

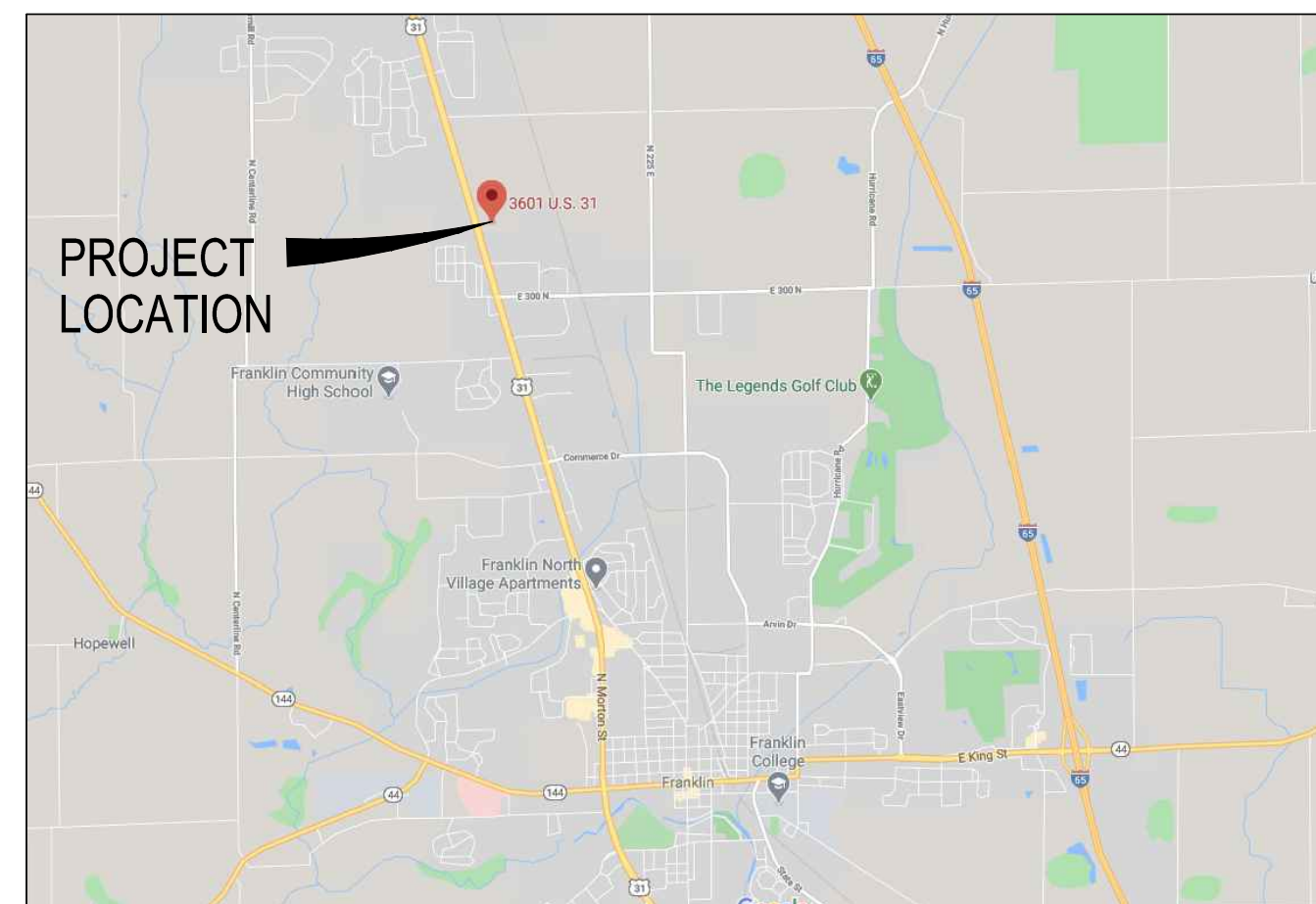
FINAL CONSTRUCTION PLANS

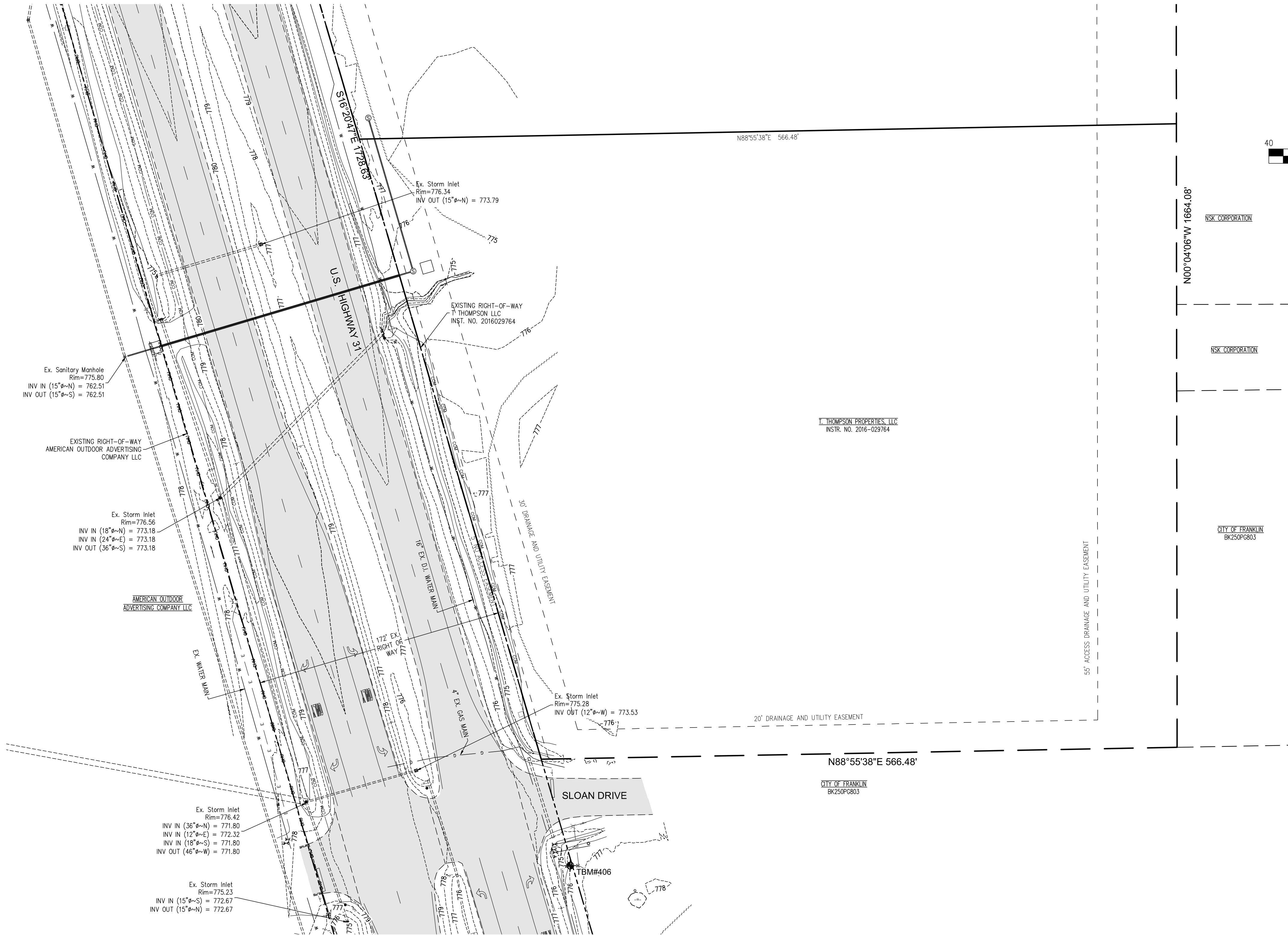
THOMPSON COMMERCIAL SUBDIVISION -

SANITARY SEWER EXTENSION

3601 US 31

FRANKLIN, INDIANA





UTILITIES

Note: Listed below are the Indiana Underground Plant Protection Services Contacts; Others not listed may exist.

SEWER
CITY OF FRANKLIN
DEPARTMENT OF PUBLIC WORKS
796 S. STATE STREET
FRANKLIN, IN 46131
PHONE: (317) 736-3648
CONTACT: SALLY BROWN
EMAIL: sbrown@franklin.in.gov

GAS
VECTREN ENERGY
600 INDUSTRIAL DRIVE
FRANKLIN, IN 46131
PHONE: (765) 287-2150
CONTACT: MOSTAFA KHALILAD
EMAIL: mostafa.khalilad@centerpointenergy.com

WATER
INDIANA AMERICAN WATER
153 N. EMERSON AVENUE
GREENWOOD, IN 46143
PHONE: (317) 893-3560
CONTACT: ADAM BOONE
EMAIL: adam.boone@iamwater.com

FIRE DEPARTMENT
CITY OF FRANKLIN FIRE DEPARTMENT
1800 THORNBURG LANE
FRANKLIN, IN 46131
PHONE: (317) 736-3650
CONTACT: BRYNE PURSIFULL
EMAIL: bpursifull@franklin.in.gov

FIBER OPTIC
CENTURY LINK
50 N. JACKSON STREET
FRANKLIN, IN 46131
PHONE: (317) 736-4863
CONTACT: EDDIE FIELDS
EMAIL: paul.e.fields@centurylink.com

METRONET
8036 COLE WOOD BLVD.
INDIANAPOLIS, IN 46239
PHONE: (317) 809-8067
CONTACT: DOUG RECKART
EMAIL: doug.reckart@metronetinc.com

ELECTRIC
DUKE ENERGY (SERVICE)
2515 N. MORTON STREET
FRANKLIN, IN 46131
PHONE: (317) 736-2017
CONTACT: TAYLOR AUSTIN
EMAIL: taylor.austin@duke-energy.com

NOTE: The underground utilities shown have been located from field survey information and existing drawings. The surveyor makes no guarantees that the underground utilities comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated although the surveyor does certify that they are located as accurately as possible from information available. The surveyor has not physically located the underground utilities.



LEGAL DESCRIPTION

A PART OF THE SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 13 NORTH, RANGE 4 EAST OF THE SECOND PRINCIPAL MERIDIAN IN JOHNSON COUNTY, INDIANA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SAID SOUTHWEST QUARTER MARKED BY A REBAR FOUND 0.8 FEET ABOVE GROUND IN AN EAST-WEST FENCE LINE (BROKEN); THENCE SOUTH 88 DEGREES 50 MINUTES 59 SECONDS WEST (GEODETIC BEARING) ON AND ALONG THE NORTH LINE OF SAID QUARTER SECTION A DISTANCE OF 446.12 FEET TO THE POINT OF BEGINNING; THENCE CONTINUING SOUTH 88 DEGREES 50 MINUTES AND 59 SECONDS WEST A DISTANCE OF 925.57 FEET TO A POINT OF THE EAST RIGHT-OF-WAY LINE OF U.S. HIGHWAY 31; THENCE SOUTH 16 DEGREES 20 MINUTES 47 SECONDS EAST ON AND ALONG SAID EAST RIGHT-OF-WAY LINE A DISTANCE OF 1728.63 FEET; THENCE NORTH 88 DEGREES 55 MINUTES 38 SECONDS EAST A DISTANCE OF 440.94 FEET; THENCE NORTH 00 DEGREES 04 MINUTES 06 SECONDS WEST A DISTANCE OF 1664.08 FEET TO THE POINT OF BEGINNING, CONTAINING 26.17 ACRES, MORE OR LESS.

EXISTING LEGEND

POWERPOLE	CONTOURS
LIGHT POLE	PROPERTY LINE
ELECTRIC METER	RIGHT-OF-WAY
ELECTRIC BOX	ADJACENT LOT LINE
WATER VALVE	PAVEMENT LINE
FIRE HYDRANT	FIELD LINE
WATER METER	DITCH
GAS VALVE	GAS LINE
SIGN	WATER LINE
STORM ROUND INLET	ELECTRIC LINE
STORM SQUARE INLET	OVERHEAD UTILITY LINE
ASPHALT	SANITARY SEWER W/MANHOLE
	STORM SEWER W/ROUND & SQUARE INLET

TOPOGRAPHICAL NOTES

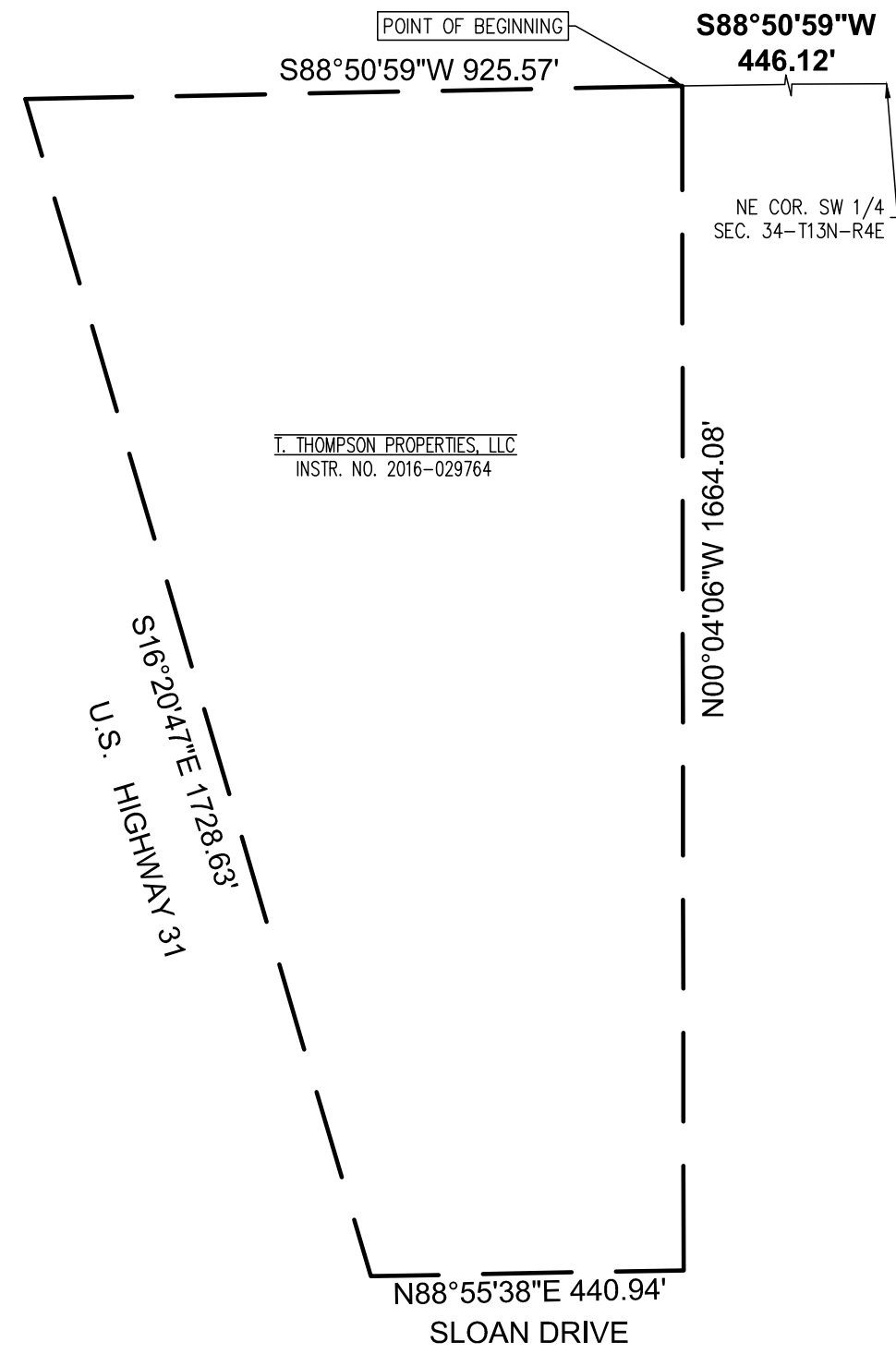
1. CONTRACTOR SHALL DISPOSE OF ALL MATERIALS IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.
2. UTILITIES ARE GRAPHICAL REPRESENTATION PER SURVEY AND MAPPING. CONTRACTOR SHALL FIELD VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH APPLICABLE UTILITY COMPANIES FOR CONNECTIONS.

FLOODPLAIN INFORMATION

BY GRAPHIC PLOTTING ONLY, THIS TRACT OF LAND DESCRIBED HEREON LIES WITHIN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) AND IS NOT IN A SPECIAL FLOOD HAZARD AREA AS PLOTTED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP FOR JOHNSON COUNTY MAP NUMBER 18081C01390, WHICH BEARS AN EFFECTIVE DATE OF AUGUST 2, 2007.

BENCHMARK INFORMATION

ORIGINATING BENCHMARK
DESIGNATION - X 13
PID - K40010
STATE/COUNTY - IN/MORGAN
USGS QUAD - MOORESVILLE EAST (1980)
VERT ORDER - FIRST CLASS II
DESCRIBED BY COAST AND GEODETIC SURVEY 1946
1.2 MI. N. FROM WAVERLY, IN JOHNSON COUNTY, 1.2 MILES NORTH ALONG STATE HIGHWAY 37 FROM THE INTERSECTION OF STATE HIGHWAY 144 AT WAVERLY, MORGAN COUNTY, 125 YARDS NORTH OF THE MORGAN-JOHNSON COUNTY LINE, 26 FEET WEST OF THE CENTERLINE OF THE HIGHWAY, IN LINE WITH THE WEST RIGHT-OF-WAY FENCE, 1.5 FEET SOUTH OF A WHITE WOODEN WITNESS POST, AND ABOUT 2 FEET HIGHER THAN THE HIGHWAY. A STANDARD DISK, STAMPED 686.370 X 13 1930 AND SET IN THE TOP OF A CONCRETE POST PROJECTING 7 INCHES ABOVE GROUND.
RECOVERY NOTE BY IN DEPT OF NAT RES 1985
NEW DESC- AT THE INTERSECTION OF NEW STATE ROAD 144 AND OLD STATE ROAD 37, IN THE SOUTHWEST QUARTER OF THE INTERSECTION, WITNESS POST IS GONE RIGHT-OF-WAY FENCE IS GONE, ALL OTHER INFORMATION APPEARS TO BE CORRECT.
ELEVATION = 685.94 (NAVD 88)
TBM# 406
OUT "X" UTOP WEST NORTHWEST CARRIAGE BOLT (UPPER) ON HYDRANT AT SOUTHEAST CORNER OF SLOAN DRIVE AND U.S. HIGHWAY 31.
ELEVATION = 777.93



OVERALL BOUNDARY KEYMAP

SCALE: 1" = 250'

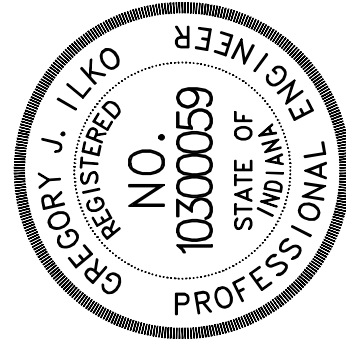


CROSSROADS ENGINEERS, INC.
TRANSPORTATION & DEVELOPMENT CONSULTANTS
REGISTERED PROFESSIONAL ENGINEERS IN INDIANA
CROSSROADSENGINEERS.COM

TOPOGRAPHICAL SURVEY

THOMPSON COMMERCIAL SUBDIVISION-SANITARY SEWER EXTENSION

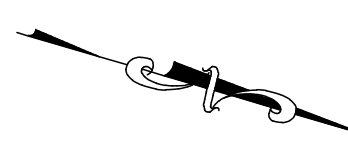
JOB NO.	DRAWN	KLF/DEP/LMC	CHECKED	GJJ	DATE	JUNE 11, 2020	DESIGNED	CDM	APPR.	GJJ	SHEET	200
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Gregory J. Ilko

NO.	1	2	3	4	5	6	7	8	9	DATE	BY	APPR.

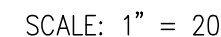
SHEET 200



NO SCALE

STR DATA

NOTE:
NO EARTHWORK DISTURBING ACTIVITY
MAY COMMENCE UNTIL A STORM WATER
MANAGEMENT PERMIT IS OBTAINED.



PROPOSED LEGEND



CROSSROAD
ENGINEERS, PC
TRANSPORTATION &
DEVELOPMENT CONSULTANTS
3417 STEWART DRIVE
ANN ARBOR, MI 48106
(734) 769-0800
www.crossroad-engineers.com

THOMPSON COMMERCIAL SUBDIVISION-SANITARY SEWER EXTENSION

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1. SCOPE OF WORK

A. EXTENT: THE WORK REQUIRED UNDER THIS SECTION CONSISTS OF ALL EXCAVATING, FILLING, ROUGH GRADING AND RELATED ITEMS NECESSARY TO COMPLETE THE WORK INDICATED ON THE DRAWINGS AND DESCRIBED IN THE SPECIFICATIONS. THE CONTRACTOR SHALL NOTIFY IN WRITING THE OWNER AND THE ENGINEER OF ANY CHANGES, ERRORS OR OMISSIONS FOUND ON THE PLANS OR IN THE FIELD, BEFORE WORK IS STARTED OR RESUMED.

1. IN GENERAL, THE ITEMS OF WORK TO BE PERFORMED UNDER THIS SECTION SHALL INCLUDE CLEARING AND GRUBBING, REMOVAL OF TREES AND STUMPS, STRIPPING AND STORAGE OF TOPSOIL, FILL COMPACTION AND ROUGH GRADING OF ENTIRE SITE. ALL TREES SHALL BE REMOVED UNLESS OTHERWISE NOTED IN PLANS OR DIRECTED BY OWNER.

2. EXCAVATED MATERIAL SHALL BE USED FOR FILL OR FOR FILL. ALL UNSUITABLE MATERIAL AND ALL SURPLUS EXCAVATED MATERIAL, NOT REQUIRED SHALL BE REMOVED FROM THE SITE. THE LOCATION OF DUMP AND LENGTH OF HAUL SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

3. PROVIDE AND PLACE ANY ADDITIONAL FILL MATERIAL FROM OFF THE SITE AS MAY BE NECESSARY TO PRODUCE THE GRADES REQUIRED. THE FILL OBTAINED FROM OFF SITE SHALL BE OF KIND AND QUALITY AS SPECIFIED HEREIN AND THE SOURCE APPROVED BY THE OWNER.

4. THE CONTRACTOR SHALL ACCEPT THE SITE AS HE FINDS IT AND SHALL REMOVE ALL TRASH, RUBBISH AND DEBRIS FROM THE SITE PRIOR TO STARTING EXCAVATION

2. BENCHMARK

A. MAINTAIN CAREFULLY ALL BENCH MARKS, MONUMENTS AND OTHER REFERENCE POINTS; IF DISTURBED OR DESTROYED, CONTRACTOR SHALL CONTACT ENGINEER.

3. REMOVAL OF TREES

A. THE INTEGRITY OF THE TOPOGRAPHIC FEATURES (INCLUDING TREES) SHALL BE PRESERVED AS MUCH AS POSSIBLE. THE CONTRACTOR SHALL COORDINATE WITH OWNER AND/OR ENGINEER PRIOR TO CLEARING ANY TREE FOR CONSTRUCTION.

B. ALL BRUSH, STUMPS, WOOD AND OTHER REFUSE FROM THE TREES REMOVED SHALL BE HAULED TO DISPOSAL AREAS OFF OF THE SITE. DISPOSAL BY BURNING SHALL NOT BE PERMITTED UNLESS PROPER PERMITS ARE OBTAINED (WHERE APPLICABLE).

4. HANDLING OF TOPSOIL

A. REMOVE ALL ORGANIC MATERIAL FROM THE AREAS TO BE OCCUPIED BY BUILDINGS, ROADS, WALKS AND PARKING AREAS. PILE AND STORE TOPSOIL AT A LOCATION WHERE IT WILL NOT INTERFERE WITH CONSTRUCTION OPERATIONS. TOPSOIL SHALL BE REASONABLE FREE FROM SUBSOIL, DEBRIS, WEEDS, GRASS STONES, ETC.

B. AFTER COMPLETION OF SITE GRADING AND SUBSURFACE UTILITY INSTALLATION, TOPSOIL SHALL BE REPLACED IN AREAS DESIGNATED ON THE EROSION CONTROL PLAN FOR SEEDING AND/OR SODDING. ANY REMAINING TOPSOIL SHALL BE USED FOR FINISHED GRADING AROUND STRUCTURES AND LANDSCAPING AREAS.

5. DISPOSITION OF UTILITIES

A. RULES AND REGULATIONS GOVERNING THE RESPECTIVE UTILITIES SHALL BE OBSERVED IN EXECUTING ALL WORK UNDER THIS SECTION.

B. IF ANY UTILITIES ARE ENCOUNTERED BUT NOT SHOWN ON THE DRAWINGS, THE ENGINEER SHALL BE ADVISED BEFORE WORK IS CONTINUED.

C. INACTIVE AND ABANDONED UTILITIES ENCOUNTERED IN EXCAVATING AND GRADING OPERATIONS SHALL BE REPORTED TO THE ENGINEER. THEY SHALL BE REMOVED, PLUGGED OR CAPPED AS DIRECTED BY THE ENGINEER.

D. IT SHALL BE THE RESPONSIBILITY OF EACH CONTRACTOR TO VERIFY ALL EXISTING UTILITIES AND CONDITIONS PERTAINING TO HIS PHASE OF THE WORK. IT SHALL ALSO BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE OWNERS OF THE VARIOUS UTILITIES BEFORE WORK IS STARTED.

6. SITE GRADING

A. GRADES: CONTRACTOR SHALL PERFORM ALL CUTTING, FILLING, COMPACTING OF FILLS AND ROUGH GRADING REQUIRED TO BRING ENTIRE PROJECT AREA TO GRADE AS SHOWN ON THE DRAWINGS.

B. ROUGH GRADING: THE TOLERANCE FOR PAVED AREAS SHALL NOT EXCEED 0.10 FEET PLUS OR MINUS ABOUT THE ESTABLISHED SUBGRADE. IN OTHER AREAS SHALL NOT EXCEED 0.10 FEET PLUS OR MINUS ABOUT THE ESTABLISHED GRADE. ALL BANKS AND OTHER BREAKS IN GRADE SHALL BE ROUNDED AT THE TOP AND BOTTOM.

C. COMPACTION REQUIREMENTS:

1. ALL BUILDING AND PAVED AREAS SHALL BE COMPACTED TO STANDARDS SPECIFIED BY LOCAL AND/OR STATE BUILDING CODES.
2. COMPACTION REQUIREMENTS OF PAVED AREAS SHALL BE 95% OF MAXIMUM DRY DENSITY.

7. EARTH WORK BALANCE

A. THE CONTRACTOR SHALL CONFIRM ALL EARTHWORK QUANTITIES PRIOR TO START OF CONSTRUCTION. IF AN EXCESS OR SHORTAGE OF EARTH IS ENCOUNTERED, THE CONTRACTOR SHALL CONFIRM WITH THE OWNER AND ENGINEER THE REQUIREMENTS FOR STOCKPILING, REMOVAL OR IMPORTING OF EARTH.

MINOR ADJUSTMENTS TO THE GRADES MAY BE REQUIRED TO EARTHWORK BALANCES WHEN MINOR EXCESS MATERIAL OR SHORTAGES ARE ENCOUNTERED. IT IS RECOGNIZED BY THE PARTIES HERETO THAT THE CALCULATIONS OF THE ENGINEER IN ACCORDANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS STANDARDS FOR SUCH CALCULATIONS. FURTHER, THAT THESE CALCULATIONS ARE SUBJECT TO THE OPERATIONS OF THE EARTHWORKS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE BALANCE PERMITTED THE CONTRACTOR, AND THAT ALL OF THESE PARAMETERS MAY CAUSE EITHER AN EXCESS OR SHORTAGE OF ACTUAL EARTHWORK MATERIALS TO COMPLETE THE PROJECT. IF SUCH AN ACTUAL MINOR EXCESS OR SHORTAGE OF ACTUAL EARTHWORK MATERIALS OCCURS, THE CONTRACTOR SHALL CONTACT THE ENGINEER TO DETERMINE IF ADJUSTMENTS CAN BE MADE TO CORRECT THE IMBALANCE OF EARTH.

1. THE WORK UNDER THIS SECTION INCLUDES ALL SANITARY SEWERS, MANHOLES, AND RELATED ACCESSORIES INCLUDING EXCAVATING, BACKFILLING, JACKING, NECESSARY TO COMPLETE THE WORK SHOWN IN THE DRAWINGS, STARTING OUTSIDE THE BUILDING WALLS, THE END OF SEWERS SHALL BE TIGHTLY ADJUSTED CAPPIED AT THE BUILDING WALLS, THE END OF THE BUILDING DRAIN AS SPECIFIED IN THE PLUMBING SPECIFICATIONS, AND/OR ARCHITECTURAL DRAWINGS.

2. MATERIALS

A. SANITARY SEWERS

1. GRAVITY PLASTIC SEWER PIPE FITTINGS SHALL CONFORM TO ASTM D3034 WITH A CELL CLASSIFICATION OF 12454-B OR 12454-C. FLEXIBLE GASKETED COMPRESSION JOINTS SHALL BE USED FOR PVC & PVC TRUSSIBLE SOLVENT CEMENT JOINTS SHALL BE USED FOR ABS.

2. ABS SEWER PIPE AND FITTINGS SHALL CONFORM TO ASTM D2680 LATEST REVISION.

3. TRACER WIRE SHALL BE INSTALLED WITH ALL NEW SANITARY PIPE.

B. MANHOLES

1. PRECAST REINFORCED CONCRETE MANHOLE SECTIONS AND STEPS SHALL CONFORM TO ASTM C-478 LATEST REVISION, EXTERIOR OF THE MANHOLE SHALL BE WATERPROOFED WITH RUBBER GASKET MATERIAL.

2. CASTINGS SHALL BE OF UNIFORM QUALITY, FREE FROM BLOW Holes, POROSITY, HARD SPOTS, SHRINKAGE DISTORTION OR OTHER DEFECTS, THEY SHALL BE SMOOTH AND WELL-CLEANED BY SHOT-BLASTING OR BY OTHER APPROVED METHOD. THEY SHALL BE COATED WITH ASPHALT PAINT WHICH SHALL RESULT IN A SMOOTH COATING, THOUGH AND TENACIOUS WHEN COAT, NOT TACKY OR BRITTLE, THEY SHALL BE GRAY IRON MEETING ASTM C-48 LATEST REVISION. MANHOLE COVERS FOR SANITARY SEWERS SHALL BE NEMA# TYPE R-1077-A W/R-1712-B-SF FRAME W/SELF-SEALING APPLICATION.

3. JOINTS: MANHOLE SECTIONS SHALL BE JOINED WITH A NOMINAL 1/4 INCH STANDARD RUMBER JOINT. JOINTS SHALL CONFORM TO A MINIMUM OF M-198 AND FEDERAL SPECIFICATIONS SS-5-210A. JOINT CONNECTIONS TO ASTM C-443.

4. MANHOLES SHALL INCLUDE STEPS. SANITARY SEWER STANDARDS REVISIONS SHALL BE. THAT STEPS ARE TO BE POLYPROPYLENE COATED STEEL REINFORCING OR AN APPROVED NON-CORROSIVE FIBERGLASS MATERIAL. THE COPOLYMER POLYPROPYLENE SHALL MEET THE REQUIREMENTS OF ASTM D-101 WITH A MINIMUM OF 1/2 INCH DIAMETER OR LARGER REINFORCING STEEL CONFORMING TO ASTM A-615, GRADE 60. STEPS SHALL BE A MAXIMUM OF 24 INCHES FROM TOP, 24 INCHES FROM BOTTOM AND 16 INCHES SPACING BETWEEN STEPS.

C. SANITARY FORCE MAINS

1. ALL SANITARY FORCE MAIN PIPE AND FITTINGS SHALL CONFORM TO ASTM D2241, STANDARD SPECIFICATION FOR POLY VINYL CHLORIDE (PVC) SCHEDULE-80 RATED PIPE, SUCH GREATER DIAMETER SHALL BE DOWNE AWMA STANDARD C900-89, STANDARD FOR POLYVINYL CHLORIDE (PVC) PRESSURE PIPE, 4 IN. THROUGH 12 IN. FOR WATER DISTRIBUTION, APPENDIX A.

2. TRACER WIRE SHALL BE INSTALLED WITH ALL SANITARY FORCE MAIN PIPE.

D. CASING

1. SANITARY SEWERS CONDUCTED WITH POLYVINYL CHLORIDE (PVC) AND HIGH DENSITY UNDER DRAILROAD SHALL BE CASED IN CONFORMANCE WITH AWWA STANDARD C900-89, STANDARD FOR POLYVINYL CHLORIDE (PVC) PRESSURE PIPE, 4 IN. THROUGH 12 IN. FOR WATER DISTRIBUTION, APPENDIX A.

3. APPLICABLE CODES

A. PERMITS AND CODES:

THE INTENT OF THIS SECTION OF THE SPECIFICATIONS IS THAT THE CONTRACTOR'S BID ON THE WORK COVERED HEREIN SHALL BE BASED UPON THE LATEST EDITIONS OF ALL SUCH CODES, ORDINANCES, AND REGULATIONS. ALL APPLICABLE CODES AND REGULATIONS AS AMENDED BY ANY WAIVERS. CONTRACTOR SHALL FURNISH ALL BONDS NECESSARY TO GET PERMITS FOR JOINTS AND CONNECTIONS TO EXISTING SEWERS.

B. STANDARDS:

THE TERM "LOCAL STANDARDS" AS USED HEREIN MEANS THE STANDARDS OF DESIGN AND CONSTRUCTION OF THE RESPECTIVE MUNICIPAL DEPARTMENT OR AGENCIES.

C. EXISTING IMPROVEMENTS:

THE CONTRACTOR SHALL MAINTAIN IN OPERATING CONDITION ALL ACTIVE UTILITIES, SEWERS, AND OTHER DRAINS ENCOUNTERED IN THE SEWER. TO INSTALL THE NEW SEWER SHALL REPAIR TO THE SATISFACTION OF THE OWNER ANY DAMAGE TO EXISTING ACTIVE IMPROVEMENTS.

D. WORKMANSHIP:

THE CONTRACTOR SHALL CONFORM TO ALL LOCAL, STATE AND NATIONAL CODES AND TO BE APPROVED BY ALL LOCAL AND STATE AGENCIES HAVING JURISDICTION.

E. TRENCHING:

LAY ALL PIPE IN OPEN TRENCHES, EXCEPT WHEN THE LOCAL AUTHORITY HAS WRITTEN PERMISSION FOR TUNNELING. OPEN THE TRENCH SUFFICIENTLY ABOVE PIPE-LAYING TO REVEAL ANY OBSTRUCTIONS. THE MIN. WIDTH OF TRENCH SHALL BE 1.25 TIMES THE OUTSIDE DIA. PLUS 12 INCHES. SHEET AND BENCHING AS NECESSARY TO PROTECT WORKMEN AND ADJACENT STRUCTURES. ALL TRENCHING TO COMPLY WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION STANDARDS. KEEP TRENCHES FREE FROM WATER WHEN CONSTRUCTION IS IN PROGRESS. UNDER NO CIRCUMSTANCES SHALL PIPE APPURTENANCES BE PLACED IN STANDING WATER. CONDUCT THE DISCHARGE FROM TRENCH DE- WATERING TO DRAINS OR NATURAL DRAINAGE CHANNELS.

F. SPECIAL SUPPORTS:

WHENEVER, IN THE OPINION OF THE ENGINEER, THE SOIL AT OR BELOW THE PIPE GRADE IS UNSUITABLE FOR SUPPORTING SEWERS AND APPURTENANCES, THE CONTRACTOR SHALL PROVIDE SUCH GREATER SUPPORT. IN ADDITION TO THOSE SHOWN OR SPECIFIED, SHALL BE PROVIDED AS THE ENGINEER MAY DIRECT, AND THE CONTRACT WILL BE ADJUSTED.

G. BACKFILLING:

PIPE SHALL BE PLACED AS SHOWN IN THE PLANS. COMPACT THIS BACKFILL THOROUGHLY, TAKING CARE NOT TO DISTURB THE PIPE. BACKFILL UNDER AND WITHIN 5 FEET OF WALKS, PARKING AREAS, DRIVEWAYS AND AREAS SHALL BE COMPACTED MATERIAL ONLY AND THOROUGHLY COMPACTED BY APPROVED METHODS.

H. FLOW CHANNELS:

THE FLOW CHANNELS WITHIN MANHOLES SHALL BE AN INTEGRAL PART OF THE FLOW CHANNELS. THE CHANNELS SHALL BE SHAPED AND FORMED FOR A CLEAN TRANSITION WITH PROPER HYDRAULICS TO ALLOW THE SMOOTH CONVEYANCE OF FLOW THROUGH THE MANHOLE. THE BENCH WALL SHALL BE FORMED TO MATCH THE TOP OF THE FLOW CHANNEL. THE BENCH WALL SHALL BE FORMED TO MATCH THE CHANNEL. THE BENCH WALL SHALL SLOPE BACK FROM THE CROWN AT 1/2 INCH PER FOOT TO THE MANHOLE WALL.

I. LEAKAGE TESTING:

THE CONTRACTOR SHALL FURNISH THE NECESSARY EQUIPMENT TO TEST SEWERS FOR INFILTRATION. ALL SANITARY SEWER GRAVITY LINES, UPON COMPLETION, SHALL BE REQUIRED TO PASS ONE OF THE FOLLOWING TESTS:

1. HYDROSTATIC TEST:

THIS HYDROSTATIC TEST SHALL BE PERFORMED WITH A MINIMUM OF TWO (2) FEET OF POSITIVE HEAD. THE RATE OF EXFILTRATION OR INFILTRATION SHALL NOT EXCEED TWO HUNDRED (200) GALLONS PER INCH OF PIPE DIAMETER PER HOUR PER DIAMETER.

2. LOW PRESSURE AIR TEST:

A LOW PRESSURE AIR TEST SHALL BE CONDUCTED IN ACCORDANCE WITH ASTM F4147, STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF BURIED GRAVITY SEWER LINES. UPON COMPLETION, AIR FOR PLASTIC PIPE, SHALL BE REQUIRED TO PASS A LEAKAGE TEST CONDUCTED IN ACCORDANCE WITH AWWA STANDARD C900-89, STANDARD FOR POLYVINYL CHLORIDE (PVC) PRESSURE PIPE AND FITTINGS FOR WATER.

3. ALL SANITARY SEWER MANHOLES SHALL ALSO BE AIR TESTED IN ACCORDANCE WITH ASTM C1244-93, STANDARD TEST METHOD FOR CONCRETE SEWER MANHOLES BY NEGATIVE AIR PRESSURE (VACUUM) TEST.

J. FLUSHING SEWERS:

FLUSH ALL SANITARY SEWERS EXCEPT BUILDING SEWERS WITH WATER TO OBTAIN FREE FLOW THROUGH EACH LINE. REMOVE ALL SILT AND TRASH FROM APPURTENANCES PRIOR TO ACCEPTANCE OF WORK.

K. PLASTIC SEWER PIPE INSTALLATION:

PLASTIC SEWER PIPE SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D3231 LATEST REVISION. THE PIPE SHALL BE TESTED AFTER THIRTY DAYS. USE A MANHOLE THAT IS 95% OF THE INSIDE DIAMETER OF THE PIPE BEING TESTED. SUE MANHOLE SHALL BE PULLED BY HAND THROUGH EACH PIPE SECTION TO ENSURE DEFLECTION IS LESS THAN ACCEPTABLE LIMITS.

L. BOTTOM WORK CONDITIONS:

NO ROOF DRAINS, FOOTING DRAINS, OR/OF SURFACE WATER DRAINS MAY BE CONNECTED TO THE SANITARY SEWER SYSTEMS, INCLUDING TEMPORARY CONNECTIONS DURING CONSTRUCTION.

M. WATERLINE CROSSING:

WHERE WATER LINES AND SANITARY SEWERS CROSS AND WATER LINES CANNOT BE PLACED ABOVE THE SEWER WITH A MINIMUM OF 18 INCHES CLEARANCE, THE SEWER SHALL BE PLACED UNDER THE WATER LINE. THE GRADE DUCTILE IRON PIPE WITH MECHANICAL JOINTS WITHIN 10 FEET OF THE WATER LINE.

N. UTILITIES:

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL EXISTING UTILITIES AND CONDITIONS PERTAINING TO HIS WORK. IT SHALL ALSO BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE OWNERS OF THE UTILITIES TO OBTAIN PERMISSION TO EXCAVATE. THE CONTRACTOR SHALL NOTIFY IN WRITING THE OWNER AND THE ENGINEER OF ANY CHANGES, ERRORS OR OMISSIONS FOUND ON THESE PLANS OR IN THE FIELD BEFORE WORK BEGINS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES.

O. SERVICE LATERALS:

INDIVIDUAL BUILDING LINES SHALL BE 6 INCHES IN DIAMETER AND OF MATERIAL EQUAL TO THAT SPECIFIED IN 2A OF THIS SECTION. SERVICE LINES SHALL BE CONNECTED TO THE MAIN SEWER AT LOCATIONS SHOWN IN THE PLANS.

