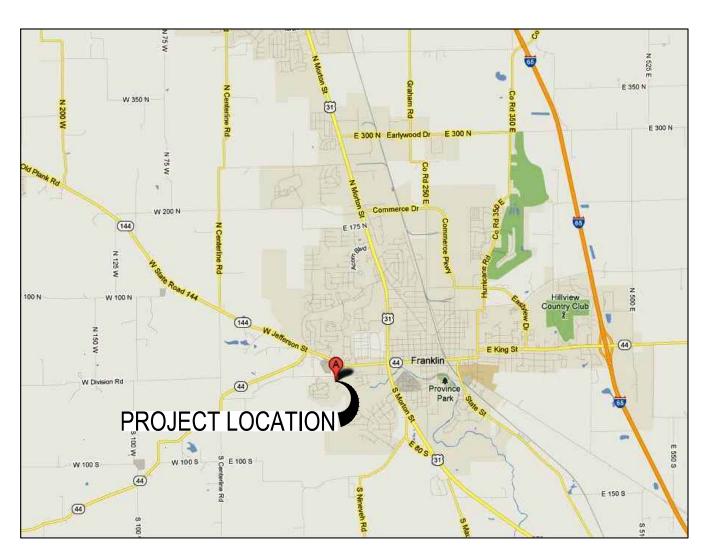
# FINAL CONSTRUCTION PLANS JOHNSON COUNTY SHOOTING RANGE 1091 HOSPITAL ROAD FRANKLIN, INDIANA



VICINITY MAP

NO SCALE



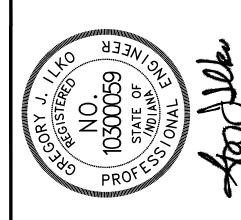
LOCATION MAP

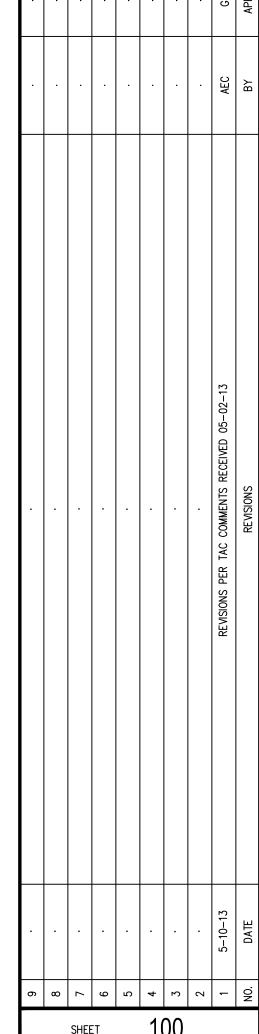
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	PLAN INDEX						
PLAN INDEX							
SHEET#	SUBJECT						
100	TITLE SHEET						
200	TOPOGRAPHICAL SURVEY AND DEMOLITIC						
300	SITE DIMENSION AND GRADING PLAN						
301	UTILITY PLAN						
400	EROSION CONTROL PLAN						
401	EROSION CONTROL DETAILS						
500	MISCELLANEOUS DETAILS AND SPECIFICA						
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JOHNSON COUNTY SHOC



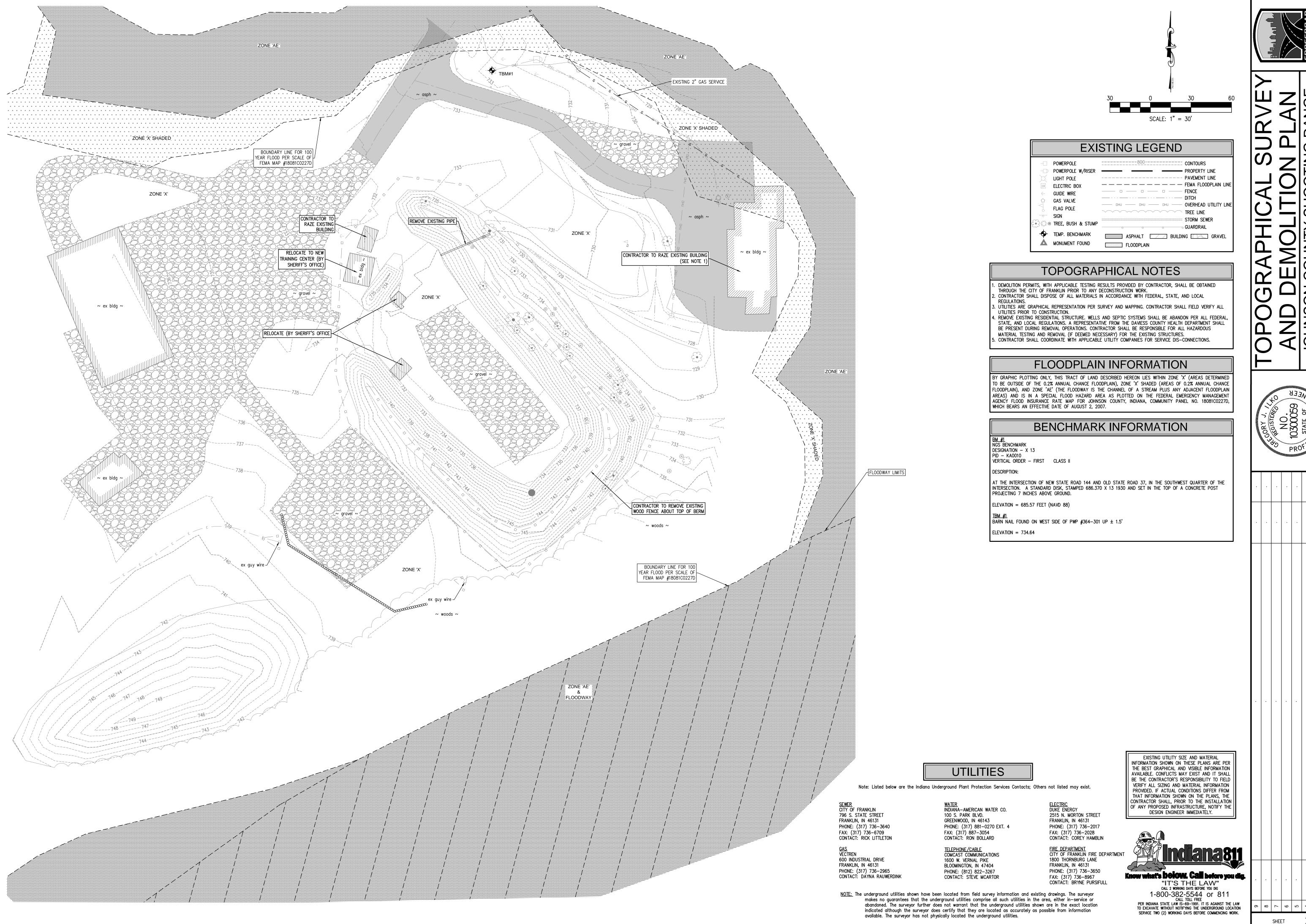


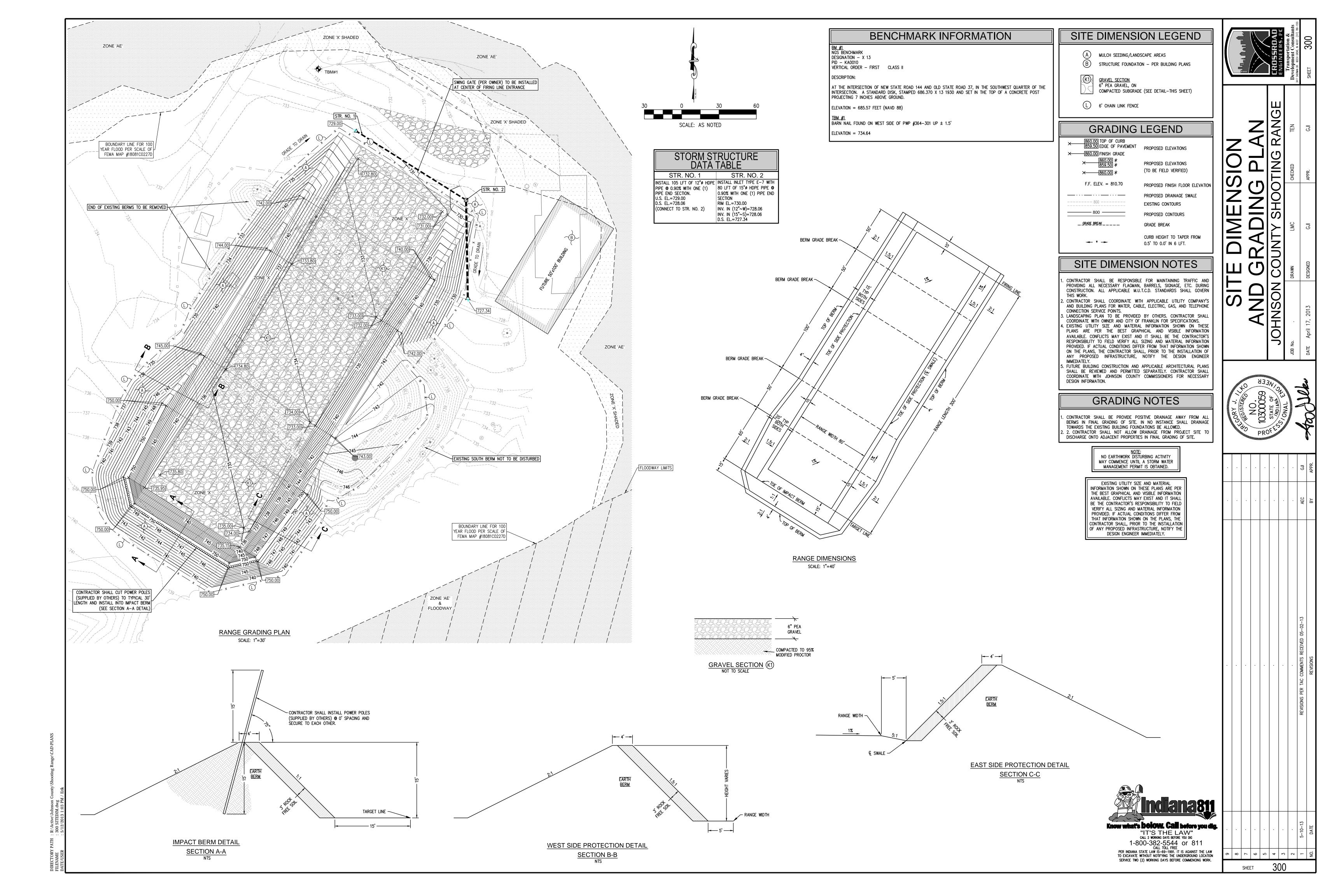
# **OWNER/DEVELOPER**

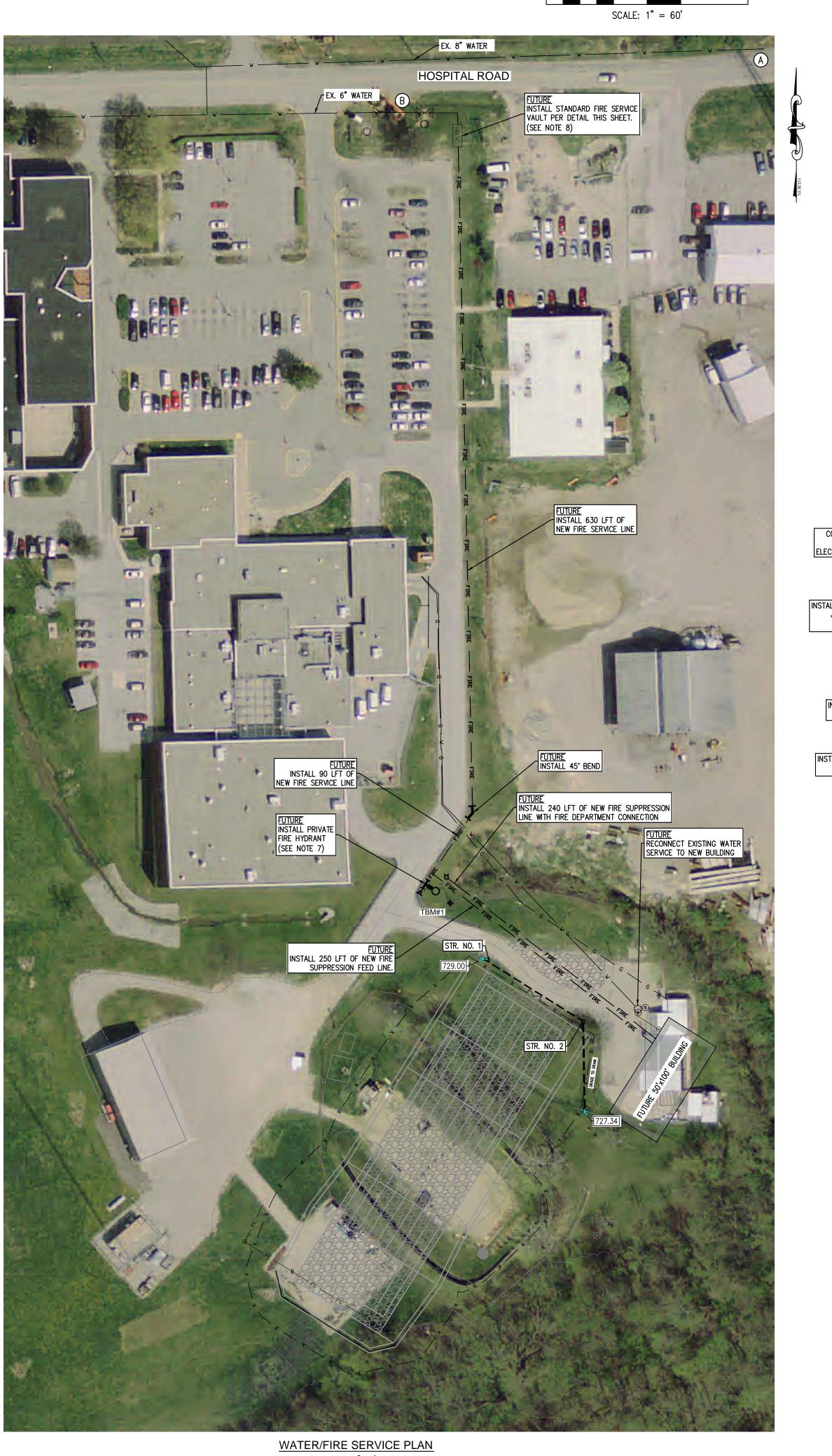
JOHNSON COUNTY
(BOARD OF COMMISSIONERS)
86 W COURT STREET
FRANKLIN, IN 46131
PHONE: (317) 346-4300
CONTACT: BRIAN BAIRD
bbaird@co.johnson.in.us

# **ENGINEER**

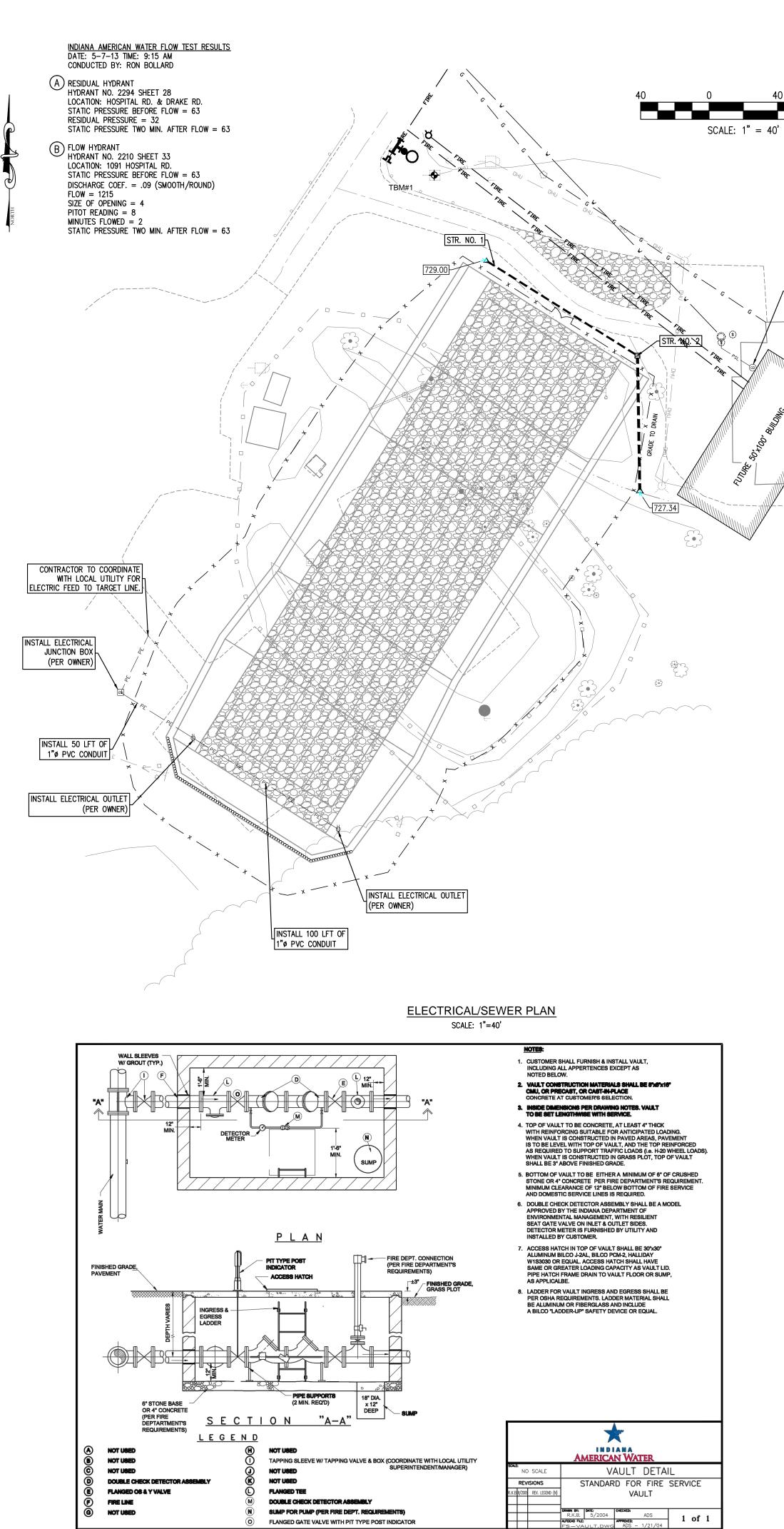
CROSSROAD ENGINEERS, PC
3417 SHERMAN DRIVE
BEECH GROVE, IN 46107
PHONE: (317) 780-1555 x 112
FAX: (317) 780-6525
CONTACT: GREGORY J. ILKO
gilko@crossroadengineers.com





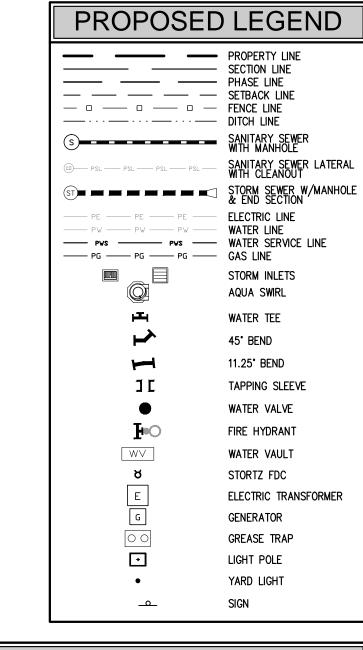


SCALE: 1"=60'



STANDARD FIRE SERVICE VAULT DETAIL

(NOT TO SCALE



# **UTILITIES NOTES**

WATER MAIN INSTALLATION SHALL BE IN ACCORDANCE WITH THE INDIANA AMERICAN WATER UTILITY STANDARDS AND SPECIFICATIONS. CONTRACTOR SHALL COORDINATE WITH UTILITY FOR CONNECTION AND TESTING PROCEDURES AND REQUIREMENTS. ALL WATER MAIN SHALL BE INSTALLED WITH A MINIMUM 56 INCHES OF COVER FROM FINISH GRADE. MAIN SHALL BE DEFLECTED AS REQUIRED TO MAINTAIN MINIMUM SEPARATION REQUIREMENTS AT ALL UTILITY CROSSINGS.

- CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC AND PROVIDING ALL NECESSARY FLAGMAN, BARRELS, SIGNAGE, ETC. DURING CONSTRUCTION. ALL APPLICABLE M.U.T.C.D. STANDARDS SHALL GOVERN THIS WORK. CONTRACTOR SHALL COORDINATE WITH APPLICABLE UTILITY COMPANIES AND BUILDING PLANS FOR WATER, CABLE, ELECTRIC, AND TELEPHONE CONNECTION SERVICE POINTS.
- CONTRACTOR TO COORDINATE WITH DUKE ENERGY FOR NECESSARY ELECTRIC SERVICE REQUIREMENTS AND SPECIFICATIONS, AND FUTURE BUILDING PLANS FOR ALL SERVICE POINTS AT BUILDING.
- EXISTING UTILITY SIZE AND MATERIAL INFORMATION SHOWN ON THESE PLANS ARE PER THE BEST GRAPHICAL AND VISIBLE INFORMATION AVAILABLE. CONFLICTS MAY EXIST AND I SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL SIZING AND MATERIAL INFORMATION PROVIDED. IF ACTUAL CONDITIONS DIFFER FROM THAT INFORMATION SHOWN ON THE PLANS, THE CONTRACTOR SHALL, PRIOR TO THE INSTALLATION OF ANY PROPOSED INFRASTRUCTURE, NOTIFY THE DESIGN ENGINEER IMMEDIATELY. CONTRACTOR TO CLEAN OUT EXISTING MANHOLE AND PIPE JET EXISTING SANITARY MAIN
- AT SUCH TIME AS LATERAL CONNECTION IS MADE. A VISUAL INSPECTION SHALL BE PERFORMED AND FINDINGS, AFTER CLEANING OF EXISTING INFRASTRUCTURE, SHALL BI REPORTED TO OWNER/ ENGINEER <u>BEFORE</u> NEW LATERAL CONNECTION IS MADE. FUTURE PRIVATE HYDRANT SHALL BE PAINTED RED WITH THE TOP CAP PAINTED FOR WATERFLOW:
  - BLUE ≥ 1500 GPM GREEN = 1000-1499 GPM ORANGE = 500-999 GPM
- ALL FUTURE FIRE SERVICE LINES AND FIRE SUPPRESSION SYSTEM LINES SHALL BE SIZED BY FIRE SUPPRESSION SYSTEM DESIGNER. IF CONNECTION TO EXISTING 6" MAIN IS NOT ADEQUATE. FIRE SUPRESSION DESIGNER MAY REQUIRE CONNECTION TO EXISTING 8" MAIN ON NORTH SIDE OF HOSPITAL ROAD. CONTRACTOR SHALL VERIFY WITH DESIGNER PRIOR

# BENCHMARK INFORMATION

BM #1 NGS BENCHMARK DESIGNATION — X 13 PID — KA0010

FUTURE INSTALL NEW CLEANOUT AND 25 LFT OF

6" PVC LATERAL @ 2.00% MIN. SLOPE.

(SEE NOTE 6)

VERTICAL ORDER - FIRST CLASS II

DESCRIPTION:

AT THE INTERSECTION OF NEW STATE ROAD 144 AND OLD STATE ROAD 37, IN THE SOUTHWEST QUARTER OF THE INTERSECTION. A STANDARD DISK, STAMPED 686.370 X 13 1930 AND SET IN THE TOP OF A CONCRETE POST

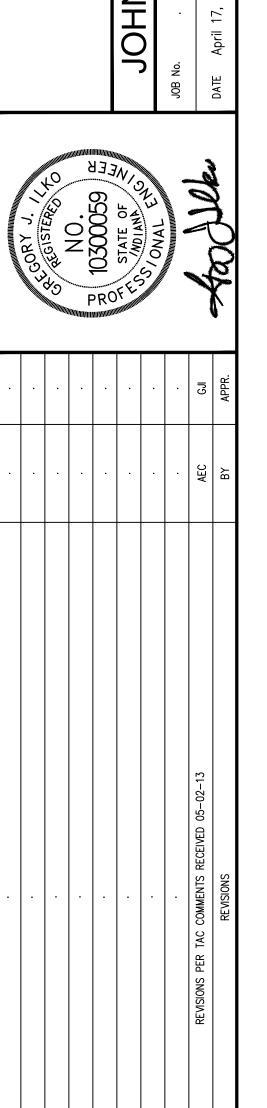
PROJECTING 7 INCHES ABOVE GROUND. ELEVATION = 685.57 FEET (NAVD 88)

BARN NAIL FOUND ON WEST SIDE OF PWP #364-301 UP ± 1.5'

ELEVATION = 734.64

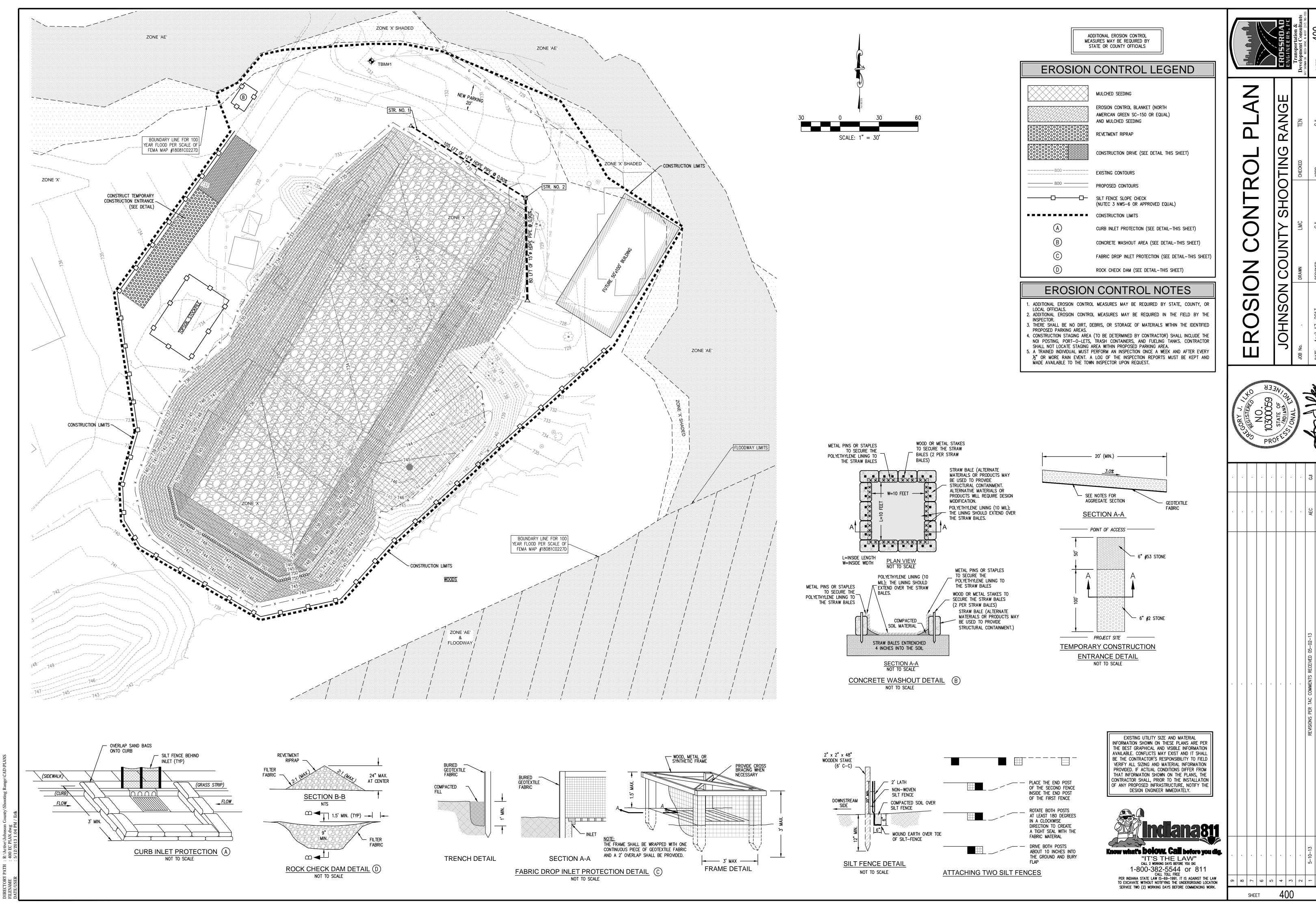


1-800-382-5544 or 811
CALL TOLL FREE
PER INDIANA STATE LAW IS-69-1991. IT IS AGAINST THE LAW
TO EXCAVATE WITHOUT NOTIFYING THE UNDERGROUND LOCATION SERVICE TWO (2) WORKING DAYS BEFORE COMMENCING WORK.



301

SHEET



LAN ELEMENTS

The project involves the construction of earth mounding and berming. The project is located at the existing shooting range within the Johnson County Sheriff Department property. A parking area in conjunction with the development shall be constructed as part of the construction plans herein. A open channel/conduit flow for stormwater collection. Drainage will discharge into Youngs Creek located due south of the project limits. Water, sanitary, telephone, cable, gas, and electric utilities shall serve the property as well. Construction is anticipated to begin in the Spring of 2013. A4 VICINITY MAP

The Vicinity Map is located in the right half of the Erosion Control Details (this sheet). Latitude N 39°28'32" Longitude W 86°04'32" LEGAL DESCRIPTION

The Legal Description of the project site is located on the right side of the Erosion Control Details (this sheet).

LOCATION OF ALL LOTS AND PROPOSED SITE IMPROVEMENTS All pertinent lot information is included on the plan view of the Erosion Control Plan

(Sheet 400). Anticipated utilities, and structures are depicted as well. HYDROLOGIĆ UNIT CODE The Hydrologic Unit Code for the represented watershed of this project is:

05120204090040 STATE AND/OR FEDERAL WATER QUALITY PERMITS No State of Federal water quality permits are required for this project.

STORMWATER DISCHARGE Stormwater discharge shall leave the site via over land flow to the south.

WETLANDS, LAKES AND WATER COURSES. There are no potential wetland areas located within the project site, nor shall any potential wetland areas be disturbed as a result of construction.

RECEIVING WATERS The receiving water for this project is Youngs Creek. POTENTIAL DISCHARGES TO GROUND WATER

There are no potential locations where stormwater may enter the groundwater. 100 YEAR FLOOD PLAINS, FLOODWAYS AND FLOODWAY FRINGES 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). Zone 'X' Shaded (areas of 0.2% annual chance floodplain), and Zone 'AE' (the floodway is the channel of a stream plus any adjacent floodplain areas) and is in a Special Flood Hazard area as plotted on the Federal Emergency Management Agency Flood Insurance Rate Map for Johnson County, Indiana, Community Panel No. 18081C0227D, which bears an effective date of August 2, 2007. POST-CONSTRUCTION PEAK DISCHARGE

Qpost Max. (10 year) = 68.49 cfs

Qpost Max. (100 year) = 94.96 cfsADJACENT LANDUSE

The adjacent landuses are labeled on the Erosion Control Plan (Sheet 400). DISTURBED AREAS

The construction limits (boundary of disturbed area) are shown on the Erosion Control Plan (Sheet 400). EXISTING VEGETATIVE COVER

The existing site includes existing berms, gravel, and miscellaneous building structures. SOILS MAP AND DESCRIPTIONS The soils map and all pertinent soil type information are located on the upper right

quadrant of the Erosion Control Details (this sheet). PROPOSED STORMWATER SYSTEMS The proposed stormwater system sizes and dimensions are labeled on the Erosion Control

Plan (Sheet 400). 20 OFF-SITE CONSTRUCTION ACTIVITIES

No offsite activities will take place within this project. SOIL STOCKPILES, BORROW/DISPOSAL AREAS

Topsoil shall be stockpiled in a convenient location (as determined by the owner and/or contractor) within the construction site as shown on the Erosion Control Plan (Sheet

Proposed one-foot contours are shown on the Erosion Control Plan (Sheet 400).

422 EXISTING SITE TOPOGRAPHY Existing one-foot contours are shown on the Erosion Control Plan (Sheet 400). A23 PROPOŠED SITE TOPOGRAPHY

### STORMWATER POLLUTION PREVENTION - DURING CONSTRUCTION

POTENTIAL POLLUTANT SOURCES ASSOCIATED WITH CONSTRUCTION ACTIVITIES There is a potential for pollutants associated with construction machinery including diesel fuel, hydraulic fluid, engine oils and lubricants, antifreeze and other petroleum products. It is unavoidable for a small amount of these pollutants to contaminate soil in the grading and construction of the site. Sediment pollution from site disturbing activities shall be remedied by Erosion Control measures (see following sections). SEQUENCE OF STORMWATER QUALITY MEASURE IMPLEMENTATION

The Construction Sequence & Schedule of Erosion Control Measure Implementation is located in the upper half on the Erosion Control Details (this sheet).

The construction entrance shall be constructed at the Western section of the project off of the existing driveway. Specifications and details are located on the Erosion Control Details (this sheet).

SEDIMENT CONTROL MEASURES FOR SHEET FLOW AREAS Sediment Control measures for Sheet flow areas are shown on the Erosion Control Plan (Sheet 400). Specifications and details are located on the Erosion Control Details (this

SEDIMENT CONTROL MEASURES FOR CONCENTRATED FLOW AREAS Sediment Control measures for concentrated flow greas are shown on the Erosion Control Plan (Sheet 400). Specifications and details are located on the Erosion Control Details

(this sheet). STORM SEWER INLET PROTECTION MEASURES Storm sewer inlet protection measures are shown on the Erosion Control Plan (Sheet 400). Specifications and details are located on the Erosion Control Details (this sheet).

RUNOFF CONTROL MEASURES Runoff control measures are shown on the Erosion Control Plan (Sheet 400). Specifications and details are located on the Erosion Control Details (this sheet). STORMWATER OUTLET PROTECTION MEASURES

Stormwater outlet protection measures are shown on the Erosion Control Plan (Sheet 400). Specifications and details are located on the Erosion Control Details (this sheet). GRADE STABILIZATION STRUCTURES No grade stabilization structures are required for this project

LOCĂTION, DIMENSIONS, SPECIFICATIONS AND DETAILS OF EACH STORMWATER QUALITY Each stormwater quality measure is shown on the Erosion Control Plan (Sheet 400) and associated details/specifications are shown on the Erosion Control Details (this sheet).

TEMPORARY SURFACE STABILIZATION Temporary surface stabilization methods are shown on the Erosion Control Plan (Sheet 400) and detailed on the Erosion Control Details (this sheet).

PERMANENT SURFACE STABILIZATION Permanent surface stabilization methods are shown on the Erosion Control Plan (Sheet 400) and detailed on the Erosion Control Details (this sheet).

MATÉRIAL HANDLING AND SPILL PREVENTION Spill prevention shall be accomplished by utilizing spillguards for equipment fueling and servicing operations. Spillquards shall be 3'x3'x6" and shall be constructed of a material resistant petroleum products (including diesel fuel and oil). On—site fuel storage tanks shall have emergency storage capacity directly below the tank in case of rupture. Any hazardous material spillage shall be collected and/or cleaned immediately by a trained individual and disposed of in accordance with all federal, state and local regulations.

Indiana Department of Environmental Management Office of Emergency Response (317) 233-7745, Toll Free (800) 233-7745 Franklin Fire Department (317) 736-3651

\*Additional Material Handling and Spill Prevention (this sheet)\* MONITORING AND MAINTENANCE GUIDELINES Monitoring and Maintenance Guidelines are located in the middle on the Erosion Control Details (this sheet)

EROSION & SEDIMENT CONTROL MEASURES FOR INDIVIDUAL BUILDING LOTS Not applicable.

TORMWATER POLLUTION PREVENTION - POST CONSTRUCTION

flow path shall be cleared of any obstructions.

PROPOSED POLLUTANTS AND SOURCES ASSOCIATED WITH PROPOSED LAND USE Potential pollutants include petroleum products and antifreeze from automobiles using the parking areas and sediment.

STORMWATER QUALITY MEASURE IMPLEMENTATION Stormwater quality measures are implemented by construction of the site improvements. PROPOSED POST CONSTRUCTION STORMWATER QUALITY MEASURES

Post construction stormwater quality measures shall consist of vegetated channels and sheet flow greas. LOCATION, DIMENSIONS, SPECIFICATIONS AND DETAILS OF EACH STORMWATER QUALITY MFASURF The location of the water quality measures are about the perimeter of the proposed berms in construction plans. MAINTENANCE GUIDELINES OF POST CONSTRUCTION STORMWATER QUALITY MEASURES The proposed channels shall be inspected quarterly for any plugging of the flow path. The

## MONITORING AND MAINTENANCE GUIDELINES

GRAVEL CONSTRUCTION DRIVE AND PARKING AREA: A. Inspect weekly and after each storm event and log condition per DNR.

A. Inspect weekly until vegetation is established and log condition per DNR.

TEMPORARY AND PERMANENT SEEDING: A. Inspect periodically, especially after storm events, until the stand is successfully B. Plan to add fertilizer the following growing season according to soil test

recommendations. C. Repair damaged, bare, or sparse areas by filling any gullies, re-fertilizing, over- or re-seeding, and mulching. D. If plant cover is sparse or patchy, review the plant materials chosen, soil fertility.

moisture condition, and mulching; repair the affected area either by over-seeding or by re-seeding and mulching after re-preparing the seed bed. E. If vegetation fails to grow, consider soil testing to determine acidity or nutrient deficiency problems. F. If additional fertilization is needed to get a satisfactory stand, do so according to soil

A. Inspect after storm events to check for movement of mulch or for erosion. B. If washout, breakage, or erosion is present, repair the surface, then re-seed, re-mulch,

and, if applicable, install new netting. Continue inspections until vegetation is firmly established. Reference the latest INDOT Specification.

**EROSION CONTROL BLANKET:** 

test recommendations.

G. Reference the latest INDOT Specification.

A. During vegetative establishment, inspect after storm events for any erosion below the B. If any area shows erosion, pull back that portion of the blanket covering it, add soil, re—seed the area, and re—lay and staple the blanket.

C. After vegetative establishment, check the treated area periodically.

A. Inspect the silt fence periodically and after each storm event. B. If fence fabric tears, starts to decompose, or in any way becomes ineffective, replace the affected portion immediately. C. Remove deposited sediment when it reaches half the height of the fence at its lowest

point or is causing the fabric to bulge. Take care to avoid undermining the fence during clean out. After the contributing drainage area has been stabilized, remove the fence and sediment deposits, bring the disturbed area to grade and stabilize.

A. Inspect the sandbag inlet protection periodically and after each storm event. 3. Remove deposited sediment when it reaches half the height of the sandbags at the

A. Inspect periodically for displaced rock material, slumping, and erosion at edges,

Remove the sandbag inlet protection and sediment deposits after contributing drainage area is stabilized.

especially downstream or downslope.

FABRIC DROP INLET PROTECTION: A. Inspect the fabric barrier after storm events, and make needed repairs immediately. B. Remove sediment from the pool area to provide storage for the next storm. Avoid

damaging or undercutting the fabric during sediment removal. C. When the contributing drainage area has been stabilized, remove and properly dispose of all construction material and sediment, grade the area to the elevation of the top of the inlet, then stabilize.

SAND BAG INLET PROTECTION:

area is stabilized

A. Inspect the sand bag inlet protection periodically and after each  $\frac{1}{2}$ " storm event. B. Remove deposited sediment when it reaches half the height of the filter at the lowest

C. Remove the Sand Bag Inlet Protection and sediment deposits after contributing drainage

A. Inspect the silt sack inlet protection periodically and after each  $\frac{1}{2}$ " storm event. 3. Remove deposited sediment when it reaches half the height of the filter at the lowest

Remove the Silt Sack Inlet Protection and sediment deposits after contributing drainage area is stabilized.

# CONSTRUCTION SEQUENCE & SCHEDULE OF EROSION CONTROL IMPLEMENTATION

1. Silt fence and/or straw bales shall be placed around existing structures and in ditches as shown in these plans before any land disturbing activities are started.

2. Schedule a pre-construction meeting with Franklin MS4 Operator 48 hours prior to start of earthwork. Construct temporary gravel entrance in accordance with the "INDIANA STORM WATER QUALITY MANUAL". All other erosion control measures shall be installed and constructed as shown at the beginning of the project.

Remove existing fencing and buildings. Strip topsoil and stockpile as shown. Rough grade site. Disturbed greas should be seeded immediately following rough grading.

Areas that will not be disturbed again should be permanently seeded. No unvegetated areas should be exposed for more than seven days. Place drainage structures. Erosion control measures shall be placed around proposed

structures as soon as they are in place and until vegetation is secure. 8. Construct berms and final grade site. All erosion control blankets shall be installed per manufacturers recommendations as soon as final grading is complete.

Final paving operations. Temporary erosion control measures shall remain in place until vegetation is secure.

### GENERAL EROSION CONTROL REQUIREMENTS FOR COMPLIANCE WITH IDEM GENERAL PERMIT RULES FOR STORM WATER RUNOFF FROM **CONSTRUCTION SITES**

1. All Erosion Control practices shall be in accordance with the latest edition of the INDIANA STORM WATER QUALITY MANUAL.

2. The Erosion Control measures included in this plan shall be installed prior to initial land disturbance activities or as soon as practical. Sediment shall be prevented from discharging from the project site by installing and maintaining silt fence, straw bales, sediment basins, etc. As shown on this plan. If shown on this plan, energy-dissipation devices or Erosion Control at the outfall of the storm sewer system shall be installed at the time of the construction of the outfall.

3. All on-site storm drain inlets shall be protected against sedimentation with silt sack inlet filters, filter fabric, or equivalent barriers as shown on this plan.

Except as prevented by inclement weather conditions or other circumstances beyond the control of the contractor/developer appropriate Erosion Control practices will be initiated within (7) seven days of the last land disturbing activity at the site. The site shall be stabilized by seeding, sodding, mulching, covering, or by other equivalent Erosion Control

5. This Erosion Control plan shall be implemented on all disturbed areas within the construction site. All measures involving Erosion Control practices shall be installed under the guidance of a qualified person experienced in Erosion Control and following he plans and specifications included herein.

6. During the period of construction activity, all sediment basins and other Erosion Control measures shall be maintained by the contractor. At the completion of construction, the contractor shall coordinate the transfer of required maintenance responsibilities with the

7. Public or private roadways shall be kept cleared of accumulated sediment. Bulk clearing of accumulated sediment shall not include flushing the area with water. Cleared sediment shall be returned to the point of likely origin or other suitable location.

The contractor shall control wastes, garbage, debris, wastewater, and other substances on the site in such a way that they shall not be transported from the site by the action of winds, storm water runoff, or other forces. Proper disposal or management of all wastes and unused building materials appropriate to the nature of the waste or material is required.

Additional Erosion Control measures may be required by state or county agencies.

## ADDITIONAL MATERIAL HANDLING AND SPILL PREVENTION PLAN

response procedure should a spill occur.

Prevention and Readiness

the absorbent materials.

Spill Response

the importance to all employees.

Indiana Department of Environmental Management.

The purpose of this plan is two fold: 1. To help protect the health and safety of those working on the site as well as the 2. Preventing the contamination of storm water runoff. Pollutants generated onsite may include gasoline, diesel fuel, oils, grease, paints, pesticides, nutrients, concrete washout,

This plan outlines procedures to help prevent health and safety issues, contamination of

storm water by onsite pollutants, help prevent fuel and chemical spills and provide a

. The contractor or responsible party will prepare a contact list in the event of a spill on

the site. The contact list will have names and contact numbers. The contact list will

specify first responders and a chain of command. Include information on what

pumpers and other equipment or businesses auglified to do clean-up operations.

Absorbent materials and supplies need to be available onsite in sufficient quantities to

address minor spills. All employees need to be educated on the proper application of

spills. A continuing education program is required for new employees and emphasizing

3. All maintenance and equipment operators must be aware and trained for prevention of

2. The contractor/owner shall maintain a list of gualified contractors. Vac-trucks, tank

circumstances require the initiation of the contact list and chain of command.

• Inspect dumpsters for leaks and repair any dumpster that is not watertight. • Provide an adequate number of containers with lids or covers that can be placed over the container to keep rain out or to prevent loss of wastes when it is windy. soil, solvents, paper, plastic, Styrofoam, metals, glass and other forms of liquid or solid

onsite use.

 Plan for additional containers and more frequent pickup during the demolition phase of • Collect site trash daily, especially during rainy and windy conditions. • Remove this solid waste promptly since erosion and sediment control devices tend to

The following steps will help keep a clean site and reduce stormwater pollution:

Inform trash-hauling contractors that you will accept only watertight dumpsters for

Select designated waste collection areas onsite.

construction debris.

• Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acid. pesticides, additives, curing compounds) are not disposed of in dumpsters designed for • Do not hose out dumpsters on the construction site. Leave dumpster cleaning to the

trash hauling contractor. · Arrange for regular waste collection before containers overflow. Clean up immediately if a container does spill.

 Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas. Solid waste storage areas should be located in areas prone to flooding or ponding. • Locate solid waste dumpster a minimum of 50' away from storm water inlets or other • Locate dumpster on stone or earth to minimize the potential for spills or leaks to drain

The following steps will help reduce stormwater pollution from concrete wastes:

Store dry and wet materials under cover, away from drainage areas.

• Perform washout of concrete trucks offsite or in designed areas only.

concrete to remove fine particles and expose the aggregate.

Properly dispose of all fluids removed or spilled from machinery.

Purpose— To prevent spills during the use and storage of the materials

Store materials in a weather proof/vandal resistant locker or building

• Provide and read instructions for the proper use and storage of all materials

• For bulk material stored onsite, provide diking or double containment in case of leaks or

• No washout of solvent from paint supplies should be done near or into a storm water

Purpose— To prevent the purposeful discharge of sediment laden water into waters of the

• The sediment and any other pollutant from all pumping or dewatering operations that

• A suitable practice is needed at the discharge to allow the suspended solids to be

discharge into storm sewers, wetlands, drainage ways or water bodies must be removed

removed from the water column. Slow moving water and time are needed components

for an effective practice. Mechanical filters and chemical flocculants can do an excellent

Sediment removal pumping bags may be used at the outlet of a pump. The bags must

be sized appropriately for the amount of flow. The practice needs to be installed on

erosion resistant surfaces. The outlet of the pumping bag must be erosion resistant to

Pumping operations that are moving clean water through a site are not required to

have a pumping bag or similar device at the outlet. The point of discharge should be

V. Fluids, paints, solvents and other chemicals storage and use

• Do not wash concrete trucks into storm drains open ditches, streets, or streams.

• Do no allow excess concrete to be dumped onsite, except in designed areas.

• Discuss the concrete management techniques described in the BMP (such as handling of

• Incorporate requirements for concrete waste management into material supplier and

Locate washout areas at least 50 feet from storm drains, open ditches, or water

• Do not allow runoff from this area by constructing a temporary pit or bermed area

· Wash out wastes into the temporary pit where the concrete can set, be broken up, and

Avoid creating runoff by drinking water to a bermed or level area when washing

• Do not wash sweepings form exposed aggregate concrete into the street or storm drain.

Implementation— Where and when feasible, maintenance shall be preformed offsite in

• Maintain clean up materials close at hand. Utilize drip pans and absorbent pads to

• Inspect equipment daily for leaks or worn hoses. Repair or replace to prevent onsite

Collect and return sweepings to aggregate base stockpile or dispose in the trash.

Purpose— To prevent spills during the normal maintenance of construction machinery.

• Site the maintenance area at least 50 feet from storm water inlets or water bodies

concrete waste and washout) with the reddy-mix concrete supplier before any deliveries

Inspection and Maintenance: 4. All materials used in the course of a cleanup will be disposed in a manor approved by • Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect 5. Using water to flush spilled material will not be permitted unless authorized by a state, federal, or local agency. Tarps can be used to cover spilled material during rain events. weekly to verify continued BMP implementation. Inspect BMPs subject to non-stormwater discharge daily while non-stormwater

III. Concrete Washout

For onsite washout:

then disposed properly.

IV. Vehicle Maintenance Areas

Implementation-

covered facility with an impervious floor.

• Use a dedicated site for machinery maintenance

prevent oils from reaching the soil surface.

• Store materials in there original containers

Maintain safety data sheets on all products

inlet or other drainage facility.

VI. Disposal of sediment laden water

from the water before it's discharged.

job of removing the fine materials.

prevent additional sedimentation.

protected to prevent soil erosion.

Keep materials away from flammable sources

immediately into a drainage facility.

Inspect construction waste are regularly.

Arrange for regular waste collection.

subcontractors' agreements.

Avoid mixing excess amounts of fresh concrete.

large enough for liquid and solid waste.

can be controlled by the first responder at the discovery of the spill. Contain spill to prevent material from entering storm or ground water. Do not flush with Use absorbent material to clean-up spill material and any subsequently contaminated soil and dispose of

Minor - Small spills that typically involve oil gasoline, paint, hydraulic fluid etc. Minor spills

Semi-significant Spills - Approximately ten gallons or less of pollutant with no contamination of ground or surface waters. Minor spills can be generally controlled by the first responder with help from other site personnel. This response may require other operations to stop to make sure the spill is quickly and safely addressed. At the discovery

• Contain spill to prevent material from entering storm or ground water. Do not flush with water or bury. • Use absorbent material to clean-up spills and dispose of properly. Spills on impervious surfaces should be contained with a dry absorbent. Spills on clayey soils should be contained by constructing an earthen dike and should be disposed of as soon as possible to prevent migration deeper into the soil and groundwater. Dispose of contaminated soils or absorbents properly. • Contact 911 if this spill could be a safety issue.

Contact supervisors and designated inspectors immediately • Contaminated solids to be removed to an approved landfill.

Major or Hazardous Spills - More than ten gallons, there is the potential for death, injury or illness to humans or animals or has the potential for surface or groundwater pollution. Control or contain the spill without risking bodily harm. Temporarily plug storm drains if possible to prevent migration of the spill into the stormwater system. Immediately contact the local Fire Department at 911 to report any hazard material

• Contact supervisors and designated inspectors immediately. Other county or municipal officials (list as needed) responsible for storm water facilities should be contacted as well. The contractor is responsible for having these contact numbers available at the job site. A written report should be submitted to the owner as soon as possible. As soon as possible but within 2 hours of discovery, contact the Department of

Environmental Management, Office of Emergency Response 1-888-233-7745. The following information should be noted for future reports to IDEM or the National Response Center.

o Approximate quantity of the substance that has been spilled or may be

o Name, address and phone number of person making the spill report o The location of the spill o The time of the spill o Identification of the spilled substance

further spilled o The duration and source of the spill o Name and location of the damaged waters o Name of spill response organization

o What measures were taken in the spill response

o Other information that may be significant Additional regulation or requirements may be present. A spill response professional should be consulted to make sure all appropriate and required steps have been taken. Contaminated solids should only be removed from the site after approval is given by Emergency Response.

# The following procedures and practices will help prevent unnecessary spills

I. Vehicle and Equipment Fueling

Description and Purpose: • Vehicle equipment fueling procedures and practices are designed to prevent fuel spills and leaks, and reduce or eliminate contamination of stormwater. This can be accomplished by using offsite facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors in proper fueling procedures.

• Onsite vehicle and equipment fueling should only be used where it is impractical to send vehicles and equipment offsite for fueling.

Implementation: • Use offsite fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate fueling area at a site.

Discourage "topping-off" of fuel tanks. • Absorbent spill cleanup materials and spill kits should be available in fueling areas and on fueling trucks, and should be disposed of properly after use. • Drip pans or absorbent pads should be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.

Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the absorbent materials promptly and dispose of properly. Avoid mobile fueling of mobile construction equipment ground the site: rather transport the equipment to designated fueling areas. Train employees and subcontractors in proper fueling and cleanup procedures.

• Dedicated fueling areas should be protected from stormwater run—on and runoff, and should be located at least 50 feet away from the downstream drainage facilities and watercourses. Fueling must be performed on level—grade areas. Protect fueling areas with berms and dikes to prevent run—on, runoff, and to contain • Nozzles used in vehicle and equipment fueling should be equipped with an automatic

 Federal, state, and local requirements should be observed for any stationary above around storage tanks. Inspection and Maintenance

shutoff to control drips. Fueling operations should not be left unattended.

• Vehicles and equipment should be inspected each day of use for leaks. Leaks should be repaired immediately or problem vehicles or equipment should be removed from the Keep ample supplies of spill cleanup materials onsite.

• Immediately clean up spills and properly dispose of contaminated soils. II. Solid Waste Management

Description of Purpose: • Solid waste management procedures and practices are designed to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and

training employees and subcontractors. Suitable Applications: This BMP is suitable for construction sites where the following wastes are generated or

• Solid waste generated from trees and shrubs removed during land clearing, demolition of existing structures (rubble), and building construction.

 Packaging materials including wood, paper, and plastic. • Scrap or surplus building materials including scrap metals, rubber, plastic, glass pieces, and masonry products. Domestic wastes including food containers such as beverage cans, coffee cups, paper bags, plastic wrappers, and cigarettes,

transport and package construction materials.

Construction waste including brick, mortar, timber, steel and metal scraps, pipe and

electrical cuttings, non-hazardous equipment parts. Styrofoam and other materials send

Johnson County, Indiana (IN081) BROOKSTON SILTY CLAY LOAM (BR)
This nearly level soil is in depressions, on flats, and in narrow

drainageways between better drained soils on broad, undulating plains. Slopes are 0 to 2 percent. Runoff is very slow. Wetness is the main limitation. Soil has limitations for building sites and must be artificially drained and protected from flooding.

This nearly level soil is on broad plains, on ridge tops in rolling areas, or in low drainageways. Slopes are 0 to 2 percent. Runoff is slow. Wetness is the main limitation. Soil has limitations for building sites and must be

artificially drained and protected from flooding. | EEL SILT LOAM (Ee) | This nearly level soil is on broad flood plains along the river and on narrow flood plains along the meandering creeks. Slopes are 0 to 2 percent. Runoff is slow. Flooding is the main limitation.

This gently sloping soil is along drainageways that cross areas of somewhat poorly drained Crosby soils. Slopes are 2 to 6 percent. Runoff s medium. Moderate erosion is the main limitation.

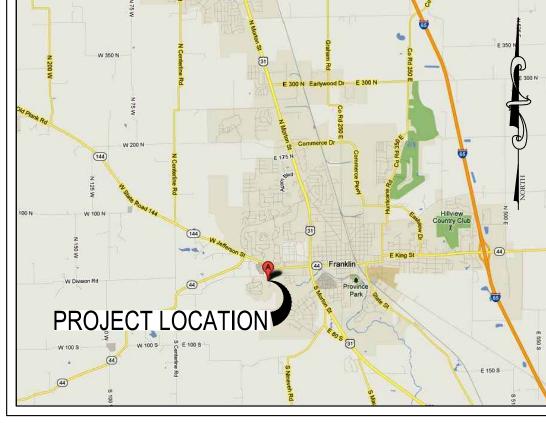
IIAMI SILT LOAM, eroded (MnC2) This moderately sloping soils is on irregularly shaped knolls surrounded b gently sloping and nearly level soils; in long narrow bands around ridgetops; along drainageways leading to terraces or bottom land; and on undulating moraines. Slopes are 6 to 12 percent. Runoff is medium. Moderate erosion is the main limitation.

This moderately sloping soils is on irregularly shaped knolls surrounded by gently sloping and nearly level soils; in long narrow bands around ridgetops; along drainageways leading to terraces or bottom land; and on undulating moraines. Slopes are 6 to 12 percent. Severely erosion is the

SHOALS SILT LOAM (Sh)
This nearly level soil is on narrow flood plains along meandering streams and in low-lying, weakly defined drainageways of large river bottom lands. Slopes are 0 to 2 percent. Runoff is slow. Flooding and Wetness is the

SOIL MAP AND DESCRIPTION

CrA



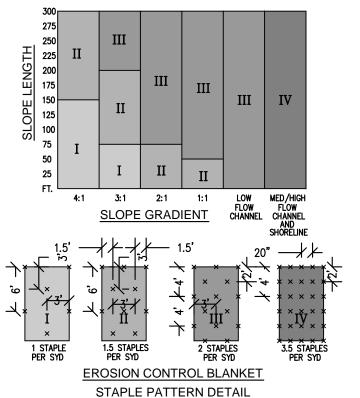
VICINITY MAP

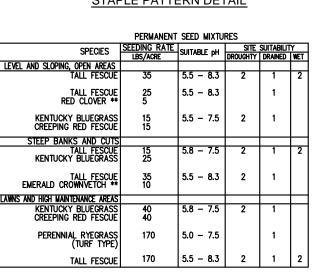
# LEGAL DESCRIPTION

A PORTION OF DEED BOOK 5, PAGE 161: THE NORTHWEST QUARTER OF SECTION TWENTY TWO, 22, IN TOWNSHIP TWELVE, 12, NORTH OF RANGE FOUR, 4, EAST IN THE DISTRICT OF LANDS SUBJECT TO SALE AT INDIANAPOLIS, INDIANA. CONTAINING 160 ACRES MORE OR LESS.

> ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY

STATE OR COUNTY OFFICIALS





1-PREFERRED 2-WILL TOLERATE \*\* - INOCULATE WITH SPECIFIC INOCULATES

1 MED. 1 20-25 12-18 7-21 KENTUCKY BLUEGRASS POA PROTINSIS 1 MED. 1 25-35 12-18 10-20 TALL FESCUE FESTUCA L ARUNDINACEA LOW 1 24-35 24-36 5-14 PERENNIAL RYEGRASS LOLIUM PERENNE ! |MED=| 2 |15-20|12-18| 5-10| – |LOW| 1 | 5–10 | 24 | 14–21 | T | 1 | - | 2 | - | - | MED. | 1 | 7-10 | 18 | 5-10 | S | S | ALT TOLERANCE (TO BOTH SOIL SALTS AND SPRAY)

– TOLERANCE

1 – MEDIUM TOLERANCE

– SLIGHT TOLERANCE SEEDBED PREPARATION APPLY LIME TO RAISE THE pH TO THE LEVEL NEEDED FOR SPECIES BEING SEEDED. APPLY 23 LBS. OF

12-12-12 ANALYSIS FERTILIZER (OR EQUIVALENT) PER 1,000 SQ. FT. (APPROXIMATELY 1,000 LBS. PER ACRE) OR FERTILIZE ACCORDING TO TEST. APPLICATION OF 150 LBS. OF AMMONIUM NITRATE ON AREAS LOW IN

ORGANIC MATTER AND FERTILITY WILL GREATLY ENHANCE VEGETATIVE GROWTH. WORK THE FERTILIZER AND LIME INTO THE SOIL A DEPTH OF 2 TO 3 INCHES WITH A HARROW, DISK, OR RAKE OPERATED ACROSS THE

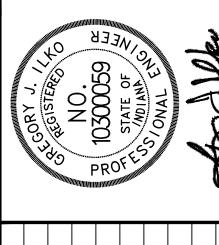
SLOPE AS MUCH AS POSSIBLE.
FERTILIZER AND LIME SHALL MEET REQUIREMENTS OF INDOT STANDARD SPECIFICATIONS 1995. <u>seeding</u> select a seed mixture based on projected use of the area while considering best seeding dates. WHEAT OR RYE SPRING OATS DORMANT SEEDING \*\* IRRIGATION NEEDED DURING THIS PERIOD. TO CONTROL EROSION AT TIMES OTHER THAN IN THE SHADED AREAS, USE MILII CH.

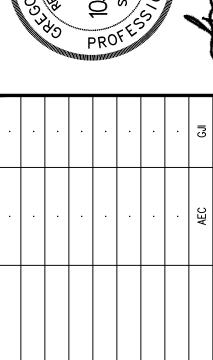
> \* -LATE SUMMER SEEDING DATES MAY BE EXTENDED 5 DAYS
> IF MUI CH IS APPLIED. \*\* -INCREASE SEEDING APPLICATION BY 50%. TEMPORARY SEEDINGS
>
> KIND OF SEED PER 1,000 SQ. FT. PER ACRE REMARKS AT OR RYSE 3.5 LBS. 2 BU. COVER SEED 1" TO 1 1/2" DEEP 16 OATS 2.3 LBS. 3 BU. COVER SEED 1" DEEP 4 LRYEGRASS 1.0 LBS. 40 LBS. COVER SEED 1/4" DEEP 4 \* NOT NECESSARY WHERE MULCH IS APPLIED



CALL 2 WORKING DAYS BEFORE YOU DIG 1-800-382-5544 or 811 CALL TOLL FREE
PER INDIANA STATE LAW IS-69-1991. IT IS AGAINST THE LAW TO EXCAVATE WITHOUT NOTIFYING THE UNDERGROUND LOCATION SERVICE TWO (2) WORKING DAYS BEFORE COMMENCING WORK.







8 7 9 2 4 5 7 -401 SHEET

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, 6. ROLLING

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 THAT IS SUITABLE MAY BE USED FOR FILLS. 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. FILL OBTAINED FROM OFF SITE SHALL BE OF KIND AND QUALITY AS SPECIFIED FOR FILLS 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. REMOVAL OF TREES A. THE INTEGRITY OF THE TOPOGRAPHIC FEATURES (INCLUDING TREES) SHALL BE PERSEVERED AS MUCH AS

POSSIBLE THE CONTRACTOR SHALL COORDINATE WITH OWNER AND/OR ENGINEER PRIOR TO CLEARING 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

5. DISPOSITION OF UTILITIES

A. RULES AND REGULATIONS GOVERNING THE RESPECTIVE UTILITIES SHALL BE OBSERVED IN EXECUTING ALL WORK UNDER THIS SECTION. B. IF ACTIVE 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 UTILITY COMPANY OR THE ENGINEER D. IT SHALL BE THE RESPONSIBILITY OF EACH CONTRACTOR TO VERITY 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.

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 ABOVE THE ESTABLISHED SUBGRADE. ALL OTHER AREAS SHALL NOT EXCEED 0.10 FEET PLUS OR MINUS THE ESTABLISHED GRADE. ALL BANKS AND OTHER BREAKS IN GRADE SHALL BE ROUNDED AT THE TOP AND BOTTOM.

C. COMPACTION REQUIREMENTS: 1. ALL BUILDING PAD 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 INTERPRETATIONS OF SOIL BORINGS AS THE PHYSICAL LIMITS IN FINISH GRADE AND COMPACTION 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

# STREETS

A. THE WORK REQUIRED UNDER THIS SECTION INCLUDES ALL CONCRETE AND BITUMINOUS PAVING AND KELATED TIEMS NECESSARY TO COMPLETE THE WORK INDICATED ON THE DRAWINGS AND DESCRIBED IN THE SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO:

ALL STREETS, PARKING AREAS WITHIN THE CONTRACT LIMITS. CURBS AND CONCRETE RAMPS

SIDEWALKS AND CONCRETE SLABS. 4. IN THE CASE OF ANY CONFLICTS WITH THESE SPECIFICATIONS AND LOCAL, STATE, FEDERAL

SPECIFICATIONS THE MORE STRINGENT SHALL APPLY. B. IN THE CASE OF ANY CONFLICTS WITH THESE SPECIFICATIONS AND LOCAL, STATE, FEDERAL SPECIFICATIONS THE MORE STRINGENT SHALL APPLY. 2. PAVEMENT CONSTRUCTION

A. ALL STREET CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS AND 9. APPLICATION CONFORM TO THE MINIMUM STANDARDS OF THE JOHNSON COUNTY PLANNING AND HIGHWAY DEPARTMENTS, AND IF THERE ARE AREAS UNDEFINED USE THE CURRENT I.N.D.O.T. STANDARDS SPECIFICATIONS, AS REVISED. B. FLEXIBLE PAVEMENT

1. MATERIALS

A. GENERAL: USE LOCALLY AVAILABLE MATERIALS AND GRADATIONS WHICH EXHIBIT A SATISFACTORY RECORD OF PREVIOUS INSTALLATIONS. B. COMPACTED AGGREGATE BASE: SOUND, ANGULAR CRUSHED LIMESTONE, CRUSHED OR UNCRUSHED GRAVEL, OR CRUSHED OR PROCESSED AIR-COOLED BLAST FURNACE SLAG. COURSE AGGREGATE SHALL BE CLASS A, TYPE "O" AND CONFORM TO I.N.D.O.T. STANDARD SPECIFICATIONS SECTION 903.

C. BASE COURT AGGREGATE: SOUND ANGULAR CRUSHED STONE, CRUSHED OR UNCRUSHED GRAVEL, OR CRUSHED SLAG, SAND, STONE, OR SLAG SCREENINGS. COARSE AGGREGATES SHALL BE CLASS A OR B AND CONFORM TO I.N.D.O.T. STANDARDS SPECIFICATIONS SECTION 903. D. COARSE AGGREGATE FOR SURFACE AND BINDER MIXTURES: CRUSHED STONE, CRUSHED GRAVEL,

CRUSHED SLAB, AND SHARP EDGED NATURAL SAND. SURFACE COARSE AGGREGATES SHALL BE CLASS A AND CONFORM TO I.N.D.O.T. STANDARD SPECIFICATIONS SECTION 903. E. ASPHALT CEMENT: PETROLEUM ASPHALT CEMENT, AP 5 WITH PENETRATION OF 60-70 OR VISCOSITY GRADED ASPHALT CEMENT AC-20 CONFORMING TO I.N.D.O.T. STANDARD

SPECIFICATIONS SECTION 903. F. PRIME COAT: MEDIUM-CURE LIQUID ASPHALT OR ASPHALT EMULSION CONFORMING TO I.N.D.O.T. STANDARD SPECIFICATIONS SECTION 408.

G. TACK COAT: RAPID-CURE LIQUID ASPHALT OR ASPHALT EMULSION CONFORMING TO I.N.D.O.T. STANDARD SPECIFICATIONS SECTION 409. H. LANE MARKING PAINT: CHLORINATED RUBBER-ALKYD TYPE, AASHTO M248 (FS TT-P-115),

I. SEAL COAT: (NOT APPLICABLE IN JOHNSON COUNTY)

3. ASPHALT-AGGREGATE MIXTURE ALL BITUMINOUS MIXTURES ARE TO CONFORM TO CURRENT I.N.D.O.T. SPECIFICATIONS

A. SURFACE COURSE: HMA SURFACE 9.5mm

BINDER COURSE: HMA INTERMEDIATE 19.0mm C. BASE COURSE: TYPE: HMA BASE 25.0mm

\*\*PROVIDED A JOB MIX FORMULA FOR EACH TYPE OF ASPHALT PRIOR TO THE BEGINNING OF THE CONSTRUCTION PROJECT. 4. SURFACE PREPARATION

A. REMOVE LOOSE MATERIAL FROM COMPACTED SUBBASE SURFACE IMMEDIATELY BEFORE APPLYING PRIME I) PROOF ROLL SUBGRADE SURFACE WITH LOADED TRI-AXLE TRUCK (48 HOUR NOTICE IS REQUIRED TO

BE GIVEN TO THE JOHNSON COUNTY HIGHWAY DEPT.) TO CHECK FOR UNSTABLE AREAS AND AREAS REQUIRING ADDITIONAL COMPACTION. II) NOTIFY CONTRACTOR OF UNSATISFACTORY CONDITIONS. DO NOT BEGIN PAYING WORK UNTIL

DEFICIENT SUBBASE AREAS HAVE BEEN CORRECTED AND ARE READY TO RECEIVE PAVING. B. AGGREGATE BASE: AFTER PLACEMENT, PROOF ROLL COMPACTED AGGREGATE BASE SURFACE TO CHECK FOR UNSTABLE AREAS AND AREAS REQUIRING ADDITIONAL COMPACTION. NOTIFY CONTRACTOR OF UNSATISFACTORY CONDITIONS. DO NOT BEGIN PAVING WORK UNTIL

DEFICIENT AGGREGATE BASE AREAS HAVE BEEN CORRECTED AND ARE READY TO RECEIVE PAVING. II) REMOVE LOOSE MATERIAL FROM COMPACTED AGGREGATE BASE SURFACE IMMEDIATELY BEFORE APPLYING PRIME COAT.

5. PLACING THE MIX

A. GENERAL: PLACE BITUMINOUS AGGREGATE MIXTURE ON PREPARED SURFACE, SPREAD AND STRIKE-OFF. SPREAD MIXTURE AT MINIMUM TEMPERATURE OF 225 DEGREES F.(107 DEGREES C). PLACE INACCESSIBLE AND SMALL AREAS BY HAND. PLACE EACH COURSE TO REQUIRED GRADE, CROSS-SECTION, AND COMPACTED THICKNESS.

B. BASE COURSE, COMPACTED AGGREGATE: SPREAD AND COMPACT IN TWO LIFTS AS FOLLOWS: I) FIRST LIFT: NO. 5'S SHALL BE A MINIMUM OF 4" OR 1/2 THE TOTAL DEPTH OF AGGREGATE. EXTEND THE FIRS LIFT 4" OR A DISTANCE EQUAL TO THE DEPTH OF THE LIFT BEYOND THE SECOND LIFT. II) SECOND LIFT: SIZE NO. 53

C. PRIME COAT: SUBBASE SURFACE SHALL BE PRIMED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF SECTION 408 OF I.N.D.O.T. STANDARD SPECIFICATIONS. D. HOT ASPHALT CONCRETE BINDER COURSE: SPREAD AND ROLL TO MINIMUM FINISH DEPTHS INDICATED ON

E. TACK COAT: BINDER COURSE SHALL BE TACKED PRIOR TO THE INSTALLATION OF THE SURFACE COURSE IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF SECTION 409 OF I.N.D.O.T. STANDARD SPECIFICATIONS.

F. SURFACE COURSE: SPREAD AND ROLL TO MINIMUM FINISH DEPTH INDICATED ON DETAILS. FINISH STORM SEWER SYSTEMS

ELEVATION SHALL BE TRUE TO LINE AND GRADE WITHIN 1/2" OF TRUE ELEVATIONS. G. PAVER PLACING: PLACE IN STRIPS NOT LESS THAN 10' WIDE, UNLESS OTHERWISE ACCEPTABLE TO 1. SCOPE OF WORK A. THE WORK UNDER THIS SECTION INCLUDES ALL STORM SEWERS, STORM WATER INLETS, AND RELATED ITEMS, ARCHITECT/ENGINEER. AFTER FIRST STRIP HAS BEEN PLACED AND ROLLED, PLACE SUCCEEDING STRIPS AND EXTEND ROLLING TO OVERLAP PREVIOUS STRIPS. COMPLETE BINDER COURSE FOR A SECTION BEFORE PLACING SURFACE COURSE.

I. JOINTS: MAKE JOINTS BETWEEN OLD AND NEW PAVEMENTS, OR BETWEEN PAVER PASSES, OR BETWEEN SUCCESSIVE DAYS WORK, TO ENSURE CONTINUOUS BOND BETWEEN ADJOINING WORK. CONSTRUCT JOINTS 2. STORM SEWER CONSTRUCTION TO HAVE SAME TEXTURE, DENSITY AND SMOOTHNESS AS OTHER SECTIONS. CLEAN CONTACT SURFACES

A. GENERAL: BEGIN ROLLING WHEN MIXTURE WILL BEAR ROLLER WEIGHT WITHOUT EXCESSIVE DISPLACEMENT. I) COMPACT MIXTURE WITH HOT HAND TAMPERS OR VIBRATING PLATE COMPACTORS IN AREAS

INACCESSIBLE TO ROLLERS. B. BREAKDOWN ROLLING: ACCOMPLISH BREAKDOWN OR INITIAL ROLLING IMMEDIATELY FOLLOWING ROLLING OF JOINTS AND OUTSIDE EDGE. CHECK SURFACE AFTER BREAKDOWN ROLLING, AND REPAIR DISPLACED AREAS BY LOOSENING AND FILLING, IF REQUIRED, WITH HOT MATERIAL

C. SECOND ROLLING: FOLLOW BREAKDOWN ROLLING AS SOON AS POSSIBLE, WHICH MIXTURE IS HOT. CONTINUE SECOND ROLLING UNTIL MIXTURE HAS BEEN THOROUGHLY COMPACTED. ). FINISH ROLLING: PERFORM FINISH ROLLING WHILE MIXTURE IS STILL WARM ENOUGH FOR REMOVAL OF ROLLER MARKS. CONTINUE ROLLING UNTIL ROLLER MARKS ARE ELIMINATED AND COURSE HAS ATTAINED

E. PATCHING: REMOVE AND REPLACE PAVING AREAS MIXED WITH FOREIGN MATERIALS AND DEFECTIVE AREAS. CUT OUT SUCH AREAS AND FILL WITH FRESH, HOT BITUMINOUS AGGREGATE MIX. COMPACT BY

ROLLING TO MAXIMUM SURFACE DENSITY AND SMOOTHNESS. F. PROTECTION: AFTER FINAL ROLLING, DO NOT PERMIT VEHICULAR TRAFFIC ON PAVEMENT UNTIL IT HAS COOLED AND HARDENED. G. ERECT BARRICADES TO PROTECT PAVING FROM TRAFFIC UNTIL MIXTURE HAS COOLED ENOUGH NOT TO

BECOME MARKED. H. SEAL COAT: (NOT APPLICABLE IN JOHNSON COUNTY) 7. TRAFFIC AND LANE MARKINGS

COATS AT MANUFACTURER'S RECOMMENDED RATES.

APPLICATION A. CLEANING: SWEEP AND CLEAN SURFACE TO ELIMINATE LOOSE MATERIAL AND DUST. B. STRIPPING: USE CHLORINATED RUBBER BASE TRAFFIC LANE-MARKING PAINT, FACTORY MIXED, QUICK-DRYING, AND NON-BLEEDING. COLOR: YELLOW

) DO NOT APPLY TRAFFIC AND LANE MARKING PAINT UNTIL LAYOUT AND PLACEMENT HAS BEEN VERIFIED WITH ARCHITECT/ENGINEER. II) APPLY PAINT WITH MECHANICAL EQUIPMENT TO PRODUCE UNIFORM STRAIGHT EDGES. APPLY IN TWO

8. FIELD QUALITY CONTROL A. TESTING AND INSPECTION SERVICE:

) OWNER SHALL EMPLOY A TESTING LABORATORY TO PERFORM PAVEMENT TESTING AND INSPECTION SERVICE FOR QUALITY CONTROL DURING PAVING OPERATIONS. II) TESTING SERVICE SHALL HAVE REPRESENTATIVE PRESENT TO OBSERVE AND PERFORM TESTS AT ALL

TIMES PAVING WORK IS IN PROGRESS B. GENERAL: TESTING SERVICE REPRESENTATIVE SHALL TAKE A MINIMUM OF TWO SAMPLES PER LIFT OF BITUMINOUS AGGREGATE MIX EACH DAY BEFORE PAVING OPERATION. LABORATORY TEST SHALL BE PERFORMED ON THESE SAMPLES TO DETERMINE AGGREGATE GRADATION AND ASPHALT CONTENT. ) TEST IN-PLACE COMPACTED BITUMINOUS AGGREGATE MIX COURSES FOR COMPLIANCE WITH REQUIREMENTS FOR THICKNESS, DENSITY AND AIR VOIDS AND SURFACE SMOOTHNESS. REPAIR OR

REMOVE AND REPLACE UNACCEPTABLE PAVING AS DIRECTED BY ENGINEER. II) A TEST SECTION AT A MINIMUM SIZE OF 100'X12' SHALL BE PLACED AT A LOCATION AS DIRECTED BY THE COUNTY PRIOR TO FULL PRODUCTION FOR EACH TYPE OF MIX. THE TEST SECTION SHALL BE COMPACTED TO DETERMINE A TARGET DENSITY FOR THE REMAINDER OF THE PAVEMENT.

: THICKNESS: IN-PLACE COMPACTED THICKNESS WILL NOT BE ACCEPTABLE IF EXCEEDING FOLLOWING ALLOWABLE VARIATION FROM REQUIRED THICKNESS: AGGREGATE BASE COURSE: 1/2", PLUS OR MINUS

BASE COURSE: 1/2", PLUS OR MINUS BINDER COURSE: 1/4", PLUS OR MINUS

SURFACE COURSE: 1/4", PLUS OR MINUS ) A MINIMUM OF TWO PAVEMENT CORES PER COMPACTED LIFT SHALL BE TAKEN. CORES ARE TO BE TAKEN AT LOCATIONS AND AT TIMES OF DAY AS DIRECTED BY THE TESTING SERVICE. THE FOLLOWING TESTS SHALL BE PERFORMED BY THE TESTING SERVICE, ON EACH PAVEMENT CORE:

II) A TEST SECTION AT A MINIMUM SIZE OF 100'X12' SHALL BE PLACED AT A LOCATION AS DIRECTED BY THE COUNTY PRIOR TO FULL PRODUCTION FOR EACH TYPE OF MIX. THE TEST SECTION SHALL BE COMPACTED TO DETERMINE A TARGET DENSITY OF THE REMAINDER OF THE PAVEMENT. D. PAVEMENT THICKNESS DENSITY

AIR VOIDS I) TESTING SERVICE SHALL SUBMIT CERTIFIED RESULTS TO THE OWNER AND ARCHITECT/ENGINEER WITHIN 72 HOURS AFTER TESTS ARE MADE, WITH THEIR COMMENTS AND RECOMMENDATIONS FOR

II) PAVEMENT WHICH FAILS TO COMPLY WITH APPROVED JOB MIX FORMULA SHALL BE REPLACED AS WATER LINE SYSTEM DIRECTED BY THE ARCHITECT/ENGINEER. E. SURFACE SMOOTHNESS: TEST FINISHED SURFACE FOR SMOOTHNESS, USING 10' STRAIGHTEDGE APPLIED

PARALLEL WITH, AND AT RIGHT ANGLES TO CENTERLINE OF PAVED AREA. SURFACE WILL NOT BE ACCEPTABLE IF EXCEEDING THE FOLLOWING TOLERANCES FOR SMOOTHNESS. AGGREGATE BASE COURSE SURFACE: 1/4"

BASE COURSE SURFACE: 1/4" BINDER COURSE SURFACE: 1/8" WEARING COURSE SURFACE: 1/8"

) CHECK SURFACED AREAS AT INTERVALS AS DIRECTED BY TESTING SERVICE. F. DENSITY TESTS: DENSITY TESTS SHALL BE MADE AT EACH LIFT. TEST SHALL BE AS FOLLOWS:

I) TESTS WILL BE REQUIRED AT VARIOUS TIMES AND LOCATIONS FOR SUBGRADE AND BASE COURSES FOR ASPHALT PAVING AREAS G. TESTING SERVICE SHALL SUBMIT CERTIFIED RESULTS TO THE OWNER AND ENGINEER WITHIN 72 HOURS

AFTER TESTS ARE MADE WITH THEIR COMMENTS AND RECOMMENDATIONS FOR ACTION. I) SUBGRADE SHALL BE PREPARED IN ACCORDANCE WITH I.N.D.O.T. STANDARD SPECIFICATIONS, SECTION 207 AND SUBSECTION 501.07. NO TRAFFIC SHALL BE PERMITTED ON THE PREPARED SUBGRADE PRIOR TO PAVING. II) SEE SITE GRADING, UNDER THE 'EARTHWORK' SECTION FOR ADDITIONAL COMPACTION REQUIREMENTS.

A. GRADING: DO ANY NECESSARY GRADING IN ADDITION TO THAT PERFORMED IN ACCORDANCE WITH EARTHWORK SECTION TO BRING SUBGRADES, AFTER FINAL COMPACTION, TO THE REQUIRED GRADES AND SECTIONS FOR SITE IMPROVEMENTS. B. PREPARATION OF SUBGRADE: REMOVE SPONGY AND OTHERWISE UNSUITABLE MATERIAL AND REPLACE WITH STABLE MATERIAL. NO TRAFFIC WILL BE ALLOWED ON PREPARED SUBGRADE PRIOR TO PAVING.

C. COMPACTION OF SUBGRADE: THE FIRST 6 INCHES BELOW THE SUBGRADE SHALL BE COMPACTED TO AT LEAST 100% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE PROVISIONS OF AASHO T-99. WATER SHALL BE PREVENTED FROM STANDING ON THE COMPACTED SUBGRADE. D. UTILITY STRUCTURES: CHECK FOR CORRECT ELEVATION OF ALL MANHOLE COVERS, VALVE BOXES AND

SIMILAR STRUCTURES LOCATED WITHIN AREAS TO BE PAVED, AND MAKE, OR HAVE MADE, ANY NECESSARY ADJUSTMENTS IN SUCH STRUCTURES. E. PLACING CONCRETE

1. SUBGRADE: PLACE CONCRETE ONLY ON A MOIST, COMPACTED SUBGRADE OR BASE FREE FROM LOOSE MATERIAL. PLACE NO CONCRETE ON A MUDDY OR FROZEN SUBGRADE. 2. FORMS: ALL FORMS SHALL BE FREE FROM WARP. TIGHT ENOUGH TO PREVENT LEAKAGE AND SUBSTANTIAL ENOUGH TO MAINTAIN THEIR SHAPE AND POSITION WITHOUT SPRINGING OR SETTLING, WHEN CONCRETE IS PLACED. FORMS SHALL BE CLEAN AND SMOOTH IMMEDIATELY BEFORE

CONCRETING. 3. PLACING CONCRETE: CONCRETE SHALL BE DEPOSITED SO AS TO REQUIRE AS LITTLE REHANDLING AS PRACTICABLE. WHEN CONCRETE IS TO BE PLACED AT AN ATMOSPHERIC TEMPERATURE OF 35 DEGREES F. OR LESS, PARAGRAPH 702.10 OF THE I.N.D.O.T. SPECIFICATIONS LATEST REVISIONS SHALL BE FOLLOWED.

F. CONCRETE CURB 1. EXPANSION JOINTS: SHALL BE 1/2 INCH THICK PREMOULDED AT ENDS OF ALL RETURNS AND AT A MAXIMUM SPACING OF 100 FEET.

2. CONTRACTION JOINTS UNLESS OTHERWISE PROVIDED, CONTRACTION JOINTS SHALL BE SAWED JOINTS 3. FINISH: TAMP AND SCREED CONCRETE AS SOON AS PLACED, AND FILL ANY HONEY COMBED PLACES. FINISH SQUARE CORNERSTONE 1/4 INCH RADIUS AND OTHER CORNERS TO RADII SHOWN.

G. CONCRETE WALKS AND EXTERIOR STEPS 1. SLOPES: PROVIDE 1/4 INCH PER FOOT CROSS SLOPE. MAKE ADJUSTMENTS ON SLOPES AT WALK INTERSECTIONS AS NECESSARY TO PROVIDE PROPER DRAINAGE. 2. DIMENSIONS: WALKS AND STEPS SHALL BE ONE COURSE CONSTRUCTION AND OF WIDTHS AND DETAILS

SHOWN ON THE DRAWINGS. 3. FINISH: SCREED CONCRETE AND TROWEL WITH A STEEL TROWEL TO A HARD DENSE SURFACE AFTER SURFACE WATER HAS DISAPPEARED. APPLY MEDIUM BROOM FINISH AND SCRIBE TRANSVERSE JOINTS AT 6 FOOT SPACING. PROVIDE ½ INCH EXPANSION JOINTS WHERE SIDEWALKS INTERSECT, AND AT A MAXIMUM SPACING OF 48 FEET BETWEEN EXPANSION JOINTS.

H. CURING CONCRETE FOR WALKS AND CURBS: EXCEPT AS OTHERWISE SPECIFIED, CURE ALL CONCRETE BY ONE OF THE METHODS DESCRIBED IN SECTION 501.17 OF THE I.N.D.O.T. SPECIFICATIONS, LATEST REVISION. I. BITUMINOUS PAVEMENT: HOT MIX ASPHALT PAVEMENT SHALL BE AS SPECIFIED IN SECTION 402 OF THE

I.N.D.O.T. SPECIFICATIONS LATEST REVISIONS. PAVING WILL NOT BE PERMITTED DURING UNFAVORABLE WEATHER OR THEN THE TEMPERATURE IS 40 DEGREES F. AND FALLING. J. COMPACTED AGGREGATE SUBBASE: THE THICKNESS SHOWN ON THE DRAWINGS IS THE MINIMUM THICKNESS OF THE FULL COMPACTED SUBBASE. COMPACTION SHALL BE ACCOMPLISHED BY ROLLING WITH A SMOOTH WHEELED ROLLER WEIGHING 8 TO 10 TONS. COMPACT TO 95% COMPACTION USING STANDARD TESTING PROCEDURES. ALONG CURBS, HEADERS AND WALLS AND AT ALL PLACES NOT ACCESSIBLE TO THE ROLLER, THE AGGREGATE MATERIAL SHALL BE TAMPED WITH MECHANICAL TAMPERS OR WITH APPROVED

HAND TAMPERS.

K. CONCRETE RAMPS 1. CONCRETE RAMPS FOR THE DISABLED SHALL BE REQUIRED AS SPECIFIED IN THE PLANS AND SHALL CONFORM WITH CURRENT SPECIFICATIONS ESTABLISHED BY THE AMERICAN DISABILITIES ACT (ADA), SECTION 4.7, "CURB RAMPS."

2. THE CONCRETE RAMP SHALL BE FLUSH AND FREE OF ABRUPT CHANGES WITH SIDEWALKS, GUTTERS OR STREETS, AND PROVIDE A MAXIMUM SLOPE OF 1:12. 3. THE MINIMUM WIDTH OF A CONCRETE RAMP SHALL BE (48) INCHES EXCLUSIVE OF FLARED SIDES. 4. SIDES OF CONCRETE RAMPS SHALL HAVE FLARED SIDES AS SHOWN IN THE PLANS.

### SANITARY SEWER SYSTEMS

SCOPE OF WORK

D. CASING

A. PERMITS AND CODES

P. STORM WATER CONNECTIONS:

INCLUDING EXCAVATING AND BACKFILLING NECESSARY TO COMPLETE THE WORK SHOWN ON THE DRAWINGS.

B. IN THE CASE OF ANY CONFLICTS WITH THESE SPECIFICATIONS AND LOCAL, STATE, FEDERAL SPECIFICATIONS

1. STORM SEWER STRUCTURES SHALL COMPLY WITH CURRENT SPECIFICATIONS OF THE CITY OF JOHNSON PLANNING AND ALL OTHER RESPONSIBLE AGENCIES IN RESPECT TO DESIGN AND QUALITY OF

2. ALL STORM SEWER CONSTRUCTION INSIDE PUBLIC RIGHT-OF-WAY, EITHER EXISTING OR TO BE DEDICATED,

3. WHERE REINFORCED CONCRETE PIPE IS SHOWN ON THE CONSTRUCTION PLANS. IT SHALL BE IN

4. WHERE CORRUGATED METAL PIPE IS SHOWN ON THE CONSTRUCTION PLANS, IT SHALL BE 14 GAUGE

5. MANHOLES, CATCH BASINS AND INLETS SHALL BE PRECAST CONCRETE. USE OF BRICK OR BLOCK WILI

JOHNSON COUNTY PLANNING AND HIGHWAY DEPARTMENTS DRAINAGE PRIOR TO CONSTRUCTION.

9. ALL TRENCHES UNDER PAVEMENT SHALL BE COMPACTED TO 95 PERCENT MODIFIED PROCTOR.

AND CONSTRUCTION OF THE RESPECTIVE MUNICIPAL DEPARTMENT OR UTILITY COMPANY.

THE SATISFACTION OF THE OWNER ANY DAMAGE TO EXISTING ACTIVE IMPROVEMENTS.

APPROVED BY ALL LOCAL AND STATE AGENCIES HAVING JURISDICTION.

PROVIDE SUCH CHANNELS FOR ALL CONNECTING SEWERS AT EACH MANHOLE.

OR IN THE FIELD BEFORE WORK IS STARTED OR RESUMED.

ALL LOCAL AND STATE AGENCIES HAVING JURISDICTION.

DRAWINGS TO THE ENGINEER PRIOR TO ANY CONSTRUCTION.

FIVE(5) FEET OF THE EDGE OF PAVEMENT.

NOT BE PERMITTED UNLESS AUTHORIZED IN WRITING BY THE ENGINEER AND APPROVED IN WRITING BY THE

A. IF THE CONTRACTOR ELECTS TO USE ALTERNATE PRECAST STRUCTURES, HE SHALL SUBMIT SHOP

6. PRECAST CONCRETE AND STEEL FOR MANHOLES AND INLETS SHALL BE IN ACCORDANCE WITH A.S.T.M.

7. CASTINGS SHALL BE AS SHOWN ON THE DETAIL SHEET(S) FOR MANUFACTURER, TYPE AND MODEL NUMBER.

8. NUMBER 53 STONE BACKFILL SHALL BE REQUIRED UNDER ALL PAVEMENT AREAS AND TRENCHES WITHIN

A. PERMITS AND CODES: THE INTENT OF THIS SECTION OF THE SPECIFICATIONS IS THAT THE CONTRACTOR'S BID

B. LOCAL STANDARDS: THE TERM "LOCAL STANDARDS" AS USED HEREIN MEANS THE STANDARDS OF DESIGN

C. EXISTING IMPROVEMENTS: THE CONTRACTOR SHALL MAINTAIN IN OPERATING CONDITION ALL ACTIVE UTILITIES,

SEWERS AND OTHER DRAINS ENCOUNTERED IN THE SEWER INSTALLATION. THE CONTRACTOR SHALL REPAIR TO

TRENCHING: LAY ALL PIPE IN OPEN TRENCHES, EXCEPT WHEN THE LOCAL AUTHORITY GIVES WRITTEN

PERMISSION FOR TUNNELING. OPEN THE TRENCH SUFFICIENTLY AHEAD OF PIPE-LAYING TO REVEAL ANY

OBSTRUCTIONS. THE MIN. WIDTH OF TRENCH SHALL BE 1.25 TIMES THE OUTSIDE DIA. OF PIPE. SHEET AND

BRACE TRENCH AS NECESSARY TO PROTECT WORKMEN AND ADJACENT STRUCTURES. ALL TRENCHING TO

COMPLY WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION STANDARDS. KEEP TRENCHES FREE FROM

WATER WHILE CONSTRUCTION IS IN PROGRESS. UNDER NO CIRCUMSTANCES SHALL PIPE OR APPURTENANCES

BE LAID IN STANDING WATER. CONDUCT THE DISCHARGE FROM TRENCH DE-WATERING TO DRAINS OR

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 SPECIFIED IN THIS SECTION. SUCH SPECIAL

SUPPORT, IN ADDITION TO THOSE SHOWN OR SPECIFIED, SHALL BE PROVIDED AS THE ENGINEER MAY DIRECT,

BE COVERED WITH 12" MINIMUM OF #8 STONE. COMPACT THIS BACKFILL THOROUGHLY, TAKING CARE NOT TO

DISTURB THE PIPE. BACKFILL UNDER AND WITHIN 5 FEET OF WALKS, PARKING AREAS, DRIVEWAYS AND

STREETS SHALL BE "B" BORROW OR EQUIVALENT GRANULAR MATERIAL ONLY AND THOROUGHLY COMPACTED

FINISHED AND OF SEMICIRCULAR SECTION CONFORMING TO THE INSIDE DIAMETER OF THE CONNECTING

SEWERS. MAKE CHANGES IN SIZE OR GRADE GRADUALLY AND CHANGES INDIRECTION BY TRUE CURVES.

THE GRADES SHOWN. ALL DRAINS CONSTRUCTED OFF-SITE AS PART OF THE OUTLET DRAIN WILL BE LOCATED

CONDITIONS PERTAINING TO HIS WORK. IT SHALL ALSO BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT

THE OWNERS OF THE VARIOUS UTILITIES BEFORE WORK IS STARTED. THE CONTRACTOR SHALL NOTIFY IN

WRITING THE OWNER AND THE ENGINEER OF ANY CHANGES, ERRORS OR OMISSIONS FOUND ON THESE PLANS

SUBDRAINS: ALL SUBDRAINS SHALL BE OF THE SIZE SHOWN ON THE PLANS AND SHALL BE CONSTRUCTED TO

J. UTILITIES: IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERITY ALL EXISTING UTILITIES AND

A. THE WORK UNDER THIS SECTION INCLUDES ALL WATER MAIN, FIRE HYDRANTS, SERVICES AND RELATED ITEMS,

INCLUDING EXCAVATING AND BACKFILLING NECESSARY TO COMPLETE THE WORK SHOWN ON THE DRAWINGS.

A. ALL MATERIALS SHALL CONFORM TO ALL LOCAL, STATE, AND NATIONAL CODES AND SHALL BE APPROVED B'

A. PERMITS AND CODES: THE INTENT OF THIS SECTION OF THE SPECIFICATIONS IS THAT THE CONTRACTOR'S BID

B. LOCAL STANDARDS: THE TERM "LOCAL STANDARDS" AS USED HEREIN MEANS THE STANDARDS OF DESIGN

C. EXISTING IMPROVEMENTS: THE CONTRACTOR SHALL MAINTAIN IN OPERATING CONDITION ALL ACTIVE UTILITIES,

D. WORKMANSHIP: THIS WORK SHALL CONFORM TO ALL LOCAL, STATE AND NATIONAL CODES AND TO BE

E. TRENCHING: LAY ALL PIPE IN OPEN TRENCHES, EXCEPT WHEN THE LOCAL AUTHORITY GIVES WRITTEN

SFWFRS AND OTHER DRAINS ENCOUNTERED IN THE WATER LINE INSTALLATION. THE CONTRACTOR SHALL

APPROVED BY ALL LOCAL AND STATE AGENCIES HAVING JURISDICTION. THIS INCLUDES ALL REQUIRED

PERMISSION FOR TUNNELING. OPEN THE TRENCH SUFFICIENTLY AHEAD OF PIPE-LAYING TO REVEAL ANY

OBSTRUCTIONS. THE MIN. WIDTH OF TRENCH SHALL BE 1.25 TIMES THE OUTSIDE DIA. OF PIPE. SHEET AND

COMPLY WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION STANDARDS. KEEP TRENCHES FREE FROM

BRACE TRENCH AS NECESSARY TO PROTECT WORKMEN AND ADJACENT STRUCTURES. ALL TRENCHING TO

WATER WHILE CONSTRUCTION IS IN PROGRESS. UNDER NO CIRCUMSTANCES SHALL PIPE OR APPURTENANCES

BE LAID IN STANDING WATER. CONDUCT THE DISCHARGE FROM TRENCH DE-WATERING TO DRAINS OR

IS UNSUITABLE FOR SUPPORTING PIPE AND APPURTENANCES SPECIFIED IN THIS SECTION, SUCH SPECIAL

SUPPORT, IN ADDITION TO THOSE SHOWN OR SPECIFIED, SHALL BE PROVIDED AS THE ENGINEER MAY DIRECT,

BE COVERED WITH 12" MINIMUM OF #8 STONE. COMPACT THIS BACKFILL THOROUGHLY, TAKING CARE NOT TO

DISTURB THE PIPE. BACKFILL UNDER AND WITHIN 5 FEET OF WALKS, PARKING AREAS, DRIVEWAYS AND

STREETS SHALL BE "B" BORROW OR EQUIVALENT GRANULAR MATERIAL ONLY AND THOROUGHLY COMPACTED

CONDITIONS PERTAINING TO HIS WORK. IT SHALL ALSO BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT

THE OWNERS OF THE VARIOUS UTILITIES BEFORE WORK IS STARTED. THE CONTRACTOR SHALL NOTIFY IN

WRITING THE OWNER AND THE ENGINEER OF ANY CHANGES, ERRORS OR OMISSIONS FOUND ON THESE PLANS

F. SPECIAL SUPPORTS: WHENEVER, IN THE OPINION OF THE ENGINEER, THE SOIL AT OR BELOW THE PIPE GRADE

G. BACKFILLING: BACKFILL SHALL BE PLACED AS SHOWN IN THE PLANS. NOTE THAT PVC & HDPE PIPE SHALL

H. UTILITIES: IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL EXISTING UTILITIES AND

AND CONSTRUCTION OF THE RESPECTIVE MUNICIPAL DEPARTMENT OR UTILITY COMPANY.

CLEANING AND TESTING PROCEDURES REQUIRED BY THE STATE AND LOCAL AGENCIES.

REPAIR TO THE SATISFACTION OF THE OWNER ANY DAMAGE TO EXISTING ACTIVE IMPROVEMENTS.

ON THE WORK COVERED HEREIN SHALL BE BASED UPON THE DRAWINGS AND SPECIFICATIONS BUT THAT THE

WORK SHALL COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS AS AMENDED BY ANY WAIVERS. THE

CONTRACTOR SHALL FURNISH ALL BONDS NECESSARY TO GET PERMITS FOR CUTS AND CONNECTIONS TO

G. BACKFILLING: BACKFILL SHALL BE PLACED AS SHOWN IN THE PLANS. NOTE THAT PVC & HDPE PIPE SHALL

H. MANHOLE INVERTS: CONSTRUCT MANHOLE FLOW CHANNELS OF CONCRETE SEWER PIPE OR BRICK, SMOOTHLY

ON THE WORK COVERED HEREIN SHALL BE BASED UPON THE DRAWINGS AND SPECIFICATIONS BUT THAT THE

WORK SHALL COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS AS AMENDED BY ANY WAIVERS. THE

CONTRACTOR SHALL FURNISH ALL BONDS NECESSARY TO GET PERMITS FOR CUTS AND CONNECTIONS TO

ALUMINIZED UNLESS OTHERWISE SPECIFIED AND SHALL HAVE THE CONNECTING BANDS AND SEALS AS

SPECIFIED BY THE MANUFACTURER. C.M.P. SHALL BE ALUMINIZED PIPE IN ACCORDANCE WITH A.S.T.M.

ACCORDANCE WITH A.S.T.M. C-76 CLASS III WALL "C" UNLESS OTHERWISE SPECIFIED ON THE PLANS.

SHALL BE IN ACCORDANCE WITH THE MOST CURRENT I.N.D.O.T. STANDARD SPECIFICATION.

THE MORE STRINGENT SHALL APPLY.

CONSTRUCTION

EXISTING SEWERS.

NATURAL DRAINAGE CHANNELS

BY APPROVED METHODS.

FXISTING WATER MAINS.

NATURAL DRAINAGE CHANNELS.

BY APPROVED METHODS.

AND THE CONTRACT WILL BE ADJUSTED.

OR IN THE FIELD BEFORE WORK IS STARTED OR RESUMED.

2. MATERIALS

AND THE CONTRACT WILL BE ADJUSTED.

A. THE WORK UNDER THIS SECTION INCLUDES ALL SANITARY SEWERS, MANHOLES, CLEANOUTS AND RELATED ITEMS INCLUDING EXCAVATING AND BACKFILLING, NECESSARY TO COMPLETE THE WORK SHOWN IN THE DRAWINGS, STARTING OUTSIDE THE BUILDING WALLS. THE END OF SEWERS SHALL BE TIGHTLY PLUGGED OR CAPPED AT THE TERMINAL POINTS, ADJACENT TO THE BUILDING DRAIN AS SPECIFIED IN THE PLUMBING SPECIFICATIONS AND/OR ARCHITECTURAL DRAWINGS.

1. ALL 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 TRUSS PIPE. NO SOLVENT CEMENT JOINTS SHALL BE ALLOWED. 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 BISMATIC 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 SOME OTHER APPROVED METHOD. THEY SHALL BE COATED WITH ASPHALT PAINT WHICH SHALL RESULT IN A SMOOTH COATING, TOUGH AND TENACIOUS WHEN COLD, NOT TACKY OR BRITTLE, THEY SHALL BE GRAY IRON MEETING ASTM A-48 LATEST REVISION. MANHOLE COVERS FOR SANITARY SEWER SHALL BE NEENAH TYPE R-1077-A W/R-1712-B-SP FRAME W/SELF-SEALING APPLICATION.

3. JOINTS: MANHOLE SECTIONS SHALL BE JOINED WITH A NOMINAL 1/2 INCH SIZE BUTYL RUBBER BASE GASKET MATERIAL, CONFORMING TO AASHTO M-198 AND FEDERAL SPECIFICATION SS-S-210A. JOINT CONFORMS 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 ASTMD-4101 WITH DEFORMED ¾ 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.

C. SANITARY FORCE MAINS 1. ALL SANITARY FORCE MAIN PIPE AND FITTINGS SHALL CONFORM TO ASTM D2241, STANDARD SPECIFICATION FOR POLY VINYL CHLORIDE (PVC) PRESSURE-RATED PIPE, (SDR 21, GREATER THAN 4 INCH 2. TRACER WIRE SHALL BE INSTALLED WITH ALL SANITARY FORCE MAIN PIPE.

1. SANITARY SEWERS CONSTRUCTED WITH POLYVINYL CHLORIDE (PVC) AND INSTALLED UNDER RAILROADS 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. D. WORKMANSHIP: THIS WORK SHALL CONFORM TO ALL LOCAL, STATE AND NATIONAL CODES AND TO BE 3. APPLICATION

> THE INTENT OF THIS SECTION OF THE SPECIFICATIONS IS THAT THE CONTRACTOR'S BID ON THE WORK COVERED HEREIN SHALL BE BASED UPON THE DRAWINGS AND SPECIFICATIONS BUT THAT THE WORK SHALL COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS AS AMENDED BY ANY WAIVERS. CONTRACTOR SHALL FURNISH ALL BONDS NECESSARY TO GET PERMITS FOR CUTS AND CONNECTIONS TO EXISTING SEWERS.

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

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

WORKMANSHIP THIS WORK SHALL CONFORM TO ALL LOCAL, STATE AND NATIONAL CODES AND TO BE APPROVED BY ALL LOCAL AND STATE AGENCIES HAVING JURISDICTION. . Trenching

LAY ALL PIPE IN OPEN TRENCHES, EXCEPT WHEN THE LOCAL AUTHORITY GIVES WRITTEN PERMISSION FOR TUNNELING. OPEN THE TRENCH SUFFICIENTLY AHEAD OF PIPE-LAYING TO REVEAL ANY OBSTRUCTIONS. THE MIN. WIDTH OF TRENCH SHALL BE 1.25 TIMES THE OUTSIDE DIA. PLUS 12 INCHES. SHEET AND BRACE TRENCH AS NECESSARY TO PROTECT WORKMEN AND ADJACENT STRUCTURES. ALL TRENCHING TO COMPLY WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION STANDARDS. KEEP TRENCHES FREE FROM WATER WHILE CONSTRUCTION IS IN PROGRESS. UNDER NO CIRCUMSTANCES SHALL PIPE OR APPURTENANCES BE LAID IN STANDING WATER. CONDUCT THE DISCHARGE FROM TRENCH DE-WATERING TO DRAINS OR NATURAL DRAINAGE 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 SPECIFIED IN THIS SECTION, SUCH SPECIAL SUPPORT, IN ADDITION TO THOSE SHOWN OR SPECIFIED, SHALL BE PROVIDED AS THE ENGINEER MAY DIRECT, AND THE CONTRACT WILL BE ADJUSTED.

BACKFILL 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 STREETS SHALL BE GRANULAR MATERIAL ONLY AND THOROUGHLY COMPACTED BY APPROVED METHODS. H. FLOW CHANNELS:

THE FLOW CHANNELS WITHIN MANHOLES SHALL BE AN INTEGRAL PART OF THE PRECAST BASE. 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 THE CROWN OF THE INLET AND OUTLET PIPES TO FORM A "U" SHAPED CHANNEL. THE BENCH WALL SHALL SLOPE BACK FROM THE CROWN AT 1/2 INCH PER FOOT TO THE MANHOLE WALL. I FAKAGE 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

J. HYDROSTATIC TEST: A 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 LINEAR MILE PER DAY. K. LOW PRESSURE AIR TEST:

A LOW PRESSURE AIR TEST SHALL BE CONDUCTED IN ACCORDANCE WITH ASTM F1417, STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW PRESSURE AIR, FOR PLASTIC PIPE

L. ALL SANITARY FORCE MAIN LINES, UPON COMPLETION, SHALL BE REQUIRED TO PASS A LEAKAGE TEST CONDUCTED IN ACCORDANCE WITH AWWA STANDARD C605-94, AWWA STANDARD FOR UNDERGROUND INSTALLATION OF POLYVINYL CHLORIDE (PVC) PRESSURE PIPE AND FITTINGS FOR WATER. M. 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. N. 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 JUST PRIOR TO ACCEPTANCE OF WORK.

O. PLASTIC SEWER PIPE INSTALLATION: PLASTIC SEWER PIPE SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321 PER LATEST REVISION. PIPES SHALL BE TESTED AFTER THIRTY DAYS, USING A MANDREL THAT IS 95% OF THE INSIDE DIAMETER OF THE PIPE BEING TESTED. SAID MANDREL SHALL BE PULLED BY HAND THROUGH EACH PIPE SECTION TO ENSURE DEFLECTION IS LESS THAN ACCEPTABLE LIMITS.

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

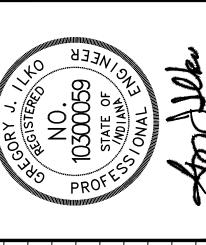
WHERE WATER LINES AND SANITARY SEWERS CROSS AND WATER LINES CANNOT BE PLACED ABOVE THE SEWER WITH A MINIMUM OF 18 INCHES VERTICAL CLEARANCE. THE SEWER MUST BE CONSTRUCTED OF WATER WORKS GRADE DUCTILE IRON PIPE WITH MECHANICAL JOINTS WITHIN 10 FEET OF THE WATER LINE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERITY ALL EXISTING UTILITIES AND CONDITIONS

PERTAINING TO HIS WORK. IT SHALL ALSO BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE OWNERS

OF THE VARIOUS UTILITIES BEFORE WORK IS STARTED. 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 IS STARTED OR RESUMED. S. 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





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