GENERAL NOTES

Provide all materials and perform construction in accordance with City of Wichita Standard Specifications, unless shown or stated otherwise on these Drawings or in the Special Provisions.
Horizontal Project Datum: NAD83 State Plane, south zone
Vertical Project Datum: NAVD88, USGS mean sea level

EXCAVATION SAFETY:

Provide a minimum advance notice of seventy-two (72) hours to utility companies prior to starting any excavation, as follows:

Kansas one-call or local Wichita	1-800-344-7233 687-2470

The contractor must notify the following in case of an emergency:

AT&T (telephone)	1-800-870-8390
Cox communications (cable)	262-0661
Westar (electric)	383-8600
Kansas gas service (gas)	1-888-482-4950
City of Wichita, Water & Sewer Maintenance.	262-6000
Black Hills (gas)	946-0096

Preserve all existing property irons. Reestablish any property irons damaged or destroyed by construction operations. Reestablishment of damaged irons shall be at the contractor's expense by a licensed land surveyor in accordance with Kansas state laws.

City of Wichita Public Works Department (PWD) shall provide all construction staking at no cost to the contractor. Coordinate survey staking with the PWD and give the surveyor 24 hours notice when stakes are required.

Project surveys used the NAD83 state plane coordinate system, south zone. No coordinates were modified to ground. Elevations are in USGS mean sea level datum (NAVD 88).

No utility relocations are expected for this project. If an unforeseen utility conflict arises, the contractor shall consult with the City of Wichita and the design engineer to determine if the toe drains alignment will be altered or continued through the utility. The Contractor shall work around existing utilities within the right-of-way that do not conflict with the proposed construction. The plans do not show existing utility locations. Utilities in the Flood Control right-of-way are limited, but the contractor is responsible for having utility locates completed prior to construction.

Others will relocate all business signs, posts and landscaping features that conflict with the new construction prior to construction. Contractor shall remove and dispose of all items that remain within the construction limits upon the start of construction, unless otherwise noted.

Contractor shall dispose of and provide disposal sites for all rubble from the removal of miscellaneous structures and excess excavation that is to be wasted. Engineer shall approve the suitability, appearance and site location of disposal sites. Engineer shall not approve locations that will leave an unsightly appearance, in Engineer's opinion. Obtain approval from Kansas Department of Health and Environment for all disposal sites. Obtain Kansas State Board of Agriculture permits for any material stockpiled or disposed of in a flood plain. Obtain approval and permits from U. S. Army Corps of Engineers for any material deposited in waters of the United States or wetlands. Provide additional archeological investigations for any material buried or stockpiled beyond approved construction limits unless buried or stockpiled in a previously approved disposal location.

Items noted for removal may be abandoned in-place if done so in conformance with City of Wichita standard specifications at no additional cost to City of Wichita. Contractor may remove items noted to be abandoned in-place or if in conflict with the proposed improvements at no additional cost to City of Wichita. Cost for removal or abandonment is subsidiary to "removal of existing items" and includes all removal items noted and not-noted on the plan sheets.

Maintain access control along the project corridor throughout construction. Construct temporary fence at no additional cost to the City of Wichita, if necessary, to maintain access control.

Excavation on the levee embankment shall require the excavation area to be re-established in accordance with the Grading Notes section of these General notes.

SITE RESTORATION NOTES:

Repair rutting on levee surfaces due to storm water runoff throughout construction. Replace lost seed, fertilizer and erosion control devices at no additional cost to City of Wichita.

Repair or replace damaged items not part of the project at no additional cost to City of Wichita.

Place topsoil to a minimum depth of 6 inches or as specified on the drawings. The finished grade on Drawings indicates the surface elevation after placement of the prescribed topsoil thickness. Offsite topsoil borrow shall be fertile natural topsoil, typical of the locality, obtained from well-drained areas. Stockpiled topsoil may be used. It shall be without admixture of subsoil or slag and shall be free of stones, lumps, sticks, plants, or their roots, toxic substances or other extraneous matter that may be harmful to plant growth or would interfere with future maintenance. Topsoil pH range shall be 5.5 to 7.0. Engineer shall approve topsoil prior to placement.

Rake all gravel or other similar debris larger than ½inch in diameter and remove during final grade preparation.

Seeding Operations

Substitute the following for City of Wichita Specification Section 902.2 and Table 902-1.

Provide seed in standard containers that is new crop seed complying with and labeled in accordance with U.S. Department of Agriculture rules and regulations under the Federal Seed Act in effect at the time of purchase. Furnish a statement certifying the purity percent, germination percent, and the sproutable seed percent for the seed. Store the seed in a cool, dry place. Seed that is moldy, wet or otherwise damaged will not be accepted.

Water seeded areas with a deep soaking every two (2) weeks during dry periods until a mature stand of grass is obtained.

Permanent seeding shall be completed between September 1 and April 1. Temporary seeding between April 1 and September 1 shall include seeding Annual Rye at a rate of 100 PLS lbs. per acre and shall be either planted and covered by North American Green S150 erosion control mat or hydroseeded with bonded fiber matrix mulch (mulch applied at 3000 lbs per acre).

Seeding shall be accomplished per the following rates and specifications:

COMMON NAME	RATE(PLS lbs/acre)*
Smooth Brome	75
K-31 Fescue	300
Annual Rye	100
Fertilizer (10-20-10)	350

*Pounds of pure live seed per acre

The Seeding process shall include in order:
1. Furnish topsoil
2. Finish grading
3. Prepare seedbed
4. Seed and maintain areas as required.

All embankment side slopes and areas within 15 feet of the levee toe shall be seeded and covered with an Erosion Control Blanket (North American Green SC-150, or approved equal). All other seeded areas shall be covered with a prairie hay mulch, or equivalent. No bare ground shall be visible in the seeded area. Thick clumps of mulch are not permissible. Provide uniform coverage. Mulch shall be applied at a minimum of 4,000 lbs. per acre.

Seeding shall not be performed in windy weather. Seeding shall be done in two (2) directions at right angles to each other. A 3-ft wide strip shall be sodded along sidewalks, roadways, and parking areas to prevent washing and erosion. Following initial soil disturbance or redisturbance, permanent or temporary erosion control measures shall be installed within seven days. The erosion control measures shall be installed on all perimeter slopes and all other disturbed or graded areas on the project site.

Seeding Operations (cont.)

The contractor shall be responsible for establishing a vigorous stand of vegetation in project seeding areas. A vigorous stand of vegetation for this project shall be defined as vegetation having a density equal to at least 70 percent of the vegetation density on undisturbed areas at the site. All work associated with seedbed preparation, seeding, mulching, and vegetation establishment shall be subsidiary to the Site Restoration bid item.

EROSION CONTROL BLANKET will be paid for seperately.

TRAFFIC CONTROL AND CONSTRUCTION SEQUENCING NOTES:

Prepare and submit a construction sequence plan prior to beginning construction.

Erect and maintain traffic control as necessary. Provide all other traffic control necessary due to construction activity on or near local or private streets at no additional cost to City of Wichita.

Maintain adequate drainage within the project limits throughout all construction activities. Provide any temporary grading or storm collection/distribution necessary to provide adequate drainage not outlined on the Drawings at no additional cost to City of Wichita.

Locate acceptable fill material sources; determine haul routes to and from the construction site, and establish staging on or near the construction site.

SPECIAL NOTES REGARDING BREACHES THROUGH THE LEVEE:

Breaching of the levees during this Work is not necessary and will not be permitted.

TREE REMOVAL NOTES:

Removal of all woody vegetation and trees within a clear zone is required to provide access for periodic inspection, regular maintenance, and flood fighting (if required), as well as to protect the levee from damage due to tree root intrusion and from trees blowing over and uprooting the levee.

No tree removal is anticipated for this work. Inspect each proposed work area and report all trees within 10 feet of proposed toe drain alignment.

TREE TRIMMING NOTES:

No tree trimming is anticipated for this work. Inspect each proposed work area and report all trees within 10 feet of proposed toe drain alignment.

EROSION CONTROL NOTES:

The contract documents provide for the construction of all improvements without necessity of entering or disturbing any regulated streams or drainage systems. If the contractor determines that entering a regulated stream or drainage system will be necessary, he will be responsible for obtaining all permits and adhering to all regulatory requirements. The contractor shall prevent all construction material and debris from coming in contact with any regulated stream or drainage system.

GRADING NOTES:

Levee construction usually occurs in narrow strip with limited access for equipment to transport, place, spread, and compact the fill. To assure that the levee is stable and resistant to the forces of water, it is critical that the toe drains be properly prepared, good materials be used, and that satisfactory compaction be accomplished. Because the construction usually takes place in a narrow strip, conventional mass grading techniques and testing frequencies are usually not appropriate.

Excavation near the toe of a slope (especially a trench parallel to the toe of the slope) can result in reducing the stability of the slope and result in slope failure.

Only that portion of the Work that can be opened and backfilled safely within a work shift or continuous shifts may be performed. Leaving a trench open overnight or over a weekend is not permitted. Inspect levee slopes during the work for signs of distress (tension cracks, bulges, depressions, etc).

Preparation

Clear the Work area by complete removal of all objectionable matter and/or obstructions above the ground surface. Objectionable matter includes all trees, fallen timber, brush, vegetation, loose stone, abandoned structures, fencing, and similar debris. Clear the entire area of the proposed toe drains for each work segment prior to construction operations. Dispose of objectionable matter and/or obstructions in approved disposal areas.

Within the Work area, grub all stumps, roots, buried logs, old piling, old paving, drains, and other objectionable matter. Remove roots or other intrusions over 1-1/2 inches diameter within the toe drains work segment. Slope the sides of all holes and depressions caused by grubbing operations no steeper than 1.5:1.0 (H:V) before backfilling. Dispose of grubbed material in approved disposal areas.

Strip topsoil from Work areas to a minimum depth of 4 inches or as designated on Drawings. Stockpile stripped material that is suitable to later reuse as topsoil. Material that does not contain wood, clods, and other objectionable material (i.e. roots, rocks, and debris) and contains adequate moisture and is capable of supporting vegetation growth may be suitable for use as topsoil. Dispose of unsuitable stripped material in approved disposal areas.

Before removing any old or abandoned pipes or any other objects that are in the levee, approval should be obtained from USACE indicating the removal and backfilling process.

Engineered Fill

In general, soil excavated in Work areas that is free of organic matter and other objectionable material (i.e. roots, rocks, and debris) and is of suitable moisture content, is suitable for reuse as engineered fill.

Obtain Record Test results or test proposed engineered fill soil as indicated in "Record Tests" prior to beginning fill placement for the Work. Perform record tests of the engineered fill soil at least once for every 5,000 cubic yards (or fraction thereof) of engineered fill used after placement commences. Retest the engineered fill as indicated in "Record Tests" if the consistency, color, texture, or appearance of the engineered fill changes significantly.

Maintain construction slopes and grades to provide positive drainage during all grading operations; if necessary, install sumps and provide pumps to maintain the Work free of standing water.

Frozen material shall not be used nor shall any fill be placed on frozen surfaces.

No foundation or embankment backfill shall be placed in standing or running water. Should a quick condition develop, dewatering by well points or other methods, shich will nullify the excess gradient, shall be used. Sump pumping will not be permitted.

Record Tests

Test each type engineered fill used for the Work to determine the MDD and optimum moisture content (OMC) per ASTM D-698 (standard Proctor) and the soil classification per ASTM D2487 (USC) of the material. Perform all tests necessary to provide the USC classification (e.g., plasticity characteristics per ASTM D4318 (Atterberg Limits), particle size distribution per ASTM D422, specific gravity ASTM D854) for each type of engineered fill soil. Assure that all engineered fill used for the Work meets the Unified Soil Classification (USC) system type SM, SC, CH, CL, or ML. Soil not meeting those USC types must have hydraulic conductivity (ASTM D5084) and triaxial shear (ASTM D4767) tests at 95% of the soils MDD at OMC submitted for approved by Engineer.

Identify each record test with a unique designation that includes a clear description and photographs of the soil in both moist and dry states so the routine density tests can be readily matched to the appropriate record test. Publish copies of all record tests to City of Wichita, Engineer, Testing Service, Contractor, and/or other entities on the distribution list. Maintain at least one up-to-date set of copies at all Work site(s).

Compaction & Moisture Control

Place approved engineered fill in maximum 12 inch thick, loose lifts and compact to at least 90% of its MDD within the levee embankment slopes and crown. Maintain engineered fill moisture content between -3% to +3% of its OMC prior to and during compaction.

GRADING NOTES(cont.):

Routine Density Tests

Perform routine density tests at a frequency of at least one test per each 2000 square feet, per lift, on all engineered fill placed for the Work with a minimum of at least three tests for each complete lift of engineered fill. Match each routine density test to the record test that most closely matches the soil at the test location.

Identify each routine density test with a unique designation and provide written documentation of each test location, elevation, actual lift thickness measurement, matching record test, actual moist density, actual moisture content, actual dry density, percent of MDD and OMC relative to the matched record test, whether the test passes or fails, and, if a retest of a failed test, the original test's unique designation.

The following table indicates the required precision for test locations:

Location station and offset	to the nearest ten feet
Elevation	to the nearest 1/2 foot
Lift thickness	to the nearest 1/10 foot

A test fails if the compaction is less than the specified criteria for MDD or if the moisture is outside of the specified range for OMC (e.g., a test may have acceptable compaction but fail due to being too dry or too wet). If routine density tests indicate inadequate compaction or excessively dry or moist soil, rework the whole lift represented by the failing test. Retest the failed area after is has been reworked and recompacted.

TOE DRAIN PIPE:

The toe drain pipe shall be 6" diameter, perforated, dual wall, High Density Corrugated Polyethylene (HDPE) such as ADS N-12 pipe as manufactured by Advanced Drainage Systems, Inc. (ADS), or pre-approved equal. All pipe shall conform to AASHTO M252 (4"-10") latest editions. All pipe shall be type SP with a full circular cross section, outer annular corrugated pipe wall, a smooth inner wall. Pipe shall be perforated to comply with the perforation requirements specified in AASHTO M252 with a slot length of 0.875" and slot width of 0.125", and minimum inlet area of 1.0 sq. inch/ft. Pipe diameter will be based on the inside open diameter of the pipe. HDPE Pipe will only be allowed from manufacturers listed as a KDOT Prequalified Polyethylene (PE) pipe manufacturer per KDOT PQL-47 of the KDOT 2007 Pipe Policies.

Unless otherwise specified on the plans or herein, thermoplastic pipe shall conform to the following:

A. High Density Polyethylene (HDPE) Corrugated and Smooth Lined Pipe shall be manufactured to comply with requirements for test methods, dimensions, and markings found in AASHTO M 252 and AASHTO M294, latest editions.
B. High Density Polyethylene (HDPE) Corrugated and Smooth Lined Pipe shall be Manufactured from virgin PE compounds which conform with the requirements of cell Class 335500C as defined and described in ASTM D 3350.
C. Minimum pipe stiffness (PS) at five percent deflection shall be as described in AASHTO M294, Section 7.4 when tested in accordance with ASTM D 2412.
D. Pipe shall be manufactured in a plant which has been 3rd party certified by the Plastic Pipe Institute (PPI) to produce pipe meeting or exceeding the manufacturing and materials requirements of AASHTO M294.
E. Pipe shall have ADS SOCK synthetic wrap (as manufactured by Zodiac Fabrics, Inc.) or approved equivalent factory installed. The filter shall meet the requirements of the following table.

PROPERTY	TEST METHOD	
Material	–	Polyester
Fabric	–	Knitted
Permitivity (min.)	ASTM D4491	5.5 sec-1
Puncture Resistance (min.)	ASTM D6241	1000 N
AOS (max.) AOS (min.)	ASTM D4751	0.60 mm 30 U.S. Sieve 0.42 mm 40 U.S. Sieve
FOS (max.)	CAN/CGSB-148.1, M10-94	450 microns
Mass (relaxed)	ASTM D3887	3.0-3.9 oz/yd2
Mass (applied minimum)		2.7-3.5 oz/yd2
Thickness (min.)	ASTM D4491	24.0 mils
Permeability (K)(min.)	ASTM D4491	0.390 cm/sec
Burst Strength (min.)	ASTM D3887	830 kpa
Air Permeability (min.)	ASTM D737	700 ft3/ft2/min
Water Flow Rate (min.)	ASTM D4491 (2" CONSTANT HEAD)	300 gal/min/ft2
Yarn Denier	–	150
Specific Gravity	–	1.3
Melt Temperature	–	450 deg. F

JOINTS & CONNECTIONS: Joints and connections shall be of like material and produced by the pipe manufacturer for use with the pipe specified. Joints shall be installed such that the connection of pipe sections will form a continuous line free from irregularities in the flow line. Pipe Joints shall be soil tight per definition in accordance with AASHTO section 26.4.2.4, and shall use a non-gasketed integral bell.

Fitting joints – Shall be either integral bell/bell or external coupler covering a minimum of two corrugations at each end.

TOE DRAIN RISERS: The toe drain riser pipe shall be of like material and shall meet all the requirements of the toe drain pipe with the following exceptions:

A. The riser pipe shall not have perforations.
B. The riser pipe shall not be wrapped with a filter sock.

INSTALLATION NOTES:

Excavated trenches on average will be 3 feet wide and 10 feet deep. All existing toe drain pipe, toe drain risers, damaged riser caps, and filter media shall be excavated and properly disposed of. All salvageable riser caps shall be given to the City. Top soil that is excavated during trenching should be stockpiled for later use. Appropriate erosion control measures shall be implemented to prevent sediment movement from any stockpile area established.

HDPE pipe shall be installed in accordance with local regulations or per ASTM D2321 and manufacturer's recommendations. The pipe shall be bedded in the toe drain filter media (C33 Sand). Approximately 12 inches of bedding shall be placed beneath the pipe to establish correct line and grade. The trench width shall be a minimum of 3 feet, or of sufficient width to permit proper compaction. The filter media shall be installed and hand compacted to greater than 85% standard proctor density until the toe drain pipe is covered by a minimum of 1.5 feet of filter media. The remaining trench opening shall be filled with coarse sand or sand/gravel mix free of fine silts and clays (less than 1% passing the #200 sieve). Flooding and jetting shall not be used for compaction without the design engineer's approval. The top foot of the trench shall be filled with stockpiled top soil and compacted to a minimum of 90% of the standard proctor density.

Mandrel deflection testing shall be used to ensure the pipe has not deflected more than 7.5% and shall be completed within 30 days of the pipe installation. Pipe deflections greater than 7.5% will not be allowed and will result in the contractor replacing any sections of pipe that do not meet this standard at the contractor's expense.

FILTER GRADATION:

The toe drain filter shall be a C33 aggregate gradation.

ASTM C33 SAND GRADATION REQUIREMENTS	
SIEVE SIZE	PERCENT PASSING
3/8"	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10
No. 200	less than 1.0

MARK	DESCRIPTION	DATE	APPR.

amec
AMEC Earth & Environmental, Inc.
1129 SW Wanamaker
Topeka, Kansas 66604
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Fax: (785) 272-2878

CITY OF WICHITA

LOWER LEVEE "D" TOE DRAIN INSTALLATION
WICHITA-VALLEY CENTER LOCAL
FLOOD PROTECTION PROJECT
WICHITA, KANSAS

PREPARED FOR
THE CITY OF WICHITA, KANSAS
455 N. Main
Wichita, KS 67202

LAWRENCE J. SAMPLE
LICENSED
15855
8/13/12
KANSAS
PROFESSIONAL ENGINEER

DESIGNED BY: Larry Sample, PE		DATE: 08-13-2012
DWN BY: RES	CKD BY: LBK	APP BY: L. SAMPLE

FILE NAME: 03_GENERAL NOTES.dgn

AMEC PROJ. NO. 5-6150-0001

GENERAL NOTES

G-0.02

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