GERALD R. FORD INTERNATIONAL AIRPORT

GRAND RAPIDS, MICHIGAN

TAXIWAY F & G RECONSTRUCTION (NORTH OF TAXIWAY V, 1,950' X 35');
TAXIWAY F & G AIRFIELD LIGHTING REPLACE

PROJECT NUMBER C-435

ADDENDUM #1

APRIL 16, 2026

To All Holders of Contract Documents:

Your attention is directed to the following interpretations of, changes in, and additions to the Contract Documents for the above-referenced project. All bid adjustments caused by the content of the Addendum shall include the cost of materials and labor related to the items herein and for any subsequent adjustments to the contract documents to accommodate the work stated herein.

Contractors shall be responsible for the full context of changes, interpretations, and clarifications to both the drawings and specifications and shall take the same into consideration when preparing their bids. Indicate receipt of this Addendum in the space provided within the Proposal.

GENERAL

1. Addendum No.1 answers questions received 3/31/2026 to 4/16/2026
2. The questions deadline is April 17, 2026.

QUESTIONS AND ANSWERS

Q: Does a SBE certification from Wayne County Airport Authority (WCAA) count towards the SBE goal at Grand Rapids Airport?

A: Yes, the WCAA SBE certification will count for GRR SBE. For clarity, there is no SBE goal for the contract, but primes are encouraged to utilize small businesses.

Q: Can the references to brand name or equal, and the requirement for an ACE3 unit please be removed from E202 per AIP Handbook table U-4 (2) *Brand Name or Equal: If an existing FAA technical specification establishes all necessary performance requirements, the FAA considers the use of a brand name or equal to be a restriction on competition. A sponsor must not disqualify a material, product, or service for not having a characteristic that the brand name material, product, or service possesses if the characteristic was not explicitly identified in the technical requirements."*

A: Both items have been deleted; Sheet E202 has been updated.

Q: The project also includes ALCMS modifications as noted in 109-1.1, and E202 Keyed Note 4 *EXISTING ALCMS SYSTEM SHALL BE MODIFIED TO SHOW NEW TW F&G GEOMETRY ON ALL SCREENS. EXISTING CCR CONTROL TO BE TIED TO NEW CCR.* All hardware/software/interface & controls/components are proprietary/sole source to the control system and will need to be procured outside of this AIP Funded Project per AIP Guidelines, AIP

Handbook 5100-38D Change 1, 3-36 Limited Noncompetitive Proposal Situations (ALCMS Modifications…). Please verify this is being procured outside of the AIP funded project.

A: The requirement for ALCMS graphics modifications has been deleted from the scope of work. Sheet E202 and Spec L-109 have been updated.

Q: Plan page GC501 shows paving the perimeter road Pavement section with 2" of 4EML as part of safety and security. Why couldn't this be paid as a Syd or Ton item?

A: The item has been updated and broken off as an add-on. Please see revised sheets attached to this addendum.

Q: Are airfield low profile barricade available from the airports stock of barricades for the project?

A: The contractor shall be responsible for the supply, placement, and relocation of all barricades per note 1 on detail C4/GC501.

Q: There is no taxiway closed markers shown on the phasing plans. However, there is the detail for taxiway closure marker on C3 detail on GC501. Will taxiway closure markers be used on the project?

A: Taxiway marker is not needed. See updated GC501 plan sheet attached to this addendum.

Q: Plan page CD101 item 205. Had the removal of cleanouts and underdrain incidental if found. It seems like there should be a quantity for this. Otherwise how are we to know if we need to plug in incidental costs to do the work?

A: Cleanouts and underdrains removals shall remain incidental work items and be removed in accordance with Specification P-101. Because the presence and quantity of these underdrains cannot be confirmed prior to removal, no separate bid item or quantity will be provided.

If an underdrain is discovered mid-run and removal and plugging is required, all labor and materials associated with plugging shall also be considered incidental to P-101. The contractor may account for any anticipated costs for removal and plugging within other bid items as they see fit. No separate payment will be made for this work

Q: Can a breakdown of the Earth Excavation item be provided. The item includes 1800 cyds of possible undercut. Does it include topsoil stripping and existing cement treated base removal?

A: The excavation quantity was developed comparing 3D surfaces. The quantity was developed in 7 different categories

1. Removal of the slag base material with cement. (An 8-inch depth is typical however 10-inch depth was assumed for the quantity as borings showed slight variability.)
2. Excavation to full depth pavement section in locations where the proposed full depth pavement overlaps with existing pavement.
3. Excavate for full depth pavement in new pavement areas
4. Excavation for pavement section step out
5. Turf grading
6. Undercut
7. Quantity Bump in accordance with FAA guidance ~ Approx. 9%

Q: Is the cement treated base material allowed to be disposed of in the on-site spoil area?

A: Clarification on material to be spoiled has been provided. See revised sheet GI003 attached to this addendum.

Q: Can a breakdown of the P209 item be provided? The item includes 1800 cods of possible undercut. I cannot find get to the plan quantity with the area that is full reconstruct and the undercut budget.

A: The P-209 item can be broken down as follows:

1. Replacement of the slag base material with cement, 8 inch min. (assumed depth for quantity was 10 inch as borings showed slight variability.)
2. Aggregate in areas of full pavement section, 8 inch depth.
3. Pavement step outs per detail A1/CP501. 8 inch depth
4. Undercut
5. Quantity Bump in accordance with FAA guidance ~ Approx. 9%

Q: What is the scope of restoration of the on-site spoil area? Are we to topsoil and seed? Any currently disturbed area or just what we are disturbing?

A: The contractor shall hydroseed the spoils area they are disturbing. See spoils area notes on C4/GC200.

Q: Will a location be provided by the Airport Authority to set up a temporary concrete batch plant with access to a water source?

A: The batch plant location is shown on sheet GC200.

SPECIFICATIONS

1. **REPLACE** Proposal Pages 1-2, in its entirety with the **REVISED** Proposal Pages 1-2 provided with this addendum as a separate document.
2. **REPLACE** Quantity Bidding Sheets, in its entirety with the **REVISED** Quantity Bidding Sheets provided with this addendum as a separate document.
3. **REPLACE** Section 30, in its entirety with the **REVISED** Section 30 provided with this addendum as a separate document.
4. **REPLACE** Specification P-101, in its entirety with the **REVISED** Specification P-101 provided with this addendum as a separate document.
5. **REPLACE** Specification P-152, in its entirety with the **REVISED** Specification P-152 provided with this addendum as a separate document.
6. **REPLACE** Specification L-109, in its entirety with the **REVISED** Specification L-109 provided with this addendum as a separate document.

DRAWINGS

1. **REPLACE** Drawing GI003 with **REVISED** GI003 sheet provided with this addendum as a separate document. Revisions are denoted with a cloud referenced to Revision 1 dated APRIL 15, 2026 on the drawings.
2. **REPLACE** Drawing GI004 with **REVISED** GI004 sheet provided with this addendum as a separate document. Revisions are denoted with a cloud referenced to Revision 1 dated APRIL 15, 2026 on the drawings.
3. **REPLACE** Drawing GC200 with **REVISED** GC200 sheet provided with this addendum as a separate document. Revisions are denoted with a cloud referenced to Revision 1 dated APRIL 15, 2026 on the drawings.
4. **REPLACE** Drawing GC501 with **REVISED** GC501 sheet provided with this addendum as a separate document. Revisions are denoted with a cloud referenced to Revision 1 dated APRIL 15, 2026.
5. **REPLACE** Drawing E202 with **REVISED** E202 sheet provided with this addendum as a separate document. Revisions are denoted with a cloud referenced to Revision 1 dated APRIL 15, 2026.

END OF ADDENDUM NO. 1

C&S ENGINEERS, INC.

Attachment A: Contract Specifications

PROPOSAL

FOR CONSTRUCTION OF THE

TAXIWAY F & G RECONSTRUCTION (NORTH OF TAXIWAY V, 1,950' X 35);
TAXIWAY F & G AIRFIELD LIGHTING REPLACEMENT

AT
GERALD R. FORD INTERNATIONAL AIRPORT
GRAND RAPIDS, MI

TO: Gerald R. Ford International Airport Authority
5500 44th St SE, Grand Rapids, MI, 49512

The undersigned, as bidder, hereby declares that he/she has examined the site of the work and informed himself/herself fully in regard to all conditions pertaining to the place where the work is to be done; that he/she has examined and read the Contract Documents and Contract Drawings for the work and all addenda relative thereto furnished prior to the opening of bids; that he/she has satisfied himself/herself relative to the work to be performed.

The bidder understands that the advertisement, located in the front of these Contract Documents, contains the location and a description of the proposed construction, as well as indicates the place, date, and time of the proposal opening; information about a Pre-Bid conference, if scheduled, is contained in the advertisement; a listing of estimated quantities is located in the front of these Contract Documents; the time in which the work must be completed shall be in accordance with the subsection titled FAILURE TO COMPLETE ON TIME of Section 80. If the bidder considers that the time to complete the work is inadequate, they should not submit a bid.

The bidder understands the quantities for bid items listed on the proposal sheets are estimated quantities only for the purpose of comparing bids; any difference between these estimated quantities and actual quantities required for construction shall not be taken as a basis for claims by the Contractor for extra compensation; compensation will be based upon the unit prices and actual construction quantities.

The bidder understands that the description under each item, being briefly stated, implies, although it does not mention, all incidentals and that the prices stated are intended to cover all such work, materials and incidentals as constitute bidder's obligations as described in the specifications and any details not specifically mentioned, but evidently included in the Contract shall be compensated for in the item which most logically includes it.

The Bidder understands that the project shall be awarded based on low bid for Base Bid.

The bidder understands that proposal guaranty shall be in the form of a bid bond in the amount of five percent (5%) of this bid in accordance with the subsection titled BID GUARANTEE of Section 20; the proposal guaranty shall become the property of the Owner in the event the Contract and bond(s) are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

The bidder agrees that upon receipt of written notice of the acceptance of this proposal, bidder will execute the Contract attached within 15 days and deliver a Surety Bond or Bonds as required by the subsection titled REQUIREMENTS OF CONTRACT BONDS OF Section 30. The bidder further agrees to commence construction with an adequate work force, plant and equipment on the date stated in the written notice to proceed and will progress therewith to its completion within the time stated, and in accordance with this Contract and Specification.

The bidder states that this proposal is based upon prevailing wages in Kent County and in no case are wages considered less than those predetermined by the State and Federal Departments of Labor, schedules of which are contained in the Contract Documents.

The bidder proposes and agrees, if this Proposal is accepted, to contract in the form of contract specified with the Gerald R. Ford International Airport Authority (Owner), to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of the Taxiway F & G Reconstruction (North Of Taxiway V, 1,950' X 35); Taxiway F & G Airfield Lighting Replacement project in full and complete accordance with the shown, noted, described and reasonably intended requirements of the Contract Documents and Contract Drawings, to the full and entire satisfaction of the above said Owner, with a definite understanding that no money will be allowed for extra work except as set forth in the attached Contract Documents, for the unit prices listed for each item.

BIDDER, IF AN INDIVIDUAL:

BY: _____
(Printed Name)

_____
(Signature)

COMPANY NAME: _____

ADDRESS: _____

_____

PHONE NO: _____

DATE: _____

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BIDDERS ARE REQUIRED TO COMPLETE ALL FIELDS SHADED.
ALL OTHER FIELDS WILL BE AUTOMATICALLY CALCULATED.
AN EXCEL FILE WILL BE PROVIDED AND THESE SHEETS CAN BE FILLED OUT IN EXCEL OR HARD COPY.
ONLY HARD COPIES SHALL BE RETURNED WITH YOUR PROPOSAL.

ITEM NO	FAA SPEC NO	PAY ITEM NO	DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	TOTAL
			BASE BID				
1	C-100	C-100-14.1	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	1	LS		
2	C-102	C-102-5.1	INSTALLATION AND REMOVAL OF STORM DRAIN INLET PROTECTION	20	EACH		
3	C-102	C-102-5.2	INSTALLATION AND REMOVAL OF SILT FENCE	4,000	LF		
4	C-105	C-105-6.1	MOBILIZATION (10% MAXIMUM)	1	LS		
5	C-105	C-105-6.2	FIELD OFFICE	1	LS		
6	CX-106	CX-106-3.1	SAFETY, SECURITY AND MAINTENANCE OF TRAFFIC	1	LS		
7	CX-106	CX-106-3.2	INSTALLATION AND REMOVAL OF HAUL ROAD	1,250	LF		
8	P-101	P-101-5.1	PAVEMENT REMOVAL (SPOILED ON-SITE)	3,870	SY		
9	P-101	P-101-5.2	PAVEMENT REMOVAL (SPOILED OFF-SITE)	12,800	SY		
10	P-152	P-152-4.1	UNCLASSIFIED EXCAVATION (SPOILED ON-SITE)	9,700	CY		
11	P-152	P-152-4.2	UNCLASSIFIED EXCAVATION (SPOILED OFF-SITE)	4,000	CY		
12	P-154	P-154-5.1	SUBBASE COURSE	2,650	CY		
13	P-154	P-154-5.2	RESHAPE AND RECOMPACT EXISTING SUBBASE MATERIAL	11,100	SY		
14	P-209	P-209-5.1	CRUSHED AGGREGATE BASE COURSE	6,900	CY		
15	P-501	P-501-8.1	CONCRETE PAVEMENT, 10" THICK	14,300	SY		
16	P-620	P-620-5.1	MARKING	19,000	SF		
17	P-620	P-620-5.2	REFLECTIVE MEDIA	470	LB		
18	P-620	P-620-5.3	TEMPORARY MARKING	10,300	SF		
19	P-620	P-620-5.4	MARKING REMOVAL	4,300	SF		

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ITEM NO	FAA SPEC NO	PAY ITEM NO	DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	TOTAL
20	D-705	D-705-5.1	6 INCH PERFORATED SMOOTH INTERIOR CORRUGATED HDPE COMPLETE, INCLUDING POROUS BACKFILL AND FILTER FABRIC	4,550	LF		
21	D-705	D-705-5.2	6 INCH NON-PERFORATED SMOOTH INTERIOR CORRUGATED HDPE COMPLETE, INCLUDING POROUS BACKFILL AND FILTER FABRIC	880	LF		
22	D-751	D-751-5.1	CLEANOUTS	25	EACH		
23	DX-800	DX-800-4.1	SOFT DIGS	2	DAYS		
24	T-901	T-901-5.1	SEEDING	3.5	ACRE		
25	T-905	T-905-5.1	TOPSOIL (OBTAINED ONSITE OR REMOVED FROM STOCKPILE)	2,700	CY		
26	T-908	T-908-5.1	MULCHING	3.5	ACRE		
27	L-105	L-105-7.1	REMOVE EXISTING TAXIWAY EDGE LIGHT AND BASE CAN COMPLETE	85	EACH		
28	L-105	L-105-7.2	REMOVE EXISTING CABLE IN CONDUIT OR DUCT BANK, CONDUIT AND DUCT TO REMAIN	12,500	LF		
29	L-105	L-105-7.3	REMOVE EXISTING CONDUIT	4,500	LF		
30	L-105	L-105-7.4	REMOVE EXISTING DUCT BANK	900	LF		
31	L-105	L-105-7.5	REMOVE AND RELOCATE EXISTING GUIDANCE SIGN, INCLUDING NEW FOUNDATION	9	EACH		
32	L-105	L-105-7.6	REMOVE EXISTING ELECTRICAL HANDHOLE	14	EACH		
33	L-108	L-108-5.1	NO.8 AWG, 5 kV, L-824, TYPE C CABLE, INSTALLED IN NEW OR EXISTING CONDUIT OR DUCT BANK	12,500	LF		
34	L-108	L-108-5.2	NO.6 AWG BARE COUNTERPOISE, GROUND RODS AND TERMINATIONS	4,500	LF		
35	L-109	L-109-7.1	AIRFIELD LIGHTING ELECTRICAL VAULT POWER AND CONTROLS MODIFCATIONS	1	LS		
36	L-109	L-109-7.2	CONSTANT CURRENT REGULATOR REMOVAL AND SALVAGE	1	EACH		
37	L-109	L-109-7.3	CONSTANT CURRENT REGULATOR 10kW, 3-STEP, 6.6A, 480V, L-829	1	EACH		
38	L-110	L-110-5.1	PROPSED 4-WAY, 4-INCH SCH. 40 PVC, CONCRETE ENCASED DUCTBANK	2,100	LF		

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ITEM NO	FAA SPEC NO	PAY ITEM NO	DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	TOTAL
39	L-110	L-110-5.2	1-WAY, 2-INCH, SCH. 40 PVC, CONDUIT DIRECT BURIED	4,500	LF		
40	L-115	L-115-5.1	4' X 4' CONCRETE MANHOLE	14	EACH		
41	L-125	L-125-5.1	L-861T(L) ELEVATED TAXIWAY EDGE LIGHT AND BASE CAN, INCLUDING ISOLATION TRANSFORMER AND CONNECTIONS	57	EACH		
42	L-125	L-125-5.2	L-861 ELEVATED TAXIWAY EDGE LIGHT ON NEW BASE CAN, INCLUDING ISOLATION TRANSFORMED AND CONNECTIONS. LABOR ONLY, FIXTURES PROVIDED BY AIRPORT	14	EACH		
43	L-126	L-126-5.1	MAINTENANCE OF AIRPORT LIGHTING SYSTEM SYSTEMS, INCLUDING TEMPORARY CONNECTIONS/JUMPERS AND POWER/CONTROLS, AS NEEDED	1	LS		
			ADD ON NO.1				
1		MDOT 501	HOT MIX ASPAHLT, 4EML	320	TON		
						TOTAL CONTRACT	
						TOTAL CONTRACT + ADD ON NO.1	

Section 30 Award and Execution of Contract

30-01 Consideration of proposals. After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit bid price written in words shall govern.

Until the award of a contract is made, the Owner reserves the right to reject a bidder's proposal for any of the following reasons:

a. If the proposal is irregular as specified in Section 20, paragraph 20-09, *Irregular Proposals*.

b. If the bidder is disqualified for any of the reasons specified Section 20, paragraph 20-14, *Disqualification of Bidders*.

In addition, until the award of a contract is made, the Owner reserves the right to reject any or all proposals, waive technicalities, if such waiver is in the best interest of the Owner and is in conformance with applicable state and local laws or regulations pertaining to the letting of construction contracts; advertise for new proposals; or proceed with the work otherwise. All such actions shall promote the Owner's best interests.

30-02 Award of contract. The award of a contract, if it is to be awarded, shall be made within 120 calendar days of the date specified for publicly opening proposals, unless otherwise specified herein.

If the Owner elects to proceed with an award of contract, the Owner will make award to the responsible bidder whose bid, conforming with all the material terms and conditions of the bid documents, is the lowest in price ***of the base bid only.***

30-03 Cancellation of award. The Owner reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the Owner in accordance with paragraph 30-07 *Approval of Contract*.

30-04 Return of proposal guaranty. All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the Owner has made a comparison of bids as specified in the paragraph 30-01, *Consideration of Proposals.* Proposal guaranties of the two lowest bidders will be retained by the Owner until such time as an award is made, at which time, the unsuccessful bidder's proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as soon as the Owner receives the contract bonds as specified in paragraph 30-05, *Requirements of Contract Bonds.*

30-05 Requirements of contract bonds. At the time of the execution of the contract, the successful bidder shall furnish the Owner a surety bond or bonds that have been fully executed by the bidder and the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to the Owner. Unless otherwise specified in this subsection, the surety bond or bonds shall be in a sum equal to the full amount of the contract.

30-06 Execution of contract. The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return the signed contract to the Owner, along with the fully executed surety bond or bonds specified in paragraph 30-05, *Requirements of Contract Bonds,* of this section, within 15 calendar days from the date mailed or otherwise delivered to the successful bidder.

30-07 Approval of contract. Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the Owner shall complete the execution of the contract in accordance with local laws or ordinances, and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the Owner's approval to be bound by the successful bidder's proposal and the terms of the contract.

30-08 Failure to execute contract. Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the period specified in paragraph 30-06, *Execution of Contract,* of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidated damages to the Owner.

END OF SECTION 30

Item P-101 Preparation/Removal of Existing Pavements

DESCRIPTION

101-1 This item shall consist of preparation of existing pavement surfaces for overlay, surface treatments, removal of existing pavement, and other miscellaneous items. The work shall be accomplished in accordance with these specifications and the applicable plans.

EQUIPMENT AND MATERIALS

101-2 All equipment and materials shall be specified here and in the following paragraphs or approved by the Resident Project Representative (RPR). The equipment shall not cause damage to the pavement to remain in place.

CONSTRUCTION

101-3.1 Removal of existing pavement.

The Contractor's removal operation shall be controlled to not damage adjacent pavement structure, and base material, cables, utility ducts, pipelines, or drainage structures which are to remain under the pavement.

a. Concrete pavement removal. Full depth saw cuts shall be made perpendicular to the slab surface. The Contractor shall saw through the full depth of the slab including any dowels at the joint, removing the pavement and installing new dowels as shown on the plans and per the specifications. Where the perimeter of the removal limits is not located on the joint and there are no dowels present, the perimeter shall be saw cut the full depth of the pavement. The pavement inside the saw cut shall be removed by methods which will not cause distress in the pavement which is to remain in place. If the material is to be wasted on the airport site, it shall be reduced to a maximum size of 12 inches. Concrete slabs that are damaged by under breaking shall be repaired or removed and replaced as directed by the RPR.

The edge of existing concrete pavement against which new pavement abuts shall be protected from damage at all times. Spall and underbreak repair shall be in accordance with the plans. Any underlaying material that is to remain in place, shall be recompacted and/or replaced as shown on the plans. Adjacent areas damaged during repair shall be repaired or replaced at the Contractor's expense.

b. Asphalt pavement removal. Asphalt pavement to be removed shall be cut to the full depth of the asphalt pavement around the perimeter of the area to be removed. If the material is to be wasted on the airport site, it shall be broken to a maximum size of 2 inches.

c. Repair or removal of Base, Subbase, and/or Subgrade. All failed material including surface, base course, subbase course, and subgrade shall be removed and repaired as shown on the plans or as directed by the RPR. Materials and methods of construction shall comply with the applicable sections of these specifications. Any damage caused by Contractor's removal process shall be repaired at the Contractor's expense.

101-3.2 Preparation of joints and cracks prior to overlay/surface treatment. Remove all vegetation and debris from cracks to a minimum depth of 1 inch (25 mm). If extensive vegetation exists, treat the specific area with a concentrated solution of a water-based herbicide approved by the RPR. Fill all cracks

greater than 1/4 inch (6 mm) wide) with a crack sealant per ASTM D6690. The crack sealant, preparation, and application shall be compatible with the surface treatment/overlay to be used. To minimize contamination of the asphalt with the crack sealant, underfill the crack sealant a minimum of 1/8 inch (3 mm), not to exceed ¼ inch (6 mm). Any excess joint or crack sealer shall be removed from the pavement surface.

101-3.3 Removal of Foreign Substances/contaminates prior to remarking. Removal of foreign substances/contaminates from existing pavement that will affect the bond of the new treatment shall consist of removal of rubber, fuel spills, oil, crack sealer, at least 90% of paint, and other foreign substances from the surface of the pavement. Areas that require removal are designated on the plans and as directed by the RPR in the field during construction.

High-pressure water or rotary grinding may be used. If chemicals are used, they shall comply with the state's environmental protection regulations. Removal methods used shall not cause major damage to the pavement, or to any structure or utility within or adjacent to the work area. Major damage is defined as changing the properties of the pavement, removal of asphalt causing the aggregate to ravel, or removing pavement over 1/8 inch (3 mm) deep. If it is deemed by the RPR that damage to the existing pavement is caused by operational error, such as permitting the application method to dwell in one location for too long, the Contractor shall repair the damaged area without compensation and as directed by the RPR.

Removal of foreign substances shall not proceed until approved by the RPR. Water used for high-pressure water equipment shall be provided by the Contractor at the Contractor's expense. No material shall be deposited on the pavement shoulders. All wastes shall be disposed of in areas indicated in this specification or shown on the plans.

101-3.4 Concrete spall or failed asphaltic concrete pavement repair.

a. Repair of concrete spalls in areas to be overlaid with asphalt. The Contractor shall repair all spalled concrete as shown on the plans or as directed by the RPR. The perimeter of the repair shall be saw cut a minimum of 2 inches (50 mm) outside the affected area and 2 inches (50 mm) deep. The deteriorated material shall be removed to a depth where the existing material is firm or cannot be easily removed with a geologist pick. The removed area shall be filled with asphalt mixture with aggregate sized appropriately for the depth of the patch. The material shall be compacted with equipment approved by the RPR until the material is dense and no movement or marks are visible. The material shall not be placed in lifts over 4 inches (100 mm) in depth. This method of repair applies only to pavement to be overlaid.

b. Asphalt pavement repair. The Contractor shall repair all spalled concrete as shown on the plans or as directed by the RPR. The failed areas shall be removed as specified in paragraph 101-3.1b. All failed material including surface, base course, subbase course, and subgrade shall be removed. Materials and methods of construction shall comply with the applicable sections of these specifications.

101-3.5 Cold milling. Milling shall be performed with a power-operated milling machine or grinder, capable of producing a uniform finished surface. The milling machine or grinder shall operate without tearing or gouging the underlaying surface. The milling machine or grinder shall be equipped with grade and slope controls, and a positive means of dust control. All millings shall be removed and disposed in areas designated on the plans. If the Contractor mills or grinds deeper or wider than the plans specify, the Contractor shall replace the material removed with new material at the Contractor's Expense.

a. Patching. The milling machine shall be capable of cutting a vertical edge without chipping or spalling the edges of the remaining pavement and it shall have a positive method of controlling the depth of cut. The RPR shall layout the area to be milled with a straightedge in increments of 1-foot (30 cm) widths. The area to be milled shall cover only the failed area. Any excessive area that is milled because the Contractor doesn't have the appropriate milling machine, or areas that are damaged because of his negligence, shall be repaired by the Contractor at the Contractor's Expense.

b. Profiling, grade correction, or surface correction. The milling machine shall have a minimum width of 7 feet and it shall be equipped with electronic grade control devices that will cut the surface to the grade specified. The tolerances shall be maintained within +0 inch and -1/4 inch (+0 mm and -6mm) of the specified grade. The machine must cut vertical edges and have a positive method of dust control. The machine must have the ability to remove the millings or cuttings from the pavement and load them into a truck. All millings shall be removed and disposed of in areas designated on the plans.

c. Clean-up. The Contractor shall sweep the milled surface daily and immediately after the milling until all residual materials are removed from the pavement surface. Prior to paving, the Contractor shall wet down the milled pavement and thoroughly sweep and/or blow the surface to remove loose residual material. Waste materials shall be collected and removed from the pavement surface and adjacent areas by sweeping or vacuuming. Waste materials shall be removed and disposed in areas designated on the plans.

101-3.6. Preparation of asphalt pavement surfaces prior to surface treatment. Existing asphalt pavements to be treated with a surface treatment shall be prepared as follows:

a. Patch asphalt pavement surfaces that have been softened by petroleum derivatives or have failed due to any other cause. Remove damaged pavement to the full depth of the damage and replace with new asphalt pavement similar to that of the existing pavement in accordance with paragraph 101-3.4b.

b. Repair joints and cracks in accordance with paragraph 101-3.2.

c. Remove oil or grease that has not penetrated the asphalt pavement by scrubbing with a detergent and washing thoroughly with clean water. After cleaning, treat these areas with an oil spot primer.

d. Clean pavement surface immediately prior to placing the surface treatment so that it is free of dust, dirt, grease, vegetation, oil or any type of objectionable surface film.

101-3.7 Maintenance. The Contractor shall perform all maintenance work necessary to keep the pavement in a satisfactory condition until the full section is complete and accepted by the RPR. The surface shall be kept clean and free from foreign material. The pavement shall be properly drained at all times. If cleaning is necessary or if the pavement becomes disturbed, any work repairs necessary shall be performed at the Contractor's expense.

101-3.8 Preparation of Joints in Rigid Pavement prior to resealing. Prior to application of sealant material, clean and dry the joints of all scale, dirt, dust, old sealant, curing compound, moisture and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method used cleans the joint and does not damage the joint.

101-3.8.1 Removal of Existing Joint Sealant. All existing joint sealants will be removed by plowing or use of hand tools. Any remaining sealant and or debris will be removed by use of wire brushes or other tools as necessary. Resaw joints removing no more than 1/16 inch (2 mm) from each joint face. Immediately after sawing, flush out joint with water and other tools as necessary to completely remove the slurry.

101-3.8.2 Cleaning prior to sealing. Immediately before sealing, joints shall be cleaned by removing any remaining laitance and other foreign material. Allow sufficient time to dry out joints prior to sealing. Joint surfaces will be surface-dry prior to installation of sealant.

101-3.8.3 Joint sealant. Joint material and installation will be in accordance with Item P-605.

101-3.9 Preparation of Cracks in Flexible Pavement prior to sealing. Prior to application of sealant material, clean and dry the joints of all scale, dirt, dust, old sealant, curing compound, moisture and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method used cleans the cracks and does not damage the pavement.

101-3.9.1 Preparation of Crack. Widen crack with router or random crack saw by removing a minimum of 1/16 inch (2 mm) from each side of crack. Immediately before sealing, cracks will be blown out with a hot air lance combined with oil and water-free compressed air.

101-3.9.2 Removal of Existing Crack Sealant. Existing sealants will be removed by routing or random crack saw. Following routing or sawing any remaining debris will be removed by use of a hot lance combined with oil and water-free compressed air.

101-3.9.3 Crack Sealant. Crack sealant material and installation will be in accordance with Item P-605.

101-3.9.4 Removal of Pipe and other Buried Structures.

a. Removal of Existing Pipe Material. Remove the types of pipe as indicated on the plans. The pipe material shall be legally disposed of off-site in a timely manner following removal. Trenches shall be backfilled with material equal to or better in quality than adjacent embankment. Trenches under paved areas must be compacted to 95% of ASTM D 1557.

b. Removal of Inlets/Manholes. Not used

METHOD OF MEASUREMENT

101-4.1 Pavement removal. The unit of measurement for pavement removal shall be the number of square yards (square meters) removed by the Contractor. Any pavement removed outside the limits of removal because the pavement was damaged by negligence on the part of the Contractor shall not be included in the measurement for payment. No direct measurement or payment shall be made for saw cutting. Saw cutting shall be incidental to pavement removal. Dowel bar installation shall be incidental to pavement removal.

101-4.2 Removal of Pipe and other Buried Structures. The unit of measurement for removal of pipe and other buried structures shall be incidental to the other work items. This shall include all labor, equipment, tools, and incidentals necessary to complete this item in accordance with paragraph 101-3.9.4.

BASIS OF PAYMENT

101-5.1 Payment. Payment shall be made at contract unit price for the unit of measurement as specified above. This price shall be full compensation for furnishing all materials and for all preparation, hauling, and placing of the material and for all labor, equipment, tools, and incidentals necessary to complete this item.

Item P-101-5.1	***Pavement Removal (spoiled on-site) - per square yard***
Item P-101-5.2	***Pavement Removal (spoiled off-site) - per square yard***

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5380-6	Guidelines and Procedures for Maintenance of Airport Pavements.

ASTM International (ASTM)

ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

END OF ITEM P-101

Item P-152 Excavation, Subgrade, and Embankment

DESCRIPTION

152-1.1 This item covers excavation, disposal, placement, and compaction of all materials within the limits of the work required to construct safety areas, runways, taxiways, aprons, and intermediate areas as well as other areas for drainage, building construction, parking, or other purposes in accordance with these specifications and in conformity to the dimensions and typical sections shown on the plans.

152-1.2 Classification. All material excavated shall be classified as defined below:

a. Unclassified excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature

152-1.3 Unsuitable excavation. Unsuitable material shall be disposed in designated waste areas as shown on the plans. Materials containing vegetable or organic matter, such as muck, peat, organic silt, or sod shall be considered unsuitable for use in embankment construction. Material suitable for topsoil may be used on the embankment slope when approved by the RPR.

CONSTRUCTION METHODS

152-2.1 General. Before beginning excavation, grading, and embankment operations in any area, the area shall be cleared or cleared and grubbed in accordance with Item P-151.

The suitability of material to be placed in embankments shall be subject to approval by the RPR. All unsuitable material shall be disposed of in waste areas as shown on the plans. All waste areas shall be graded to allow positive drainage of the area and adjacent areas. The surface elevation of waste areas shall be specified on the plans or approved by the RPR.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the RPR notified per Section 70, paragraph 70-20. At the direction of the RPR, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

Areas outside the limits of the pavement areas where the top layer of soil has become compacted by hauling or other Contractor activities shall be scarified and disked to a depth of 4 inches (100 mm), to loosen and pulverize the soil. Stones or rock fragments larger than 4 inches (100 mm) in their greatest dimension will not be permitted in the top 6 inches (150 mm) of the subgrade.

If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the Contractor shall notify the RPR, who shall arrange for their removal if necessary. The Contractor, at their own expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

a. Blasting. Blasting shall not be allowed.

152-2.2 Excavation. No excavation shall be started until the work has been staked out by the Contractor and the RPR has obtained from the Contractor, the survey notes of the elevations and measurements of

the ground surface. The Contractor and RPR shall agree that the original ground lines shown on the original topographic mapping are accurate, or agree to any adjustments made to the original ground lines.

Digital terrain model (DTM) files of the existing surfaces, finished surfaces and other various surfaces were used to develop the design plans.

Volumetric quantities were calculated by comparing DTM files of the applicable design surfaces and generating Triangle Volume Reports. Electronic copies of DTM files and a paper copy of the original topographic map will be issued to the successful bidder.

Volumetric quantities were calculated using design cross sections which were created for this project using the DTM files of the applicable design surfaces and generating End Area Volume Reports. Paper copies of design cross sections and a paper copy of the original topographic map will be issued to the successful bidder.

Existing grades on the design cross sections or DTM's, where they do not match the locations of actual spot elevations shown on the topographic map, were developed by computer interpolation from those spot elevations. Prior to disturbing original grade, Contractor shall verify the accuracy of the existing ground surface by verifying spot elevations at the same locations where original field survey data was obtained as indicated on the topographic map. Contractor shall recognize that, due to the interpolation process, the actual ground surface at any particular location may differ somewhat from the interpolated surface shown on the design cross sections or obtained from the DTM's. Contractor's verification of original ground surface, however, shall be limited to verification of spot elevations as indicated herein, and no adjustments will be made to the original ground surface unless the Contractor demonstrates that spot elevations shown are incorrect. For this purpose, spot elevations which are within 0.1 foot (30 mm) of the stated elevations for ground surfaces, or within 0.04 foot (12 mm) for hard surfaces (pavements, buildings, foundations, structures, etc.) shall be considered "no change". Only deviations in excess of these will be considered for adjustment of the original ground surface. If Contractor's verification identifies discrepancies in the topographic map, Contractor shall notify the RPR in writing at least 30 days before disturbance of existing grade to allow sufficient time to verify the submitted information and make adjustments to the design cross sections or DTM's. Disturbance of existing grade in any area shall constitute acceptance by the Contractor of the accuracy of the original elevations shown on the topographic map for that area.

All areas to be excavated shall be stripped of vegetation and topsoil. Topsoil shall be stockpiled for future use in areas designated on the plans or by the RPR. All suitable excavated material shall be used in the formation of embankment, subgrade, or other purposes as shown on the plans. All unsuitable material shall be disposed of as shown on the plans.

The grade shall be maintained so that the surface is well drained at all times.

When the volume of the excavation exceeds that required to construct the embankments to the grades as indicated on the plans, the excess shall be used to grade the areas of ultimate development or disposed as directed by the RPR. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from borrow areas.

a. Selective grading. When selective grading is indicated on the plans, the more suitable material designated by the RPR shall be used in constructing the embankment or in capping the pavement subgrade. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas until it can be placed. The more suitable material shall then be placed and compacted as specified. Selective grading shall be considered incidental to the work involved. The cost of stockpiling and placing the material shall be included in the various pay items of work involved.

b. Undercutting. Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for safety areas, subgrades, roads, shoulders, or any areas intended for turf shall be excavated to a minimum

depth of 12 inches (300 mm) below the subgrade or to the depth specified by the RPR. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed of at locations shown on the plans. The cost is incidental to this item. This excavated material shall be paid for at the contract unit price per cubic yard (per cubic meter) for unclassified excavation. The excavated area shall be backfilled with suitable material obtained from the grading operations or borrow areas and compacted to specified densities. The necessary backfill will constitute a part of the embankment. Where rock cuts are made, backfill with select material. Any pockets created in the rock surface shall be drained in accordance with the details shown on the plans. Undercutting will be paid as unclassified excavation.

c. Over-break. Over-break, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the RPR. All over-break shall be graded or removed by the Contractor and disposed of as directed by the RPR. The RPR shall determine if the displacement of such material was unavoidable and their own decision shall be final. Payment will not be made for the removal and disposal of over-break that the RPR determines as avoidable. Unavoidable over-break will be classified as "Unclassified Excavation."

d. Removal of utilities. The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by the Contractor as indicated on the plans. All existing foundations shall be excavated at least 2 feet (60 cm) below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the RPR. All foundations thus excavated shall be backfilled with suitable material and compacted as specified for embankment or as shown on the plans.

152-2.3 Borrow excavation. Borrow areas are not required.

152-2.4 Drainage excavation. Drainage excavation shall consist of excavating drainage ditches including intercepting, inlet, or outlet ditches; or other types as shown on the plans. The work shall be performed in sequence with the other construction. Ditches shall be constructed prior to starting adjacent excavation operations. All satisfactory material shall be placed in embankment fills; unsuitable material shall be placed in designated waste areas or as directed by the RPR. All necessary work shall be performed true to final line, elevation, and cross-section. The Contractor shall maintain ditches constructed on the project to the required cross-section and shall keep them free of debris or obstructions until the project is accepted.

152-2.5 Preparation of cut areas or areas where existing pavement has been removed. In those areas on which a subbase or base course is to be placed, the top 12 inches of subgrade shall be compacted to not less than 100 % of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM D1557. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

152-2.6 Preparation of embankment area. All sod and vegetative matter shall be removed from the surface upon which the embankment is to be placed. The cleared surface shall be broken up by plowing or scarifying to a minimum depth of 6 inches (150 mm) and shall then be compacted per paragraph 152-2.10.

Sloped surfaces steeper than one (1) vertical to four (4) horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches (300 mm) and compacted as specified for the adjacent fill.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

152-2.7 Control Strip. The first half-day of construction of subgrade and/or embankment shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The

sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

152-2.8 Formation of embankments. The material shall be constructed in lifts as established in the control strip, but not less than 6 inches (150 mm) nor more than 12 inches (300 mm) of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications.

The lifts shall be placed, to produce a soil structure as shown on the typical cross-section or as directed by the RPR. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained due to rain, freezing, or other unsatisfactory weather conditions in the field. Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. The Contractor shall drag, blade, or slope the embankment to provide surface drainage at all times.

The material in each lift shall be within ±2% of optimum moisture content before rolling to obtain the prescribed compaction. The material shall be moistened or aerated as necessary to achieve a uniform moisture content throughout the lift. Natural drying may be accelerated by blending in dry material or manipulation alone to increase the rate of evaporation.

The Contractor shall make the necessary corrections and adjustments in methods, materials or moisture content to achieve the specified embankment density.

The contractor will take samples of excavated materials which will be used in embankment for testing and develop a Moisture-Density Relations of Soils Report (Proctor) in accordance with D 1557. A new Proctor shall be developed for each soil type based on visual classification.

Density tests will be taken by the contractor for every 3,000 square yards of compacted embankment for each lift which is required to be compacted, or other appropriate frequencies as determined by the RPR.

If the material has greater than 30% retained on the 3/4-inch (19.0 mm) sieve, follow AASHTO T-180 Annex Correction of maximum dry density and optimum moisture for oversized particles.

Rolling operations shall be continued until the embankment is compacted to not less than 100% of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM D1557. Under all areas to be paved, the embankments shall be compacted to a depth of 12 inches and to a density of not less than 100 percent of the maximum density as determined by ASTM D1557. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

On all areas outside of the pavement areas, no compaction will be required on the top 4 inches which shall be prepared for a seedbed in accordance with Item T-901.

The in-place field density shall be determined in accordance with ASTM 6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. The Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance. If the specified density is not attained, the area represented by the test or as designated by the RPR shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

Compaction areas shall be kept separate, and no lift shall be covered by another lift until the proper density is obtained.

During construction of the embankment, the Contractor shall route all construction equipment evenly over the entire width of the embankment as each lift is placed. Lift placement shall begin in the deepest portion of the embankment fill. As placement progresses, the lifts shall be constructed approximately parallel to the finished pavement grade line.

When rock, concrete pavement, asphalt pavement, and other embankment material are excavated at approximately the same time as the subgrade, the material shall be incorporated into the outer portion of the embankment and the subgrade material shall be incorporated under the future paved areas. Stones, fragmentary rock, and recycled pavement larger than 4 inches (100 mm) in their greatest dimensions will not be allowed in the top 12 inches (300 mm) of the subgrade. Rockfill shall be brought up in lifts as specified or as directed by the RPR and the finer material shall be used to fill the voids forming a dense, compact mass. Rock, cement concrete pavement, asphalt pavement, and other embankment material shall not be disposed of except at places and in the manner designated on the plans or by the RPR.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in lifts of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in lifts not exceeding 2 feet (60 cm) in thickness. Each lift shall be leveled and smoothed with suitable equipment by distribution of spalls and finer fragments of rock. The lift shall not be constructed above an elevation 4 feet (1.2 m) below the finished subgrade.

There will be no separate measurement of payment for compacted embankment. All costs incidental to placing in lifts, compacting, discing, watering, mixing, sloping, and other operations necessary for construction of embankments will be included in the contract price for excavation, borrow, or other items.

152-2.9 Proof rolling. The purpose of proof rolling the subgrade is to identify any weak areas in the subgrade and not for compaction of the subgrade. After compaction is completed, the subgrade area shall be proof rolled with a 20 ton Tandem axle Dual Wheel Dump Truck loaded to the legal limit with tires inflated to 80/100/150 psi in the presence of the RPR. Apply a minimum of 80% coverage, or as specified by the RPR, under pavement areas. A coverage is defined as the application of one tire print over the designated area. Soft areas of subgrade that deflect more than 1 inch (25 mm) or show permanent deformation greater than 1 inch (25 mm) shall be removed and replaced with suitable material or reworked to conform to the moisture content and compaction requirements in accordance with these specifications. Removal and replacement of soft areas is incidental to this item.

152-2.10 Compaction requirements. The subgrade under areas to be paved shall be compacted to a depth of 12 inches (300 mm)and to a density of not less than 100 percent of the maximum dry density as determined by ASTM D1557. The subgrade in areas outside the limits of the pavement areas shall be

compacted to a depth of 12 inches and to a density of not less than 95 percent of the maximum density as determined by ASTM D1557.

The material to be compacted shall be within ±2% of optimum moisture content before being rolled to obtain the prescribed compaction (except for expansive soils). When the material has greater than 30 percent retained on the ¾ inch (19.0 mm) sieve, follow the ASTM D1557 procedures in AASHTO T180 Annex for correction of maximum dry density and optimum moisture for oversized particles. Tests for moisture content and compaction will be taken at a minimum of 2,000 S.Y. of subgrade. All quality assurance testing shall be done by the Contractor's laboratory in the presence of the RPR, and density test results shall be furnished upon completion to the RPR for acceptance determination.

The in-place field density shall be determined in accordance with ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938 within 12 months prior to its use on this contract. The gage shall be field standardized daily.

Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

If the specified density is not attained, the entire lot shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

All cut-and-fill slopes shall be uniformly dressed to the slope, cross-section, and alignment shown on the plans or as directed by the RPR and the finished subgrade shall be maintained.

152-2.11 Finishing and protection of subgrade. Finishing and protection of the subgrade is incidental to this item. Grading and compacting of the subgrade shall be performed so that it will drain readily. All low areas, holes or depressions in the subgrade shall be brought to grade. Scarifying, blading, rolling and other methods shall be performed to provide a thoroughly compacted subgrade shaped to the lines and grades shown on the plans. All ruts or rough places that develop in the completed subgrade shall be graded, re-compacted, and retested. The Contractor shall protect the subgrade from damage and limit hauling over the finished subgrade to only traffic essential for construction purposes.

The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. No subbase, base, or surface course shall be placed on the subgrade until the subgrade has been accepted by the RPR.

152-2.12 Haul. All hauling will be considered a necessary and incidental part of the work. The Contractor shall include the cost in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work.

The Contractor's equipment shall not cause damage to any excavated surface, compacted lift or to the subgrade as a result of hauling operations. Any damage caused as a result of the Contractor's hauling operations shall be repaired at the Contractor's expense.

The Contractor shall be responsible for providing, maintaining and removing any haul roads or routes within or outside of the work area, and shall return the affected areas to their former condition, unless otherwise authorized in writing by the Owner. No separate payment will be made for any work or materials associated with providing, maintaining and removing haul roads or routes.

152-2.13 Surface Tolerances. In those areas on which a subbase or base course is to be placed, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. The Contractor shall perform all final smoothness and grade checks in the presence

of the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense.

a. Smoothness. The finished surface shall not vary more than +/- ½ inch (12 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

b. Grade. The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +/- 0.05 feet (15 mm) of the specified grade.

On safety areas, turfed areas and other designated areas within the grading limits where no subbase or base is to placed, grade shall not vary more than 0.10 feet (30 mm) from specified grade. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

152-2.14 Topsoil. When topsoil is specified or required as shown on the plans or under Item T-905, it shall be salvaged from stripping or other grading operations. The topsoil shall meet the requirements of Item T-905. If, at the time of excavation or stripping, the topsoil cannot be placed in its final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall be located as shown on the plans and the approved CSPP, and shall not be placed on areas that subsequently will require any excavation or embankment fill. If, in the judgment of the RPR, it is practical to place the salvaged topsoil at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further re-handling.

Upon completion of grading operations, stockpiled topsoil shall be handled and placed as shown on the plans and as required in Item T-905. Topsoil shall be paid for as provided in Item T-905. No direct payment will be made for topsoil under Item P-152.

METHOD OF MEASUREMENT

152-3.1 Measurement for payment specified by the cubic yard (cubic meter) shall be computed by the the comparison of digital terrain model (DTM) surfaces for computation of neat line design quantities. The end area is that bound by the original ground line established by field cross-sections and the final theoretical pay line established by cross-sections shown on the plans, subject to verification by the RPR.

152-3.1 The quantity of unclassified excavation to be paid for shall be the number of cubic yards (cubic meters) measured in its original position. Measurement shall not include the quantity of materials excavated without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed.

BASIS OF PAYMENT

152-4.1 Unclassified excavation payment shall be made at the contract unit price per cubic yard (cubic meter). This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-152-4.1	***Unclassified Excavation (spoiled on-site) - per cubic yard***
Item P-152-4.2	***Unclassified Excavation (spoiled off-site) - per cubic yard***

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T-180	Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

ASTM International (ASTM)

ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2700 kN-m/m^3))
ASTM D6938	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

Advisory Circulars (AC)

AC 150/5370-2	Operational Safety on Airports During Construction Software

Software

FAARFIELD – FAA Rigid and Flexible Iterative Elastic Layered Design

U.S. Department of Transportation

FAA RD-76-66	Design and Construction of Airport Pavements on Expansive Soils

END OF ITEM P-152

Item L-109 Airport Transformer Vault and Vault Equipment

DESCRIPTION

109-1.1 This item shall consist of modifying an existing airport transformer vault and equipment per these specifications and per the design shown in the plans. This work shall also include the installation of a new constant current regulator (CCR) and installation of associated power and control conduits and wiring as noted on the plans. This item shall also include ~~modifications to the existing Airfield Lighting Control and Monitoring System (ALCMS) to control the new CCR and show the new Taxiway geometry on the graphics screens, in addition to~~ minimal power distribution system modifications. The proposed vault modifications shall be as noted on the plans and shall include the marking and labeling of equipment and the labeling or tagging of wires; the testing and commissioning of the installation; and the furnishing of all incidentals necessary to place it in operating condition as a completed unit to the satisfaction of the RPR.

EQUIPMENT AND MATERIALS

109-2.1 General.

a. Airport lighting equipment and materials covered by advisory circulars (AC) shall be certified in AC 150/5345-53, Airport Lighting Equipment Certification Program (ALECP) and listed in the ALECP Addendum.

b. All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the RPR.

c. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications. Materials supplied and/or installed that do not comply with these specifications shall be removed (when directed by the RPR) and replaced with materials that comply with these specifications at the Contractor's cost.

d. All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete any non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment to which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in the project that may accrue directly or indirectly from late submissions or resubmissions of submittals.

e. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be provided in electronic pdf format, tabbed by

specification section. The RPR reserves the right to reject any and all equipment, materials or procedures that do not meet the system design and the standards and codes, specified in this document.

f. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

MODIFICATION OF VAULT

109-3.1 Electrical vault building. Not used.

109-3.2 Concrete. Not used.

109-3.3 Precast concrete structures. Not used.

109-3.4 Reinforcing steel. Not used.

109-3.5 Brick. Not used.

109-3.6 Rigid steel conduit. Rigid steel conduit and fittings shall be per Underwriters Laboratories Standards 6 and 514B.

109-3.7 Plastic Conduit and fittings. Plastic Conduit and fittings shall conform to the requirements of UL-651 and UL-654 schedule 40 polyvinyl chloride (PVC) suitable for use above or below ground.

109-3.8 Lighting. Not used.

109-3.9 Outlets. Not used.

109-3.10 Switches. Not used.

109-3.11 Paint.

a. Priming paint for non-galvanized metal surfaces shall be a high solids alkyd primer compatible with the manufacturer's recommendations for the intermediate or topcoat.

b. White paint for body and finish coats on metal and wood surfaces shall be ready-mixed paint conforming to the Master Painter's Institute (MPI), Reference #9, Exterior Alkyd, Gloss.

c. Priming paint for wood surfaces shall be mixed on the job by thinning the specified white paint by adding 1/2 pint of raw linseed oil to each gallon.

d. Paint for the floor, ceiling, and inside walls shall be per Porter Paint Company 69, 71, and 79 or equivalent. Walls and ceiling shall be light gray and the floor shall be medium gray.

e. The roof coating shall be hot asphalt material per ASTM D2823. Asbestos-free roof coating per ASTM D4479 may be substituted if required by local codes.

109-3.12 Ground bus. Ground bus shall be 1/8 × 3/4 inch minimum copper bus bar.

109-3.13 Square duct. Not used.

109-3.14 Ground rods. Ground rods shall be in accordance with Item L-108.

109-3.15 Vault prefabricated metal housing. Not used.

109-3.16 FAA-approved equipment. Certain items of airport lighting equipment installed in vaults are covered by individual ACs listed below:

AAC 150/5345-7 Airport	Specification for L-824 Underground Electrical Cable for Lighting Circuits
AC 150/5345-10	Specification for Constant Current Regulators and Regulator Monitors
AC 150/5345-56	Specification for L-890 Airport Lighting Control and Monitoring System (ALCMS)

109-3.17 Other electrical equipment. Distribution transformers, oil switches, cutouts, relays, terminal blocks, transfer relays, circuit breakers, and all other regularly used commercial items of electrical equipment not covered by FAA equipment specifications and ACs shall conform to the applicable rulings and standards of the Institute of Electrical and Electronic Engineers (IEEE) or the National Electrical Manufacturers Association (NEMA). When specified, test reports from a testing laboratory indicating that the equipment meets the specifications shall be supplied. In all cases, equipment shall be new and a first-grade product. This equipment shall be supplied in the quantities required for the specific project and shall incorporate the electrical and mechanical characteristics specified in the proposal and plans. Equipment selected and installed by the Contractor shall maintain the interrupting current rating of the existing systems or specified rating whichever is greater.

109-3.18 Wire. Wire (in conduit) rated up to 5,000 volts shall be per AC 150/5345-7, Specification for L-824 Underground Electrical Cables for Airport Lighting Circuits. For ratings up to 600 volts, moisture and heat resistant thermoplastic wire conforming to Commercial Item Description A-A-59544A Type THWN-2 shall be used. The wires shall be of the type, size, number of conductors, and voltage shown in the plans or in the proposal.

a. Control circuits. Unless otherwise indicated on the plans, wire shall be not less than No. 12 American wire gauge (AWG) and shall be insulated for 600 volts. If telephone control cable is specified, No. 19 AWG telephone cable per ANSI/Insulated Cable Engineers Association (ICEA) S-85-625 specifications shall be used.

b. Power circuits.

(1) 600 volts maximum – Wire shall be No. 6 AWG or larger and insulated for at least 600 volts.

(2) 3,000 volts maximum – Wire shall be No. 6 AWG or larger and insulated for at least 3,000 volts.

(3) Over 3,000 volts-Wire shall be No. 6 AWG or larger and insulated for at least the circuit voltage.

109-3.19 AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM. THE EXISTING ALCMS SYSTEM SHALL BE MODIFIED TO CONTROL AND MONITOR THE NEW CONSTANT CURRENT REGULATOR AND MEGGER THE NEW TAXIWAY CIRCUIT. IT SHALL ALSO SHOW THE NEW TAXIWAY ON THE GRAPHICS PANEL(S) AS NEEDED AND TO THE SATISFACTION OF THE AIRPORT AND ENGINEER. THE CONTRACTOR SHALL CONTACT THE ALCMS MANUFACTURER FOR SET UP, TESTING AND COMMISSIONING OF THE NEW REGULATOR AND ITS CONTROLS. THE EXISTING ALCMS MODIFICATION SHALL BE ENABLED TO CONTROL, MONITOR, AND TEST THE NEW REGULATOR AND AIRFIELD CIRCUIT IN SIMILAR FASHION TO THE EXISTING CIRCUITS AT THE AIRPORT. CONTRACTOR SHALL WORK WITH THE ALCMS MANUFACTURER TO PROVIDE ANY ADDITIONAL EQUIPMENT, EXPANSION OR UPGRADE OF THE EXISTING ALCMS SYSTEM TO PROVIDE A COMPLETE AND

OPERATIONAL ALCMS FOR THE NEW TAXIWAY, INCLUDING CONDUITS AND CONTROL WIRING WITHIN THE EXISTING VAULT. CONSTRUCTION METHODS

MODIFICATION OF VAULT

109-4.1 General. The Contractor shall modify the transformer vault as indicated in the plans. Installation methods and equipment placement are as shown in the plans and final methods and placements shall be coordinated with the airport and engineer.

109-4.2 Foundation and walls.

a. Reinforced concrete construction. Not used. **b. Brick and concrete construction.** Not used.

c. Concrete masonry construction. Not used.

109-4.3 Roof. Not used.

109-4.4 Floor. Not used.

109-4.5 Floor drain. Not used.

109-4.6 Conduits in floor and foundation. Not used.

109-4.7 Doors. Not used.

109-4.8 Painting. Not used.

109-4.9 Lights and switches. Not used.

INSTALLATION OF EQUIPMENT IN VAULT OR PREFABRICATED METAL HOUSING

109-5.1 General. The Contractor shall furnish, install, and connect all equipment, equipment accessories, conduit, cables, wires, buses, grounds, and support necessary to ensure a complete and operable electrical distribution center for the new constant current regulator and ALCMS modifications as shown on the plans and specified herein.

The equipment installation and mounting shall comply with the requirements of the National Electrical Code and local code agency having jurisdiction. All electrical work shall comply with the NEC and local code agency having jurisdiction including the separation of under 600V work from 5,000V work."

109-5.2 Power supply equipment. Transformers, regulators, booster transformers, and other power supply equipment items shall be furnished and installed at the location shown in the plans or as directed by the RPR. Contractor shall work with existing power distribution system panel manufacturer to obtain and install new circuit breaker(s) as shown on the plans.

109-5.3 Switchgear and panels. Not used.

109-5.4 Duct and conduit. The Contractor shall furnish and install conduits in the existing vault matching existing installations for both power and controls, as coordinated with the airport and engineer. Final locations and routing shall be to the satisfaction of the airport and RPR/engineer.

109-5.5 Wiring and connections. The Contractor shall make all necessary electrical connections in the vault per the wiring diagrams furnished and as directed by the RPR. In wiring to the terminal blocks, the Contractor shall leave sufficient extra length on each control lead to make future changes in connections

at the terminal block. This shall be accomplished by running each control lead the longest way around the box to the proper terminal. Leads shall be neatly laced in place.**109-5.6 Marking and labeling.** All equipment, control wires, terminal blocks, etc., shall be tagged, marked, or labeled as specified below:

a. Wire identification. The Contractor shall furnish and install self-sticking wire labels or identifying tags on all control wires at the point where they connect to the control equipment or to the terminal blocks. Wire labels, if used, shall be of the self-sticking preprinted type and of the manufacturer's recommended size for the wire involved. Identification -markings designated in the plans shall be followed. Tags, if used, shall be of fiber not less than 3/4 inch in diameter and not less than 1/32 inch thick. Identification markings designated in the plans shall be stamped on tags by means of small tool dies. Each tag shall be securely tied to the proper wire by a nonmetallic cord.

b. Labels. The Contractor shall stencil identifying labels on the cases of regulators, breakers, and distribution and control relay cases with white oil paint as designated by the RPR. The letters and numerals shall be not less than one inch in height and shall be of proportionate width. The Contractor shall also mark the correct circuit designations per the wiring diagram on the terminal marking strips, which are a part of each terminal block.

METHOD OF MEASUREMENT

109-6.1 The quantity of Constant Current Regulators (CCRs) to be paid for under this item shall consist of the number of CCRs constructed in place and accepted as a complete unit.

109-6.2 The quantity of ALCMS modifications to be paid for under this item shall consist of a lump sum unit, in place and accepted and complete.

109-6.3 The quantity of Vault Power Distribution modifications to be paid for under this item shall consist of a lump sum unit, in place and accepted and complete.

BASIS OF PAYMENT

109-7 Payment will be made at the contract unit price for each completed and accepted CCR or listed modification. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item L-109-7.1 Airfield Lighting Electrical Vault Power and Controls Modifications – lump sum

Item L-109-7.2 Constant Current Regulator Removal and Salvage – per each

Item L-109-7.3 Constant Current Regulator 10kW, 3-Step, 6.6A, 480V, L-829 – per each

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5340-30 Design and Installation Details for Airport Visual Aids

AC 150/5345-3	Specification for L-821, Panels for Remote Control of Airport Lighting
AC 150/5345-5	Circuit Selector Switch
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-10	Specification for Constant Current Regulators and Regulator Monitors
AC 150/5345-13	Specification for L-841 Auxiliary Relay Cabinet Assembly for Pilot Control of Airport Lighting Circuits
AC 150/5345-49	Specification L-854, Radio Control Equipment;
AC 150/5345-53	Airport Lighting Equipment Certification Program

American National Standards Institute / Insulated Cable Engineers Association (ANSI/ICEA)

ANSI/ICEA S-85-625	Standard for Telecommunications Cable Aircore, Polyolefin Insulated, Copper Conductor Technical Requirements

ASTM International (ASTM)

ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM C62	Standard Specification for Building Brick (Solid Masonry Units Made from Clay or Shale)
ASTM C90	Standard Specification for Loadbearing Concrete Masonry Units
ASTM D2823	Standard Specification for Asphalt Roof Coatings, Asbestos Containing
ASTM D4479	Standard Specification for Asphalt Roof Coatings – Asbestos-Free

Commercial Item Description (CID)

A-A 59544	Cable and Wire, Electrical (Power, Fixed Installation) Institute of Electrical and Electronic Engineers (IEEE)
IEEE 1584	Guide for Performing Arc-Flash Hazard Calculations

Master Painter's Institute (MPI)

MPI Reference #9	Alkyd, Exterior, Gloss (MPI Gloss Level 6)

Underwriters Laboratories (UL)

UL Standard 6	Electrical Rigid Metal Conduit – Steel
UL Standard 514B	Conduit, Tubing, and Cable Fittings
UL Standard 514C	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
UL Standard 651	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
UL Standard 651A	Type EB and A Rigid PVC Conduit and HDPE Conduit

National Fire Protection Association (NFPA)

NFPA-70	National Electrical Code (NEC)
NFPA-70E	Standard for Electrical Safety in the Workplace

NFPA-780 Standard for the Installation of Lightning Protection Systems

END OF ITEM L-109

Attachment B: Contract Drawings

GENERAL CONSTRUCTION NOTES

1. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SECTION 70-08, ATTACHMENT A - CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) OF THE GENERAL PROVISIONS.
2. THESE DRAWINGS HAVE BEEN PREPARED, IN PART, BASED UPON RECORD DRAWINGS AND/OR CAD FILES FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, THOSE UTILIZING THE INFORMATION ON THESE DRAWINGS ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY BEFORE USING IT FOR ANY PURPOSE.
3. EXISTING UTILITIES WERE TAKEN FROM PLANS OF RECORD. THEY HAVE BEEN SHOWN TO THE EXTENT KNOWN AND ARE OFFERED IN GOOD FAITH SOLELY FOR INFORMATIONAL PURPOSES. THEY MAY NOT REFLECT ACTUAL LOCATIONS AND MAY NOT BE INCLUSIVE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
4. THE ACTUAL LOCATION AND ELEVATION OF ALL UTILITIES SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.
5. IN THE EVENT OF DAMAGE TO EXISTING UTILITIES OR CABLES, THE RPR AND OWNER SHALL BE NOTIFIED IMMEDIATELY.
6. THE CONTRACTOR SHALL REPAIR ALL DAMAGE TO UTILITIES OR CABLES, AS DIRECTED BY THE RPR, IMMEDIATELY AND AT THE CONTRACTOR'S EXPENSE.
7. ALL AREAS DISTURBED AS A RESULT OF THE CONTRACTOR'S STAGING AND CONSTRUCTION OPERATIONS SHALL BE RESTORED EQUAL TO OR BETTER THAN ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
8. ALL DIRT, DUST, STONES AND LOOSE DEBRIS SHALL BE CONTINUOUSLY REMOVED FROM ALL PAVED SURFACES DURING THIS CONTRACT.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RECONSTRUCTION, REPAIR, AND MAINTENANCE OF ALL EXISTING ACCESS ROADS IMPACTED BY CONSTRUCTION ACTIVITIES. ANY DAMAGE RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED AT THE CONTRACTOR'S SOLE EXPENSE TO A CONDITION EQUAL TO OR BETTER THAN THAT WHICH EXISTED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
10. PROPOSED HAUL ROADS SHALL BE REMOVED UPON COMPLETION OF WORK AND THE AREA RESTORED TO ORIGINAL CONDITION.
11. ALL OF THE CONTRACTOR'S OPERATIONS SHALL REMAIN ON AIRPORT PROPERTY AT ALL TIMES. UNDER NO CIRCUMSTANCES WILL THE CONTRACTOR BE ALLOWED ON ADJACENT PROPERTY.
12. THIS CONTRACT DOES NOT ALLOW FOR PRICE INCREASES DUE TO ESCALATION IN COST OF UNIT BID ITEMS. THE CONTRACTOR SHALL TAKE THIS INTO CONSIDERATION WHEN PREPARING UNIT PRICES FOR BID.
13. THE COST OF ALL FAILING TESTS PERFORMED BY THE OWNER OR ON THE OWNER'S BEHALF SHALL BE BORNE BY THE CONTRACTOR.
14. THE OWNER RESERVES THE RIGHT TO ELIMINATE ANY ITEMS OF THE CONTRACT AND PERFORM THESE ITEMS WITH ITS FORCES AND MATERIALS. THE ITEMS TO BE COMPLETED BY THE OWNER WILL BE SPECIFIED PRIOR TO AWARD.
15. THE CONTRACTOR SHALL BE AWARE THAT OTHER CONCURRENT PROJECTS WILL BE UNDER CONSTRUCTION ON THE AIRPORT, SPECIFICALLY, THE GSE FUEL FACILITY , TAXIWAY D REHABILITATION, AND TAXIWAY L EXTENSION PROJECTS. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ACTIVITIES WITH THE OTHER CONTRACTORS ON THE AIRPORT. THE COST OF COORDINATION SHALL BE INCLUDED IN ITEM CX-106.

GENERAL PHASING NOTES

16. REFER TO SECTION 70 ATTACHMENT A - CSPP OF THE GENERAL PROVISIONS FOR SPECIFIC OPERATING REQUIREMENTS DURING WORK ON THE AIRFIELD.
17. THE CONTRACTOR WILL BE GIVEN THE SPECIFIC NUMBER OF CALENDAR DAYS TO COMPLETE THE WORK AS SHOWN. LIQUIDATED DAMAGES SHALL BE ASSESSED AFTER THE CONTRACT TIME HAS EXPIRED UNLESS THE CONTRACTOR CAN SHOW JUST CAUSE FOR DELAYS. JUST CAUSE WILL BE REVIEWED BY THE RPR AND OWNER. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE JUSTIFICATION FOR WAIVING ANY LIQUIDATED DAMAGES CHARGED.
18. PRIOR TO CONSTRUCTION, CONTRACTOR AND RPR SHALL VIDEOTAPE / PHOTOGRAPH ALL HAUL ROADS TO BE USED DURING THE PROJECT. THE INFORMATION SHALL BE PROVIDED TO THE OWNER PRIOR TO NOTICE TO PROCEED. ANY DAMAGE TO THE PAVEMENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR, PER RPR. ALL COSTS SHALL BE RESPONSIBILITY OF THE CONTRACTOR.
19. THE WORK PHASING REQUIRES THE CONTRACTOR TO USE FLAGGERS TO MAINTAIN TRAFFIC, SEE THE GC SERIES FOR REQUIREMENTS. ALL COST OF FLAGGING SHALL BE BORNE BY THE CONTRACTOR AND INCLUDED UNDER ITEM CX-106.
20. CONTRACTOR SHALL COORDINATE SCHEDULE, CLOSURES, AND NOTAMS WITH THE RPR PRIOR TO STARTING WORK.
21. CONTRACTOR SHALL PROVIDE A CURRENT UPDATED DETAILED SCHEDULE TO THE RPR ON A WEEKLY BASIS.
22. CONTRACTOR SHALL HAVE COMPANY IDENTIFICATION DECALS ON BOTH SIDES OF THE VEHICLE CONTAINING THE COMPANY NAME AND MUST BE MARKED WITH FLASHING YELLOW/AMBER BEACONS.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL CONSTRUCTION ACTIVITIES, INCLUDING, BUT NOT LIMITED TO, HAUL ROUTES, SPOILS ACCESS, AND CONSTRUCTION PHASE CHANGES, WITH THE RPR AND ALL CONCURRENT CONSTRUCTION PROJECTS OCCURRING ON THE AIRFIELD.

GRADING AND EXCAVATION NOTES

24. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL STRIP AND STOCKPILE ALL MATERIAL SUITABLE FOR TOPSOILING.
25. SELECTIVE GRADING SHALL BE REQUIRED AS DIRECTED BY THE RPR.
26. QUALITY ASSURANCE TESTS WILL BE MADE BY AND AT THE EXPENSE OF THE OWNER, UNLESS OTHERWISE NOTED. THE COST OF ALL FAILING TESTS SHALL BE BORNE BY THE CONTRACTOR.
27. THE QUANTITY OF UNCLASSIFIED EXCAVATION, ITEM P-152, INCLUDES 1,800CY OF UNDERCUT EXCAVATION WHICH WILL BE USED ONLY WHEN DIRECTED BY THE RPR.
28. THE QUANTITY OF CRUSHED STONE BASE COURSE, ITEM P-209, INCLUDES 1,800 CY FOR REPLACEMENT OF UNDERCUT EXCAVATION WHICH WILL BE USED ONLY WHEN DIRECTED BY THE RPR.
29. THE EXACT LOCATIONS AND DIMENSIONS OF PAVEMENT TO BE RECONSTRUCTED SHALL BE DETERMINED BY THE RPR DURING CONSTRUCTION.
30. EXCESS TOPSOIL AND EXCAVATED MATERIAL SHALL BE DISPOSED OF ON AIRPORT PROPERTY AS SHOWN ON THE CONTRACT DRAWINGS, UNLESS OTHERWISE DIRECTED BY THE AIRPORT AUTHORITIES. EXCESS TOPSOIL SHALL BE PAID UNDER T-905 AND EXCAVATED MATERIAL SHALL BE PAID UNDER ITEM P-152 UNCLASSIFIED EXCAVATION (SPOILED ON-SITE).
31. CONCRETE TO BE REMOVED AND THE SLAG BASE MATERIAL WITH CEMENT TO BE EXCAVATED SHALL BE DISPOSED OF OFFSITE UNLESS OTHERWISE DIRECTED BY THE AIRPORT AUTHORITIES. CONCRETE REMOVAL SHALL BE PAID UNDER ITEM P-101 PAVEMENT REMOVAL (SPOILED OFF-SITE). THE SLAG BASE MATERIAL WITH CEMENT SHALL BE PAID UNDER ITEM P-152 UNCLASSIFIED EXCAVATION (SPOILED OFF-SITE).
32. ITEM P-101 PAVEMENT REMOVAL (SPOILED ON-SITE) SHALL BE USED ONLY AS NEEDED AND ONLY AS DIRECTED BY THE AIRPORT OWNER. CONCRETE TO BE SPOILED ON-SITE SHALL BE DISPOSED OF IN THE LOCATION AS SHOWN ON THE PLAN SHEETS. IF THE MATERIAL IS TO BE WASTED ON AIRPORT PROPERTY IT SHALL BE REDUCED TO A MAXIMUM SIZE AS INDICATED IN SPECIFICATION P-101.
33. THE QUANTITY OF UNCLASSIFIED EXCAVATION (SPOILED ON-SITE), ITEM P-152, INCLUDES 1,100CY OF EXCAVATION FOR SLAG BASE MATERIAL WITH CEMENT TO BE SPOILED ON-SITE. MATERIAL TO BE SPOILED ON-SITE SHALL BE DISPOSED OF IN THE LOCATION AS SHOWN ON THE PLAN SHEETS AND SHALL ONLY BE USED AS DIRECTED BY THE AIRPORT OWNER
34. EMBANKMENTS SHALL BE CONSTRUCTED WITH SUITABLE ON-SITE MATERIAL UNLESS OTHERWISE DIRECTED BY THE RPR.
35. THE LIMIT FOR TOPSOILING, SEEDING, AND MULCHING ARE THE LIMITS OF GRADING SHOWN ON THE GRADING PLANS. ALL AREAS OUTSIDE OF THE GRADING LIMITS WHICH ARE DISTURBED SHALL BE RESTORED BY THE CONTRACTOR AT HIS EXPENSE.
36. THE COMBINATION OF SILT/CLAY SOILS AND HIGH NATURAL MOISTURE CONTENTS CREATE THE POTENTIAL FOR LOSS OF STRENGTH UNDER REPETITIVE LOADINGS OR VIBRATION. THE CONTRACTOR SHOULD TAKE THESE FACTORS INTO CONSIDERATION WHEN SELECTING EQUIPMENT, METHODS AND MEANS FOR CONSTRUCTION OF THIS PROJECT, AS WELL AS HAULING EQUIPMENT THAT WILL OPERATE IN THE AREA THROUGHOUT CONSTRUCTION. ANY DAMAGE TO THE SUBGRADE CONDITION AS A RESULT OF CONSTRUCTION OPERATIONS SHALL BE RESTORED TO EQUAL OR BETTER THAN ORIGINAL CONDITION, AS DIRECTED BY THE RPR AND ALL AT THE CONTRACTOR'S EXPENSE.
37. TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION AND SILTATION CONTROL WORK PERFORMED FOR PROTECTION OF CONSTRUCTION AREAS OUTSIDE THE CONSTRUCTION LIMITS, SUCH AS BORROW AREAS AND WASTE AREAS, HAUL ROADS, EQUIPMENT AND MATERIAL STORAGE SITES, AND TEMPORARY PLANT SITES, WILL NOT BE MEASURED AND PAID FOR DIRECTLY BUT SHALL BE CONSIDERED AS A SUBSIDIARY OBLIGATION OF THE CONTRACTOR.
38. ALL SOIL EROSION AND SEDIMENT CONTROL DEVICES AND MATERIALS SHALL BE IN PLACE PRIOR TO BEGINNING EARTHWORK OPERATIONS AND SHALL BE MAINTAINED UNTIL THE NEW SLOPES ARE STABILIZED WITH SEEDING AND/OR SLOPE PROTECTION.
39. TAXIWAY RECONSTRUCTION SHOWN ON THESE PLANS OCCURS OVER AN EXISTING TUNNEL STRUCTURE. NO STRUCTURAL ENGINEERING ANALYSIS OR LOAD CAPACITY CALCULATIONS WERE PERFORMED AS PART OF THIS PROJECT TO EVALUATE THE TUNNEL'S ABILITY TO SUPPORT CONSTRUCTION ACTIVITIES OR FINAL ROADWAY LOADS.
40. IT IS ASSUMED THAT THE EXISTING TUNNEL IS IN GOOD STRUCTURAL CONDITION AND CAPABLE OF SUPPORTING PAVEMENT RECONSTRUCTION AND ASSOCIATED CONSTRUCTION EQUIPMENT.
41. CONTRACTOR MEANS AND METHODS SHALL NOT EXCEED TYPICAL ROADWAY CONSTRUCTION LOADS. ANY OBSERVED DAMAGE OR UNEXPECTED CONDITIONS RELATED TO THE TUNNEL SHALL BE IMMEDIATELY REPORTED TO THE OWNER.

SURVEY NOTES

42. FOR TYPICAL SECTIONS, THE CONTOUR INTERVAL EQUALS 0.2 FOOT.
43. THE TOPOGRAPHIC FEATURES SHOWN HEREON WERE COMPILED FROM FIELD SURVEY PERFORMED BY FISHBECK DATED NOVEMBER 6, 2025 AND SUPPLEMENTED ON FEBRUARY 9, 2026.

MARKING NOTES

44. REMOVAL OF EXISTING MARKINGS SHALL BE IN ACCORDANCE WITH ITEM P-620.

A1 **GENERAL NOTES**
SCALE: NOT TO SCALE

C&S COMPANIES®
C&S Engineers, Inc.
38777 Six Mile Road, Suite 202
Livonia, Michigan 48152
Phone: 734-953-2571
Fax: 734-206-7973
www.cscos.com

STATE OF MICHIGAN KELLY J. JOST 6201056345 LICENSED PROFESSIONAL ENGINEER

GERALD R. FORD International Airport

TAXIWAY F & G RECONSTRUCTION (NORTH OF TAXIWAY V, 1,950' X 35'); TAXIWAY F & G AIRFIELD LIGHTING REPLACEMENT
GERALD R. FORD INTERNATIONAL AIRPORT GRAND RAPIDS, MI

MARK	DATE	DESCRIPTION
1	4/15/2026	ADDENDUM NO.1

REVISIONS

PROJECT NO:	K19.031.001 & K19.031.002
DATE:	MARCH 2026
DRAWN BY:	B. BUCKINGHAM
DESIGNED BY:	T.J. CORCORAN
CHECKED BY:	K.J. JOST

CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.

GENERAL NOTES

GI003

SHEET NO. 3 OF 65

Apr 16, 2026 - 4:06pm
F:\Projects\K19 - Gerald R. Ford Airport\K19031001 - Taxiway F\Design\CADD\Sheet Files\K19031001_GI-07.dwg

ALIGNMENT LINE TABLE							
LINE NO.	ALIGNMENT NAME	START STATION	START NORTHING	START EASTING	END STATION	END NORTHING	END EASTING
L1	TWY B	0+00.00	508,414.38	12,813,907.92	5+00.00	507,919.14	12,813,976.72
L2	TWY F	0+00.00	508,684.28	12,813,555.96	21+00.00	506,604.15	12,813,844.20
L3	TWY G	0+00.00	508,332.15	12,813,587.09	6+00.00	508,414.50	12,814,181.41
L4	TWY J	0+00.00	508,629.47	12,813,309.06	6+00.00	508,711.83	12,813,903.38
L5	TWY V	0+00.00	506,627.76	12,813,514.26	5+00.00	506,696.39	12,814,009.53

C1 ALIGNMENT TABLE

SCALE: NOT TO SCALE

ITEM NO	FAA SPEC NO.	PAY ITEM NO	DESCRIPTION	QUANTITY	UNITS
			Base Bid		
1	C-100	C-100-14.1	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	1	LS
2	C-102	C-102-5.1	INSTALLATION AND REMOVAL OF STORM DRAIN INLET PROTECTION	20	EACH
3	C-102	C-102-5.2	INSTALLATION AND REMOVAL OF SILT FENCE	4,000	LF
4	C-105	C-105-6.1	MOBILIZATION (10% MAXIMUM)	1	LS
5	C-105	C-105-6.2	FIELD OFFICE	1	LS
6	CX-106	CX-106-3.1	SAFETY, SECURITY AND MAINTENANCE OF TRAFFIC	1	LS
7	CX-106	CX-106-3.2	INSTALLATION AND REMOVAL OF HAUL ROAD	1,250	LF
8	P-101	P-101-5.1	PAVEMENT REMOVAL (SPOILED ON-SITE)	3,870	SY
9	P-101	P-101-5.2	PAVEMENT REMOVAL (SPOILED OFF-SITE)	12,800	SY
10	P-152	P-152-4.1	UNCLASSIFIED EXCAVATION (SPOILED ON-SITE)	9,700	CY
11	P-152	P-152-4.2	UNCLASSIFIED EXCAVATION (SPOILED OFF-SITE)	4,000	CY
12	P-154	P-154-5.1	SUBBASE COURSE	2,650	CY
13	P-154	P-154-5.2	RESHAPE AND RECOMPACT EXISTING SUBBASE MATERIAL	11,100	SY
14	P-209	P-209-5.1	CRUSHED AGGREGATE BASE COURSE	6,900	CY
15	P-501	P-501-8.1	CONCRETE PAVEMENT, 10" THICK	14,300	SY
16	P-620	P-620-5.1	MARKING	19,000	SF
17	P-620	P-620-5.2	REFLECTIVE MEDIA	470	LB
18	P-620	P-620-5.3	TEMPORARY MARKING	10,300	SF
19	P-620	P-620-5.4	MARKING REMOVAL	4,300	SF
20	D-705	D-705-5.1	6 INCH PERFORATED SMOOTH INTERIOR CORRUGATED HDPE COMPLETE, INCLUDING POROUS BACKFILL AND FILTER FABRIC	4,550	LF
21	D-705	D-705-5.2	6 INCH NON-PERFORATED SMOOTH INTERIOR CORRUGATED HDPE COMPLETE, INCLUDING POROUS BACKFILL AND FILTER FABRIC	880	LF
22	D-751	D-751-5.1	CLEANOUTS	25	EACH
23	DX-800	DX-800-4.1	SOFT DIGS	2	DAYS
24	T-901	T-901-5.1	SEEDING	3.5	ACRE
25	T-905	T-905-5.1	TOPSOIL (OBTAINED ONSITE OR REMOVED FROM STOCKPILE)	2,700	CY
26	T-908	T-908-5.1	MULCHING	3.5	ACRE
27	L-105	L-105-7.1	REMOVE EXISTING TAXIWAY EDGE LIGHT AND BASE CAN COMPLETE	85	EACH
28	L-105	L-105-7.2	REMOVE EXISTING CABLE IN CONDUIT OR DUCT BANK, CONDUIT AND DUCT TO REMAIN	12,500	LF
29	L-105	L-105-7.3	REMOVE EXISTING CONDUIT	4,500	LF
30	L-105	L-105-7.4	REMOVE EXISTING DUCT BANK	900	LF
31	L-105	L-105-7.5	REMOVE AND RELOCATE EXISTING GUIDANCE SIGN, INCLUDING NEW FOUNDATION	9	EACH
32	L-105	L-105-7.6	REMOVE EXISTING ELECTRICAL HANDHOLE	14	EACH
33	L-108	L-108-5.1	NO.8 AWG, 5 kV, L-824, TYPE C CABLE, INSTALLED IN NEW OR EXISTING CONDUIT OR DUCT BANK	12,500	LF
34	L-108	L-108-5.2	NO.6 AWG BARE COUNTERPOISE, GROUND RODS AND TERMINATIONS	4,500	LF
35	L-109	L-109-7.1	AIRFIELD LIGHTING ELECTRICAL VAULT POWER AND CONTROLS MODIFCATIONS	1	LS
36	L-109	L-109-7.2	CONSTANT CURRENT REGULATOR REMOVAL AND SALVAGE	1	EACH
37	L-109	L-109-7.3	CONSTANT CURRENT REGULATOR 10kW, 3-STEP, 6.6A, 480V, L-829	1	EACH
38	L-110	L-110-5.1	PROPSED 4-WAY, 4-INCH SCH. 40 PVC, CONCRETE ENCASED DUCTBANK	2,100	LF
39	L-110	L-110-5.2	1-WAY, 2-INCH, SCH. 40 PVC, CONDUIT DIRECT BURIED	4,500	LF
40	L-115	L-115-5.1	4' X 4' CONCRETE MANHOLE	14	EACH
41	L-125	L-125-5.1	L-861T(L) ELEVATED TAXIWAY EDGE LIGHT AND BASE CAN, INCLUDING ISOLATION TRANSFORMER AND CONNECTIONS	57	EACH
42	L-125	L-125-5.2	L-861 ELEVATED TAXIWAY EDGE LIGHT ON NEW BASE CAN, INCLUDING ISOLATION TRANSFORMED AND CONNECTIONS. LABOR ONLY, FIXTURES PROVIDED BY AIRPORT	14	EACH
43	L-126	L-126-5.1	MAINTENANCE OF AIRPORT LIGHTING SYSTEM SYSTEMS, INCLUDING TEMPORARY CONNECTIONS/JUMPERS AND POWER/CONTROLS, AS NEEDED	1	LS
			Add On No.1		
1		MDOT 501	HOT MIX ASPAHLT, 4EML	320	TON

A1 QUANTITIES FOR CANVASS OF BIDS

SCALE: NOT TO SCALE

ALIGNMENT NAME	STATION	NORTHING	EASTING
TW F	0+20.4	508664.07	12813558.76
TW J	2+52.08		

ALIGNMENT NAME	STATION	NORTHING	EASTING
TW F	3+53.07	508334.55	12813604.42
TW G	0+17.5		

ALIGNMENT NAME	STATION	NORTHING	EASTING
TW F	20+31.33	506672.17	12813834.78
TW V	3+23.58		

ALIGNMENT NAME	STATION	NORTHING	EASTING
TW B	0+37.42	508377.32	12813913.07
TW G	3+29.1		

ALIGNMENT NAME	STATION	NORTHING	EASTING
TW F	7+15.85	507975.20	12813654.22
TW NJ	0+17.5		

C3 EQUALIZATION TABLE

SCALE: NOT TO SCALE

CONTROL				
POINT	NORTHING	EASTNG	ELEVATION	DESCRIPTION
100	507319.640	12813331.570	784.859	1/2" x 18" REBAR WITH RED FISHBECK CONTROL POINT CAP, IN GRASSY AREA, 90 FEET NORTHEAST OF NORTHEAST CORNER OF ARFF BUILDING
105	506751.443	12813780.292	783.419	1/2" x 18" REBAR WITH RED FISHBECK CONTROL POINT CAP, NW QUADRANT OF TAXIWAYS F AND V
106	506812.022	12813894.318	782.495	1/2" x 18" REBAR WITH RED FISHBECK CONTROL POINT CAP, NE QUADRANT OF TAXIWAYS F AND V
107	507216.126	12813722.218	781.676	1/2" x 18" REBAR WITH RED FISHBECK CONTROL POINT CAP, SW QUADRANT OF TAXIWAY F AND DRIVE TO ARFF STATION
108	507330.732	12813782.902	781.627	1/2" x 18" REBAR WITH RED FISHBECK CONTROL POINT CAP, NE QUADRANT OF TAXIWAY F AND DRIVE TO ARFF STATION
109	507757.114	12813651.500	781.731	1/2" X 18" REBAR WITH RED FISHBECK CONTROL POINT CAP, WEST SIDE OF TAXIWAY F, SOUTH OF DRIVE TO NORTHERN JET BUILDING
110	507846.848	12813706.178	781.774	1/2" X 18" REBAR WITH RED FISHBECK CONTROL POINT CAP, EAST SIDE OF TAXIWAY F, SOUTH OF DRIVE TO NORTHERN JET BUILDING
111	508218.496	12813586.681	781.731	1/2" X 18" REBAR WITH RED FISHBECK CONTROL POINT CAP, WEST SIDE OF TAXIWAY F, SOUTH OF TAXIWAY G
112	508281.510	12813653.156	781.558	1/2" X 18" REBAR WITH RED FISHBECK CONTROL POINT CAP, SE QUADRANT OF TAXIWAY F AND TAXIWAY G
113	508602.471	12813525.361	782.868	1/2" X 18" REBAR WITH RED FISHBECK CONTROL POINT CAP, SW QUADRANT OF TAXIWAY F AND TAXIWAY J
114	508706.684	12813635.143	783.109	1/2" X 18" REBAR WITH RED FISHBECK CONTROL POINT CAP, NORTH SIDE OF TAXIWAY J, EAST OF TAXIWAY F
115	508447.722	12813971.066	780.368	1/2" X 18" REBAR WITH RED FISHBECK CONTROL POINT CAP, NORTH SIDE OF TAXIWAY G TO TAXIWAY B5 AREA
202	507267.184	12813330.860	787.536	NORTHERLY FLANGE BOLT ON HYDRANT, 60 FEET EAST OF NORTHEAST CORNER OF ARFF BUILDING
203	506811.338	12813845.188	782.433	MAIL NAIL IN NORTHWEST CORNER OF CONRETE PAD FOR F-V SIGN, NE QUADRANT OF TAXIWAYS F AND V
204	508267.209	12813583.958	781.820	MAIL NAIL IN SOUTHEAST CORNER OF CONRETE PAD FOR F-G SIGN, WEST SIDE OF TAXIWAY F, NORTH OF NORTHERN JET TAXIWAY

A3 SURVEY CONTROL TABLE

SCALE: NOT TO SCALE

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STATE OF MICHIGAN KELLY JOST 6201056345 LICENSED PROFESSIONAL ENGINEER

GERALD R. FORD International Airport

TAXIWAY F & G RECONSTRUCTION (NORTH OF TAXIWAY V, 1,950' X 35'); TAXIWAY F & G AIRFIELD LIGHTING REPLACEMENT
GERALD R. FORD INTERNATIONAL AIRPORT GRAND RAPIDS, MI

MARK	DATE	DESCRIPTION
1	4/15/2026	ADDENDUM NO.1

REVISIONS

PROJECT NO:	K19.031.001 & K19.031.002
DATE:	MARCH 2026
DRAWN BY:	B. BUCKINGHAM
DESIGNED BY:	T.J. CORCORAN
CHECKED BY:	K.J. JOST

CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.

QUANTITIES FOR CANVASS OF BID, SURVEY CONTROL TABLE, ALIGNMENT TABLE, AND EQUALIZATION TABLE

GI004

SHEET NO. 4 OF 65

Apr 16, 2026 - 1:48pm
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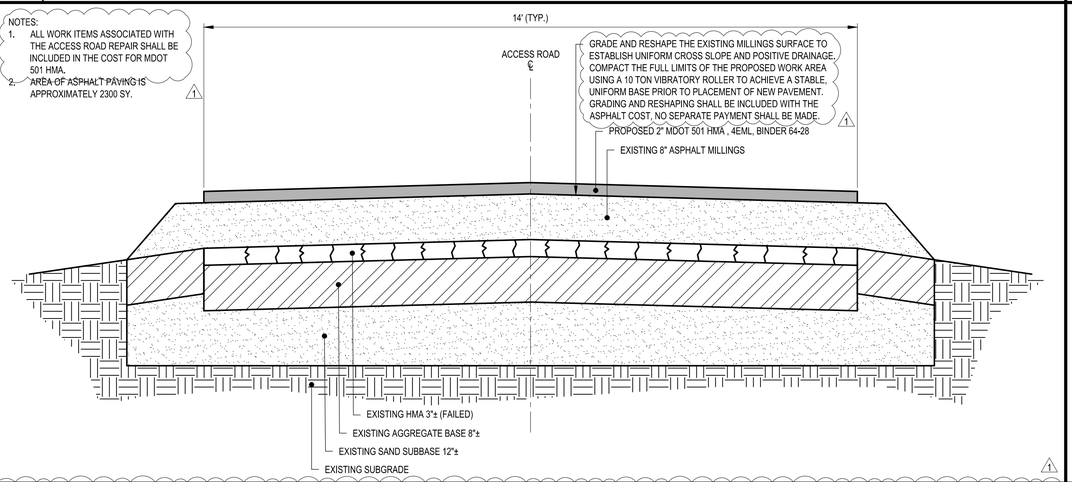
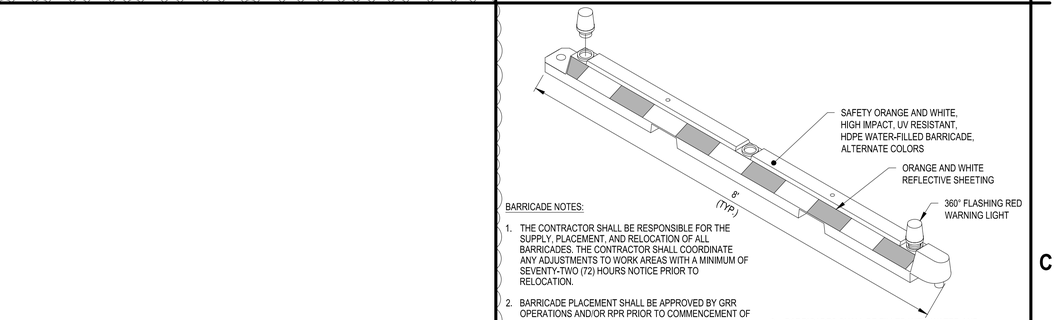
WORK AREA							
POINT NO.	DESCRIPITION	NORTHING	EASTING	LATITUDE	LONGTITUDE	ELEV. (FT.)	MAX HEIGHT
1	WORK AREA	508,701.71	12,813,829.94	N42° 53' 24.24"	W85° 31' 18.39"	782.00	25 FEET
2	WORK AREA	508,602.64	12,813,843.68	N42° 53' 23.27"	W85° 31' 18.19"	780.00	25 FEET
3	WORK AREA	508,637.52	12,813,367.61	N42° 53' 23.55"	W85° 31' 24.59"	784.39	25 FEET
4	WORK AREA	508,538.51	12,813,381.34	N42° 53' 22.57"	W85° 31' 24.39"	782.91	25 FEET
5	WORK AREA	508,602.64	12,813,843.68	N42° 53' 23.27"	W85° 31' 18.19"	780.00	25 FEET
6	WORK AREA	508,285.85	12,813,887.84	N42° 53' 20.14"	W85° 31' 17.53"	780.93	25 FEET
7	WORK AREA	507,318.16	12,813,939.46	N42° 53' 10.59"	W85° 31' 16.66"	781.00	25 FEET
8	WORK AREA	506,573.40	12,813,935.19	N42° 53' 03.23"	W85° 31' 16.58"	785.00	25 FEET
9	WORK AREA	506,537.63	12,813,678.51	N42° 53' 02.85"	W85° 31' 20.02"	785.00	25 FEET
10	WORK AREA	508,103.40	12,812,638.14	N42° 53' 18.17"	W85° 31' 34.29"	786.00	25 FEET
11	WORK AREA	508,307.19	12,812,610.01	N42° 53' 20.18"	W85° 31' 34.70"	787.00	25 FEET
12	WORK AREA	508,541.21	12,813,400.95	N42° 53' 22.60"	W85° 31' 24.12"	782.35	25 FEET
13	WORK AREA	506,548.73	12,813,757.95	N42° 53' 02.97"	W85° 31' 18.96"	785.00	25 FEET
14	WORK AREA	505,601.86	12,813,889.59	N42° 52' 53.63"	W85° 31' 17.02"	788.00	25 FEET
15	WORK AREA	505,438.22	12,813,793.10	N42° 52' 52.00"	W85° 31' 18.28"	788.00	25 FEET
16	WORK AREA	505,204.00	12,811,774.14	N42° 52' 49.41"	W85° 31' 45.36"	784.00	25 FEET
17	WORK AREA	506,522.11	12,811,743.80	N42° 53' 02.43"	W85° 31' 46.01"	785.00	25 FEET
18	STAGING	507,704.33	12,813,085.69	N42° 53' 14.29"	W85° 31' 28.20"	785.00	25 FEET
19	STAGING	507,575.56	12,813,103.58	N42° 53' 13.02"	W85° 31' 27.94"	785.00	25 FEET
20	STAGING	507,564.55	12,813,024.35	N42° 53' 12.90"	W85° 31' 29.00"	785.00	25 FEET
21	STAGING	507,676.09	12,812,953.07	N42° 53' 13.99"	W85° 31' 29.98"	785.00	25 FEET
22	BATCH PLANT	509,798.22	12,809,226.00	N42° 53' 34.44"	W85° 32' 20.44"	791.00	80 FEET
23	BATCH PLANT	509,848.99	12,808,868.42	N42° 53' 34.90"	W85° 32' 25.25"	791.00	80 FEET
24	BATCH PLANT	510,264.43	12,808,863.10	N42° 53' 39.00"	W85° 32' 25.40"	791.00	80 FEET
25	BATCH PLANT	510,264.10	12,809,161.29	N42° 53' 39.04"	W85° 32' 21.39"	791.00	80 FEET
26	SPOILS	509,423.99	12,815,029.52	N42° 53' 31.54"	W85° 31' 02.41"	770.00	25 FEET
27	SPOILS	509,796.35	12,815,245.19	N42° 53' 35.25"	W85° 30' 59.58"	770.00	25 FEET
28	SPOILS	509,835.24	12,815,516.52	N42° 53' 35.67"	W85° 30' 55.94"	770.00	25 FEET
29	SPOILS	509,331.74	12,815,659.54	N42° 53' 30.71"	W85° 30' 53.93"	770.00	25 FEET

A1 WORK AREAS - POINT TABLES (AIRSPACE CASE)
SCALE: NOT TO SCALE



A1 TYPICAL PERIMETER ROAD PAVEMENT SECTION (ADD ON NO.1)
SCALE: NOT TO SCALE



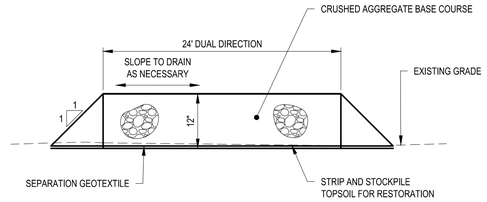
BARRICADE NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SUPPLY, PLACEMENT, AND RELOCATION OF ALL BARRICADES. THE CONTRACTOR SHALL COORDINATE ANY ADJUSTMENTS TO WORK AREAS WITH A MINIMUM OF SEVENTY-TWO (72) HOURS NOTICE PRIOR TO RELOCATION.
2. BARRICADE PLACEMENT SHALL BE APPROVED BY GRR OPERATIONS AND/OR RPR PRIOR TO COMMENCEMENT OF WORK IN THE AREA.
3. BARRICADES SHALL BE 6' X 8' AIRPORT LOW PROFILE BARRICADE AS MANUFACTURED BY NEUBERT AERO CORP., OR 10' X 8' RRM LOW PROFILE AIRPORT BARRIER AS MANUFACTURED BY SHERWIN INDUSTRIES, INC., OR APPROVED EQUAL.
4. BARRICADES SHALL EXTEND TO EDGES OF PAVEMENT UNLESS OTHERWISE SHOWN. EXACT LOCATIONS SHALL BE DETERMINED DURING CONSTRUCTION.
5. COORDINATE ARFF ACCESS WITH AIRPORT OPERATIONS.
6. BARRICADES SHALL BE FILLED WITH WATER AND INTERLOCKED WITH EACH OTHER. BARRICADES WHICH HAVE TO BE MOVED DAILY MAY BE ANCHORED TO THE PAVEMENT BY AN ALTERNATE METHOD APPROVED BY AIRPORT OPERATIONS OR THE RPR.
7. IN AREAS OF JET BLAST, USE METAL STRAPS AND EXPANSION ANCHORS OR OTHER METHOD APPROVED BY RPR TO SECURE BARRICADES TO THE PAVEMENT.
8. WARNING LIGHTS SHALL BE ATTACHED TO EACH BARRICADE.
9. ALL COSTS ASSOCIATED WITH THIS ITEM SHALL BE INCLUDED IN ITEM CX-106.

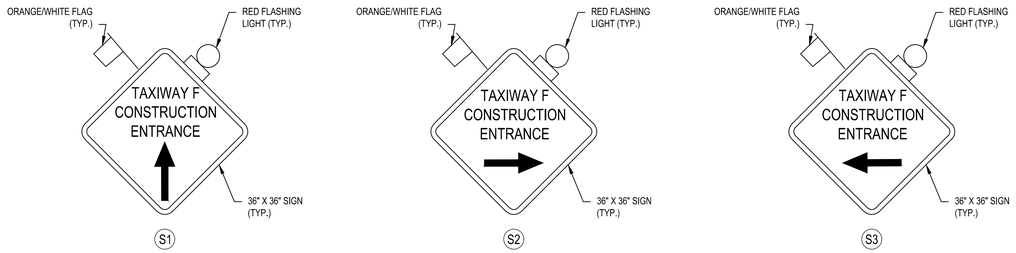
C4 INTERLOCKING AIRFIELD BARRICADE DETAIL
SCALE: NOT TO SCALE

NOTE:

1. PAYMENT FOR ALL MATERIALS, LABOR AND EQUIPMENT USED TO CONSTRUCT THE HAUL ROAD SHALL BE INCLUDED IN ITEM CX-106.
2. THE ROAD SHALL BE REMOVED AND THE SURFACE GRADED AND RESTORED TO ORIGINAL CONDITION AFTER CONSTRUCTION. SITE RESTORATION SHALL INCLUDE REMOVAL OF GRANULAR MATERIALS, GEOTEXTILE, TOPSOIL REPLACEMENT AND SEEDING AND MULCHING. NO ADDITIONAL PAYMENT SHALL BE MADE FOR ROAD REMOVAL AND RESTORATION.
3. THE CONTRACTOR MAY, AT ITS DISCRETION AND WITH APPROVAL FROM THE RPR, CONSTRUCT ADDITIONAL WIDTH; HOWEVER NO ADDITIONAL COMPENSATION WILL BE PROVIDED FOR ANY WIDTH EXCEEDING 24 FEET.



B3 TEMPORARY HAUL ROAD DETAIL
SCALE: NOT TO SCALE



NOTES:

1. ALL COSTS RELATING TO CONSTRUCTION TRAFFIC SIGNAGE ARE INCIDENTAL TO ITEM CX-106, SAFETY, SECURITY AND MAINTENANCE OF TRAFFIC.
2. SIGN TO INCLUDE UNIQUE IDENTIFIER TO RECONSTRUCTION OF TAXIWAY D PROJECT (PROJECT TIMELINE ANTICIPATED TO OVERLAP WITH THAT OF OTHER PROJECTS).
3. SIGN LETTERS ARE TO BE BLACK, MINIMUM HEIGHT OF 3", AND BE A BOLD LETTERING STYLE.
4. SIGN MUST BE LOCATED HIGH ENOUGH TO ALLOW EASY VIEWING FROM ALL CONSTRUCTION VEHICLES ENTERING THE CONSTRUCTION SITE.
5. THE CONTRACTOR MUST COORDINATE THE EXACT PLACEMENT AND LOCATION OF ALL CONSTRUCTION TRAFFIC SIGNS WITH THE ENGINEER AND AIRPORT OPERATIONS.
6. SIGN MOUNTING PER MDOT STANDARD SPECIFICATIONS.
7. ARROW DIRECTIONS ON SIGNS WILL VARY.

A3 CONSTRUCTION SIGN DETAIL
SCALE: NOT TO SCALE

C&S Engineers, Inc.
38777 Six Mile Road, Suite 202
Livonia, Michigan 48152
Phone: 734-953-2571
Fax: 734-206-7973
www.cscos.com

STATE OF MICHIGAN KELLY JOST 6201056345 LICENSED PROFESSIONAL ENGINEER

GERALD R. FORD International Airport

TAXIWAY F & G RECONSTRUCTION (NORTH OF TAXIWAY V, 1,950' X 35'); TAXIWAY F & G AIRFIELD LIGHTING REPLACEMENT
GERALD R. FORD INTERNATIONAL AIRPORT GRAND RAPIDS, MI

MARK	DATE	DESCRIPTION
1	4/15/2026	ADDENDUM NO.1

REVISIONS

PROJECT NO:	K19.031.001 & K19.031.002
DATE:	MARCH 2026
DRAWN BY:	L.A. WASHINGTON
DESIGNED BY:	T.J. CORCORAN
CHECKED BY:	K.J. JOST

CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.

CONSTRUCTION SAFETY AND PHASING DETAILS

GC501

SHEET NO. 15 OF 65

Apr 16, 2026 - 2:29pm
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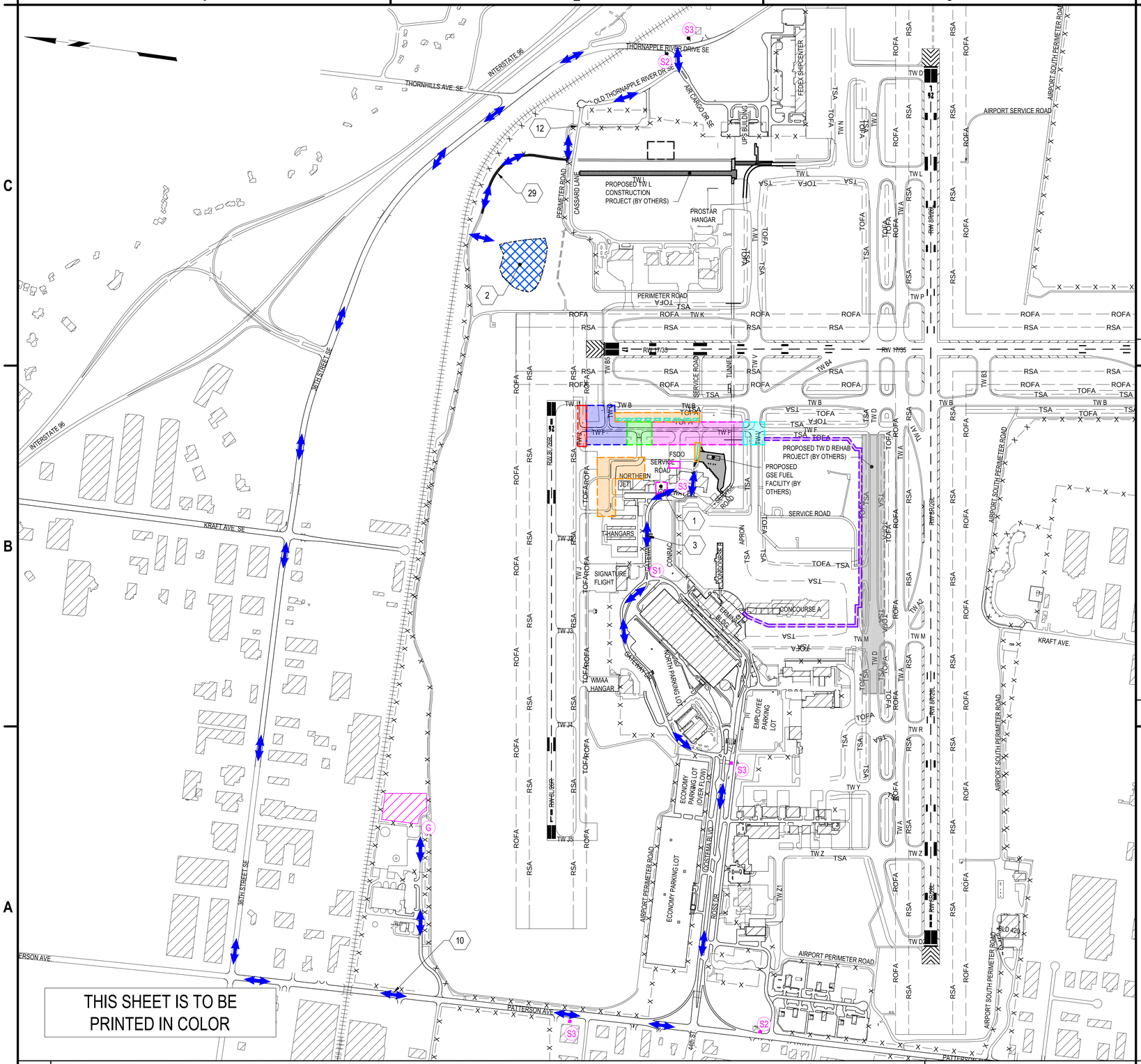

THIS SHEET IS TO BE PRINTED IN COLOR

A1 CONSTRUCTION SAFETY AND PHASING PLAN - SPOILS AND BATCH PLANT ACCESS

SCALE: 1" = 600'

600' 0 600 1200FT.

1. THE CONTRACTOR SHALL GRADE THE SPOILS AREA TO DRAIN AS APPROVED BY THE RPR. EQUIPMENT WITHIN THE SPOILS AREA MAY NOT EXCEED 25 FEET IN HEIGHT.
2. THE CONTRACTOR SHALL TOPSOIL AND HYDROSEED THE SPOILS AREA PER SPECIFICATION C-102, INCIDENTAL TO THE CONTRACT.
3. THE CONTRACTOR SHALL PROVIDE A SWEEPER TRUCK TO SWEEP HAUL ROUTES AND WORK SITE PAVEMENTS CLEAN OF DUST, STONES AND DEBRIS AT ALL TIMES.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE, SWEEPING AND DUST CONTROL OF THE HAUL ROUTE ORIGINATING AT THE PROJECT SITE UP-TO AND INCLUDING GATEWAY DRIVE, PATTERSON AVENUE, THORNAPPLE ROAD AND THE ACCESS ROAD TO THE SPOILS AREA LIMITS. THE CONTRACTOR SHALL PROVIDE SWEEPING AND DUST CONTROL ON HAUL ROUTES AND SPOILS AREA AS DIRECTED BY THE RPR.

C4 SPOILS AREA GENERAL NOTES

SCALE: NOT TO SCALE

CONTRACTOR'S HAUL ROUTES

XX TEMPORARY CONSTRUCTION SIGN AND ID, ITEM CX-106, SEE DETAIL A3/GC501.

SPOILS AREA

BATCH PLANT AREA

B4 LEGEND

SCALE: NOT TO SCALE

1. CONTRACTOR STAGING AREA AND FIELD OFFICE LOCATION.
2. CONTRACTOR SPOILS AREA, FINAL SPOILS LOCATION TO BE APPROVED BY THE RPR. THE GSE FUEL FARM PROJECT WILL ALSO SHARE THE SPOILS AREA. CONTRACTOR SHALL COORDINATE WITH THE CONTRACTOR ON THE CONCURRENT GSE FUEL FARM PROJECT. (MAXIMUM ALLOWABLE HEIGHT IN SPOILS AREA SHALL BE 25').
3. CONTRACTOR ACCESS ROUTE TO WORK AREA (TYP.)
10. CONTRACTOR ACCESS ROUTE TO AND FROM SPOILS AREA (TYP.).
12. AOA ACCESS POINT TO SPOILS AREA THROUGH EXISTING BADGE READER GATE 80. CONTRACTOR SHALL COORDINATE GATE GUARD SECURITY WITH ONGOING CONSTRUCTION EFFORTS FROM OTHER PROJECTS AT THE AIRPORT. COST SHALL BE INCLUDED IN THE CX-106 SAFETY AND SECURITY.
29. EXISTING ASPHALT ROADWAY SHALL BE REPAIRED FOLLOWING COMPLETION OF SPOILING AND HAULING OPERATIONS. THE EXISTING PAVEMENT HAS FAILED AND HAS BEEN BACKFILLED WITH APPROXIMATELY 8 INCHES OF ASPHALT MILLINGS TO MAINTAIN STRUCTURAL INTEGRITY. SEE DETAIL A1/GC501. (ADD ON NO.1) △1

A4 KEYED NOTES

SCALE: NOT TO SCALE

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38777 Six Mile Road, Suite 202
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STATE OF MICHIGAN KELLY J. JOST 6201056345 LICENSED PROFESSIONAL ENGINEER

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TAXIWAY F & G RECONSTRUCTION (NORTH OF TAXIWAY V, 1,950' X 35'); TAXIWAY F & G AIRFIELD LIGHTING REPLACEMENT
GERALD R. FORD INTERNATIONAL AIRPORT GRAND RAPIDS, MI

MARK	DATE	DESCRIPTION
△1	4/15/2026	ADDENDUM NO.1

REVISIONS

PROJECT NO:	K19.031.001 & K19.031.002
DATE:	MARCH 2026
DRAWN BY:	B. BUCKINGHAM
DESIGNED BY:	T.J. CORCORAN
CHECKED BY:	K.J. JOST

CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.

CONSTRUCTION SAFETY AND PHASING PLAN - SPOILS AND BATCH PLANT ACCESS

GC200

SHEET NO. 14 OF 65

Apr 14, 2026 - 5:10pm
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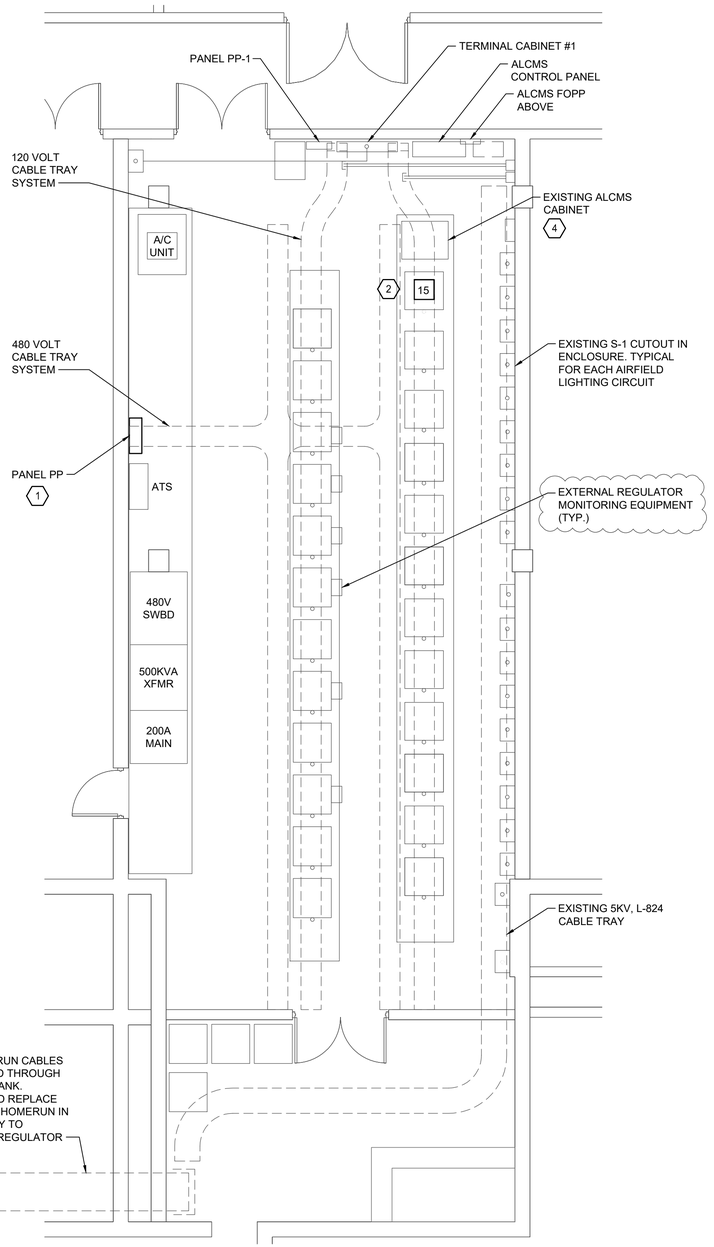


1 E201 **AIRFIELD LIGHTING ELECTRICAL VAULT PROPOSED PLAN**

SCALE:N.T.S

PROPOSED REGULATOR SCHEDULE

CIRCUIT #	CIRCUIT NAME	RATINGS	NOTES
15	TWY F&G	10KW, 3-STEP, 6.6A, 480V, L-829	1 3

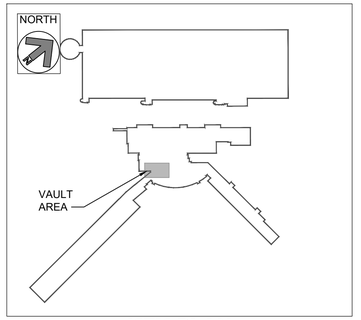
1

EXISTING PANEL "PP" SCHEDULE

DESIGNATION: PANEL "PP"
LOCATION: BLDG 100, ROOM 028
VOLTAGE: 480/277 VOLTS
PHASE: 3 PHASE, 4 WIRE

MAIN: 500 AMP MAIN CIRCUIT BREAKER
BUS RATING: 600 AMP
PANEL MOUNTING: SURFACE
AIC RATING: 18 KAIC

CKT. NO.	LOAD DESCRIPTION	KVA	CKT. BKR. AMPS	POLE	KVA A	KVA B	KVA C	CKT. BKR. AMPS	POLE	KVA	LOAD DESCRIPTION	CKT. NO.
1	CKT. 4 RUNWAY 8R-26L	16.62	80	2	33.24			80	2	16.62	CKT. 5 RUNWAY 8R-26L RGLS	2
3	CKT. 4 RUNWAY 8R-26L	16.62	80			33.24		80		16.62	CKT. 5 RUNWAY 8R-26L RGLS	4
5	CKT. 19 BACK-UP 30KW CCR	16.62	80	2			33.24	80	2	16.62	CKT. 6 RUNWAY 17-35	6
7	CKT. 19 BACK-UP 30KW CCR	16.62	80		33.24			80		16.62	CKT. 6 RUNWAY 17-35	8
9	CKT. 7 RUNWAY 17-35 RGLS	16.62	80	2		29.27		40	2	12.65	CKT. 17 TAXIWAY D-CENTER	10
11	CKT. 7 RUNWAY 17-35 RGLS	16.62	80				29.27	40		12.65	CKT. 17 TAXIWAY D-CENTER	12
13	CKT. 16 TAXIWAY D-EAST	13.1	40	2	27.91			60	2	14.81	CKT. 12 TAXIWAY D-WEST	14
15	CKT. 16 TAXIWAY D-EAST	13.1	40			27.91		60		14.81	CKT. 12 TAXIWAY D-WEST	16
17	CKT. 3 TAXIWAY A-WEST	8.86	40	2			17.72	40	2	8.86	CKT. 1 TAXIWAY A-CENTER	18
19	CKT. 3 TAXIWAY A-WEST	8.86	40		17.72			40		8.86	CKT. 1 TAXIWAY A-CENTER	20
21	CKT. 2 TAXIWAY A-EAST	8.86	40	2		13.29		20	2	4.43	SPARE	22
23	CKT. 2 TAXIWAY A-EAST	8.86	40				13.29	20		4.43	SPARE	24
25	CKT. 18 TAXIWAY B-NORTH	4.43	20	2	13.29			40	2	8.86	CKT. 14 TAXIWAY B-SOUTH	26
27	CKT. 18 TAXIWAY B-NORTH	4.43	20			13.29		40		8.86	CKT. 14 TAXIWAY B-SOUTH	28
29	CKT. 8 TAXIWAY K	8.86	40	2			17.72	40	2	8.86	CKT. 9 TAXIWAY V & B	30
31	CKT. 8 TAXIWAY K	8.86	40		17.72			40		8.86	CKT. 9 TAXIWAY V & B	32
33	**CKT. 15 TAXIWAY F & G**	**8.86**	**40**	**2**		17.72		40	2	8.86	SPARE	34
35	**CKT. 15 TAXIWAY F & G**	**8.86**	**40**				17.72	40		8.86	SPARE	36
37	NB WME ASOS	4.43	20	1	8.86			20	2	4.43	TOWER PANEL	38
39	NB WME ASOS	4.43	20	1		8.86		20		4.43	TOWER PANEL	40
41	CKT. 10 TAXIWAY A-1	4.43	20	1			8.86	20	2	4.43	CKT. 22 TAXIWAY B-4	42
43	CKT. 10 TAXIWAY A-1	4.43	20	1	8.86			20		4.43	CKT. 22 TAXIWAY B-4	44
45	CKT. 11 TAXIWAY A-2	4.43	20	1		11.07		30	2	6.64	CKT. 25 TAXIWAY V-EAST, L, N	46
47	CKT. 11 TAXIWAY A-2	4.43	20	1			11.07	30		6.64	CKT. 25 TAXIWAY V-EAST, L, N	48
49					0.00							50
51						0.00						52
53							0.00					54
55					0.00							56
57						0.00						58
59							0.00					60
TOTAL CONNECTED LOAD:					160.84	154.65	148.89	TOTAL = 464.38				



KEY PLAN

GENERAL NOTES:

1. EXISTING CONSTANT CURRENT REGULATOR BEING REPLACED SHALL BE RELOCATED AS SHOWN ON THE PLANS. EXACT LOCATION TO BE CONFIRMED WITH THE AIRPORT. REMOVAL AND REPLACEMENT SHALL BE DONE AT THE SAME TIME TO MINIMIZE DOWN TIME AND ONLY AFTER AIRFIELD CIRCUIT HAS BEEN COMPLETELY REPLACED, TESTED, MEGGERED, AND ACCEPTED BY AIRPORT AND ENGINEER.
2. CONTRACTOR SHALL FOLLOW ALL AIRPORT LOCK-OUT-TAG-OUT PROCEDURES WHILE WORKING IN THE AIRFIELD LIGHTING ELECTRICAL VAULT.
3. ANY DOWN TIME FOR AIRFIELD CIRCUITS SHALL BE APPROVED IN ADVANCE, IN WRITING, AND SHALL BE COMPLETED WITHIN A SINGLE TIME PERIOD, WHICH SHALL BE ESTIMATED BY THE CONTRACTOR AND APPROVED BY THE AIRPORT AND ENGINEER.

KEYED NOTES:

1. REPLACE EXISTING 2-POLE CIRCUIT BREAKER FOR TAXIWAY CIRCUIT 15 WITH NEW 40A, 2-POLE CIRCUIT BREAKER (EVEN IF SAME SIZE). REPLACE WIRING BETWEEN PANEL "PP" TO NEW CCR WITH 2#8 THWN, 1#10G IN EXISTING CONDUITS (EVEN IF SAME SIZE). EXTEND CONDUITS (RIGID AND FLEXIBLE) AS NEEDED FOR INSTALLATION OF NEW CCR. REPLACE GROUND WIRE BETWEEN CCR AND GROUND BUS TO MATCH EXISTING.
2. PROPOSED CCR SHALL BE RATED 10KW, 480V, 3-STEP, L-829. PROPOSED CCR SHALL BE COMPATIBLE WITH THE EXISTING ALCMS AND SHALL BE CONFIGURED TO PROVIDE INPUT AND OUTPUT INFORMATION TO THE EXISTING ALCMS FOR ALL CONTROL AND MONITORING CAPABILITIES. CONTRACTOR SHALL ALSO CONFIGURE THE PROPOSED CCR AND EXISTING ALCMS AS NEEDED TO PROVIDE COMPLETE CONTROL AND MONITORING CAPABILITIES. CONTRACTOR SHALL REESTABLISH PRIMARY POWER, CONTROLS AND 5KV "HOMERUN" COMPLETE AND OPERATIONAL. ANY ITEMS REQUIRED FOR REPLACEMENT SHALL BE PROVIDED. TRANSFER NAMEPLATES FROM OLD CCR TO NEW CCR. NEW CCR SHALL BE COMPLETELY COMPATIBLE WITH EXISTING ALCMS AND SHALL MATCH ALL EXISTING CONTROLS, TESTING AND MONITORING CAPABILITIES. REPROGRAM NEW CCR WITH EXISTING ALCMS, AS NEEDED.
3. EXISTING CONTROL WIRING AND CONDUITS SHALL BE REUSED AND EXTENDED, AS NEEDED, TO ACCOMMODATE NEW CCR CONNECTION POINTS.

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GERALD R FORD International Airport

TAXIWAY F&G RECONSTRUCTION (NORTH OF TAXIWAY V, 1,950' X 36'); TAXIWAY F&G AIRFIELD LIGHTING REPLACEMENT
GERALD R. FORD INTERNATIONAL AIRPORT GRAND RAPIDS, MI

MARK	DATE	DESCRIPTION
1	4/15/2026	ADDENDUM NO.1

REVISIONS

PROJECT NO:	K19.031.001
DATE:	MARCH 2026
DRAWN BY:	A. ALZAMLI
DESIGNED BY:	A. RAHMAN
CHECKED BY:	E. ESSOF

AIRFIELD LIGHTING VAULT PROPOSED PLAN

E202

SHEET NO. 56 OF 64