



No. 10302418 STATE OF

MDW



INSTALLATION

PLEASE SEE SHEET XXXX INCLUDED WITH THE SUBMITTAL

ASSOCIATED PARKING AND DRIVE AREAS, AS WELL AS UTILITY SERVICES FOR THE SITE.

A5 LEGAL DESCRIPTION OF THE PROJECT SITE PART OF LOT 1, LAKE BUSINESS CENTER SUB. INST. #2013-019681

LONGITUDE 87° 30' 52" W LATITUDE 41° 33' 00" N A6 LOCATION OF ALL LOTS AND PROPOSED SITE IMPROVEMENTS SEE SHEETS C201

A8 NOTATION OF ANY STATE OR FEDERAL WATER QUALITY PERMITS:

 $\underline{\rm A9}$ SPECIFIC POINTS WHERE STORMWATER DISCHARGE WILL LEAVE THE SITE: RUNOFF WILL EXIT THE SITE AT THE NW CORNER VIA A 48" DIA. PIPE.

A10 LOCATION & NAME OF ALL WETLANDS, LAKES & WATER COURSES ON AND ADJACENT TO THE SITE:
AN EXISTING WETLAND IS LOCATED APPROX. 130' WEST OF THE SITE. IT WILL NOT BE IMPACTED BY CONSTRUCTION.

A11 IDENTIFY ALL RECEIVING WATERS: UNKNOWN. RUNOFF FROM THE SITE WILL BE SENT TO THE TOWN OF MUNSTER STORM SEWER SYSTEM.

UNDERGROUND STORAGE IS UTILIZED ON THIS SITE, SO THERE IS A SLIGHT POTENTIAL FOR INFILTRATION. HOWEVER, THIS IS NOT THE INTENT OF THE DESIGN.

N/A - PER FIRM 18089 C0117E, EFFECTIVE DATE 01/18/2012, THIS SITE LIES IN ZONE X, AREA OF MINIMAL FLOOD HAZARD.

 $\frac{\text{A14 PRE-CONSTRUCTION AND POST CONSTRUCTION ESTIMATE OF PEAK DISCHARGE:}}{\text{PRE-CONSTRUCTION 100 YEAR}\ =\ 6.28\ \text{CFS}}$ POST CONSTRUCTION 100 YEAR = 3.05 CFS

A15 ADJACENT LAND USE, INCLUDING UPSTREAM WATERSHED: NORTH = RESIDENTIAL

EAST = COMMERCIAL SOUTH = INDUSTRIA WEST = UNDEVELOPED

A16 LOCATIONS AND APPROXIMATE BOUNDARIES OF ALL DISTURBED AREAS:

A17 IDENTIFICATION OF EXISTING VEGETATIVE COVER: EXISTING SITE CONSISTS OF GRASSED AREA AND ASPHALT STREET.

A18 SOILS MAP INCLUDING DESCRIPTIONS AND LIMITATIONS SEE SHEET C100 A19 LOCATION, SIZE AND DIMENSIONS OF PROPOSED STORMWATER SYSTEMS

A20 PLAN FOR ANY OFF-SITE CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT:

A21 LOCATIONS OF PROPOSED SOIL STOCKPILES, BORROW AND/OR DISPOSAL AREAS:

A22 EXISTING SITE TOPOGRAPHY AT AN INTERVAL APPROPRIATE TO SHOW DETAILED DRAINAGE PATTERNS: SEE SHEET C101 A23 PROPOSED FINAL TOPOGRAPHY AT AN INTERVAL APPROPRIATE TO SHOW DETAILED DRAINAGE PATTERNS; SEE SHEETS C301

ASSESSMENT OF STORMWATER POLLUTION PREVENTION PLAN-CONSTRUCTION COMPONENT (SECTION B)

21 DESCRIPTION OF POTENTIAL POLLUTANT SOURCES ASSOCIATED WITH CONSTRUCTION ACTIVITIES: POTENTIAL POLLUTANT ICES DURING CONSTRUCTION INCLUDE DISTURBED SOILS, STORED MATERIALS AND FUELS, EQUIPMENT USED DURING CONSTRUCTION, TRASH FROM CONSTRUCTION, FERTILIZERS, PESTICIDES, AND HERBICIDES. EQUIPMENT AND FUEL WILL BE STORED IN A CENTRAL LOCATION AND THE CONTRACTOR SHALL INSTITUTE METHODS AND PROCEDURES TO PREVENT DISCHARGE

QUENCE DESCRIBING STORMWATER QUALITY MEASURE IMPLEMENTATION RELATIVE TO LAND DISTURBING ACTIVITIES:

B3 STABLE CONSTRUCTION ENTRANCE LOCATIONS AND SPECIFICATIONS: SEE SHEET C101FOR LOCATION. SEE SHEET C602FOR DETAILS.

B4 SEDIMENT CONTROL MEASURES FOR SHEET FLOW AREAS: SEE SHEET C601. SILT FENCE POSTS SHALL BE 2"X2" AT A MINIMUM

B5 SEDIMENT CONTROL MEASURES FOR CONCENTRATED FLOW AREAS:

B6 STORM SEWER INLET PROTECTION MEASURE LOCATIONS AND SPECIFICATIONS: SEE SHEET C601. SEE SHEETS C602FOR DETAILS.

B8 STORMWATER OUTLET PROTECTION SPECIFICATIONS

B9 GRADE STABILIZATION STRUCTURE LOCATIONS AND SPECIFICATIONS SEE SHEET XXXX

B10 LOCATION, DIMENSIONS, SPECIFICATIONS AND CONSTRUCTION DETAILS FOR EACH STORMWATER QUALITY MEASURE SEE SHEET C601 AND EROSION CONTROL DETAILS ON SHEET C602.

B11 TEMPORARY SURFACE STABILIZATION METHODS APPROPRIATE FOR EACH SEASON: SEE SHEET C601AND IMPLEMENTATION AND MAINTENANCE PROCEDURE ON THIS SHEE

SEE SHEET C601AND IMPLEMENTATION AND MAINTENANCE PROCEDURE ON THIS SHEET

<u>813 MATERIAL HANDLING AND SPILL PREVENTION PLAN:</u>
FXPECTED CONSTRUCTION MATERIALS ON SITE MAY INCLUDE VEHICLE LUBRICANTS, OILS, VEHICULAR FUELS, MULCH, PESTICIDES, HERBICIDES, FERTILIZER, AND TRASH. FUELS, OILS, AND GASOLINE CAN LEAK OR BE SPILLED FROM TRUCKS AND CONSTRUCTION EQUIPMENT WHICH COULD FIND THEIR WAY TO N/A.

SMALL SPILLS AND LEAKS OF THESE MATERIALS ONTO NON-PAVED AREAS WILL BE SHOVELED INTO CONTAINERS OR DUMPSTERS FOR PROPER DISPOSAL.

FUELING TRUCKS WILL BE EQUIPPED WITH SPILL PREVENTION KITS FOR SMALLER FUEL SPILLS. ALL VEHICULAR MAINTENANCE SHALL BE PERFORMED IN THE SAME DESIGNATED AREA THROUGHOUT THE CONSTRUCTION TIME FRAME. IF POSSIBLE, VEHICULAR MAINTENANCE SHALL BE DONE OFF-SITE AT FACILITIES THAT ARE DESIGNED TO HANDLE ANY MATERIAL SPILLAGE. THIS SHALL INCLUDE FUELING OF VEHICLES WHENEVER POSSIBLE. THE N/A FIRE DEPARTMENT (XXX)XXX-XXXX OR 911, INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, OFFICE OF EMERGENCY RESPONSE (800)-233-7745, SHALL BE NOTIFIED IMMEDIATELY FOR LARGER SPILLS OR LEAKS. THE NATIONAL RESPONSE CENTER (800)-424-8802 SHALL BE NOTIFIED AND PROVIDED WITH THE FOLLOWING INFORMATION: TIME OF SPILL, LOCATION OF SPILL, MATERIAL, SOURCE OF SPILL, APPROXIMATE VOLUME AND LENGTH OF SPILLAGE, WEATHER CONDITIONS AT TIME OF SPILL, PERSONAL PRESENT AT TIME OF SPILL, AND ALL ACTION TAKEN FOR POST SPILL CLEANUP.

CONTRACTOR SHALL CONTACT A WASTE RECOVERY AGENCY IMMEDIATELY FOR REMOVAL OF CONTAMINATES AND COORDINATION OF MONITORING THE SITE DURING CLEANUP UNTIL ALL OF THE HAZARDOUS MATERIAL HAS BEEN REMOVED. CONTRACTOR SHALL COOPERATE WITH IDEM DURING AND AFTER THE SPILL TO INSURE ALL REQUIRED CLEANUP AND FILING REPORTS ARE PROPERLY THE DEVELOPER SHALL BE CONTINUALLY INFORMED OF ANY CONTAMINATION CONCERNS OCCURRING ON THE SITE. THE

CONSTRUCTION MANAGER SHALL KEEP ON SITE A LIST OF QUALIFIED CONTRACTORS FOR SPILL REMEDIATION. ALL SITE PERSONNEL, INCLUDING MAINTENANCE EMPLOYEES, SHALL BE MADE AWARE OF PROPER SPILL PREVENTION AND REMEDIATION TECHNIQUES. ALL MATERIALS USED TO ABSORB SPILLS SHALL BE PROPERLY DISPOSED OF IN AN APPROVED MANOR WILL LOCAL. AND STATE LAWS. DO NOT FLUSH SPILL MATERIALS WITH WATER UNLESS DIRECTED TO DO SO BY A GOVERNING AGENCY. IT IS IMPORTANT THAT ALL MANUFACTURER'S INSTRUCTIONS BE FOLLOWED WHEN USING OR APPLYING ALL FERTILIZERS, HERBICIDES

B14 MONITORING AND MAINTENANCE GUIDELINES FOR EACH PROPOSED POLLUTION PREVENTION MEASURE: REFER TO MAINTENANCE GUIDELINES SHOWN FOR EACH EROSION CONTROL MEASURE - SEE THIS SHEET.

815 EROSION AND SEDIMENT CONTROL SPECIFICATIONS FOR INDIMIDUAL BUILDING LOTS

ASSESSMENT OF STORMWATER POLLUTION PREVENTION POST-CONSTRUCTION COMPONENT (SECTION C)

C1 DESCRIPTION OF POTENTIAL POLLUTANT SOURCES ASSOCIATED WITH THE PROPOSED LAND USE:
POTENTIAL POLLUTANT SOURCES POST CONSTRUCTION INCLUDE FERTILIZERS, HERBICIDES, PESTICIDES AND OTHER LAWN TREATMENT APPLICATIONS ALONG WITH ASSORTED FUELS, OILS AND LIQUIDS ASSOCIATED WITH VEHICULAR TRAFFIC THROUGHOUT THE DEVELOPED SITE.

C2 SEQUENCE DESCRIBING STORMWATER QUALITY MEASURE IMPLEMENTATION: FOLLOWING CONSTRUCTION, ALL EROSION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED UNTIL ALL PERMANENT

MEASURES AND VEGETATION HAS BEEN ESTABLISHED AND CONSTRUCTION, INCLUDING LANDSCAPING, IS COMPLETE

INDIVIDUAL EROSION CONTROL MEASURES MAY BE REMOVED FOLLOWING SEEDING AND AFTER SUFFICIENT VEGETATION HAS BEEN ESTABLISHED IN AN AREA TO PREVENT SILT AND SOIL EROSION INTO THE STORM SEWER SYSTEM.

INSPECTION AND MAINTENANCE OF ALL COMMON AREAS, LANDSCAPE AREAS AND INFRASTRUCTURE IMPROVEMENTS ARE THE RESPONSIBILITY OF THE DEVELOPER/OWNER AND OR LOCAL AGENCIES TAKING JURISDICTION OVER THE INFRASTRUCTURE

3 DESCRIPTION OF PROPOSED POST CONSTRUCTION STORMWATER QUALITY MEASURES:
OST CONSTRUCTION STORMWATER QUALITY MEASURES TO AID IN REDUCING THE AMOUNT OF POLLUTANTS INCLUDE INFILTRATION TRENCHES ENERGY DISSIPATION MEASURES.

POST CONSTRUCTION STORMWATER QUALITY MEASURES WILL CONSIST OF VEGETATIVE COVER ON THE PERMANENT GRASS AREAS. THE VEGETATIVE COVER IS INTENDED TO STABILIZE THE DISTURBED AREAS AND TO SERVE AS A SEDIMENT TRAP FOR FINER PARTICLES WITHIN THE STORM SEWER SYSTEM.

ALTHOUGH NOT CURRENTLY A PART OF THE PROPOSED SYSTEM. THE OWNER SHOULD BE AWARE THAT IF AN EXCESS OF POLLUTANTS IS DETERMINED TO BE FOUND LEAVING THE SITE, ADDITIONAL MEASURES SUCH AS INLET DROP IN FILTERS MAY BE REQUIRED IN THE FUTURE TO FURTHER REDUCE THE AMOUNT OF FINES AND PETROLEUM PRODUCTS ENTERING THE STORM SEWER SYSTEM FROM THE PARKING LOT AND ROADWAY SYSTEM.

C4 LOCATION, DIMENSIONS, SPECIFICATIONS, AND CONSTRUCTION DETAILS OF EACH STORMWATER:
THE STORMWATER QUALITY MEASURES FOR POST CONSTRUCTION ACTIVITIES ARE INDICATED WITHIN THESE CONSTRUCTION DOCUMENTS. REFER TO SHEETS XXXX-XXXX FOR EROSION CONTROL MEASURES TO BE IMPLEMENTED WITHIN THE PROJECT SITE. DIMENSIONS, SPECIFICATIONS AND CONSTRUCTION DETAILS FOR THESE STORMWATER QUALITY MEASURES ARE INCLUDED WITHIN THE AFOREMENTIONED SERIES OF CONSTRUCTION DOCUMENTS.

C5 DESCRIPTION OF MAINTENANCE GUIDELINES FOR POST CONSTRUCTION STORMWATER:
DEVELOPER WILL PROVIDE MAINTENANCE ACTIVITIES FOR THE POST CONSTRUCTION WATER QUALITY MEASURES. MAINTENANCE ACTIVITIES WILL BE COMPLETED AS DESCRIBED BELOW.

GRASS AREAS SURROUNDING INLETS WILL BE MAINTAINED ON A REGULAR MOWING CYCLE. TRASH AND DEBRIS WILL BE REMOVED FROM SEEDED AND PAVED AREAS.

OUTLET STRUCTURE SHALL BE INSPECTED QUARTERLY. ADD RIP-RAP AS REQUIRED TO MAINTAIN PROPER BANK STABILITY. INSURE RIP-RAP MATERIAL IMMEDIATELY DOWNSTREAM OF THE OUTLET IS BELOW THE INVERT OF THE OUTLET STRUCTURE TO PREVENT

INSPECTION FREQUENCY - MONTHLY OR AFTER MAJOR RAINFALL EVENTS (4 INCHES OR MORE OF RAINFALL IN ANY 24 HOUR

INSPECTION ITEM: VEGETATION - REMOVE UNDESIRED VEGETATION ALONG POND BANKS INCLUDING BUT NOT LIMITED TO SEEDLING TREES, CATTAILS, ETC.

MOWING REQUIREMENTS - MOW ALL GRASSED AREAS MONTHLY OR WHEN GRASS HEIGHT EXCEEDS 6 INCHES. ADDITIONAL STORMWATER POLLUTION PREVENTION MEASURES

DESCRIPTION AND PURPOSE TO PREVENT OR REDUCE THE AMOUNT OF CONTAMINATION TO STORMWATER RESULTING FROM VEHICLE AND EQUIPMENT MAINTENANCE BY MAINTAINING A "DRY AND CLEAN SITE". THE BEST PRACTICE WOULD BE TO PERFORM MAINTENANCE ACTIVITIES AT AN OFFSITE FACILITY WHENEVER POSSIBLE. IF THIS OPTION IS NOT FEASIBLE, THEN WORK SHOULD BE PERFORMED ONLY IN DESIGNATED AREAS. WHILE PROVIDING ADEQUATE COVER FOR MATERIALS STORED OUTSIDE, ROUTINELY CHECKING FOR LEAKS AND SPILLS, AND CONTAINING AND CLEANING UP ALL SPILLS IMMEDIATELY

THESE PROCEDURES ARE APPLICABLE FOR ALL CONSTRUCTION PROJECTS WHERE AN ONSITE STAGING YARD AREA IS NECESSARY FOR THE STORAGE AND MAINTENANCE OF HEAVY CONSTRUCTION EQUIPMENT AND VEHICLES.

VEHICLE AND EQUIPMENT MAINTENANCE SHOULD ONLY BE PERFORMED ONSITE WHEN IT IS IMPRACTICAL TO SEND THEM OFFSITE FOR MAINTENANCE AND REPAIR. TRANSPORTING VEHICLES AND /EQUIPMENT OFFSITE SHOULD BE DONE ONLY AT THE STABILIZED CONSTRUCTION ENTRANCE/EXIT. VEHICLE STORAGE AND EQUIPMENT MAINTENANCE PROVIDES FOR A POTENTIALLY SIGNIFICANT SOURCE OF STORMWATER POLLUTION. ONSITE ACTIVITIES THAT CAN CONTAMINATE STORMWATER INCLUDE GENERAL MAINTENANCE SUCH AS CHANGING OR REPLACEMENT OF FLUIDS AND FILTERS, ENGINE REPAIR AND SERVICE, AND OUTDOOR EQUIPMENT STORAGE OR PARKING (FROM SOURCES SUCH AS THE ENGINE, OIL, FUEL, OR HYDRAULIC FLUID LEAKS).

IF MAINTENANCE MUST OCCUR ONSITE, WORK SHOULD BE DONE ONLY IN DESIGNATED AREAS LOCATED AWAY FROM DRAINAGE COURSES. DEDICATED MAINTENANCE AREAS SHOULD BE PROTECTED FROM STORMWATER INFILTRATION AND RUNOFF. THE MAINTENANCE AREA SHOULD BE LOCATED AT LEAST 50 FEET FROM DOWNSTREAM DRAINAGE FACILITIES, WATERWAYS, AND FLOOD

STORE AN ADEQUATE AMOUNT OF SPILL CLEANUP MATERIALS ONSITE WHERE THEY CAN BE READILY ACCESSIBLE. DRIP PANS OR ABSORBENT PADS SHOULD BE USED DURING VEHICLE AND EQUIPMENT MAINTENANCE WORK THAT INVOLVES FLUIDS, UNLESS THE MAINTENANCE WORK IS PERFORMED OVER AN IMPERMEABLE SURFACE WITHIN THE DEDICATED MAINTENANCE AREA USE ABSORBENT MATERIALS ON SMALL SPILL AREAS. REMOVE THE CONTAMINATED ABSORBENT MATERIALS PROMPTLY AND

DISPOSE OF THEM PROPERLY. ALL FUELING TRUCKS AND FUELING AREAS SHALL HAVE SPILL KITS AND/OR USE OTHER ADEQUATE SPILL PROTECTION DEVICES. INSPECT ONSITE VEHICLES AND EQUIPMENT DAILY AT THE BEGINNING OF EACH DAY FOR LEAKS AND REPAIR IMMEDIATELY.

KEEP VEHICLES AND EQUIPMENT CLEAN; DO NOT ALLOW EXCESSIVE BUILD-UP OF OIL, GREASE OR SILT MATERIALS THAT MAY CONTAMINATE OTHER PORTIONS OF THE SITE. EMPLOYEES AND SUBCONTRACTORS SHALL BE TRAINED IN PROPER MAINTENANCE AND SPILL MEDIATION PROCEDURES.

PROPERLY DISPOSE OF USED OILS, FLUIDS, LUBRICANTS, AND SPILL CLEANUP MATERIALS PER LOCAL AND STATE LAWS. SEPARATE AND RECYCLE WASTES SUCH AS GREASES, USED OIL, HYDRAULIC FLUID, OIL FILTERS, ANTIFREEZE, CLEANING SOLVENTS, BATTERIES, AND TRANSMISSION FLUIDS. IF THESE MATERIALS ARE STORED ONSITE, PROVIDE ADEQUATE SECONDARY

DO NOT PLACE USED OIL IN AN UNAPPROVED DUMPSTER, POUR INTO A STORM DRAIN OR WATERCOURSE, OR POUR ONTO THE

DRIP PANS OR PLASTIC SHEETING SHOULD BE PLACED UNDER ALL VEHICLES AND EQUIPMENT PLACED ON WATERWAY DOCKS, BARGES, OR OTHER STRUCTURES LOCATED OVER WATER BODIES WHEN THE VEHICLE OR EQUIPMENT IS ANTICIPATED TO BE IDLE

SOLID WASTE MANAGEMENT

DO NOT BURY OR BURN USED TIRES.

DESCRIPTION AND PURPOSE

SOLID WASTE MANAGEMENT PROCEDURES AND PRACTICES ARE DESIGNED TO PREVENT OR REDUCE THE POTENTIAL FOR DISCHARGE OF POLLUTANTS TO STORMWATER FROM SOLID OR CONSTRUCTION WASTE BY PROVIDING DESIGNATED WASTE COLLECTION AREAS AND CONTAINERS, ENSURING REGULAR DISPOSAL, AND TRAINING OF EMPLOYEES AND SUBCONTRACTORS.

THIS PRACTICE IS APPLICABLE FOR CONSTRUCTION SITES WHERE THE FOLLOWING WASTES ARE GENERATED OR STORED: SOLID WASTE GENERATED FROM DEMOLITION ACTIVITIES SUCH AS TREES OR SHRUBS, DEMOLITION OF EXISTING STRUCTURES, AND NEW BUILDING CONSTRUCTION MATERIALS INCLUDING CONCRETE, MASONRY, WOOD, METAL, GLASS, RUBBER, STYROFOAM, PAPER, PLASTIC, PIPE, ELECTRICAL COMPONENTS, AND PACKAGING MATERIALS.

DOMESTIC WASTES INCLUDE: FOOD CONTAINERS, BEVERAGE CONTAINERS, COFFEE CUPS, PAPER BAGS, PLASTIC WRAPPERS, CONSTRUCTION WASTES INCLUDING BRICK, MORTAR, TIMBER, STEEL AND METAL SCRAPS, PIPE AND ELECTRICAL CUTTINGS.

NON-HAZARDOUS EQUIPMENT PARTS, STYROFOAM AND OTHER MATERIALS SEND TRANSPORT AND PACKAGE CONSTRUCTION

THE FOLLOWING STEPS WILL AID IN KEEPING THE SITE CLEAN AND REDUCE THE POTENTIAL FOR STORMWATER POLLUTION: SELECT A DESIGNATED WASTE COLLECTION AREA ONSITE THAT IS DOWNSTREAM FROM THE STORMWATER COLLECTION SYSTEM AND AT LEAST 50 FEET AWAY FROM ALL WATERWAYS AND FLOOD PLAINS.

INFORM THE TRASH-HAULING CONTRACTOR THAT ONLY WATERTIGHT DUMPSTERS FOR ONSITE USE WILL BE ACCEPTED. INSPECT DUMPSTERS WHEN THEY REACH THE SITE FOR LEAKS. REJECT ANY DUMPSTER THAT IS NOT WATERTIGHT OR IS DEFECTIVE PROVIDE AN ADEQUATE NUMBER OF CONTAINERS WITH LIDS OR COVERS TO KEEP RAINWATER OUT AND TO PREVENT LOSS OF MATERIALS DUE TO WINDY CONDITIONS.

ALLOW FOR ADDITIONAL DUMPSTERS OR MORE FREQUENT PICKUPS DURING THE DEMOLITION PHASE OF CONSTRUCTION TO INSURE TRASH MATERIALS DO NOT GET STORED ON THE GROUND. HAVE SITE TRASH COLLECTED DAILY. DURING RAINY AND WINDY CONDITIONS IT MAY BE NECESSARY TO COLLECT TRASH MORE

REMOVE SOLID WASTE MATERIALS PROMPTLY FROM THE SITE SINCE EROSION AND SEDIMENT CONTROL MEASURES TEND TO COLLECT TRASH WHICH HINDERS THE EFFECTIVENESS OF THE EROSION CONTROL MEASURES. INSURE THAT TOXIC LIQUID WASTES SUCH AS USED OILS, SOLVENTS, AND PAINTS AND CHEMICALS SUCH AS ACIDS, PESTICIDES

PROPERLY DISPOSED OF ACCORDING TO LOCAL AND STATE LAWS.

ADDITIVES, AND CURING COMPOUNDS ARE NOT DISPOSED OF IN DUMPSTERS DESIGNATED FOR CONSTRUCTION DEBRIS BUT ARE

DO NOT WASH OUT DUMPSTERS ON THE CONSTRUCTION SITE. DUMPSTER CLEANING SHOULD BE THE RESPONSIBILITY OF THE ARRANGE FOR REGULAR WASTE COLLECTION BEFORE DUMPSTERS OVERFLOW. DO NOT PILE MATERIAL ABOVE THE DUMPSTER 4. INSTALL SILT FENCING, SEDIMENT BASINS OR TRAPS AROUND THE PERIMETER OF THE SITE AND DIVERSIONS ABOVE THE SITE TO DIRECT WATER FROM UNDISTURBED AREAS AWAY FROM THE SEDIMENT TRAPS WHILE CONVEYING SEDIMENT-LADEN RUNOFF FROM DISTURBED AREAS TO THE TRAPS.

5. INSTALL AN ADEQUATE AND STABLE CONSTRUCTION ENTRANCE / EXIT DRIVE FROM THE CONSTRUCTION SITE TO KEEP MUD AND SEDIMENT OFF PUBLIC ROADS. DUST SHALL BE KEPT TO A MINIMUM BY UTILIZING SPRINKLING, CALCIUM CHLORIDE, VEGETATIVE COVER. SPRAY ON ADHESIVES OR OTHER APPROVED METHODS.

6. IDENTIFY CONSTRUCTION STAGING AREA, MATERIAL STORAGE AREA, CONCRETE AND MASONRY WASHOUT AREAS, DUMPSTER AREA. EACH AREA SHALL PROPERLY PROTECTED AND DELINEATED PRIOR TO CONSTRUCTION.

7. ONCE EROSION AND SEDIMENT CONTROL MEASURES ARE IN PLACE, BEGIN LAND CLEARING FOLLOWED IMMEDIATELY BY GRADING. DO NOT LEAVE LARGE AREAS UNPROTECTED FOR MORE THAN 7 DAYS.

8. START MASS EARTHWORK INCLUDING TOPSOIL STRIPING AND STOCKPILE. 9. AS GRADING PROGRESSES, INSTALL ADDITIONAL TRAPS, SILT FENCES, SLOPE DRAINS, TEMPORARY DIVERSIONS, AND OTHER RUNOFF CONTROL MEASURES AT APPROPRIATE LOCATIONS TO KEEP SEDIMENT CONTAINED ON-SITE.

10. INSTALL THE MAIN RUNOFF CONVEYANCE SYSTEM WITH INLET AND OUTLET PROTECTION DEVICES TO CONVEY STORM RUNOFF THROUGH THE SITE WITHOUT CREATING GULLIES AND TO PREVENT DAMAGE TO OPEN CHANNELS. SIDES OF SWALES, MOUNDS AND PONDS TO BE SEEDED AND MULCHED UPON COMPLETION. TEMPORARY SEEDING SHALL BE REQUIRED FOR ALL SWALES AND DISTURBED AREAS THAT CAN NOT BE FINAL SEEDED WITHIN A TIME PERIOD THAT WILL PREVENT SLOPE EROSION. FOR TEMPORARY SEEDING, THE CONTRACTOR SHALL UTILIZE A FAST GROWING SEED OF EITHER OATS, ANNUAL RYE GRASS, WHEAT OR RYE DEPENDING ON TIME OF YEAR. DISTURBED AREAS SHALL BE KEPT TO A MINIMUM AT ALL TIMES.

11. AS SOON AS THE STORM DRAIN SYSTEM IS FUNCTIONAL, INSTALL DRAIN INLET PROTECTIONS, WHICH TRAP SEDIMENT ON-SITE IN SHALLOW POOLS WHILE ALLOWING HIGH WATER FLOWS TO ENTER THE SYSTEM.

12. INSTALL SANITARY SEWERS AND OTHER UTILITIES.

CONSTRUCTION/STORMWATER POLLUTION PREVENTION PLAN

MAKE SURE THAT CONSTRUCTION WASTE IS COLLECTED, REMOVED, AND DISPOSED OF IN A TIMELY MANOR BY AN AUTHORIZED

INSPECT AND VERIFY THAT PRACTICES ARE IN PLACE PRIOR TO THE START OF EACH ASSOCIATED ACTIVITY. WHILE ACTIVITIES ARE IN

VEHICLES AND EQUIPMENT SHOULD BE INSPECTED AT THE START OF EACH DAY. IMMEDIATELY REPAIR ALL LEAKS. IT IS PREFERRED

THAT THE PROBLEM VEHICLE OR EQUIPMENT BE REMOVED FROM THE PROJECT SITE FOR REPAIRS TO MINIMIZE ONSITE IMPACTS.

INSPECT EQUIPMENT FOR DAMAGED HOSES AND LEAKY GASKETS DAILY. IMMEDIATELY REPAIR OR REPLACE FAULTY COMPONENTS.

VEHICLE AND EQUIPMENT FUELING PROCEDURES AND PRACTICES ARE DESIGNED TO PREVENT FUEL SPILLS OR LEAKS AND REDUCE

OR ELIMINATE CONTAMINATION OF SOILS AND STORMWATER. THIS CAN BE ACCOMPLISHED BY USING OFFSITE FACILITIES, FUELING

ONSITE VEHICLE AND EQUIPMENT FUELING SHOULD ONLY BE DONE WHEN IT IS NOT FEASIBLE TO SEND VEHICLES AND EQUIPMENT

OFFSITE FOR FUELING. VEHICLES AND EQUIPMENT ENTERING AND EXITING THE SITE SHOULD ALWAYS BE DONE AT THE STABILIZED

THE USE OF OFFSITE FUELING STATIONS IS ENCOURAGED WHENEVER FEASIBLE. THESE FACILITIES ARE EQUIPPED TO HANDLE

FUELING AND SPILLS PROPERLY. PERFORMING THIS WORK OFFSITE MAY BE MORE ECONOMICAL BY ELIMINATING THE NEED FOR A

ABSORBENT SPILL CLEANUP MATERIALS AND SPILL KITS SHALL BE AVAILABLE IN ONSITE FUELING AREAS AND ON MOBILE FUELING

ABSORBENT MATERIALS FOR SMALL SPILLS SHALL BE USED. DO NOT WASH OR BURY THE SPILL MATERIAL AS THIS ONLY RESULTS IN

ADDITIONAL REMEDIATION REQUIREMENTS. REMOVE THE CONTAMINATED ABSORBENT MATERIALS PROMPTLY AND DISPOSE OF

EQUIPMENT TO DESIGNATED ONSITE FUELING AREAS WHERE ADEQUATE PREVENTION AND SPILL CONTAINMENT MATERIALS ARE

DEDICATED FUELING AREAS SHOULD BE PROTECTED FROM STORMWATER INFILTRATION AND RUNOFF, AND SHOULD BE LOCATED

NOZZLES USED IN VEHICLE AND EQUIPMENT FUELING SHOULD BE EQUIPPED WITH AN AUTOMATIC SHUTOFF TO CONTROL SPILLS

FEDERAL, SLATE, AND LOCAL REQUIREMENTS SHOULD BE OBSERVED FOR ANY TEMPORARY ABOVE GROUND STORAGE TANKS.

TO PREVENT CLOGGING OF THE STORM DRAINAGE SYSTEM LITTER AND DEBRIS SHOULD BE REMOVED FROM DRAINAGE GRATES,

TRASH RECEPTACLES SHOULD BE PROVIDED IN THE CONSTRUCTION STAGING AREAS, FIELD TRAILER AREAS, AND AREAS UTILIZED

DOMESTIC TRASH FROM WORK AREAS WITHIN THE CONSTRUCTION LIMITS OF THE SITE SHOULD BE COLLECTED AND PLACED IN

SOURCE. COLLECTED LITTER AND DEBRIS SHOULD NOT BE PLACED IN OR NEXT TO THE STORMWATER DRAINAGE SYSTEMS OR

DUMPSTERS OF SUFFICIENT SIZE AND QUANTITY SHOULD BE PROVIDED TO CONTAIN THE SOLID WASTE GENERATED BY THE

WATERTIGHT DUMPSTERS WEEKLY AT A MINIMUM. DOMESTIC TRASH SHOULD BE COLLECTED FROM THE SITE REGARDLESS OF THE

DUMPSTERS SHOULD BE REMOVED FROM THE PROJECT SITE ONCE THEY BECOME FULL AND THE CONTENTS DISPOSED OF BY THE

CONSTRUCTION DEBRIS AND WASTE SHOULD BE REMOVED FROM THE SITE WEEKLY OR MORE FREQUENTLY AS REQUIRED. THE

CONSTRUCTION MATERIAL VISIBLE TO THE PUBLIC SHOULD BE STORED OR STACKED IN AN ORDERLY MANNER AWAY FROM THE

STORMWATER RUNOFF SHOULD BE DIVERTED FROM STORED SOLID WASTE THROUGH THE USE OF BERMS. DIKES, OR OTHER

INSPECT AND VERIFY THAT ACTIVITY-BASED PRACTICES ARE IN PLACE PRIOR TO THE START OF CONSTRUCTION IN THAT AREA.

INSPECT CONSTRUCTION WASTE COLLECTION AREA REGULARLY TO INSURE ALL WASTE MATERIALS ARE BEING DISPOSED OF

THE FOLLOWING STEPS WILL HELP REDUCE STORMWATER POLLUTION FROM CONCRETE AND MASONRY WASTES: DISCUSS THE

CONCRETE MANAGEMENT TECHNIQUES DESCRIBED, SUCH AS HANDLING OF CONCRETE WASTE AND WASHOUT AREAS WITH THE

STORE DRY AND LIQUID MATERIALS IN A COVERED AREA AWAY FROM DRAINAGE AREAS. PREVENT MASONRY SAND STOCKPILE

DO NOT WASH OUT CONCRETE TRUCKS OR MORTAR MIXERS INTO STORM DRAINS, OPEN DITCHES, STREETS, OR WATERWAYS.

INCORPORATE REQUIREMENTS FOR CONCRETE AND MASONRY WASTE MANAGEMENT INTO MATERIAL SUPPLIER AND

READY-MIX CONCRETE SUPPLIER BEFORE ANY DELIVERIES ARE MADE. DISCUSS MASONRY WASTE MANAGEMENT TECHNIQUES WITH

TEMPORARY DIVERSION STRUCTURES OR THROUGH THE USE OF MEASURES TO ELEVATE THE WASTE COLLECTION DUMPSTER.

SOLID WASTE STORAGE AREAS SHOULD NOT BE LOCATED IN AREAS PRONE TO FLOODING OR PONDING AND SHOULD BE LOCATED

CONTRACTOR SHOULD USE THEIR BEST JUDGMENT IN ANTICIPATING WHEN A DUMPSTER WILL BE FULL AND SCHEDULE A PICKUP IN ADVANCE OF THE DUMPSTER BEING FULL TO PREVENT OVER TOPPING OF THE DUMPSTER OR PLACEMENT OF EXCESS MATERIAL ON

AT LEAST 50 FT AWAY FROM DOWNSTREAM DRAINAGE FACILITIES, WATERWAYS, AND FLOOD PLAINS. FUELING MUST BE PERFORMED

AVOID FUELING OF CONSTRUCTION EQUIPMENT AT VARIOUS LOCATIONS AROUND THE SITE. TRANSPORT THE VEHICLE OR

EMPLOYEES AND SUBCONTRACTORS SHOULD BE TRAINED IN PROPER FUELING AND CLEANUP PROCEDURES.

PROTECT FUELING AREAS WITH BERMS OR DIKES TO PREVENT INFILTRATION, RUNOFF, AND TO CONTAIN SPILLS.

AND DRIPS. FUELING OPERATIONS SHOULD BE MONITORED BY THE FUELING OPERATOR AT ALL TIMES.

ABSORBENT PADS OR DRIP PANS SHOULD BE USED DURING VEHICLE AND EQUIPMENT FUELING UNLESS THE FUELING IS

IN DESIGNATED ONSITE AREAS ONLY, ENCLOSING OR COVERING STORED MATERIAL, UTILIZING SPILL CONTROLS, AND TRAINING

KEEP ADEQUATE SUPPLIES OF SPILL CLEANUP MATERIALS ONSITE. INSURE THAT ALL EMPLOYEES ARE AWARE OF MATERIAL

MAINTAIN FLUID WASTE CONTAINERS IN LEAK PROOF CONDITION. REMOVE AND REPLACE ANY CONTAINERS FOUND TO BE

IMMEDIATELY CLEAN UP DUMPSTER SHOULD A SPILL OCCUR.

PROGRESS, INSPECT EACH PRACTICE WEEKLY TO VERIFY CONTINUED IMPLEMENTATION.

STORAGE LOCATIONS AND ACCESS CAN BE OBTAINED TO THE MATERIALS.

DISPOSAL CONTRACTOR.

DESCRIPTION AND PURPOSE

CONSTRUCTION ENTRANCE/EXIT.

<u>LIMITATION</u>

IN A LEVEL AREA.

EMPLOYEES AND SUBCONTRACTORS IN PROPER FUELING

SEPARATE DESIGNATED FUELING AREA AND CONTAINMENT MEASURES ONSITE.

PERFORMED OVER AN IMPERVIOUS SURFACE WITHIN A DEDICATED FUELING AREA.

TRUCKS. PROPERLY DISPOSE OF USED MATERIALS AFTER USE.

COLLECTION, STORAGE, AND DISPOSAL OF MATERIALS

AT LEAST 50 FT FROM STORM DRAINAGE SYSTEMS AND WATERWAYS.

INSPECT EACH PRACTICE WEEKLY TO VERIFY IMPLEMENTATION.

CONCRETE AND MASONRY WASHOUT AREAS

SUBCONTRACTOR AGREEMENTS.

ARRANGE FOR REGULAR WASTE COLLECTION WITH A TRASH HAULING CONTRACTOR.

THE MASONRY CONTRACTORS FOR THE CONTROL OF CEMENT MIXER WASHOUT AREAS.

FROM WASHING INTO STREETS, STORM DRAINAGE SYSTEMS, AND WATERWAYS.

PERFORM WASHOUT OF CONCRETE TRUCKS OFFSITE OR IN DESIGNATED AREAS ONLY

AVOID MIXING EXCESS AMOUNTS OF FRESH CONCRETE OR MORTAR.

LITTERING ON THE PROJECT SITE IS PROHIBITED.

TRASH BACKS AND DITCHES DAILY

FOR LUNCH AND BREAK PERIODS.

PROPERLY ACCORDING TO LOCAL AND STATE LAWS.

DISCOURAGE EMPLOYEES FROM "TOPPING-OFF" FUEL TANKS TO PREVENT UNNECESSARY SPILLS.

INSPECTION AND MAINTENANCE

13. COMPLETE PARKING LOT AND ROADWAY GRADING FOLLOWED BY AGGREGATE LAYERS AND CURBING.

14. IMMEDIATELY AFTER GRADING, APPLY SURFACE STABILIZATION PRACTICES ON ALL GRADED AREAS, USING PERMANENT MEASURES IN ACCORDANCE WITH THE EROSION CONTROL PLAN. HOWEVER, IF WEATHER DELAYS PERMANENT STABILIZATION, TEMPORARY SEEDING AND/OR MULCHING MAY BE NECESSARY AS A STOP-QAP MEASURE. ALSO STABILIZE (USING TEMPORARY SEEDING/MULCHING OR OTHER SUITABLE MEANS) ANY DISTURBED AREA WHERE ACTIVE CONSTRUCTION WILL NOT TAKE PLACE FOR 30 WORKING DAYS.

15. AFTER CONSTRUCTION AND FINAL GRADING, LANDSCAPE AND PERMANENTLY STABILIZE ALL DISTURBED SITES, INCLUDING BORROW AND DISPOSAL AREAS. ALSO REMOVE TEMPORARY RUNOFF CONTROL STRUCTURES AND ANY UNSTABLE SEDIMENT AROUND THEM, AND VEGETATE THOSE AREAS.

16. MAINTAIN ALL EROSION AND SEDIMENT CONTROL PRACTICES UNTIL ALL DISTURBED AREAS ARE PERMANENTLY STABILIZED.

IMPLEMENTATION AND MAINTENANCE PROCEDURE PART 1 - EXECUTION

C TOPSOIL MUST BE PRESENT TO ENSURE GROWTH

1.1 AT BEGINNING OF SITE WORK A. PRIOR TO GENERAL STRIPPING TOPSOIL AND EXCAVATING, INSTALL SILT FENCE WHERE INDICATED. B. CONSTRUCT EROSION CONTROL DEVICES WHERE INDICATED ON DRAWINGS DURING ROUGH GRADING AS GRADING PROGRESSES.

D. TEMPORARILY SEED BASIN SLOPES, TOPSOIL STOCKPILES, AND AREAS DISTURBED BY CONSTRUCTION. 1. SEEDING TIMES AND RATES: A. MAY 15 TO SEPTEMBER 15; ANNUAL RYE GRASS AT 40 LBS./ACRE.

B. AUGUST 15 TO NOVEMBER 15; RYE (GRAIN) OR WHEAT AT 2 BUSHELS/ACRE. C. MARCH 1 TO MAY 15: OATS AT 3 BUSHELS/ACRE.

2. FERTILIZER: COMMERCIAL ANALYSIS 12/12/12 APPLIED AT A RATE OF 600#/ACRE A. APPLY LIME TO RAISE PH TO THE LEVEL NEEDED FOR SPECIES BEING SEEDED B. WORK FERTILIZER AND LIME INTO THE SOIL TO A DEPTH OF 2-3 IN. 3. ALL HYDROSEEDING SHALL BE IN ACCORDANCE WITH THE PRECEDING REQUIREMENTS. 4. RESEED AS REQUIRED UNTIL GOOD STAND OF GRASS IS ACHIEVED.

1.2 DURING CONSTRUCTION PERIOD

A. MAINTAIN BASINS, DIKES, TRAPS, STONE FILTERS, SILT FENCES, ETC. B. INSPECT REGULARLY ESPECIALLY AFTER RAINSTORMS.

C. REPAIR OR REPLACE DAMAGED OR MISSING ITEMS D. AFTER ROUGH GRADING, SOW TEMPORARY GRASS COVER OVER EXPOSED EARTH AREAS NOT DRAINING INTO A PROTECTED DEVICE E. CONSTRUCT INLETS AS SOON AS POSSIBLE. . INSTALL SILT FENCE OR STRAW BALE BARRIERS OR 1/2" SLOTTED BARREL AT EACH NEW INLET, AS NECESSARY TO CONTROL

A. PROVIDE NECESSARY SWALES AND DIKES TO DIRECT WATER TOWARDS A PROTECTED DEVICE. B. DO NOT DISTURB EXISTING VEGETATION (GRASS AND TREES) OUTSIDE LIMITS OF CONSTRUCTION. C. REMOVE SEDIMENT FROM BEHIND SILT FENCES WHEN SEDIMENT REACHES ONE-FOURTH FABRIC HEIGHT. D. TOPSOIL AND FINE GRADE SLOPES AND SWALES, ETC. SEED AND MULCH AS SOON AS POSSIBLE IN AREAS AS THEY BECOME

1.3 NEAR COMPLETION OF CONSTRUCTION A. ELIMINATE EROSION CONTROL DEVICES EXCEPT INLET PROTECTION.

B. GRADE TO FINISHED OR EXISTING GRADES. C. FINE GRADE REMAINING EARTH AREAS DISTURBED BY CONSTRUCTION ACTIVITIES.

D. TOPSOIL MUST BE A MINIMUM OF 4" TO ENSURE GROWTH. E. PERMANENT SEED: MARCH 1 TO MAY 15 AND AUGUST 10 TO OCTOBER 15. (DATES MAY VARY AT DISCRETION OF LANDSCAPE ARCHITECT DEPENDING ON WEATHER CONDITIONS.)

F. SOIL PREPARATION. 1. SOIL SURFACE MUST BE FREE OF ROCKS, DEBRIS, AND OTHER FOREIGN MATERIALS. 2. SOILS MUST HAVE PROPER MOISTURE CONTROL TO ASSURE PROPER GERMINATION AND GROWTH.

3. SOIL SURFACE MUST BE COMPACTED TO A DEPTH OF AT LEAST 6 INCHES. 4. SOIL PREPARATION DEPENDS ON SOIL CONDITIONS AT TIME OF SEEDING. VARIOUS TOOLS MAY BE NECESSARY TO ACHIEVE SURFACE 5. SURFACE OF SOIL SHALL BE LEVEL AND LARGE VOIDS ELIMINATED TO APPLYING FERTILIZER, LIME AND SEED.

G. APPLYING FERTILIZER, LIME AND SEED. 1. WORK FERTILIZER AND LIME INTO SOIL TO A DEPTH OF 2 - 3 INCHES. 2. APPLY SEED CAREFULLY AND COVER SEED WITH 1/4 INCH SOIL, APPLY SEED CAREFULLY AND AVOID COVERING SEED MORE THAN

3. APPLY MULCH AT RATE OF 2 TONS PER ACRE FOLLOWING SEEDING. 4. WATER AS NECESSARY TO ENSURE ADEQUATE MOISTURE FOR GERMINATION AND GROWTH. 5. RESEED AS NECESSARY UNTIL A GOOD STAND OF GRASS IS ACHIEVED.

1. FERTILIZER: COMMERCIAL ANALYSIS 12/12/12 OR EQUIVALENT APPLIED AT A RATE OF 600 POUNDS PER ACRE. 2. LIME: APPLY AGRICULTURAL LIME TO RAISE PH TO THE LEVEL NEEDED FOR SPECIES BEING SEEDED. SOIL TEST MAY BE REQUIRED TO DETERMINE RATE. 3. SWALES/SLOPES: BLENDED MIXTURE OF SEED SHALL BE APPLIED AT THE RATE OF 110 POUNDS PER ACRE. THE MIX SHALL

CONSIST OF 40 POUNDS MUSTANG TURF-TYPE TALL FESCUE, 30 POUNDS BANFF OR WABASH KENTUCKY BLUEGRASS.

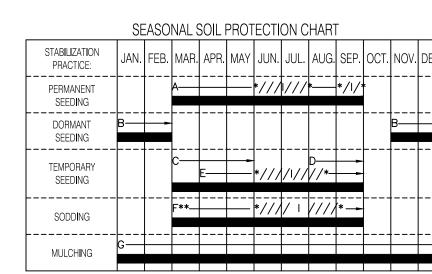
4. GRADED AREAS ADJACENT TO PAVEMENT: BLENDED MIXTURE OF SEED SHALL BE APPLIED AT A RATE OF 90 POUNDS PER ACRE. THE MIXTURE SHALL CONSIST OF 35 POUNDS MUSTANG TURF-TYPE TALL FESCUE, 30 POUNDS FIESTA PERENNIAL. 5. APPLY MULCH STRAW AT RATE OF 2 TONS PER ACRES IMMEDIATELY AFTER SEEDING. THE STRAW MUST BE EVENLY DISTRIBUTED LOOSELY OVER THE ENTIRE AREA. "SLABS" OF STRAW MUST BE REDISTRIBUTED OR IT WILL KILL YOUNG SEEDLINGS. ON LARGE OPEN AREAS THE MULCH MUST BE SECURED TO SOIL BY A TACK OR MECHANICAL MEANS TO PREVENT WIND ACTION ON MULCH.

PART 2 - COMPLETION 2.1 MAINTENANCE

A. RESEED ALL AREAS THAT DON'T TAKE. B. APPLY A MAINTENANCE FERTILIZER (*) WITHIN 6 MONTHS OF ACQUIRING A GOOD STAND.

C. AVOID TRAFFIC ON AREA UNTIL AREA IS WELL PROTECTED AND STABLE. D. WATER AS NECESSARY TO ENSURE ADEQUATE GROWTH AND DEVELOPMENT

*MAINTENANCE FERTILIZER - APPLY 200 LBS OF 12-12-12 OR EQUIVALENT.



A = KENTLICKY BLUEGRASS, 40 lbs/ACRE: CREEPING RED FESCUE 40 lbs/ACRE: PLUS 2 TONS STRAW MULCH/ACRE, OR ADD ANNUAL RYE GRASS 20 lbs/ACRE.

B = KENTUCKY BLUEGRASS 60 lbs/ACRE; CREEPING RED FESCUE 60 lbs/ACRE; PLUS 2 TONS STRAW

MULCH/ACRE, OR ADD ANNUAL RYE GRASS 30 lbs/ACRE. C = SPRING OATS 3 BUSHEL/ACRE.

PROVIDED BY CONTRACTOR.

F = SOD

D = WHEAT OR RYE 2 BUSHEL/ACRE E = ANNUAL RYE GRASS 40 lbs/ACRE. (1 lb/1000 sq. ft.)

G = STRAW MULCH 2 TONS/ACRE */I/* = IRRIGATION NEEDED DURING JUNE, JULY, AND/OR SEPTEMBER.

** = IRRIGATION NEEDED FOR 2 TO 3 WEEKS AFTER APPLYING SOD.

TENTATIVE SCHEDULE LAND D**i**STURBING ACT**i**VITIES START DATE DURATION PRE-CONSTRUCTION ACTIONS CONSTRUCTION ACCESS **-**-17 DEMOLITION ** ** 17 CLEARING AND GRUBBING **-**-17 STRIPPING TOPSOIL **-**-17 ROUGH GRADING SURFACE DRAINAGE EXCAVATION **-**-17 UTILITY EXCAVATION STORM SEWER **-**-17 **-**-17 FINISH GRADING TOPSOIL REPLACEMENT **-**-17

LANDSCAPING *NOTE TO CONTRACTOR - SCHEDULE PROVIDED PER AGENCY REQUIREMENTS MORE DETAILED SCHEDULE TO BE

•••••

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SIDE OR ALLOW MATERIAL TO DRAPE OVER THE SIDES.

-LOCATE WASHOUT AREA AT LEAST 50 FEET FROM STORM DRAINS, OPEN DITCHES, OR WATERWAYS. -DO NOT ALLOW RUNOFF TO LEAVE THE DESIGNATED AREA BY CONSTRUCTING A TEMPORARY PIT OR BERMED AREA LARGE ENOUGH FOR LIQUID AND SOLID WASTE.

CONTROL PRACTICES ARE INSTALLED ACCORDING TO THIS SEQUENCE SCHEDULE.

PERFORM MORTAR MIXER WASHOUT IN ONE DESIGNATED AREA FOR THE DURATION OF THE PROJECT.

DO NOT ALLOW EXCESS CONCRETE OR MORTAR TO BE DUMPED ONSITE, EXCEPT IN DESIGNATED AREAS

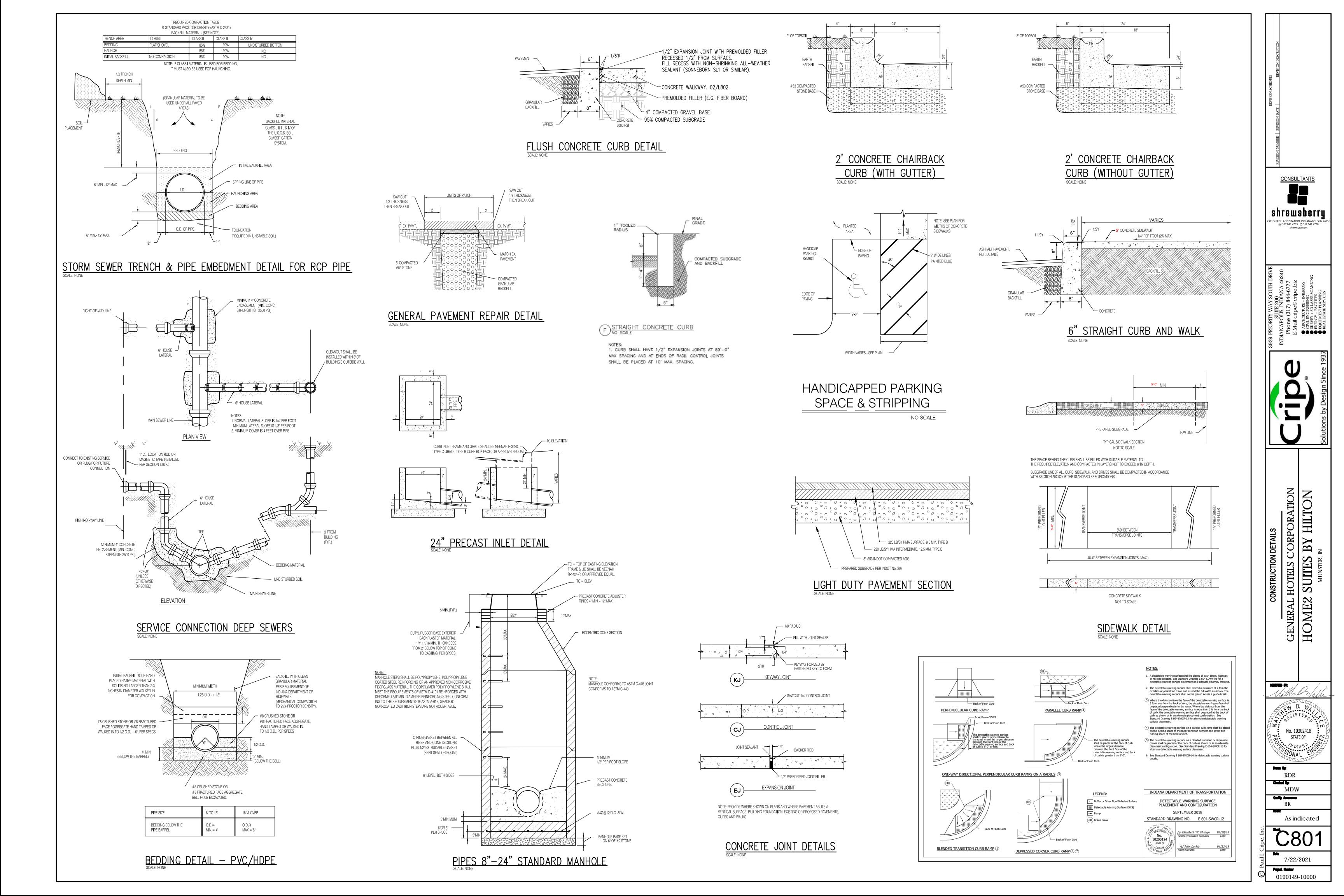
-WASH OUT WASTES INTO THE TEMPORARY PIT WHERE THE CONCRETE CAN SET, BE BROKEN UP, AND BE DISPOSED OF PROPERLY. -AVOID CREATING UNNECESSARY RUNOFF BY DRAINING WATER FROM THE WASHOUT AREA INTO A BERMED, LEVEL AREA WHEN WASHING CONCRETE TO REMOVE FINE PARTICLES AND EXPOSE THE AGGREGATE.

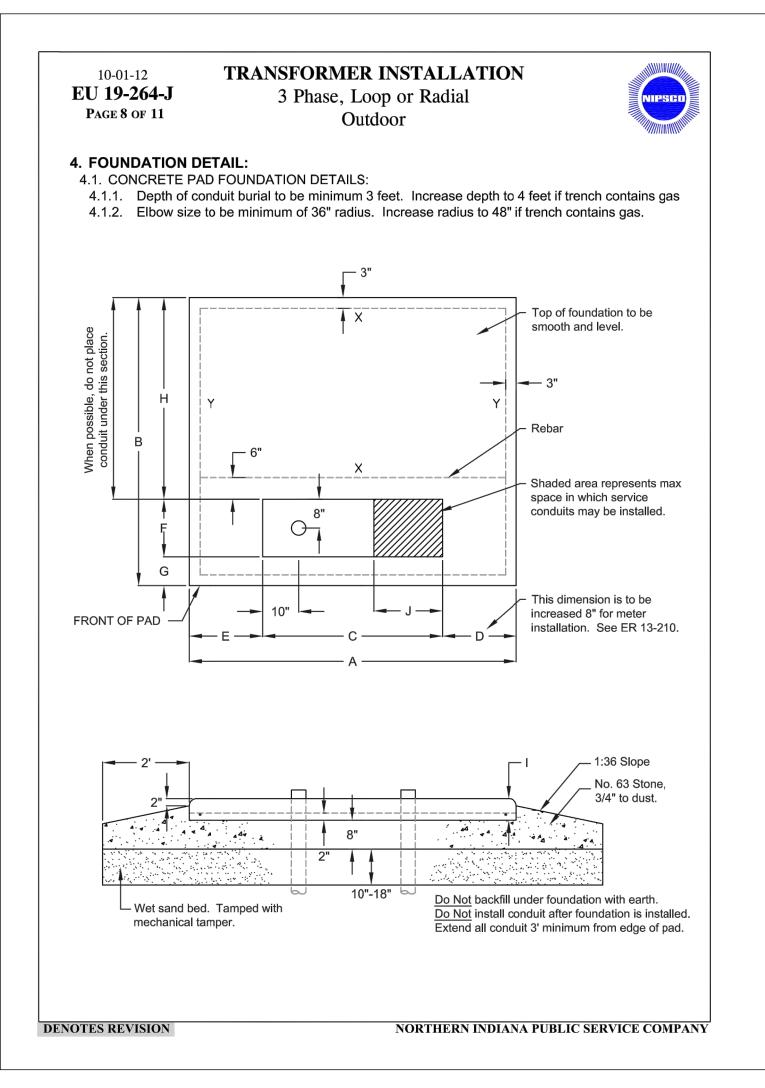
-DO NOT WASH SWEEPINGS FROM EXPOSED AGGREGATE CONCRETE INTO THE STREET OR STORM DRAIN SYSTEM. COLLECT AND RETURN SWEEPINGS TO AGGREGATE BASE STOCKPILE OR DISPOSE OF PROPERLY. EROSION AND SEDIMENT CONTROL SEQUENCE

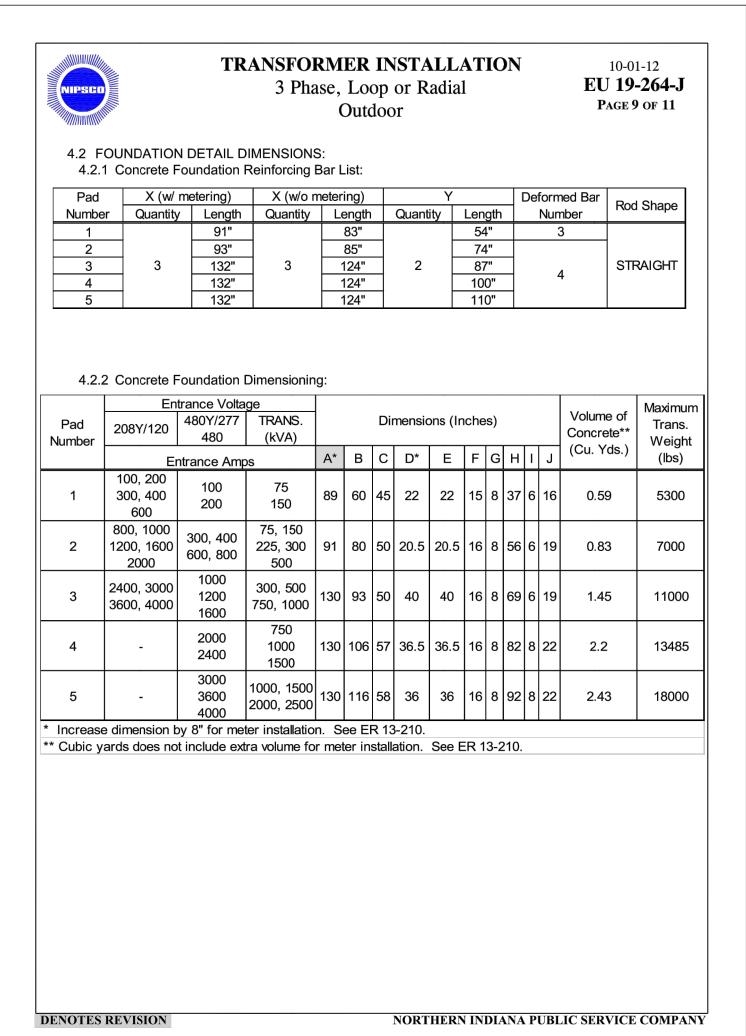
LOCATIONS. (1-800-382-5544). IN ADDITION, A PRE-CONSTRUCTION CONFERENCE MUST BE HELD AT LEAST 48 HOURS BEFORE ANY ADDITIONAL LAND DISTURBANCE TAKES PLACE 3. BEFORE OPENING UP THE SITE, FIRST EVALUATE, MARK AND PROTECT IMPORTANT TREES AND ASSOCIATED ROOT ZONES, UNIQUE AREAS TO BE PRESERVED (I.E. WETLANDS), OR EXISTING VEGETATION SUITABLE FOR USE AS FILTER STRIPS (ESPECIALLY IN PERIMETER AREAS).

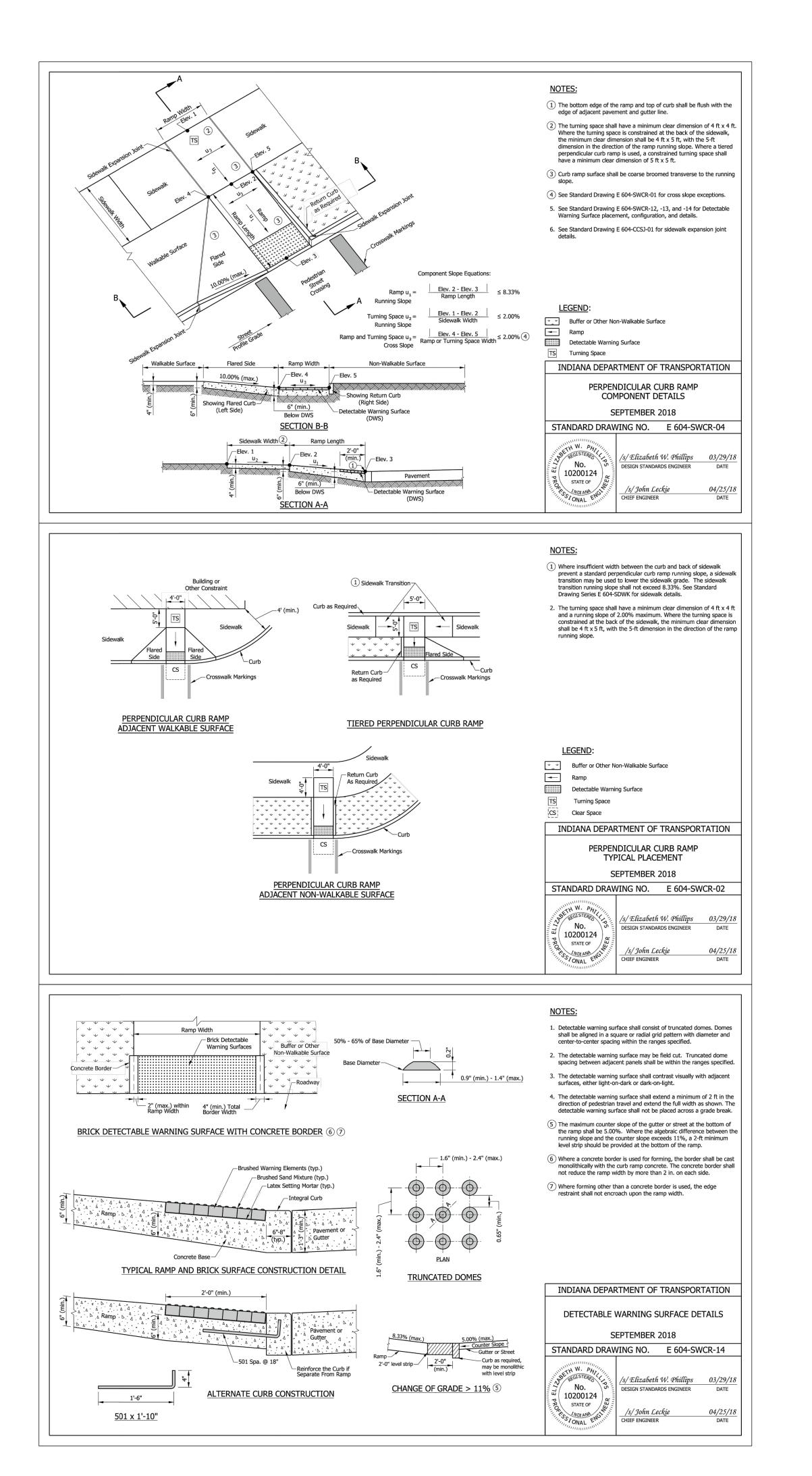
1. ASSIGN AN ON-SITE PERSON WITH THE DAILY RESPONSIBILITY AND AUTHORITY TO ENSURE THAT EROSION/SEDIMENT

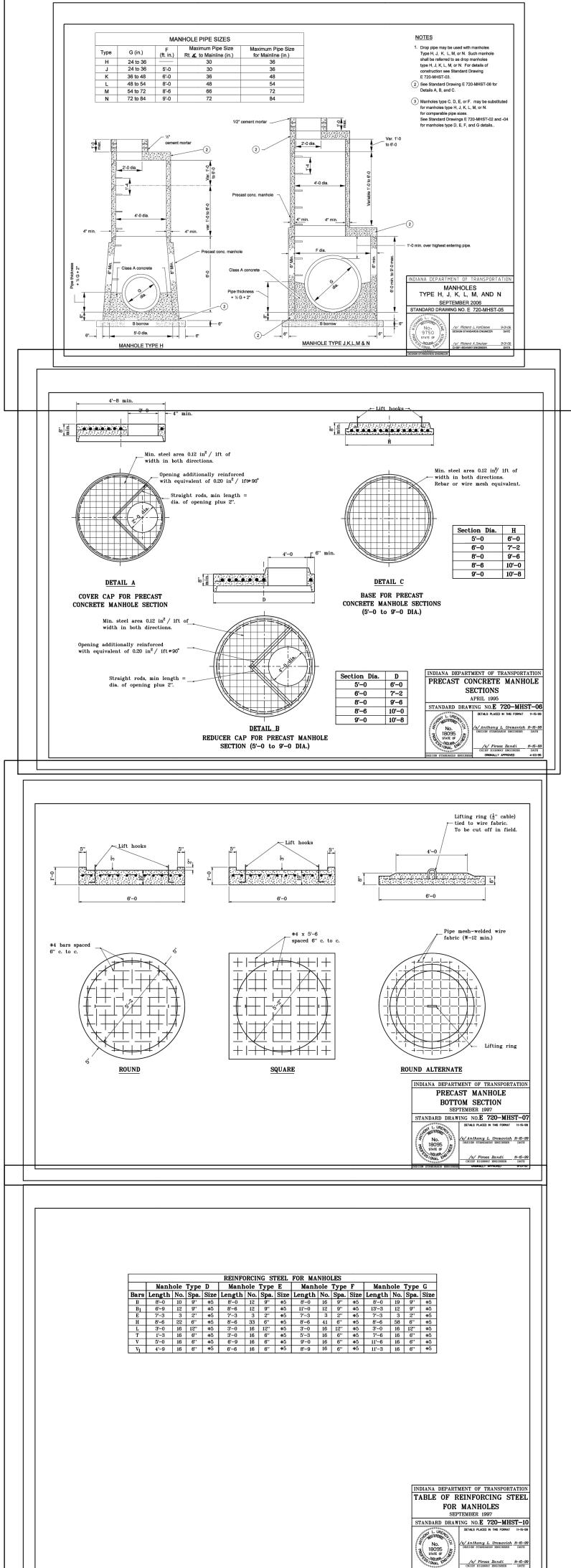
2. CONTACT INDIANA UNDERGROUND PLANNED PROTECTION SYSTEMS, INC. ("HOLEY MOLEY") FOR UNDERGROUND UTILITY

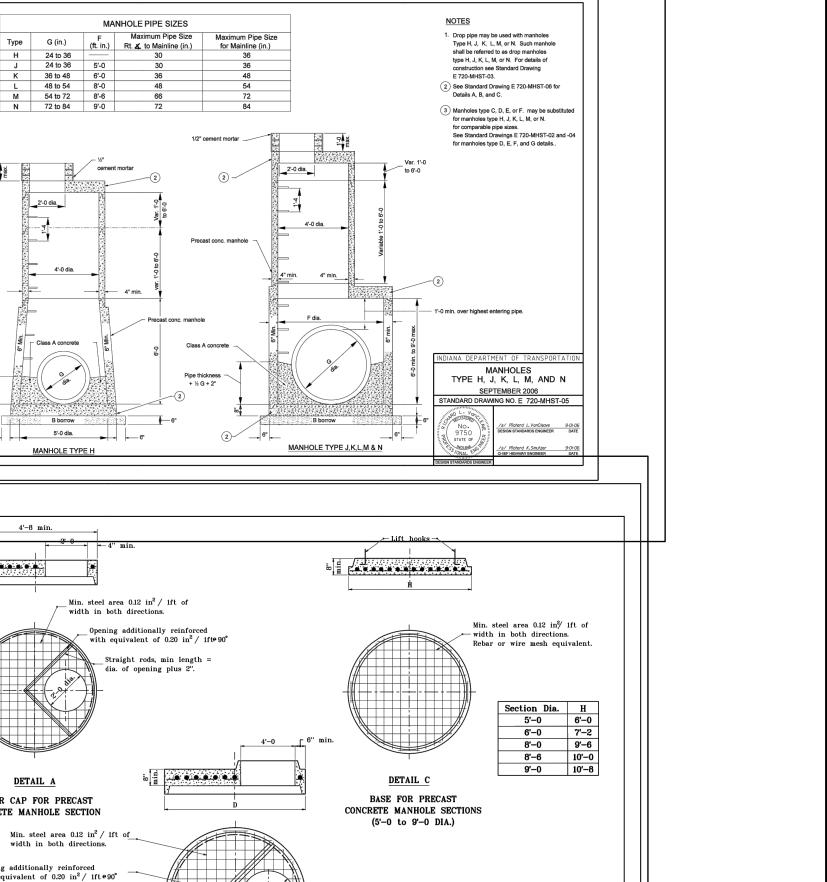














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RDR Checked By: MDW

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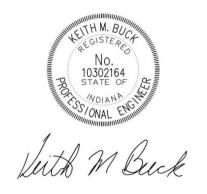
Project Humber

7/22/2021 0190149-10000

Site Development Hydraulic Narrative Project Number 19-0161

Home2Suites

9120 Calumet Ave Munster, Indiana 46321 Lake County, Indiana



Shrewsberry Project # 19-0161

June 29, 2020



TABLE OF CONTENTS

Project Narrative	. 3
1.1 Project Narrative	.3
1.2 Floodzone Designation	.4
Hydrologic Analysis	4
2.1 Stormwater Design	.4
2.2 Rainfall and Time of Concentration	. 5
2.3 Existing Conditions	.5
2.4 Contributing Offsite Drainage Basins:	. 5
2.5 Existing Conditions Calculations:	.5
2.6 Proposed Conditions Calculations:	.6
2.7 Water Quality Calculations:	.7
•	1.1 Project Narrative

APPENDICES

Appendix A: NRCS Soils Report

Appendix B: Existing Conditions

Appendix C: Post-Developed Conditions

Appendix D: Pipe & Inlet Sizing Calculations

Appendix E: Water Quality Calculations

Appendix F: Lake Business Center – Hotel Site – Simborg Development, Inc - 2012 Final Engineering Improvement Plans



1. Project Narrative

1.1 Project Narrative

Simborg Development, Inc. is proposing to develop approximately 1.5 acres ± of primarily vacant commercial zoned land to a 107 room, four story hotel with parking, hearin referred to as Home2Suites. The site is located in the northwest corner of Lake Business Center Planned Unit Development, and will occupy approximately 63,846 square feet of ground floor space with associated parking lots and spaces, curb cuts and drive lanes. There will be two separate entrance drives, one shared drive between Home2Suites and an existing Homewood Suites east of the subject tract, and one new private drive located at the west end of the onsite parking lot on the north side of Calument Ave. The onsite parking lot will accommodate 21 total spaces, including two ADA spaces. Additional parking spaces will be provided through shared parking lot agreements with Homewood Suites to the east and a parking lot located south of the proposed Home2Suites site.

The Home2Suites project is part of a larger planned unit development. The Lake Business Center (LBC) encompasses approximately 60 acres of mixed commercial properties. All other properties in the LBC development have been constructed at this time. The Home2Suites storm network will be directly connected to a previously constructed and shared underground detention system, located due west of the existing Homewood Suites hotel, on the subject tract. The Home2Suites storm network will utilize a previously constructed mechanical bmp and the shared underground detention system to reduce peak flows.

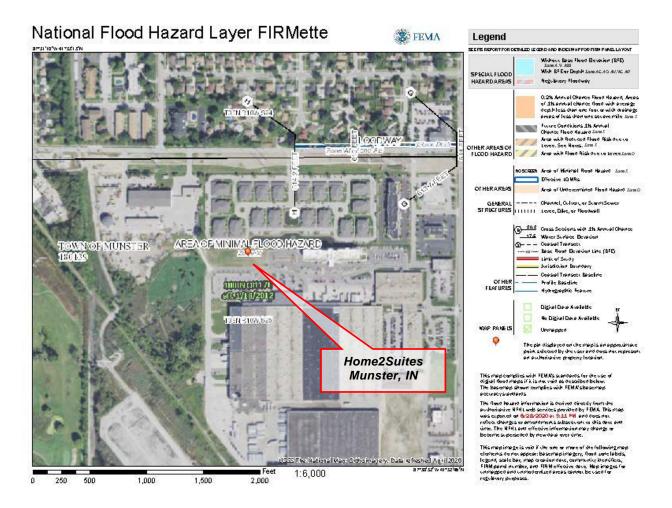
The site is located in Section 25, Township 36 North, Range 10 West in Munster, IN, Lake County. The approximate coordinates of the center of the property is Latitude 41° 32' 59" North and Longitude 87° 30' 53" West. The property is zoned Commercial, according to the information found on Lake County GIS.





1.2 Floodzone Designation

Based upon a scaled interpretation of the Flood Insurance Map No. 18089C0017E for Lake County, Indiana, dated January 18, 2012, portions of the subject tract (primarily developed) *IS* located within Zone X. Zone X refers to minimal risk areas between the 1-percent and 0.2 percent-annual-chance floodplains. The subject tract *IS NOT* located within Zone A (Special Flood Hazard Area without Base Flood Elevation).



2. Hydrologic Analysis

2.1 Stormwater Design

The proposed Home2Suites site and parking area are located west of the existing Homewood Suites hotel in the Lake Business Center development.

Said development will consist of one existing underground detention system with a flow restricting structure that will store and release the site's stormwater runoff per the requirements set forth by the Town of Munster's and Lake County, Indiana requirements. One (1) existing offline mechanical BMP will be used to treat the disturbed limits of the proposed site and meet the City's SQU sizing requirements. The site



will discharge directly to an existing 48" storm sewer that will be relocated as part of this project. Refer to the Existing Conditions and Post Developed Conditions portions of this Narrative and Appendices for additional information.

2.2 Rainfall and Time of Concentration

The existing and proposed site runoff was calculated using the Rational Method. The time of concentration (Tc) for existing and proposed drainage basins were calculated using the TR-55 methodology as specified in the stormwater technical standards.

2.3 Existing Conditions

The Home2Suites site encompasses approximately 1.5 acres of primarily vacant commercial area, with residential property to the north, Homewood Suites hotel to the east, commercial area to the south, and undeveloped area to the west. The undeveloped area to the west was studied via the Lake Business Center Restoration Plan, prepared in 2017. No portion of the proposed site sits within 130 feet of delineated wetland area. A copy of the 2017 Restoration Plan can be found in Appendix G of this Report.

The subject tracts consist of the following soil types: Maumee loamy find sand, o to 1 percent slopes. A USGS soil map and Report has been included with this Report. Curve numbers were assigned using existing land use in conjunction with soils mapping from the Natural Resource Conservation (NRCS). An abbreviated NRCS Soils Report can be found in Appendix A of this Report.

Detailed topography provided by Cripe in 2019 was used to determine the existing hydrologic conditions. The existing drainage areas generally drain via sheet flow and existing storm inlets to the existing underground detention system. The concentrated flow then travels via a deep 48" storm network that runs due northwest offsite. The existing controlled drainage areas has been evaluated as one controlled drainage basin, matching the limits of the proposed post-developed controlled drainage areas for the Home2Suites site.

2.4 Contributing Offsite Drainage Basins:

In addition to the Home2 Suites controlled drainage area $(1.5 \text{ acres} \pm)$ a combined tributary area of 5.93 acres \pm including acreage from the adjacent Homewood Suites parcel and portions of Calumet Ave (4.43 acres) is collected in the existing underground detention system. The 4.43 acres of contributing offsite drainage area is sent through a separate mechanical BMP for water quality treatment, prior to entering the shared underground detention system.

2.5 Existing Conditions Calculations:

The existing conditions model accounts for a controlled drainage area of 1.50 acres from Home2 Suites and 4.43 acres from the contributing offsite drainage basin. C-values of 0. 90 for impervious areas and 0.45 for pervious areas were evaluated for pipe sizing calculations and detention evaluation. The original calculations, provided by SEH Engineers, is provided in Appendix B of this Report.

Allowable Post-Developed Release Rates:

The original calculations for the approved underground detention system for the Lake Business Center PUD evaluated the Town of Munster's Infrastructure Specifications Section 3-3- Allowable Release Rate limitations. The allowable release rate was based on, at a minimum, the predeveloped 2-year frequency



for the Homewood Suites site and approved PUD site to the west (the proposed Home2Suites location).

Table 2.5a:

Existing Conditions Release Rates Aequitas Site (cfs) 2year – 30 min event:

 $Q_{2e} = 7.59 \text{ cfs}$

*Calculations provided by SEH of Indiana

2.6 Proposed Conditions Calculations:

Simborg Development, Inc. is proposing to develop approximately $1.5 \text{ acres} \pm \text{ of primarily vacant}$ commercial zoned land to a 107 room, four story hotel with parking, hearin referred to as Home2Suites. The site is located in the northwest corner of Lake Business Center Planned Unit Development, and will occupy approximately 63,846 square feet of ground floor space with associated parking lots and spaces, curb cuts and drive lanes.

Said development will consist of one existing underground detention system with a flow restricting structure that will store and release the site's stormwater runoff per the requirements set forth by the Town of Munster's and Lake County, Indiana requirements. One (1) existing offline mechanical BMP will be used to treat the disturbed limits of the proposed site and meet the City's SQU sizing requirements. The site will discharge directly to an existing 48" storm sewer that will be relocated as part of this project. Refer to the Existing Conditions and Post Developed Conditions portions of this Narrative and Appendices for additional information.

The post-developed conditions models account for a controlled drainage area of 5.93 total acres for the Homewood Suites and Home2 Suites sites, with 1.5 acres contributing from the proposed Home2Suites site.

A runoff coefficient, C-value of 0.90 for impervious areas and 0.45 for pervious areas was evaluated for pipe sizing calculations. See Appendix C for additional information.

Underground Detention System:

To meet the allowable post-developed release rates a 6.8" orifice was required and approximately 19,000 cft of stone and chamber storage was provided. Please see Appendix C of this Report for additional information.

Storm Sewers:

The storm sewer system is designed using Hydraflow analysis to convey stormwater runoff at a minimum velocity of 2.5 feet/second through reinforced concrete pipes, when flowing full, while maintaining a hydraulic grade line elevation below the crown of the pipe at the 10-year storm event. For sizing of the storm sewer network, the controlled drainage basin was further broken down into a total of nine (9) contributing sub-basins based on proposed grading plans and structure locations. See Appendix D of the Report for Pipe Sizing Figures and Calculations.



2.7 Water Quality Calculations:

Site Runoff for the Home2 Suites site (0.97 acres impervious., 0.53 acres pervious) will be treated by one existing offline mechanical BMP unit to meet the standards for Water Quality as defined by the Lake County Stormwater Management and Clean Water Regulations Ordinance.

A 1-inch rainfall event was modeled using the SCS Type II–24hr evaluation. A Water Quality Curve Number of 98 was utilized for the impervious area. See Appendix E for additional information.

Table 2.8: Structure: WO1

Bractare. WQ1		
Water Quality Controlled Drainage Area	1.50	acres
Impervious Area	0.97	acres
% Impervious	64.67	%
Qwq (Water Quality Treatment Rate)	1.13	cfs from ICPR4 analysis
Capacity of offline AquaShield XC-4	1.86	cfs (offline unit per SQU Sizing Criteria)
FloGard Dual Vortex DVS – 60S Unit	2.50	cfs (offline unit per FloGard Sizing Guide)
constructed in 2012 – treatment capacity		

