WASHBURN UNIVERSITY BASEBALL CONVERSION AND FAN ACTIVATION ZONE

1700 SW College Ave
Topeka, Kansas 66621

WASHBURN UNIVERSITY

05/09/2024

ISSUED FOR BID

PROJECT DIRECTORY

OWNER
Washburn University
1700 SW College Ave
Topeka, KS 66621
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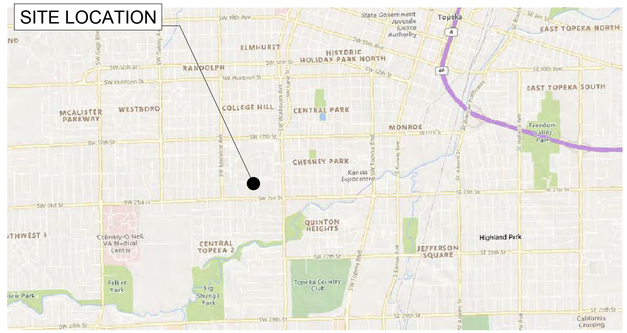
CONTRACTOR
TBD

NOTES

1. THE CONTRACTOR, PRIOR TO ANY EXCAVATION, SHALL HAVE ALL UTILITIES LOCATED BY ONE CALL AND BY PRIVATE LOCATE.
2. CONTRACTOR SHALL VERIFY WITH OWNER FOR PRIVATE LOCATE ASSISTANCE.
3. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SAFETY OF THE CONSTRUCTION WORKERS AND THE PUBLIC. THE CONTRACTOR SHALL INCLUDE ADEQUATE SIGNS, BARRICADES, AND MARKINGS TO IDENTIFY WORK AREAS FOR THE PROTECTION OF THE PUBLIC.

SHEET INDEX

LOCATION MAP



City of Topeka, KS

SITE MAP

MAMMOTH

BID DOCUMENTS

WASHBURN

WASHBURN UNIVERSITY
WASHBURN UNIVERSITY BASEBALL OUTFIELD CONVERSION AND FAN ACTIVATION ZONE
1700 SW College Ave
Topeka, KS 66621

DYLAN T. MEDLOCK
LICENSED
05-09-2024
26990
STATE OF KANSAS
PROFESSIONAL ENGINEER

Revision Key

No.	Date	Revision

Civil Engineer: Dylan Medlock, P.E.
Checked By: Seth Soto, P.E.
Project Number: 22-0273
Date of Issue: 05-09-2024
Sheet Number:

C - 000
COVER SHEET

GENERAL CIVIL CONSTRUCTION NOTES AND SPECIFICATIONS:

31-00-10 - EARTHWORK AND GRADING

1. GENERAL
1.1. CONSIDERATIONS
1.1.1. EARTHWORK CONSISTS OF OPERATIONS REQUIRED FOR THE EXCAVATION AND/OR FILL OF SUBGRADE MATERIALS; STOCK PILING MATERIALS; SCARIFYING AND COMPACTION OF SUB-GRADES; FINISH GRADING; AND OTHER REQUIRED OPERATIONS.
1.2. REFERENCES
1.2.1. ASTM D698 STANDARD TEST METHODS FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING STANDARD EFFORT
1.2.2. ASTM D2487 - CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES
1.2.3. ASTM D2938 - IN-PLACE DENSITY AND WATER CONTENT OF SOIL AND SOIL-AGGREGATE BY NUCLEAR METHODS.
1.3. DEFINITIONS:
1.3.1. CLASSIFICATION: EARTHWORK MATERIALS ARE CLASSIFIED IN ACCORDANCE WITH DEFINITIONS IN THIS ARTICLE.
1.3.2. SUBGRADE: NATURAL SOIL AT THE ESTABLISHED LINES AND GRADES.
1.3.3. EARTHEN FILL: SUITABLE, CLEAN MATERIAL EXCAVATED ON-SITE OR IMPORTED BORROW MATERIAL MEETING SPECIFIED CHARACTERISTICS.
1.3.4. FINISH GRADING: OPERATIONS REQUIRED FOR SMOOTHING DISTURBED AREAS THAT ARE NOT OVERLAID WITH PAVEMENT.
1.3.5. EXCAVATION: EXCAVATION OF EVERY DESCRIPTION AND OF WHATEVER SUBSTANCES ENCOUNTERED WITHIN THE LIMITS OF THE PROJECT TO THE LINES AND GRADES INDICATED.
1.3.6. COMPACITON: COMPACTION OF SOIL MATERIALS SHALL BE MEASURED AS A PERCENT OF STANDARD PROCTOR MAXIMUM DENSITY AS DETERMINED BY ASTM D698.
1.4. EXISTING UTILITIES
1.4.1. WHERE PIPES, DUCTS AND STRUCTURES ARE ENCOUNTERED IN THE EXCAVATION BUT ARE NOT SHOWN OR SPECIFIED ON THE DRAWINGS TO BE ABANDONED, IMMEDIATELYL NOTIFY THE ENGINEER.

2. PRODUCTS
2.1. EARTHEN FILL:
2.1.1. GENERAL SITE FILL MAY BE COMPRISED OF CLEAN INSITU SOILS HARVESTED FROM THE FIELDS AND OTHER IMPROVEMENTS SITE AREAS AND SHALL BE SELECTED TO BE THE BEST MATERIALS WHICH ARE FREE OF ALL ORGANIC MATERIALS OR, SUITABLE IMPORTED EARTH FILL MATERIALS MAY BE USED. UNSUITABLE MATERIALS SHALL BE CLASSIFIED AS; TOPSOIL; FROZEN MATERIALS; CONSTRUCTION MATERIALS AND MATERIALS SUBJECT TO DECOMPOSITION; CLODS OF CLAY AND STONES LARGER THAN 75 MM (3 INCHES); SOILS CONTAINING IN EXCESS OF 1% ORGANIC MATERIALS, SANDS OR GRAVELS WITH A FINES CONTENT GREATER THAN 50%, HIGH CONTENT SILT OR CLAY SOILS WITH A PLASTICITY INDEX LESS THAN 12 OR WHICH ARE UNSTABLE AND/OR TOO WET TO BE STABLE AND, ANY MATERIAL WITH A LIQUID LIMIT AND PLASTICITY INDEX EXCEEDING 40 AND 17 RESPECTIVELY. UNSATISFACTORY SOILS ALSO INCLUDE SATISFACTORY SOILS NOT MAINTAINED WITHIN 1-2 PERCENT OF OPTIMUM MOISTURE CONTENT AT TIME OF COMPACTION.
2.1.2. SOIL STABILIZATION
2.1.2.1. SUBGRADE SOILS SHALL BE STABILIZED AS INDICATED IN THE GEOTECHNICAL REPORT AND PER THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.

3. EXECUTION
3.1. SITE PREPARATION
3.1.1. THE PROJECT SITE SHALL BE STRIPPED OF ALL VEGETATION AND SHALL BE ROUGH GRADED AND OTHERWISE PREPARED, AS DETAILED ON THE DRAWINGS.
3.2. OVER-EXCAVATION
3.2.1. OVER EXCAVATE ALL AREAS WHERON NEW CONCRETE OR SYNTHETIC TURF SURFACES ARE TO BE CONSTRUCTED AS NEEDED TO MAKE ROOM FOR THE NEW SURFACE LAYERS. OVER EXCAVATION SHALL ALSO BE PERFORMED AS NEEDED TO MEET THE SPECIFIED FINISH ELEVATIONS AND GRADES INDICATED ON THE DRAWINGS.
3.2.2. ANY AREAS FOUND TO BE SOFT AND NOT TO BE COMPACTED TO PROVIDE AN UNYIELDING SURFACES AND MEET COMPACTION CRITERIA DETAILED HERIN SHALL BE OVER-EXCAVATED TO A MINIMUM OF 24-INCHES AND REPLACED WITH HIGH QUALITY EARTHEN FILL OR IF NECESSARY, IMPORT SELECT FILL OR AGGREGATE BASE. PLACEMENT OF SOILS FOR BACKFILL SHALL BE IN LAYERS NOT TO EXCEED 6-INCHES COMPACTED DEPTH AND SHALL BE IN ACCORDANCE WITH ALL REQUIREMENTS INDICATED HERIN OR FILL MATERIALS.
3.3. TREATMENT OF SUBGRADES, AREAS OF CUT:
3.3.1. EXCAVATE, REMOVE AND PROPERLY DISPOSE OF EXCESS SUBGRADE SOILS.
3.3.2. UPON COMPLETION OF EXCAVATION AND GRADING IN AREAS OF CUT, FINISHED SUBGRADE SHALL BE COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY PER ASTM D698 AT A MOISTURE CONTENT OF 1-2% OF OPTIMUM. SUBGRADE SHALL BE TESTED BY AN INDEPENDENT TESTING LABORATORY PER ASTM D 6938 AT A MINIMUM RATE OF ONE TEST PER 10,000 SQUARE FEET OF COMPACTED SUBGRADE. THEREAFTER, SUBGRADE SURFACES SHALL BE PROOF ROLL TESTED IN THE PRESENCE OF A GEOTECHNICAL ENGINEER PRIOR TO PLACING ANY OTHER LAYERS FOR CONSTRUCTION.
3.4. PLACING FILL MATERIALS
3.4.1. IN AREAS OF FILL, PLACE AND COMPACT FILL LAYERS OR EARTHEN FILL IN HIORIZONTAL LIFTS NOT TO EXCEED 6-INCHES AND COMPACT TO A MINIMUM OF 95 PERCENT OF MAXIMUM DRY DENSITY PER ASTM D698 AT A MOISTURE CONTENT OF +/- 1-2% OF OPTIMUM.
3.4.2. ATTAINING PROPER BOND: IF THE COMPACTED SURFACE OF A LAYER IS TOO SMOOTH TO BOND WITH SUCCEEDING LAYERS, SCARIFY SURFACE OF UNDERLYING LAYER PRIOR TO PLACEMENT OF SUBSEQUENT LAYER, AS NEEDED TO OBTAIN PROPER BOND BETWEEN LAYERS.
3.4.3. PLACE MATERIALS TO LINES AND GRADES SHOWN ALLOWING FOR DEPTH OF BASE AND CONCRETE/ASPHALT.
3.4.4. MAINTAIN AGGREGATE DRAINAGE THROUGHOUT CONSTRUCTION.
3.4.5. THE MATERIAL SHALL BE BLENDED SUFFICIENTLY TO SECURE THE BEST DEGREE OF COMPACTION.
3.4.6. COMPACTED FILL LAYERS SHALL BE TESTED BY AN INDEPENDENT TESTING LABORATORY PER ASTM D 6938 AT A MINIMUM OF ONE TEST PER 10,000 SQUARE FEET OF COMPACTED SUBGRADE. UPON COMPLETION OF FILL PLACEMENT, THE FINISHED SUBGRADE FOR THE SYNTHETIC TURF FIELD SHALL BE PROOF ROLL TESTED IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER PRIOR TO FINAL GRADING.
3.5. FINAL GRADING
3.5.1. UPON COMPLETION OF THE EXCAVATION, GRADING AND COMPACTION PROCESS, AND TESTING, CONTRACTOR SHALL FINE GRADE ALL SURFACED BY MEANS OF LASER GRADING (OR GRADE USING EQUIVALENT MEANS) AS NEEDED TO MEET THE MEET THE ELEVATIONS, LINES AND GRADES INDICATED ON THE DRAWINGS.
3.6. TESTING
3.6.1. COMPACTION TESTING: CONDUCT COMPACTION TESTING PER ASTM D6938 FOR SUBGRADE AND FILL LAYER SOILS. MINIMUM SPACING FOR COMPACTION TESTING SHALL BE ONE TEST PER EACH 10,000 SQUARE FEET OF AREA COMPACTED. AREAS OF THE FIELD FOUND NOT TO MEET COMPACTION CRITERIA SHALL BE RE-WORKED AND/OR RE-COMPACTED AT THE CONTRACTOR'S EXPENSE UNTIL COMPACTION CRITERIA ARE MET. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE COSTS OF ADDITIONAL COMPACTION TESTING.
3.6.2. PROOF ROLL TESTING: CONDUCT PROOF ROLL TEST IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER BY MEANS OF DRIVING A LOADED 10-WHEEL TRUCK (LOADED WITH SOIL) OR FULLY LOADED WATER TRUCK IN PARALLEL LINES ACROSS THE SURFACE OF BOTH SYNTHETIC TURF FIELD AREAS AS DIRECTED BY THE ENGINEER. ANY AREA OF SUBGRADE SOILS FOUND TO YIELD SHALL BE MARKED AND SHALL BE FURTHER STABILIZED BY ADDITIONAL DRYING AND/OR MIXING OF PORTLAND CONCRETE CEMENT AND/OR AGGREGATE BASE OR OVER-EXCAVATION AS NEEDED TO PASS PROOF ROLL TEST EVERYWHERE.

32-20-35 CRUSHED STONE

1. GENERAL
1.1. SECTION INCLUDES
1.1.1. CRUSHED ANGULAR STONE AS PIPE BEDDING AND TRENCH BACKFILL IN THE TURF FIELDS PERIMETER DRAINAGE SYSTEMS AND AS THE SYNTHETIC TURF UNDER-DRAIN SYSTEM MATERIAL TO BE PLACED OVER ENTIRE SURFACE OF TURF FIELDS.
1.2. REFERENCES
1.2.1. ASTM D 6155 - STANDARD SPECIFICATION FOR NONTRADITIONAL COARSE AGGREGATES FOR ASPHALT PAVING MIXTURES
1.2.2. ASTM C 136 - TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATE.
1.2.3. ASTM C 33 - STANDARD SPECIFICATION FOR CONCRETE AGGREGATES.
1.3. SUBMITTALS FOR REVIEW
1.3.1. SUBMITTALS: PROCEDURES FOR SUBMITTALS PER CONDITIONS SET FORTH IN THE CONTRACT.
1.3.2. SIEVE ANALYSIS: PROVIDE COPIES OF ANALYSIS RESULTS FOR STONE.

2. PRODUCTS
2.1. MATERIALS
2.1.1. STONE SHALL BE CRUSHED WITH ANGULAR FACES ON ALL SIDES IN ACCORDANCE WITH THE FOLLOWING GRADATION CRITERA:
2.1.1.1. STONE TYPE
2.1.1.1.1. LIMESTONE
2.1.1.1.2. GRANITE
2.1.1.2. BASE STONE (GRADATION SHALL MEET THE REQUIREMENTS OF STANDARD GRADATION MIXTURE 570 (57 STONE) OR 670 (67 STONE) PER ASTM C33.
2.1.1.3. FINISH STONE - 3/8-INCH MINUS CRUSHED STONE MATERIAL.
2.1.2. CRUSHED STONE MATERIALS SHALL BE A UNIFORM WELL GRADED MIXTURE WITH LESS THAN 2% PASSING THE NO.200 SIEVE BY WEIGHT AND SHALL BE STORED AND PLACED TAKING CARE TO PROTECT MATERIAL AS SUCH.

3. EXECUTION:
3.1. PREPARATION
3.1.1. ENSURE GEOTEXTILE IS PROPERLY INSTALLED ACROSS ENTIRE SURFACE OF FIELDS AND THROUGH FIELD PERIMETER DRAIN TRENCHES PRIOR TO PLACING STONE. CARE SHALL BE TAKEN TO PROTECT FABRIC FROM PUNCTURE AND/OR TEAR DURING PLACEMENT OF ROCK.
3.1.2. ENSURE DRAINAGE PIPING IS PROPERLY INSTALLED PRIOR TO BACKFILLING TRENCHES WITH ROCK. PROTECT PIPES FROM MOVEMENT AND DAMAGE DURING PLACEMENT SO AS TO LEAVE PIPE IN THE LINE AND TO THE GRADES AND ELEVATIONS SPECIFIED ON THE DRAWINGS UPON COMPLETION OF CRUSHED STONE PLACEMENT.
3.2. PLACING CRUSHED STONE:
3.2.1. PLACEMENT SHALL BE COMPLETED SO AS TO PROTECT THE GEOTEXTILE AND DRAINAGE PIPING FROM DISPLACEMENT, PUNCTURE OR DAMAGE DURING WORK. ANY TEARS, PUNCTURES OR OTHER DAMAGE TO THE PIPING OR GEOTEXTILE DURING WORK SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL ALSO BE RESPONSIBLE TO RE-ALIGN, REPOSITION PIPING IF MOVEMENT OCCURS DURING ROCK PLACEMENT AT CONTRACTOR'S EXPENSE.
3.2.2. PLACE STONE SO AS TO ENTIRELY FILL FIELD PERIMETER DRAIN TRENCHES INCLUDING AROUND PIPING, TAKING SPECIAL CARE TO ENSURE ROCK PLACEMENT BENEATH THE HAUNCHES OF THE PIPE.
3.2.3. FOR TRENCHES, PLACE BASE STONE TO FILL TRENCH. OVER TURF FIELD SURFACE, PLACE BASE STONE TO A UNIFORM DEPTH OF 4 INCHES OVER THE ENTIRE SURFACE OF FIELD. THEREAFTER, PLACE 2-INCHES OF FINISH STONE AS NEEDED TO MEET GRADATION REQUIREMENTS AND TO LOCK UP THE SURFACE OF THE ROCK SO AS TO CREATE A NON-YIELDING FINISHED STONE SURFACE.

32 30 40 GEOTEXTILE

1. GENERAL
1.1. SECTION INCLUDES
1.1.1. INSTALL PERMEABLE GEOTEXTILE ACROSS SURFACES OF THE FIELD INCLUDING MATERIAL EXTENDED THROUGH THE PERIMETER TRENCH DRAINS, AS INDICATED AND DETAILED IN THE DRAWINGS.
1.2. 1.02 SUBMITTALS FOR REVIEW:
1.2.1. SUBMITTALS: PROCEDURES FOR SUBMITTALS PER CONDITIONS SET FORTH IN THE CONTRACT.
1.2.2. PRODUCT DATA: MANUFACTURE'S PRODUCT DATA SHEETS ON ALL MATERIALS INCORPORATED INTO WORK.

2. PRODUCTS
2.1. MATERIALS:
2.1.1. GEOTEXTILE:
2.1.1.1. MIRAFI 160N OR APPROVED EQUAL.
2.1.1.2. SEAMS SHALL BE OVERLAPPED AT LEAST 24-INCHES MINIMUM.

3. EXECUTION
3.1. INSTALLATION:
3.1.1. INSTALL GEOTEXTILE FABRIC ACROSS ENTIRE SURFACE OF BOTH TURF FIELDS IN A TIGHT MANNER SO AS TO LEAVE NO WRINKLES OR RIPPLES. FABRIC SHALL BE STRETCHED AND ANCHORED INTO PLACE BY MEANS OF LANDSCAPE STAKES OR EQUIVALENT. JOINTS BETWEEN FABRIC ROLLS SHALL BE INSTALLED WITH OVERLAPS OF AT LEAST 12-INCHES SO AS TO INSURE 100% GROUND COVER WITH.
3.1.2. FABRIC SHALL BE ANCHORED TO NAILER BOARD AROUND ENTIRE PERIMETER OF THE FIELDS AND SHALL BE EXTENDED THROUGH THE STORM DRAIN TRENCHES, ALL PRIOR TO THE PLACEMENT OF ANY CRUSHED STONE MATERIAL. TURF CONTRACTOR SHALL PLACE STONE WHILE PROTECTING FABRIC FROM MOVEMENT, TEAR AND PUNCTURE, AS NEEDED TO ENSURE A 100% COVER OF THE SUBGRADE AND AGGREGATE BASE MATERIALS THAT THE FABRIC IS TO BE PLACED OVER.

33 40 00 DRAINAGE SYSTEMS

1. GENERAL
1.1. SECTION INCLUDES
1.1.1. DRAINAGE SYSTEMS INCLUDING PERFORATED AND NON-PERFORATED POLYETHYLENE PIPE AS STORM DRAIN.

1.2. REFERENCES
1.2.1. ASTM F405 - STANDARD SPECIFICATION FOR CORRUGATED POLYETHYLENE PIPE AND FITTINGS.
1.2.2. AASHTO M 252 - STANDARD SPECIFICATION FOR POLYETHYLENE CORRUGATED DRAINAGE PIPE.

1.3. SUBMITTALS:
1.3.1. SUBMITTALS: PROCEDURES FOR SUBMITTALS PER CONDITIONS SET FORTH IN THE CONTRACT.
1.3.2. PRODUCT DATA: MANUFACTURER'S PRODUCT DATA SHEETS ON ALL MATERIALS INCORPORATED INTO THE WORK.
1.3.3. CERTIFICATES: MANUFACTURER'S CERTIFICATES ATTESTING COMPLIANCE WITH APPLICABLE SPECIFICATIONS, GRADES, TYPES, CLASSES, AND OTHER PROPERTIES.

1.4. QUALITY ASSURANCE
1.4.1. PIPELINE INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS SUPPLEMENTED BY THESE SPECIFICATIONS.
1.4.2. PIPE SHALL BE KEPT CLEAN OF ALL FOREIGN MATTER.
1.4.2.1. AT TEMPORARY TERMINATION OF PIPE LAYING, PROVIDE SUITABLE COVER TO CLOSE OPEN END OF PIPE UNTIL BURYING OPERATIONS ARE RESUMED.
1.4.3. JOINTING SHALL BE BY TRAINED EMPLOYEES.

1.5. DELIVERY, STORAGE, AND HANDLING:
1.5.1. DELIVER, STORE, AND HANDLE PRODUCTS TO PROTECT PIPE AND FITTING FROM HARM AND FROM DIRT AND DEBRIS.

2. PRODUCTS
2.1. PIPE
2.1.1. POLYETHYLENE DRAIN PIPE: ASTM F 405; AASHTO M 252
2.1.1.1. CORRUGATED EXTERIOR, SMOOTH INTERIOR POLYETHYLENE PIPE WITH PERFORATED WALL OR NON-PERFORATED WALL IN ACCORDANCE WITH THE DRAWINGS.
2.1.2. MANUFACTURER:
2.1.2.1. ADVANCED DRAINAGE SYSTEMS, INC, N-12 DRAINAGE PIPE
2.1.2.2. APPROVED EQUAL

2.2. COUPLINGS
2.2.1. BURIED COUPLINGS FOR USE WITH POLYETHYLENE PIPE AND FIELD DRAIN PIPE:
2.2.1.1. MANUFACTURER'S STANDARD POLYETHYLENE COUPLING.

2.3. AREA DRAINS
2.3.1. NYLOPLAST LIGHT DUTY AREA DRAINS SIZED TO MATCH CONNECTING DRAIN LINE WITH H-10 PEDESTRIAN COVERS AND GRATES.

3. EXEUCUTION
3.1. PREPARATION
3.1.1. IN THE CASE OF THE PERFORATED FIELD PERIMETER DRAIN LINES, ENSURE THAT PIPE TRENCHING HAS TAKEN PLACE IN ACCORDANCE WITH PLAN DETAILS. IN THE CASE OF NON-PERFORATED STORM DRAIN LINES, ENSURE THAT PIPE TRENCHING AND BEDDING HAVE TAKEN PLACE IN ACCORDANCE WITH PLAN DETAILS.

3.2. PIPE INSTALLATION
3.2.1. PREPARATION:
3.2.1.1. KEEP INSIDE OF PIPE FREE FROM FOREIGN MATTER DURING OPERATIONS BY PLUGGING PIPE END OR OTHER APPROVED METHOD.
3.2.1.2. PLACE PIPE SO THAT FULL LENGTH OF EACH SECTION RESTS SOLIDLY UPON PIPE BEDDING, WITH RECESSES EXCAVATED TO ACCOMMODATE JOINTS. TAKE UP AND RE-LAY PIPE WHEN GRADE OR JOINT IS DISTURBED AFTER LAYING.
3.2.1.3. HANDLE PIPE AND ACCESSORIES SO THAT PIPE PLACED IN TRENCH IS SOUND AND UNDAMAGED. TAKE PARTICULAR CARE NOT TO INJURE PIPE.
3.2.1.4. CUT PIPE NEATLY WHEN NEEDED, USING APPROVED TYPE MECHANICAL CUTTER WITHOUT DAMAGING PIPE. USE WHEEL CUTTERS WHEN PRACTICABLE.
3.2.2. TURF FIELDS PERIMETER DRAIN PIPE BEDDING:
3.2.2.1. CRUSHED STONE IN ACCORDANCE WITH SECTION 32 30 35 "CRUSHED STONE" WHICH SHALL BE BROUGHT UP EVENLY TO THE SPRING-LINE OF THE PIPE. CAREFUL CONSIDERATION TO ENSURE PIPE BEDDING MATERIAL IS FULLY PLACED BENEATH THE HAUNCHES OF THE PIPE.
3.2.3. TURF FIELDS PERIMETER DRAIN PIPE BACKFILL:
3.2.3.1. BACKFILL PIPE WITH CRUSHED STONE IN ACCORDANCE WITH SECTION 32 30 35, "CRUSHED STONE" AS SHOWN IN DETAIL ON THE CONTRACT DRAWINGS AND IN ACCORDANCE WITH THE SPECIFICATIONS. STONE SHALL BE PLACED, TAMPED AND LEVELED TO CREATE A SMOOTH UNYIELDING SURFACE THAT FORMS A UNIFORM SLOPE WITH THE ADJACENT SUB-GRADE IN ACCORDANCE WITH THE SPECIFIED GRADE OF THE FIELD.
3.2.4. JOINTS:
3.2.4.1. INSTALL JOINTS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

3.3. AREA DRAIN INSTALLATION:
3.3.1. INSTALL IN ACCORDANCE WITH MANUFACTURER GUIDELINES AND AS INDICATED ON THE DRAWINGS.

32 30 00 CAST IN PLACE CONCRETE

1. GENERAL
1.1. SECTION INCLUDES:
1.1.1. CAST-IN-PLACE CONCRETE CONSISTING OF PORTLAND CEMENT, AGGREGATE, WATER, AND ADMIXTURES.
1.1.2. MIX DESIGN REQUIREMENTS.
1.1.3. FORMWORK, REINFORCEMENT, JOINTS, AND PLACING REQUIREMENTS.

1.2. REFERENCES
1.2.1. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
1.2.1.1. ASTM A615--DEFORMED AND PLAIN BILLET STEEL BARS FOR CONCRETE REINFORCEMENT.
1.2.1.2. ASTM C31--MAKING AND CURING CONCRETE TEST SPECIMENS IN THE FIELD.
1.2.1.3. ASTM C33--CONCRETE AGGREGATES.
1.2.1.4. ASTM C39--COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS.
1.2.1.5. ASTM C94--(1986; REV. B) READY-MIXED CONCRETE.
1.2.1.6. ASTM C143--SLUMP OF PORTLAND CEMENT CONCRETE.
1.2.1.7. ASTM C172--SAMPLING FRESHLY MIXED CONCRETE.
1.2.1.8. ASTM C173--AIR CONTENT OF FRESHLY MIXED CONCRETE BY THE VOLUMETRIC METHOD.

1.3. SUBMITTALS
1.3.1. SUBMITTALS: PROCEDURES FOR SUBMITTALS PER CONDITIONS SET FORTH IN THE CONTRACT.
1.3.2. CERTIFICATES: MILL CERTIFICATES FOR BULK CEMENT.
1.3.3. PRODUCT DATA: MANUFACTURER'S DATA SHEETS FOR ENGINEER APPROVED ADDITIVES AND BONDING AGENTS.
1.3.4. SUBMIT TEST DATA ON PROPOSED DESIGN MIXES FOR EACH TYPE OF CONCRETE TO BE USED IN THE PROJECT TO VERIFY THAT THE SPECIFICATION REQUIREMENTS ARE MET OR EXCEEDED.

1.4. QUALITY ASSURANCE:
1.4.1. PROJECT CONTROLS: PROVIDE NECESSARY CONTROLS DURING EVALUATION OF MATERIAL, MIX DESIGNS, PRODUCTION AND DELIVERY OF CONCRETE, PLACEMENT, COMPACTION, FINISHING AND CURING NECESSARY TO ASSURE THAT WORK WILL BE ACCOMPLISHED IN SUCH A MANNER TO PRODUCE THE WORK IN ACCORDANCE WITH CONTRACT DOCUMENTS.

1.5. DELIVERY, STORAGE, AND HANDLING:
1.5.1. MATERIALS SHALL BE DELIVERED, STORED, AND HANDLED IN A MANNER TO PREVENT DETERIORATION, CONTAMINATION, OR ANY OTHER CIRCUMSTANCE THAT WOULD BE HARMFUL TO CAST-IN-PLACE CONCRETE.

1.6. PROJECT CONDITIONS:
1.6.1. DO NOT PLACE CONCRETE DURING RAIN, SLEET, OR SNOW UNLESS PROTECTION IS PROVIDED AND APPROVED BY THE ENGINEER.
1.6.2. COORDINATE CONCRETE PLACEMENT SCHEDULE WITH OTHER RELATED WORK.
1.6.3. NOTIFY ENGINEER AT LEAST 24 HOURS BEFORE PLACEMENT.

2. PRODUCTS
2.1. MATERIALS
2.1.1. CEMENT: ASTM C 94, TYPE I CEMENT, UNLESS APPROVED BY THE ENGINEER. ONLY ONE BRAND OF ANY ONE TYPE OF CEMENT SHALL BE USED FOR EXPOSED CONCRETE SURFACES OF ANY INDIVIDUAL STRUCTURE.
2.1.2. FINE AGGREGATE: AGGREGATE MEETING THE REQUIREMENTS OF ASTM C33.
2.1.3. COARSE AGGREGATE: AGGREGATE SIZES NO. 467 OR NO. 57 ACCORDING TO ASTM C33 OR AS APPROVED BY THE ENGINEER.
2.1.4. WATER: POTABLE WATER FREE FROM DETRIMENTAL CHEMICALS AND SOLIDS THAT WILL DECREASE THE STRENGTH OF THE CONCRETE.
2.1.5. EMBEDDED ITEMS: EMBEDDED ITEMS SHALL BE OF THE SIZE AND TYPE SHOWN OR AS NEEDED FOR THE APPLICATION.
2.1.6. CURING MATERIALS: CURING MATERIALS SHALL BE BURLAP, IMPERVIOUS SHEETS, OR MEMBRANE-FORMINGCOMPOUNDS.
2.1.7. DOWELS: PLAIN CARBON STEEL BARS, MINIMUM YIELD POINT OF 40,000 PSI FOR USE IN SLABS ON GRADE.
2.1.8. EXPANSION JOINT FILLER STRIPS: PREMOLDED NON-EXTRUDING, RESILIENT BITUMINOUS OR NON-BITUMINOUS TYPE FOR USE IN CONCRETE PAVING OR CONSTRUCTION, THICKNESS AS SHOWN.
2.1.9. FORM MATERIALS: WOOD, METAL OR OTHER ENGINEER APPROVED MATERIALS THAT WILL PRODUCE THE SPECIFIED FINISHES WITHOUT ADVERSELY AFFECTING THE CONCRETE SURFACES.
2.1.10. FORM COATING: NON-STAINING FORM OIL OR FORM-RELEASE AGENT THAT WILL NOT DELETERIOUSLY AFFECT CONCRETE SURFACES NOR IMPAIR SUBSEQUENT APPLICATIONS.
2.1.11. FORM TIES: METAL, FACTORY-FABRICATED REMOVABLE SNAP-OFF TYPE, THAT WILL NOT LEAVE HOLES LESS THAN 1/4 INCH NOR MORE THAN 1 INCH DEEP AND NOT MORE THAN 1 INCH IN DIAMETER.
2.1.12. JOINT SEALANT: AS SHOWN OR APPROVED BY ENGINEER FOR SEALING JOINTS IN CONCRETE AGAINST MOISTURE INFILTRATION.
2.1.13. REINFORCEMENT: BAR REINFORCEMENT SHALL BE DEFORMED, GRADE 60 CONFORMING TO ASTM A615. MESH REINFORCEMENT SHALL BE WELDED WIRE FABRIC WITH WIRES AT RIGHT ANGLES TO EACH OTHER.
2.1.14. BONDING AGENT: AS APPROVED BY ENGINEER.
2.1.15. ADMIXTURES: AIR-ENTRAINING, RETARDERS, AND OTHER ADMIXTUES AS APPROVED BY ENGINEER.

2.2. MIX DESIGN
2.2.1. CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH (PSI) OF 4000.
2.2.1.1. MIX DESIGN SHALL HAVE A MIN CEMENTITIOUS MATERIAL CONTENT OF 610 LBS/CY.
2.2.1.2. ENTRAINED AIR SHALL BE 5 TO 8 PERCENT AND SHALL MEET THE REQUIREMENTS OF ASTM C260.
2.2.1.3. SLUMP SHALL BE A MINIMUM OF 6 INCHES AND HAVE A MAXIMUM OF 9 INCHES. THE USE OF RETARDERS AND MID-RANGE WATER REDUCERS IS ALLOWED TO EXTEND THE SLUMP LIFE OF THE CONCRETE. ADMIXTURE SHALL MEET THE REQUIREMENTS OF ASTM C494.
2.2.1.4. COARSE AGGREGATE SIZE SHALL BE AASHTO M43 SIZE #8.
2.2.2. MIXING WATER SHALL BE POTABLE AND NOT DETRIMENTAL TO THE CONCRETE.

2.3. STORAGE:
2.3.1. MATERIALS SHALL BE STORED SO AS NOT TO DETERIORATE OR BECOME CONTAMINATED.

3. EXECUTION
3.1. FORMWORK:
3.1.1. FORMWORK SHALL BE MADE MORTAR TIGHT, PROPERLY ALIGNED AND ADEQUATELY SUPPORTED TO PRODUCE CONCRETE CONFORMING ACCURATELY TO THE INDICATED SHAPES, LINES, DIMENSIONS, AND WITH SURFACES FREE OF OFFSETS, WAVINESS, OR BULGES.
3.1.2. UNLESS OTHERWISE SHOWN EXPOSED EXTERNAL CORNERS SHALL BE CHAMFERED, BEVELED, OR ROUNDED BY MOLDINGS PLACED IN THE FORMS. CHAMFER SHALL BE 1" NOMINAL.
3.1.3. SURFACES SHALL BE THOROUGHLY CLEANED AND COATED BEFORE EACH USE.
3.1.4. FORMS SHALL BE REMOVED AT A TIME AND IN A MANNER, THAT WILL NOT DAMAGE THE CONCRETE.

3.2. REINFORCEMENT
3.2.1. REINFORCEMENT SHALL BE FABRICATED TO THE SHAPES REQUIRED.
3.2.2. REINFORCEMENT SHALL BE INTERRUPTED 2 INCHES CLEAR ON EACH SIDE OF EXPANSION JOINTS.
3.2.3. REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONTRACTION AND CONSTRUCTION JOINTS.
3.2.4. SUPPORTS FABRICATED OF PLASTIC, OR OTHER ENGINEER APPROVED MATERIAL, SHALL BE USED TO SUPPORT REINFORCEMENT DURING PLACING OPERATIONS.
3.2.5. DOWELS AND TIE BARS SHALL BE INSTALLED AT RIGHT ANGLES TO JOINTS, ACCURATELY ALIGNED PARALLEL TO THE FINISHED SURFACE, AND RIGIDLY HELD IN PLACE AND SUPPORTED DURING CONCRETE PLACEMENT.
3.2.6. ONE END OF DOWELS SHALL BE OILED OR GREASED.

3.3. INSTALLATION OF ANCHORAGE ITEMS:
3.3.1. INSTALLATION OF ANCHORAGE ITEMS SHALL BE AS SHOWN OR REQUIRED TO ENSURE SUFFICIENT ANCHORAGE FOR PURPOSE INTENDED.

3.4. JOINTS:
3.4.1. CONTRACTION JOINTS: JOINTS SHALL BE INSTALLED AS SPECIFIED OR SHOWN.
3.4.2. EXPANSION JOINTS: JOINTS SHALL BE INSTALLED AS SPECIFIED OR SHOWN.
3.4.3. CONSTRUCTION JOINTS: CONSTRUCTION JOINTS SHALL BE LOCATED AS SHOWN OR APPROVED BY THE ENGINEER.

3.5. PLACING:
3.5.1. SURFACES TO RECEIVE CONCRETE SHALL BE CLEAN AND FREE FROM FROST, ICE, MUD, AND WATER.
3.5.2. CONCRETE MAY BE PLACED DIRECTLY ON IMPERVIOUS SURFACES THAT ARE THOROUGHLY MOISTENED BUT NOT MUDDY.
3.5.3. DURING COLD WEATHER, IN-PLACE CONCRETE SHALL BE PROTECTED FROM FREEZING WEATHER, THROUGHOUT THE CURING PERIOD.
3.5.4. DURING HOT WEATHER, A RETARDER MAY BE USED IF APPROVED BY THE ENGINEER.
3.5.5. CONCRETE TO RECEIVE OTHER CONSTRUCTION SHALL BE STRUCK TO THE PROPER LEVEL LEAVING A TEXTURED SURFACE TO RECEIVE THE ADDITIONAL CONSTRUCTION.

3.6. CONSLIDATION OF CONCRETE:
3.6.1. EXCEPT FOR SLABS 4 INCHES OR LESS, EACH LAYER OF CONCRETE SHALL BE CONSOLIDATED WITH INTERNAL CONCRETE VIBRATORS SUPPLEMENTED BY HAND SPADING, RODDING, AND TAMPING.
3.6.2. VIBRATING EQUIPMENT SHALL BE ADEQUATE TO THOROUGHLY CONSOLIDATE THE CONCRETE.
3.6.3. CONCRETE IN SLABS 4 INCHES AND LESS SHALL BE CONSOLIDATED BY COMPACTING AND SCREENING.

3.7. FINISHING CONCRETE:
3.7.1. FORMED SURFACES:
3.7.1.1. FINS AND LOOSE MATERIAL SHALL BE REMOVED.
3.7.1.2. UNSOUND CONCRETE, VOIDS OVER 1/2 INCH IN DIAMETER, AND TIE-ROD AND BOLT HOLES SHALL BE CUT BACK TO SOLID CONCRETE, REAMED, BRUSH-COATED WITH CEMENT GROUT, AND FILLED SOLID WITH A STIFF PORTLAND-CEMENT-SAND MORTAR MIX.
3.7.1.3. PATCHWORK SHALL FINISHED FLUSH WITH ADJOINING CONCRETE SURFACES AND, WHERE EXPOSED, SHALL MATCH ADJOINING SURFACES IN TEXTURE AND COLOR.
3.7.2. UNFORMED SURFACES:
3.7.2.1. SURFACES SHALL FINISHED TO A TRUE PLANE WITH NO DEVIATION EXCEEDING 5/16 INCH WHEN TESTED WITH A 10-FOOT STRAIGHTEDGE.
3.7.2.2. SURFACES SHALL BE SCREED AND FLOATED TO THE REQUIRED FINISH LEVEL WITH NO COARSE AGGREGATE VISIBLE BEFORE FINISHING AS SPECIFIED BELOW.
3.7.3. MONOLITHIC FINISH:
3.7.3.1. MONOLITHIC FINISH SHALL BE GIVEN TO FLATWORK UNLESS OTHERWISE SPECIFIED.
3.7.3.2. AFTER THE SURFACE MOISTURE HAS DISAPPEARED, FLOATED SURFACES SHALL BE STEEL-TROWLED TO A SMOOTH, EVEN, DENSE FINISH, FREE FROM BLEMISH INCLUDING TROWEL MARKS.

3.8. CURING
3.8.1. CURING SHALL START AS SOON AS FREE WATER HAS DISAPPEARED FROM CONCRETE SURFACES AFTER PLACING AND FINISHING.
3.8.2. CURING MATERIALS SHALL BE APPLIED AND MAINTAINED SO AS TO PROTECT THE CONCRETE FROM MOISTURE LOSS FOR 7 DAYS.
3.8.3. CURING SHALL BE ACCOMPLISHED BY IMPERVIOUS SHEET OR MEMBRANE-FORMING CURING COMPOUND.
3.8.4. CONCRETE SURFACES SHALL BE THOROUGHLY WETTED BEFORE COVERING WITH IMPERVIOUS SHEET MATERIALS.
3.8.5. MEMBRANE-FORMING CURING COMPOUND SHALL BE APPLIED WITH MECHANICAL SPRAYING EQUIPMENT AT A COVERAGE RATE AS RECOMMENDED BY MANUFACTURER
3.8.6. CURING COMPOUND SHALL NOT BE USED ON SURFACES RECEIVING APPLICATIONS DEPENDING ON ADHESION OR BONDING.

32 00 90 SYNTHETIC TURF

1. GENERAL
1.1. SECTION INCLUDES
1.1.1. SYNTHETIC TURF SYSTEM COMPRISED OF 100% POLYETHYLENE FIBERS THAT IS SPECIFICALLY DESIGNED TO REPLICATE THE PLAY OF SPORTS ON NATURAL GRASS. SYNTHETIC TURF FIBERS SHALL BE COMPRISED OF 100% MONOFILAMENT OR A BLEND OF MONOFILAMENT AND XPS TYPE SLIT-FILM-FIBER. NO LSR SLIT-FILM-FIBER WILL BE PERMITTED.

1.2. REFERENCES:
1.2.1. ASTM F 1936 - SHOCK ABSORBING PROPERTIES OF PLAYING SURFACES AND MATERIALS
1.2.2. ASTM D 5034 & 5035 -BREAKING LOAD AND ELONGATION OF TEXTILE FABRICS
1.2.3. ASTM D 1577 - LINEAR DENSITY OF TEXTILE FIBER
1.2.4. ASTM D 2256 - TENSILE PROPERTIES OF YARNS, SINGLE STRAND

1.3. SUBMITTALS FOR REVIEW:
1.3.1. ALL TURF TYPES SHALL BE CONSIDERED BY OWNER.
1.3.2. PRODUCT DATA:
1.3.2.1. CONTRACTOR SHALL SUBMIT A MINIMUM OF TWO TURF TYPES FOR EACH LOCATION / SPORT WITH THEIR BID AND PRICING DIFFERENCE FOR EACH
1.3.2.1.1. BASEBALL: SUBMIT A "GOOD" AND "BEST" OPTION FOR BASEBALL SPECIFIC TURF.
1.3.2.1.2. FAN ACTIVATION ZONE: SUBMIT A "GOOD" AND "BEST" OPTION FOR MULTISPORT / FOOTBALL SURFACE.

1.4. SUBGRADE PREPARATION:
1.4.1. DO NOT INSTALL TURF UNTIL THE SURFACE WHEREON TURF IS TO BE LAIN HAS BEEN PROVEN TO BE WITHIN GRADING TOLERANCES SPECIFIED IN THIS DESIGN. CONTRACTOR SHALL HAND WORK SAID SURFACE IF NEEDED TO ENSURE THAT NO PART OF THE FIELD IS OUTSIDE OF TOLERANCES WHEN TESTED WITH A STRING LINE.

2. PRODUCTS:
2.1. MATERIALS:
2.1.1. SYNTHETIC TURF SYSTEM
2.1.1.1. THE SYNTHETIC TURF PILE YARN SHALL CONSIST OF 100% POLYETHYLENE FIBERS. IN EVERY WAY, FIBERS SHALL BE MANUFACTURED TO LOOK LIKE, FEEL LIKE, AND PLAY LIKE REAL GRASS UPON INSTALLATION. TURF SYSTEM SHALL ALSO BE COMPRISED OF A FIBER OR SYSTEM OF FIBERS THAT ARE DESIGNED TO EXHIBIT EFFECTIVE REBOUND AND RESIST MATTING.
2.1.2. THE SYNTHETIC TURF SHALL BE MANUFACTURED TO BE RESISTANT TO ULTRA-VIOLET DEGRADATION, WEATHER, INSECTS, ROT, MILDEW, FUNGUS GROWTH, HEAT, FOOT TRAFFIC WEAR UNDER THE USE OF ATHLETIC CLEATS UP TO ½-INCH IN LENGTH, AND AIR BORNE POLLUTANTS.
2.1.2.1. THE SYNTHETIC TURF SYSTEMS SHALL HAVE A PILE HEIGHT APPROPRIATE FOR THE SPORT THEY'RE BEING INSTALLED ON. BIDDER TO PROVIDE TURF TYPES ALONG WITH BID. SEE SECTION 1.3 ABOVE FOR SUBMITTAL INFORMATION.
2.1.3. SYNTHETIC TURF INFILL SHALL BE COMPRISED OF A COOLING TECHNOLOGY GRANULAR INFILL AND IF NEEDED FOR WEIGHT, ALSO SILICA SAND OR PEA GRAVEL. INFILL MATERIALS ARE TO BE SPECIFICALLY DESIGNED BY MANUFACTURER AND/OR CONTRACTOR AS NEEDED TO MEET THE PERFORMANCE NEEDS OF EACH FIELD. PRODUCTS USED IN THE MIXTURE SHALL MEET THE FOLLOWING CRITERIA:
2.1.3.1. SBR RUBBER INFILL:
2.1.3.1.1. RUBBER SHALL BE CRYOGENICALLY GROUND, CLEAN SBR RUBBER GRANULES WITH ALL MATERIALS FALLING BETWEEN THE NO.10 AND THE NO.30 MESH SCREENS WHEN TESTED BY SIEVE ANALYSIS.
2.1.3.1.2. SILICA SAND OR PEA GRAVEL:
2.1.3.1.2.1. MEDIA THAT HAS BEEN WASHED (LESS THAN 0.5% MATERIAL BY VOLUME PASSING #200 SIEVE) AND SHALL BE A SMOOTH, ROUNDED. SAND SHALL BE 10-30 MESH IN GRADATION AND 100% PURE INDUSTRIAL QUARTZ SILICA SAND GRADED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. PEA GRAVEL SHALL BE HARD, SMOOTH STONE SUCH AS GRANITE WITH SMOOTH SIDES ON ALL SIDES AND WITH NO STONE MEASURING MORE THAN 3/8-INCH IN ANY DIRECTION.
2.1.3.1.2.2. CONTRACTOR SHALL INDICATE INFILL RATIOS AND INFILL DEPTH WITH EACH TURF PRODUCT.
2.1.4. INFILL THICKNESS INFILL SHALL BE PLACED TO A UNIFORM DEPTH THAT IS 3/4 INCH LESS THAN THE NOMINAL LENGTH OF THE SYNTHETIC TURF SYSTEM PILE LENGTH.
2.1.5. THE SYNTHETIC TURF SYSTEM SHALL BE PERMEABLE AND MEET THE FOLLOWING DRAINAGE CRITERIA:
2.1.5.1. SYNTHETIC TURF SYSTEM INCLUDING UNDER DRAIN SYSTEM SHALL BE CAPABLE OF DRAINING A MINIMUM OF 4 INCHES OF PRECIPITATION PER HOUR WHEN TESTED AT A 1.0% SLOPE. SYSTEM SHALL BE DESIGNED TO PREVENT INFILL MOVEMENT OR WASHING DUE TO SURFACE DRAIN CIRCUMSTANCES.
2.1.6. THE SYNTHETIC TURF SYSTEM SHALL MEET THE FOLLOWING SHOCK ABSORPTION CRITERIA:
2.1.6.1. MAXIMUM G-MAX RATING (UPON INSTALLATION) 120 ASTM F 1936
2.1.6.2. MAXIMUM G-MAX RATING (ULTIMATE) 165 ASTM F 1936
2.1.6.3. FIELD SURFACE SHALL MAINTAIN A G-MAX RATING WITHIN THE LIMITS OF THE ULTIMATE G-MAX RANGE LISTED ABOVE THROUGHOUT THE LIFE OF THE SYNTHETIC TURF SYSTEM WARRANTY.

2.2. WARRANTY
2.2.1. THE SYNTHETIC TURF SYSTEM SHALL BE WARRANTED AGAINST ULTRA-VIOLET DEGRADATION, MANUFACTURING DEFECTS OF ANY KIND, FAULTY INSTALLATION INCLUDING DEFECTIVE SEAMS AND PREMATURE WEAR AND TEAR UNDER PROPER MAINTENANCE FOR A MINIMUM PERIOD OF EIGHT (8) YEARS.
2.2.2. WARRANTY SHALL BE NON-PRORATED.

2.3. FEATURES:
2.3.1. THE SYNTHETIC TURF SURFACE SHALL HAVE ALL STANDARD NCAA BASEBALL MARKINGS INLAIN INTO THE TURF CARPET. LINE COLORS AND ANY FIELD CUSTOMIZATION SHALL BE IN ACCORDANCE WITH THE CONTRACTOR'S TURF SEAMING PLAN SUBMITTALS, AS APPROVED BY WASHBURN UNIVERSITY.

3. EXECUTION
3.1. INSTALLATION:
3.1.1. ALL INSTALLATION OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES AND BY PERSONNEL TRAINED AND AUTHORIZED BY MANUFACTURER TO INSTALL THEIR SYNTHETIC TURF SYSTEM SO AS TO MEET ALL SPECIFICATIONS OF THIS CONTRACT.
3.1.2. CARE SHALL ALSO BE TAKEN SO AS NOT TO DISTURB THE GRADED CRUSHED STONE MATERIAL. ANY RUTS, DEPRESSIONS, MOUND OR OTHER IMPERFECTIONS TO THE CRUSHED STONE SURFACE SHALL BE RE-LEVELED IMMEDIATELY PRIOR TO CONTINUING THE TURF INSTALLATION PROCESS.
3.1.3. SYNTHETIC TURF SEAMS SHALL BE MADE SO AS TO ENSURE THAT SEAM, WHEN FINISHED, HAS A GRAB TEAR STRENGTH GREATER THAN OR EQUAL TO THAT OF THE SYNTHETIC TURF SYSTEM BACKING.
3.1.4. THE SYNTHETIC TURF SYSTEM SHALL BE INSTALLED SO AS TO YIELD A SMOOTH UNIFORM FIELD SURFACE UPON COMPLETION WITH NO DEPRESSIONS, HEAVES, WRINKLES, RIPPLES, WARPS, VISIBLE SEAMS, OR BUBBLES. ALL SEAMS SHALL BE HAND WORKED AS NEEDED TO MAKE SEAMS INVISIBLE.
3.1.5. ALL INLAIN LINES, WHETHER FOOTBALL, SOCCER OR OTHER SHALL BE STRAIGHT SUCH THAT THEY DO NOT DEVIATE MORE THAN 1/2 INCH FROM A TRUE LINE OVER THEIR ENTIRE LENGTH.
3.1.6. SYNTHETIC TURF SHALL BE UNIFORMLY FASTENED AROUND THE ENTIRE PERIMETER OF THE FIELD. TURF SHALL BE ATTACHED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS AND AS SPECIFIED IN A MANNER THAT SHALL ENSURE THAT AT NO POINT ALONG ANY EDGE SHALL THE TURF PULL UP OR AWAY OR IN ANY WAY BREAK FREE THROUGHOUT THE DURATION OF THE TURF WARRANTY.
3.1.7. GRANULAR INFILL SHALL BE PLACED TO A UNIFORM DEPTH AND IN A MANNER SO AS TO CREATE A SMOOTH SURFACE WITH NO MOUNDS OR LOW AREAS IN THE INFILL UPON COMPLETION. INFILL SHALL BE APPLIED UP TO A DEPTH NECESSARY TO LEAVE ONLY THE TOP 3/4" OF GRASS FIBERS VISIBLE WHEN THE TURF PILE YARN IS FULLY EXTENDED TO ITS ULTIMATE LENGTH. HOWEVER, AT NO POINT SHALL INFILL MATERIAL BURY ANY OF THE TURF PILES. IF IN THE CASE TURF PILES BECOME BURIED BY INFILL, CONTRACTOR SHALL GROOM OR RAKE THE FIELD AS NEEDED SO AS TO LEAVE NO BURIED TURF PILES.
3.1.8. UPON COMPLETION OF THE INSTALLATION OF THE SYNTHETIC TURF AND INFILL MATERIAL, CONTRACTOR SHALL BE RESPONSIBLE TO TRIM ALL TURF PILES THAT ARE NOTICEABLY LONGER THAN ADJACENT TURF PILES SO AS TO LEAVE A FINISHED SYNTHETIC TURF SURFACE WITH NO LONG FIBERS VISIBLE.

3.2. CLEAN UP:
3.2.1. CONTRACTOR SHALL KEEP THE FIELD AREA CLEAN THROUGHOUT THE PROCESS OF THE WORK. CONTRACTOR SHALL TAKE SPECIAL CARE TO COLLECT AND REMOVE ALL TOOLS, LOOSE TURF MATERIALS, LOOSE TURF FIBERS, FASTENERS AND/OR OTHER DEBRIS GENERATED DURING TURF INSTALLATION PROCESS SO AS TO GUARANTEE THAT NO FOREIGN MATTER WILL BE BURIED WITHIN THE INFILL MATERIAL. CONTRACTOR SHALL DRAG ENTIRE FIELD WITH A MAGNET BAR UPON COMPLETION OF WORK TO ENSURE REMOVAL OF ALL METAL. CONTRACTOR SHALL ALSO CLEAN THE SURFACE OF THE FIELD OF ALL DEBRIS AND FOREIGN MATTER UPON COMPLETION OF THE WORK.

3.3. FINAL INSPECTION
3.3.1. SYNTHETIC TURF FOUND NOT TO COMPLY WITH THE CONTRACT DOCUMENTS SHALL BE REWORKED OR REPLACED AT THE CONTRACTOR'S EXPENSE UNTIL SPECIFICATIONS ARE MET.

MAMMOTH

BID DOCUMENTS

WASHBURN

WASHBURN UNIVERSITY
WASHBURN UNIVERSITY
BASEBALL OUTFIELD
CONVERSION AND FAN
ACTIVATION ZONE
1700 SW College Ave
Topeka, KS 66621

DYLAN T. MEDLOCK
LICENSED
05-09-2024
26990
KANSAS
PROFESSIONAL ENGINEER

Revision Key

No.	Date	Revision

Civil Engineer: Dylan Medlock, P.E.

Checked By: Seth Soto, P.E.

Project Number: 22-0273

Date of Issue: 05-09-2024

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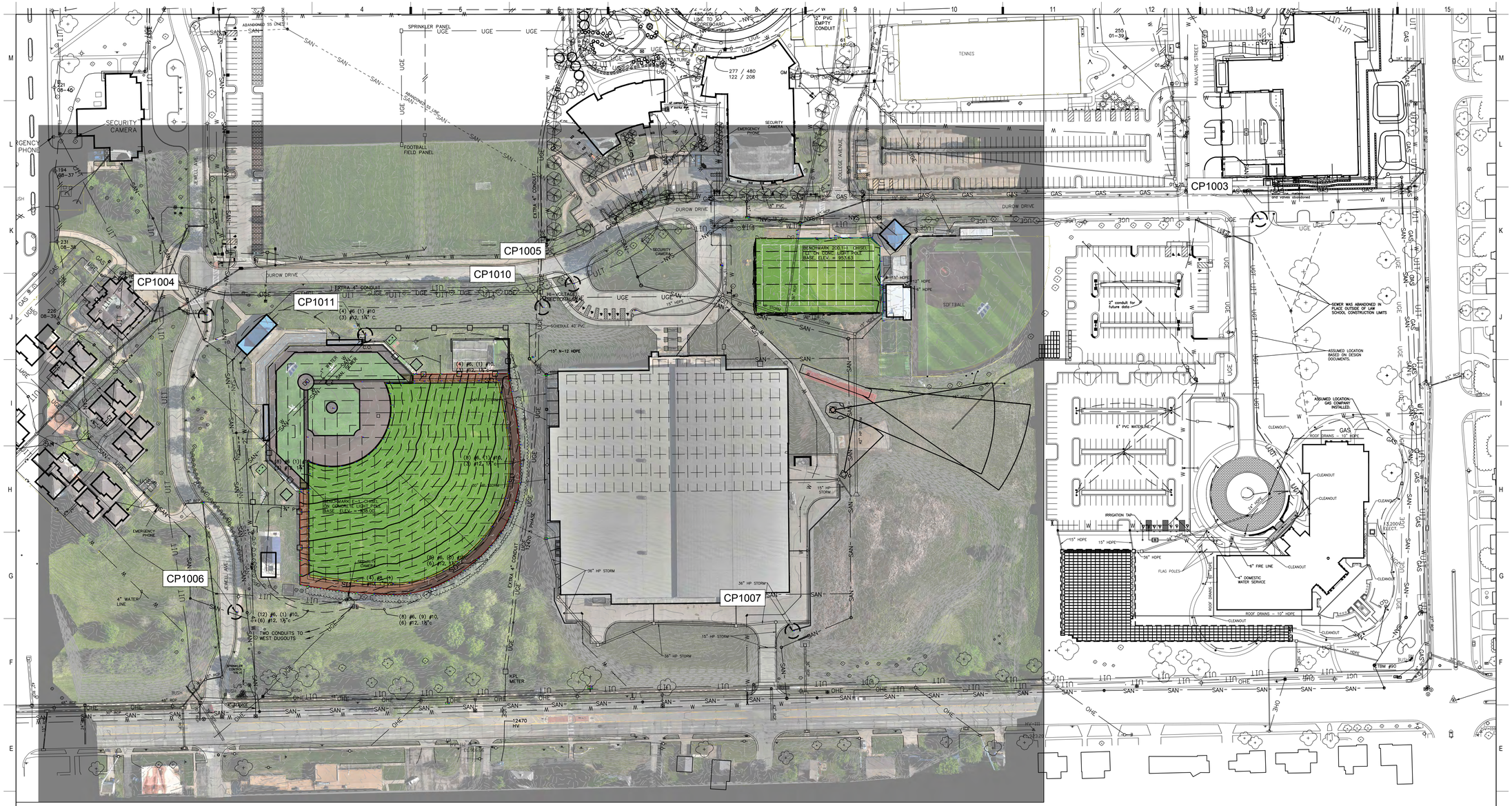
C - 001

GENERAL NOTES



SURVEY CONTROL MAP

1" = 100'

N

0 80 160 FEET

SURVEY CONTROL AND INFORMATION

DESCRIPTION:
TURF INSTALLATIONS IN TOPEKA, KS
A PART OF THE SW ¼ OF SEC 1 LESS ROW
S01, T12, R15, TOPEKA, SHAWNEE COUNTY, KANSAS

CONTROL POINTS
BASED ON NAD83, STATE PLANE KANSAS NORTH US FT (EPSG CODE 3419)

CP1003	CP1004	CP1005	CP1006	CP1007	CP1010
N: 262718.292	N: 262562.666	N: 262613.345	N: 262081.648	N: 262050.391	N: 262575.325
E: 1966213.121	E: 1964504.345	E: 1965099.125	E: 1964552.051	E: 1965455.562	E: 1965050.004
ELEV: 943.975	ELEV: 939.042	ELEV: 942.969	ELEV: 924.927	ELEV: 925.766	ELEV: 9938.791
BAR					BM INK SQ

CP1011
N: 262530.325
E: 1964762.336
ELEV: 934.651
BM INK SQ

MAMMOTH

BID DOCUMENTS

WASHBURN

WASHBURN UNIVERSITY
WASHBURN UNIVERSITY BASEBALL OUTFIELD CONVERSION AND FAN ACTIVATION ZONE
1700 SW College Ave
Topeka, KS 66621

DYLAN T. MEDLOCK LICENSED 05-09-2024 26990 KANSAS PROFESSIONAL ENGINEER

Revision Key

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Civil Engineer: Dylan Medlock, P.E.
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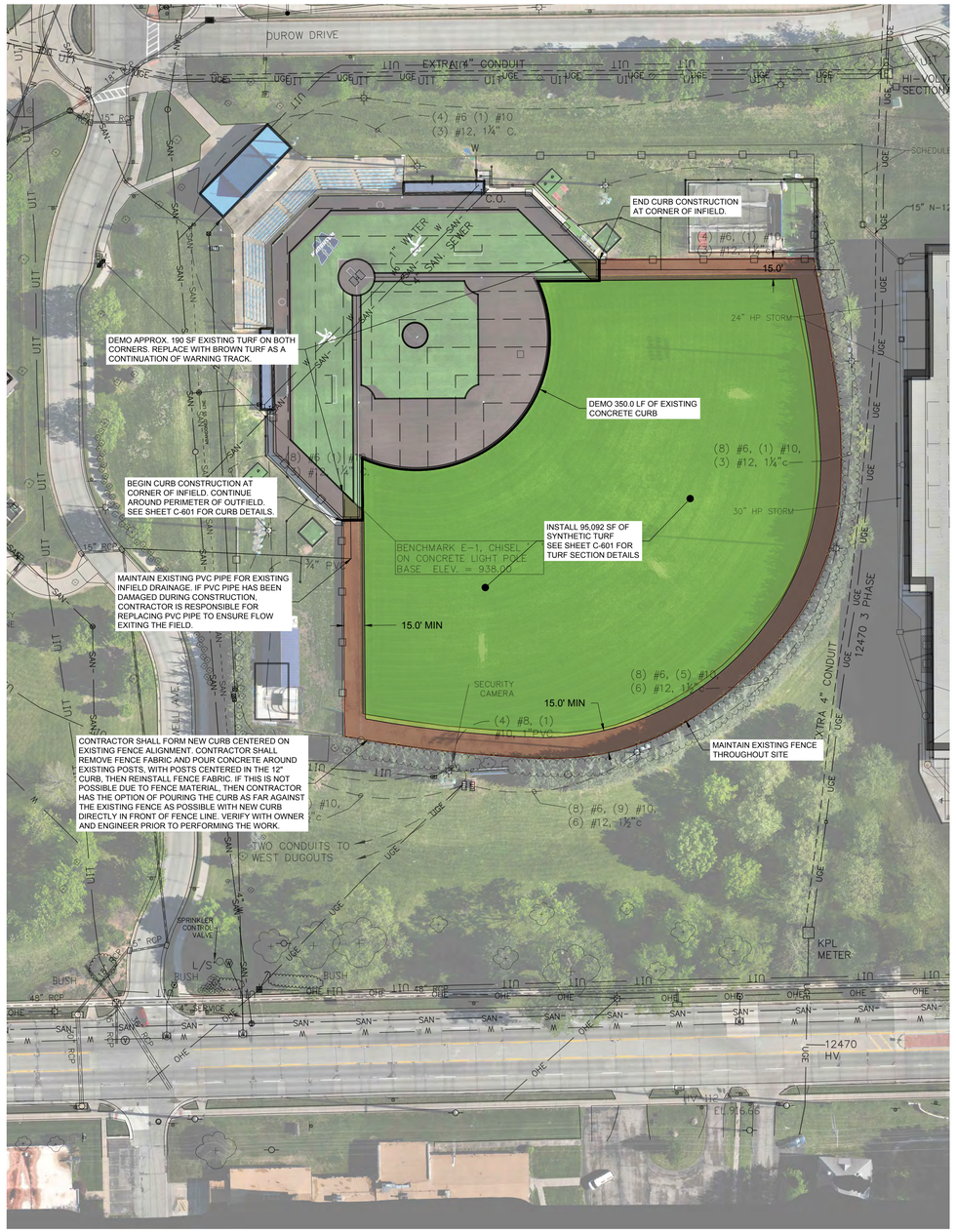
SURVEY CONTROL



SITE PLAN

1" = 50'

N

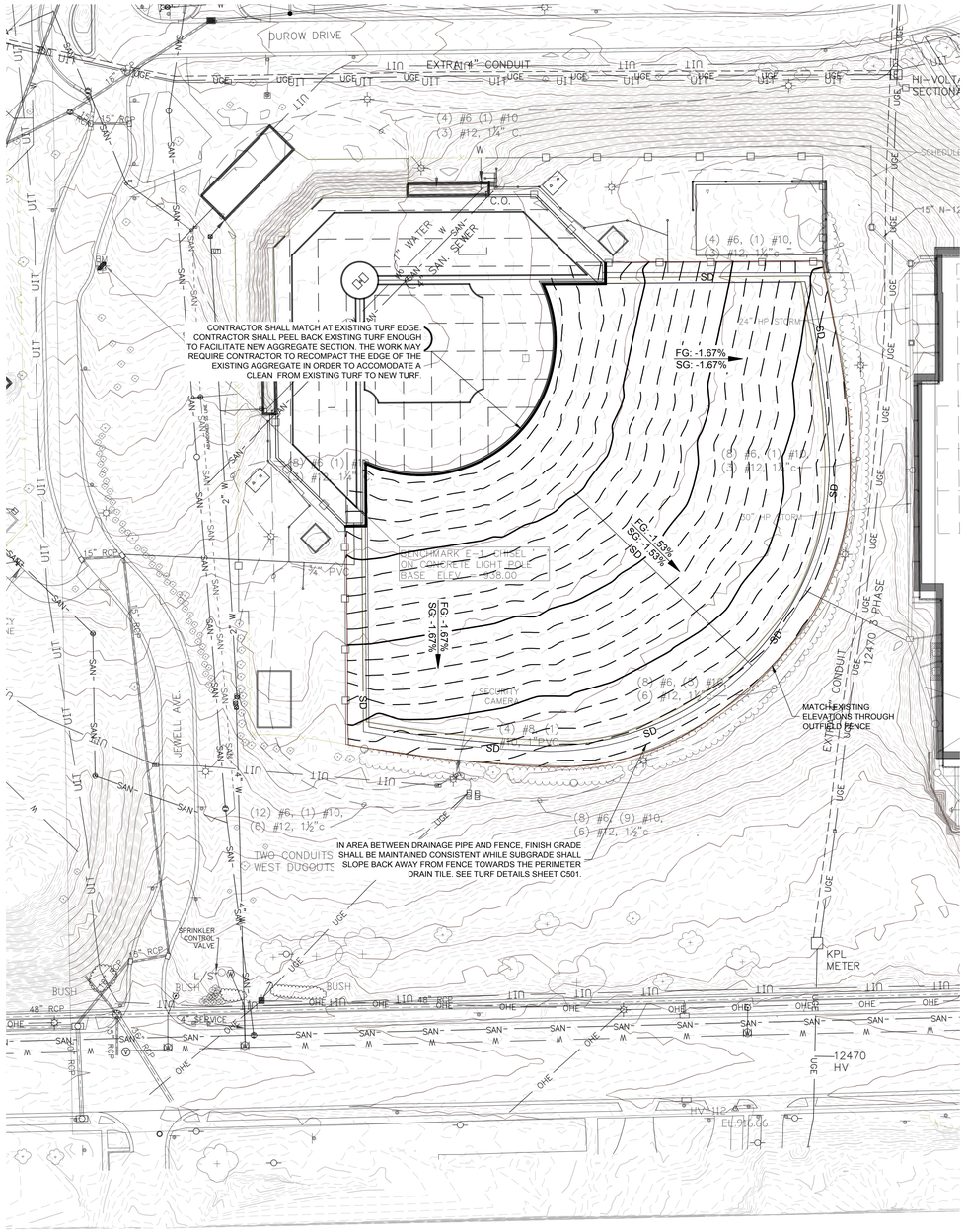
0 50 100 Feet

SITE PLAN NOTES:

1. FIELD MARKINGS AND COLORS SHOWN ARE FOR REFERENCE AND ARE SCHEMATIC IN NATURE. CONTRACTOR SHALL SUBMIT TURF SHOP DRAWINGS TO OWNER AND ENGINEER FOR REVIEW PRIOR TO PERFORMING THE WORK.
2. THIS PROJECT INCLUDES LOGOS ON FIELDS - REFERENCE THE ATTACHED VISUAL RENDERING FOR LOGOS. OWNER/ENGINEER SHALL PROVIDE AWARDED CONTRACTOR WITH LOGO FILES TO SEND TO TURF MANUFACTURER. LOGOS SHALL BE SHOWN ON SHOP DRAWINGS SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY OWNER AND ENGINEER.
3. EXISTING UTILITIES AND FENCE POSTS SHALL NOT BE DISTURBED UNLESS OTHERWISE SPECIFIED.
4. FENCE FABRIC SHALL BE REMOVED ENOUGH TO FACILITATE NEW CURB POURED AND CENTERED ALONG FENCE ALIGNMENT THEN REINSTALLED.
5. VERIFY ANY DIMENSION DISCREPANCY OR REQUIRED FIELD ADJUSTMENTS WITH ENGINEER PRIOR TO BEGINNING THE WORK.
6. EXISTING APPURTENANCES OUTSIDE OF THE FIELD SUCH AS SCOREBOARD, LIGHT POLES, FOUL POLES, SHALL NOT BE DISTURBED.

SITE PLAN LEGEND

- FIELD MARKINGS
- TURF
- DEMO



GRADING PLAN

1" = 50'

N

0 50 100 Feet

GRADING PLAN NOTES:

1. CONTOURS SHOWS ARE 0.2' MINOR CONTOURS WITH A 1.0' MAJOR CONTOUR
2. SEE GRADING SPECIFICATIONS IN GENERAL NOTES

GRADING PLAN LEGEND

- 1000 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- 1000 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- SLOPE ARROW INDICATOR

MAMMOTH

BID DOCUMENTS

WASHBURN

WASHBURN UNIVERSITY

WASHBURN UNIVERSITY BASEBALL OUTFIELD CONVERSION AND FAN ACTIVATION ZONE

1700 SW College Ave
Topeka, KS 66621

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Civil Engineer: Dylan Medlock, P.E.

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SITE PLAN & GRADING PLAN

MAMMOTH

BID DOCUMENTS

WASHBURN

WASHBURN UNIVERSITY
WASHBURN UNIVERSITY BASEBALL OUTFIELD CONVERSION AND FAN ACTIVATION ZONE
1700 SW College Ave
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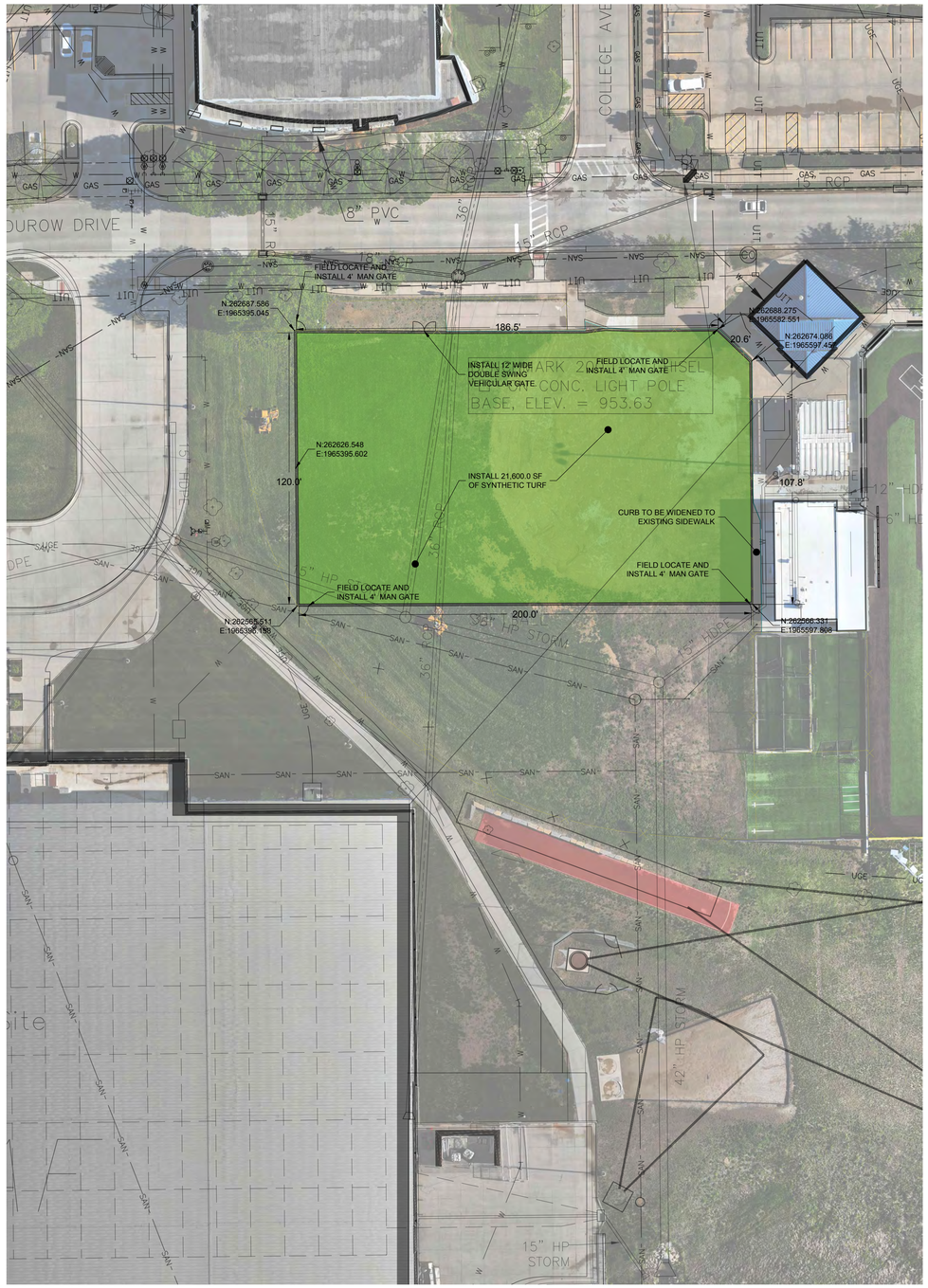

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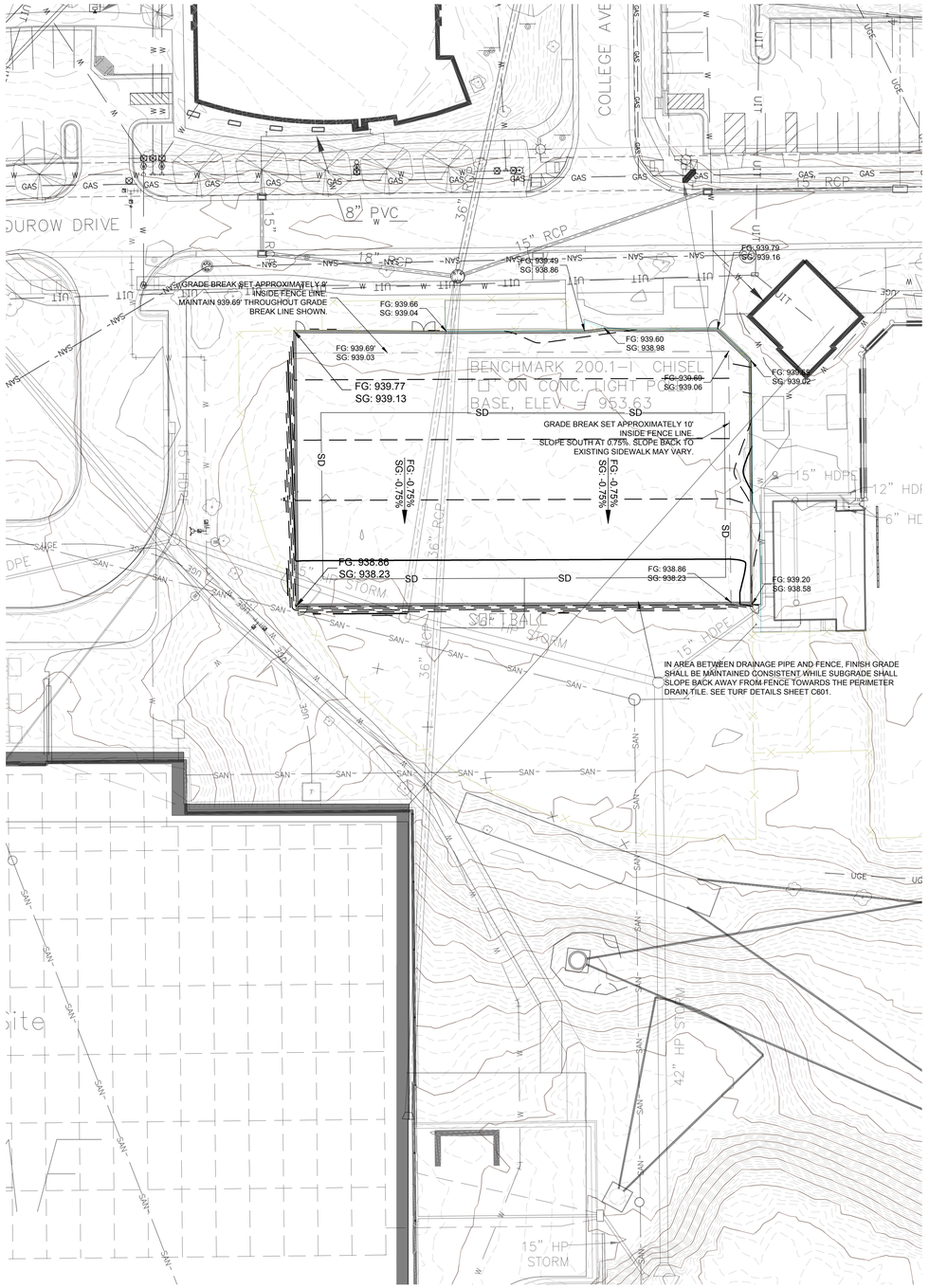
SITE PLAN LEGEND
- FIELD MARKINGS
- TURF
- CHAIN LINK FENCE



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GRADING PLAN LEGEND
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- PROPOSED MINOR CONTOUR
- SLOPE ARROW INDICATOR

D.LAN T. MEDLOCK
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Civil Engineer: Dylan Medlock, P.E.
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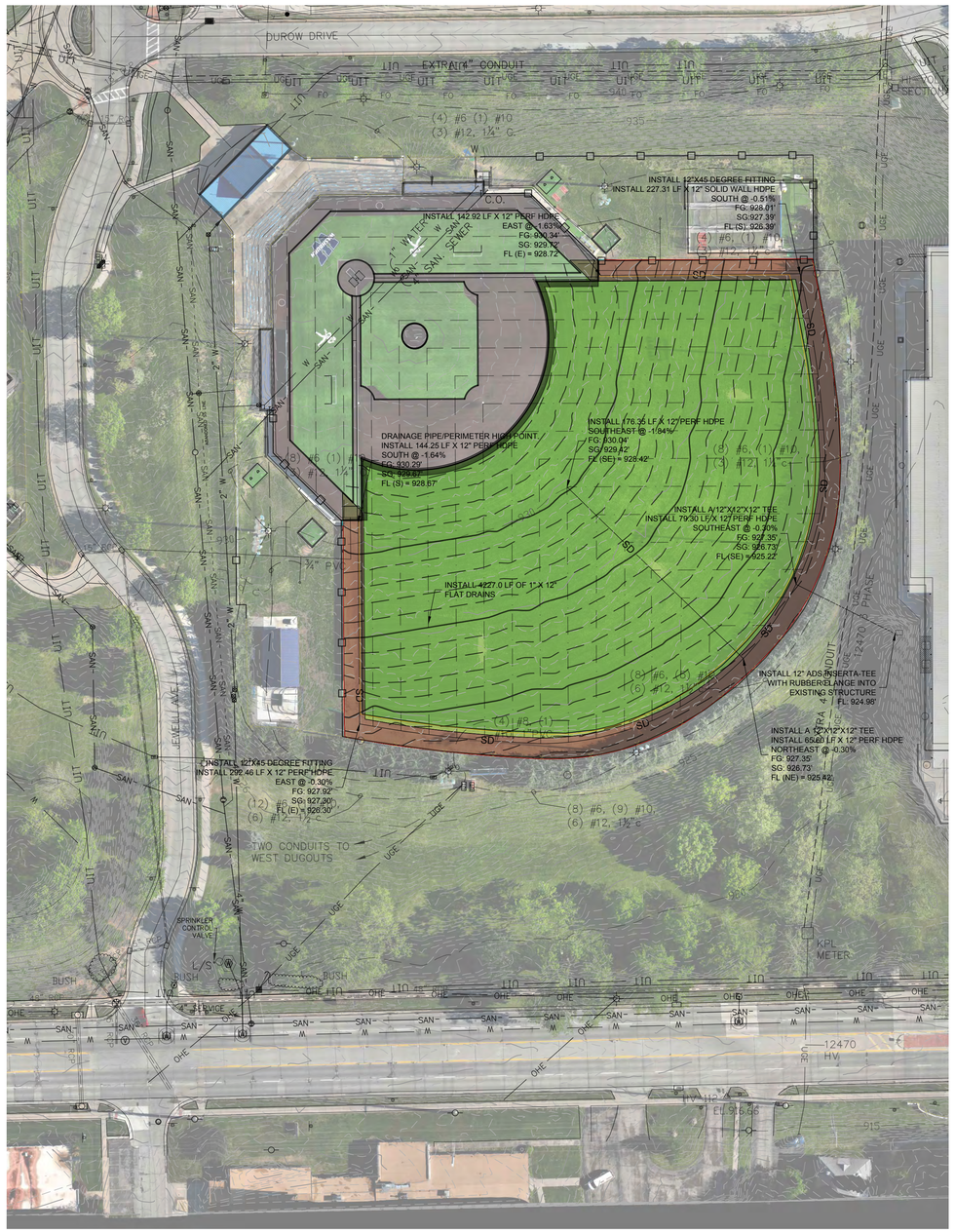
C - 202
SITE PLAN & GRADING PLAN



DRAINAGE PLAN

1" = 50'

DRAINAGE PLAN NOTES:

1. UNLESS OTHERWISE STATED, ALL ROUND PIPE SHALL HAVE A MINIMUM -0.50% SLOPE TO EXIT.
2. ALL PIPES AND PIPE FITTINGS SHALL MATCH CROWNS.
3. FLOWLINES INDICATE INSIDE PIPE ELEVATION. TRENCHES SHALL BE DUG 4" (MIN.) DEEPER IN CONSIDERATION OF PIPE THICKNESS AND MINIMUM BEDDING.
4. SEE DETAILS FOR PIPE TRENCH CROSS SECTION AND OTHER DRAINAGE DETAILS.
5. ALL PIPE ANGLES SHOWN AS 90 DEGREES SHALL BE INSTALLED WITH TWO 45 DEGREE FITTINGS.
6. NO SAND, SILT, CONCRETE WASH, DEBRIS AND ANY OTHER POLLUTANTS SHALL BE ALLOWED TO ENTER THE STORM DRAIN SYSTEM. IF POLLUTANTS HAVE BEEN FOUND TO ENTER THE SYSTEM, THE PIPES EFFECTED SHALL BE CLEANED OUT AT THE CONTRACTORS EXPENSE.

DRAINAGE PLAN LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- STORM DRAINS
- FLAT DRAINS

MAMMOTH

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PROFESSIONAL ENGINEER

Revision Key

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SITE DRAINAGE PLAN

DRAINAGE PLAN

1" = 30'

DRAINAGE PLAN NOTES:

1. UNLESS OTHERWISE STATED, ALL ROUND PIPE SHALL HAVE A MINIMUM -0.50% SLOPE TO EXIT.
2. ALL PIPES AND PIPE FITTINGS SHALL MATCH CROWNS.
3. FLOWLINES INDICATE INSIDE PIPE ELEVATION. TRENCHES SHALL BE DUG 4" (MIN.) DEEPER IN CONSIDERATION OF PIPE THICKNESS AND MINIMUM BEDDING.
4. SEE DETAILS FOR PIPE TRENCH CROSS SECTION AND OTHER DRAINAGE DETAILS.
5. ALL PIPE ANGLES SHOWN AS 90 DEGREES SHALL BE INSTALLED WITH TWO 45 DEGREE FITTINGS.
6. NO SAND, SILT, CONCRETE WASH, DEBRIS AND ANY OTHER POLLUTANTS SHALL BE ALLOWED TO ENTER THE STORM DRAIN SYSTEM. IF POLLUTANTS HAVE BEEN FOUND TO ENTER THE SYSTEM, THE PIPES EFFECTED SHALL BE CLEANED OUT AT THE CONTRACTORS EXPENSE.

DRAINAGE PLAN LEGEND

- 1000 — EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- 1000 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- SD STORM DRAINS
- FLAT DRAINS

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C - 402

SITE DRAINAGE PLAN

EROSION CONTROL PLAN

1" = 50'

N

0 50 100 FEET

EROSION CONTROL LEGEND

- SILT FENCE
- CONSTRUCTION ENTRANCE
- CONCRETE WASHOUT
- LOD — LIMIT OF DISTURBANCE

EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL EROSION & SEDIMENT CONTROL MEASURES AND PRACTICES THROUGHOUT THE PROJECT. ANY AND ALL FINES ASSOCIATED WITH EROSION CONTROL VIOLATIONS WILL BE THE CONTRACTOR'S RESPONSIBILITY.
2. EROSION CONTROL IS THE CONTRACTOR'S RESPONSIBILITY. THIS PLAN SHOULD BE USED AS A GUIDE AND REPRESENTS THE MINIMUM EROSION CONTROL DEVICES REQUIRED.
3. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. ADDITIONAL EROSION & SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON-SITE INSPECTION.
4. CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL EROSION & SEDIMENT CONTROL DEVICES AFTER EACH RAINFALL EVENT.
5. THE CONTRACTOR SHALL PROVIDE ANY FURTHER EROSION CONTROL MEASURES IN ADDITION TO THOSE LISTED TO ENSURE THAT SILT WILL NOT LEAVE THE PROJECT CONFINES.
6. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING THE TEMPORARY EROSION & SEDIMENT CONTROL DEVICES AFTER COMPLETION OF CONSTRUCTION AND ONLY WHEN AREAS HAVE BEEN STABILIZED WITH A HEALTHY STAND OF PERMANENT VEGETATION.
7. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING SILT FROM SITE IF NOT REUSABLE ON-SITE AT COMPLETION OF CONSTRUCTION.
8. THE CONTRACTOR SHALL ENSURE THAT ALL DRAINAGE STRUCTURES, FLUMES, PIPES ARE CLEANED OUT AND WORKING PROPERLY AT TIME OF ACCEPTANCE.
9. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY STABILIZATION AS REQUIRED.
10. THE CONTRACTOR SHALL PROVIDE A TEMPORARY CONSTRUCTION ENTRANCE FOR VEHICULAR TRAFFIC AT LOCATIONS SHOWN.
11. ALL EROSION CONTROL DEVICES SHALL CONFORM TO THE APPLICABLE SECTIONS OF THE STANDARD SPECIFICATIONS AND DESIGN CRITERIA OF THE ENGINEERING DIVISION DEPARTMENT OF PUBLIC WORKS, CITY OF TOPEKA, KS.
12. CONTRACTOR IS RESPONSIBLE FOR REMOVING VEHICLE TRACK OUT WHICH ENTERS PUBLIC STREETS OR PRIVATE ROADWAYS AT THE END OF EACH WORKING DAY AND PRIOR TO ANY RAINFALL EVENTS OR MORE FREQUENTLY AS ACTUAL CONDITIONS WARRANT.
13. CONTRACTOR IS RESPONSIBLE FOR PHASED INSTALLATION OF EROSION CONTROL BMP'S IN ORDER TO PREVENT SEDIMENT FROM BREACHING THE LIMITS OF DISTURBANCE.
14. SILT FENCE DOES NOT CROSS SIDEWALK OR PAVEMENT.

MAMMOTH

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Civil Engineer: Dylan Medlock, P.E.

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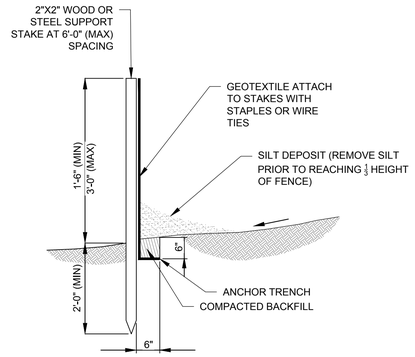
SWPPP MAP

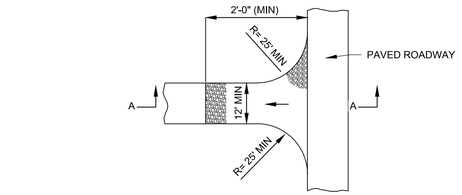


NOTES:

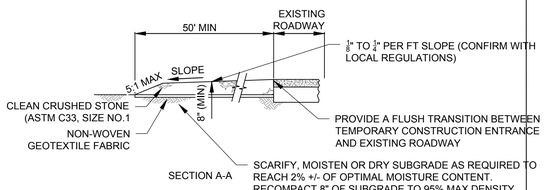
1. SILT FENCE MAY BE A COMMERCIALLY MANUFACTURED PRODUCT OR FABRICATED IN FIELD USING GEOTEXTILE CUT TO THE LENGTH OF THE BARRIER. WHEN JOINTS ARE UNAVAILABLE, THE ENDS OF THE ADJACENT PANELS OF SILT FENCE SHALL BE FOLDED TOGETHER AROUND 2 STAKES AT LEAST ONE FULL TURN AND SECURED WITH STAPLES OR WIRE TIES.
2. TURN THE ENDS OF THE SILT FENCE UPHILL TO PREVENT WATER FROM FLOWING AROUND THE FENCE. THE LAST 8' OF FENCE SHALL BE TURNED UP SLOPE.
3. AT END POINTS OF THE SILT FENCE THE GEOTEXTILE SHALL BE FOLDED AROUND THE LAST STAKE AT LEAST ONE FULL TURN AND SECURED WITH STAPLES OR WIRE TIES.

SILT FENCE

NTS



PLAN

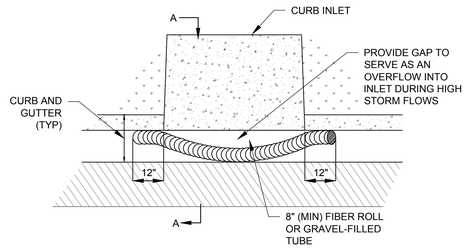


NOTES:

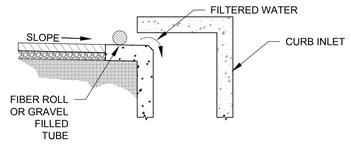
1. TEMPORARY CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED DURING CONSTRUCTION.
2. ALL SEDIMENT DEPOSITED ON PUBLIC ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE DAILY, WASHING OF ROADWAYS IS NOT PERMITTED.
3. REMOVE BUILT-UP SEDIMENT AS NECESSARY TO AVOID TRACKING ONTO PAVED ROADWAY.
4. PROVIDE TEMPORARY DRAINAGE AROUND THE ENTRANCE AND DIRECT DISCHARGE TO SEDIMENT CONTROL MEASURES WITHIN THE PROJECT SITE.
5. PROVIDE ¼" FT CROSS SLOPE ON CONSTRUCTION ENTRANCE IF SITE GRADES WILL NOT ACCOMMODATE THE LONGITUDINAL SLOPE SHOWN.

TEMPORARY CONSTRUCTION ENTRANCE

NTS



PLAN



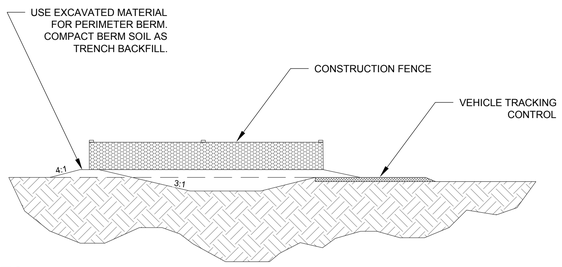
SECTION A-A

NOTES:

1. INLET PROTECTION MAY CONSIST OF A FIBER ROLL OR CONTINUOUS FILTER TUBING FILLED WITH GRAVEL OR OTHER PREFABRICATED FILTER MATERIAL. INSTALL DEVICE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
2. INCREASE SIZE ON INLET PROTECTION DEVICE AS REQUIRED TO COMPLETELY BLOCK OPENING TO CURB INLET.

CURB INLET PROTECTION

NTS



NOTES:

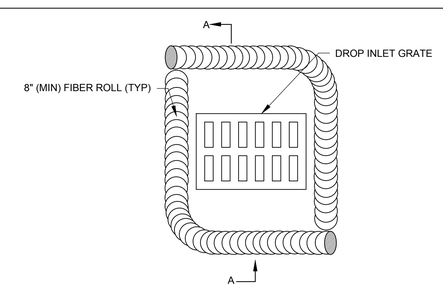
1) CONCRETE WASHOUT(S) SHALL BE INSTALLED BEFORE ANY CONCRETE PLACEMENT IS DONE ON SITE AND SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.
2) WASHOUT PIT(S) SHALL BE SIZED TO REFLECT THE AMOUNT OF CONCRETE WORK BEING DONE ON SITE. SLOPES RUNNING OUT OF THE PIT(S) SHALL BE 3:1. THE VEHICLE TRACKING PAD(S) SHALL BE SLOPED TOWARDS THE WASHOUT AREA(S).
3) VEHICLE TRACKING CONTROL IS REQUIRED AT ACCESS POINTS TO ALL CONCRETE WASHOUTS.
4) SIGNAGE IS TO BE PLACED AT THE ENTRANCE TO THE CONSTRUCTION SITE, WASHOUT AREA(S), AND ELSEWHERE AS NECESSARY TO BETTER INDICATE THE LOCATION(S) OF CONCRETE WASHOUT AREA(S).
5) A ONE-PIECE IMPERVIOUS LINER MAY BE REQUIRED ALONG THE BOTTOM AND SIDES OF THE WASHOUT PIT(S) IN SANDY OR GRAVELLY SOILS.

MAINTENANCE:

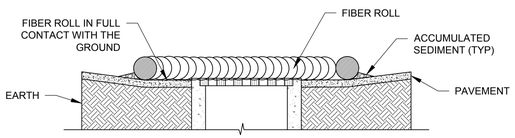
1) CONCRETE WASHOUT AREA(S) SHALL BE REMOVED ONCE MATERIALS HAVE FILLED THE PIT TO ROUGHLY 75% CAPACITY.
2) CONCRETE WASHOUT AREA(S) SHALL BE ENLARGED/DOWNSIZED AS NECESSARY TO MAINTAIN SUFFICIENT CAPACITY FOR WASTED CONCRETE.
3) CONCRETE WASTE, INCLUDING WASHOUT WATER AND OTHER DEBRIS IN THE WASHOUT PIT(S) SHALL BE TRANSPORTED FROM THE SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.
4) WHEN CONCRETE WASHOUT AREAS ARE REMOVED, EXCAVATIONS SHALL BE FILLED WITH SUITABLE COMPACTED BACKFILL AND TOPSOIL. ANY DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE WASHOUT AREA(S) SHALL BE STABILIZED.

CONCRETE WASHOUT

NTS



PLAN



SECTION A-A

NOTES:

1. INSTALL FIBER ROLL WITH STAKES SPACED NO MORE THAN 24" ON CENTER. DRIVE STAKES 12" (MIN) INTO UNDISTURBED SOIL.

CURB INLET PROTECTION

NTS

MAMMOTH

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Civil Engineer: Dylan Medlock, P.E.

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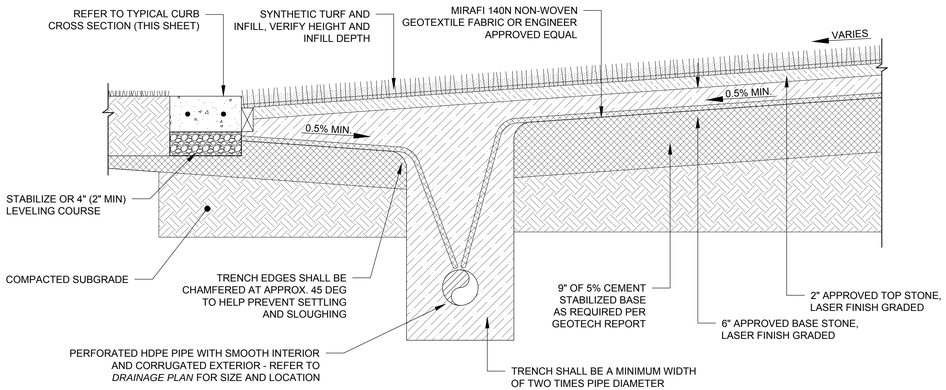
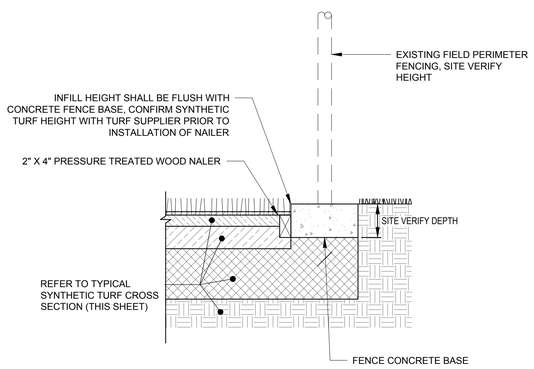
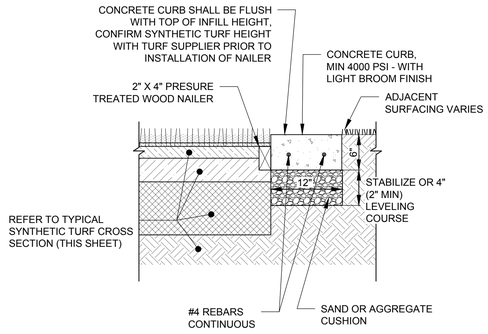
C - 502
SWPPP DETAILS



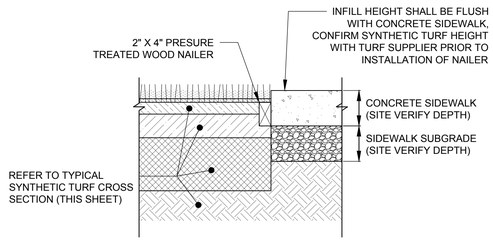
ARTIFICIAL TURF SECTION WITH NEW CURB



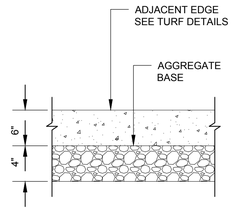
WOOD NAILER AT CONCRETE SIDEWALK EDGE DETAILS



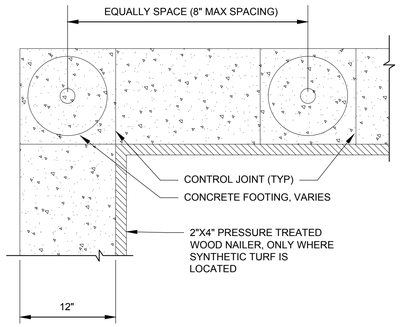
MAINTENANCE STRIP DETAILS



WOOD NAILER AT CONCRETE SIDEWALK EDGE DETAILS



SECTION A-A



PLAN VIEW

MAMMOTH

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STANDARD DETAILS