



ADDENDUM TO THE CONTRACT

for the

JNU Runway Safety Area Improvements, Phase 2B Contract No. BE17-045

ADDENDUM NO.: TWO

CURRENT DEADLINE FOR BIDS:
August 24, 2016

PREVIOUS ADDENDA: ONE

ISSUED BY: City and Borough of Juneau
ENGINEERING DEPARTMENT
155 South Seward Street
Juneau, Alaska 99801

PREVIOUS DEADLINE FOR BIDS:
August 17, 2016

DATE ADDENDUM ISSUED: August 3, 2016

The following items of the contract are modified as herein indicated. All other items remain the same. This addendum has been issued and is posted online. Please refer to the CBJ Engineering Contracts Division webpage at: http://www.juneau.org/engineering_ftp/contracts/Contracts.php

Project Manual:

- Item No. 1: SECTION 00 0300-NOTICE INVITING BID, DEADLINE FOR BIDS. **Change** the date of the Deadline for Bids **from** August 17, 2016, **to** August 24, 2016. The time remains the same.
- Item No. 2: SECTION 00 4113-BID. **Delete** in its entirety, and **replace** with the attached SECTION 00 4113 – BID, labeled Addendum No. 2.
- Item No. 3: SECTION 00 4114-BID SCHEDULE. **Delete** in its entirety, and **replace** with the attached SECTION 00 4114 – BID SCHEDULE, labeled Addendum No. 2.
- Item No. 4: SECTION D-701-STORM DRAINS AND CULVERTS, Article 701-5.1 BASIS OF PAYMENT. **Delete** third paragraph.
- Item No. 5: SECTION D-701-STORM DRAINS AND CULVERTS, Article 701-5.1 BASIS OF PAYMENT, **Delete** the following:
 - “Item D-701a(1) Corrugated Polyethylene Pipe, 12 inch - per linear foot
 - Item D-701a(4) Corrugated Metal Pipe, 18 inch – per linear foot”.
- Item No. 6: SECTION D-751-MANHOLES, CATCH BASINS, INLETS, AND INSPECTION HOLES. **Delete** in its entirety, and **replace** with the attached SECTION D-751-MANHOLES, CATCH BASINS, INLETS, AND INSPECTION HOLES, labeled Addendum No. 2.
- Item No. 7: SECTION F-162-CHAIN LINK FENCE. **Delete** entire section.
- Item No. 8: SECTION F-170-STEEL BOLLARD. **Delete** entire section.
- Item No. 9: SECTION F-171-POWER GATE OPERATORS. **Delete** entire section.

- Item No. 10: SECTION G-705-WATERING FOR DUST CONTROL. **Delete** entire section.
- Item No. 11: SECTION L-100-RUNWAY AND TAXIWAY LIGHTING. **Delete** in its entirety and **replace** with the attached SECTION L-100-RUNWAY AND TAXIWAY LIGHTING, labeled Addendum No. 2.
- Item No. 12: SECTION L-110–UNDERGROUND ELECTRICAL DUCT, Article 110-5.1, BASIS OF PAYMENT. **Delete** the following:
 “Item L-110a 2-inch Rigid Steel Conduit - per linear foot
 Item L-110c 2-inch PVC Conduit - per linear foot”.
- Item No. 13: SECTION L-112-APRON FLOOD LIGHTING. **Delete** entire section.
- Item No. 14: SECTION P-152–EXCAVATION AND EMBANKMENT, Article 152–3.1 GENERAL, First paragraph. **Delete** the following: “clearing and grubbing in accordance with Item P-151, and”.
- Item No. 15: SECTION P-401–PLANT MIX ASPHALT PAVEMENT, Article 401-8.1 BASIS OF PAYMENT. **Delete** the following:
 “Item P-401a(2) Hot mix asphalt Type V, Class S - per ton
 Item P-401b(2) Hot Mix Asphalt Price Adjustment – per contingent sum
 Item P-401c(2) Asphalt Cement PG 52-28 - per ton”.
- Item No. 16: SECTION P-403-HOT MIX ASPHALT (HMA) PAVEMENT BASE COURSE. **Delete** entire section.
- Item No. 17: SECTION P-610–STRUCTURAL PORTLAND CEMENT CONCRETE, Article 610-5.1-BASIS OF PAYMENT. **Delete** the following:
 “Payment will be made under:
 Item P-610a Structural Portland Cement Concrete - per cubic yard”.
- Item No. 18: SECTION ITEM P-650-AIRCRAFT TIE-DOWN, Article 650-5.1-BASIS OF PAYMENT. **Delete** the following:
 “Item P-650e(2) Concrete Anchor, 10,000 lbs – per each”.
- Item No. 19: SECTION U-400-TELEPHONE SYSTEM. **Delete** entire section.
- Item No. 20: SECTION U-500-ELECTRICAL SYSTEM. **Delete** entire section.
- Item No. 21: SECTION U-700–GROUND LOOP, HORIZONTAL PIPING, Article 700–1.2-RELATED SECTIONS, (a). **Delete** the following:
 “a. P-151 Clearing and Grubbing. Procedures for site clearing.”

DRAWINGS:

Item No. 22: **Replace** ALL drawings with the drawings located at the CBJ Engineering FTP site at: [ftp://ftp.ci.juneau.ak.us/pub/CBJ Bid Documents/](ftp://ftp.ci.juneau.ak.us/pub/CBJ_Bid_Documents/) and labeled Addendum No. 2.
This file is very large and takes a few minutes to load.

You may access this site through any web browser (Internet Explorer, Firefox, etc.). Once you access the FTP site, please open the folder entitled, "JNU Runway Safety Area Improvements, Phase 2B – BE17-045".

If you are having trouble viewing once you get to the page please follow these instructions: **"To view this FTP site in Windows Explorer: press Alt, click View, and then click Open FTP Site in Windows Explorer." If you are using Firefox, you may need to cut and paste the url in your browser.**

NOTICE TO CONTRACTOR:

Construction Safety and Phasing Plan.

The Construction Safety and Phasing Plan document for the Juneau International Airport Runway Safety Area Improvements Phase 2B project includes language and work items that are outside the scope of the project. In particular, work in the Northeast Development Area is not under the project scope. Contractors shall develop their Construction Safety and Phasing Plan based on information and recommendations detailed in the report that are relevant to the contracted scope of this project.

Erosion and Sediment Control Plan

The Erosion and Sediment Control Plan for the Juneau International Runway Safety Area Improvements Phase 2B project includes language and items that are outside the scope of the project. In particular, work in the Northeast Development Area is not under the project scope. The Contractor shall develop their Storm Water Pollution Prevention Plan using information and recommendations detailed in the report that are relevant to the contracted scope of this project.

By: 
Greg Smith,
Contract Administrator

Total number of pages contained within this Addendum: 67

BID – 00 4113

BID TO: THE CITY AND BOROUGH OF JUNEAU

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with the Owner in the form included in the Contract Documents (as defined in Article 7 of the Agreement 00 5200) to perform the Work as specified or indicated in said Contract Documents entitled

**JNU Runway Safety Area Improvements, Phase 2B
Contract No. BE17-045**

2. Bidder accepts all of the terms and conditions of the Contract Documents, including without limitation those in the “Notice Inviting Bids” and “Instructions to Bidders,” dealing with the disposition of the Bid Security.

3. This Bid will remain open for the period of time stated in the “Notice Inviting Bids” unless otherwise required by law. Bidder will enter into an Agreement within the time and in the manner required in the “Notice Inviting Bids” and the “Instructions to Bidders,” and will furnish insurance certificates, Payment Bond, Performance Bond, and any other documents as may be required by the Contract Documents.

4. Bidder has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality where the Work is to be performed, the legal requirements (federal, state and local laws, ordinances, rules, and regulations), and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as Bidder deems necessary.

5. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

6. To all the foregoing, and including all Bid Schedule and information required of Bidder contained in this Bid Form, said Bidder further agrees to complete the Work required under the Contract Documents within the Contract Time stipulated in said Contract Documents, and to accept in full payment therefore the Contract Price based on the total bid price(s) named in the aforementioned Bid Schedule.

7. Bidder has examined copies of all the Contract Documents including the following Addenda (receipt of all of which is hereby acknowledged by the Undersigned):

Addenda No.	Date Issued	Addenda No.	Date Issued

Give number and date of each addenda above. Failure to acknowledge receipt of all Addenda may cause the Bid to be non-responsive and may cause its rejection.

8. **TO BE CONSIDERED, ALL BIDDERS MUST COMPLETE AND INCLUDE THE FOLLOWING**
JNU RUNWAY SAFETY AREA IMPROVEMENTS, PHASE 2B **BID**
Contract No. BE17-045/AIP No. 3-02-0133-xxx-2016 **Addendum No. 2** **00 4113-1**

BID – 00 4113

AT THE TIME OF THE DEADLINE FOR BIDS. CHECK OR INITIAL THE BOX FOR EACH DOCUMENT INCLUDED IN BID. MISSING DOCUMENTS MAY DEEM THIS BID NON-RESPONSIVE:

- Bid (00 4113) (includes addenda receipt statement)
- Completed Bid Schedule (00 4114)
- Bid Security (Bid Bond (00 4313), or by a certified or cashier's check as stipulated in the Notice Inviting Bids (00 0300)
- Contractor's Financial Responsibility (00 4310)
- Completed DBE Bidder's Registration Form, signed by Contractor (00 5420-7)
- Buy American Certificate (00 4410)

9. The Bidder has read this Bid and agrees to the conditions as stated herein by signing his/her signature in the space provided below.
10. The apparent low Bidder is required to complete and submit the following documents by 4:30

Dated: _____	Bidder: _____ (Company Name)
Alaska CONTRACTOR's Business License No: _____	By: _____ (Signature)
Alaska CONTRACTOR's License No: _____	Printed Name: _____ Title: _____
Telephone No: _____	Address: _____ (Street or P.O. Box)
Fax No: _____	_____ (City, State, Zip)
Email: _____	

p.m. on the ***fifth business day*** following the date of the Posting Notice.

- Subcontractor Report (00 5100);
- Comply with CBJ's DBE requirements (00 5420).
- Complete Utilization Report for each DBE (00 5420), if DBE goals are not achieved, the Contact Reports and Summary of Good Faith Efforts are required. (Forms are located in 00 5420);
- Completed DBE Bidder's Registration Form (00 5420-7), signed by each Subcontractor.

The apparent low Bidder who fails to submit a completed Subcontractor Report within the time specified in Subcontractor Report (00 5100), will be found to be not a responsible Bidder and may be required to forfeit the Bid security. The Owner will then consider the next lowest Bidder for award of the contract.

11. The successful Bidder will be required to submit, within ***Ten Days (calendar)*** after the date of the "Notice of Intent to Award" letter, the following executed documents:

BID – 00 4113

- Agreement (00 5200)
- Performance Bond (00 5300)
- Payment Bond (00 5400)
- Certificates of Insurance, (CONTRACTOR) (00 7000) and (00 8000)
- Vets4212 Federal Contractor Report (00 5430)
- EEO - 1 Certification (00 5500)
- EEO Estimated Employment Profile (00 5500)
- EEO Notice to Labor Unions, Minority/Women Organizations (00 5500)
- EEO Signature Page (00 5500)

END OF SECTION

BID SCHEDULE - 00 4114

BASE BID

PAY ITEM NO.	PAY ITEM DESCRIPTION	PAY UNIT	APPROX. QUANTITY	UNIT PRICE		AMOUNT	
				DOLLARS	CENTS	DOLLARS	CENTS
D-701a(2)	CPEP Polyethylene Corrugated Pipe, 18-inch	LF	1,430				
D-701a(3)	CPEP Polyethylene Corrugated Pipe, 24-inch	LF	170				
D-751a(1)	Manhole, Type I	Each	6				
D-751a(2)	Manhole, Type II	Each	1				
D-754a	Curb and Gutter	Linear Foot	835				
G-100a(1)	Mobilization and Demobilization	Lump Sum	All Req'd	Lump	Sum		
G-135a(1)	Construction Surveying by the Contractor	Lump Sum	All Req'd	Lump	Sum		
G-135b(1)	Extra Three Person Survey Party	Hour	22				
G-150a(1)	Equipment Rental	Hour	34				
G-300a(1)	CPM Scheduling	Lump Sum	All Req'd	Lump	Sum		
G-700a(1)	Airport Flagger	Contingent Sum	All Req'd	Contingent	Sum	16,200	00
L-100e	Taxiway Edge Light, L-861T	Each	13				
L-100h	Remove Runway and Taxiway Light	Each	1				
L-100n	Airport Sign, Type L-858	Each	1				
L-100ap	Spare Parts	Contingent Sum	All Req'd	Contingent	Sum	3,000	00
L-108a	Underground Cable #8 AWG, Copper, 5kV FAA Type "B" or Type "C" (as specified on Plans), L-824	Linear Foot	1,950				
L-108c	#6 Bare Copper Ground Conductor	Linear Foot	950				
L-110g	2-inch HDPE Conduit	Linear Foot	950				
P-152a	Unclassified Excavation	Cubic Yard	23,495				
P-154b	Subbase Course	Ton	5,295				
P-157a(1)	Erosion, Sediment and Pollution Control Administration	Lump Sum	All Req'd	Lump	Sum		
P157c(1)	Temporary Erosion, Sediment and Pollution Control	Lump Sum	All Req'd	Lump	Sum		

COMPANY NAME _____

BID SCHEDULE - 00 4114

PAY ITEM NO.	PAY ITEM DESCRIPTION	PAY UNIT	APPROX. QUANTITY	UNIT PRICE		AMOUNT	
				DOLLARS	CENTS	DOLLARS	CENTS
P-157e(1)	Temporary Erosion, Sediment and Pollution Control by Directive	Contingent Sum	All Req'd	Contingent	Sum	40,500	00
P-157f(1)	Withholding	Contingent Sum	All Req'd	Contingent	Sum	00	00
P-160a	Excavation of Pavement	Square Yard	4,630				
P-161e	Recycled Asphalt Pavement Placement	Cubic Yard	1,255				
P-209b	Crushed Aggregate Base Course	Ton	7,100				
P-401a(1)	Hot Mix Asphalt Type II, Class B	Ton	4,745				
P-401b(1)	Hot Mix Asphalt Price Adjustment	Contingent Sum	All Req'd	Contingent	Sum	29,953	00
P-401c(1)	Asphalt Cement, PG 52-28	Ton	265				
P603a	Tack Coat, PG 52-28	Ton	7				
P620c	Runway and Taxiway Painting	Lump Sum	All Req'd	Lump	Sum		
P-620f	Painted Marking Removal	Lump Sum	All Req'd	Lump	Sum		
P-620h	Roadway Painting	Lump Sum	All Req'd	Lump	Sum		
P-650e(1)	Concrete Anchor, 5,000 lbs	Each	21				
P-660b	Reflective Marker, Type II	Each	7				
P-670a	Hazard Marker Barrier, Plastic	Each	48				
T-901a	Seeding	Acre	0.2				
T-901c	Water for Maintenance	M-Gal	135.4				
T-905a	Topsoiling	Square Yard	1,005				
U-100a	Water Main	Lump Sum	All Req'd	Lump	Sum		
U-200a	Sanitary Sewer System	Lump Sum	All Req'd	Lump	Sum		
U-700a	Ground Loop, Horizontal Piping	Lump Sum	All Req'd	Lump	Sum		

TOTAL BASE BID: _____

COMPANY NAME _____

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, vaults, and inspection holes, according to 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 C32, Grade MS.

751-2.2 MORTAR. Mortar shall consist of one part by volume portland cement and two parts sand. The portland cement shall conform to the requirements of AASHTO M 85, Type I. The sand shall conform to the requirements of AASHTO M 45.

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 P-610.

751-2.4 PRECAST CONCRETE PIPE MANHOLE RINGS. Precast concrete pipe manhole rings shall conform to the requirements of ASTM C478. Unless otherwise specified, the risers and offset cone sections shall have an inside diameter of not less than 36 inches nor more than 48 inches. There shall be a gasket between individual sections and sections cemented together with mortar on the inside of the manhole.

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. Gray iron castings shall meet the requirements of ASTM A48, Class 30B and 35B.
- b. Malleable iron castings shall meet the requirements of ASTM A47.
- c. Steel castings shall meet the requirements of AASHTO M 103.
- d. Structural steel for grates and frames shall conform to the requirements of ASTM A283, Grade D.
- e. Ductile iron castings shall conform to the requirements of ASTM A536.
- f. Austempered ductile iron castings shall conform to the requirements of ASTM A897.

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 AASHTO M 111.

751-2.7 STEPS. The steps or ladder bars shall be gray or malleable cast iron, injection-molded polypropylene, 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. **Limits of Excavation.** The Contractor shall excavate 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 direct, in writing, changes in dimensions or elevations of footings necessary for a satisfactory foundation.
- b. **Excavation.** 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. Where concrete will rest on a surface other than rock, the bottom of the excavation shall not be disturbed, and excavation to final grade shall not be made until just before the concrete or reinforcing is to be placed.
- c. **Shoring.** 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. **Shoring Removal.** All 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 not damage or disturb finished masonry. The cost of removal shall be included in the unit price bid for the structure.
- e. **Engineer's Approval.** After excavation is completed for each structure, the Contractor shall notify the Engineer. No concrete or reinforcing steel shall be placed after the Engineer has approved the depth of the excavation and the character of the foundation material.

751-3.3 CONCRETE STRUCTURES. Concrete structures shall be built on prepared foundations. The contractor shall confirm the dimensions and shape prior to removing the existing structure. The construction shall conform to the requirements specified in Item P-610. Reinforcement is required and shall be depicted on shop drawings prepared by the contractor. Shop drawings shall be approved by the Engineer before the concrete is placed.

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 to the outlet.

751-3.4 PRECAST CONCRETE STRUCTURES. Precast concrete structures shall conform to ASTM C478. Precast concrete structures shall be constructed on prepared or previously placed slab foundations conforming 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. Joint between precast concrete risers and tops shall be full-bedded in cement mortar. The top of the upper precast concrete section 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 which are embedded or built into the side walls shall be aligned and placed at vertical intervals of 12 inches. 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 prefabricated. All standard or special fittings shall be furnished to provide pipe connections or branches with the correct dimensions and of sufficient length to accommodate connecting bands. The fittings shall be welded in

place to the metal structures. The top of the metal structure shall be designed so that either a concrete slab or metal collar may be attached to allow the fastening of a standard metal frame and grate or cover. Steps or ladders shall be furnished as shown on the plans. Corrugated metal structures shall be constructed on prepared foundations, conforming to the dimensions and locations as shown on the plans. When indicated, the structures shall be placed on a reinforced concrete base.

751-3.6 INLET AND OUTLET PIPES. Inlet and outlet pipes shall extend through the walls of the structures a sufficient distance beyond the outside surface to allow for connections. They shall be cut off flush with the wall on the inside surface of the structure, unless otherwise directed. For concrete or brick structures, 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 elevation. If frames or fittings are to be set in concrete or cement mortar, all anchors or bolts shall be in place 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 placed on previously constructed masonry, the bearing surface of the masonry shall be brought true to line and grade and shall present an even bearing surface in order so 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 by the Engineer. All units shall set firm and secure.

After the frames or fittings have been set in final position the concrete or mortar shall be allowed to harden for 7 days, before the grates or covers are 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 placed. 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 7 days, 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 sections at the time the 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 inches.

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

751-3.9 BACKFILLING. After a structure has been completed, the area around it shall be backfilled with approved material, in horizontal layers not to exceed 8 inches in loose depth, and compacted to the density required in Item P-152. Each layer shall be deposited evenly 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.

Backfilling shall not be placed against any structure until approved by the Engineer. For concrete structures, approval shall not be given until the concrete has been in place 7 days, or until tests establish that the concrete has attained sufficient strength to withstand any pressure created by the backfill placing methods.

751-3.10 VAULT MANHOLES. Vault manholes shall be constructed as shown on the plans.

METHOD OF MEASUREMENT

751-4.1 Manholes, will be measured by the unit. Manhole covers and frames will not be measured for payment and are subsidiary to the work.

BASIS OF PAYMENT

751-5.1 The accepted quantities of manholes will be paid for at the contract unit price per each or contract lump sum price complete and in place. This price shall be full compensation for 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.

All excavation and backfill required to complete the items of this section shall not be measured for payment, and shall be considered as a subsidiary obligation of the Contractor, included in the contract unit price for the structure involved.

Adjustments to existing sewer cleanouts affected by construction shall be considered as a subsidiary obligation of the Contractor.

Payment will be made under:

- Item D-751a(1) Manhole, Type I – per each
- Item D-751a(2) Manhole, Type II - per each

MATERIAL REQUIREMENTS

AASHTO M 36	Zinc Coated (Galvanized) Corrugated Iron or Steel Culverts and Underdrains
AASHTO M 45	Aggregate for Masonry Mortar
AASHTO M 85	Portland Cement
AASHTO M 103	Steel Castings, Carbon, for General Application
AASHTO M 111	Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A47	Malleable Iron Castings
ASTM A48	Gray Iron Castings
ASTM A283	Low and Intermediate Tensile Strength Carbon Steel Plates, Shapes, and Bars
ASTM A536	Ductile Iron Castings
ASTM A897	Austempered Ductile Iron Castings
ASTM C32	Sewer and Manhole Brick
ASTM C478	Precast Reinforced Concrete Manhole Sections
ASTM C1433	Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers

ITEM L-100 RUNWAY AND TAXIWAY LIGHTING

DESCRIPTION

100-1.1 This item consists of furnishing and installing runway and taxiway lighting systems as indicated on the Plans and as specified herein. Remove the existing taxiway lights and replace them with new as shown. Remove the existing lighted signs and replace them with new lighted signs as shown. Provide all other work shown on the drawings that is covered under the bid items for this specification.

Perform all work necessary to the above systems to make them fully functional and operational at the completion of the work performed under this section.

Remove all unused or replaced portions of the above systems as shown on the drawings.

Furnish all labor, equipment, supplies and materials and perform all operations necessary to complete the work described in this section and work shown on the plans which is covered under this section of the specifications. All work shall comply with the applicable FAA advisory circulars, the National Electrical Code (NEC), National Electrical Safety Code (NESC), and any applicable National Fire Protection Association (NFPA) codes.

EQUIPMENT AND MATERIALS

100-2.1 GENERAL. Obtain approval of all materials and equipment to be used or incorporated in the work, prior to their shipment to the project site. Submit to the Engineer 5 complete listings of materials and equipment specified herein and on the Plans. Clearly identify the material or equipment by item, name, or designation used on the Plans or specifications and indicate where specified. Include applicable catalog numbers, cuts, wiring diagrams, performance data, and operation and maintenance manuals. Neatly bind and clearly index the submittals. In addition, when specified, include in the submittals certificates of compliance, manufacturer's instructions and/or shop drawings, or proposed construction or installation procedures. The submittal information for any item may not be submitted separately from the bound submittals. All materials for all electrical items (L-100, 108, 110, & 112) shall be submitted in the same bound submittal set for L-100, 108, 110, & 112. If there are more pages than one binder can hold, the submittal shall be split into volumes of more than one binder. If any submittal material in any volume is rejected, all of the volumes have to be resubmitted as one group. Re-submittals and individual submittals shall not be provided as separate sheets, but shall be included in the bound submittals.

- a. **Certified Airport Lighting Equipment.** The following items shall conform to the applicable FAA specifications, except as shown on the Plans and/or modified herein. The equipment shall be certified and listed under AC 150/5345-53, Airport Lighting Equipment Certification Program. This AC, the latest certified equipment list, and the address list of certified airport lighting equipment manufacturers are available on the Internet page for the FAA Office of the Associate Administrator for Airports (ARP). The internet address is http://www.faa.gov/airports_airtraffic/airports/construction/

ITEM FAA AC 150/

- (1) **Taxiway Edge Light, Medium Intensity, L861T**, with LED 6.6 A lamp, heater and Lexan lens, with 1" support column, 2" metal frangible coupling with stainless steel hex head set screws, and upper plug and cord assembly with separable connector. 5345-46
- (2) **Airport Signs, L-858**, internally lighted. with legend size, style, and class as indicated on the plans. 5345-44

(3) **Airport Light Base, L-867**, transformer housing, Class I, hot dipped-galvanized steel Size B, 24 inches deep, one piece with internal grounding lug, gasket, steel cover, base extension, drain opening, and conduit. . Provide 6" drain hole offset so edge of hole is one inch from side wall of base, gasket, Hot dipped-galvanized steel cover, and conduit holes with grommets as indicated on the plans and as required. The drain hole shall be drilled by the manufacturer prior to hot dip galvanizing the light base.

5345-42

(4) **Isolating Transformer, L-830**, individual lamp type, series-to-series, 5000 V, 6.6 A to 6.6 A, 30/45 W or 200 W. Provide a 30/45 watt transformer with taxiway edge lights and a 200 watt transformer with runway edge or threshold lights. Provide transformers for airport signs as required by sign per manufacturer's recommendations.

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5-47

(5) **Primary Handhole, L-868**, class 1, size B, hot dipped-galvanized steel, 24 inches deep x 12 inches diameter, conduit holes with grommets as shown on the plans and as required, 1-3/8 inch N.P.T. conduit hubs (with number and location of hubs as indicated, 6 inch bottom drain hole, steel cover and gasket, internal ground lug with connector and other misc. items. Handhole and cover shall be suitable for vehicle and aircraft wheel loading.

5345-42

- b. **Sealer.** Adhesive sealant shall be a self-leveling silicone sealer.
- c. **Regularly Used Commercial Items.** All other regularly used commercial items of electrical equipment not covered by FAA equipment specifications shall conform to the applicable NEMA rulings and standards for equipment of its type. All electrical equipment not covered by FAA equipment specifications shall be UL listed where standards have been developed by that company
- d. **Lock Washers.** Lock washers shall be two piece cam-type lock washer.
- e. **Lubricant and Sealant.** Lubricant and sealant shall be a general purpose "O"-ring and valve lubricant. Temperature range shall be -40 °F to +400 °F.
- f. **Soft Gasket.** Gaskets to be installed between the base plate and base in watertight lighting systems shall be soft neoprene.
- g. **Pedestals.** The power and communications pedestals shall be fiberglass enclosures constructed to meet the requirements of ANCI C 57.12.28 Standard for Pad-mounted Equipment Enclosure Integrity, an attachment to ANSI C 37.72. Construction details and overall dimensions shall be according to the Plans.
- h. **Junction Box, Type II.** Junction boxes shall be pre-cast reinforced concrete boxes of the size and details shown on the Plans. Junction boxes shall have metal covers. The covers shall be effectively grounded with a 3-foot copper braid.
- i. **Concrete.** Conform to Item P-610 Structural Portland Cement Concrete, 1-inch maximum size coarse aggregate.
- j. **Hot Mix Asphalt (HMA).** Conform to Item P-401.
- k. **Washed Rock.** Use aggregates that meet the requirements of P-610-2.2, except meet AASHTO M 43, Number 67, for ¾" minus.

- I. Crushed Aggregate Base Course. Use material that meets the requirements P-209, and gradation D-1.

CONSTRUCTION METHODS

100-3.1 GENERAL. All work in connection with the airport lighting system shall be according to the applicable provisions of the current NEC of the National Fire Protection Association and all State and local codes. Location of all new fixtures, conduit, cables, etc., shall be as shown on the Plans.

Level and align light fixtures according to manufacturer's instructions. Level to within 1 degree. Align to within 1/2 inch at right angles to centerline and to within 1 inch parallel to centerline.

Where electrical cable or duct is required, such work will be covered under Item L-108 or L-110, as applicable.

Provide all labor, materials, systems, equipment, facilities, and other incidental items as may be required to provide temporary electrical power for construction and testing of all contract work.

All equipment shall be installed per the manufacturer's recommendations, per the applicable FAA advisory circulars, per these specifications and as shown on the drawings.

All joints between metal and concrete shall be sealed with a sealant meeting Federal Specification TT-S-001543A – Sealing Compound, Silicone Rubber Base – Class A, Non-Sag. Product shall be DOW Corning 888 Silicone Highway Joint Sealant with 35888 Primer on metal, painted, or epoxy painted surfaces, or approved equal.

Clean all construction debris from all light bases, hand holes, and all other equipment.

Washed rock shall be mechanically compacted in lifts no greater than 8 inches in thickness, to the satisfaction of the Engineer.

Crushed aggregate base course shall be placed and compacted to 100% as specified in P-209.

100-3.2 INSTALLATION OF NON-WATERTIGHT EDGE LIGHTS. The light base shall be placed on a layer of bedding material as shown on the plans the Contractor shall construct the backfill according to the specifications for the material in which the conduit is placed. The material shall be compacted to the requirements of the material into which it is placed. The light base shall be placed so the light cover plate bolts are 1/4" below finished grade. When lights are installed in a sloped section of runway the highest edge of fixture shall be 1/4" below finished grade. The base shall be level to within ±1/16" inch.

Connect the insulating transformer with L-823 connector kits and heat shrink tubing. Ensure that all field installed primary cable connectors have the plug pin connectors and receptacle socket connectors properly positioned within their respective connector bodies, as detailed by the connector manufacturer, prior to the shrinking of heat shrink tubing at the cable-connector interface.

Install isolating transformers in the light bases as shown on the Plans. Where called for on the Plans, ty wrap transformer to light base lid. Provide adequate primary and secondary cable slack in each light base to assure that all connectors can be lifted at least 12 inches above the top of the light base without subjecting the connector to tension.

Label each edge light assembly with the letter and number designation as indicated on the Plans. Label by permanently die-stamping the letter and number designation onto the light base and base cover plate with 1/4 inch figures.

Install the light fixtures with stainless steel hardware and coat the bolts and frangible couplings with a suitable corrosion inhibitor prior to being installed. Install the light fixtures with lamp, clean the lenses, align and adjust each optical system according to the manufacturer's instructions.

The light base shall be connected to the grounding system as shown on the drawings. The edge lights shall be located where shown on the plans. A laser or survey equipment shall be used to position the lights per the tolerances specified.

100-3.5 INSPECTION. Notify the Engineer in writing and request inspection at least 48 hours prior to installing lighting fixtures, making any splices, or covering any buried or concealed work. Immediately correct any deficiencies found during the inspection.

100-3.6 RECORD DOCUMENTS. Maintain at the project site a complete set of contract Plans, specifications and approved changes thereto. In addition to the above, 2 complete sets of electrical plans shall be maintained for as-built purposes upon which all changes, connections, part numbers and conductor routings shall be legibly shown and noted. Where changes to Plans are involved, make notations to show the dates and authorities approving the changes. Permanently store one set of annotated electrical plans in a dry, secure location at the project site. Deliver the second set to the Engineer.

As-built plans shall show locations of all buried items such as conduit, including any existing active lines encountered. All dimensions shall be from runway and taxiway centerlines or other permanent objects. As-built plans shall include complete wiring diagrams, (both power and control), identifying terminals, cables, and connections. As-built plans shall be kept current as the work progresses.

100-3.7 GUARANTEE. Furnish a written guarantee that any materials or workmanship found defective within one year of final acceptance shall be replaced at no additional cost to the Owner, promptly upon notification and to the satisfaction of the Engineer.

100-3.8 SPARE PARTS. Provide a quantity of spare light fixtures and transformers equal to 10 percent (rounded down) of the installed quantity of each type fixture and size of transformer, but not less than one of each type or size. Deliver spare parts to airport maintenance as directed by the Engineer.

100-3.9 TESTING. Furnish all necessary labor, equipment and appliances for testing all material and equipment as specified herein. No work will be accepted until all applicable tests have been performed. Tests shall not begin until the work has been approved by the Engineer. All tests shall be neatly tabulated on a reproducible "Test Sheet" which shall be signed and dated by the Contractor upon completion of the test. Test and demonstrate to the Engineer the following:

- a. That all lighting, power, and control circuits are continuous, and free from short circuits.
- b. That all circuits are free from unspecified grounds.
- c. That the resistance to ground of all non-ground 5000 V circuits is not less than 50 megohms. Where additions are made to existing circuits, only the new section shall be tested. The resistance to ground of 600 V capacity shall be 10 megohms for the insulation test.
- d. That all circuits are properly connected in accordance with applicable wiring diagrams.
- e. That all circuits are operable.

100-3.10 INSTALLATION OF LIGHTED AIRPORT SIGNS. All signs shall be powered from a dedicated isolation transformer located in a light base set in the concrete base for the sign. The transformer shall be fed from the nearest taxiway or runway light base as shown on the drawings. All signs shall have frangible couplings on the bases.

100-4.1 METHOD OF MEASUREMENT.

- a. **Lump Sum.** No measurement of quantities will be made.
- b. **Unit Prices.** The quantity to be paid for will be the number of units installed, complete, in place, accepted, and ready for operation, or the number of units acceptably removed.
- c. **Contingent Sum.** For spare parts, the quantity shall be equal to 10 percent (rounded down) of the installed quantity of each type of fixture and size of transformer, but not less than one of each size or type. The total cost of spare parts for each airport aid shall not exceed \$10,000, per FAA regulations. If necessary, reduce the quantity of each spare part equally until the costs are at or below the \$10,000 limit.

BASIS OF PAYMENT

100-5.1 ITEMS OF WORK PAID IN OTHER SECTIONS. All work and materials required to install cable, conduit, and ground rods is paid for under Items L-108, and L-110 unless otherwise noted. Cutting and patching of asphalt as required for equipment removal or installation shall be considered subsidiary to the pay items below.

All work and materials required to install remote relay assembly and remote control panel are paid for under item L-109.

100-5.2 ITEMS OF WORK PAID IN THIS SECTION. At the contract lump sum or unit prices for the completed and accepted job.

Refer to Item P-610 for requirements regarding all work and materials to place Portland cement concrete. Portland cement concrete is subsidiary to L-100 items requiring its use.

Refer to Item P-401 for requirements regarding all work and materials to place Hot Mix Asphalt. Hot Mix Asphalt is subsidiary to L-100 items requiring its use.

Subsidiary work – All work associated with providing the equipment and materials included in this section of the specifications that is not specifically covered in the pay items below shall be considered subsidiary to the pay items below and shall not be paid for separate from the pay items below. This includes any work required to access the area in and across soft ground or muskeg necessary to perform work under this and related items.

All work required during the construction staging and sequencing of this project including disconnecting and reconnecting equipment, temporary power, temporary wiring, temporary lighting, and all other work needed to keep the FAA equipment and the runway and taxiway lighting systems operational during the construction period when the airport is open for operations is considered subsidiary to the pay items below and shall not be paid for separate from the pay items below.

Item L-100e, Taxiway Edge Light, L-861T: Complete, including L-867 base assembly, gasket, cover, frangible coupling, support column, L-830-1 45 watt isolating transformer, L-823 cable connectors, grounding lug and connector, conduit grommets, trenching, bedding, backfilling, compaction, cutting and removal of existing asphalt pavement if present and re-paving if required, and all necessary incidentals to provide a complete and operable/acceptable taxiway light installation. Includes re-routing of existing conduit, reconnection of existing cables, replacement of cable connectors and all associated work necessary when replacing an existing taxiway light with a new light for a complete and operable/acceptable taxiway light system.

Item L-100g, Primary Handhole, L-868, Size B: Includes traffic rated steel cover and gasket, grounding lug and connector. Includes conduit grommets, grounding, trenching, bedding, backfilling, compaction, cutting and removal of existing asphalt pavement if present and re-paving if required, and all necessary incidentals to provide an installed handhole.

Item L-100h, Remove Airport Electrical: Removal of all electrical in project area as shown on drawings. Includes complete removal of all hand holes, runway or taxiway edge or centerline light bases, isolation transformers, and light assemblies including connection to conduit and/or cable. Backfill of light base location. Patching of asphalt and re-striping if required. All locates of existing underground conduit and cable shall be considered incidental to this item. Includes removal of airport signs with concrete bases, and associated light bases. Includes removal of conduit, cable, backfilling of trenches and all other existing electrical equipment and materials that are to be removed. No other payment for removal or re-routing of existing conduit and conductors shall be made outside of this item. Includes re-routing of conduit and conductors, reconnection of cables, connectors as required to reconnect existing circuits so they properly function after removal of a light or sign, etc.

Item L-100n, Airport Sign, Type L-858: Includes sign, L-867 base, frangible couplings, transformer, concrete base, sign faces as shown. Includes concrete pad, conduit with grommet, cabling, L-823 cable connectors, grounding lug and connector, conduit grommets, trenching, bedding, backfilling, compaction, cutting and removal of existing asphalt pavement if present and re-paving if required, and all other work to provide an operational/acceptable sign that is connected to the runway or taxiway light circuit as shown.

Item L-100ap. Spare Parts: Includes spare parts to be paid by actual invoiced material and deliver cost, plus 15% markup.

Payment will be made under:

Item L-100e	Taxiway Edge Light, L-861T - per each
Item L-100h	Remove Airport Electrical – lump sum
Item L-100n	Airport Sign, Type L-858 - per each
Item L-100ap	Spare Parts – per contingent sum

MATERIAL REQUIREMENTS

AC 150/5345-42	<i>Airport Light Bases, Transformer Houses, Junction Boxes and Accessories</i>
AC 150/5345-44	<i>Taxiway and Runway Signs</i>
AC 150/5345-46	<i>Runway and Taxiway Light Fixtures</i>
AC 150/5345-47	<i>Isolation Transformers for Airport Lighting Systems</i>
AC 150/5345-53	<i>Airport Lighting Equipment Certification Program</i>
ATM 207	Moisture-Density Relationship of Soils