BIDDING AND CONTRACT DOCUMENTS

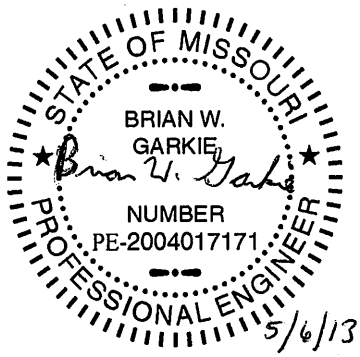
ADDENDUM NUMBER ONE

STATE PROJECT NO. AIR 126-080A-MoDOT

DATE: MAY 6, 2012

BOLLINGER-CRASS MEMORIAL AIRPORT

CRAWFORD, MURPHY, TILLY, INC.
ONE MEMORIAL DRIVE, SUITE 500
SAINT LOUIS, MISSOURI 63102



TO: ALL PLANHOLDERS AND POTENTIAL BIDDERS

SUBJECT: ADDENDUM NUMBER ONE TO THE BIDDING DOCUMENTS FOR: FULL-DEPTH RECLAMATION AND OVERLAY OF RUNWAY 2-20, CONNECTING TAXIWAY AND APRON

This addendum forms a part of the bidding and contract documents, and modifies the original bidding documents dated April 16, 2013. This addendum must be signed on the last page and included with the submitted Bid Package. An acknowledgement sheet is also attached. This must be signed and returned to Crawford, Murphy, & Tilly, Inc via fax or mail by May 9, 2013. FAILURE TO NOT RECOGNIZE THE ADDENDUM ON THE BID FORM MAY SUBJECT THE BIDDER TO DISQUALIFICATION.

The Contract Documents are revised as follows:

PLANS:

Sheet 2 of 14
REPLACE this sheet with Revision 1

Sheet 3 of 14
ADD the following notes to the end of Section 5. CONTRACTOR ACCESS:

12. DURING ADVERSE WEATHER, THE CONTRACTOR SHALL MAKE PROVISIONS FOR ACCESS TO THE WORK AT NO ADDITIONAL COST TO THE CONTRACT. NO EXTENSION OF TIME WILL BE CONSIDERED FOR DELAYS DUE TO LACK OF ADEQUATE ACCESS TO THE WORK.

13. THE CONTRACTOR SHALL BE RESPONSIBLE AT NO ADDITIONAL COST TO THE CONTRACT FOR ANY IMPROVEMENTS TO THE ACCESS ROUTE THAT ARE REQUIRED TO ACCOMMODATE THE CONTRACTOR'S HAULING OPERATIONS.

Sheet 6 of 14
REPLACE this sheet with Revision 1

Sheet 8 of 14
REPLACE this sheet with Revision 1

Sheet 9 of 14
REPLACE this sheet with Revision 1

Sheet 10 of 14
REPLACE this sheet with Revision 1

Sheet 10A of 14
ADD this sheet after sheet 10 of 14.

Sheet 10B of 14
ADD this sheet after sheet 10A of 14.

Sheet 10C of 14
ADD this sheet after sheet 10B of 14.

Sheet 10D of 14
ADD this sheet after sheet 10C of 14.

Sheet 10E of 14
ADD this sheet after sheet 10D of 14.

CONTRACT PROPOSAL:

Page 88, ITEM MO-156 EROSION AND SEDIMENT CONTROL
ADD at the end of the section the following:

156-12.4 BASIS OF PAYMENT. The accepted quantity of inlet protection will be paid for at the contract unit price per each and will be full compensation for all labor, equipment and material to complete the described work. This includes maintaining and repairing the original structure and the removal and disposal of the erosion control after completion of the work. The contractor will be compensated if the Engineer determines unusual conditions warrant a repair or replacement of the erosion control.

Payment will be made under:

Item MO-156-12.4.1 Inlet Protection--per each

Page 88A-88D, ITEM MO-209 CRUSHED AGGREGATE BASE COURSE
ADD pages 88A-88D after page 88.

Page 96, ITEM MO-401S PLANT MIX BITUMINOUS PAVEMENTS
ADD after the fourth sentence of paragraph 401S-5.2.B.5. Grade the following: Payment for each lot shall be withheld until the survey documentation is submitted to the Engineer.

Page 114A-114D, ITEM MO-701 PIPE FOR STORM DRAINS AND CULVERTS
ADD pages 114A-114D after page 114.

Page 114E-114I, ITEM D-751 MANHOLES, CATCH BASINS, INLETS AND INSPECTION HOLES
ADD pages 114E-114I after page 114D.

Pages 133-137, PROPOSAL FORM
DELETE pages 133-137.
ADD pages 133A-137A.

The new proposal form shall be either bound into the contract documents or stapled over top of the existing form.

CRAWFORD, MURPHY & TILLY, INC.
This Addendum consists of 2 pages plus 10 revised/new plan sheets, a revised proposal form, 3 new specifications and a fax transmittal sheet.

_____ _____
Signed Date
(Contractor)

Contractor to sign and date this Addendum #1 to acknowledge receipt. This signed Addendum must be included with the submitted Bid Package.

FAX TRANSMITTAL

To: Crawford, Murphy & Tilly, Inc
Attention: **Brian Garkie**
Re: Addendum #1
Fax 314.436.0723

From:
(name)_____

(company)_____

Date:

_____

To verify that all contractors are in receipt of this addendum, Contractors are asked to sign and date this acknowledgement sheet. The Contractor should fax or mail to Crawford, Murphy, & Tilly, Inc. at the number listed below by **May 9, 2013.**

Crawford, Murphy, & Tilly, Inc.
One Memorial Drive, Suite 500
Saint Louis, Missouri 63102

Fax: (314) 436-0723
Phone: (314) 436-5500

BY: CRAWFORD, MURPHY, & TILLY, INC.

ITEM MO-209 CRUSHED AGGREGATE BASE COURSE

DESCRIPTION

209.1.1 This work shall consist of furnishing and placing one or more courses of crushed aggregate base on a prepared subgrade in accordance with these specifications and in conformity with the lines, grades, thicknesses and typical cross sections shown on the plans. Aggregate base shall meet the requirements of the 2004 Missouri Standard Specification for Highway Construction (MSSHC), Section 304 - Aggregate Base Course. **All construction methods, testing, and acceptance criteria shall be in accordance with the standards included within this Item MO-209.**

For areas where the new pavement is to be extended beyond the footprint of the existing pavement or the existing pavement grade is to be raised above the bituminous surface course thickness, the Contractor shall first use any extra recycled aggregate and bituminous concrete mixture leftover from the pulverization process. If there is not sufficient material available, then crushed aggregate base course meeting the requirements specified herein shall be used to complete the 6" minimum thickness aggregate base to be constructed under paved areas and to complete the fill required for the proposed pavement grades.

MATERIALS

209-2.1 AGGREGATE. All materials for new aggregate base shall conform to the requirements of the 2004 (MSSHC), Section 304, for **Type 5 Aggregate.**

The ledge stone from which the aggregate base will be produced has to have source approval from the Missouri Department of Transportation (MoDOT). Prior to use of materials, the contractor shall submit the current MoDOT source approval letter to the Engineer for the materials proposed for use during construction. Source approval granted for "all types of highway construction" (Product Code 1005CACP) constitutes approval for all uses. Source approval granted for "all types except PCCP" (Product Code 1005CACM) comprises approval for all uses except Portland cement concrete pavement. Source approval obtained for "all types except PCCP & PCCM" (Product Code 1002CAAC) is considered to be approval for all uses except Portland cement concrete.

The contractor shall submit certified test reports to the Engineer for the gradation of the aggregate base. The certification shall show the appropriate AASHTO test for the material, the test results, and a statement that the material passed or failed. The aggregate shall be sampled and tested for gradation using the following procedures:

1. Sampling Aggregates. Sampling shall be in accordance with AASHTO T 2.

2. Sieve Analysis of Fine and Coarse Aggregate. The aggregate shall be tested in accordance with AASHTO T 27 and shall meet the gradation requirements of the MSSHC, Section 1007.

3. Material Passing No. 200 Sieve. The aggregate shall be tested in accordance with AASHTO T 11 and meet the requirements of the MSSHC, Section 1007.

In lieu of the above gradation testing requirements, the contractor may provide documentation from MoDOT (District Materials Office) indicating that the material meets specification requirements.

The Engineer may request samples for testing, prior to and during production, to verify the quality of the materials and to ensure conformance with the applicable specifications.

CONSTRUCTION METHODS

209-3.1 PREPARING UNDERLYING COURSE. The underlying course shall be checked and accepted by the Engineer before placing and spreading operations are started. Any ruts or soft yielding places caused by improper drainage conditions, hauling, or any other cause shall be corrected at the Contractor's expense before the base course is placed thereon. Material shall not be placed on frozen subgrade.

209-3.2 MIXING. The aggregate shall be uniformly blended during crushing operations or mixed in a plant. The plant shall blend and mix the materials to meet the specifications and to secure the proper moisture content for compaction.

209-3.3 PLACING. The crushed aggregate base material shall be placed on the moistened subgrade in layers of uniform thickness with a mechanical spreader. The maximum depth of a compacted layer shall be 6 inches. If the total depth of the compacted material is more than 6 inches, it shall be constructed in two or more layers. In multi-layer construction, the base course shall be placed in approximately equal-depth layers.

The previously constructed layer should be cleaned of loose and foreign material prior to placing the next layer. The surface of the compacted material shall be kept moist until covered with the next layer.

209-3.4 COMPACTION. Immediately upon completion of the spreading operations, the crushed aggregate shall be thoroughly compacted. The number, type, and weight of rollers shall be the same that is used for Item SP-1. The compaction effort shall be the same that is required for Item SP-1.

209-3.5 NOT USED.

209-3.6 FINISHING. The surface of the aggregate base course shall be finished by blading or with automated equipment especially designed for this purpose.

In no case will the addition of thin layers of material be added to the top layer of base course to meet grade. If the elevation of the top layer is 1/2 inch or more below grade, the top layer of base shall be scarified to a depth of at least 3 inches, new material added, and the layer shall be blended and recompacted to bring it to grade. If the finished surface is above plan grade, it shall be cut back to grade and rerolled.

Type 5 aggregate base is intended to provide some drainage and shall not be segregated. Trimmed Type 5 aggregate base may not be reused until it is verified as meeting the required specifications. Base material contaminated to such an extent that it no longer complies with the specifications shall be removed and replaced with satisfactory material at the expense of the contractor.

209-3.7 SURFACE TOLERANCES. The finished surface shall not vary more than 3/8 inch when tested with a 16-foot straightedge applied parallel with or at right angles to the centerline. Any deviation in excess of this amount shall be corrected by the Contractor at the Contractor's expense.

209-3.8 THICKNESS CONTROL. The completed thickness of the base course shall be within 1/2 inch of the design thickness.

209-3.9 MAINTENANCE. The base course shall be maintained in a condition that will meet all specification requirements until the work is accepted. Equipment used in the construction of an adjoining section may be routed over completed portions of the base course, provided no damage results and provided that the equipment is routed over the full width of the base course to avoid rutting or uneven compaction.

If a prime coat is specified in the contract, the contractor will be required to apply the prime coat on any completed portion of the aggregate base as soon as practicable, or as otherwise specified. However, the contractor will not be permitted to apply prime if the moisture in the top 2 inches of the aggregate base exceeds the higher of either (1) the average of the optimum moisture as determined by the standard compaction test and the absorption of the plus No. 4 fraction, or (2) two-thirds of the optimum moisture as determined by the standard compaction test.

At the discretion of the engineer, proof rolling may be required by a loaded tandem axle truck on top of the aggregate base course to determine the level of stability. If the condition of the aggregate base course is not satisfactory, it should be given more time to cure or be reworked to put it into the proper condition for overlay.

METHOD OF MEASUREMENT

209-4.1 The quantity of crushed aggregate base course shall not be measured for payment but shall be considered incidental to the contract work.

END OF ITEM MO-209

ITEM MO-701 PIPE FOR STORM DRAINS AND CULVERTS

DESCRIPTION

701-1.1 This item shall consist of the construction of pipe culverts and storm drains in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans. The pipe materials shall conform to the requirements of the 2004 Missouri Standard Specification for Highway Construction (MSSHC), Section 725 - Metal Pipe and Pipe-Arch Culverts, Section 726 - Rigid Pipe Culverts, Storm Drains and Sewers, and Section 732 - Flared End Sections.

All construction methods, testing, and acceptance criteria shall be in accordance with the standards included within this Item MO-701.

MATERIALS

701-2.1 PIPE MATERIALS. Pipe materials shall conform to the requirements of the 2004 MSSHC, as follows:

Reinforced Concrete Pipe - Class III Section 726

Prior to the use of materials, the contractor shall furnish manufacturer's certified test reports to the Engineer for those materials proposed for use during construction. The certified test reports shall include a statement that the materials meet the specification requirements.

701-2.2 CONCRETE. Concrete for pipe cradles shall have a minimum compressive strength of 2000 psi at 28 days and conform to the requirements of ASTM C 94.

CONSTRUCTION METHODS

701-3.1 EXCAVATION. The width of the pipe trench shall be sufficient to permit satisfactory jointing of the pipe and thorough tamping of the bedding material under and around the pipe, but it shall not be less than the external diameter of the pipe plus 6 inches on each side. The trench walls shall be approximately vertical.

Where rock, hardpan, or other unyielding material is encountered, the Contractor shall remove it from below the foundation grade for a depth of at least 12 inches or one-half inch for each foot of fill over the top of the pipe (whichever is greater) but for no more than three-quarters of the nominal diameter of the pipe. The width of the excavation shall be at least 1 foot greater than the horizontal outside diameter of the pipe. The excavation below grade shall be backfilled with selected fine compressible material, such as silty clay or loam, and lightly compacted in layers not over 6 inches in uncompacted depth to form a uniform but yielding foundation.

Where a firm foundation is not encountered at the grade established, due to soft, spongy, or other unstable soil, the unstable soil shall be removed and replaced with approved granular material for the full trench width. The Engineer shall determine the depth of removal necessary. The granular material shall be compacted to provide adequate support for the pipe.

The excavation for pipes that are placed in embankment fill shall not be made until the embankment has been completed to a height above the top of the pipe as shown on the plans.

701-3.2 BEDDING. Bedding for reinforced concrete pipe will be classified as Class A, Class B, or Class C. When no bedding class is specified or detailed on the plans, the requirements for Class C bedding shall apply.

A. Reinforced Concrete Pipe.

Class A bedding shall be used if, in the judgment of the engineer, soil conditions are such that a firm bed cannot be otherwise secured. The pipe shall be laid in the center of a concrete cradle having a minimum width of 6 inches greater than the outside diameter of the pipe. The minimum thickness of the cradle under the bottom of the pipe shall

be 1/4 of the internal diameter of the pipe, and the cradle shall extend up the sides of the pipe for a height equal to 1/4 its outside diameter. The concrete shall meet the requirements of item MO-610.

Class B bedding shall consist of a bed of granular material having a thickness of at least 6 inches below the bottom of the pipe and extending up around the pipe for a depth of not less than 30 percent of the pipe's vertical outside diameter. The layer of bedding material shall be shaped to fit the pipe for at least 10 percent of the pipe's vertical diameter and shall have recesses shaped to receive the bell of bell and spigot pipe. The bedding material shall be sand or selected sandy soil, all of which passes a 3/8 inch (9mm) sieve and not more than 10 percent of which passes a No. 200 (0.075 mm) sieve.

Class C bedding shall consist of a soil foundation shaped to fit the lower part of the pipe exterior for at least 10 percent of its overall height, and shall afford a uniformly firm bed throughout its entire length. In lieu of Class C bedding, Class B bedding may be used at no additional cost to the Sponsor.

701-3.3 LAYING PIPE. The pipe laying shall begin at the lowest point of the trench and proceed upgrade. The lower segment of the pipe shall be in contact with the bedding throughout its full length. Bell or groove ends of rigid pipes and outside circumferential laps of flexible pipes shall be placed facing upgrade.

Paved or partially lined pipe shall be placed so that the longitudinal center line of the paved segment coincides with the flow line.

Elliptical and elliptically reinforced pipes shall be placed with the manufacturer's top of pipe mark within five degrees of a vertical plane through the longitudinal axis of the pipe.

701-3.4 JOINING PIPE. All joints shall be sealed with an approved plastic compound, cement mortar or tubular joint seal. Rubber gasketed joints may be used at no additional cost to the sponsor. Where permissible lift holes have been used, the holes shall be carefully filled with expansive mortar to provide a watertight section. The mortar shall be finished flush on the inside of the pipe and shall be properly cured on the outside. Lifting devices shall have sufficient bearing on the inside of the pipe to avoid damage resulting from a concentration of stresses around the lift holes.

If rubber gasket type pipe is specified or used, the joints shall be installed in accordance with the manufacturer's recommendations to ensure that joint devices are properly installed and that rubber gaskets are not displaced.

In sealing rigid pipe with mortar, the mortar contact areas of all pipe ends shall be damp when mortar is applied. After applying mortar to the entire interior surface of the bell or groove, the spigot or tongue end shall be forced into position. Any remaining void in the bell or groove shall be filled with a hub of mortar built up adjacent to the bell, or a bead of mortar built up around a groove-type joint. The interior joints of either type of pipe shall be finished flush with the surface of the pipe. Outside surface of mortar joints shall be cured with membrane curing compound.

In sealing rigid pipe with plastic joint compound, trowel grade compound shall be applied to the mating surfaces of both the tongue and groove, or to the entire interior surface of the bell and the upper portion of the spigot. Rope or tape type plastic compound shall be applied in accordance with the manufacturer's recommendations. The joints shall be forced together with excess compound extruding both inside and outside the joint. Excess compound shall be removed from the interior surface where accessible. Tubular joint seals shall be installed in a manner as recommended by the manufacturer. The joint between the bell and spigot shall be uniform for the full circumference and care shall be taken to prevent the bell from supporting the spigot.

In joining corrugated metal pipe, the ends shall be butted as closely as the corrugations will permit and shall be joined with a firmly bolted coupling band of the same material as the pipe.

701-3.5 BACKFILLING. Pipes shall be inspected before any backfill is placed; any pipes found to be out of alignment, unduly settled, or damaged shall be removed and relaid or replaced at the Contractor's expense.

Material for backfill shall be fine, readily compatible soil, or granular material selected from the excavation or a source of the Contractor's choosing. It shall not contain frozen lumps, stones that would be retained on a 2-inch sieve, chunks of highly plastic clay, or other objectionable material. No less than 95 percent of a granular backfill material shall pass through a 1/2 inch sieve, and no less than 95 percent of it shall be retained on a No. 4 sieve.

When the top of the pipe is even with or below the top of the trench, the backfill shall be compacted in layers not exceeding 6 inches on both sides of the pipe and shall be brought up one foot above the top of the pipe or to natural ground level, whichever is greater. Care shall be exercised to thoroughly compact the backfill material under the haunches of the pipe. Material shall be brought up evenly on both sides of the pipe.

When the top of the pipe is above the top of the trench, the backfill shall be compacted in layers not exceeding 6 inches and shall be brought up evenly on both sides of the pipe to 1 foot above the top of the pipe. The width of backfill on each side of the pipe for the portion above the top of the trench shall be equal to twice the pipe's diameter of 12 feet, whichever is less.

All backfill shall be compacted to the density required under Item MO-152.

METHOD OF MEASUREMENT

701-4.1 The length of pipe shall be measured in linear feet of pipe in place, completed, and approved. It shall be measured along the centerline of the pipe from end or inside face of structure to the end or inside face of structure, whichever is applicable. The several classes, types and size shall be measured separately.

701-4.2 The number of concrete and/or corrugated metal pipe flared end sections of each class, type, and size shall be measured by the number per each installed and approved by the Engineer.

BASIS OF PAYMENT

701-5.1 Payment will be made at the contract unit price per linear foot for each kind of pipe of the type and size designated, and per each for each kind of flared end section of the type and size designated.

These prices shall fully compensate the Contractor for furnishing all materials, excavation, bedding, installation of these materials, backfilling, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item MO-701-5.1	18” Reinforced Concrete Pipe--per linear foot
Item MO-701-5.2	18” Reinforced Concrete Pipe Flared End Section--per each

END OF ITEM MO-701

ITEM D-751 MANHOLES, CATCH BASINS, INLETS AND INSPECTION HOLES

DESCRIPTION

751-1.1 This item shall consist of construction of manholes, catch basins, inlets, and inspection holes, in accordance with these specifications, at the specified locations and conforming to the lines, grades, and dimensions shown on the plans or required by the Engineer.

MATERIALS

751-2.1 BRICK. The brick shall conform to the requirements of ASTM C 32, Grade SM.

751-2.2 MORTAR. Mortar shall consist of one part Portland cement and two parts sand. The Portland cement shall conform to the requirements of ASTM C 150, Type I. The sand shall conform to the requirements of ASTM C 144.

751-2.3 CONCRETE. Plain and reinforced concrete used in structures, connections of pipes with structures, and the support of structures or frames shall conform to the requirements of Item MO-610.

751-2.4 PRECAST CONCRETE PIPE MANHOLE RINGS. Precast concrete pipe manhole rings shall conform to the requirements of ASTM C 478. Unless otherwise specified, the risers and offset cone sections shall have an inside diameter of not less than 36 in (90 cm) nor more than 48 in (120 cm).

751-2.5 CORRUGATED METAL. Corrugated metal shall conform to the requirements of AASHTO M 36.

751-2.6 FRAMES, COVERS, AND GRATES. The castings shall conform to one of the following requirements:

a.	ASTM A 48, Class 30B and 35B	Gray iron castings
b.	ASTM A 47	Malleable iron castings
c.	ASTM A 27	Steel castings
d.	ASTM A 283, Grade D	Structural steel for grates and frames
e.	ASTM A 536	Ductile iron castings
f.	ASTM A 897	Austempered ductile iron castings

All castings or structural steel units shall conform to the dimensions shown on the plans and shall be designed to support the loadings, aircraft gear configuration and/or direct loading, specified.

Each frame and cover or grate unit shall be provided with fastening members to prevent it from being dislodged by traffic but which will allow easy removal for access to the structure.

All castings shall be thoroughly cleaned. After fabrication, structural steel units shall be galvanized to meet the requirements of ASTM A 123.

751-2.7 STEPS. The steps or ladder bars shall be gray or malleable cast iron or galvanized steel. The steps shall be the size, length, and shape shown on the plans and those steps that are not galvanized shall be given a coat of bituminous paint, when directed.

CONSTRUCTION METHODS

751-3.1 UNCLASSIFIED EXCAVATION.

a. The Contractor shall do all excavation for structures and structure footings to the lines and grades or elevations, shown on the plans, or as staked by the Engineer. The excavation shall be of sufficient size to permit the placing of the full width and length of the structure or structure footings shown. The elevations of the bottoms of footings, as shown on the plans, shall be considered as approximately only; and the Engineer may order, in writing, changes in dimensions or elevations of footings necessary to secure a satisfactory foundation.

b. Boulders, logs, or any other objectionable material encountered in excavation shall be removed. All rock or other hard foundation material shall be cleaned of all loose material and cut to a firm surface either level, stepped, or serrated, as directed by the Engineer. All seams or crevices shall be cleaned out and grouted. All loose and disintegrated rock and thin strata shall be removed. When concrete is to rest on a surface other than rock, special care shall be taken not to disturb the bottom of the excavation, and excavation to final grade shall not be made until just before the concrete or reinforcing is to be placed.

c. The Contractor shall do all bracing, sheathing, or shoring necessary to implement and protect the excavation and the structure as required for safety or conformance to governing laws. The cost of bracing, sheathing, or shoring shall be included in the unit price bid for the structure.

d. Unless otherwise provided, bracing, sheathing, or shoring involved in the construction of this item shall be removed by the Contractor after the completion of the structure. Removal shall be effected in a manner that will not disturb or mar finished masonry. The cost of removal shall be included in the unit price bid for the structure.

e. After each excavation is completed, the Contractor shall notify the Engineer to that effect; and concrete or reinforcing steel shall be placed after the Engineer has approved the depth of the excavation and the character of the foundation material.

751-3.2 BRICK STRUCTURES.

a. Foundations. A prepared foundation shall be placed for all brick structures after the foundation excavation is completed and accepted. Unless otherwise specified, the base shall consist of reinforced concrete mixed, prepared, and placed in accordance with the requirements of Item P-610.

b. Laying Brick. All brick shall be clean and thoroughly wet before laying so that they will not absorb any appreciable amount of additional water at the time they are laid. All brick shall be laid in freshly made mortar. Mortar that is not used within 45 minutes after water has been added shall be discarded. Retempering of mortar shall not be permitted. An ample layer of mortar shall be spread on the beds and a shallow furrow shall be made in it that can be readily closed by the laying of the brick. All bed and head joints shall be filled solid with mortar. End joints of stretchers and side or cross joints of headers shall be fully buttered with mortar and a shoved joint made to squeeze out mortar at the top of the joint. Any bricks that may be loosened after the mortar has taken its set, shall be removed, cleaned, and relaid with fresh mortar. No broken or chipped brick shall be used in the face, and no spalls or bats shall be used except where necessary to shape around irregular openings or edges; in which case, full bricks shall be placed at ends or corners where possible, and the bats shall be used in the interior of the course. In making closures, no piece of brick shorter than the width of a whole brick shall be used; and wherever practicable, whole brick shall be used and laid as headers.

c. Joints. All joints shall be slushed with mortar at every course, but slushing alone will not be considered adequate for making an acceptable joint. Exterior faces shall be laid up in advance of backing. Exterior faces shall be back plastered or pargeted with a coat of mortar not less than 3/8 in (9 mm) thick before the backing is laid up. Prior to pargeting, all joints on the back of face courses shall be cut flush. Unless otherwise noted, joints shall be not less than 1/4 in (6 mm) nor more than 1/2 in (12 mm) wide and whatever width is adopted shall be maintained uniform throughout the work.

d. Pointing. Face joints shall be neatly struck, using the weather joint. All joints shall be finished properly as the laying of the brick progresses. When nails or line pins are used the holes shall be immediately plugged with mortar and pointed when the nail or pin is removed.

e. Cleaning. Upon completion of the work all exterior surfaces shall be thoroughly cleaned by scrubbing and washing down with water and, if necessary to produce satisfactory results, cleaning shall be done with a 5% solution of muriatic acid which shall then be rinsed off with liberal quantities of clean fresh water.

f. Curing and Cold Weather Protection. In hot or dry weather, or when directed by the Engineer, the brick masonry shall be protected and kept moist for at least 48 hours after laying the brick. Brick masonry work or pointing shall not be done when there is frost in the brick or when the air temperature is below 50 F (10 C) unless the Contractor has on the project ready to use, suitable covering and artificial heating devices necessary to keep the atmosphere surrounding the masonry at a temperature of not less than 60 F (15 C) for the duration of the curing period.

751-3.3 CONCRETE STRUCTURES. Concrete structures shall be built on prepared foundations, conforming to the dimensions and form indicated on the plans. The construction shall conform to the requirements specified in Item MO-610. Any reinforcement required shall be placed as indicated on the plans and shall be approved by the Engineer before the concrete is poured.

All invert channels shall be constructed and shaped accurately so as to be smooth, uniform, and cause minimum resistance to flowing water. The interior bottom shall be sloped downward toward the outlet.

751-3.4 PRECAST CONCRETE PIPE STRUCTURES. Precast concrete pipe structures shall be constructed on prepared or previously placed slab foundations and shall conform to the dimensions and locations shown on the plans. All precast concrete pipe sections necessary to build a completed structure shall be furnished. The different sections shall fit together readily, and all jointing and connections shall be cemented with mortar. The top of the upper precast concrete pipe member shall be suitably formed and dimensioned to receive the metal frame and cover or grate, or other cap, as required. Provision shall be made for any connections for lateral pipe, including drops and leads that may be installed in the structure. The flow lines shall be smooth, uniform, and cause minimum resistance to flow. The metal steps that are embedded or built into the side walls shall be aligned and placed at vertical intervals of 12 in (300 mm). When a metal ladder replaces the steps, it shall be securely fastened into position.

751-3.5 CORRUGATED METAL STRUCTURES. Corrugated metal structures shall be constructed on prepared foundations, conforming to the dimensions and locations as shown on the plans. The structures shall be prefabricated. standard or special fittings shall be furnished to provide pipe connections or branches of correct dimensions. The connections or branches shall be of sufficient length to accommodate connecting bands. The fittings shall be welded in place to the metal structures. When indicated, the structures shall be placed on a reinforced concrete base. The top of the metal structure shall be designed so that either a concrete slab or metal collar may be attached to which can be fastened a standard metal frame and grate or cover. Steps or ladders shall be furnished as shown on the plans.

751-3.6 INLET AND OUTLET PIPES. Inlet and outlet pipes shall extend through the walls of the structures for a sufficient distance beyond the outside surface to allow for connections but shall be cut off flush with the wall on the inside surface, unless otherwise directed. For concrete or brick structures, the mortar shall be placed around these pipes so as to form a tight, neat connection.

751-3.7 PLACEMENT AND TREATMENT OF CASTINGS, FRAMES, AND FITTINGS. All castings, frames, and fittings shall be placed in the positions indicated on the plans or as directed by the Engineer, and shall be set true to line and to correct elevation. If frames or fittings are to be set in concrete or cement mortar, all anchors or bolts shall be in place and position before the concrete or mortar is placed. The unit shall not be disturbed until the mortar or concrete has set.

When frames or fittings are to be placed upon previously constructed masonry, the bearing surface or masonry shall be brought true to line and grade and shall present an even bearing surface in order that the entire face or back of the unit will come in contact with the masonry. The unit shall be set in mortar beds and anchored to the masonry as indicated on the plans or as directed and approved by the Engineer. All units shall set firm and secure.

After the frames or fittings have been set in final position and the concrete or mortar has been allowed to harden for 7 days, then the grates or covers shall be placed and fastened down.

751-3.8 INSTALLATION OF STEPS. The steps shall be installed as indicated on the plans or as directed by the Engineer. When the steps are to be set in concrete, they shall be placed and secured in position before the concrete is

poured. When the steps are installed in brick masonry, they shall be placed as the masonry is being built. The steps shall not be disturbed or used until the concrete or mortar has hardened for at least 7 days. After this period has elapsed, the steps shall be cleaned and painted, unless they have been galvanized.

When steps are required with precast concrete pipe structures, they shall be cast into the sides of the pipe at the time the pipe sections are manufactured or set in place after the structure is erected by drilling holes in the concrete and cementing the steps in place.

When steps are required with corrugated metal structures, they shall be welded into aligned position at a vertical spacing of 12 in (300 mm).

In lieu of steps, prefabricated ladders may be installed. In the case of brick or concrete structures, the ladder shall be held in place by grouting the supports in drilled holes. In the case of metal structures, the ladder shall be secured by welding the top support and grouting the bottom support into drilled holes in the foundation or as directed.

751-3.9 BACKFILLING.

a. After a structure has been completed, the area around it shall be filled with approved material, in horizontal layers not to exceed 8 in (200 mm) in loose depth, and compacted to the density required in Item MO-152. Each layer shall be deposited all around the structure to approximately the same elevation. The top of the fill shall meet the elevation shown on the plans or as directed by the Engineer.

b. Backfilling shall not be placed against any structure until permission is given by the Engineer. In the case of concrete, such permission shall not be given until the concrete has been in place 7 days, or until tests made by the laboratory under supervision of the Engineer establish that the concrete has attained sufficient strength to provide a factor of safety against damage or strain in withstanding any pressure created by the backfill or the methods used in placing it.

c. Backfill shall not be measured for direct payment. Performance of this work shall be considered on obligation of the Contractor covered under the contract unit price for the structure involved.

751-3.10 CLEANING AND RESTORATION OF SITE. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site. Surplus dirt may be deposited in embankments, shoulders, or as ordered by the Engineer. The Contractor shall restore all disturbed areas to their original condition. After all work is completed, the Contractor shall remove all tools and equipment, leaving the entire site free, clear, and in good condition.

METHOD OF MEASUREMENT

751-4.1 Manholes, catch basins, inlets, and inspection holes shall be measured by the unit.

BASIS OF PAYMENT

751-5.1 The accepted quantities of manholes, catch basins, inlets, and inspection holes will be paid for at the contract unit price per each in place when completed. This price shall be full compensation for furnishing all materials and for all preparation, excavation, backfilling and placing of the materials; furnishing and installation of such specials and connections to pipes and other structures as may be required to complete the item as shown on the plans; and for all labor equipment, tools and incidentals necessary to complete the structure.

Payment will be made under:

Item D-751-5.1 3’x3’ Type S-1 Pre-Cast Drop Inlet

MATERIAL REQUIREMENT

ASTM A 27	Steel Castings, Carbon, for General Application
ASTM A 47	Ferritic Malleable Iron Castings
ASTM A 48	Gray Iron Castings
ASTM A 123	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 283	Low and Intermediate Tensile Strength Carbon Steel Plates, Shapes, and Bars
ASTM A 536	Ductile Iron Castings
ASTM A 897	Austempered Ductile Iron Castings
ASTM C 32	Sewer and Manhole Brick (Made from Clay or Shale)
ASTM C 144	Aggregate for Masonry Mortar
ASTM C 150	Portland Cement
ASTM C 478	Precast Reinforced Concrete Manhole Sections
AASHTO M 36	Zinc Coated (Galvanized) Corrugated Iron or Steel Culverts and Underdrains

END OF ITEM D-751

PROPOSAL FORM
CITY OF PIEDMONT
State Project No. AIR 126-808A-MoDOT

TO: Mayor

The undersigned, in compliance with the request for bids for construction of the following Project:

Full-Depth Reclamation and Overlay of Runway 2-20, Connecting Taxiway and Apron:

hereby proposes to furnish all labor, permits, material, machinery, tools, supplies and equipment to faithfully perform all work required for construction of the Project in accordance with the project manual, project drawings and issued Addenda within the specified time of performance for the following prices:

BASE BID

BID ITEM	FAA or MoDOT SPEC.	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		EXTENSION	
				DOLLARS	CTS	DOLLARS	CTS
1	MO-100-4.1	Mobilization	1 Lump Sum				
2	MO-156-4.5.1	Silt Fence	200 L.F.				
3	MO-156-12.4.1	Inlet Protection	1 Each				
4	MO-401S-8.1	Mineral Aggregate (BP-1 Mix)	2,850 Tons				
5	MO-401S-8.1	Asphalt Cement (BP-1 Mix)	150.0 Tons				
6	MO-602-5.1	Bituminous Prime Coat	6,900 Gals.				
7	MO-620-5.1	Airport Runway Pavement Marking (White)	3,526 S.F.				
8	MO-620-5.2	Airport Taxiway Pavement Marking (Yellow)	497 S.F.				
9	MO-620-5.3	Airport Pavement Marking (Black)	2,599 S.F.				
10	MO-701-5.1	18” Reinforced Concrete Pipe	182 L.F.				
11	MO-701-5.2	18” Reinforced Concrete Pipe Flared End Section	1 Each				
12	D-751-5.1	3’x3’ Type S-1 Pre-Cast Drop Inlet	1 Each				
13	SP-1-5.1	Full-Depth Reclamation	19,700 S.Y.				
14	SP-2-5.1	Mooring Eyes	21 Each				
15	SP-2-5.2	Partial Depth Tie-Down Removal	14 Each				
TOTAL BID (Base Bid)							

ACKNOWLEDGEMENTS BY BIDDER

a. By submittal of a proposal, the BIDDER acknowledges and accepts that the quantities established by the OWNER are an approximate estimate of the quantities required to fully complete the Project and that the estimated quantities are principally intended to serve as a basis for evaluation of bids. The BIDDER further acknowledges and accepts that payment under this contract will be made only for actual quantities and that quantities will vary in accordance with the General Provisions subsection entitled "Alteration of Work and Quantities".

b. The BIDDER acknowledges and accepts that the Bid Documents are comprised of the documents identified within the General Provisions. The BIDDER further acknowledges that each the individual documents that comprise the Bid Documents are complementary to one another and together establishes the complete terms, conditions and obligations of the successful BIDDER.

c. As evidence of good faith in submitting this proposal, the undersigned encloses a bid guaranty in the form of a certified check, cashier's check or bid bond in the amount of 5% of the bid price. The BIDDER acknowledges and accepts that refusal or failure to accept award and execute a contract within the terms and conditions established herein will result in forfeiture of the bid guaranty to the owner as a liquidated damage.

d. The BIDDER acknowledges and accepts the OWNER'S right to reject any or all bids.

e. The BIDDER acknowledges and accepts the OWNER'S right to hold all Proposals for purposes of review and evaluation and not issue a notice-of-award for a period not to exceed ninety (90) calendar days from the stated date for receipt of bids.

f. The undersigned agrees that upon written notice of award of contract, he or she will execute the contract within thirty (30) days of the notice-of-award, and furthermore, and provide executed payment and performance bonds within fifteen (15) days from the date of contract execution. The undersigned accepts that failure to execute the contract and provide the required bonds within the stated timeframe shall result in forfeiture of the bid guaranty to the owner as a liquidated damage.

g. Time of Performance: By submittal of this proposal, the undersigned acknowledges and agrees to commence work within ten (10) calendar days of the date specified in the written "Notice-to-Proceed" as issued by the OWNER. The undersigned further agrees to complete the Project within **twenty five (25)** Calendar days from the commencement date specified in the Notice-to-Proceed.

h. The undersigned acknowledges and accepts that for each and every Calendar day the project remains incomplete beyond the contract time of performance, the Contractor shall pay the non-penal amount of **$750.00** per Calendar day as a liquidated damage to the OWNER.

i. The BIDDER, by submission of a proposal, acknowledges that award of this contract is subject to the provisions of the Missouri Prevailing Wage Law. The BIDDER accepts the requirement to pay prevailing wages for each classification and type of worker as established in the attached wage rate determinations as issued by the Missouri Division of Labor Standards. The BIDDER further acknowledges and accepts their requirement to incorporate the provision to pay the established prevailing wages in every subcontract agreement entered into by the Bidder under this project.

j. The undersigned acknowledges receipt of the following addenda:

Addendum No. _____, dated _____ Date Received _____

Addendum No. _____, dated _____ Date Received _____

Addendum No. _____, dated _____ Date Received _____

Addendum No. _____, dated _____ Date Received _____

Addendum No. _____, dated _____ Date Received _____

REPRESENTATIONS BY BIDDER

By submittal of a proposal (bid), the BIDDER represents the following:

a. The BIDDER has read and thoroughly examined the bid documents including all authorized addenda.
b. The BIDDER has a complete understanding of the terms and conditions required for the satisfactory performance of project work.
c. The BIDDER has fully informed themselves of the project site, the project site conditions and the surrounding area.
d. The BIDDER has familiarized themselves of the requirements of working on an operating airport and understands the conditions that may in any manner affect cost, progress or performance of the work
e. The BIDDER has correlated their observations with that of the project documents.
f. The BIDDER has found no errors, conflicts, ambiguities or omissions in the project documents, except as previously submitted in writing to the owner that would affect cost, progress or performance of the work.
g. The BIDDER is familiar with all applicable Federal, State and local laws, rules and regulations pertaining to execution of the contract and the project work.
h. The BIDDER has complied with all requirements of these instructions and the associated project documents.

CERTIFICATION BY BIDDER

a. The undersigned hereby declares and certifies that the only parties interested in this proposal are named herein and that this proposal is made without collusion with any other person, firm or corporation.

b. Compliance with the Work Authorization Law (as required by Section 285.530, Revised Statues of Missouri)

For all contracts which include state or local funds in excess of $5,000, the Bidder, by submission of an offer and by signing the Worker Eligibility Verification Affidavit for All Contract Agreements in Excess of $5,000, certifies that it:

1. does not knowingly employ any person who is an unauthorized alien in connection with the contracted services;

2. has enrolled and actively participates in a federal work authorization program;

A general contractor or subcontractor of any tier shall not be liable under sections 285.525 to 285.550 when such general contractor or subcontractor contracts with its direct subcontractor who violates subsection 1 of this section, if the contract binding the contractor and subcontractor affirmatively states that the direct subcontractor is not knowingly in violation of subsection 1 of this section and shall not henceforth be in such violation and the contractor or subcontractor receives a sworn affidavit under the penalty of perjury attesting to the fact that the direct subcontractor's employees are lawfully present in the United States.

WORKER ELIGIBILITY VERIFICATION AFFIDAVIT FOR ALL CONTRACT AGREEMENTS IN EXCESS OF $100,000 (Local match in excess of $5,000)

(for joint ventures, a separate affidavit is required for each business entity)

STATE OF _____)
) ss
COUNTY OF _____)

On this _____ day of _____, 20_____, before me appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be a person whose name is subscribed to this affidavit, who being by me duly sworn, deposed as follows:

My name is _____, and I am of sound mind, capable of making this affidavit, and personally certify the facts herein stated, as required by Section 285.530, RSMo, to enter into any contract agreement with the state or any of its political subdivisions to perform any job, task, employment, labor, personal services, or any other activity for which compensation is provided, expected, or due, including but not limited to all activities conducted by business entities:

I am the _____ (title) of _____ (business name), and I am duly authorized, directed, and/or empowered to act officially and properly on behalf of this business entity.

I hereby affirm and warrant that the aforementioned business entity is enrolled in a federal work authorization program operated by the United States Department of Homeland Security, and the aforementioned business entity shall participate in said program to verify information (employment eligibility) of newly hired employees working in connection to work under the within contract agreement. I have attached documentation to this affidavit to evidence enrollment/participation by the aforementioned business entity in a federal work authorization program, as required by Section 285.530, RSMo.

In addition, I hereby affirm and warrant that the aforementioned business entity does not and shall not knowingly employ, in connection to work under the within contract agreement, any alien who does not have the legal right or authorization under federal law to work in the United States, as defined in 8 U.S.C. § 1324a(h)(3).

I am aware and recognize that, unless certain contract and affidavit conditions are satisfied pursuant to Section 285.530, RSMo, the aforementioned business entity may be held liable under Sections 285.525 though 285.550, RSMo, for subcontractors that knowingly employ or continue to employ any unauthorized alien to work within the state of Missouri.

I acknowledge that I am signing this affidavit as a free act and deed of the aforementioned business entity and not under duress.

_____
(Affiant Signature)

Subscribed and sworn to before me this _____ day of _____, 20_____.

_____
(Notary Public)

My commission expires:

[Documentation of enrollment/participation in a federal work authorization program is attached. Acceptable enrollment and participation documentation consists of the following two pages of the E-Verify Memorandum of Understanding: (1) A valid, completed copy of the first page identifying the business entity; and (2) A valid copy of the signature page completed and signed by the business entity, the Social Security Administration, and the Department of Homeland Security – Verification Division.]

THIS EXECUTED PROPOSAL FORM MUST BE SUBMITTED IN THE ORIGINAL BOUND PROJECT MANUAL.

SIGNATURE OF BIDDER

The undersigned states that the correct LEGAL NAME AND ADDRESS of (1) the individual bidder, (2) each partner or joint venturer (whether individuals or corporations, and whether doing business under a fictitious name), or (3) the corporation (with the state in which it is incorporated) are shown below; that (if not signing with the intention to bind themselves to become responsible and sole bidder) they are the agent of, and they are signing and executing this (as indicated in the proper spaces below) as the bid of a

( ) sole individual ( ) partnership ( ) joint venture

( ) corporation, incorporated under the laws of state of _____.

Executed by bidder this _____ day of _____ 20_____.

Name of individual, all partners or joint venturers:	Address of each:
_____	_____
_____	_____
_____	_____
doing business under the name of:	Address of principal place of business in Missouri:
_____ (If using a fictitious name, show this name above in addition to legal names)	_____
_____ (If a corporation, show its name above)	_____
ATTEST: (SEAL)	
_____ (Signature) Secretary	_____ (Signature) (Title)
_____ Please print name	_____ Please print name

NOTE: If bidder is doing business under a fictitious name, the bid shall be executed in the legal name of the individual partners, joint ventures, or corporation, with the legal address shown, and registration of fictitious name filed with the secretary of state, as required by sections 417.200 to 417.230 RSMo. If the bidder is a corporation not organized under the laws of Missouri, it shall procure a certificate of authority to do business in Missouri, as required by section 351.572 et seq RSMo.

SUMMARY OF QUANTITIES

	ITEM	DESCRIPTION	UNIT	QUANTITY
	MO-100-4.1	MOBILIZATION	LS	1
	MO-156-4.5.1	SILT FENCE	LF	200
⚠	MO-156-12.4.1	INLET PROTECTION	EA	1
⚠	MO-401S-8.1	MINERAL AGGREGATE (BP-1 MIX)	TON	2,850
⚠	MO-401S-8.2	ASPHALT CEMENT (BP-1 MIX)	TON	150.0
	MO-602-5.1	BITUMINOUS PRIME COAT	GAL	6,900
	MO-620-5.1	AIRPORT RUNWAY PAVEMENT MARKING (WHITE)	SF	3,526
	MO-620-5.2	AIRPORT TAXIWAY PAVEMENT MARKING (YELLOW)	SF	497
	MO-620-5.3	AIRPORT PAVEMENT MARKING (BLACK)	SF	2,599
⚠	MO-701-5.1	18" REINFORCED CONCRETE PIPE	LF	182
⚠	MO-701-5.2	18" REINFORCED CONCRETE PIPE FLARED END SECTION	EA	1
⚠	D-751-5.1	3'x3' TYPE S-1 PRE-CAST DROP INLET	EA	1
	SP-1-5.1	FULL-DEPTH RECLAMATION	SY	19,700
	SP-2-5.1	MOORING EYES	EA	21
	SP-2-5.2	PARTIAL DEPTH TIE-DOWN REMOVAL	EA	14

REVISIONS

NUMBER	BY	DATE
⚠	BWG	5/6/2013

0 1 2

THIS BAR IS EQUAL TO 2" AT FULL SCALE (34X22). PLOT 1

BOLLINGER-CRASS
MEMORIAL AIRPORT
VAN BUREN, MISSOURI

FULL-DEPTH RECLAMATION AND OVERLAY OF RUNWAY 2-20, CONNECTING TAXIWAY AND APRON

STATE OF MISSOURI
BRIAN W. GARKIE
NUMBER PE-2004017171
PROFESSIONAL ENGINEER
DATE: 5/6/13
BRIAN W. GARKIE, P.E.
PROFESSIONAL ENGINEER

ONE MEMORIAL DRIVE, SUITE 500
ST. LOUIS, MO 63102
(314) 436-5560

CMT
CRAWFORD, MURPHY & TILLY, INC.
CONSULTING ENGINEERS

PROFESSIONAL ENGINEERING - 000631

STATE PROJECT NO. AIR 126-080A-MoDOT

FILE: 02_Quantities_Rev_1.dgn
DESIGN BY: LEW
DRAWN BY: LEW
CHECKED BY: BHH
APPROVED BY: BWG
DATE: APRIL 16, 2013
JOB No: 12409-02

SUMMARY OF QUANTITIES

SHEET 2 OF 14 SHEETS

5/6/2013
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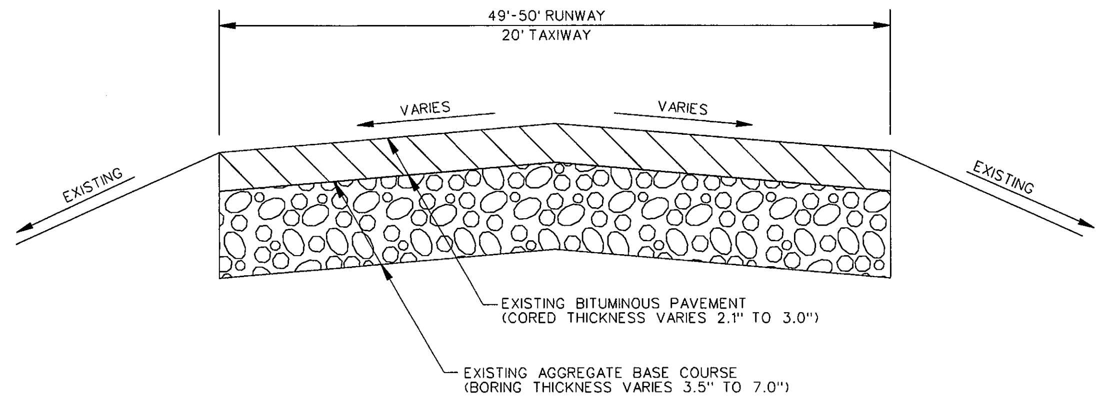
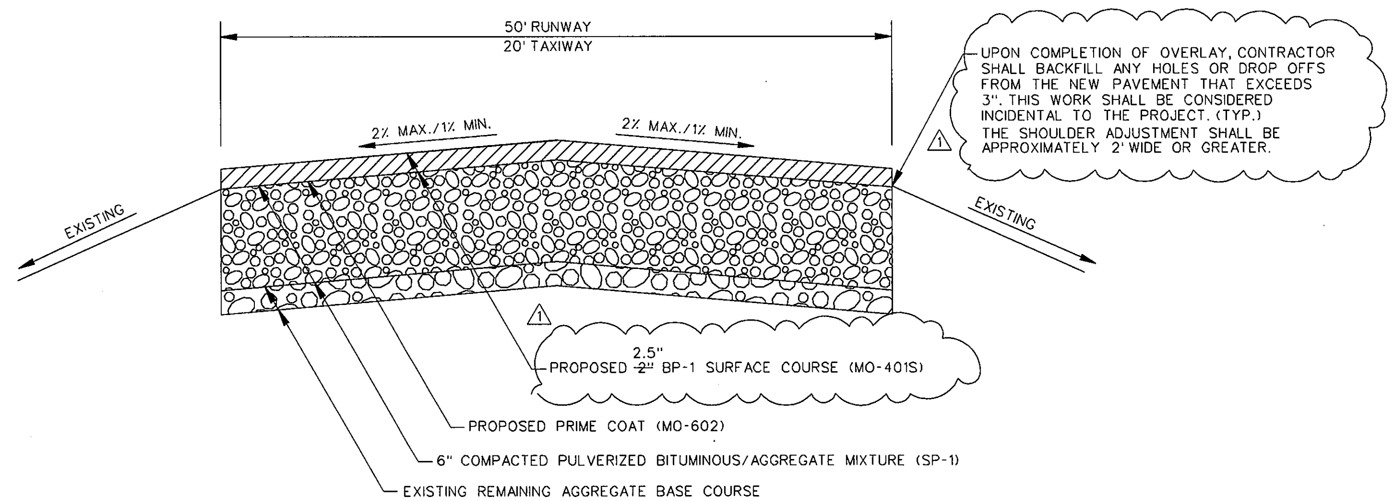


EXISTING TYPICAL SECTION

NOT TO SCALE



PROPOSED TYPICAL SECTION

NOT TO SCALE

NOTE:

1. COMPACTED PULVERIZED BITUMINOUS/AGGREGATE MIXTURE SHALL BE FINISHED TO 2.5" BELOW FINISHED GRADE. IF ADDITIONAL MATERIAL IS NEEDED, THE CONTRACTOR SHALL PLACE CRUSHED AGGREGATE BASE COURSE IN ACCORDANCE WITH ITEM MO-209. IF EXCESS MATERIAL IS ENCOUNTERED, THE EXCESS MATERIAL SHALL BE SPREAD ON THE AIRPORT ENTRANCE ROAD AS DIRECTED BY THE ENGINEER. ALL WORK ASSOCIATED WITH A SHORTAGE OF MATERIAL OR EXCESS MATERIAL SHALL BE INCIDENTAL TO THE ITEM SP-1 WORK.

REVISIONS		
NUMBER	BY	DATE
1	BWG	5/6/2013

THIS BAR IS EQUAL TO 2" AT FULL SCALE (34X22). PLOT 1

BOLLINGER-CRASS MEMORIAL AIRPORT VAN BUREN, MISSOURI

FULL-DEPTH RECLAMATION AND OVERLAY OF RUNWAY 2-20, CONNECTING TAXIWAY AND APRON

STATE OF MISSOURI — BRIAN W. GARKIE — NUMBER PE-2004017171 — PROFESSIONAL ENGINEER
DATE: 5/6/13
BRIAN W. GARKIE, P.E. PROFESSIONAL ENGINEER

ONE MEMORIAL DRIVE, SUITE 500
ST. LOUIS, MO 63102
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CONSULTING ENGINEERS

PROFESSIONAL ENGINEERING - 000631

STATE PROJECT NO. AIR 126-080A-MoDOT

FILE: 06_Typical_Sections_Rev_1.dgn
DESIGN BY: LEW
DRAWN BY: LEW
CHECKED BY: BHH
APPROVED BY: BWG
DATE: APRIL 16, 2013
JOB No: 12409-02

TYPICAL SECTIONS

5/6/2013
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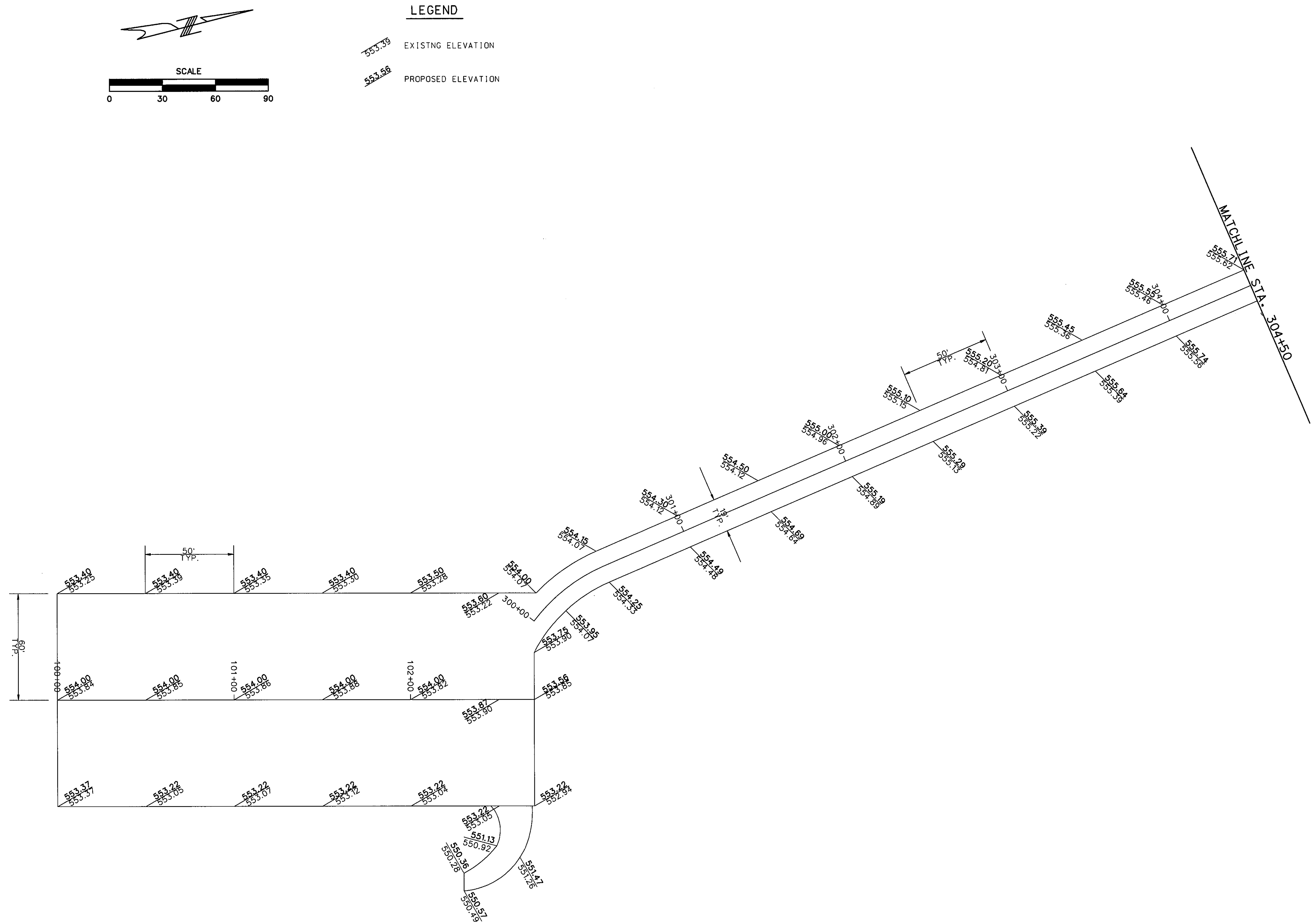
SHEET REVISED PER ADDENDUM NO. 1



REVISIONS		
NUMBER	BY	DATE
1	BWG	5/6/2013

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THIS BAR IS EQUAL TO 2" AT FULL SCALE (34X22). PLOT 1

BOLLINGER-CRASS MEMORIAL AIRPORT VAN BUREN, MISSOURI

FULL-DEPTH RECLAMATION AND OVERLAY OF RUNWAY 2-20, CONNECTING TAXIWAY AND APRON

STATE OF MISSOURI
BRIAN W. GARKIE
NUMBER PE-2004017171
PROFESSIONAL ENGINEER
DATE: 5/6/13
BRIAN W. GARKIE, P.E.
PROFESSIONAL ENGINEER

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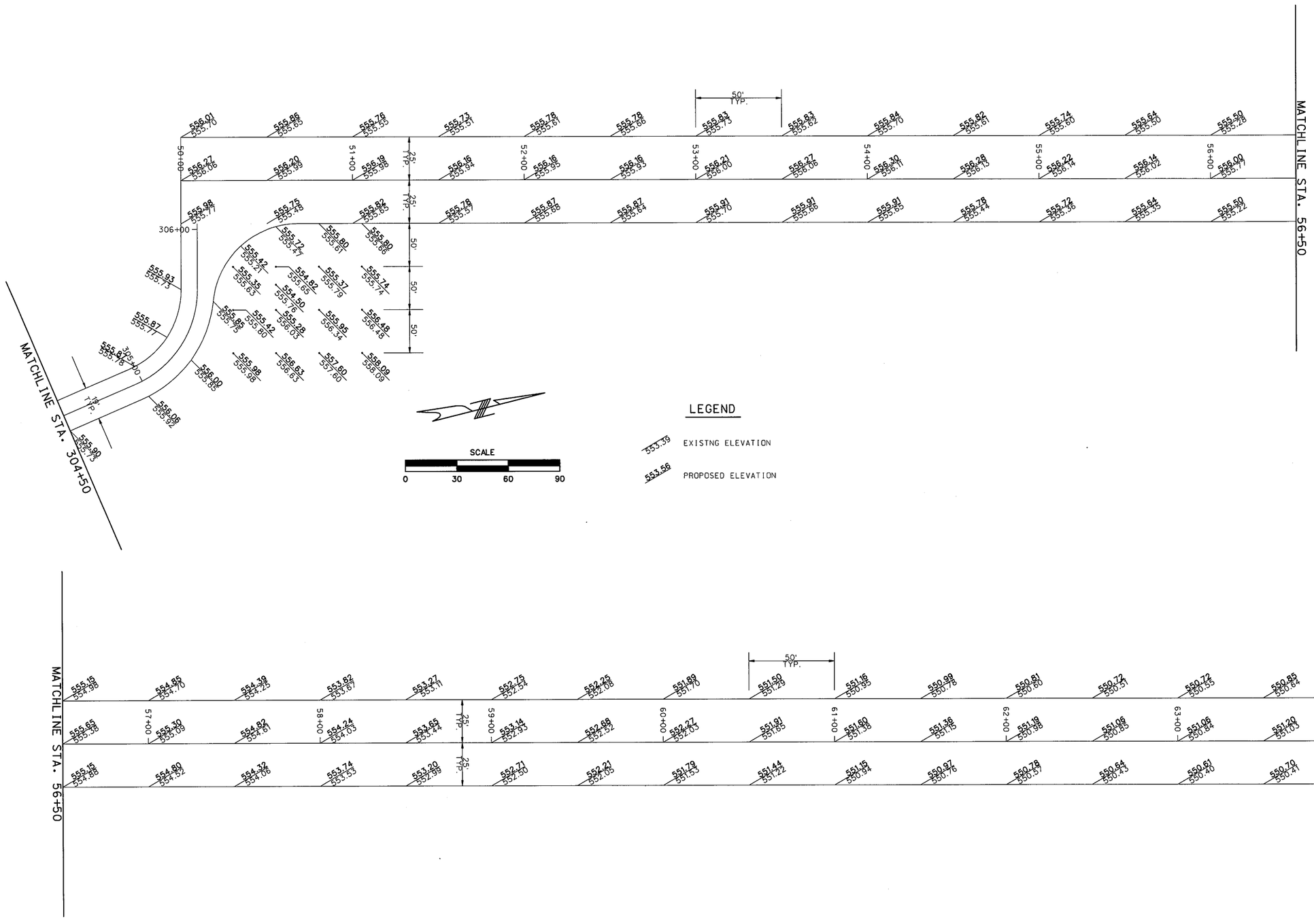
CRAWFORD, MURPHY & TILLY, INC.
CONSULTING ENGINEERS

STATE PROJECT NO. AIR 126-080A-MoDOT

FILE: 08_Staking_Plan_1_Rev_1.dgn	
DESIGN BY: LEW	
DRAWN BY: LEW	
CHECKED BY: BHH	
APPROVED BY: BWG	
DATE: APRIL 16, 2013	
JOB No: 12409-02	

STAKING PLAN
SHEET 1 OF 3

⚠1 SHEET REVISED PER ADDENDUM NO. 1



REVISIONS		
NUMBER	BY	DATE
⚠1	BWG	5/6/2013

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THIS BAR IS EQUAL TO 2" AT FULL SCALE (34X22). PLOT 1

BOLLINGER-CRASS MEMORIAL AIRPORT
VAN BUREN, MISSOURI

FULL-DEPTH RECLAMATION AND OVERLAY OF RUNWAY 2-20, CONNECTING TAXIWAY AND APRON

STATE OF MISSOURI
BRIAN W. GARKIE
NUMBER PE-2004017171
PROFESSIONAL ENGINEER
DATE: 5/6/13
BRIAN W. GARKIE, P.E.
PROFESSIONAL ENGINEER

CMT
CRAWFORD, MURPHY & TILLY, INC.
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STATE PROJECT NO. AIR 126-080A-MoDOT

FILE: 09_Staking_Plan_2_Rev_1.dgn
DESIGN BY: LEW
DRAWN BY: LEW
CHECKED BY: BHH
APPROVED BY: BWG
DATE: APRIL 16, 2013
JOB No: 12409-02

STAKING PLAN
SHEET 2 OF 3

SHEET 9 OF 14 SHEETS

5/6/2013
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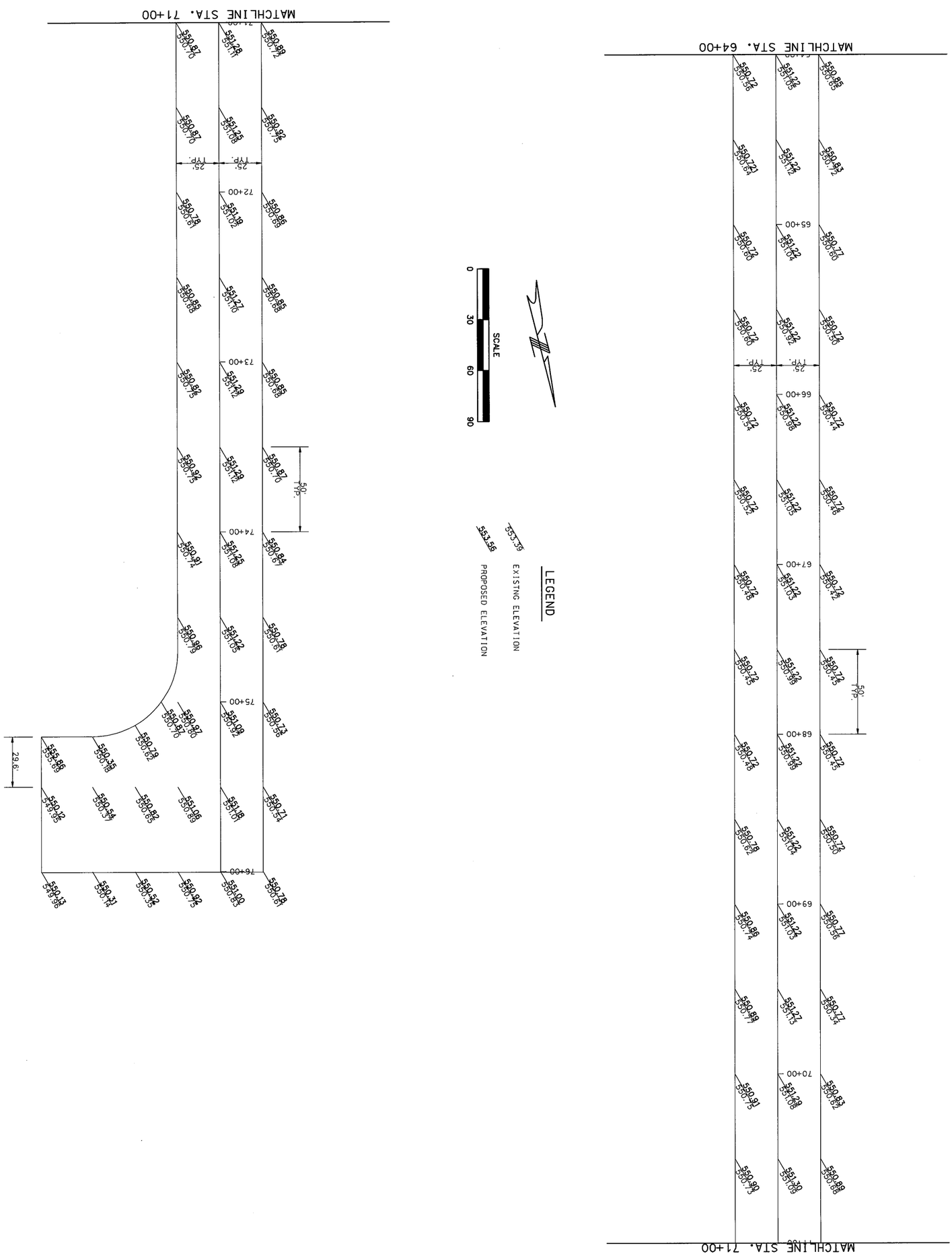

SHEET REVISED PER ADDENDUM NO. 1

REVISIONS		
NUMBER	BY	DATE
1	BWG	5/6/2013

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BOLLINGER–CRASS MEMORIAL AIRPORT
VAN BUREN, MISSOURI

FULL–DEPTH RECLAMATION AND OVERLAY OF RUNWAY 2–20, CONNECTING TAXIWAY AND APRON

STATE PROJECT NO. AIR 126–080A–MoDOT

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(314) 436-5500

CMT
CRAWFORD, MURPHY & TILLY, INC.
CONSULTING ENGINEERS

PROFESSIONAL ENGINEERING - 000631

STATE OF MISSOURI
BRIAN W. GARNER
NUMBER PE-2004017771
PROFESSIONAL ENGINEER
DATE: 5/6/13
BRIAN W. GARNER, P.E.
PROFESSIONAL ENGINEER

FILE: 10_Staking_Plan_3_Rev_1.dgn	
DESIGN BY: LEW	
DRAWN BY: LEW	
CHECKED BY: BHH	
APPROVED BY: BWG	
DATE: APRIL 16, 2013	
JOB No: 124090-02	

STAKING PLAN
SHEET 3 OF 3

SHEET 10 OF 14 SHEETS

⚠ SHEET ADDED PER ADDENDUM NO. 1

LEGEND

- DITCH FLOW LINE
- FLARED END SECTION
- PROPOSED REINFORCED CONCRETE PIPE

SCALE: 0 20 40 60

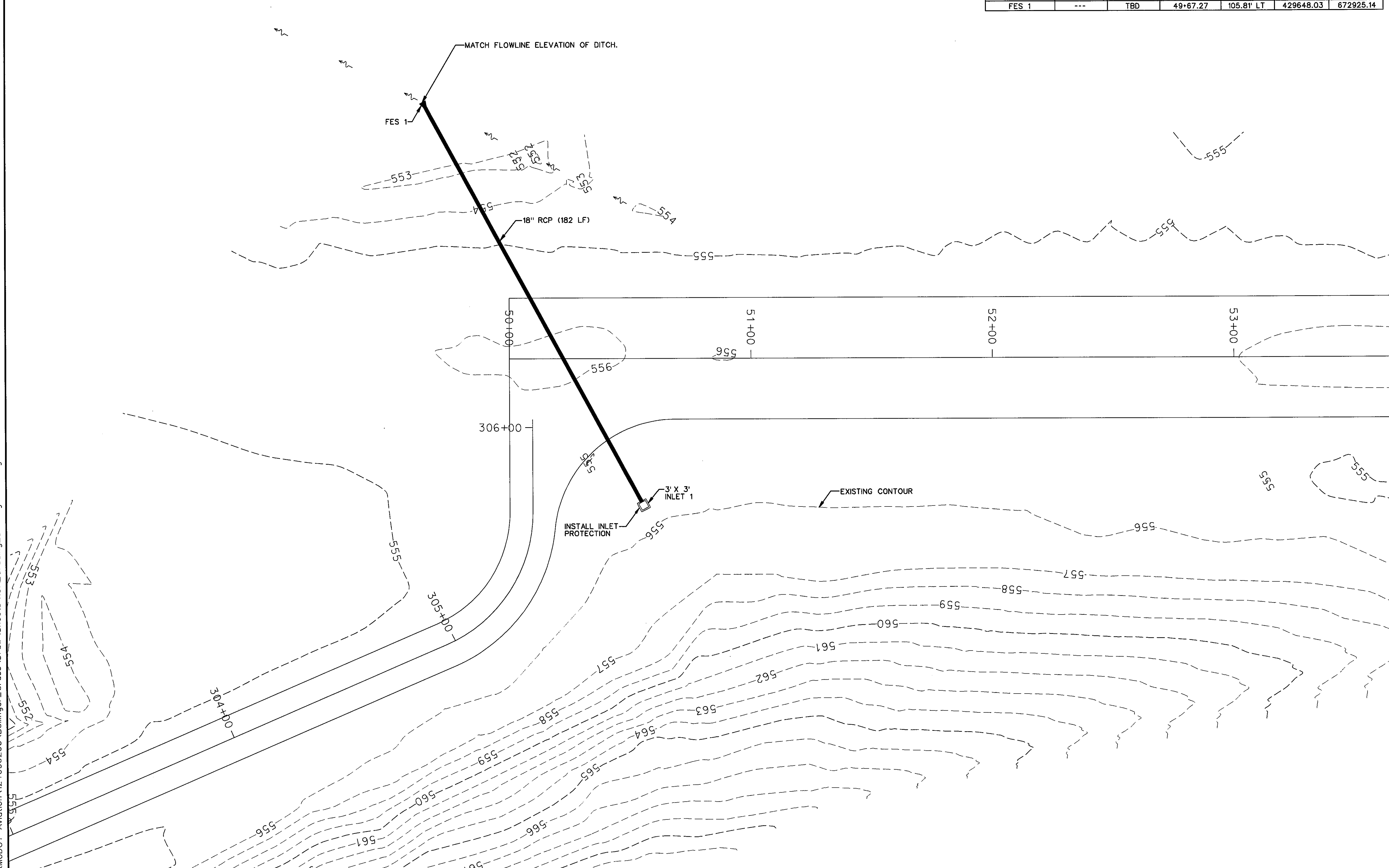
NOTE:
1. GRADE AREA AROUND INLET TO DRAIN TOWARD INLET.

STORM SEWER SCHEDULE

REACH	PIPE SIZE	LENGTH FOR PAYMENT (FT)	LENGTH W/ FES (FT)	SLOPE
INLET 1 - FES 1	18" RCP	182	188	TBD

STRUCTURE SCHEDULE

STRUCTURE NUMBER	RIM ELEV	INVERT ELEV	STATION	OFFSET	NORTHING	EASTING
INLET 1	454.50	451.00	50+55.33	60.45' RT	429647.10	672735.63
FES 1	---	TBD	49+67.27	105.81' LT	429648.03	672925.14



REVISIONS		
NUMBER	BY	DATE
⚠	BWG	5/6/2013

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BOLLINGER-CRASS MEMORIAL AIRPORT
VAN BUREN, MISSOURI

FULL-DEPTH RECLAMATION AND OVERLAY OF RUNWAY 2-20, CONNECTING TAXIWAY AND APRON

STATE OF MISSOURI — BRIAN W. GARKIE — NUMBER PE-2004017171 — PROFESSIONAL ENGINEER

DATE: 5/6/13
BRIAN W. GARKIE, P.E.
PROFESSIONAL ENGINEER

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CMT
CRAWFORD, MURPHY & TILLY, INC.
CONSULTING ENGINEERS
PROFESSIONAL ENGINEERING - 000631

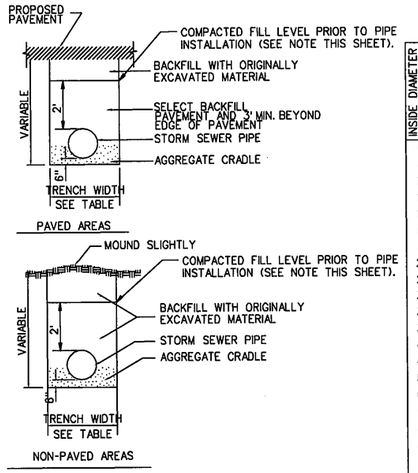
STATE PROJECT NO. AIR 126-080A-MoDOT

FILE: 10A_Grading_Drainage_Plan.dgn
DESIGN BY: LEW
DRAWN BY: LEW
CHECKED BY: BHH
APPROVED BY: BWG
DATE: APRIL 16, 2013
JOB No: 12409-02

GRADING AND DRAINAGE PLAN

SHEET 10A OF 14 SHEETS

5/6/2013
K:\MoDOT Aviation\12409020\Bollinger_Crass\Draw\Sheets\10A_Grading_Drainage_Plan.dgn

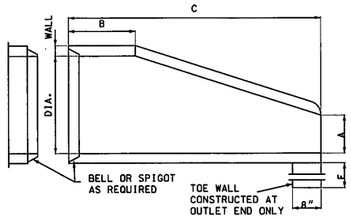


INSIDE DIAMETER OF SEWER (INCHES)	MAXIMUM TRENCH WIDTH
6	3'-2"
8	3'-2"
10	3'-2"
12	3'-4"
15	3'-6"
18	3'-10"
21	4'-4"
24	4'-8"
27	4'-11"
30	5'-3"
33	6'-0"
36	6'-4"
42	6'-11"
48	7'-6"
54	8'-7"
60	9'-2"
66	9'-9"
72	10'-4"
78	10'-11"
84	11'-6"
90	12'-1"
96	12'-8"
102	13'-3"
108	13'-10"

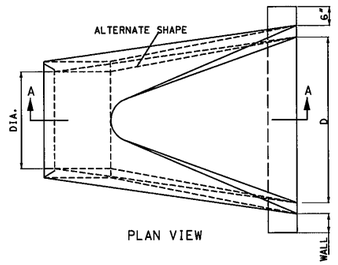
NOTE:
CONTRACTOR SHALL COMPACT FILL 2' ABOVE PROPOSED TOP OF PIPE ELEVATION PRIOR TO EXCAVATION OF PIPE TRENCH. BACKFILL PAVED AREAS WITH SELECT GRANULAR MATERIAL 2' ABOVE THE TOP OF PIPE. BACKFILL NON-PAVED AREAS WITH ORIGINALLY EXCAVATED FILL.

STORM SEWER TRENCH DETAILS

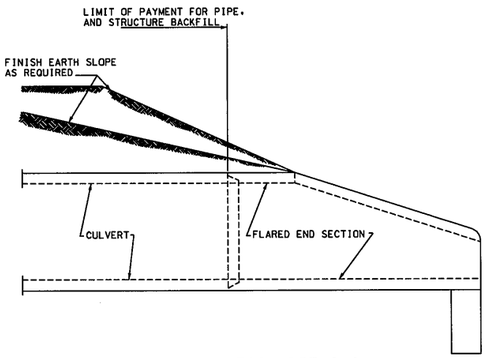
N.T.S.



SECTION A-A



PLAN VIEW



INSTALLATION DETAILS

DIMENSIONS						
DIA.	WALL	A	B MIN.	C MIN.	D	E
12"	2"	4"	4'-0"	6'	2'-0"	18"
15"	2½"	6"	3'-10"	6'	2'-6"	18"
18"	2½"	9"	3'-10"	6'	3'-0"	18"
21"	2½"	9"	3'-2"	6'	3'-6"	18"
24"	3"	9½"	2'-6"	6'	4'-0"	24"
27"	3½"	10½"	2'-1"	6'	4'-6"	24"
30"	3½"	1'-0"	1'-7"	6'	5'-0"	24"
33"	3¾"	1'-2"	1'-7"	6'	5'-6"	24"
36"	4"	1'-3"	2'-10"	8'	6'-0"	24"
42"	4½"	1'-9"	2'-11"	8'	6'-6"	24"
48"	5"	2'-0"	2'-2"	8'	7'-0"	24"
54"	5½"	2'-3"	2'-11"	8'	7'-6"	36"
60"	6"	2'-6"	3'-3"	8'	8'-0"	36"
66"	6½"	2'-0"	1'-9"	8'	8'-6"	36"
72"	7"	2'-0"	2'-9"	10'	9'-0"	36"
78"	7½"	2'-3"	2'-3"	10'	9'-6"	36"
84"	8"	2'-6"	2'-0"	10'	10'-0"	36"

REINFORCEMENT					
ADJOINING PIPE DIA.	BARREL SECTION REINFORCEMENT			FLARE SECTION REINFORCEMENT (ONE LAYER ONLY IN CENTER OF WALL)	
	CIRCULAR		ELLIPTICAL		
	INNER CAGE SQ. IN./ LIN. FT.	OUTER CAGE SQ. IN./ LIN. FT.	SQ. IN./ LIN. FT.	AREA OF LONGITUDINAL SQ. IN./ LIN. FT.	AREA OF TRANSVERSE SQ. IN./ LIN. FT.
12"	0.07			0.048	0.048
15"	0.07			0.054	0.054
18"	0.07		0.07	0.060	0.060
21"	0.07		0.07	0.066	0.066
24"	0.07		0.07	0.072	0.072
27"	0.13		0.11	0.078	0.078
30"	0.14		0.12	0.084	0.084
33"	0.15		0.13	0.090	0.090
36"	0.12	0.09	0.13	0.096	0.096
42"	0.15	0.12	0.17	0.108	0.108
48"	0.18	0.14	0.20	0.120	0.120
54"	0.22	0.16	0.24	0.132	0.132
60"	0.25	0.19	0.28	0.144	0.144
66"	0.31	0.23	0.34	0.156	0.156
72"	0.35	0.21	0.39	0.170	0.170
78"	0.40	0.24	0.44	0.185	0.185
84"	0.46	0.28	0.51	0.205	0.205

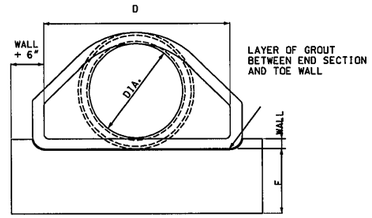
GENERAL NOTES:

SLIGHT VARIATIONS IN BOTH SHAPE AND DIMENSIONS FROM THOSE SHOWN MAY BE ACCEPTED IF APPROVED BY THE ENGINEER.

NOT MORE THAN THREE LIFT HOLES MAY BE DRILLED OR CAST IN THE END SECTION FOR HANDLING AND LAYING.

LIFT LUGS OR BARS WILL BE PERMITTED IN PRECAST TOE WALLS.

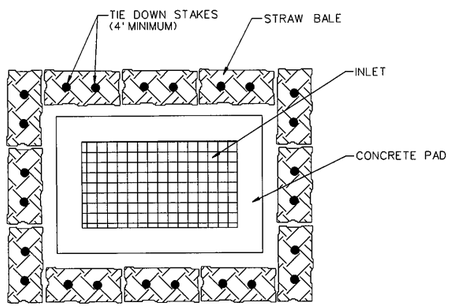
TOE WALLS MAY BE CAST-IN-PLACE OR PRECAST.



END VIEW

PRECAST CONCRETE FLARED END SECTION

N.T.S.



INLET EROSION PROTECTION DETAIL

NOT TO SCALE

⚠1 SHEET ADDED PER ADDENDUM NO. 1

REVISIONS		
NUMBER	BY	DATE
⚠1	BWG	5/6/2013

0 1 2

THIS BAR IS EQUAL TO 2" AT FULL SCALE (34X22). PLOT 1

BOLLINGER-CRASS MEMORIAL AIRPORT VAN BUREN, MISSOURI

FULL-DEPTH RECLAMATION AND OVERLAY OF RUNWAY 2-20, CONNECTING TAXIWAY AND APRON

STATE PROJECT NO. AIR 126-080A-MoDOT

STATE OF MISSOURI BRIAN W. GARKIE NUMBER PE-2004017171 PROFESSIONAL ENGINEER

DATE: 5/6/13
BRIAN W. GARKIE, P.E.
PROFESSIONAL ENGINEER

ONE MEMORIAL DRIVE, SUITE 500
ST. LOUIS, MISSOURI 63102
(314) 436-5500

CMT
CRAWFORD, MURPHY & TILLY, INC.
CONSULTING ENGINEERS

PROFESSIONAL ENGINEERING - 000631

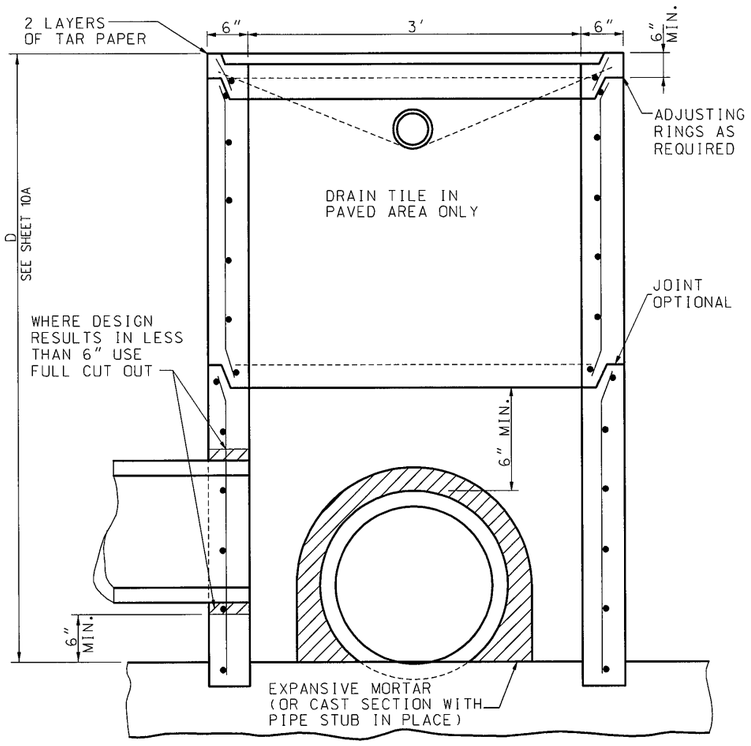
FILE:	10B_drainage_details.dgn
DESIGN BY:	LEW
DRAWN BY:	LEW
CHECKED BY:	BHH
APPROVED BY:	BWG
DATE:	APRIL 16, 2013
JOB No:	12409-02

DRAINAGE DETAILS

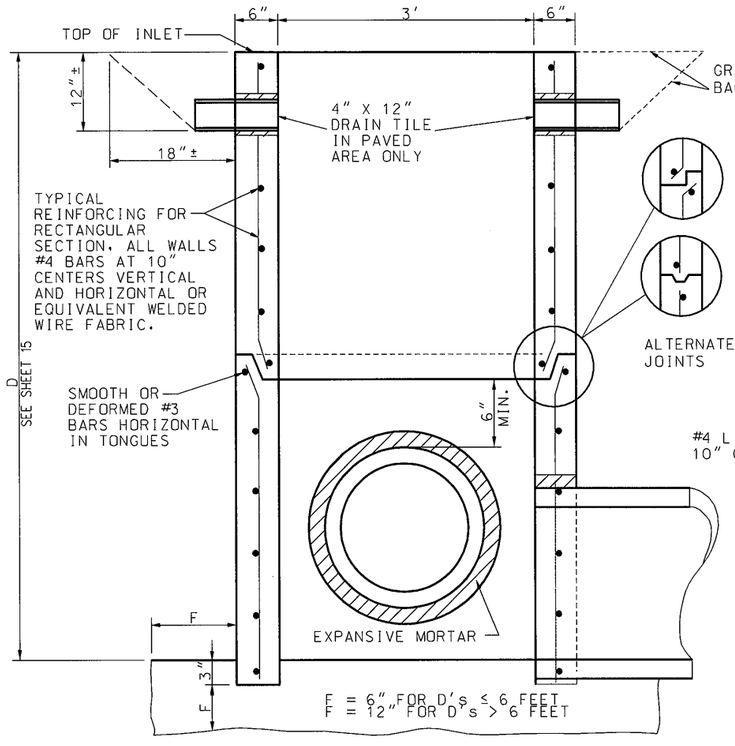
SHEET 10B OF 14 SHEETS

5/6/2013
K:\MoDOT Aviation\12409020O\Bollinger_Crass\Drow\Sheets\10B_drainage_details.dgn

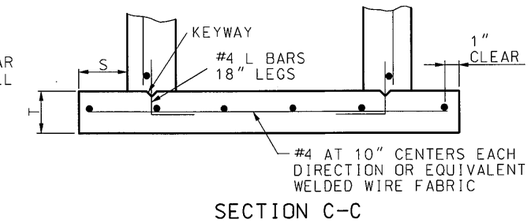
⚠ SHEET ADDED PER ADDENDUM NO. 1



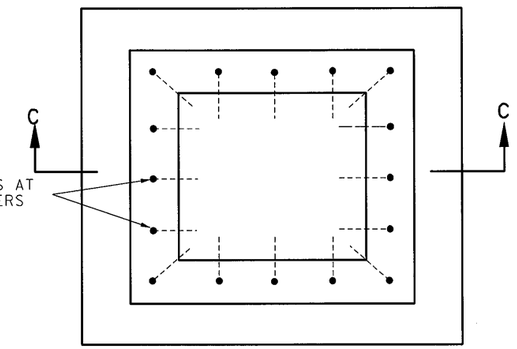
SECTION A-A



SECTION B-B



SECTION C-C



S = 0 FOR D ≤ 6 FEET AND 9" FOR D > 6 FEET

T = 6" FOR D ≤ 6 FEET AND 9" FOR D > 6 FEET

FOUNDATION SLAB AND BASE SECTION MAY BE POURED MONOLITHIC OR SEPARATELY WITH A KEYWAY.

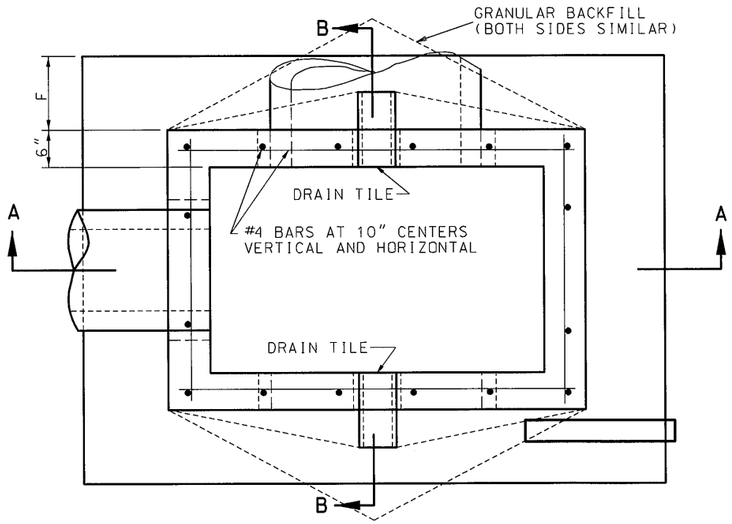
PRECAST FOUNDATION SLAB

STEPS SHALL BE PLACED AT VERTICAL INTERVALS OF 16" MAXIMUM IN ALL INLETS HAVING A DEPTH OF MORE THAN 4 FEET. STEPS SHALL BEGIN AT AN ELEVATION 6" ABOVE THE TOP OF THE OUTLET PIPE.

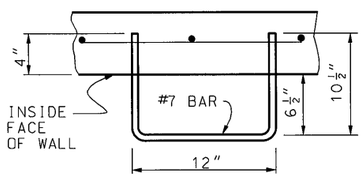
STEPS SHALL BE SET LEVEL AND IN VERTICAL ALIGNMENT AND NOT NEARER THAT 3" TO A JOINT.

NO DIRECT PAYMENT WILL BE MADE FOR INLET STEPS.

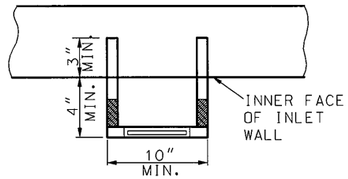
STEPS ARE NOT REQUIRED FOR TYPE D INLETS.



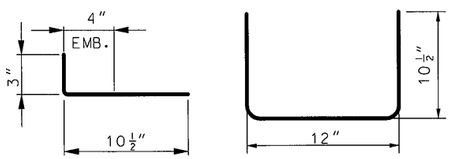
INLET PLAN



STEPS



STEP INSTALLATION (OTHER THAN STEEL BAR)



S - BARS

BENDING DIAGRAM STEEL STEP BAR

REVISIONS		
NUMBER	BY	DATE
⚠	BWG	5/6/2013

0 1 2
THIS BAR IS EQUAL TO 2" AT FULL SCALE (34X22). PLOT 1

BOLLINGER-CRASS MEMORIAL AIRPORT VAN BUREN, MISSOURI

FULL-DEPTH RECLAMATION AND OVERLAY OF RUNWAY 2-20, CONNECTING TAXIWAY AND APRON

STATE PROJECT NO. AIR 126-080A-MoDOT

STATE OF MISSOURI — BRIAN W. GARKIE — NUMBER PE-2004017171 — PROFESSIONAL ENGINEER
DATE: 5/6/13
BRIAN W. GARKIE, P.E.
PROFESSIONAL ENGINEER

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ONE MEMORIAL DRIVE, SUITE 500
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PROFESSIONAL ENGINEERING - 000631

FILE:	10C_inlet_details_1.dgn
DESIGN BY:	LEW
DRAWN BY:	LEW
CHECKED BY:	BHH
APPROVED BY:	BWG
DATE:	APRIL 16, 2013
JOB No:	12409-02

TYPE S-I PRECAST DROP INLET IN-TURF DETAILS SHEET 1 OF 3

SHEET 10C OF 14 SHEETS

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

PRECAST DROP INLET

DATE:	EFFECTIVE: 12-01-2005	731.10R	1/2

5/6/2013
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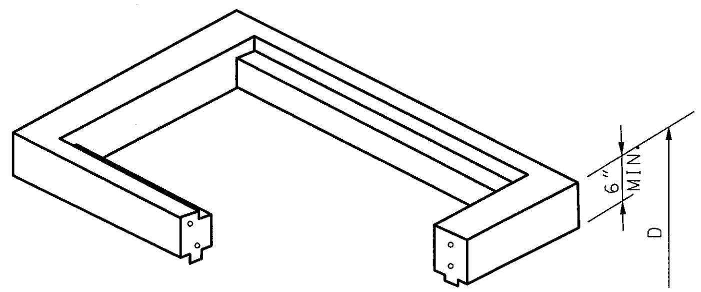
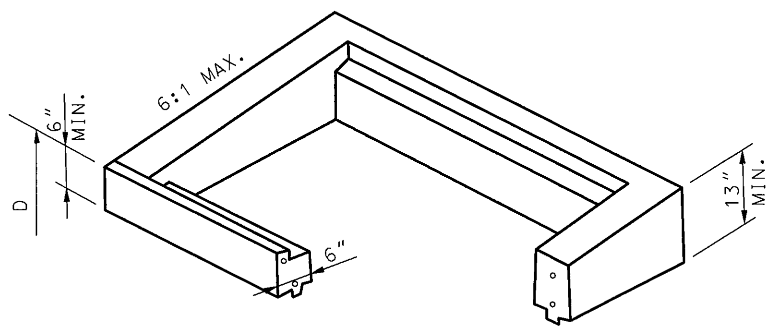
⚠ SHEET ADDED PER ADDENDUM NO. 1

REVISIONS		
NUMBER	BY	DATE
⚠	BWG	5/6/2013

0 1 2
THIS BAR IS EQUAL TO 2" AT FULL SCALE (34X22). PLOT 1

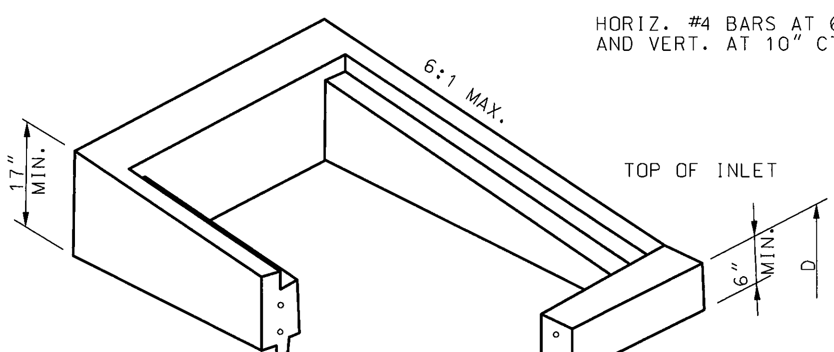


TYPE S-1

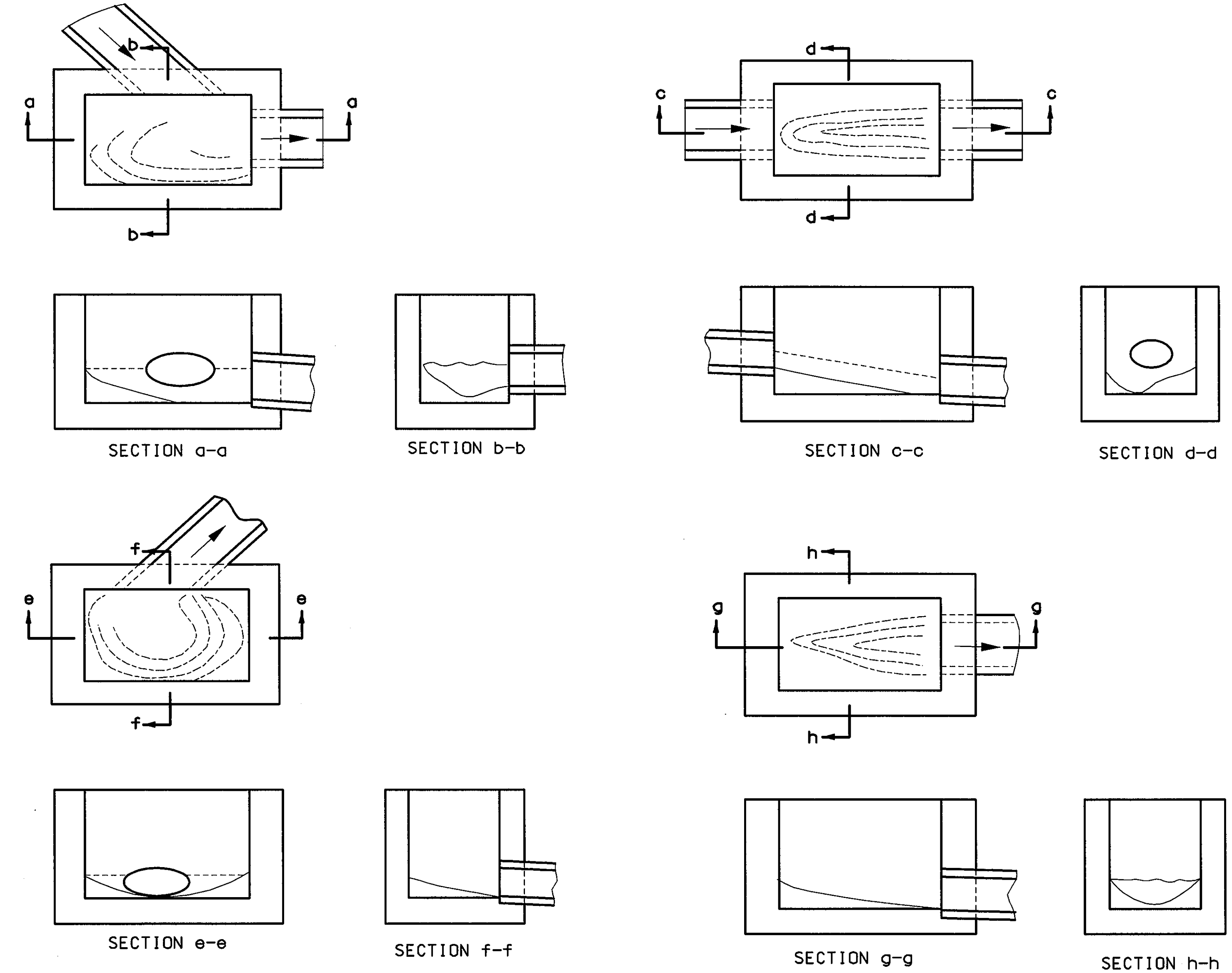


TYPE S-2

HORIZ. #4 BARS AT 6" CTRS. AND VERT. AT 10" CTRS.



TYPE S-3



TYPICAL INVERTS

SEE STANDARD PLAN 614.10 FOR GRATES AND BEARING PLATES. TYPICAL LOCATION DETAILS ARE INDICATED ON SHEETS 7 AND 8 OF 8. TOP SECTIONS MAY BE CAST MONOLITHIC WITH BASE SECTION.

DROP INLET		
WIDTH FT.	LENGTH FT.	TYPE
2	2	A, B, C
4	2	
2	2	D
3	2	
3	3	E, **S-1**
5	2	S-2, S-3
5	3	

THIS PROJECT ⟶ (row 3 × 3)

GENERAL NOTES:

THE CONCRETE FOR INVERTS SHALL BE PLACED AFTER COMPLETION OF THE DROP INLET BOX. NO DIRECT PAYMENT WILL BE MADE FOR FURNISHING OR PLACING INVERT CONCRETE.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

PRECAST DROP INLET

DATE:______ EFFECTIVE: 12-01-2005 731.10R 2/2

BOLLINGER-CRASS MEMORIAL AIRPORT
VAN BUREN, MISSOURI

FULL-DEPTH RECLAMATION AND OVERLAY OF RUNWAY 2-20, CONNECTING TAXIWAY AND APRON

STATE OF MISSOURI — BRIAN W. GARKIE — NUMBER PE-2004017171 — PROFESSIONAL ENGINEER
DATE: 5/6/13
BRIAN W. GARKIE, P.E.
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STATE PROJECT NO. AIR 126-080A-MoDOT

FILE: 10D_inlet_details_2.dgn
DESIGN BY: LEW
DRAWN BY: LEW
CHECKED BY: BHH
APPROVED BY: BWG
DATE: APRIL 16, 2013
JOB No: 12409-02

TYPE S-1
PRECAST DROP
INLET IN-TURF DETAILS
SHEET 2 OF 3

SHEET 10D OF 14 SHEETS

5/6/2013
K:\MoDOT Aviation\124090200\Bollinger_Crass\Draw\Sheets\10D_inlet_details_2.dgn

⚠1 SHEET ADDED PER ADDENDUM NO. 1

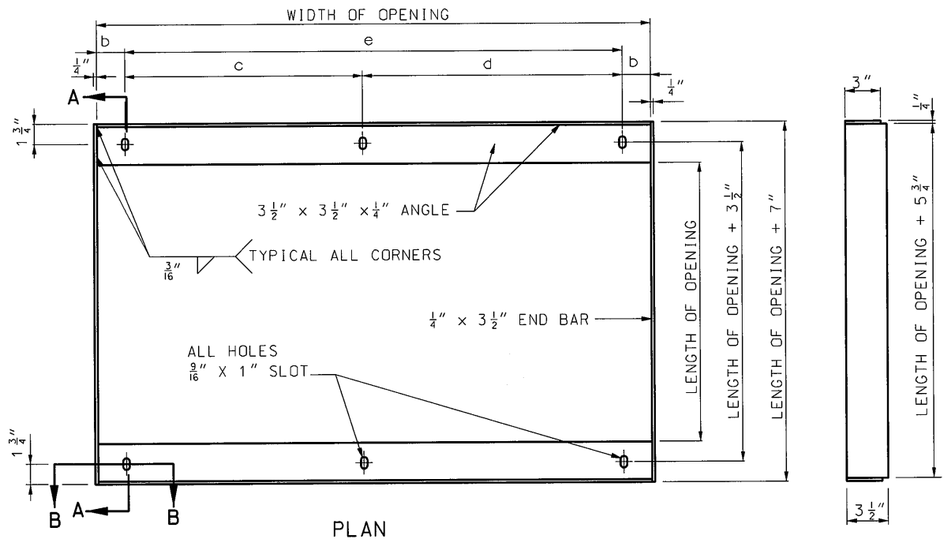
REVISIONS		
NUMBER	BY	DATE
⚠1	BWG	5/6/2013

0 1 2
THIS BAR IS EQUAL TO 2" AT FULL SCALE (34X22). PLOT 1

WEIGHT AND DIMENSIONS DATA

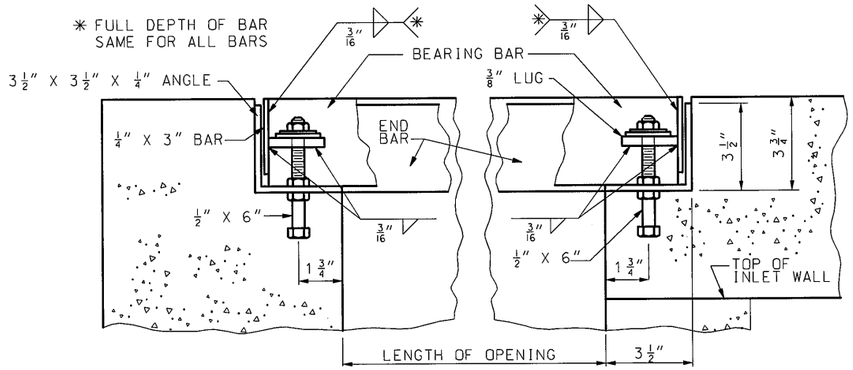
OPENING WIDTH	OPENING LENGTH	WEIGHT (1) LBS.	BEARING BARS x	BEARING BARS y	BEARING BARS LENGTH	BEARING BARS NUMBER	DIMENSIONS a	DIMENSIONS b	DIMENSIONS c	DIMENSIONS d	DIMENSIONS e	REMARKS
3'-0"	2'-0"	190	3/8"	3"	2'-5 3/4"	11	13/16"	2 13/16"			2'-6 3/8"	USE WITH TYPE S-1 INLETS AND TYPE S HEADWALLS
3'-0"	3'-0"	330	5/8"	3"	3'-5 3/4"	10	1 1/4"	3 1/2"			2'-5"	
5'-0"	2'-0"	300	3/8"	3"	2'-5 3/4"	18	1"	3"	2'-3"	2'-3"		
5'-0"	**3'-0"**	**550**	**5/8"**	**3"**	**3'-5 3/4"**	**17**	**9/16"**	**2 13/16"**	**2'-1 3/8"**	**2'-5"**		
3'-1"	2'-1"	200	3/8"	3"	2'-6 3/4"	11	1 5/16"	3 5/16"			2'-6 3/8"	USE WITH TYPE S-2 AND TYPE S-3 INLETS ONLY
3'-1"	3'-1"	340	5/8"	3"	3'-6 3/4"	10	1 3/4"	4"			2'-5"	
5'-1"	2'-1"	310	3/8"	3"	2'-6 3/4"	18	1 1/2"	3 1/2"	2'-3"	2'-3"		
5'-1"	3'-1"	560	5/8"	3"	3'-6 3/4"	17	1 1/16"	3 5/16"	2'-1 3/8"	2'-5"		

(1) THE WEIGHT OF THE GRATE AND BEARING PLATE INCLUDES THE BOLTS, NUTS, AND WASHERS AND SHALL BE AS SHOWN WITH A TOLERANCE OF 5 PERCENT.

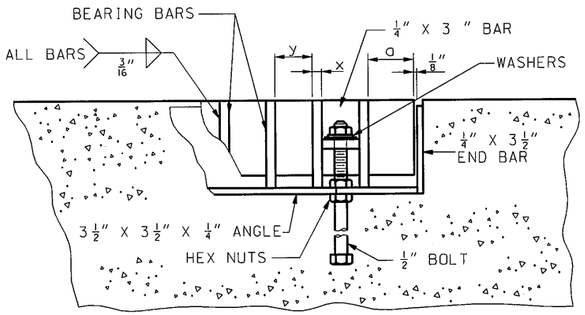


PLAN
BEARING PLATE

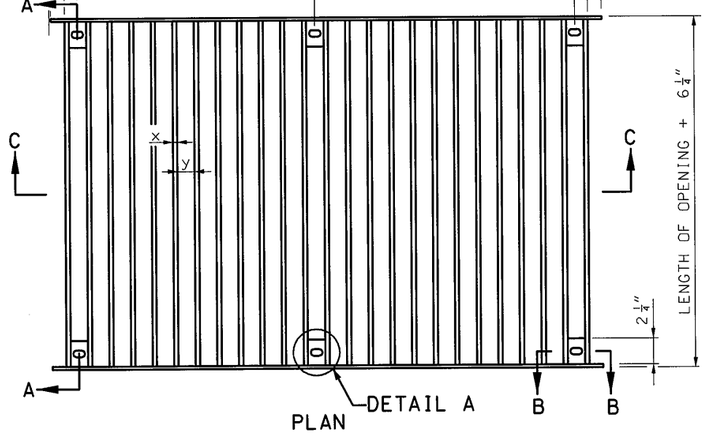
END VIEW OF BEARING BAR



SECTION A-A

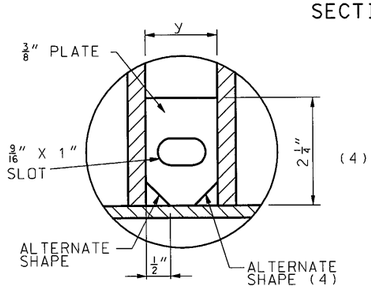


SECTION B-B



PLAN

SECTION C-C
GRATE



DETAIL A

(4) OTHER ALTERNATE SHAPES ARE ALLOWED, UPON APPROVAL, PROVIDED 4 LINEAR INCHES WELD IS MAINTAINED SYMETRICALLY AROUND THE PLATE AND THE NOMINAL DIMENSIONS OF THE PLATE AND SLOT ARE MAINTAINED.

GENERAL NOTES:

WHEN BOLTS ARE CUT IN THE FIELD, THREADS MUST BE CLEANED TO PERMIT THE FINAL NUT TO RUN FREELY ON THE BOLT.

THE WELDING REQUIREMENTS SHOWN ON THIS DRAWING ARE FOR PAINTED GRATES AND BEARING PLATES. IF GALVANIZED, ALL TIGHTLY CONTACTING SURFACES SHALL BE COMPLETELY SEALED, ON ALL SIDES BY WELDING, PRIOR TO GALVANIZING.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

GRATES & BEARING PLATES

DATE:_____ EFFECTIVE: 12-01-2005 614.10T 1/1

BOLLINGER-CRASS MEMORIAL AIRPORT
VAN BUREN, MISSOURI

FULL-DEPTH RECLAMATION AND OVERLAY OF RUNWAY 2-20, CONNECTING TAXIWAY AND APRON

STATE PROJECT NO. AIR 126-080A-MoDOT

STATE OF MISSOURI — BRIAN W. GARKIE — NUMBER PE-2004017177 — PROFESSIONAL ENGINEER
DATE: 5/6/13
BRIAN W. GARKIE, P.E.
PROFESSIONAL ENGINEER

CMT
CRAWFORD, MURPHY & TILLY, INC.
CONSULTING ENGINEERS
ONE MEMORIAL DRIVE, SUITE 500
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(314) 436-5500

FILE: 10E_inlet_details_3.dgn
DESIGN BY: LEW
DRAWN BY: LEW
CHECKED BY: BHH
APPROVED BY: BWG
DATE: APRIL 16, 2013
JOB No: 12409-02

TYPE S-1
PRECAST DROP
INLET IN-TURF DETAILS
SHEET 3 OF 3

SHEET 10E OF 14 SHEETS

5/6/2013
K:\MoDOT Aviation\124090200\Bollinger_Crass\Draw\Sheets\10E_inlet_details_3.dgn