OAK BROOK PARK DISTRICT 1450 FOREST GATE ROAD OAK BROOK, ILLINOIS (630) 990 - 4233

# **Proposed Improvements**

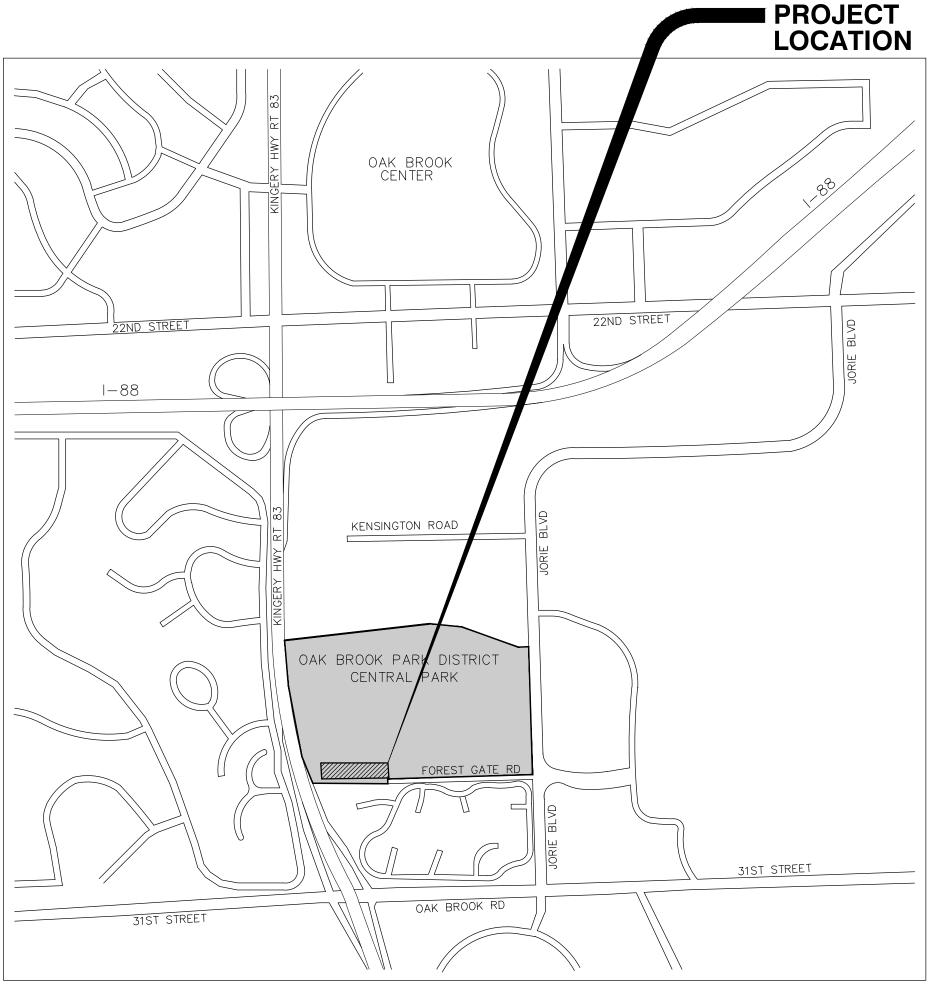
for

# CENTRAL PARK - MAINTENANCE FACILITY FORCE MAIN IMPROVEMENTS

## STANDARD SYMBOLS

**EXISTING** STORM SEWER SANITARY SEWER COMBINED SEWER FORCEMAIN DRAINTILE WATER MAIN **ELECTRIC** TELEPHONE OVERHEAD WIRES SANITARY MANHOLE STORM MANHOLE CATCH BASIN STORM INLET CLEANOUT HAY BALES RIP RAP VALVE IN VAULT VALVE IN BOX FIRE HYDRANT BUFFALO BOX FLARED END SECTION STREET LIGHT SUMMIT / LOW POIN RIM ELEVATION INVERT ELEVATION DITCH OR SWALE DIRECTION OF FLOW OVERFLOW RELIEF SWALE 1 FOOT CONTOURS CURB AND GUTTER REVERSE CURB AND GUTTER SIDEWALK DETECTABLE WARNINGS EASEMENT LINE SETBACK LINE MAIL BOX TRAFFIC SIGNAL POWER POLE GUY WIRE GAS VALVE HANDHOLE ELECTRICAL EQUIPMENT TELEPHONE EQUIPMENT CHAIN-LINK FENCE 792.8 G SPOT ELEVATION mBRUSH/TREE LINE DECIDUOUS TREE WITH TRUNK DIA. IN INCHES (TBR)

1450 FORREST GATE ROAD OAK BROOK, ILLINOIS



LOCATION MAP

# **ABBREVIATIONS**

CONIFEROUS TREE WITH HEIGHT IN FEET (TBR)

SILT FENCE

RETAINING WALL

WETLAND

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| ADJ   | ADJUST                       | F/L       | FLOW LINE   | R             | RADIUS                   |
|---|------------------------------|-----------|---|---------------|--------------------------|
| AGG.  | AGGREGATE                    | FM        | FORCE MAIN  | R.O.W.        | RIGHT-OF-WAY             |
| ARCH  | ARCHITECT                    | G         | GROUND  | RCP           | REINFORCED CONCRETE P    |
| 3.A.M.  | BITUMINOUS AGGREGATE MIXTURE | GAS       | GAS   | REM           | REMOVAL                  |
| 3-B   | BACK TO BACK                 | G/F       | GRADE AT FOUNDATION                                     | REV           | REVERSE                  |
| 3/C   | BACK OF CURB                 | ĠŴ        | GUY WIRE  | RR            | RAILROAD                 |
| B/P   | BOTTOM OF PIPE               | HDWL      | HEADWALL  | RT            | RIGHT                    |
| 3/W   | BACK OF WALK                 | HH        | HANDHOLE  | SAN           | SANITARY                 |
| B-BOX   | BUFFALO BOX                  | HWL       | HIGH WATER LEVEL  | SF            | SQUARE FOOT              |
| BIT.  | BITUMINOUS                   | HYD.      | HYDRANT   | SHLD.         | SHOULDER                 |
| BM  | BENCHMARK                    | INL       | INLET   | SL            | STREET LIGHT             |
| 3.0.  | BY OTHERS                    | INV.      | INVERT  | SMH           | SANITARY MANHOLE         |
| D.E.  | COMMERCIAL ENTRANCE          | IP        | IRON PIPE   | ST            | STORM                    |
| CB  | CATCH BASIN                  | ĽΤ        | LEFT  | STA.          | STATION                  |
| CL CL   | CENTERLINE                   | MAX.      | MAXIMUM   | STD           | STANDARD                 |
| CMP   | CORRUGATED METAL PIPE        | MB        | MAILBOX   | SW            | SIDEWALK                 |
| NTRL  | CONTROL                      | M/E       | MEET EXISTING   | SY            | SQUARE YARDS             |
| C.O.  | CLEANOUT                     | MH        | MANHOLE   | TBR           | TO BE REMOVED            |
| CONC.   | CONCRETE                     | MIN.      | MINIMUM   | T             | TELEPHONE                |
| CY  | CUBIC YARD                   | NWL       | NORMAL WATER LEVEL                                      | T-A           | TYPE A                   |
| <u>,                                     </u> | DITCH                        | P.E.      | PRIVATE ENTRANCE  | T/C           | TOP OF CURB              |
| OIA.  | DIAMETER                     | PC        | POINT OF CURVATURE                                      | T/F           | TOP OF FOUNDATION        |
| DIP   | DUCTILE IRON PIPE            | PCC       | POINT OF COMPOUND CURVE                                 | T/P           | TOP OF PIPE              |
| DIWM  | DUCTILE IRON WATER MAIN      | PGL       | PROFILE GRADE LINE                                      | T/W           | TOP OF WALK              |
| )S  | DOWNSPOUT                    | PI        | POINT OF INTERSECTION                                   |               |                          |
| )T  | DRAIN TILE                   | PL        | POINT OF INTERSECTION PROPERTY LINE POWER POLE PROPOSED | T/WALL        | TOP OF WALL              |
| -   | ELECTRIC                     | PP        | POWER POLE  | TEMP          | TEMPORARY                |
| -Е  | EDGE TO EDGE                 | PROP.     | PROPOSED  | TRANS<br>V.B. | TRANSFORMER<br>VALVE BOX |
| LEV.  | ELEVATION                    | PT .      | POINT OF TANGENCY                                       |               |                          |
| E/P   | EDGE OF PAVEMENT             | PVC       | POLYVINYL CHLORIDE PIPE                                 | VCP           | VITRIFIED CLAY PIPE      |
| -/  | EXISTING                     | PVC       | POINT OF VERTICAL CURVATURE                             | V. V.         | VALVE VAULT              |
| -^.<br>E.                                     | FIELD ENTRANCE               | PVI       | POINT OF VERTICAL INTERSECTION                          | WL<br>WA      | WATER LEVEL              |
|   | FACE TO FACE                 | PVT       | POINT OF VERTICAL TANGENCY                              | WM            | WATER MAIN               |
|   | FINISHED FLOOR               | P         | PAVEMENT  |               |                          |
| ES  | FLARED END SECTION           | P.U.D.E.  | PUBLIC UTILITY & DRAINAGE EASEMENT                      |               |                          |
| LJ  | FLANED END SECTION           | · .0.D.L. | TODAY OTHER CONTINUE ENSEMBLY                           |               |                          |



INDEX OF SHEETS

| SHEE NO. | DESCRIPTION |
|----------|-------------|
|          |             |

MASTER PLAN EXISTING CONDITIONS, DEMOLITION, AND UTILITY PLAN

#### TITLE SHEET

SPECIFICATIONS & DETAILS

#### **BENCHMARK:**

#### **SOURCE BENCHMARK:**

BRONZE DISK MONUMENT IN CONCRETE BASE STAMPED "DUPAGE COUNTY MAPS AND PLATS" AS DESCRIBED FROM DUPAGE COUNTY BENCHMARK YK35001.

PUBLISHED ELEVATION = 719.5371 (NGVD 29) OBSERVED ELEVATION = 719.35 (NAVD 88) AS DESCRIBED FROM NGS DATA SHEET DESIGNATED AS YK35001 (DK3131).

#### SITE BENCHMARK NO. 1:

NORTHWEST BOLT OF THE FIRE HYDRANT LOCATED ON THE NORTH SIDE OF THE NORTHEAST PARKING LOT AT CENTRAL PARK IN OAK BROOK, ILLINOIS. ELEVATION = 666.64DATUM: NAVD88

#### SITE BENCHMARK NO. 2:

CROSS CUT ON BACK OF CURB LOCATED ON THE WEST SIDE OF THE ENTRANCE TO CENTRAL PARK IN OAK BROOK, ILLINOIS APPROXIMATELY 200 FEET NORTH OF FOREST GATE ROAD. ELEVATION = 689.33DATUM: NAVD88

### SITE BENCHMARK NO. 3:

CROSS CUT ON BACK OF CURB LOCATED ON THE SOUTH SIDE OF THE NORTHEAST PARKING LOT AT CENTRAL PARK IN OAK BROOK, ILLINOIS APPROXIMATELY 600 FEET NORTH OF FOREST GATE ROAD. ELEVATION = 665.95DATUM: NAVD88

TOPOGRAPHIC FIELD WORK COMPLETED ON SEPTEMBER 8, 2011

**Simply Call 811** 

### NOTES:

1. THE TOPOGRAPHY SURVEY FOR THIS PROJECT IS BASED ON A FIELD SURVEY PREPARED BY COWHEY MANHARD (MANHARD) AND WAS PERFORMED ON SEPTEMBER 8, 2011. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS PRIOR TO CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY MANHARD CONSULTING AND THE CLIENT IN WRITING OF ANY DIFFERING CONDITIONS.

UTILITY CONTACTS

VILLAGE OF OAK BROOK 1200 OAK BROOK ROAD COMMONWEALTH EDISON 1040 JANES AVENUE OAK BROOK, IL 60521 BOLINGBROOK, IL 60440 (630) 985-4092 ENGINEERING DEPARTMENT

(630) 368-5130 BUILDING DEPARTMENT CONTACT: BILL HUDSON

CONTACT: PHIL LAURES

(630) 368-5110 PUBLIC WORKS DEPARTMENT CONTACT: DON LANGE

(630) 629-2500CONTACT: RYANT BANK TELEPHONE 6655 SOUTH MAIN STREET (630) 368-5270 DOWNERS GROVE, IL 60516

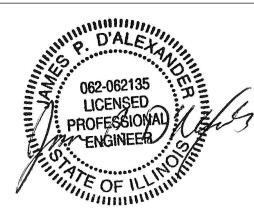
NICOR GAS 90 N. FINLEY ROAD

(630) 241-5151

CONTACT: JEFF DOUGLAS

GLEN ELLYN, IL 60137

FLAGG CREEK WATER <u>RECLAMATION DISTRICT</u> 7001 FRONTAGE ROAD BURR RIDGE, IL 60527 (630) 323-3299 CONTACT: THOMAS O'CONNOR



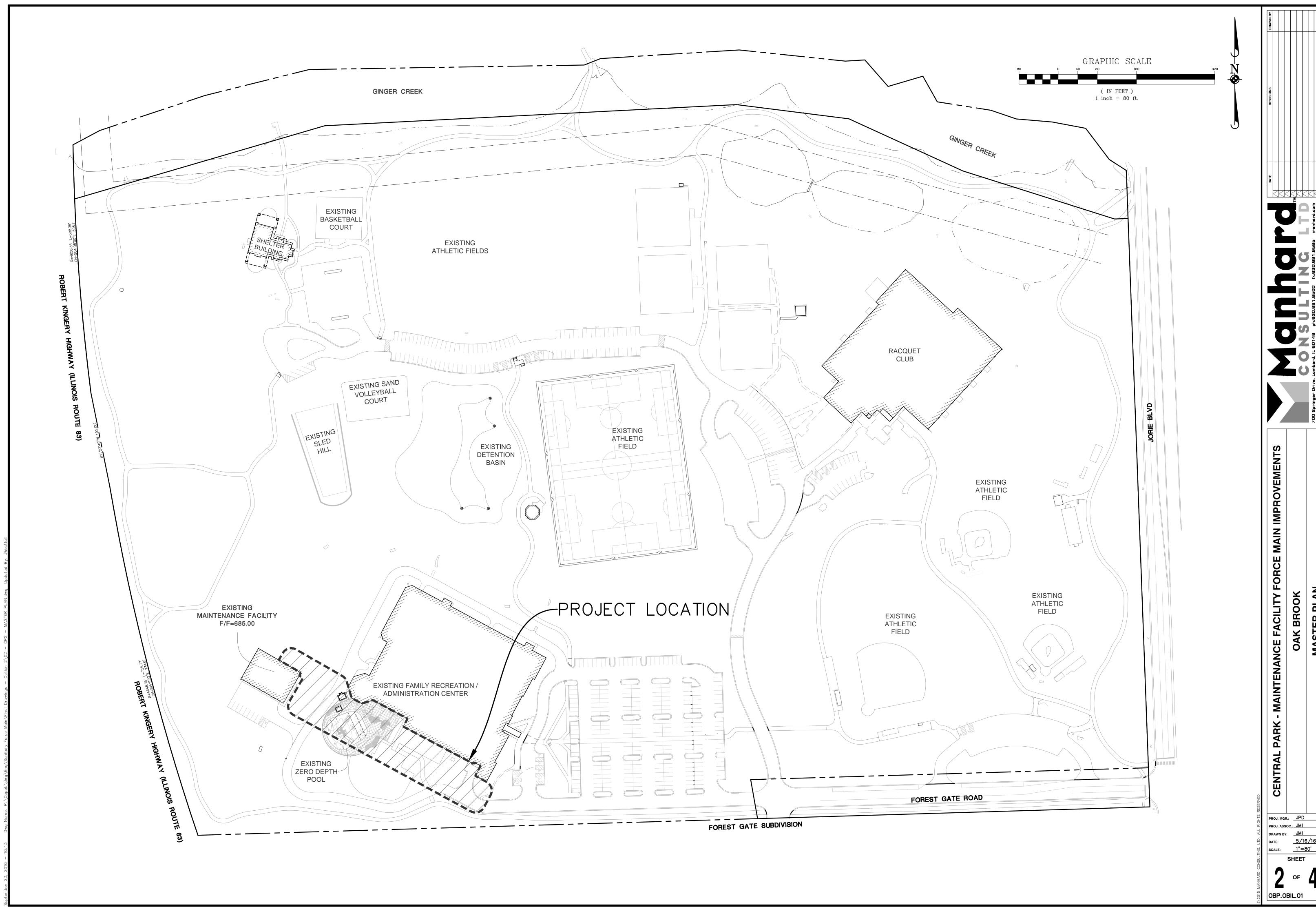
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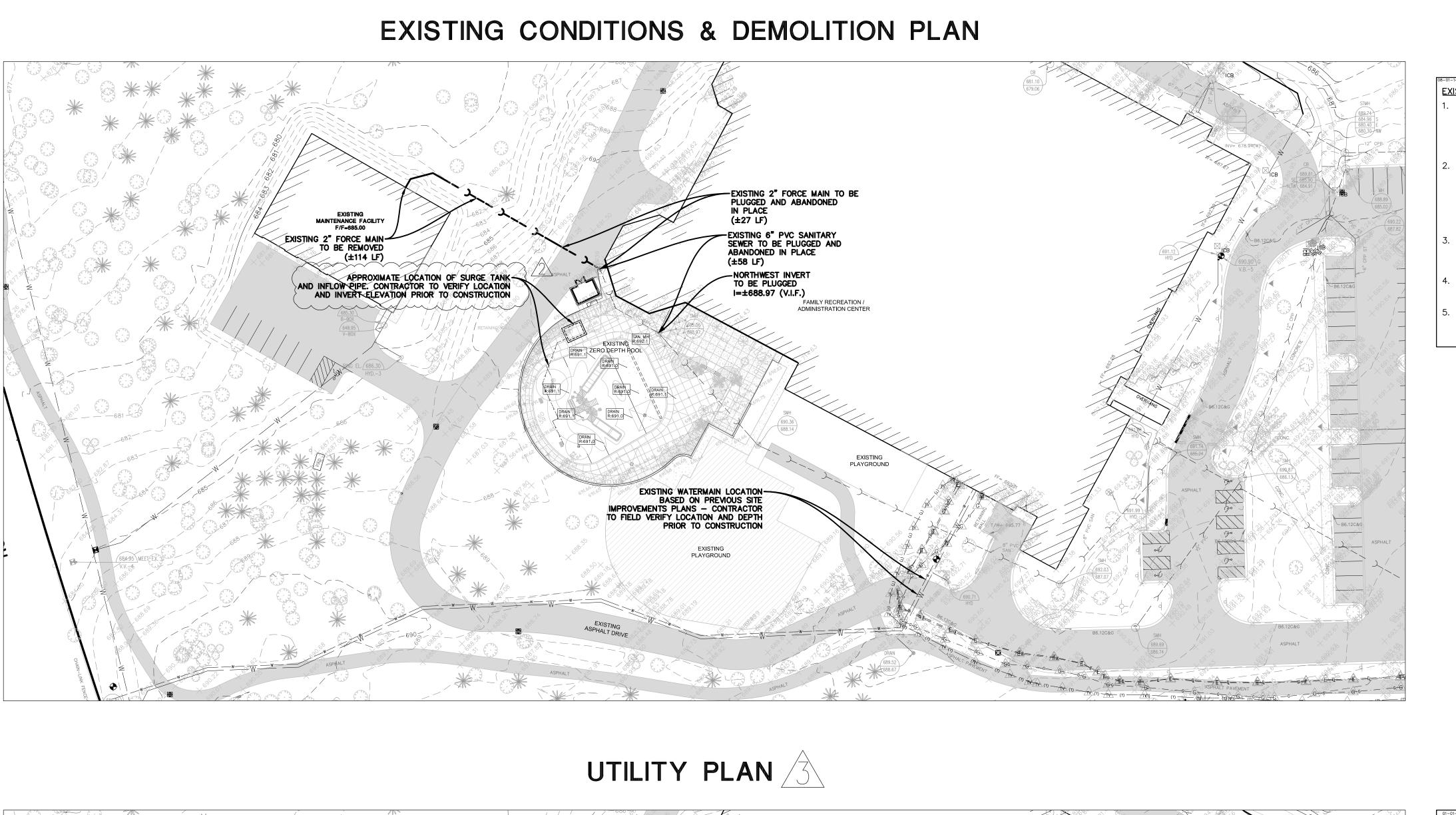
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<u>N.T.S.</u> SHEET

MANHARD CONSULTING, LTD. IS NOT RESPONSIBLE FOR THE SAFETY OF ANY PARTY AT OR ON THE CONSTRUCTION SITE. SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND ANY OTHER PERSON OR ENTITY PERFORMING WORK OR SERVICES. NEITHER THE OWNER NOR ENGINEER ASSUMES ANY RESPONSIBILITY FOR THE JOB SITE SAFETY OF PERSONS ENGAGED IN THE WORK OR THE MEANS OR METHODS OF CONSTRUCTION.







EXISTING TOPOGRAPHY SHOWN REPRESENTS SITE CONDITIONS AS PREPARED BY COWHEY MANHARD (MANHARD CONSULTING, LTD.) ON SEPTEMBER 8, 2011. CONTRACTOR SHALL FIELD CHECK EXISTING ELEVATIONS AND CONDITIONS PRIOR TO CONSTRUCTION AND NOTIFY ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING CONSTRUCTION.

GRAPHIC SCALE

( IN FEET ) 1 inch = 40 ft

- EXISTING CONDITIONS AND DEMOLITION PLANS REPRESENT SITE CONDITIONS AS OF NOVEMBER 13, 2014. CONTRACTOR SHALL INSPECT SITE PRIOR TO BIDDING WORK TO VERIFY ACTUAL FIELD CONDITIONS AS PORTIONS OF THE DEMOLITION WORK MAY HAVE SINCE BEEN COMPLETED. CONTRACTOR SHALL BE RESPONSIBLE TO COMPLETE ALL DEMOLITION WORK AS PER PLANS TO PREPARE THE SITE FOR CONSTRUCTION OF PROPOSED IMPROVEMENTS.
- EXISTING ZERO DEPTH POOL INFORMATION BASED ON SITE IMPROVEMENT PLANS, PREPARED BY 3D DESIGN STUDIO, DATED JANUARY 29, 2013. CONTRACTOR TO FIELD VERIFY EXISTING INFORMATION PRIOR TO CONSTRUCTION.
- ALL ABANDONED SANITARY SEWER SHALL BE PLUGGED ON BOTH ENDS WITH A MINIMUM 2 FOOT LONG NON-SHRINK CONCRETE OR MORTAR PLUG.
- ALL DISTURBED AREAS SHALL BE SEEDED, BLANKETED, AND RESTORED TO EXISTING AND ACCEPTABLE CONDITION, AS DETERMINED BY THE OWNER, AT THE COMPLETION OF THE

**UTILITY NOTES:** 

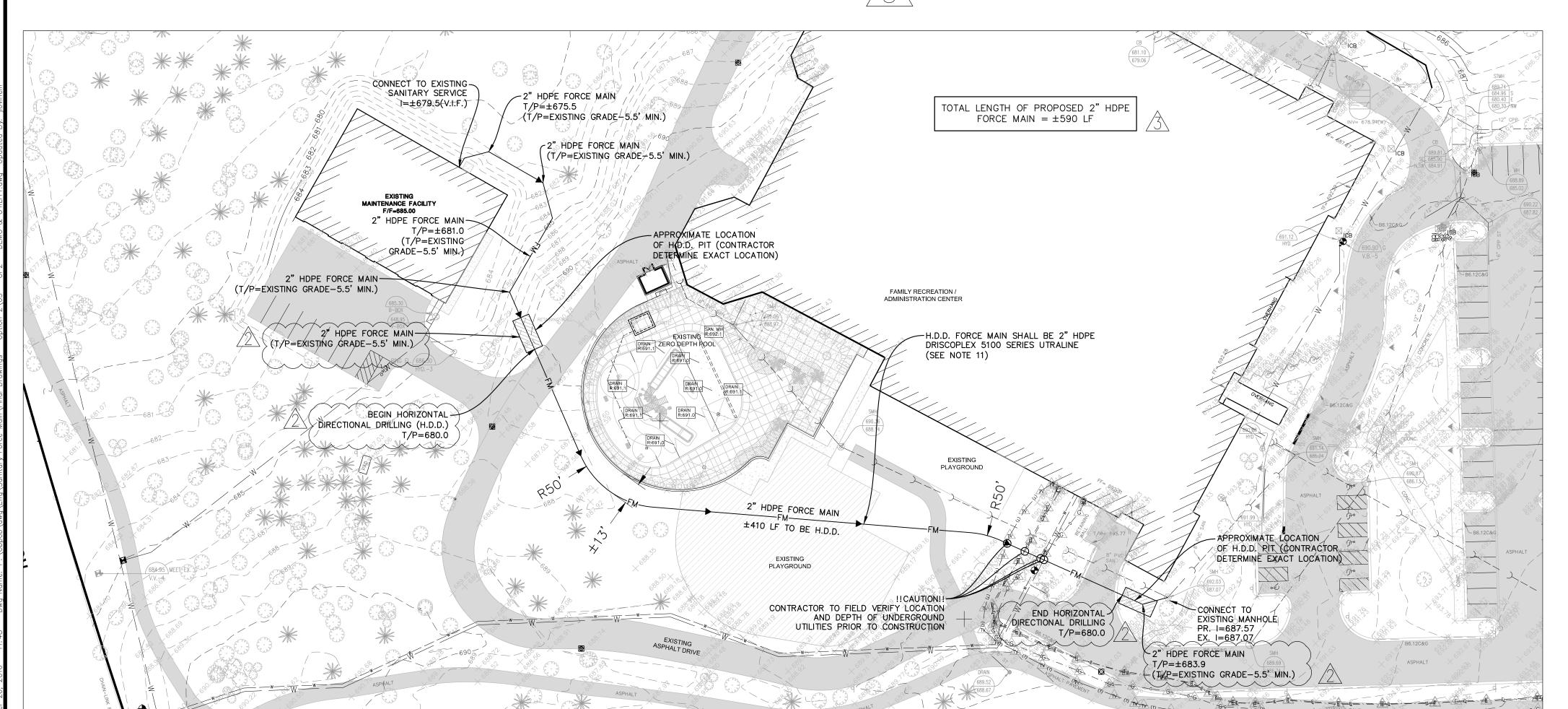
- ALL UTILITY DIMENSIONS ARE TO CENTER OF PIPE OR CENTER OF STRUCTURE UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL CONTACT J.U.L.I.E. (1-800-892-0123) PRIOR TO ANY WORK TO LOCATE UTILITIES AND SHALL CONTACT THE OWNER SHOULD UTILITIES APPEAR TO BE IN CONFLICT WITH THE PROPOSED IMPROVEMENT.
- CONTRACTOR SHALL EXCAVATE AND VERIFY ALL EXISTING SEWER, WATER MAIN AND DRY UTILITY LOCATIONS, SIZES. CONDITIONS & ELEVATIONS AT PROPOSED POINTS OF CONNECTION AND CROSSINGS PRIOR TO ANY UNDERGROUND CONSTRUCTION AND NOTIFY THE OWNER OF ANY DISCREPANCIES OR CONFLICTS.
- 4. AT LOCATIONS WHERE WATER MAIN CROSSES BENEATH OR LESS THAN 18" ABOVE A SEWER, PROVIDE WATER MAIN PROTECTION PER STANDARD SPECIFICATIONS FOR SEWER AND WATER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION.
- ALL EXISTING UTILITIES SHOWN ARE NOT TO BE INTERPRETED AS THE EXACT ELEVATION OR LOCATION, OR AS THE ONLY OBSTACLES THAT MAY OCCUR ON THE SITE. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND PROCEED WITH CAUTION AROUND ANY ANTICIPATED FEATURES.
- 5. THE UNDERGROUND UTILITY INFORMATION AS SHOWN HERE ON IS BASED, IN PART, UPON INFORMATION FURNISHED BY UTILITY COMPANIES AND THE LOCAL MUNICIPALITY. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, ITS ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED NOR CERTIFIED.
- ALL SANITARY AND STORM SEWER LENGTHS SHOWN ARE CENTER OF MANHOLE TO CENTER OF MANHOLE OR STORM MANHOLE TO FES.
- B. CONTRACTOR SHALL CORE AND BOOT ALL PIPE ENTRANCES TO EXISTING SANITARY MANHOLES.
- . EXTERNAL CHIMNEY SEALS ARE REQUIRED ON PROPOSED AND ADJUSTED EXISTING SANITARY MANHOLES.
- 10. SOME EXISTING ITEMS TO BE REMOVED HAVE BEEN DELETED FROM THIS PLAN FOR CLARITY. SEE DEMOLITION PLAN FOR ITEMS DELETED.
- 1. PROPOSED FORCE MAIN SHALL BE 2" DRISCOPLEX 5100 SERIES ULTRALINE, INSIDE DIAMETER CONTROLLED, CONFORMING TO ASTM D2239, OR APPROVED EQUAL.
- 12. A TRACER WIRE OR EQUIVALENT LOCATING METHOD SHALL BE USED IN ORDER TO ENSURE THE FORCE MAIN CAN BE DETECTED AND LOCATED IN THE FUTURE WITHOUT EXPLORATORY EXCAVATION.

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PROJ. MGR.: <u>JPD</u> PROJ. ASSOC.: JMI

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5/16/16 <u>1"=40'</u> SCALE: SHEET



SUPPLEMENTAL CONDITIONS CONTRACTOR acknowledges and agrees that the use and reliance of these Plans and Specifications is sufficient consideration for CONTRACTOR'S covenants stated herein

**DEFINITION OF TERMS** a. "CLIENT" shall mean Oak Brook Park District, which is the person or entity with whom Manhard Consulting, Ltd. has contracted with to prepare Civil

Engineering PLANS and SPECIFICATIONS. b. "ENGINEER" shall mean Manhard Consulting, Ltd., a Civil Engineering consultant on the subject project.

c. "PLANS and SPECIFICATIONS" shall mean the Civil Engineering PLANS and SPECIFICATIONS prepared by the ENGINEER, which may be a part of

the contract documents for the subject project.

d. "CONTRACTOR" shall mean any person or entity performing any work described in the PLANS and SPECIFICATIONS. e. "JURISDICTIONAL GOVERNMENTAL ENTITY" shall mean any municipal, county, state or federal unit of government from whom an approval, permit

and/or review is required for any aspect of the subject project INTENT OF THE PLANS AND SPECIFICATIONS

The intent of the PLANS and SPECIFICATIONS is to set forth certain requirements of performance, type of equipment and structures, and standards of materials and construction. They may also identify labor and materials, equipment and transportation necessary for the proper execution of the work but are not intended to be infinitely determined so as to include minor items obviously required as part of the work. The PLANS and SPECIFICATIONS require new material and equipment unless otherwise indicated, and to require complete performance of the work in spite of omissions of specific references to any minor component part. It is not intended, however, that materials or work not covered by or properly inferred from any heading, branch, class or trade of the SPECIFICATIONS shall be supplied unless distinctly so noted. Materials or work described in words, which so applied have a well-known technical or trade meaning, shall be held to refer to such recognized standards. INTERPRETATION OF PLANS AND SPECIFICATIONS

a. The CLIENT and/or CONTRACTOR shall promptly report any errors or ambiguities in the PLANS and SPECIFICATIONS to the ENGINEER. Questions as to meaning of PLANS and SPECIFICATIONS shall be interpreted by the ENGINEER, whose decision shall be final and binding on all parties

b. The ENGINEER will provide the CLIENT with such information as may be required to show revised or additional details of construction.

c. Should any discrepancies or conflicts on the PLANS or SPECIFICATIONS be discovered either prior to or after award of the contract, the ENGINEER's attention shall be called to the same before the work is begun thereon and the proper corrections made. Neither the CLIENT nor the CONTRACTOR may take advantage of any error or omissions in the PLANS and SPECIFICATIONS. The ENGINEER will provide information when errors or omissions are

**GOVERNING BODIES** 

All works herein proposed shall be completed in accordance with all requirements of any JURISDICTIONAL GOVERNMENTAL ENTITY, and all such pertinent laws, directives, ordinances and the like shall be considered to be a part of these SPECIFICATIONS. If a discrepancy is noted between the PLANS and SPECIFICATIONS and requirements of any JURISDICTIONAL GOVERNMENTAL ENTITY, the CLIENT and/or the CONTRACTOR shall immediately notify the ENGINEER in writing.

LOCATION OF UNDERGROUND FACILITIES AND UTILITIES

When the PLANS and SPECIFICATIONS include information pertaining to the location of existing underground facilities and utilities (including but not limited to water mains, sanitary sewers, storm sewers, electric, telephone, gas and cable TV lines), such information represents only the opinion of the ENGINEER as to the approximate location and elevation of such facilities and utilities. At the locations wherein detailed positions of these facilities and utilities become necessary to the new construction, including all points of connection, the CONTRACTOR shall furnish all labor and tools to verify or definitely establish the horizontal location, elevation, size and material (if appropriate) of the facilities and utilities. The CONTRACTOR shall notify the ENGINEER at least 48 hours prior to construction if any discrepancies in existing utility information or conflicts with existing utilities exist. The ENGINEER assumes no responsibility whatever with respect to the sufficiency or accuracy of the information shown on the PLANS and SPECIFICATIONS relative to the location of underground

facilities and utilities, nor the manner in which they are removed or adjusted. It shall be the CONTRACTOR's responsibility prior to construction, to notify all Utility Companies of the intent to begin construction and to verify the actual location of all such facilities and utilities. The CONTRACTOR shall also obtain from the respective Utility Companies the working schedules for removing or

adjusting these facilities.

The PLANS have been prepared by the ENGINEER based on the assumption that all soils on the project are suitable to support the proposed improvements shown. The CLIENT or CONTRACTOR shall immediately notify the ENGINEER if he discovers or encounters an obstruction that prevents the installation of the improvement according to the line and grades shown on the PLANS.

**PROTECTION OF TREES** 

All trees that are not to be removed shall be protected from damage. Trees shall not be removed unless requested to do so in writing by the CLIENT. NOTIFICATION OF OWNERS OF FACILITIES AND UTILITIES

The CONTRACTOR shall notify all applicable Jurisdictional Governmental Entities or utility companies, i.e., water, sewer, electric, telephone, gas and cable TV prior to beginning any construction so that said entity or company can establish the location and elevation of underground pipes, conduits or cables adjoining or crossing proposed construction. TRAFFIC CONTROL

The CONTRACTOR shall provide when required by any JURISDICTIONAL GOVERNMENTAL ENTITY, all signs, equipment, and personnel necessary to provide for safe and efficient traffic flow in all areas where the work will interrupt, interfere or cause to change in any form, the conditions of traffic flow that existed prior to the commencement of any portions of the work. The CLIENT may, at his discretion, require the CONTRACTOR to furnish traffic control under these or other circumstances where in his opinion it is necessary for the protection of life and property. Emergency vehicle access shall be maintained at all times. Unless authorized by the CLIENT or CLIENT's construction representative, all existing access points shall be maintained at all times by the CONTRACTOR. The need for traffic control shall be anticipated by the CLIENT.

The CONTRACTOR, his agents and employees and their employees and all equipment, machinery and vehicles shall confine their work within the boundaries of the project or work area specified by the Client. The CONTRACTOR shall be solely liable for damage caused by him or his agents and employees and their equipment, machinery and vehicles on adjacent property or areas outside designated work areas.

**UTILITY POLES** 

It shall be the responsibility of the CONTRACTOR to arrange for the relocation or bracing of existing utility poles that may be within the working limits of this contract. It is expressly understood that all work and costs connected with the maintenance of these utility poles, their temporary relocations, etc., shall be the responsibility of the CLIENT or the CONTRACTOR.

**RESTORATION** 

It is the intent of these SPECIFICATIONS that clean-up and final restoration shall be performed immediately upon completion of each phase of the work, both inside and outside the Project, or when so directed by the CLIENT so that these areas will be restored as nearly as possible to their original condition or trees, shrubs, fences, mailboxes, sewers, drain tiles, water mains, etc. **CLEANING UP** 

The CONTRACTOR shall at all times keep the premises free from accumulations of waste material or rubbish caused by his employees or work, and at the completion of the work he shall remove all his rubbish, tools, scaffolding and surplus materials and shall leave his work "broom clean" or its equivalent, unless more exactly specified.

**ROAD CLEANING** 

The CONTRACTOR shall maintain roadways adjoining the project site free from mud and debris at all times. If mud and/or debris is carried onto the roadways from vehicles entering onto the highway from either the CONTRACTOR's trucks, his employees' vehicles, or his material suppliers, the CONTRACTOR shall immediately remove said mud and/or debris.

SAFETY AND PROTECTION The CONTRACTOR shall be solely and completely responsible for the conditions of the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. The CONTRACTOR shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR's duties and responsibilities for safety and for protection of the work shall continue until such time as all work is completed and the CLIENT has notified CONTRACTOR that the work is acceptable. The duties of the

ENGINEER do not include review of the adequacy of either the CONTRACTOR's or the general public's safety in, on, or near the construction site. To the fullest extent permitted by law, any CONTRACTOR; material supplier or other entity by use of these plans and specifications hereby waives any right of contribution and agrees to indemnify, defend, save and hold harmless the CLIENT and ENGINEER and its agents, employees and consultants from and against all manner of claims, causes, causes of action, damages, losses and expenses, including but not limited to, attorneys' fees arising out of, resulting

from or in connection with the performance of any work, pursuant to or with respect to these plans and specifications. However, this indemnity shall not be construed to indemnify ENGINEER, its consultants, agents or employees against its own negligence. Claims, damages, losses and expenses as these words are used in the Agreement shall mean and include, but not be limited to (1) injury or damage occurring by reason of the failure of or use or misuse of any hoist, riggings, blocking, scaffolding or any and all other kinds of items of equipment, whether or not the same be owned, furnished or loaned by any part or entity, including any contractor; (2) all attorneys' fees and costs incurred in bringing an action to

enforce the provisions of this indemnity; (3) costs for time expended by the indemnified party and its employees, at its usual rates plus costs or travel, long distance telephone and reproduction of documents and (4) consequential damages. In any and all claims against the CLIENT or ENGINEER or any of their agents or employees and consultants by any party, including any employee of the CONTRACTOR or any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount of type of damages, compensation or benefits payable by or for the

CONTRACTOR or any Subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts or any insurance maintained by CONTRACTOR or any Subcontractor or any other party.

is considered secondary. Such insurance shall not limit any liability of any party providing work or services or providing materials.

INSURANCE Any party using or relying on these plans, including any contractor, material supplier, or other entity shall obtain, (prior to commencing any work) general public liability insurance insuring against all damages and claims for any bodily injuries, death or property damage arising out of any work, including the construction work provided for in these plans, and shall name the CLIENT and ENGINEER and its consultants, agents and representatives as additional insureds under such insurance policy; provided that any party using or relying on these plans having obligations to maintain specific insurance by reason of any agreement with CLIENT or any CONTRACTOR or ENGINEER shall provide evidence and certificates of insurance as required by such contract or agreement. Such insurance must contain a clause stating that the insurance is primary coverage for ENGINEER and ENGINEER's other applicable coverage

#### **DETAILED SPECIFICATIONS**

I. DEMOLITION

The CONTRACTOR shall coordinate with respective utility companies prior to the removal and/or relocation of utilities. The CONTRACTOR shall coordinate with the utility company concerning portions of work which may be performed by the Utility Company's forces and any fees which are to be paid to the utility company for their services. The CONTRACTOR is responsible for paying for all fees and charges.

Should removal and/or relocation activities damage features indicated to remain, the CONTRACTOR shall provide new materials/structures in accordance with the contract documents. Except for materials designed to be relocated on this plan, all other construction materials shall be new. Prior to demolition occurring, all erosion control devices are to be installed. All existing utility lines and conduits located under proposed buildings shall be removed and properly backfilled. All utility lines and conduits located under drives, on-site

roads, parking lots or sidewalks shall be filled with a flowable backfill and end plugged. All existing structures shall be removed. All existing utility lines located under landscape areas shall be left in place and plugged at all structures. The CONTRACTOR is responsible for demolition, removal and disposal (in a location approved by all JURISDICTIONAL GOVERNING ENTITIES) of all structures, pads,

walls, flumes, foundations, road, parking lots, drives, drainage structures, utilities, etc., such that the improvements shown on these plans can be constructed. All demolition work shall be in accordance with all applicable federal, state and local requirements. All facilities to be removed shall be undercut to suitable material and brought to grade with suitable compacted fill material per the specifications. The CONTRACTOR is responsible for obtaining all permits required for demolition and disposal.

Electrical, telephone, cable, water, fiber optic cable and/or gas lines needing to be removed shall be coordinated by the CONTRACTOR with the affected utility company.

CONTRACTOR must protect the public at all times with fencing, barricades, enclosures, and other appropriate best management practices. Continuous access shall be maintained for surrounding properties at all times during demolition.

All fire access lanes within the project area shall remain in service, clean of debris, and accessible for use by emergency vehicles.

The CONTRACTOR shall coordinate water main work with the Fire Department and the JURISDICTIONAL GOVERNING ENTITY to plan the proposed improvements and to ensure adequate fire protection is available to the facility and site throughout this specific work and through all phases of construction. CONTRACTOR shall be responsible for any required water main shut offs with the JURISDICTIONAL GOVERNING ENTITY during construction. Any costs associated with water main shut offs

will be the responsibility of the CONTRACTOR and no extra compensation will be provide. CONTRACTOR shall maintain all existing parking areas, sidewalks, drives, etc. clear and free from any construction activity and/or material to ensure easy and safe pedestrian and vehicular traffic to and from the site. CONTRACTOR shall coordinate/phase all construction activity within proximity of the building and utility interruptions with the facility manager to minimize disturbance and inconvenience to facility operations.

CONTRACTOR may limit saw-cut and pavement removal to only those areas where it is required as shown on these construction plans, however if any damage is incurred on any of the surrounding pavement, etc. the CONTRACTOR shall be responsible for ITS removal and repair

Any existing wells encountered shall be exposed and sealed 3' below proposed finish grade by the CONTRACTOR in accordance with Section 920.120 (latest edition) of the Illinois Water Well Construction Code, Department of Public Health, and all applicable local rules and regulations. CONTRACTOR is responsible for obtaining all permits required by JURISDICTIONAL GOVERNMENTAL ENTITIES for abandoning existing wells.

Any existing septic tanks and grease traps encountered shall have all liquids and solids removed and disposed of by a licensed commercial hauler in accordance with JURISDICTIONAL GOVERNING ENTITY regulations, and the tank and grease traps shall then be filled with suitable materials or removed from the site and disposed of by the CONTRACTOR.

Voids left by any item removed under any proposed building, pavement, walk, etc. or within 24" thereof shall be filled and compacted with suitable materials by the

The CONTRACTOR shall be responsible for the disconnection of utility services to the existing buildings prior to demolition of the buildings. Any material containing asbestos found within existing structures shall be removed from the site and disposed of off-site by the CONTRACTOR in accordance with

CONTRACTOR shall develop and implement a daily program of dust control and shall submit and obtain JURISDICTIONAL GOVERNING ENTITY approval of dust control procedures prior to demolition of any structures. Modification of dust control procedures shall be performed by the CONTRACTOR to the satisfaction of the JURISDICTIONAL GOVERNING ENTITY as requested

The CONTRACTOR shall coordinate all demolition with the JURISDICTIONAL GOVERNING ENTITY and CLIENT to ensure protection and maintenance of sanitary sewer and water utilities as necessary and to provide stormwater conveyance until new facilities are constructed, tested and placed into operation The locations of all existing utilities shown on this plan have been determined from the best information available and are given for the convenience of the CONTRACTOR and are not to be interpreted as the exact location, or as the only obstacles that may occur on the site. The ENGINEER assumes no responsibility for their accuracy. Prior to the start of any demolition activity, the CONTRACTOR shall notify the utility companies for location of existing utilities and shall verify existing conditions and proceed with caution around any anticipated features.

The CONTRACTOR is responsible for removing the existing irrigation system in the areas of proposed improvements. The contractor shall cap the existing irrigation system to remain such that the remaining system shall continue to function properly. The parking lot shall be completed in sections such that it does not interrupt the facility operations. The CONTRACTOR shall coordinate with the construction manager

#### for work to be performed. II.EARTHWORK

CONTRACTOR.

This work shall be completed in conformance with the applicable sections of the Standard Specifications for Road and Bridge Construction, Department of Transportation, State of Illinois, latest edition except as modified below.

**SOIL BORING DATA** INTENTIONALLY REMOVED

**EARTHWORK CALCULATIONS AND CROSS SECTIONS** 

INTENTIONALLY REMOVED.

**CLEARING, GRUBBING AND TREE REMOVAL** The site shall be cleared, grubbed, and trees and stumps removed where designated on the PLANS. Trees designated to remain shall be protected from

Upon completion of demolition, clearing, grubbing and tree removal, all topsoil shall be stripped from under all buildings and pavements areas, and other areas necessary to complete the work. Topsoil stripped shall be placed in stockpiles in locations as designated by the CLIENT.

Upon completion of roadway and/or parking lot improvements and installation of underground utilities a minimum of four inches (4") of topsoil shall be respread over all unpayed areas which have been disturbed by earthwork construction, except building pads and other designated areas, which shall be kept free from topsoil.

Upon completion of topsoil respread, the CONTRACTOR shall apply seed and fertilizer to all respread areas in accordance with IDOT standards or as designated on landscape drawings and specifications provided by the CLIENT.

Upon completion of topsoil respread, the CONTRACTOR shall install sod to all areas designated on the plans or as designated on the landscape drawings

and specifications provided by the CLIENT. EXCAVATION AND EMBANKMENT

Upon completion of topsoil stripping, all excavation and embankments shall be completed as shown on the PLANS. All suitable excavated materials shall be hauled, placed (moisture conditioned if necessary) and compacted in the embankment areas. The CONTRACTOR shall include all dewatering, temporary ditching and culverts necessary to complete the excavation and embankment

Specifically included in the scope of Excavation and Embankments is grading and shaping of all cut or fill areas including swales and ditches; handling of sewer spoil, etc., and all work required to provide positive drainage at the end of each working day and upon completion of a section.

The CONTRACTOR shall be responsible for the excavation of all swales and ditches and for the excavation or filling of the roads, building pads and parking lots within the work limits to lines & grades shown on the plans. He shall be responsible for obtaining compaction in accordance with the minimum values listed in the table below for all embankments unless more stringent values are listed in the soils report or are approved by the CLIENT, and to use any method approved by the CLIENT necessary to obtain this compaction (i.e., soil fabric or any undercutting that may be required).

Modified Proctor 95% Clayey Soils Standard Proctor 95%

The CONTRACTOR shall notify the CLIENT if proper compaction cannot be obtained so that the CLIENT may determine what remedial measures may be

A soils testing firm employed by the CLIENT shall determine which soils are unsuitable. Materials in their natural state being defined as unsuitable that would be suitable material if moisture conditioned, shall be conditioned by the CONTRACTOR and used as suitable embankment material or hauled from the site

1. Any soil whose optimum moisture content exceeds 25%.

For purposes of definition, unsuitable material shall be as follows unless determined otherwise by the Soils Engineer:

3. Any soil whose silt content exceeds 60% by weight 4. Any soil whose maximum density is less than 100 pounds per cubic foot.

5. Any soil containing organic, deleterious, or hazardous material.

Upon completion of excavation and shaping of the water retention areas intended to maintain a permanent pool of water, all silt seams and granular or sandy soils shall be removed to a minimum depth of three feet below the subgrade and replaced with an impermeable clay liner, including adjacent to and under storm sewer inlets and outlets. It is the intent of these PLANS and SPECIFICATIONS that the CONTRACTOR shall prepare the lake bottoms, side slopes, and compaction thereof such that the lakes will maintain the proposed normal water level and that leakage does not exceed ½ inch per week.

Ditches and swales are to be excavated to the lines and grades indicated on the PLANS. All suitable materials excavated from the ditches shall be used in The CONTRACTOR shall notify the CLIENT immediately upon encountering groundwater during excavation. If in the opinion of the CLIENT or the JURISDICTIONAL GOVERNING ENTITY this condition necessitates the installation of perforated drain tile bedded in washed gravel or open storm sewer

joints wrapped with fabric, the CONTRACTOR shall install the same. During excavation and embankment, grades may be adjusted to achieve an overall site earthwork balance. The CONTRACTOR shall cooperate fully with the CLIENT in adjustment of grades, construction methods and placement of material to meet the above goals and shall immediately advise CLIENT if he

believes that the earthwork will not balance. It is the intent of these PLANS that storm waters falling on the site be diverted into sedimentation / lake / detention basins during construction. The CONTRACTOR shall construct and maintain any temporary ditches or swales that are necessary to accomplish this prior to beginning mass excavation.

Suitable erosion control practices shall be maintained by the CONTRACTOR in accordance with Illinois Urban Manual and all applicable Soil Erosion and Sedimentation Control ordinances and the PLANS.

UNDERCUTTING DURING EARTHWORK If the subgrade cannot be dried adequately by discing as outlined above for placement of material to planned grades and if the CLIENT determines that the subgrade does not meet the standards set forth above, the CLIENT may require undercutting.

MISCELLANEOUS CONTRACT ITEMS The following items may be required at the CLIENT's option, as indicated on the PLANS or as required by the JURISDICTIONAL GOVERNING ENTITY: (1) GEOTEXTILE FABRIC

Geotextile fabric or approved equal shall be provided in areas as designated by the CLIENT, as indicated on the PLANS or as required by the JURISDICTIONAL GOVERNING ENTITY where proper compaction of embankments over existing soft soils is not possible. Geotextile fabric shall meet the material specifications of and shall be installed in accordance with the above standards.

(2) EROSION CONTROL BLANKET

Erosion control blanket or approved equal shall be provided in areas as designated by the CLIENT, as indicated on the PLANS or as required by the JURISDICTIONAL GOVERNING ENTITY for the stabilization of disturbed areas. Erosion control blanket shall meet the material specifications of and shall be installed in accordance with the above standards, the Illinois Urban Manual and/or the details shown on the PLANS.

**III.UNDERGROUND IMPROVEMENTS** 

A. GENERAL

All underground improvements shall be constructed and tested in accordance with the Standard Specifications for Water and Sewer Construction in Illinois and Standard Specifications for Road and Bridge Construction, Department of Transportation, State of Illinois, latest edition. In the event of conflicting guidelines, the more restrictive shall govern.

Selected Granular Backfill shall be required for all sewer and water main trenches lying under existing or proposed streets, driveways, parking lots and within 24" thereof, and where noted on PLANS. All material placed in such trenches shall be in accordance with the above standards. MANHOLES, CATCH BASIN, INLETS & VALVE VAULTS

INTENTIONALLY REMOVED

Casing pipe shall be welded steel pipe, installed where shown on the PLANS. The carrier pipe shall be securely blocked and banded and sanitary and storm sewers shall maintain the specified gradient. Upon installing the carrier pipe the ends shall be sealed with hydraulic cement. **AUGER (OPEN BORE)** 

The CONTRACTOR shall auger (open bore) where noted on PLANS.

HORIZONTAL AND VERTICAL SEPARATION OF WATER AND SEWER MAINS

Horizontal and vertical separation of water and sewer mains shall be in accordance with Standard Specifications for Water and Sewer Construction in Illinois Section 41-2.01A and 41-2.01B and Standard Drawing 18, 19, 20, 21, 22, 23 and 24.

STRUCTURE ADJUSTMENTS Structures shall be adjusted to the finished grade as shown on PLANS.

HORIZONTAL DIRECTIONAL DRILL (HDD)

The contractor shall have experience in horizontal directional drilling for a minimum of 3 years.

Installation shall be achieved by augering a pilot hole at the line and grades shown on the plans at a sufficient diameter to subsequently pull the pipe through the generated void. The directional drilling machine shall consist of a hydraulically powered system to rotate, push and pull hollow drill pipe into the ground a variable angles down to 8 degrees above horizontal, while delivering a pressurized fluid mixture to a guidable drill (bore) head. The machine shall have a capacity to adequately complete the drilling and piping installation. The machine shall be anchored to the ground to withstand the pulling, pushing and rotating pressure required to complete the crossing. The hydraulic power system shall be self-contained with sufficient pressure and volume to power drilling operations. The hydraulic system shall be free of leaks. The rig shall have a system to monitor the maximum pull-back pressure during the pull-back operation. The rig shall be grounded during drilling and pull-back operations. There shall be a system to detect electrical current from the drill string and an audible alarm, which automatically sounds when an electrical current is detected. The drill head shall be a steerable type and shall provide the necessary cutting surfaces and drilling fluid jets. Mud motors shall be adequate to power the required drilling tools.

A conventional electromagnetic sound walkover system, Magnetic Guidance System (MGS) probe or proven gyroscopic probe and interface shall be used to provide a continuous and accurate determination of the location of the drill head during the drilling operation. The guidance shall be capable of tracking at the maximum depth required and in any soil condition. It shall enable the driller to guide the drill head by providing immediate information to the tool face of horizontal and vertical direction. The guidance system shall be accurate to 2% vertically and 1 foot horizontally. A self-contained, closed drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid composed of bentonite clay, potable water and

appropriate additives. Mixing system shall be able to molecularly shear individual bentonite particles from the dry powder to avoid clumping and ensure thorough mixing. Mixing system shall continually agitate the drilling fluid during drilling operations. Pipe rollers shall be of sufficient size to fully support the weight of the pipe while being hydro-tested during pull-back operations. Sufficient number of rollers

The pipe pulling head shall be made of ductile iron and designed and furnished by the pipe manufacturer or an approved equal. The bore path shall be designed by the drilling contractor to ensure the pipe joint do not deflect more than 50% of the manufacturer's recommended maximum deflection.

The pilot hole shall be drilled on the bore path with no deviations greater than 5% of depth over a length of 100'. In the event the pilot does deviate from the bore path more than 5%, the contractor shall notify the Engineer who may require the contractor to pull back and re-drill from the location along the bore path before the deviation. If any obstruction is encountered during installation to stop the forward action of the pipe, and it becomes evident that it is impossible to advance the pipe, operations will cease and the Engineer shall be notified at once. Prior to commencement of the work, the Contractor shall secure field verification of all utility clearances.

Upon successful completion of the pilot hole, contractor shall ream the bore hole to a minimum of 25% greater than the outside diameter of the pipe bell for straight pulls and 50% greater for radius pulls. After successfully reaming the bore hole to the required diameter, contractor shall pull the pipe through the bore hole. Once pull-back operations have commenced, operations must continue without interruption until pipe is completely pulled into the bore hole. During pull-back operations the contractor shall not apply more than the maximum safe pipe pull force at any time.

Contractor shall keep a record of the drilling operations and a guidance system log with a copy give to the engineer at the completion of boring. \*\*For specific pipe materials refer to the 'SANITARY SEWERS AND APPURTENANCES" section of these specifications.

**B. SANITARY SEWERS AND APPURTENANCES** 

SANITARY SEWER PIPE

Sanitary sewer pipe including building services, shall conform to the following:

(1) Polyvinyl Chloride (PVC) Sewer Pipe shall conform to ASTM D3034 (4-inch thru 15-inch) or ASTM F679 (18-inch thru 48-inch) minimum SDR 26 with flexible elastomeric seal gasket gasketed joints conforming to ASTM D3212 and F477.

(2) Ductile Iron Sewer Pipe shall conform with ANSI/AWWA C151/A21.51 Class 50, cement lined with push on type joints conforming to ANSI/AWWA

(3) Extra Strength Clay Sewer Pipe shall conform with ASTM Specification C700 (glazed) with ASTM D1784 type joints conforming to Clow NO-BEL (ESVCP), with flexible gasket meeting ASTM C425 (MWRD only). Sanitary sewers shall include bedding and backfilling.

MANHOLES

INTENTIONALLY REMOVED FOUNDATION, BEDDING AND HAUNCHING

Foundation, Bedding and Haunching shall be wet coarse aggregate or moist fine aggregate in accordance with the above standards and placed as shown on

**TESTING** 

Sanitary sewers shall be air tested and tested for deflection in accordance with the requirements of Section 31-1.12 "TESTING AND INSPECTION FOR ACCEPTANCE OF SANITARY SEWERS" of the Standard Specifications for Water and Sewer Construction in Illinois or the JURISDICTIONAL GOVERNING ENTITY, whichever is more restrictive. In addition, a televised inspection of the completed sanitary sewers shall be conducted and a copy of the videotape and report furnished to the JURISDICTIONAL GOVERNING ENTITY

All sanitary manholes are to be tested for water tightness in accordance with ASTM C969 "Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines", or ASTM C1244 "Standard Test Method for Concrete Sewer Manholes by the Negative Pressure (Vacuum) Test".

SERVICES

A wye branch or "tee" and sanitary service line, properly plugged and sealed shall be constructed as shown on the PLANS. The ends of all services shall be marked with a 4"x4" post extending 36" above grade and painted red. The CONTRACTOR shall keep accurate records of all Wye or Tee locations as measured from the downstream manhole as well as the service lengths and furnish same to CLIENT.

INTENTIONALLY REMOVED

DROP MANHOLE CONNECTIONS

INTENTIONALLY REMOVED SANITARY SEWER FORCE MAIN

Sanitary sewer force main shall conform to the following

(1) 2" HDPE Driscoplex 5100 Series Ultraline, Inner Diameter Controlled, conforming to ASTM D2239, with a pressure rating of 250 psi.

(2) Polyvinyl Chloride (PVC) Pressure Pipe conforming to the latest revision of ANSI/AWWA C900, Class 150. (3) Ductile iron cement lined pipe conforming to the latest revision of ANSI/AWWA C151/A21.51, Thickness Class 50, minimum 150 psi working pressure

Force mains shall have a minimum of five feet six inches (5'-6") of cover and shall include bedding and trench backfill. A tracer wire or equivalent locating method shall be used in order to ensure the force main can be detected and located in the future without exploratory excavation. Upon completion of installation, force mains are to be plugged and pressure tested at 2 times the working pressure or total dynamic head for a period of 10

minutes, with no loss of pressure or as required by the JURISDICTIONAL GOVERNING ENTITY, whichever is more stringent. Upon completion of construction a television inspection of the sanitary sewer system shall be performed on all portions of the sewer if required by the JURISDICTIONAL GOVERNING ENTITY. Videotapes and written report of all television inspections shall be provided to the CLIENT. The form of report and

All sewers and appurtenances shall be cleaned prior to inspection and testing required by this section. All defects and corrective work required as the result of television inspection shall be performed by the CONTRACTOR without delay. All dips. cracks, leaks. improperly sealed joints and departures from approved grades and alignment shall be repaired by removing and replacing the involved sections of pipe. Upon completion thereof, the sewer shall be retested and such further inspection made as may appear warranted by the CLIENT.

**MISCELLANEOUS** 

INTENTIONALLY REMOVED

sewer line when:

(3.) Standard Drawing No. 18.

C. WATER MAINS AND APPURTENANCES **INTENTIONALLY REMOVED** D. STORM SEWERS AND APPURTENANCES

INTENTIONALLY REMOVED IV. ROADWAY AND PARKING LOT IMPROVEMENTS

type and format of the videotape shall be approved by the JURISDICTIONAL GOVERNING ENTITY.

STANDARD SPECIFICATIONS FOR WATER AND SEWER CONSTRUCTION IN ILLINOIS, LATEST EDITION. 41-2.01 PROTECTION OF WATER MAIN AND WATER SERVICE LINES

41-2.01A GENERAL Water mains and water service lines shall be protected from sanitary sewers, storm sewers, combined sewers, house sewer service connections and drains as follows:

41-2.01B HORIZONTAL SEPARATION - WATER MAINS AND SEWERS

(1.) Water mains shall be located at least ten (10) feet (3.1 m) horizontally from any existing or proposed drain, storm sewer, sanitary sewer, combined sewer or sewer service connection.

Water mains may be located closer than ten (10) feet (3.1 m) to a (a) local conditions prevent a lateral separation of ten (10) feet (3.1 m);

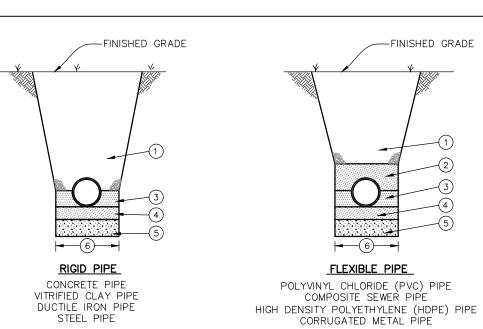
(2.)(b) the water main invert is at least eighteen (18) inches (460 mm) ambdive the crown of the sewer; and

When it is impossible to meet (1) or (2) above, both the water main and drain or sewer shall be constructed of slip—on or mechanical joint cast or ductile iron pipe, prestressed concrete pipe, or PVC pipe equivalent to water main standards of construction. The drain or sewer shall be pressure tested to the maximum expected surcharge head before backfilling. See

(c) the water main is either in a separate trench or in the same trench

on an undisturbed earth shelf located to one side of the sewer.

WATER AND SEWER SEPARATION REQUIREMENTS (HORIZONTAL SEPARATION)



) MECHANICALLY COMPACTED SELECTED GRANULAR BACKFILL IN 6 INCH LIFTS UNDER OR WITHIN FEET OF ANY PAVEMENT, CURB & GUTTER OR SIDEWALK. MACHINE COMPACTION OF EXCAVATED MATERIAL IN OTHER LOCATIONS WHERE SUITABLE.

) MECHANICALLY COMPACTED SELECTED GRANULAR BACKFILL IN 6 INCH LIFTS TO 12"

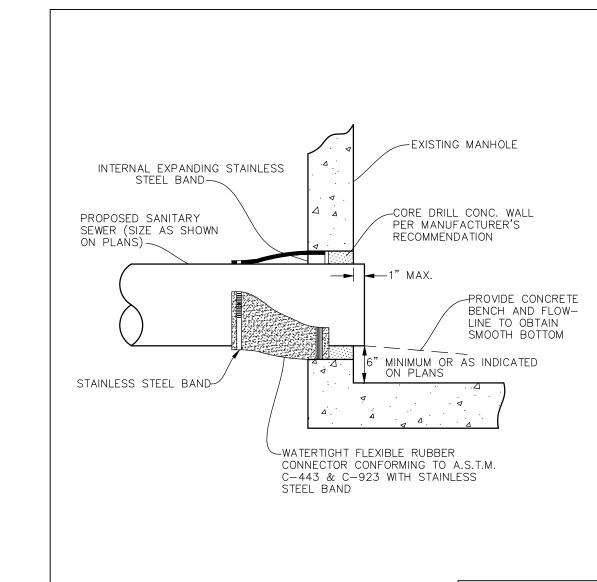
) <u>RIGID PIPE:</u> WELL—COMPACTED HAUNCHING MATERIAL PLACED IN MAXIMUM 6 INCH LIFTS FLEXIBLE PIPE: WELL-COMPACTED HAUNCHING MATERIAL PLACED IN MAXIMUM 6 INCH LIFTS

(4) 4" WELL-COMPACTED BEDDING MATERIAL

5) UNSUITABLE MATERIAL TO BE REMOVED AND REPLACED WITH GRANULAR FOUNDATION MATERIAL WHERE SOIL CONDITIONS WARRANT

TRENCH DEPTH OF 5 FEET AND LESS, WITHOUT PROTECTION OUTSIDE DIAMETER + 12 INCHES ON EACH SIDE OF THE PIP JTSIDE DIAMETER + 18 INCHES ON EACH SIDE OF TRENCH DEPTH OF GREATER THAN 5 FEET
OUTSIDE DIAMETER + 18 INCHES ON EACH SIDE OF THE PIPE

INSTALLATION DETAIL



PIPE TO EXISTING SANITARY MANHOLE CONNECTOR DETAIL

#### STANDARD SPECIFICATIONS FOR WATER AND SEWER CONSTRUCTION IN ILLINOIS, LATEST EDITION.

41-2.01C VERTICAL SEPARATION - WATER MAINS AND SEWERS

(1.) A water main shall be separated from a sewer so that its invert is a minimum of eighteen (18) inches (460mm) above the crown of the drain or sewer whenever water mains cross storm sewers, sanitary sewers or sewer service connections. The vertical separation shall be maintained for that portion of the water main located within ten (10) feet (3.1m) horizontally of any sewer or drain crossed. A length of water main pipe shall be centered over the sewer to be crossed with joints equidistant from the sewer or drain.

(2.) Both the water main and sewer shall be constructed of slip—on or nechanical joint cast or ductile iron pipe, prestressed concrete pipe, or PVC pipe equivalent to water main standards of construction when:

in (1) above; or

FQUIVALENT PIPE.

(b) the water main passes under a sewer or drain. (1) CASING OF EITHER THE WATER MAIN OR SEWER PIPE IS ACCEPTABLE IN LIEU OF PLACING THE SEWER IN WATER MAIN

(a) it is impossible to obtain the proper vertical separation as described

CONCRETE PIPE USING FLEXIBLE GASKETS JOINTS, (ASTM C361 C443) INSTEAD OF CONSTRUCTING THE STORM SEWER WITH WATER MAIN EQUIVALENT PIPE OR CASING PIPE. (3.) A vertical separation of eighteen (18) inches (460 mm) between the invert of the sewer or drain and the crown of the water main shall be maintained

(2) THE STORM SEWER CAN BE CONSTRUCTED WITH REINFORCED

where a water main crosses under a sewer. Support the sewer or drain lines

to prevent settling and breaking the main, as shown on the Plans or as

approved by the ENGINEER. (4.) Construction shall extend on each side of the crossing until the perpendicular distance from the water main to the sewer or drain line is at least ten (10) feet (3.1 m) See Standard Drawings No. 19-23.

WATER AND SEWER SEPARATION REQUIREMENTS (VERTICAL SEPARATION)

BRO

O PROJ. MGR.: JPD PROJ. ASSOC.: JN <u>5/16/16</u> N.T.S. SCALE:

SHEET