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.

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	*1-800-344-7233*
or local Wichita	*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 existing property irons shown on Drawings that are to remain. 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).

Others will adjust utility service lines, poles, valve boxes, meters, etc., as necessary, prior to construction unless the Drawings specifically call for their adjustment by Contractor. Existing utilities and their location, as shown on the Drawings, represent the best information obtainable for design. Some utilities were relocated and may not reflect so on the Drawings. Various utility companies provided utility location information from record drawings or field locations; the plan locations shown are not guaranteed. Additional existing utilities may also be encountered. Contractor shall work around existing utilities within the right-of-way that do not conflict with proposed 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 provide disposal sites for and dispose of 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 dumped 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.

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.

SITE RESTORATION NOTES

Repair rutting on levee surfaces due to storm water runoff throughout construction. Significant rutting shall be repaired in accordance with procedure shown on sheet SP-2.13. 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 ½ inch in diameter and removed 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. Install erosion control blanket (Curlex 1, or approved equal) on all seeded areas except as noted in the Drawings.

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 seeded areas on or within 15 feet of the toe of the levee embankment shall be covered with an Erosion Control Blanket (Curlex I, or approved equivalent). All other seeded areas shall be covered with a prairie hay mulch, or equivalent. No bare ground shall be visible in the seeded area if proper application is achieved. Thick clumps of mulch are not permissible as uniform coverage is expected. 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 of all perimeter slopes and all other disturbed or graded areas on the project site.

All costs for this Work shall be subsidiary to the Seeding and Site Restoration bid item.

TRAFFIC CONTROL AND CONSTRUCTION SEQUENCING NOTES:

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

Erect and maintain traffic control as shown on Drawings. 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:

Repairs to existing sections of levee, storm pipe removal and replacement, and levee widening transitions to existing levee sections may require breaching existing portions of the levee. Adherence to the following notes will be required to breach existing levees:

Schedule Work requiring breaching levees during historic periods of low river stage. The river stage at the nearest, upstream river gage shall be less than ½ bank-full and steady or dropping prior to beginning Work requiring breaching levees.

*Monitor the weather forecast frequently and coordinate the Work with the City of Wichita in accordance with 3.04 Flood Warning and Prediction Service of the **Operation and Maintenance Manual**. Postpone Work requiring breaching levee if Contractor anticipates significant precipitation or if there are severe storm and/or flash flood watches in the upstream watershed prior to or during planned Work period.*

The Contractor shall Maintain a sufficient supply of approved fill material on-site and appropriate equipment to patch construction breaches in the levee should the river level rises above ½ bank-full stage at the nearest, upstream river gage. The Contractor shall be responsible for ceasing construction activities at construction breach locations and immediately patching breaches in the levee whenever there is a threat of flooding and whenever so directed by City of Wichita.

Make breaches in the levee for pipe installation only when all required pipe, approved fill, and other material and equipment for the Work is on site and ready to install.

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.

Substitute the following for City of Wichita Specification Section 202.2.

Remove trees and any other undesirable woody vegetation within the15 feet clear zone on each side of the existing or reconstructed levee in general accordance with USACE ETL 1110-2-571 "Guidelines For Landscape Planting And Vegetation Management At Floodwalls, Levees, Embankment Dams, And Appurtenant Structures," the project specifications, these notes, and Drawing SP-2.12. Measure the clear zone from the levee's toe, the land side of collection ditch, land side face of floodwall, or relief well, to the center of the tree trunk.

Before proceeding with any tree removal activities, obtain, or confirm that the City of Wichita has obtained, all required permits.

Remove all trees, regardless of size, within the 15 foot clear zone as shown on the attached Drawing SP-2.12. Trees located outside the 15 foot clear zone but having limbs encroaching within the clear zone, as shown on Drawing SP-2.12, shall be trimmed back to a minimum of 8 feet above the ground level. New plantings that are less than 10 years in age planted outside of the 15 foot clear zone but having limbs encroaching on the clear zone, as shown in the attached drawing, shall be trimmed back so that they do not encroach beyond the transition zone; see Drawing SP-2.12.

Determine the diameter of a tree by measuring the widest section of the tree trunk at a point 2 feet above the ground surface.

Cut trees and other woody vegetation having a trunk diameter less than 4 inches flush with the ground and treat the remaining exposed stump with herbicide containing Glyphosate (Roundup, Accord) or Triclopyr (Redeem) to prevent regrowth. Treat the entire cut surface by applying herbicide immediately after cutting. Following herbicide application, treat exposed surfaces with a protective coating similar to polyurethane that will prolong the decaying process.

Remove trees having a trunk diameter 4 inches and larger totally, including stump and root ball. Cut trees that are 4 inches and larger approximately 2 feet above the ground level leaving a prominent stump for use in the root ball extraction process. Protect and avoid damaging the existing embankment, overhead/buried utilities, conveyance structures, vegetation to remain, and nearby properties.

Grub stumps of all trees 4 inches in diameter and larger within the levee clear zone. Remove root balls by pulling the stump or extraction with appropriate excavation equipment. Special tree removal procedures are required for trees on levee crown or slopes; see Drawing SP-2.12 for details. Once the root ball has been extracted, any remaining loose soil or remaining root system shall be removed from the cavity by excavating the root ball cavity with a horizontal bottom and maximum side slopes of 1.0:1.5 (horizontal to vertical) as shown in the attached drawing.

*Backfill all excavations with approved, **Engineered Fill** as specified in **GRADING NOTES**. Overfill all root ball cavities or excavations a minimum of 5 percent of till depth to provide positive drainage and allow for settlement. **Flowable Fill** as specified in **GRADING NOTES** may be used to backfill excavations that are not located within the embankment.*

*Within the levee embankment slopes and crown, place approved backfill material in accordance with Compaction & Moisture Control as specified in **GRADING NOTES** except the maximum thickness of loose lifts shall be 6 inches. Verify compaction in accordance with Routine Density Tests as specified in **GRADING NOTES**.*

*Outside the levee embankment, place approved backfill material in accordance with Compaction & Moisture Control as specified in **GRADING NOTES**. Verify compaction in accordance with Routine Density Tests as specified in **GRADING NOTES**.*

*Grade and seed all areas disturbed by the construction activity. Prevent water from ponding on the levee or within the 15 feet clear zone and provide for positive drainage away from the levee. Restore grades in accordance with **SITE RESTORATION NOTES** and provide positive drainage of finished surface to prevent ponding of water.*

Remove all woody debris, stumps, root balls, tree trunks, limbs, etc. from levee to approved disposal locations.

Tree removal will also be required to allow construction of new fences. Remove trees to provide clear space along fences for installation, access, and security. Grub all stumps for all trees that are in conflict with proposed improvements such as fences.

TREE TRIMMING NOTES

Perform tree trimming with sharp instrument/tool intended for such operations. Consult landscape architect prior to trimming. Knocking branches off with a backhoe or other similar machine is not acceptable. Refer to tree trimming detail on Drawing SP-2.12 for trimming procedure.

EROSION CONTROL NOTES:

The contract documents provide for the construction of all improvements with necessary but limited disturbance of the Little Arkansas River. When the contractor determines that entering the river will be necessary, he will be responsible adhering to all regulatory requirements. The contractor shall make all reasonable efforts to minimize streambed disturbance and time spent working in the river. The contractor shall prevent all construction debris from coming in contact with the river

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 foundation 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.

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 foundation area under the proposed levee and berms prior following construction operations. Dispose of objectionable matter and/or obstructions in approved disposal area.

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 levee foundation area to a depth of 3 ft below existing ground surface. 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 area.

Strip topsoil from Work areas to a minimum depth of 4 inches or as designated on Drawings. Stockpile stripped material that is suitable for use as topsoil for later reuse. 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 area.

Engineered Fill

In general, soil excavated in Work areas is suitable for use as engineered fill if it is free of organic matter and other objectionable material (i.e. roots, rocks, and debris), is of suitable moisture content, and it meets the requirements of an approved USC classified soil as stated in the Record Tests section.

Test proposed engineered fill soil as indicated in "Record Tests" prior to beginning fill placement for the Work. Once placement of engineered fill commences, the new set of "Record Tests" shall be completed a minimum of once every 5,000 cubic yards (or fraction thereof) of engineered fill placed. Retest the engineered fill as indicated in "Record Tests" if the consistency, color, texture, or appearance of the engineered fill changes significantly or if three or more routine density tests on the same material fail by yielding relative compaction percentages below 95% or above 105% of maximum dry density (MDD).

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.

Record Tests

Test each type of 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 to the Engineer for approval..

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 8 inch thick, loose lifts and compact to at least 95% of its MDD within the levee embankment slopes and crown. Maintain engineered fill moisture content between -1% to +2% of its OMC prior to and during compaction.

Outside the levee embankment, place approved backfill material in maximum 8 inch, loose lifts and compact to at least 90% of its MDD. Maintain engineered fill moisture content between -3% to +2% of its OMC prior to and during compaction.

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 compiete 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 indicated the required precision for test locations:

Location station and offset	*to the nearest ten feet*
Elevation	*to the nearest ½ 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.

Flowable Fill

Flowable fill may be used to backfill excavations not located within the levee embankment. The following table presents the minimum allowable mix design for flowable fill. Test aggregates for alkali-aggregate reactivity per ASTM C1260 if more than 200 cubic yards of flowable fill is used the project. Materials with measured expansion of less than 0.10% at 16 days after casting are acceptable.

Material	***Fill Mix (batch weight per cubic yard)***	***Remarks***
Portland Cement Type I or II	minimum 100 *lbs*	ASTM C150 meeting low alkali requirements. Or, ASTM C989, Grade 100 or 120 GGBFS[1] Cement.
Fly Ash	minimum 275 *lbs*	ASTM C618, Class N, C[2] or F.
Sand SSD[3]	2795 *lbs*	ASTM C33, concrete fine aggregate.
Total Water	maximum 370 *lbs*	Potable water.
Air Entraining Agent	Minimum 2 ounces	ASTM C260
Water reducing Admixture	As required to produce cohesive flowable mixture	ASTM C494, Type A or F.

(1) Ground Granulated Blast Furnace Slag.
(2) Class C shall not be used with aggregate that exhibit alkali-aggregate reactivity potential.
(3) Saturated Surface Dry

RIP RAP NOTES

Rip Rap that is installed for the Work upon the levees and riverbanks adjacent to the levees is intended to protect the earthwork from erosion and scour during flood events. To assure that the rip rap is stable and resistant to the forces of water, it is critical that the foundation be properly prepared, good materials be used, and that satisfactory placement be accomplished.

Preparation

Clear, grub, and strip in accordance with "Grading Notes" – Preparation. Dispose of unsuitable material in approved disposal area.

Materials

*Provide stone rip rap in accordance with City of Wichita **Specification 304.3, Quality Requirements; b) Department of the Army, Corp of Engineers Specifications.** Provide certifications that the material meets or exceeds the specified test criteria.*

*Gradation of stone rip rap and rock filter underlayment shall be in accordance with City of Wichita **Specification 304.3, Gradation Requirements; a) Floodway Heavy Stone Riprap** except that thickness of stone rip rap shall be as shown on Drawings. Provide certifications that the material meets the specified test criteria.*

Installation

*Install stone rip rap in accordance with City of Wichita **Specification 304.4.***

Document the installation of rip rap with a clear written description and photographs. Publish copies of all installation records to City of Wichita and other entities on the distribution list.

MARK	DESCRIPTION	DATE	APPR.

amec
AMEC Earth & Environmental, Inc.
1129 SW Wanamaker
Topeka, Kansas 66604
Phone: (785) 272-6830
Fax: (785) 272-6878

CITY OF WICHITA

LEVEE "L"
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
7/17/09
KANSAS
PROFESSIONAL ENGINEER

DESIGNED BY: Lawrence J. Sample, P.E.		DATE: 2009/JUL/17
DWN BY: Staff	CKD BY: MG	APP BY: DWD
FILE NAME: 561500000-GI-102.dgn		

AMEC PROJ. NO. 5-6150-0000

CONSTRUCTION NOTES

G-1.02

SHEET 3 OF 48