUPERVISION BY THE FEDERAL, STATE, AND THE LENAWEE COUNTY DRAIN COMMISSION.
17. ALL CATCH BASINS AND INLETS NEAR DISTURBED AREAS SHALL HAVE TEMPORARY INLET PROTECTION SEDIMENT BARRIERS PLACED AND MAINTAINED THROUGHOUT CONSTRUCTION TO PREVENT SEDIMENT FROM ENTERING THE DRAINAGE SYSTEMS WHETHER SHOWN IN THE DRAWINGS OR NOT.
18. ANY DETENTION OR RETENTION AREAS AND ANY PERIMETER CONTROLS SHALL BE IMPLEMENTED WITHIN SEVEN (7) DAYS OF FIRST GRUBBING AND SHALL REMAIN FUNCTIONAL UNTIL THE UP-SLOPE DEVELOPMENT AREA IS STABILIZED.
19. STOCKPILED SOILS SHALL BE LEGALLY REMOVED FROM THE SITE OR COVERED WITH TEMPORARY SEED AND MULCH WITHIN SEVEN (7) DAYS AND SURROUNDED WITH SILT FENCE UNTIL SUCH TIME THAT IT CAN BE REUSED ON THE SITE.
20. ALL AREAS AT FINAL GRADE OR WHERE CONSTRUCTION ACTIVITY HAS TEMPORARILY CEASED FOR 14 DAYS OR LONGER SHALL BE STABILIZED WITHIN SEVEN (7) DAYS OF ACTIVITY.
21. ALL GRASS AREAS ARE TO BE SEEDED AND STRAW MULCHED WITHIN FIVE (5) DAYS AFTER FINAL GRADE IS REACHED.
22. STRUCTURAL PRACTICES SHALL BE USED TO CONTROL EROSION AND TRAP SEDIMENTS FROM ALL SITES REMAINING DISTURBED FOR MORE THAN (14) FOURTEEN DAYS.
23. SEED AND MULCH ALL AREAS NOT SHOWN AS BUILDING OR PAVEMENT AND ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES UNLESS OTHERWISE NOTED IN THE PLANS.
24. ALL STREETS MUST BE MAINTAINED DURING CONSTRUCTION. STREETS SHALL BE KEPT FREE OF MUD, DIRT, AND CONSTRUCTION DEBRIS. CONTRACTOR SHALL PROVIDE ROUTINE STREET SWEEPING TO ENSURE MINIMAL EROSION INTO THE PUBLIC STORM SEWER SYSTEM AND ROADWAY.
25. CLEANUP SHALL BE CONDUCTED IN A MANNER TO ENSURE THAT EROSION MEASURES ARE NOT DISTURBED.
26. THE LENAWEE COUNTY DRAIN COMMISSION MAY REQUIRE WORK TO BE STOPPED AND THE STORM DRAINAGE OUTLET TO BE PLUGGED IF CONDITIONS BECOME UNSATISFACTORY.
27. DUST CONTROL – SITE SHALL BE SPRAYED WITH WATER ON DRY WINDY DAYS TO CONTROL AIRBORNE DUST FROM LEAVING THE SITE.
28. CONSTRUCTION SCHEDULE
    - 28.1. CONTACT LENAWEE COUNTY DRAIN COMMISSION AT (517) 264-4696
    - 28.2. INSTALL PERIMETER EROSION CONTROL MEASURES – JUNE 2025
    - 28.3. STRIP TOPSOIL, CONSTRUCT MOUNDING, AND BEGIN FILLS – JUNE 2025
    - 28.4. INSTALL UNDERGROUND UTILITIES – JULY 2025
    - 28.5. INSTALL EROSION CONTROL MEASURES IN SWALES AND AT STORM STRUCTURES AS CONSTRUCTED. – JULY 2025
    - 28.6. IF SOIL IS TO REMAIN EXPOSED OVER THE WINTER MONTHS, IT SHALL BE STABILIZED.
    - 28.7. INSTALL PAVEMENT – OCTOBER 2025
    - 28.8. FINISH GRADING AND FINAL STABILIZATION – NOVEMBER 2025
    - 28.9. REMOVE TEMPORARY EROSION CONTROL MEASURES WHEN GROUND IS STABILIZED.
    - 28.10. SITE FULLY STABILIZED – DECEMBER 2025

2 SEEDING AND MULCHING

SPREAD 4 TO 6 INCHES OF TOPSOIL.

FERTILIZE ACCORDING TO SOIL TEST (OR APPLY 10 LB./1000 SQ. FT. OF 20-10-10 OR 10-10-10 FERTILIZER.)

SEED WITH AN APPROPRIATE MIX FOR THE SITE (SEE TABLE.) RAKE LIGHTLY TO COVER SEED WITH 1/4" OF SOIL. ROLL LIGHTLY.

MULCH WITH STRAW (70-90 LB. OR ONE BALE PER 1000 SQ. FT.)

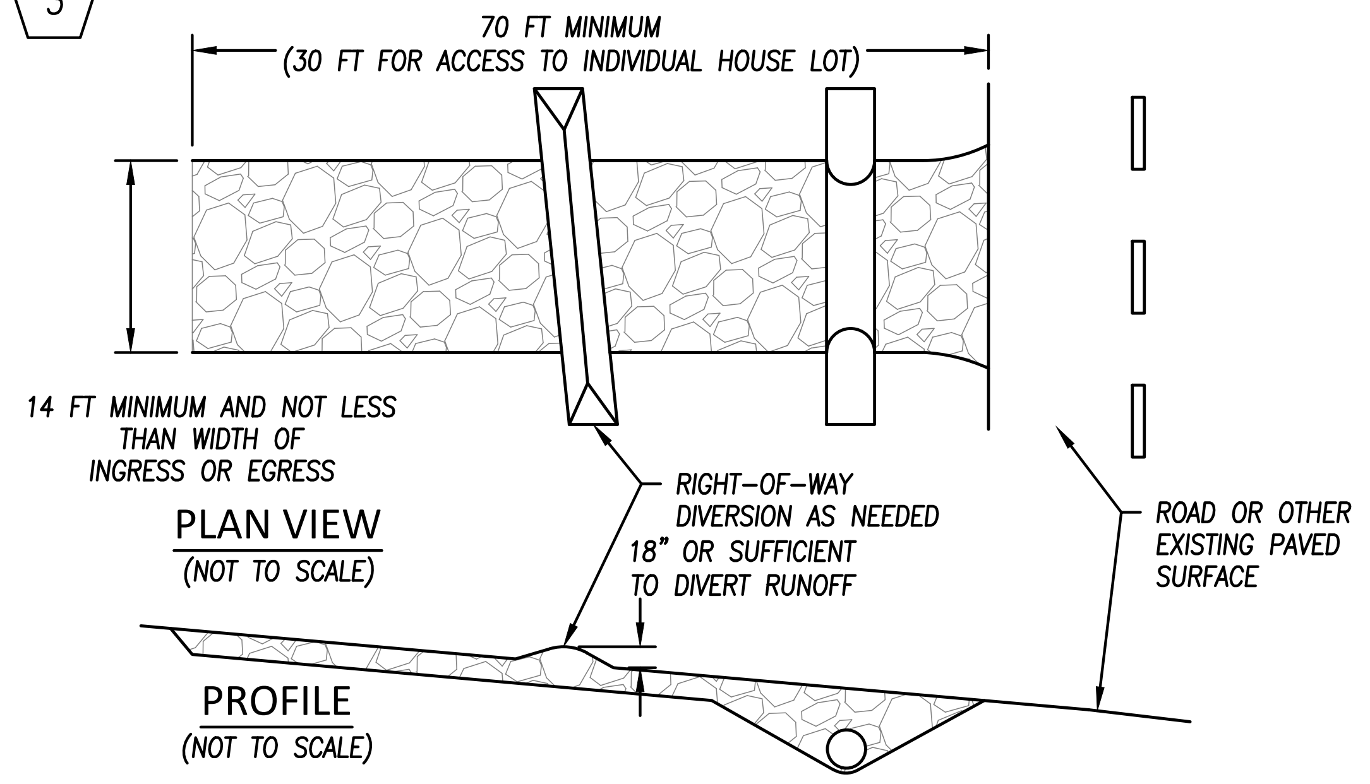
ANCHOR MULCH BY PUNCHING 2 INCHES INTO THE SOIL WITH A DULL, WEIGHTED DISK OR BY USING NETTING OR OTHER MEASURES ON STEEP SLOPES, OR WINDY AREAS. WATER GENTLY EVERY DAY OR TWO TO KEEP SOIL MOIST. LESS WATERING IS NEEDED ONCE GRASS IS 2 INCHES TALL.

TEMPORARY SEEDING SPECIES SELECTION

SEEDING DATES	SPECIES	LB/1,000 FT^2	LB/ACRE
MARCH 1 TO AUGUST 15	OATS TALL FESCUE ANNUAL RYEGRASS	3 1 1	128 (4 BUSHEL) 40 40
	PERENNIAL RYEGRASS TALL FESCUE ANNUAL RYEGRASS	1 1 1	40 LB. 40 LB. 40 LB.
	ANNUAL RYEGRASS PERENNIAL RYEGRASS CREEPING RED FESCUE KENTUCKY BLUEGRASS	1.25 3.25 0.4 0.4	55 142 17 17
AUGUST 16 TO NOVEMBER 1	RYE TALL FESCUE ANNUAL RYEGRASS	3 1 1	112 (2 BUSHEL) 40 LB. 40 LB.
	WHEAT TALL FESCUE ANNUAL RYEGRASS	3 1 1	120 (2 BUSHEL) 40 LB. 40 LB.
	PERENNIAL RYEGRASS TALL FESCUE ANNUAL RYEGRASS	1 1 1	40 LB. 40 LB. 40 LB.
	ANNUAL RYEGRASS PERENNIAL RYEGRASS CREEPING RED FESCUE KENTUCKY BLUEGRASS	1.25 3.25 0.4 0.4	40 40 40 40
NOVEMBER 1 TO FEBRUARY 29	USE MULCH ONLY OR DORMANT SEEDING.		

NOTE: OTHER APPROVED SEED SPECIES MAY BE SUBSTITUTED.
PERMANENT SEEDING TO BE AS PER LANDSCAPING PLANS

3 CONSTRUCTION ENTRANCE



PLAN VIEW
(NOT TO SCALE)

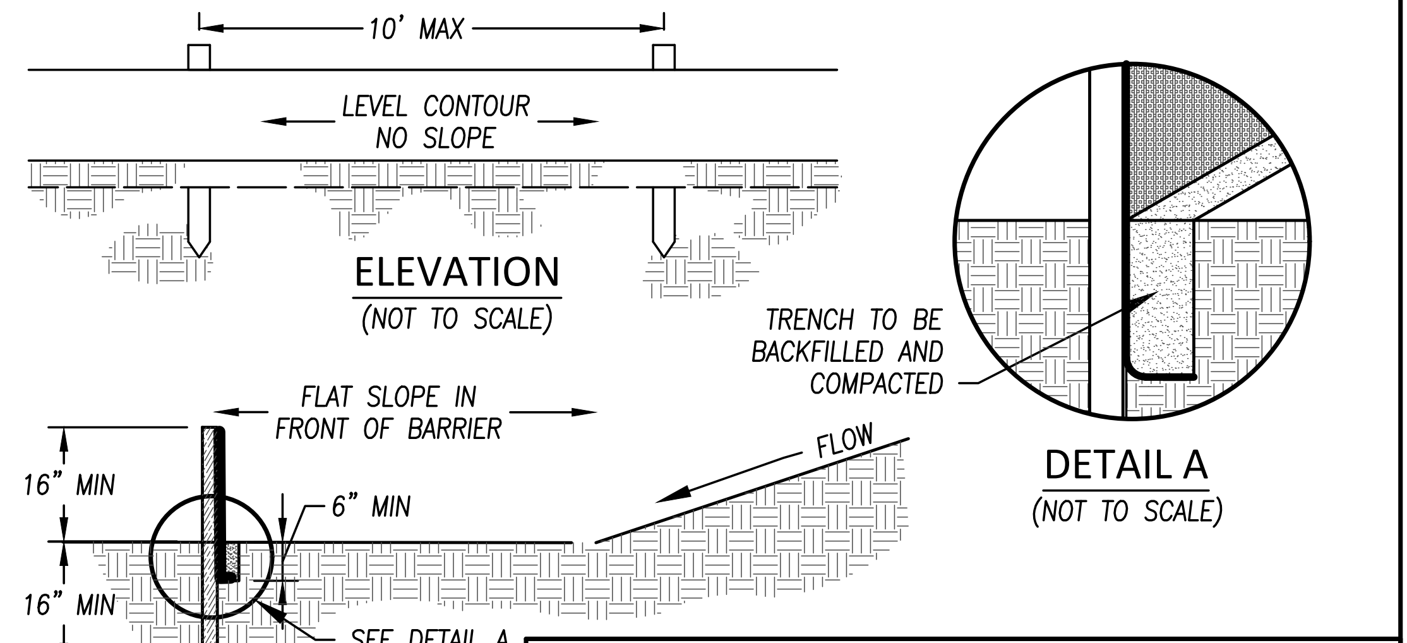
PROFILE
(NOT TO SCALE)

1. STONE SIZE – (1.5 – 2.5 INCH) STONE SHALL BE USED, OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH – THE CONSTRUCTION ENTRANCE SHALL BE AS LONG AS REQUIRED TO STABILIZE HIGH TRAFFIC AREAS BUT NOT LESS THAN 70 FT. (EXCEPTION: APPLY 30 FT. MINIMUM TO SINGLE RESIDENCE LOTS).
3. THICKNESS – THE STONE LAYER SHALL BE AT LEAST 6 INCHES THICK FOR LIGHT DUTY ENTRANCES OR AT LEAST 10 INCHES FOR HEAVY DUTY USE.
4. WIDTH – THE ENTRANCE SHALL BE AT LEAST 14 FEET WIDE, BUT NOT LESS THAN THE FULL FINAL WIDTH AT POINTS WHERE INGRESS AND EGRESS OCCURS.
5. GEOTEXTILE – A GEOTEXTILE SHALL BE LAID OVER THE ENTIRE AREA PRIOR TO PLACING STONE. IT SHALL BE COMPOSED OF STRONG, ROT-PROOF POLYMERIC FIBERS AND MEET THE FOLLOWING SPECIFICATIONS:

GEOTEXTILE SPECIFICATION FOR CONSTRUCTION ENTRANCE	
MINIMUM TENSILE STRENGTH	200 LBS.
MINIMUM PUNCTURE STRENGTH	80 PSI.
MINIMUM TEAR STRENGTH	50 LBS.
MINIMUM BURST STRENGTH	320 PSI.
MINIMUM ELONGATION	20%
EQUIVALENT OPENING SIZE	EOS < 0.6 MM.
PERMITTIVITY	1x10-3 CM/SEC.

6. TIMING – THE CONSTRUCTION ENTRANCE SHALL BE INSTALLED AS SOON AS IS PRACTICABLE BEFORE MAJOR GRADING ACTIVITIES.
7. CULVERT – A PIPE OR CULVERT SHALL BE CONSTRUCTED UNDER THE ENTRANCE IF NEEDED TO PREVENT SURFACE WATER FROM FLOWING ACROSS THE ENTRANCE OR TO PREVENT RUNOFF FROM BEING DIRECTED OUT ONTO PAVED SURFACES.
8. WATER BAR – A WATER BAR SHALL BE CONSTRUCTED AS PART OF THE CONSTRUCTION ENTRANCE IF NEEDED TO PREVENT SURFACE RUNOFF FROM FLOWING THE LENGTH OF THE CONSTRUCTION ENTRANCE AND OUT ONTO PAVED SURFACES.
9. MAINTENANCE – TOP DRESSING OF ADDITIONAL STONE SHALL BE APPLIED AS CONDITIONS DEMAND. MUD SPILLED, DROPPED, WASHED, OR TRACKED ONLY PUBLIC ROADS, OR ANY SURFACE WHERE RUNOFF IS NOT CHECKED BY SEDIMENT CONTROLS, SHALL BE REMOVED IMMEDIATELY. REMOVAL SHALL BE ACCOMPLISHED BY SCRAPING OR SWEEPING.
10. CONSTRUCTION ENTRANCES SHALL NOT BE RELIED UPON TO REMOVE MUD FROM VEHICLES AND PREVENT OFF-SITE TRACKING. VEHICLES THAT ENTER AND LEAVE THE CONSTRUCTION SITE SHALL BE RESTRICTED FROM MUDDY AREAS.
11. REMOVAL – THE ENTRANCE SHALL REMAIN IN PLACE UNTIL THE DISTURBED AREA IS STABILIZED OR REPLACED WITH A PERMANENT ROADWAY OR ENTRANCE.

4 SILT FENCE



ELEVATION
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DETAIL A
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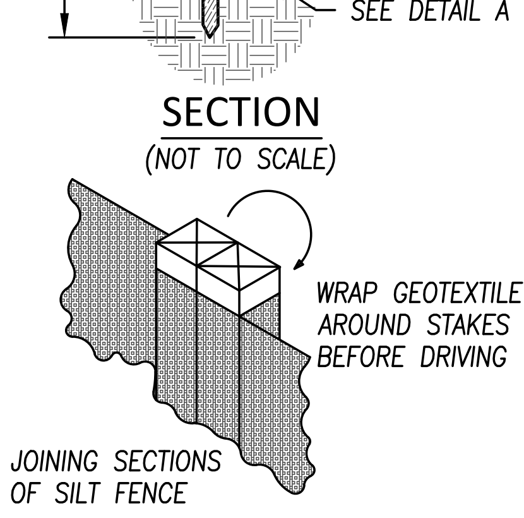


SECTION
(NOT TO SCALE)

JOINING SECTIONS OF SILT FENCE

MINIMUM CRITERIA FOR SILT FENCE FABRIC

FABRIC PROPERTIES	VALUES	TEST METHOD
MINIMUM TENSILE STRENGTH	120 LBS (535 N)	ASTM D 4632
MAXIMUM ELONGATION AT 60 LBS	50%	ASTM D 4632
MINIMUM PUNCTURE STRENGTH	50 LBS (220 N)	ASTM D 4833
MINIMUM TEAR STRENGTH	40 LBS (180 N)	ASTM D 4533
APPARENT OPENING SIZE	≤ 0.84 MM	ASTM D 4751
MINIMUM PERMITTIVITY	1X10-2 SEC.-1	ASTM D 4491
UV EXPOSURE STRENGTH RETENTION	70%	ASTM G 4355

MATERIALS:

1. FENCE POST – THE LENGTH SHALL BE A MINIMUM OF 32 INCHES. WOOD POSTS WILL BE 2-BY-2-IN. NOMINAL DIMENSIONED HARDWOOD OF SOUND QUALITY. THEY SHALL BE FREE OF KNOTS, SPLITS, AND OTHER VISIBLE IMPERFECTIONS THAT WILL WEAKEN THE POSTS. THE MAXIMUM SPACING BETWEEN POSTS SHALL BE 10 FT. POSTS SHALL BE DRIVEN A MINIMUM 16 INCHES INTO THE GROUND, WHERE POSSIBLE. IF NOT POSSIBLE, THE POSTS SHALL BE ADEQUATELY SECURED TO PREVENT OVERTURNING OF THE FENCE DUE TO SEDIMENT/WATER LOADING.
2. SILT FENCE FABRIC – SEE CHART.

INSTALLATION:

3. SILT FENCE SHALL BE CONSTRUCTED BEFORE UPSLOPE LAND DISTURBANCE BEGINS.
4. ALL SILT FENCE SHALL BE PLACED AS CLOSE TO THE CONTOUR AS POSSIBLE SO THAT WATER WILL NOT CONCENTRATE AT LOW POINTS IN THE FENCE AND SO THAT SMALL SWALES OR DEPRESSIONS THAT MAY CARRY SMALL CONCENTRATED FLOWS TO THE SILT FENCE ARE DISSIPATED ALONG ITS LENGTH.
5. ENDS OF THE SILT FENCES SHALL BE BROUGHT UPSLOPE SLIGHTLY SO THAT WATER PONDED BY THE SILT FENCE WILL BE PREVENTED FROM FLOWING AROUND THE ENDS.
6. SILT FENCE SHALL BE PLACED ON THE FLATTEST AREA AVAILABLE.
7. WHERE POSSIBLE, VEGETATION SHALL BE PRESERVED FOR 5 FEET (OR AS MUCH AS POSSIBLE) UPSLOPE FROM THE SILT FENCE. IF VEGETATION IS REMOVED, IS SHALL BE REESTABLISHED WITHIN 7 DAYS FROM THE INSTALLATION OF THE SILT FENCE.
8. THE HEIGHT OF THE SILT FENCE SHALL BE A MINIMUM OF 16 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
9. THE SILT FENCE SHALL BE PLACED IN AN EXCAVATED OR SLICED TRENCH CUT A MINIMUM OF 6 INCHES DEEP. THE TRENCH SHALL BE MADE WITH A TRENCHER, CABLE LAYING MACHINE, SLICING MACHINE, OR OTHER SUITABLE DEVICE THAT WILL ENSURE AN ADEQUATELY UNIFORM TRENCH DEPTH.
10. THE SILT FENCE SHALL BE PLACED WITH THE STAKES ON THE DOWNSLOPE SIDE OF THE GEOTEXTILE. A MINIMUM OF 8 INCHES OF GEOTEXTILE MUST BE BELOW THE GROUND SURFACE. EXCESS MATERIAL SHALL LAY ON THE BOTTOM OF THE 6-INCH DEEP TRENCH. THE TRENCH SHALL BE BACKFILLED AND COMPACTED ON BOTH SIDES OF THE FABRIC.
11. SEAMS BETWEEN SECTIONS OF SILT FENCE SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST WITH A MINIMUM 6-IN. OVERLAP PRIOR TO DRIVING INTO THE GROUND, (SEE DETAILS).

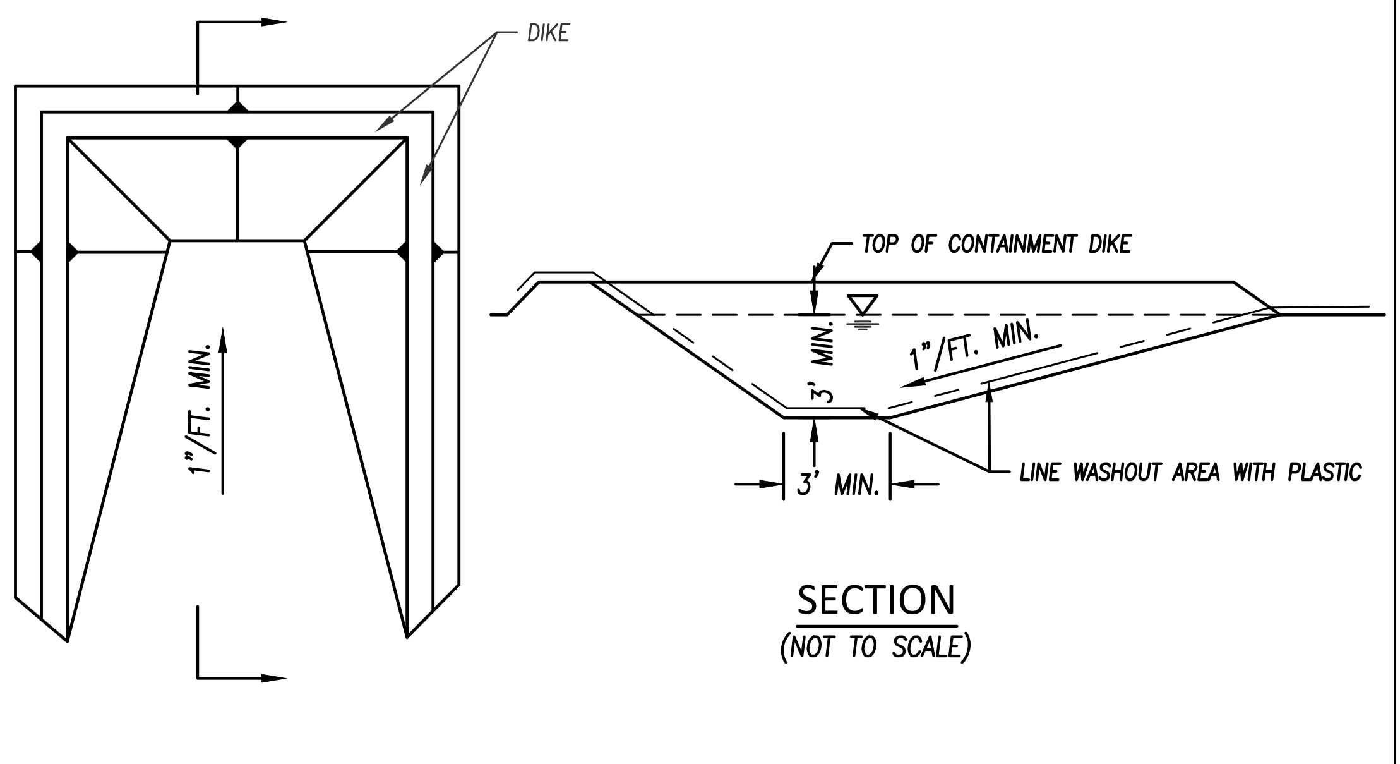
MAINTENANCE:

1. SILT FENCE SHALL ALLOW RUNOFF TO PASS ONLY AS DIFFUSE FLOW THROUGH THE GEOTEXTILE. IF RUNOFF OVER-TOPS THE SILT FENCE, FLOWS UNDER THE FABRIC OR AROUND THE FENCE ENDS, OR IN ANY OTHER WAY ALLOWS A CONCENTRATED FLOW DISCHARGE, ONE OF THE FOLLOWING SHALL BE PERFORMED, AS APPROPRIATE:
    - 1.1. THE LAYOUT OF THE SILT FENCE SHALL BE CHANGED
    - 1.2. ACCUMULATED SEDIMENT SHALL BE REMOVED
    - 1.3. OTHER PRACTICES SHALL BE INSTALLED
2. SEDIMENT DEPOSITS SHALL BE ROUTINELY REMOVED WHEN THE DEPOSIT REACHES APPROXIMATELY ONE-HALF OF THE HEIGHT OF THE SILT FENCE.
3. SILT FENCES SHALL BE INSPECTED AFTER EACH RAINFALL AND AT LEAST DAILY DURING A PROLONGED RAINFALL. THE LOCATION OF EXISTING SILT FENCE SHALL BE REVIEWED DAILY TO ENSURE ITS PROPER LOCATION AND EFFECTIVENESS.
4. IF DAMAGED, THE SILT FENCE SHALL BE REPAIRED IMMEDIATELY.

REMOVAL

1. REMOVE SILT FENCE ONCE THE AREA UPSLOPE OF THE SILT FENCE HAS BEEN STABILIZED WITH PERMANENT INSTALLATIONS SUCH AS PAVEMENT, BUILDINGS, LANDSCAPING, OR OTHER VEGETATION.

8 CONCRETE TRUCK WASHOUT



SECTION
(NOT TO SCALE)

7 MANUFACTURED INLET FILTER

MATERIALS

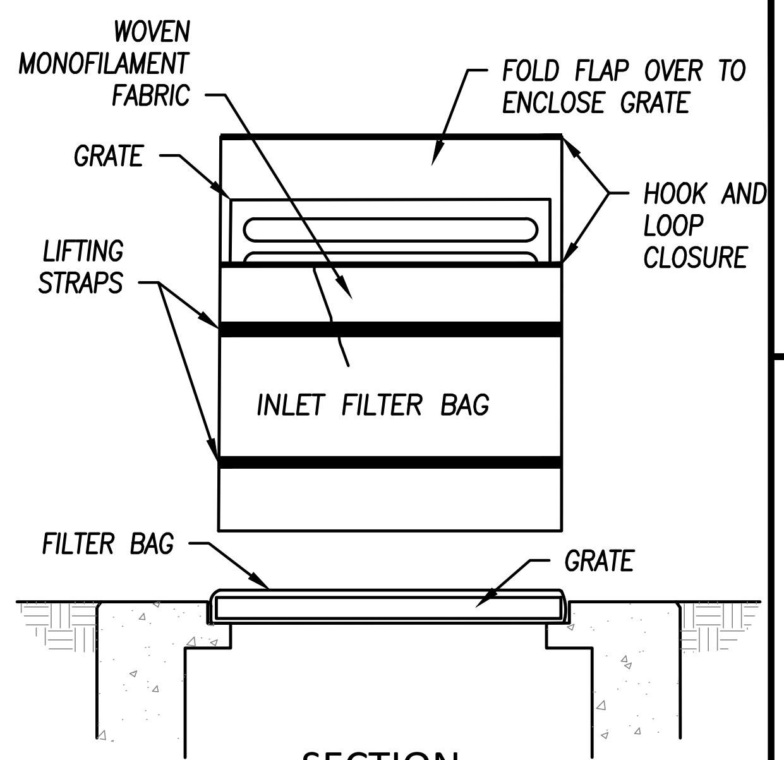
1. INLET FILTERS ARE TO BE MANUFACTURED FROM WOVEN MONOFILAMENT FABRIC MATERIALS MEETING THE REQUIREMENTS OF THE TABLE BELOW.

INSTALLATION:

1. STAND GRATE ON END AND PLACE THE BAG OVER THE GRATE.
2. ROLL THE GRATE OVER SO THAT THE OPEN END IS UP AND PULL UP THE SLACK.
3. TUCK THE FLAP IN AND PRESS THE HOOK AND LOOP STRIPS TOGETHER MAKING SURE THAT THE END OF THE GRATE IS COMPLETELY COVERED BY THE FLAP.
4. CAREFULLY PLACE THE BAG WITH THE GRATE INSERTED INTO THE CATCH BASIN FRAME USING THE LIFTING HANDLES.

MAINTENANCE:

1. ROUTINELY INSPECT INLET FILTERS AFTER EACH SIGNIFICANT RAIN, MAINTAINING INLET FILTERS IN A FUNCTIONAL CONDITION AT ALL TIMES.
2. REMOVE SILT, SEDIMENT, AND DEBRIS FROM THE SURFACE AND THE VICINITY OF THE UNIT WITH A SQUARE POINT SHOVEL OR STIFF BRISTLE BROOM. REMOVE FINE MATERIAL FROM INSIDE THE FILTER BAG AS NEEDED.
3. KEEP MATERIAL AWAY FROM ENVIRONMENTALLY SENSITIVE AREAS AND WATERWAYS IN A MANNER SATISFACTORY TO THE ENGINEER/INSPECTOR.
4. REPLACE AND DISPOSE OF FILTER BAGS DAMAGED WHICH ARE NO LONGER EFFECTIVE.
5. WHERE THE INLET FILTER DETERIORATES OR FAILS, IT SHALL BE REPAIRED OR REPLACED WITH A MORE EFFECTIVE SOLUTION.
6. REMOVE INLET FILTERS FROM THE SITE WHEN NO LONGER REQUIRED.



SECTION
(NOT TO SCALE)

INLET FILTER SPECIFICATIONS

MECHANICAL PROPERTIES	TEST METHOD	MARV
GRAB TENSILE STRENGTH	ASTM D 4632	365 LBS X 200 LBS
GRAB TENSILE ELONGATION	ASTM D 4632	24% X 10%
PUNCTURE STRENGTH	ASTM D 4833	90 LBS
MULLEN BURST STRENGTH	ASTM D 3786	450 PSI
TRAPEZOID TEAR STRENGTH	ASTM D 4533	115 LBS X 75 LBS
UV RESISTANCE	ASTM D 4355	90 %
APPARENT OPENING SIZE	ASTM D 4751	NO 40 (US STD SIEVE)
FLOW RATE	ASTM D 4491	145 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D 4491	2.1/SEC

STATE OF MICHIGAN
KYLE W. LAYTON
ENGINEER
No.
6201313424
LICENSED PROFESSIONAL ENGINEER
February 21, 2025

NO	REVISION	DATE
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DGL CONSULTING ENGINEERS, LLC
3455 BRIARFIELD BLVD. SUITE E
MAUMEE, OH 43537
PHONE: 419.535.1015
www.dgl-ltd.com

RE-DEVELOPMENT BIXBY HOSPITAL

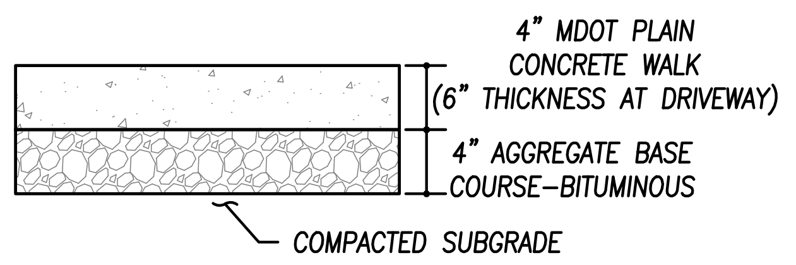
818 RIVERSIDE AVENUE
ADRIAN, MICHIGAN 49221
CITY OF ADRIAN, LENAWEE COUNTY
PART OF SECTION 27, TOWN 6 SOUTH, RANGE 3 EAST

EROSION CONTROL NOTES & DETAILS

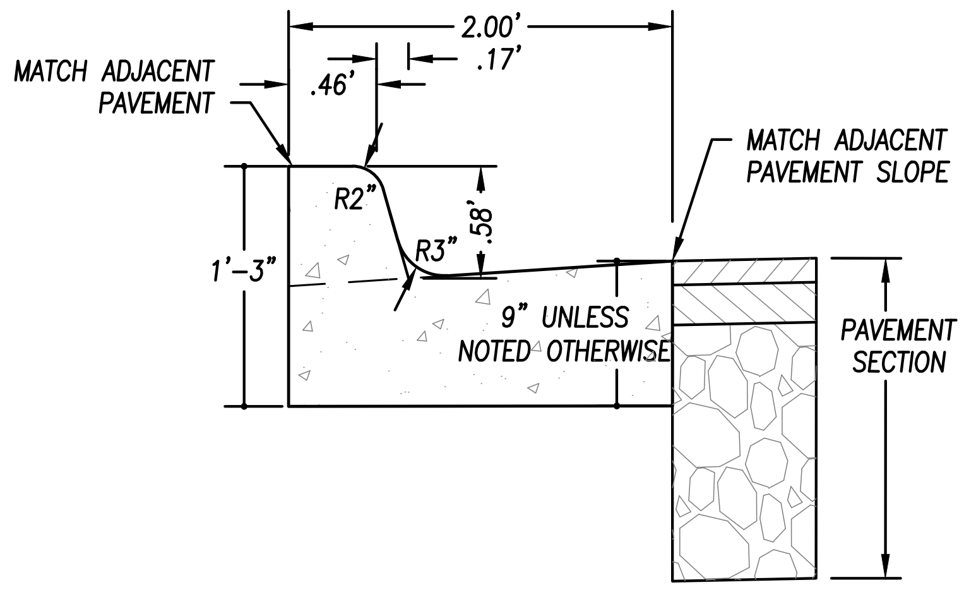
FILE:	24191 CD.dwg
JOB NO.:	24191
DRAWN BY:	LMM
ISSUED:	JAN 30, 2025

C10

PLOTTED: Feb 21, 2025 – 7:49am
DRAWING: M:\24191 (Windev – Bixby Hospital Development)\CIVIL\Dwg\24191 CD.dwg: C10 EC BIXBY

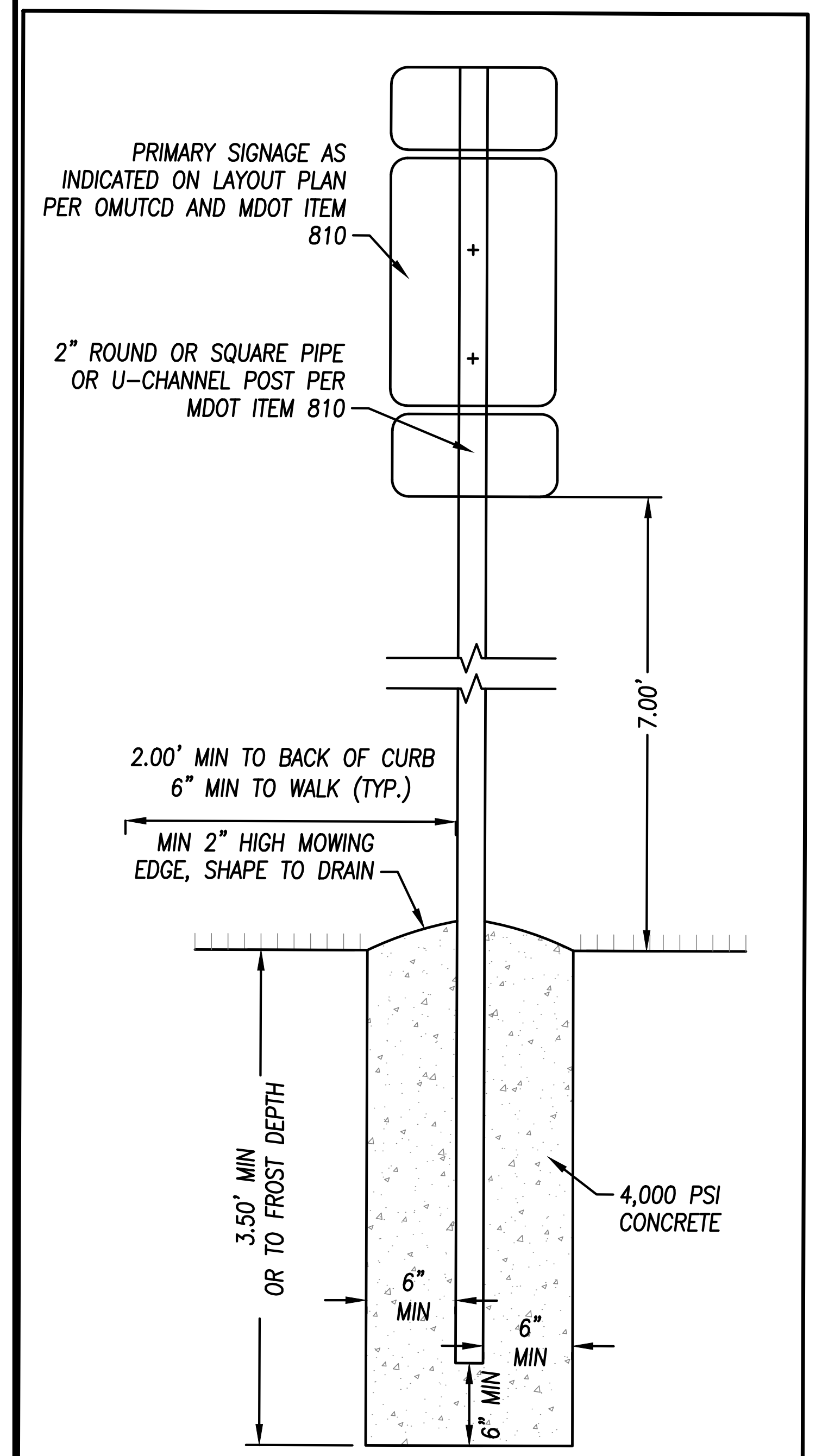


CONCRETE SIDEWALK SECTION

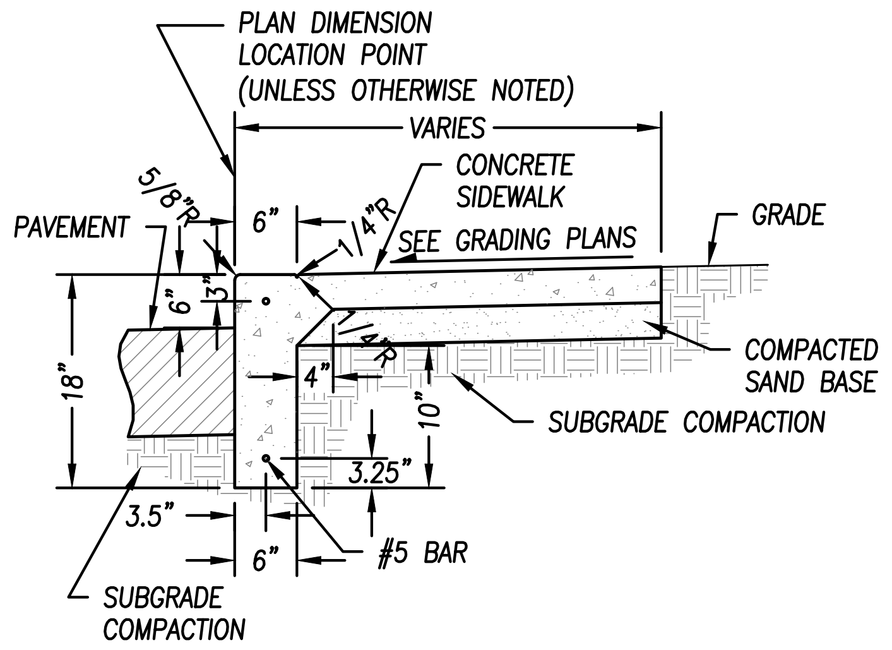


MDOT TYPE C4 CURB MODIFIED

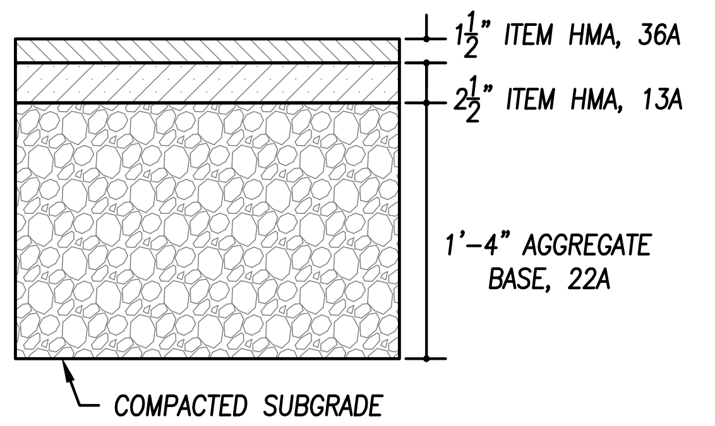
(SEE GRADING PLANS)



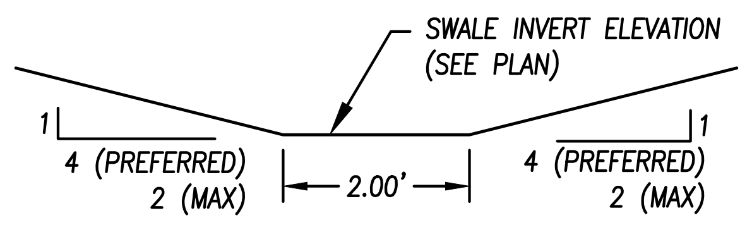
TYPICAL SIGNAGE IN LANDSCAPE AREA OR SIDEWALK



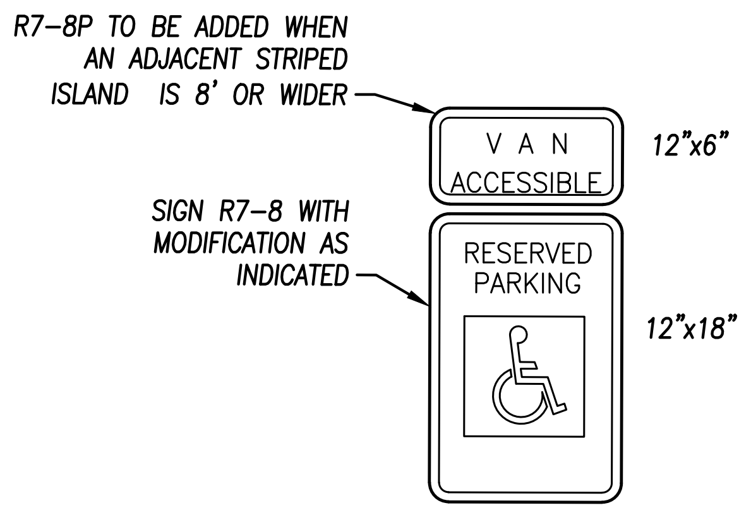
INTEGRAL CURB AND WALK



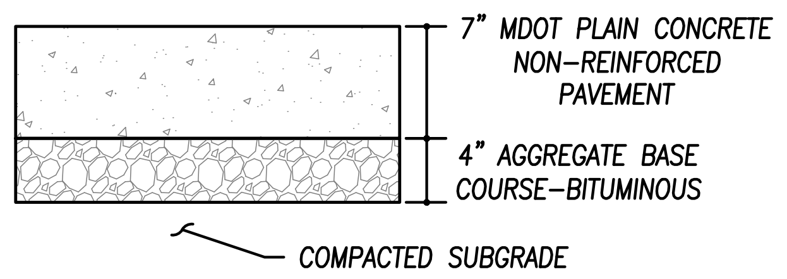
HEAVY PAVEMENT SECTION



TYPICAL SWALE SECTION



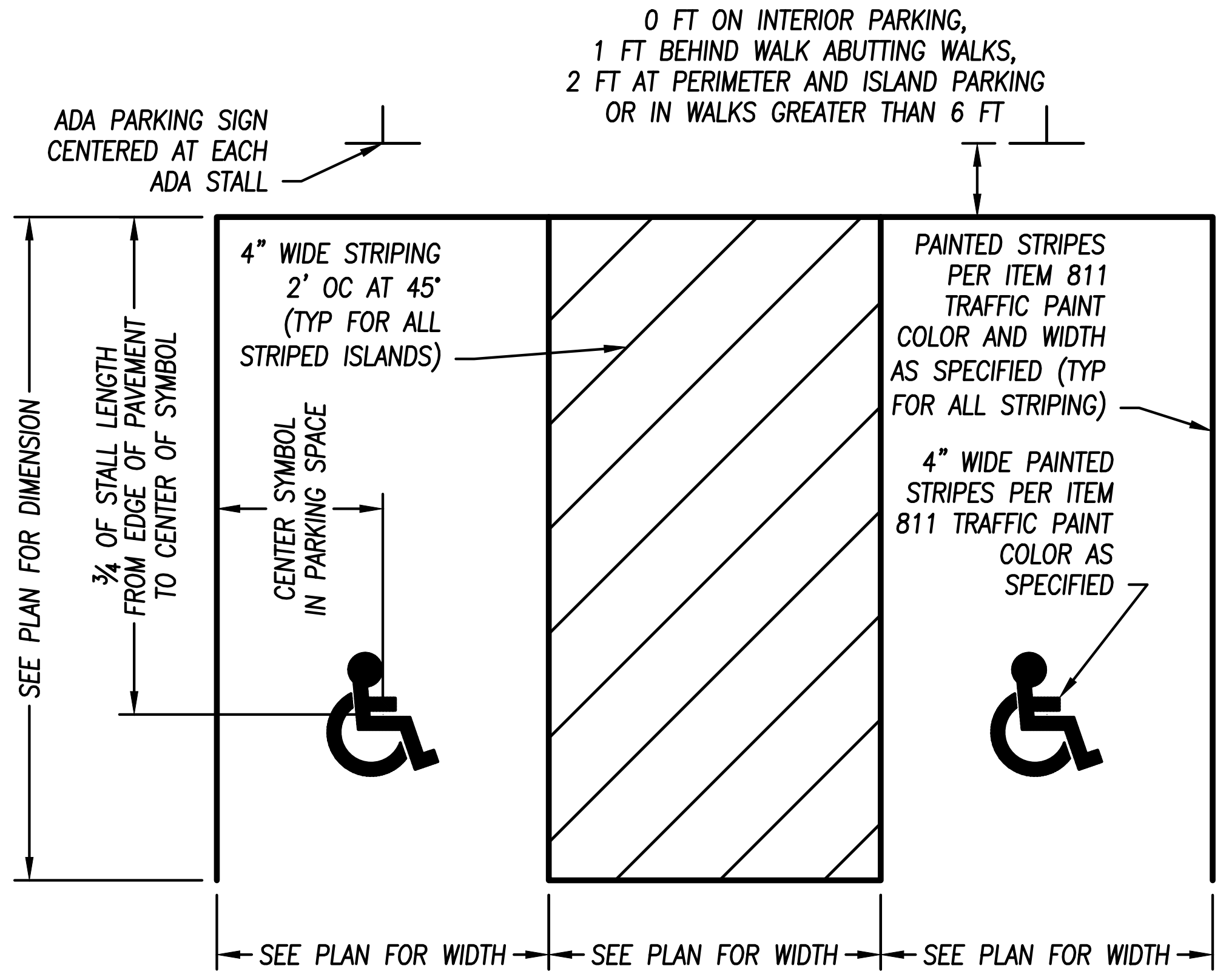
TYPICAL ADA SIGNAGE

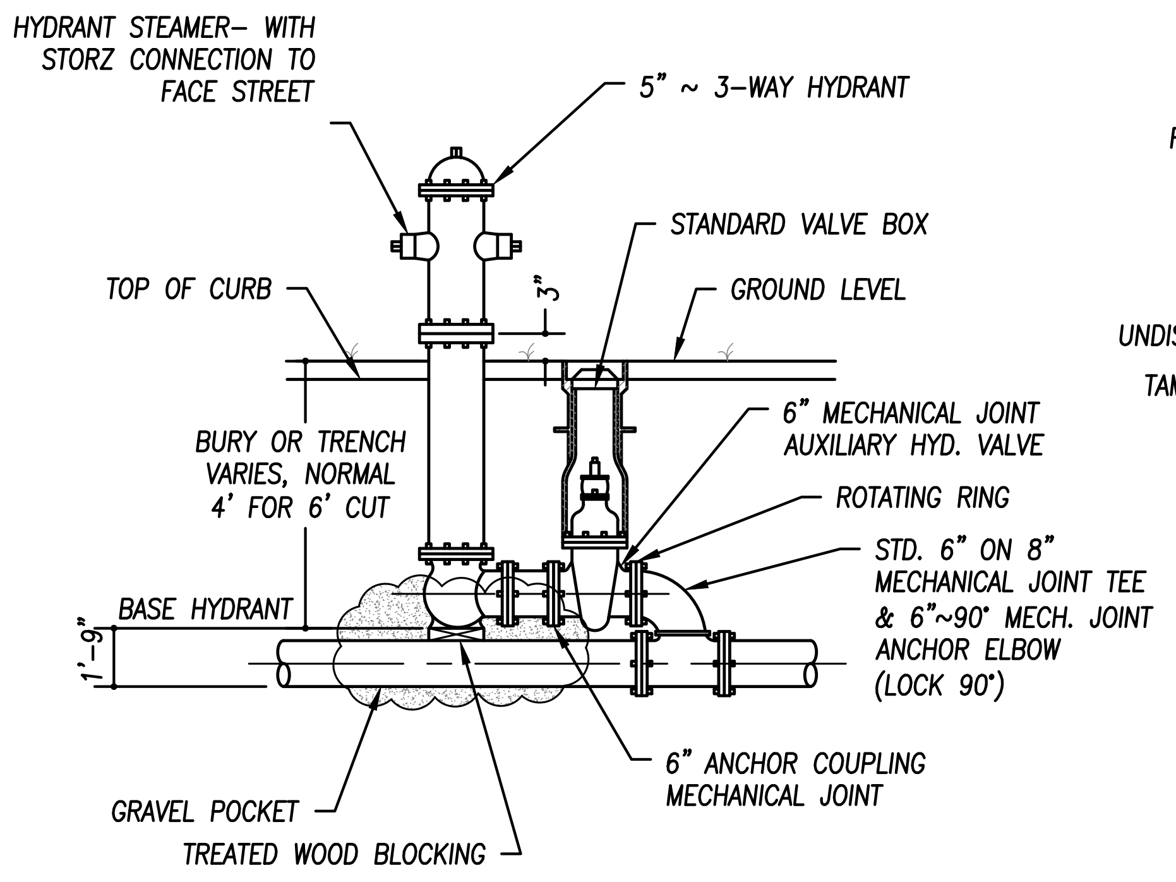


CONCRETE PAVEMENT SECTION

ADA PARKING/STRIPING

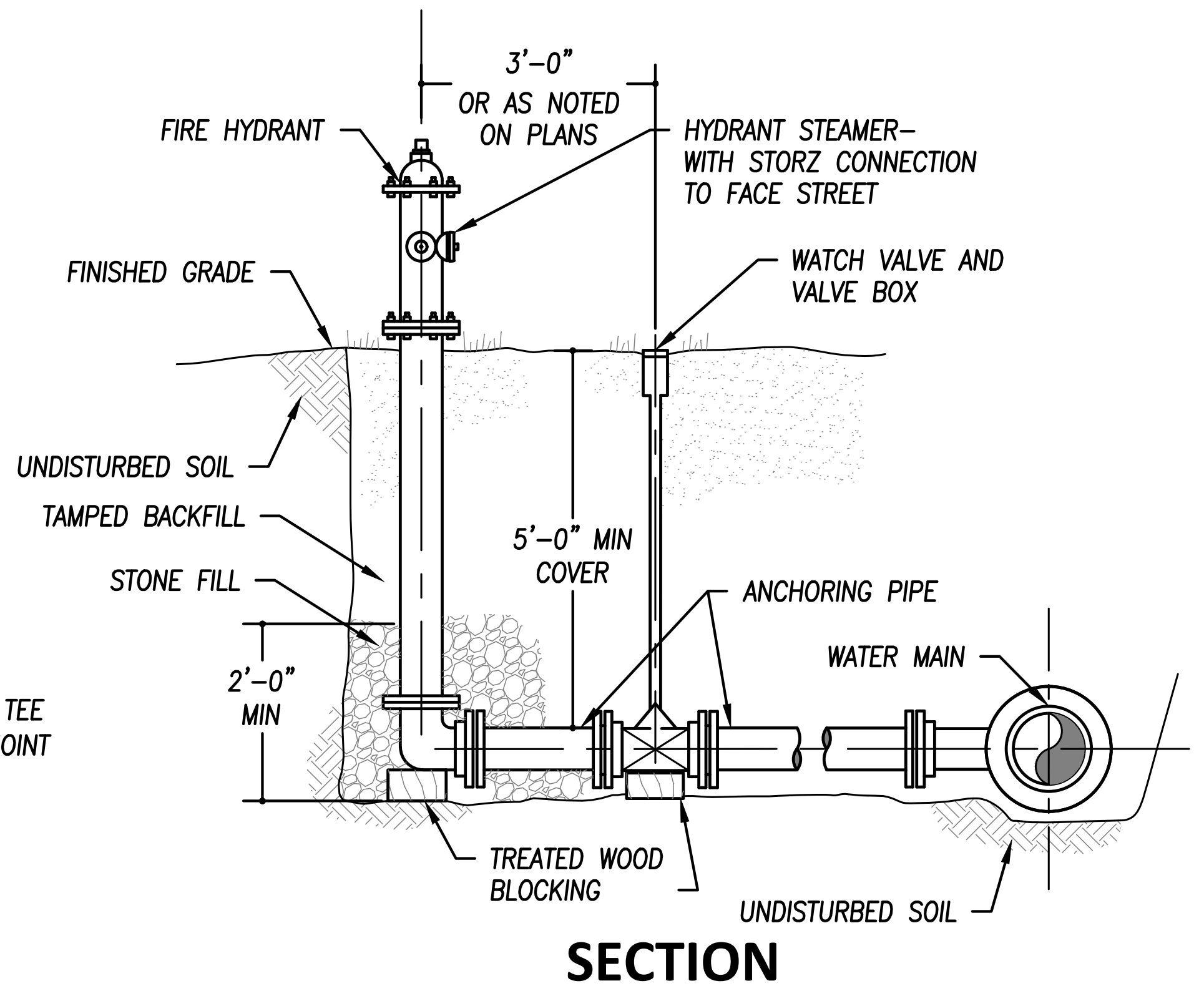
N.T.S.





STANDARD HYDRANT ASSEMBLY

N.T.S.



SECTION

SPECIAL HYDRANT ASSEMBLY

N.T.S.

NOTE:

STANDARD FOR PRIVATE HYDRANTS

HYDRANTS SHALL BE THE MANUFACTURERS LATEST AND BEST DESIGN; HOWEVER, THE ONLY ACCEPTABLE MODELS WILL BE THOSE IN MASS PRODUCTION A MINIMUM OF FIVE (5) YEARS. ALL HYDRANTS SHALL CONFORM TO THE LATEST AWWA STANDARD SPECIFICATION C-502.

HYDRANTS SHALL BE OF THE 5-1/4" VALVE OPENING COMPRESSION TYPE, OPENING AGAINST AND CLOSING WITH THE WATER PRESSURE, OPENING BY TURNING THE OPERATING NUT TO THE LEFT, COUNTER-CLOCKWISE DIRECTION. PRIVATE HYDRANTS TO BE USED IN THE LUCAS COUNTY DISTRIBUTION SYSTEM SHALL BE LIMITED TO THE FOLLOWING (MEETING AWWA C-502);
- AMERICAN VALVE MODEL B84B
- KENNEDY GUARDIAN K-81A
- MUELLER SUPER CENTURION 250

HYDRANT REPLACEMENT PARTS, INCLUDING EXTENSIONS, CAPS, NOZZLES, AND ALL EXTERNAL AND INTERNAL PARTS SHALL BE OF THE SAME MANUFACTURER AS HYDRANT.

2-1/2" CAPS SHALL HAVE GASKETS AND BE SECURED TO THE HYDRANT BY HOT-DIPPED, WELDED, GALVANIZED CHAINS OF 3/16" DIAMETER.

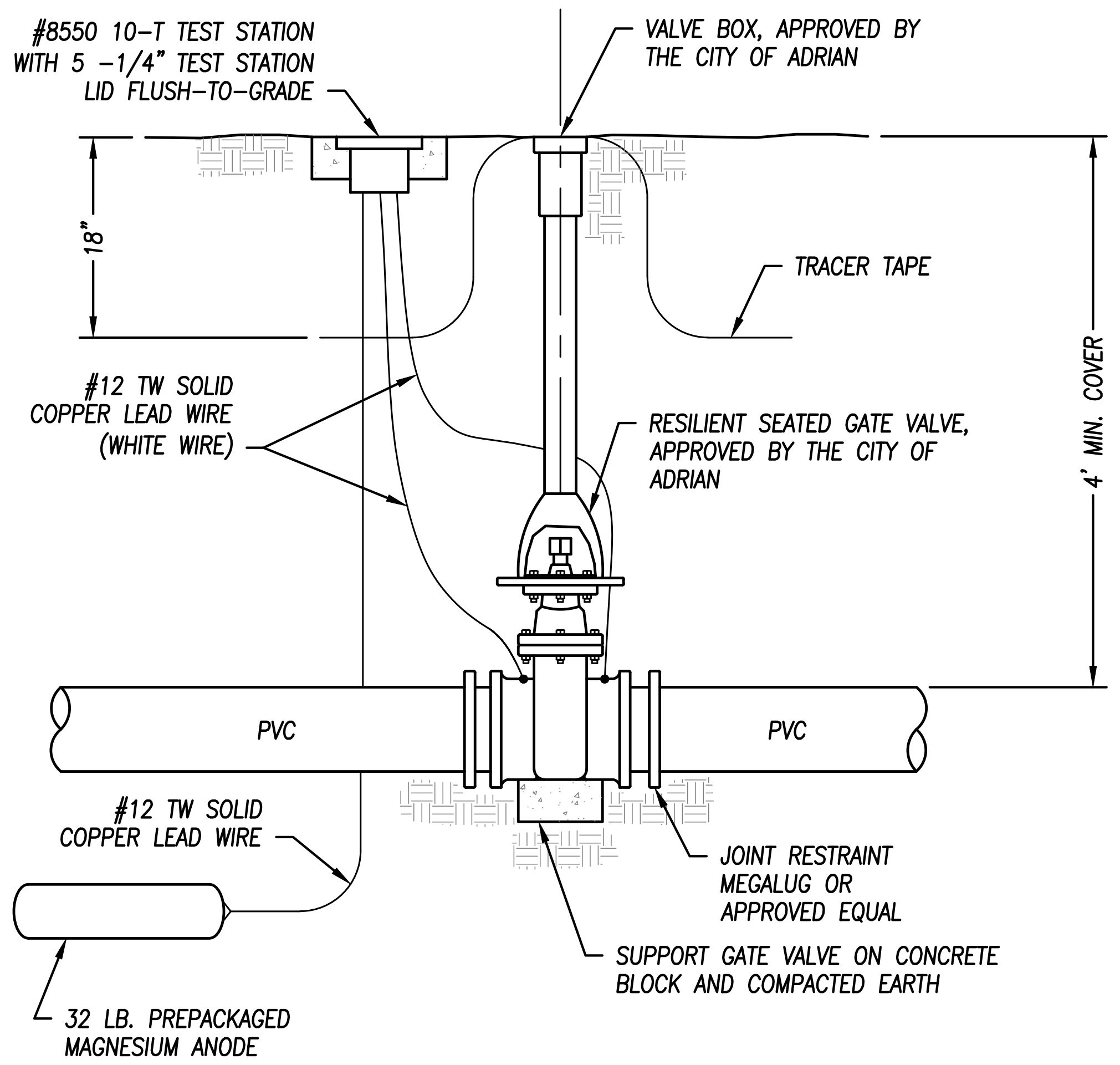
PUMPER NOZZLE SHALL BE 4-1/2" INTERNAL DIAMETER WITH STORZ CONNECTOR FROM HARRINGTON, INC. STORZ CONNECTOR SHALL BE AN INTEGRAL PART OF THE HYDRANT ASSEMBLY; HYDRANTS ARE LIMITED TO THOSE PROVIDED WITH THE INTEGRAL STORZ CONNECTOR. THE STORZ CAP SHALL BE CONNECTED TO THE HYDRANT WITH A 0.125" VINYL COATED AIRCRAFT CABLE. THE ENTIRE STORZ CONNECTOR SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS OF HARRINGTON, INC. #H.I.H.S. 5" STORZ. THE 2-1/2" NOZZLES SHALL BE NATIONAL STANDARD THREADS (NST). NUTS AND BOLTS EXPOSED TO SOIL SHALL BE 316 STAINLESS STEEL. STORZ CONNECTOR AND CAP ARE NOT TO BE PAINTED.

ALL HYDRANTS TO BE FIELD PAINTED WITH MACHINERY ENAMEL, HYDRANT BODY YELLOW, CAPS AND BONNETS BLACK.

VALVE BOXES

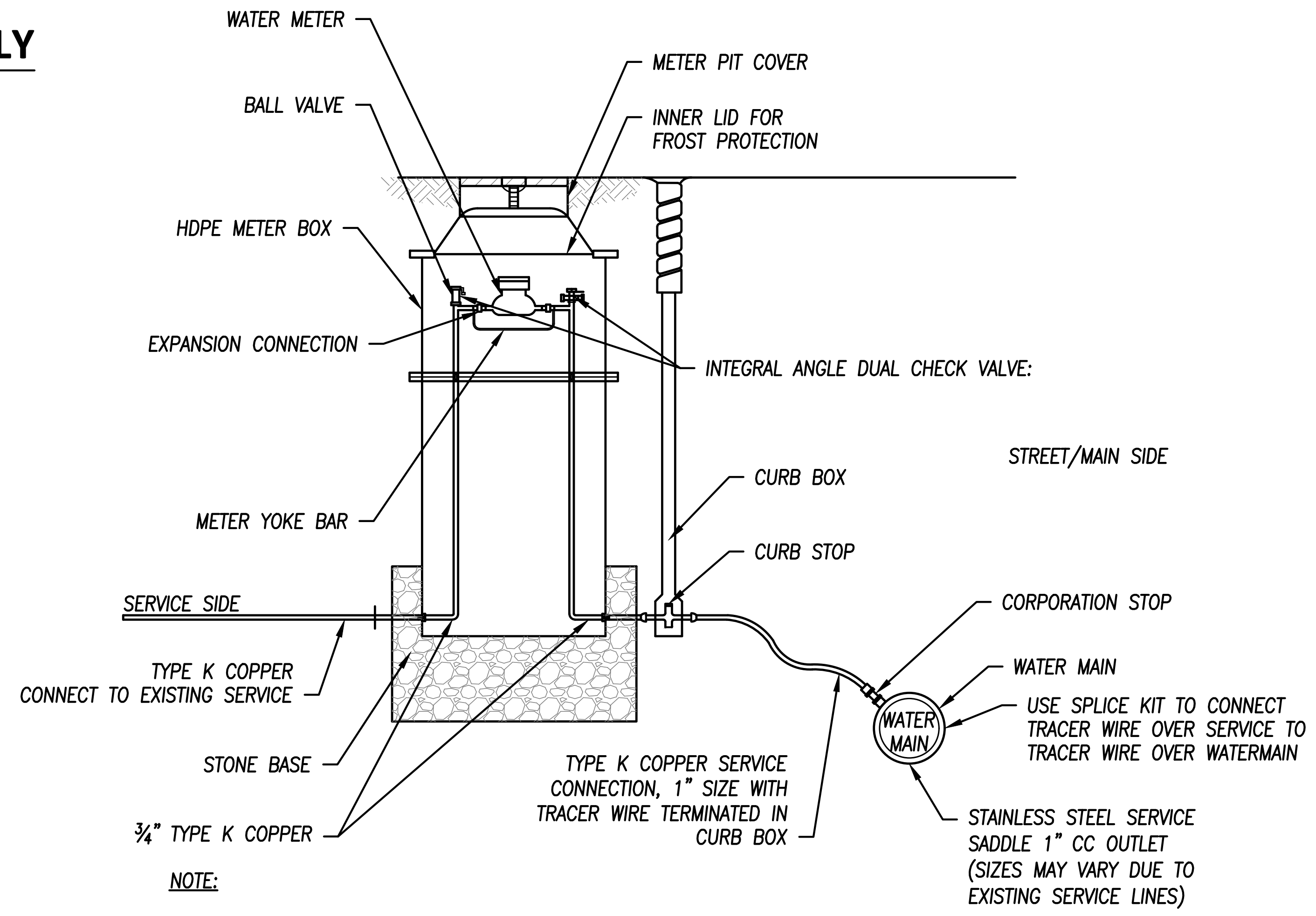
SEE WATERLINE NOTES SHEET C3.

KYLE W. LAYTON
No. 6201813474
February 21, 2025



GATE VALVE AND BOX (FOR 3" TO 12" MAINS)

N.T.S.

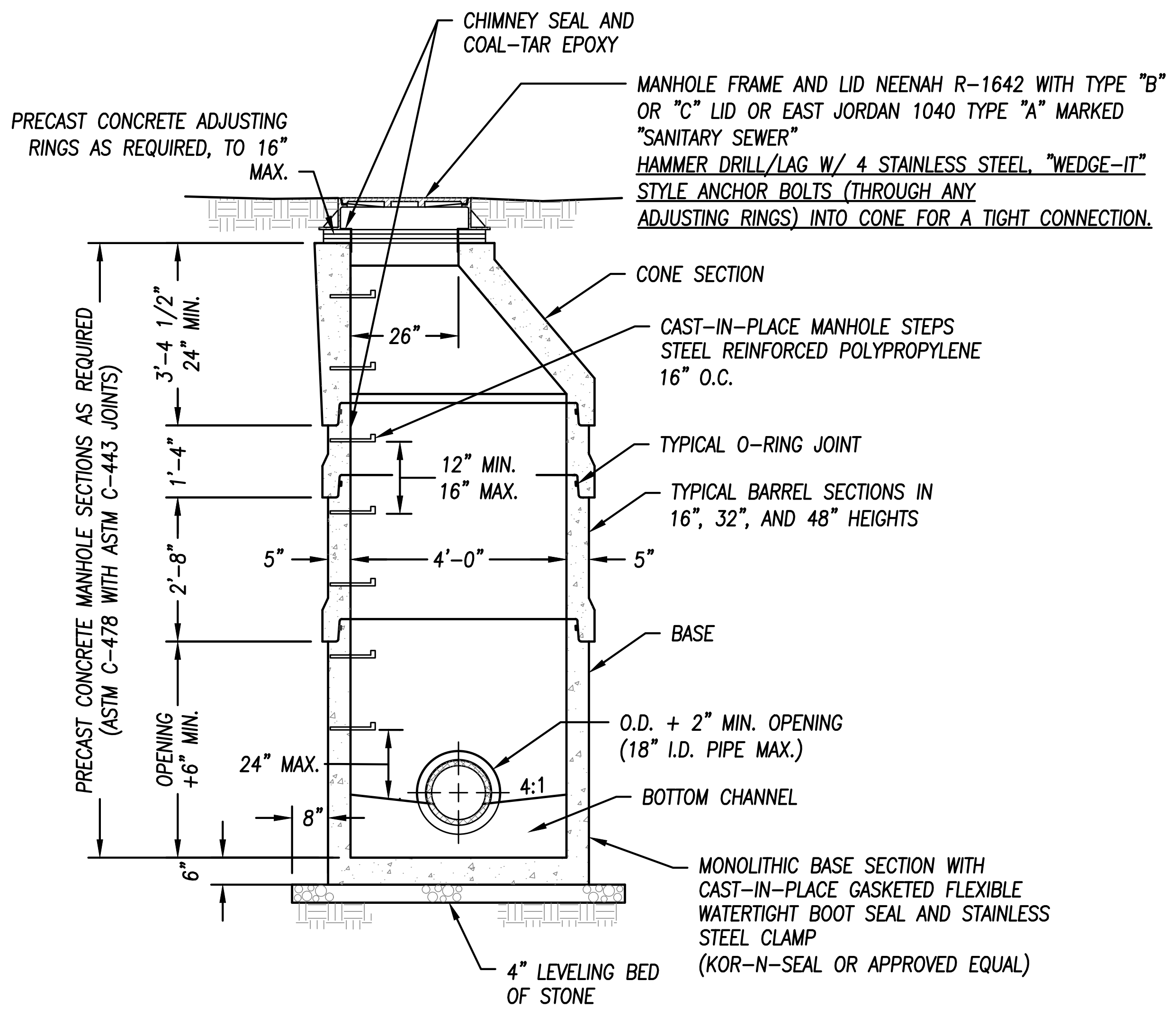


NOTE:

1. ALL PARTS TO BE APPROVED BY THE CITY OF ADRIAN FIRE DEPARTMENT.
2. METER SUPPLIED BY CITY AND INSTALLED BY CONTRACTOR. METER PIT, LID, YOKE, AND OTHER APPURTENANCES SUPPLIED AND INSTALLED BY CONTRACTOR.
3. ALL FITTINGS, VALVES, ETC. SHALL BE "NO LEAD."
4. ALL FITTINGS, VALVES, PIPING, METER AND OTHER APPURTENANCES ASSOCIATED WITH/SHOWN FOR WHICH A SPECIFIED BID ITEM HAS NOT BEEN PROVIDED SHALL BE INCLUDED IN AS PART OF THE METER PIT WITH THE COST INCLUDED IN METER PIT BID ITEM.

STANDARD CURB BOX & METER PIT INSTALLATION

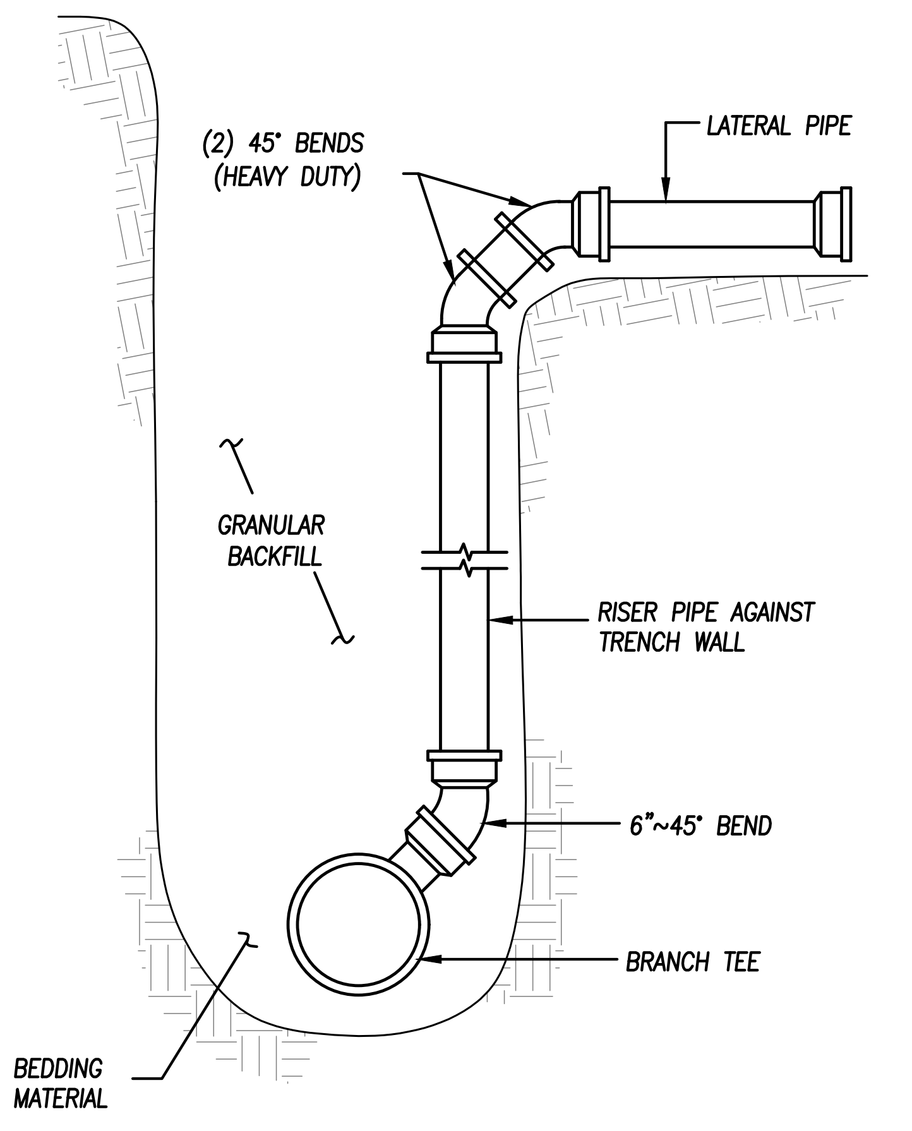
N.T.S.



FOR INSTALLATION ON SEWERS 18 INCHES IN DIAMETER OR SMALLER

SANITARY MANHOLE

N.T.S.



RISER DETAIL

N.T.S.

SANITARY SERVICE CONNECTION DETAILS

NO	REVISION	DATE
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1		

DGL CONSULTING ENGINEERS, LLC
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RE-DEVELOPMENT BIXBY HOSPITAL

818 RIVERSIDE AVENUE
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CITY OF ADRIAN, LENAWEE COUNTY
PART OF SECTION 27, TOWN 6 SOUTH, RANGE 3 EAST

CIVIL DETAILS

FILE:	24191 CD.dwg
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ISSUED:	JAN 30, 2025

C11

PLOTTED: Feb 21, 2025 – 7:49am
DRAWING: M:\24191 (Windev – Bixby Hospital Development)\CIVIL\Dwg\24191 CD.dwg: C11 DET BIXBY

PRELIMINARY LANDSCAPE PLAN

FOR PLANNING COMMISSION:
PENDING CITY OF ADRIAN
APPROVALS INCLUDING BUT
NOT LIMITED TO ZONING AND
BUILDING APPROVAL

Landscaping And Screening Requirements
City of Adrian
Article IV ? Section 4.9

4.91 For the WH and the RM-1 Districts, 25% of the site shall be in landscaped open space. The open space shall be landscaped with one (1) evergreen tree or shrub for every 1,000 square feet of portion thereof, plus one (1) small or large deciduous tree for every 2,000 square feet or portion thereof. (Plant materials existing on the site prior to development may be included as part of the requirement). Ground cover or lawn is required in all landscaped areas. (See Table for appropriate uses of plant materials).

4.92 For permitted and special approval nonresidential uses in the R-1, R-2, RT, RM-1, and WH Districts, 30% of the site under development shall be in landscaped open space. The open space shall be landscaped with one (1) evergreen tree or shrub for every 1,000 square feet or portion thereof plus one (1) small or large deciduous tree for every 1,500 square feet or portion thereof. (Plant Materials existing on the site prior to development may be included as part of the requirement). Twenty-five (25) percent of the required open space shall be between the roadway and the building. Buildings on corner lots shall have 40% of the required open space between the building and the street. Landscaping of an adjacent right-of-way may be included in the requirement if it is maintained by the adjacent property owner. (See Table for appropriate uses of plant materials.)

4.93 For permitted and special approval uses in the OS-1, B-1, B-2, I-1 and I-2 Districts, 15% of the site shall be in landscaped open space with one (1) evergreen tree or shrub for every 1,000 square feet or portion thereof plus one (1) small or large deciduous tree for every 2,000 square feet or portion thereof. (Plant materials existing on the site prior to development may be included as part of the requirement). Thirty (30) percent of the required open space shall be between the roadway and the building. Buildings on corner lots shall have 60% of the required open space between the building and the roadway. Whenever feasible, a portion of the landscaping shall be places adjacent to the building(s). Landscaping of an adjacent right-of-way may be included in the requirement if it is maintained by the adjacent property owner. (See Table for appropriate uses of plant materials).

4.94 All areas shall be landscaped and shall meet the following standards:

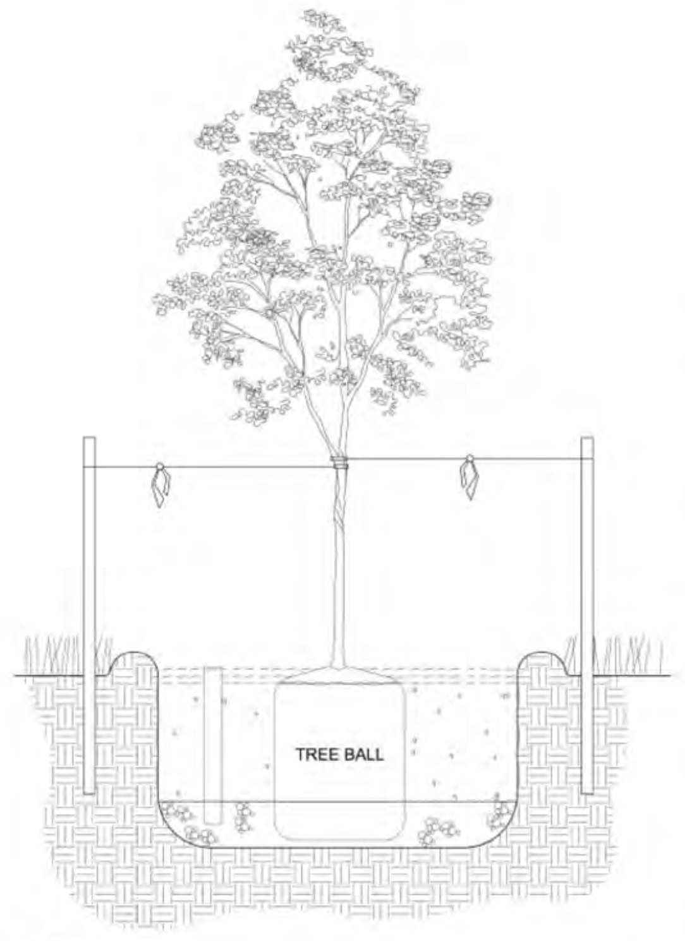
- No synthetic plant materials such as artificial grass, shrubs, trees, or flowers shall be used to fulfill any landscaping requirements.
- Berms, whenever utilized shall be designed and landscaped to minimize erosion. Berms adjacent public rights-of-way shall have a slope no greater than 3:1, unless designed as part of a retaining wall.
- All landscaping materials shall consist of healthy specimens compatible with local climate, soil characteristics, drainage, and water supply. All plant material shall be reasonably resistant to drought and disease. Non-nursery derived stock shall not be used to satisfy these requirements.
- Grass or other living plants shall be primary ground cover in required landscaped areas. Both sod planting and seeding are acceptable.
- Ground covers other than grass shall be planted in required areas to provide complete coverage within two (2) growing seasons. Vines shall not be used adjacent to pedestrian areas.
- Unless otherwise specified, materials such as river rock, cobble, boulders, paving stone, patterned concrete, bark and wood chips shall be limited to small areas and shall not exceed 25 percent of the required landscape area. All such ground covers shall be at least six (6) inches deep. Loose gravel less than three (3) inch minimum aggregate size shall not be used in areas abutting public streets or sidewalks.
- Maintenance shall include all reasonable and regular irrigation, weeding, fertilizing and pruning. Plant materials which show signs of insect pests, diseases and/or damage shall be appropriately treated. Dead plant materials shall be replaced immediately or as soon as practical under the seasonal conditions existing and according to the approved site plan. The developer and subsequent owner(s) shall be responsible for maintaining all on-site landscaping.
- Plant materials and their minimum size requirements shall be installed in accordance with Plant Material Guidelines.
- Landscaping plans may be submitted to the Zoning Officer for technical review and to the Planning Commission for approval within ninety (90) days after final approval of the site plan. Plans may be submitted as an amendment to the site plan, thereby not requiring an additional review fee. On projects in excess of two (2) acres, the developer may file a phased plan for completing the landscaping pursuant to these standards.

Zones 6a

According to the 2023 USDA Hardiness Zone Map Adrian, Michigan is in Zones 6a (-10°F to -5°F). There is no change from the 2012 USDA Hardiness Zone Map which has Adrian in also in Zones 6a (-10°F to -5°F).

LANDSCAPE PLAN & SCHEDULE

Plan is to utilize all mature growth trees and shrubs that are existing to site where possible while adding all trees, plants and shrubs needed to meet or exceed all city requirements if Section 4.9.
a comprehensive plan to include all existing landscape items as well as new landscape items shll be submitted during the permit process for approval of the Building Dept. City of Adrian MI.



REMOVE TWINE FROM BRANCHES ON TREES TIED UP FOR SHIPPING. SPRAY WITH WILT PRUF OR EQUAL (IF LEAFED OUT).

ORANGE FLUORESCENT FLAGGING ON WIRE FOR SAFETY.

SET TREE VERTICAL, STAKE UP TO 3" CALIPER TREES WITH TWO POSTS ON THE LEEWARD AND WINDWARD SIDES; STAKE TREES OVER 3" CALIPER WITH 3 EVENLY SPACED POSTS. USE NYLON STRAP WITH GROMMETS BELOW MIDPOINT OF TREE. TIGHTEN #10 GUY WIRE BY TWISTING. PROTECT BRANCHES FROM TOUCHING WIRE. ALLOW A SLIGHT BAG FOR SWAY. PROVIDE FLAGGING TAPE WITH MINIMUM 6" DANGLING. SET STAKES IN MINIMUM 18" FIRM SOIL. REMOVE STAKES WITHIN 12-18 MONTHS OF PLANTING.

TRUNK FLARE MUST BE VISIBLE AT TOP OF ROOTBALL. POSITION ROOT FLARE AT GRADE.

3-4" DEPTH OF SPECIFIED MULCH. PROVIDE A 6" DIAMETER WOOD MULCH RING AND 6" PLANTING RIM FOR TREES IN DRYLAND PLANTING BEDS AND IN IRRIGATED NATIVE SEED AREAS WHERE IRRIGATION ZONES ARE TO BE SHUT DOWN AFTER ESTABLISHMENT. PROVIDE SAUCER ON DOWNHILL SIDE ON SLOPES. KEEP MULCH AWAY FROM CONTACT WITH WOODY TRUNK. DO NOT PLACE FABRIC UNDER MULCH. NO RIM FOR TREES LOCATED IN TURF AREAS.

SCARIFY SIDES OF PLANTING PIT. BACKFILL WITH AMENDED SOIL MIX. ROOTBALL SHALL REST ON FIRM, UNDISTURBED SOIL.

AFTER TREE IS POSITIONED, REMOVE ALL TWINE, ROPE, PLASTIC, WIRE, BURLAP, AND RUBBER.

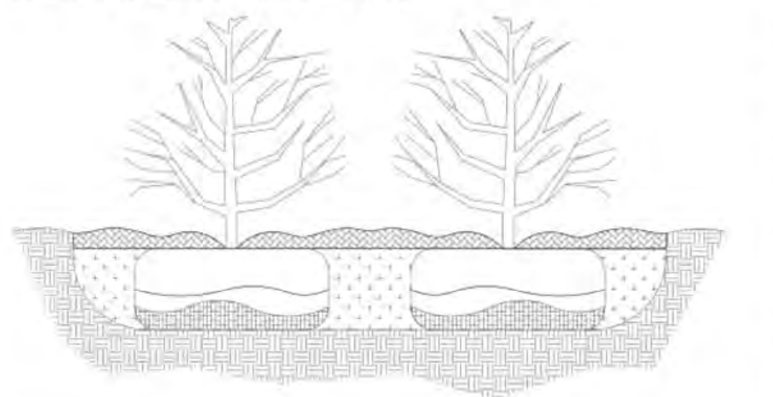
NOTES:
1) MARK THE NORTH SIDE OF TREE IN THE NURSERY AND ROTATE TREE TO FACE NORTH AT THE SITE WHENEVER POSSIBLE
2) AT TIME OF PLANTING, DO NOT REMOVE OR CUT LEADER AND PRUNE ONLY DEAD OR BROKEN BRANCHES, CROSS OVER BRANCHES, AND WEAK OR NARROW CROTCHES. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED. HOWEVER, DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.
3) STRUCTURAL PRUNING SHOULD NOT BEGIN UNTIL AFTER ESTABLISHMENT PERIOD, USUALLY TWO GROWING SEASONS.
4) KEEP PLANTS MOIST AND SHADED UNTIL PLANTING.
5) DO NOT FERTILIZE FOR AT LEAST ONE GROWING SEASON.
6) AMENDED BACKFILL SHALL BE 1/3 COMPOST (PREFERABLY CLASSIFIED) AND 2/3 NATIVE AND/OR IMPORTED TOPSOIL.
7) WRAP TRUNK ON EXPOSED SITES AND SPECIES WITH THIN BARK. USE ELECTRICAL OR DUCT TAPE, NOT TWINE.
8) COORDINATE WITH CITY FORESTRY FOR CURRENT INSECT AND DISEASE RECOMMENDATIONS PRIOR TO PLANTING.
9) DEEP WATER ALL PLANTS AT THE TIME OF PLANTING.

1 TREE PLANTING DETAIL

3" CAL. MINIMUM

N.T.S.

NOTES:
1) PRUNE ONLY DEAD OR BROKEN BRANCHES AND WEAK OR NARROW CROTCHES.
2) KEEP PLANTS MOIST AND SHADED UNTIL PLANTING.
3) DO NOT FERTILIZE FOR AT LEAST ONE GROWING SEASON.
4) AMENDED BACKFILL SHALL BE 1/3 COMPOST (PREFERABLY CLASSIFIED) AND 2/3 NATIVE AND/OR IMPORTED TOPSOIL.
 - ROTO-TILL BEDS WITH AMENDED SOIL A MIN. 6" DEPTH
5) ALL SHRUBS IN ROCK AREAS TO RECEIVE SHREDDED MULCH RINGS.
6) DEEP WATER ALL PLANTS AT TIME OF PLANTING.



SET SHRUBS VERTICAL. SHRUB SPACING AS PER PLANS. LAYOUT VARIES. FINISHED GRADE OF SHRUB BED TO BE 2" BELOW ADJACENT FINISH GRADE AT EDGE TO HOLD MULCH.

PLANT TOP OF ROOTBALL AT GRADE.

3-4" SPECIFIED ORGANIC MULCH. PROVIDE 6" PLANTING RIM FOR SHRUBS NOT IN PLANTING BED. PROVIDE SAUCER ON DOWNHILL SIDE OF SLOPES. NO PLANTING RIM FOR SHRUBS IN PLANTING BED. KEEP MULCH AWAY FROM CONTACT WITH WOODY TRUNK.

SCARIFY SIDES OF PLANTING PIT. BACKFILL WITH AMENDED SOIL MIX. ROOTBALL SHALL REST ON FIRM, UNDISTURBED SOIL.

REMOVE ALL PACKAGING MATERIAL. FOR POT BOUND PLANTS ONLY: MAKE 4-5 VERTICAL CUTS IN ROOTBALL 1" DEEP. PLANT IMMEDIATELY.

FOR ROOT BIND AT BOTTOM OF BALL: SPLIT ROOTBALL VERTICALLY FROM BOTTOM HALFWAY TO TOP. SPREAD THE TWO HALVES OVER A MOUND OF SOIL IN THE PLANTING HOLE.

2 SHRUB PLANTING DETAIL

N.T.S.

QTY.	KEY	DESCRIPTION
72	●	Deciduous Shrub (Hydrangea, Burning Bush, Knockout Rose etc...)
72	●	Evergreen Shrub (Globe Arborvitae, Chamaecyparis, Juniper etc....)
132	●	Perennial or Grass (Ornamental Grass, Sedum, Daylily etc...)

Landscape beds shown with 1.5" washed River Rock, Vinyl edging and visqueen weed barrier.

BEAUBIEN COMPANIES INC.
Landscape • Irrigation
Design • Build • Maintain

TYPICAL PLANT LIST

NOTE:
ALL PLANT SELECTIONS WILL BE CHOSEN FROM THE CITY OF ADRIAN PREFERRED PLANT LIST.
NO MORE THAN 25% OF PLANTINGS WILL BE FROM THE SAME SPECIES AND AT LEAST 50% SHALL BE LOW
WATER USERS AS IDENTIFIED ON THE PREFERRED PLANT LIST.
WATER:
THE WATER COLUMN INDICATES THE PARTICULAR PLANT SPECIES' WATER NEEDS. AT LEAST 50% OF ANY PLANTINGS REQUIRED BY THE CITY OF ADRIAN MI SHALL HAVE LOW OR VERY LOW WATERING NEEDS.
VL - VERY LOW - WATER OCCASIONALLY
L - LOW - WATER THOROUGHLY EVERY 3-4 WEEKS IF NO RAINFALL
M - MEDIUM - WATER THOROUGHLY EVERY 2-3 WEEKS IF NO RAINFALL
H - HIGH - WATER THOROUGHLY EVERY 5-7 DAYS
EVERGREEN OR DECIDUOUS (TYPE):
THE EVERGREEN/DECIDUOUS COLUMN INDICATES WHETHER THE PLANT SPECIES IS OF AN EVERGREEN OR
DECIDUOUS VARIETY. CERTAIN LANDSCAPING REQUIREMENTS OF CITY OF ADRIAN MI. SPECIFICALLY CALL FOR
EVERGREEN PLANTINGS.

E - EVERGREEN
SE - SEMI-EVERGREEN
D - DECIDUOUS

REVISION TABLE		
NUMBER	DATE	REVISED BY	DESCRIPTION

MODERN MOD DESIGN

RE-DEVELOPMENT PLAN BIXBY
HOSPITAL SITE
PRELIMINARY LANDSCAPE PLAN

DRAWINGS PROVIDED BY:
DAVID K PAPEN
417-825-1613

DATE:
7/11/24

SCALE:

SHEET:
L-100

MODERN
MOD
DESIGN

PRELIMINARY LANDSCAPE PLAN NOT FOR CONSTRUCTION