OCTOBER 9, 2018

ADDENDUM NO.2

For

CHICAGO O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 CONCOURSE M EXTENSION SITE/CIVIL PACKAGE

SPECIFICATION NO. 766477

For which Bids were scheduled to be opened in the office of the Chief Procurement Officer, Department of Procurement Services, Room 103, City Hall, 121 N. LaSalle Street, Chicago, IL 60602 on **October 10, 2018 at 11:00 a.m., Central Time.**

The following changes and/or revisions are incorporated into the Contract Documents as noted. All other provisions and requirements as originally set forth, except as amended by previous addenda, remain in force and are binding. Any additional work required by this Addendum must conform to the applicable provisions of the original Contract Documents.

In accordance with Paragraph 13 of the "Requirements for Bidding and Instructions for Bidders" in Part One of Three of the Specifications, the deadline for questions has passed. No additional questions will be answered prior to bid opening except as the Chief Procurement Officer, in her sole discretion, deems to be in the best interest of the City.

UPON SUBMITTING THE BID, THE BIDDER MUST ACKNOWLEDGE RECEIPT OF THE ADDENDUM IN THE APPROPRIATE PLACE AT THE TOP OF THE SIGNATURE PAGE OF THE PROPOSAL FORM.

Revisions to Contract Documents
Notice of Additions/Revisions

BID OPENING HAS BEEN POSTPONED TO OCTOBER 19, 2018

1.	The Bid Opening Date has been postponed to October 19, 2018. For which Bids are due in the Department of Procurement Services, Bid & Bond Room, Room 103, City Hall, 121 N. LaSalle Street, Chicago, Illinois, 60602, at 11:00 a.m., Central Time.

PART ONE OF THREE	
Bid Package Contents	Updated Bid Package Contents per Addendum No. 2.
S4-5	Phasing Chart Area F modified to 60 days
S4-6	Area A Milestone 4 Duration changed to 285 Days
S4-7	Area D is not available until August 1, 2019
S4-8	Area F Phasing modified to one 60-day phase
S4-9	Area K 12.C modified to indicate permanent tie-in date of storm sewer
S4-11	Phase 5 is modified to 60 days.
PART THREE OF THREE	
TOC Vol IIIA	Updated by adding a new Specification 10810

TOC Vol IIIB	Updated by adding a new Specification Section 16742
02245	Revised Specification Section 6.01.B to indicate that removal and disposal of deleterious materials will be off Airport property and to clarify payment terms regarding CA-1 byproduct. Revised Specification Section 6.01.C to indicate that removal and disposal of deleterious materials will be off Airport property.
03600	Revised Specification Section 1.01.A to indicate that design, detailing, and construction of Retaining Wall 2 must be coordinated with the jet blast protection fence foundation. Revised Specification Section 1.03 to change Department to Commissioner. Revised Specification Section 2.01.A to include specifications for MSE wall materials. Revised Specification Section 2.01.B to clarify loading requirements for the retaining wall design.
09900	Revised Section 3.07.C.10 to include Epoxy Finish
***10810**	**Added a new Specification Section 10810**
13128	• Removed Specification Section 1.01.D and re-numbered subsequent Sections. • Removed Specification Section 1.03.C. • Revised Specification Section 1.04.B.1 to clarify the stamping and sealing requirements for shop drawings. • Revised Specification Sections 1.05.F and 2.02.J to remove the bullet resistance requirements for glazing and add requirement for insulated safety glass. • Removed Specification Sections 2.03.D.6 and 2.03.D.7 and re-numbered subsequent Sections. • Removed Sections 2.03.O, 2.03.P, and 2.03.Q and re-numbered subsequent Sections. • Revised Section 2.04.E.3.c to remove the dimensional requirements from the specification. Modified formatting of Parts 4 and 5 to match the remainder of the specification.
***16742**	**Added a new Specification Section 16742**
P-154	Revised Section 5.01.B to remove furnishing of crushed recycled concrete from the basis of payment.
X-100	• Revised Specification Section 4.01.D to add the removal of concrete backfill and provision and installation of blank plates to the method of measurement. • Revised Specification Section 5.01.D to add blank plates to the basis of payment.

DRAWING SHEETS	
GI-102	LS-100 is not used and has been removed from the index.
GC-202	Modified the descriptions and durations for Work Areas D and F.
CP-102	Extended single face barrier wall 100 LF. Modified the existing transition between the new apron pavement and existing Spine Road pavement.
CP-202	Extended single face barrier wall 100 LF. Modified the existing transition between the new apron pavement and existing Spine Road pavement.
CP-212	Modified Doweled Construction Joint Details for Types C, E, and G to reflect the correct paving thicknesses.
CP-213	Removed the PCC Pavement Restoration detail.
CG-202	Modified the grading associated with the transition between new apron pavement and existing Spine Road pavement to reflect the revised transition and single face barrier wall extension.
CS-402	Modified the Type B fence limits to reflect the single face barrier wall extension.
S-101	Modified the Elevation View, Plan View, and Elevation Table to reflect the single face barrier wall extension.
ED-101	Modified Notes 3 and 4 to clarify pay item associated with hold pad perimeter light removals and adjustments.

ED-102	Modified Notes 3 and 4 to clarify pay item associated with hold pad perimeter light removals and adjustments.
ED-103	Removed 1 light pole adjustment along Balmoral Ave.
ED-104	Removed 2 light pole adjustments along Balmoral Ave. Modified the reconstruction of 2 electrical handholes along Balmoral Ave. to removal of the 2 handholes.
ED-105	Removed 3 light pole adjustments along Balmoral Ave. and modified the reconstruction of 2 electrical handholes along Balmoral Ave. to removal of the 2 handholes.
ED-106	Modified Notes 3 and 4 to clarify pay item associated with hold pad perimeter light removals and adjustments.
ED-107	Modified Notes 3 and 4 to clarify pay item associated with hold pad perimeter light removals and adjustments.
ES-201	Added additional conduit callouts and modified conduit schedule to clarify installation requirements under new pavement and existing pavements. Modified note for interior conduit installation to clarify that fueling contractor is responsible.
ES-204	Modified EHH-H2028.17-0190 and EHH-H2028.17-020 from reconstructed handholes to new handholes.
ES-205	Modified EHH-H2028.17-0190 and EHH-H2028.17-020 from reconstructed handholes to new handholes.
ES-502	Modified Pole-Mounted EFSO Station and Conduit Penetration Thru Terminal Building Exterior Wall Details to clarify delineation of work limits between Contractor and Fueling Contractor.
ES-503	Modified the Isolation Valve Pit for ISO-6 Detail to clarify delineation of work limits between Contractor and Fueling Contractor.
ES-602	Modified Electrical Handhole Schedule for EHH-H2028.17-0190 and EHH-H2028.17-020 to reflect change from reconstruction to new installation. Corrected the reference sheet detail for EHH-H2028.17-024.
A-102	Added note to clarify hierarchy between plan sheet and specification discrepancies for the prefabricated guard booth.
T-201	Modified call out to indicate required innerduct.
T-202	Modified call out to indicate required innerduct.
T-203	Modified call out to indicate required innerduct.
T-204	Modified call out to indicate required innerduct.
T-205	Modified call out to indicate required innerduct.

CLARIFICATIONS TO QUESTIONS

Question 1:	13128-1.03 Performance Requirements - Paragraph C. Bullet Resisting Construction – UL Level III. The drawings do not indicated bullet resisting construction and the previous projects eliminated the bullet resisting requirement. Will this booth be bullet resistant?
Response:	***Bullet resistance not required, storm resistance is required (wind loading). Use tinted glass.***
Question 2:	13128-1.04 Submittals - Paragraph B - Shop drawings Do the drawings require a PE or SE stamp? State of Illinois? Does the structural analysis require a PE or SE stamp? State of Illinois?
Response:	***Specification Section 13128-1.04 modified to include the requirements.***
Question 3:	13128-1.05 Quality Control Paragraph F. Safety Glass UL level III bullet resistant Glazing as specified or tinted insulated safety glass as shown on the drawing?
Response:	***Bullet resistance not required, storm resistance is required (wind loading). Use tinted glass.***

Question 4:	13128-2.03 Prefabricated Control Booths, General Paragraph D. Electric Power Service - Provide warning and barrier toggle switches with stainless steel JB and cover 1. This item is not specified as to model, number of switches, etc. There is nothing shown on the drawing regarding location or type of warning or barriers. a. Who supplies these items and what is specifically required?
Response:	***Everything related to control booth gate is installed by CDA forces.***
Question 5:	13128-2.03 Prefabricated Control Booths Paragraph O - Surface Mounted Signage There is nothing shown on the drawing as what is required – size or location. Please clarify. Paragraph P – Roof Mounted Signage There is nothing shown on the drawing as what is required – size or location. Please clarify. Paragraph Q – Side Mounted Signage Brackets There is nothing shown on the drawing as what is required – size or location. Please clarify.
Response:	***These paragraphs are not applicable and have been deleted from the Specification Section 13128-2.03; signage is not mounted to Guard Post building. See Drawing Sheets CP-305 and CP-506 for Guard Booth related signage and location.***
Question 6:	13128-2.04 Prefabricated Steel Control Booths Paragraph E Flat Roof/Ceiling Assembly 3 - Canopy Fascia C. 3' x 6' Canopy – nothing shown on the drawings. Is the canopy required?
Response:	***Drawing Sheet A-102 and Specification Section 13128 have been updated. The Specification Section 13128 will have hierarchy over plan Drawing Sheet A-102.***
Question 7:	No electrical drawing that pertains to the control booths have been found – does one exist?
Response:	***See Drawing Sheets E-102, ES-205, and ES-602***
Question 8:	There are discrepancies for the guard booths between specification 13128 and what is shown on A-102. Please clarify what is to be followed.
Response:	***The Specification Section 13128 has precedence over Drawing Sheet A-102. A note has been added to the Drawing Sheet A-102.***
Question 9:	The Moment Slab/Blast Fence Foundation for Retaining Wall #2 (Sheet CS-411 Section A-A) has a depth of 4'. The 5' wide lower section is approximately 6' from the back of wall panel. However, the minimum strap length for the MSE wall is 8'. This appears there will be a conflict. Note 1 on the drawing states the dimensions are for bidding purpose and the final dimensions will be determined by the contractor. Will there be an allowance, to cover potential additional costs for design and installation that may be beyond what is shown in the drawing?
Response:	***The foundation configuration concept portrayed beneath the proprietary blast fence on Drawing Sheet CS-411 is subject to change by the Contractor based on coordination with their selected blast fence and proprietary MSE wall suppliers. Specification Section F-165 Jet Blast Protection Fence includes provisions related to the design of the foundation, coordination with the MSE wall design, and pay items to compensate for these activities.***
Question 10:	Part 1 1.03 B.1 states system must consist of a sacrificial type Cathodic Protection system. Drawing CU-401 sheet 2 of 17 shows 2 rectifiers, 2 junction boxes and 2 deep anode ground beds. Please clarify.
Response:	***This work is to be done by the Fueling Contractor. Please note the "FOR REFERENCE ONLY WORK BY OTHERS".***
Question 11:	Section 03600, Part 3, 3.01 C – The select fill shall be defined as the material placed in the reinforced volume behind the wall panels. Please provide the gradation,

	physical properties and electrochemical requirements for the select fill.
Response:	***Intent is that design and construction of the retaining walls are in conformance with Illinois Department of Transportation Standard Specifications for Road and Bridge Construction Specification Section 522. This has been clarified by adding Specification Section 03600, Part 1, 1.02 C.***
Question 12:	Section 03600, Part 2, 2.01 B Second Paragraph – External Loads, such as those applied through structure foundations, from traffic or railroads, slope surcharge, etc. shall be accounted for in the internal stability design. What are the expected traffic loads? Is it 250 psf traffic surcharge or the aircraft loading. If it is aircraft loading, what is the expected aircraft loading, if any?
Response:	***The paragraph in question has been revised. Aircraft gravity loads are not anticipated within 100 feet of these walls. Traffic surcharge should be used.***
Question 13:	Can you please provide soil borings for the trunk line sewer, shown on pages CG-308?
Response:	***Soil Borings are in progress, and will not be provided prior to bid.***
Question 14:	The 84" and 60" augured sewer lines, as shown on CG-308-CG-314, go under runway 4R 22L. This will be a 24-hour operation, will the runway be closed, so that we can proceed with that work? Taxiway Y is shown to be closed for 45 days for the auger of that 84" pipe section.
Response:	***Runway 4R-22L must remain open. Operation to be completed at night only when runway is closed (under runway – CDA to provide runway width and will contact FAA for input).***
Question 15:	We are to install the 84" pipe, shown on CG-312 and 313, through an existing parking lot. The sewer run has a depth of approx. 20'. We are to install temporary barrier wall to keep people out of the work area. Will we be able to close that entire 1400' of parking lot or will this have to be done in stages? If we can't have the entire 1400' at once, as shown on the plans, how many feet will we have access to at one time?
Response:	***The work must be done in two phases (keeping approximately half of the spaces open in the 1400' bay).***
Question 16:	Per note 3 on CD-100 we are to remove the existing concrete pavement by saw cutting and removing in slabs. The other removal pages don't show this note. This site has a lot of concrete pavement to remove and this is a very costly and slow method of removal. Is this the entire site? Or only isolated phases and which phases require this?
Response:	***Yes, saw cut and remove in slabs. Notes 1 through 11 on Drawing Sheet CD-100 are applicable to Drawing Sheets CD-101 through CD-05.***
Question 17:	Sheets ED-103 and ED-104 show adjustment of light pole foundations. Please provide details for this work. Also, how is this work paid?
Response:	***All existing foundations will stay where they are. Drawing Sheets ED-103, ED-104, and ED-105 have been updated.***
Question 18:	Sheet ES-204 and the Handhole Schedule on Sheet ES-602 show reconstruction of (2) roadway handholes EHH H2028.17-019 and -020. Please provide details for this work. Also, how is this work paid?
Response:	***Roadway Handholes EHH H2028.17-019 and -020 have been changed to being demolished and replaced. Drawings Sheets ED-104, ED-105, ES-204, ES-205, and ES-602 have been updated.***
Question 19:	Sheet ES-202 shows a new ISO-6 valve pit. Sheet ES-503, provides the detail for this work. Note 2 states that all electrical and control systems are to be installed with the new T5 building expansion. Please clarify what work, if any, needs to be provided for this project. Also, how is this work paid?
Response:	***Contract separation notes have been added to Drawing Sheet ES-503 for clarity. All work to be paid under unit prices.***

Question 20:	Sheet ED-106, Note 3 – Please clarify how the adjustment of the hold pad perimeter lights is paid.
Response:	***Work is to be paid as part of the electrical demo. Notes have been added to Drawing Sheets ED-101, ED-102, ED-106, and ED-107. Specification X-100 has been updated with the description of work.***
Question 21:	The note on Sheet ES-502 states that all work on this sheet will be performed by the fueling contractor. Please confirm that this includes all foundations, above ground conduits, junction boxes, lighting, and equipment for the EFSO Stations, EFSO control cabinet, and work in the terminal building.
Response:	***Drawing Sheet ES-502 contains details for fuel work and is included in FUEL work by Fuel Contractor. Drawing Sheet ES-502 has been updated with separation of work notes.***
Question 22:	Spec Section 13128 Para 1.03C states that the prefabricated booth is to meet U.L. Level III standards for bullet resistance. Para 2.04D states the exterior walls are to be 12 gauge steel. Sheet A-102 shows 14 gauge exterior walls. Both 12 and 14 gauge steel are not Level III rated. Please clarify if a Level III booth is required.
Response:	***Bullet resistance not required, storm resistance is required (wind loading). Use tinted glass.***
Question 23:	Spec Section 13128 Para 2.02J This section states that all exterior glazing is to be bullet resistant laminated glass and must meet UL Level III standards. However, Sheet A-102 shows tinted safety glass. Please clarify. This section also states that a tinted film is required on all exterior glazing. Please note that a film typically voids the warranty on insulated and/or bullet resistant glass. Tinted glass can be offered in lieu of a film. Please clarify.
Response:	***Bullet resistance not required, storm resistance is required (wind loading). Use tinted glass.***
Question 24:	Item 148, L-110-10 Innerduct, 1.25" - Where is this innerduct installed?
Response:	***Three 1.25" innerducts are required to be installed within each 4" PVC conduit in all Telecommunications Duct Bank shown on Drawing Sheets T-201 to T-205. Callouts on Drawing Sheets T-201 through T-205 will be modified to indicate required innerduct.***
Question 25:	Sheet ES-201 shows EFSO ductbank and handholes that are in the footprint of the building package work. Is the contractor to sawcut through existing pavement to install this work? What are the restoration requirements?
Response:	***Drawing Sheet ES-201 has been updated with clarification notes for separation of the work. A new detail has been referenced for the sawcut through the pavement.***
Question 26:	Spec L110 Para 2.05B.1.b states that innerduct must conform to ASTM F2160. Para 2.05B.1.c.4 states that innerduct shall be yellow for FAA single mode fiber installations. ASTM F2160 Para 4.5.1 states that "solid yellow or black with yellow stripes shall not be used for identification of conduit due to risk of misidentification with gas pipe." Manufacturers refuse to certify and price yellow innerduct for this use. Please clarify.
Response:	***No FAA fiber will be installed in this project. Contractor to provide standard orange innerduct.***
Question 27:	Are the existing airfield taxiway circuitry drawings available?
Response:	***Yes, selected bidder can obtain these on later date.***
Question 28:	Are the existing roadway lighting drawings available?
Response:	***Yes, selected bidder can obtain these on later date.***

Question 29:	Are the existing manhole surveys available?
Response:	***Yes, selected bidder can obtain these on later date.***
Question 30:	On page 2-106.16C it states that the City is planning on purchasing an OCIP Insurance policy, however there is no complete insurance specifications on this. Can you please provide them?
Response:	***This clause will be removed from the front end documents.***
Question 31:	What are the dimensions of the perimeter of the construction site in linear footage?
Response:	***Varies per phase, see phasing drawings.***
Question 32:	Since this construction site is within City of Chicago limits, is it required to comply with the the long-standing Building Wrecking/Demolition Pest Control Ordinance (§ 13-32-235) that was passed in 2001 and the New Construction Site Rodent Abatement Ordinance (§ 13-32-140) passed in 2015?
Response:	***Yes. Contractor must comply with all laws.***
Question 33:	Sheet FA-101 Note 1 - Please provide the Fire Alarm specification referenced in this note. Spec 15300 is for Fire Protection and does not provide the information required for the Fire Alarm system, i.e. panels, devices, system wiring, SMS tie-in, temperature controller interface, etc.
Response:	***A new Specification Section 16742 Fire Detection and Alarm has been provided.***
Question 34:	Will the Contractor be permitted to import broken concrete from other projects in order to produce the recycled aggregate quantities needed for this project? For example, if the Contractor chooses to use RCB in lieu of lime stabilized subgrade. Would the additional quantities be paid under the applicable line items for crushing/placing recycled aggregate?
Response:	***Import of broken concrete from outside sources will not be allowed.***
Question 35:	From the Earthwork Summary Table on Plan Sheet CT-110 it appears the project is short select fill. Where is the balance of the select fill going to come from? Is the Contractor allowed to propose alternate stockpiles for select fill excavation?
Response:	***To be determined during construction. CDA will determine and provide locations of select material from O'Hare as necessary.***
Question 36:	CA-1 is a byproduct of CA-6 crushing operations, and the anticipated volume of CA-1 is called out on plan sheet CT-110, but there is no Bid Item for CA-1. Are we to assume the CA-1 quantity is incidental to CA-6 production?
Response:	***There is no additional pay item for CA-1 production as it is byproduct of the CA-6 crushing. It is considered incidental to the CA-6 crushing item. The contractor does have the freedom to use CA-1 as <undercut and embankments>, as defined in the specifications.*** ***Cost to Crush to create CA-6 produces CA-1 as a by product, and will include cost to be brought over to the CDA stockpiles. Spec Section 02245 has been modified to per this comment.***
Question 37:	Sheet S-100, Retaining Wall 2 – this wall supports a blast fence on the top of the wall – what are the loads from the blast fence that needs to be considered in the design of the wall?
Response:	***See response to Question 9 above.***
Question 38:	Sheet CS-411, Section A-A of the blast fence – blast fence requires a 4-ft. deep footing that may interfere with the MSE strips, please indicate how shall we resolve this conflict.

Response:	***See response to Question 9 above.***
Question 39:	Sheet CP-213 Shows a detail in the upper left hand corner called "Typical Fillet and Reinforcement Details". This is the typical detail we see at O'Hare for reinforced PCCP panels. In the lower right hand corner on CP-213, we see two details titled "PCC Pavement Reinforcement" and "PCC Pavement Restoration". Which detail shall we use in 19.5" panels labeled "R" on the joint plan? Where do the two details in the lower right hand corner apply?
Response:	***Minor changes to Drawing Sheet CP-213 have been made. Use the "Typical Fillet and Reinforcement Details" along with the "PCC Pavement Reinforcement" detail. The "PCC Pavement Restoration" detail is currently not used in this contract.***
Question 40:	There is a conflict in the date of availability and duration of work for Area D. The plan sheet (GC-202) under the constructing phasing for Area D state the area is not available until August 1, 2019 and shall have a duration of 120 days. In book one (S4-7) Area D is stated to not be available until March 31, 2019 with a duration of 135 days. Please clarify which date and duration period is correct for Area D.
Response:	***Per GC-202 and S4-7, Area D is not available until August 1, 2019.***
Question 41:	There is a conflict in the date of availability and duration of work for Area F. The plan sheet (GC-202) under the constructing phasing for Area F state the area is not available until 151 days from the end of mobilization and the contract will have access for 30 days to complete the surrounding work. After 30 days, the fueling contractor will occupy Area F through December 15th. In book one (S4-7/S4-8) Area F is stated to not be available until 121 days from the end of mobilization and shall have 2 intermittent durations. The contract will have access to Area F for 60 days to complete the surrounding work. The fueling contractor will have access to the area for the next 75 days, and lastly the contract will have the balance of the time in Area F to complete the remaining work. Please clarify which dates and duration are correct and if we will have 1 or 2 intermittent durations to complete the work in Area F.
Response:	***Per Drawing Sheets GC-202 and S4-8, Area F is not available until one hundred twenty (120) days from the end of Mobilization. The Fueling Contractor will occupy Area F for the first 120 days from the start of construction to complete the majority of the ISO-6 Vault and as much other work as time permits within the Area. Upon completion of the 120 days, this Contract will have access to Area F for 60 days to complete surrounding pavements, in close coordination with the Fueling Contractor's needs.***
Question 42:	Please confirm the CDA will claim "Generator" status for any pre-existing hazardous waste/special waste materials encountered on this project.
Response:	***CDA has confirmed that CDA will claim "Generator" status.***
Question 43:	There is a conflict in the date being used to determine if a temporary tie-in of the new Trunk storm sewer to the existing drainage system for the work in Area G-K is needed. The plan sheet (GC-201) under the "PHASE 1 notes" states that date as December 15,2019. In book one (S4-9) under Section 12, subsection C, it states "If the new Trunk Storm Sewer is not completed by October 16th, 2019, the contractor shall make provisions to tie the new storm sewer temporarily into the existing drainage system…" Please clarify which date is to be used to determine if a temporary tie-in will be needed for the drainage work in Area G-K.
Response:	***The duration of this phase allows work until December 15, 2019. The temporary tie-in is needed if work is not complete by October 16, 2019. Part One Section 4 documents have been clarified that if the permanent sewer is not tied-in by October 16th, 2019, a temporary tie-in is necessary.***
Question 44:	Is there a start date and schedule for the building package to be let and constructed?

Response:	***Not applicable.***
Question 45:	Is there a start date and schedule for the Fuel System work referenced in the bid documents?
Response:	***Intended to be March 1, 2019.***
Question 46:	In the Instructions and Execution documents (Part 1), Section 4.0, Sub-Section 7.0, Part 3, Area A is shown under Milestone A having a duration of 255 days. 3B then states Area A has a duration of 285 days. Please confirm.
Response:	***Area has a duration of 285 days. Part One Section 4 has been modified.***
Question 47:	In the Instructions and Execution documents (Part 1), Section 4.0, Sub-Section 7.0, Part 17, Phase 5 Milestone 8 is shown as having 30 days, but then 17.A states the duration is 60 days. Please confirm.
Response:	***Part One Section 4 has been modified the duration to 60 days.***
Question 48:	Paving Detail Sheet CP-212 shows details for types C,E, and G joints. Detail notes state that T = 18". That is incorrect. T = 19 ½". Paving detail sheets do not give dowel bar length, diameter, nor spacing for T = 11". Please provide that information. Joint plan sheet CP-205 shows the location of the 9" PCCP. None of those joints are identified. Are we to assume that all joints in the 9" PCCP are dummy?
Response:	***Minor changes have been made to sheet CP-212. T= 19-1/2" Notes for Types C, D and G will be enhanced to show dowel bar dimensions for various thicknesses. The 9-inch PCCP will use dummy transverse contraction joints***
Question 49:	There are no spec's for Division 10 items. I believe there's two bathrooms without any items called out. As well will there be any fire extinguishers needed?
Response:	***Specification Section 10810 – Toilet Accessories has been added.*** ***Toilet Accessories are called out on Drawing Sheet A-401.*** ***Per Drawing Sheet LS-101, fire extinguishers are to be provided in the Storage Room 100, Mechanical Room 104, and Triturator Room 105. Additionally, per current Specification Section 15300 – Fire Protection, Part 2.06 Fire Extinguishers, Item B, provide an additional fire extinguisher in the Electrical Room 106.***
Question 50:	Per P-152 we are to get paid for the earth excavation in it's original position. The earth work table on sheet CT-110 states that we are to use trench backfill and excess pavement removal as embankment. How will we get paid for placing and hauling that material, if the earth excavation is measured in the original position and not the final position?
Response:	***Please refer to Specification Section P-152 Sections 3.05 R., 4.01 C., and 5.01 A.***
Question 51:	Please provide the design criteria utilized for the CIP drainage manholes including the design aircraft type (ex. 747-400 ER). Note AC 150/5320-6F, Appendix B just states the "Design for the largest and heaviest airplane or vehicle at maximum gross weight that could use the airport over the life of the airport". Additionally, please provide soil properties that were used such as a particular ko/ka, water table height, soil density, and allowable bearing capacity if available.
Response:	***The design criteria included currently active/proposed aircraft, including the Airbus A380-800, the Boeing 747-8F, the 777-300ER and other smaller aircraft. To address the AC150/5320-6F mention of potential future aircraft over the life of the airport, 75,000 wheel loads configured in a manner consistent with AC 150/5320-6E, Appendix 3, Figure 1 were also considered.***

	Soil properties assumed for design included: ***Allowable bearing capacity: 2000 psf*** ***Soil density: 120 pcf*** ***Coefficient ko: 0.5*** ***Coefficient ka: 0.33*** ***Water table height: 12 ft. below existing site grades***
Question 52:	Item F-162-07 Underground wildlife deterrent fence barrier is a pay item. When you read the spec F-162 it states that this is incidental to the Type A and D fence. Which is correct?
Response:	***Underground Wildlife Deterrent Fence Barrier will be paid for separately under Pay Item F-162-07. Refer to Specification Section 5.01 E.***
Question 53:	In regards to the underground utilities and structure removals (demolition), can we haul the broken concrete to an approved location on O'Hare property?
Response:	***Refer to Specification Section 01524 Construction Waste Management.***
Question 54:	Sheet GI-102 indicates existence of drawing number LS-100 Life Safety Plan -1, this drawing is not found on the plan disc, will it be provided for the bid?
Response:	***LS-100 is not used. Drawing Sheet GI-102 has been modified to remove this sheet.***
Question 55:	Roof specs call for TPO roof, but plans call for PVC roof. Please clarify.
Response:	***Provide a TPO roof for the Triturator building.*** ***The Guard Building will remain as a metal panel roof, which is currently identified as such in the plans and specifications.***
Question 56:	Please provide specification for epoxy wall, ceilings & base coatings as referenced on Room Finish Schedule A-601. Current specifications do not include section for epoxy coatings.
Response:	***Specification Section 09900 – Paints and Coatings will be modified to include epoxy paint coatings.***
Question 57:	Specification Section 13128 Prefabricated Modular Control Booth Drawing No. A-102 Guard Booth 11 Pre-Fab Building Plans & Elevations The specification and drawing are similar to other recent O'Hare projects and they have the same conflicting information: • 1.03 Performance Requirements o Paragraph C. Bullet Resisting Construction – UL Level III ▪ The drawings do not indicated bullet resisting construction and the previous projects eliminated the bullet resisting requirement. ▪ Will this booth be bullet resistant? • 1.04 Submittals o Paragraph B - Shop drawings ▪ Do the drawings require a PE or SE stamp? State of Illinois? ▪ Does the structural analysis require a PE or SE stamp? State of Illinois? • 1.05 Quality Control o Paragraph F. Safety Glass ▪ UL level III bullet resistant Glazing as specified or tinted insulated safety glass as shown on the drawing? • 2.03 Prefabricated Control Booths, General o Paragraph D. Electric Power Service ▪ 6 – Provide warning and barrier toggle switches with stainless steel JB and cover • This item is not specified as to model, number of switches, etc. There is nothing shown on the drawing regarding location or type of warning or barriers.

	○ Who supplies these items and what is specifically required? ▪ 7 – Provide gate controllers, stainless steel JB and cover • Typically the gate controllers are supplied by the gate operator vendor – correct? ○ Paragraph J - Intercom System ▪ The scope of this item goes beyond the Guard Post and it would make more sense if some other vendor supply and install the entire system. We would exclude this from our scope. ○ Paragraph O - Surface Mounted Signage ▪ There is nothing shown on the drawing as what is required – size or location ○ Paragraph P – Roof Mounted Signage ▪ There is nothing shown on the drawing as what is required – size or location ○ Paragraph Q – Side Mounted Signage Brackets ▪ There is nothing shown on the drawing as what is required – size or location • 2.04 Prefabricated Steel Control Booths ○ Paragraph E Flat Roof/Ceiling Assembly • 3 - Canopy Fascia ○ C. 3' x 6' Canopy – nothing shown on the drawings
Response:	***See revised Drawing Sheet A-102 and Specification Section 13128.*** ***1.03 – See response to Question 1 above.*** ***1.04 – See response to Question 2 above.*** ***1.05 – See response to Question 3 above.*** ***2.03 – See response to Questions 4 and 5 above.*** ***2.04 – See response to Question 6 above.***

END OF ADDENDUM NO. 2

CITY OF CHICAGO
DEPARTMENT OF PROCUREMENT SERVICES

SHANNON E. ANDREWS
CHIEF PROCUREMENT OFFICER

CITY OF CHICAGO
DEPARTMENT OF AVIATION
Terminal 5 – Concourse M Extension
Site/Civil Package

PART ONE OF THREE
INSTRUCTIONS AND EXECUTION DOCUMENTS

SPECIFICATION NO.: 766477

PROJECT NO.: H2028.17-00

CITY OF CHICAGO
Rahm Emanuel
Mayor

CHICAGO DEPARTMENT OF AVIATION

CHICAGO DEPARTMENT OF AVIATION
Jamie L. Rhee
Commissioner

Issued by:

DEPARTMENT OF PROCUREMENT SERVICES
Shannon E. Andrews
Chief Procurement Officer

ISSUED FOR Addendum 2
OCTOBER 9, 2018

Bid Package Contents

Specification No.: 766477
Project No.: H2028.17-00

CD 1 (Issued for Bid)

- **"Read Me" Text File**
- **Part One of Three – Instructions and Execution Documents**
- **Part Two of Three – General Conditions**
- **Part Three of Three – Technical Specifications**
- **Construction Safety Manual**
- **Drawings**
- **Construction Safety Phasing Plan**

EMAIL (Issued for Addendum No. 2)

- **Addendum 2 Narrative**
- **Part One of Three – Instructions and Execution Documents Section 4 – Addendum 2**
- **Part Three of Three – Technical Specifications – Addendum 2**
- **Drawings – Addendum 2**

SECTION 4
TIME OF COMPLETION

1.0 GENERAL

A. The City of Chicago anticipates issuing a Notice to Proceed (NTP) no later than January 28, 2019. The Contractor must achieve Substantial Completion four hundred fifty-five (455) days after the NTP. Upon acceptance of the work as Substantially Complete and the issuance of a formal punch list, in accordance with the Contract Documents, a thirty (30) day punch list period will commence.

B. The time period between the NTP and Substantial Completion includes time for Mobilization, Winter Suspensions and all work in this section, and in the project plans and specifications.

C. A release for administrative activities (Administrative Notice to Proceed) may be issued depending on the time of award in relation to the Winter Suspension period. All activities normally accomplished during the Mobilization Period are to be executed. The date of issuance and the duration will be mutually agreed upon between the Commissioner and the Contractor, but regardless, work will be expected to commence on or around March 1st.

> Note: An exception to the March 1st start date is Phase 1, Area G, Trunk Storm Sewer. This work is expected to commence immediately upon required approvals and work continuously to accomplish the goals described in Section 6.0, Mobilization, and Section 7.0, Project Phasing.

D. The date for the NTP will not be counted as a calendar day, but each subsequent day thereafter, from midnight to midnight, will be counted as one calendar day. The last day of the overall duration will be the day the Contractor achieves Substantial Completion as defined by the Contract Documents.

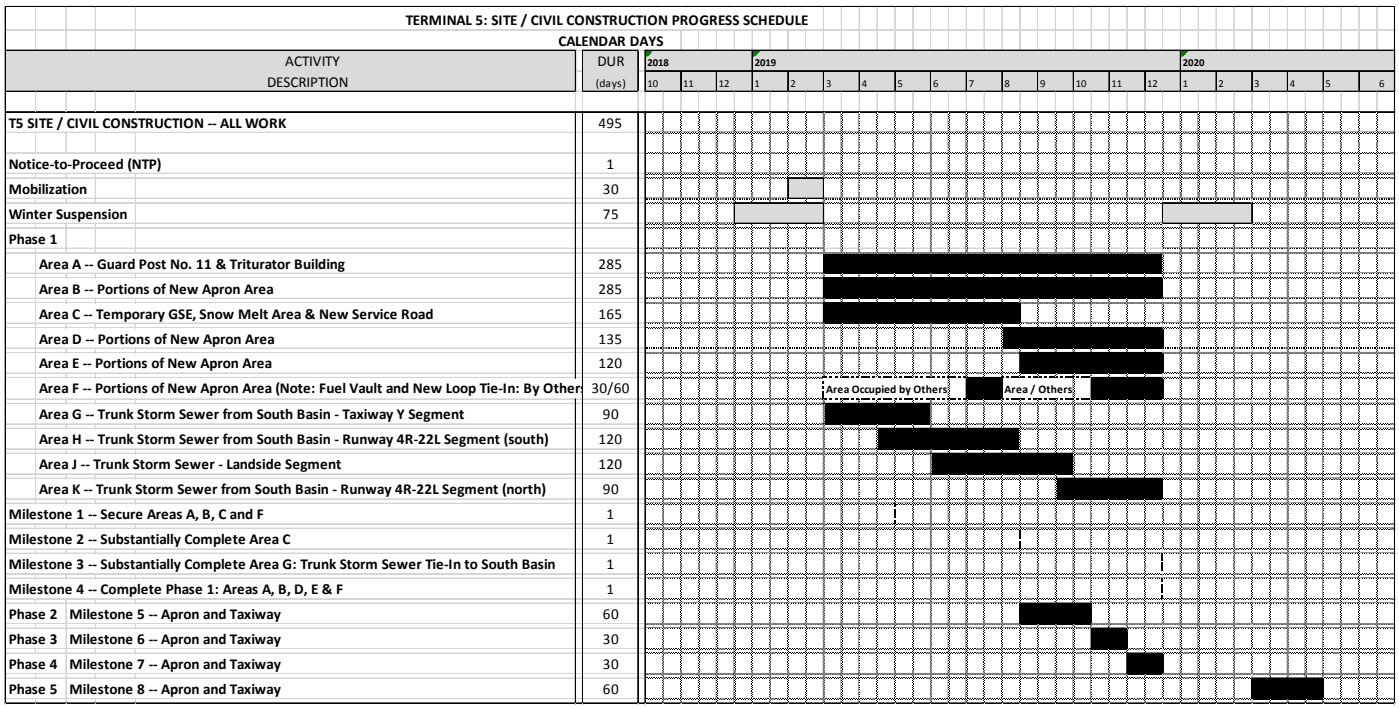
E. The Contractor must perform all work within the specified time frames.

F. The Contractor must perform all work in accordance with the Contract Documents. The Construction Phasing Plan and descriptions are intended to give a general outline of the order in which the work is to be accomplished. Neither the Construction Phasing Plan, nor the descriptions contained in this section, are intended to be a comprehensive list of work items. It is the Contractor's responsibility to anticipate upcoming work and to coordinate their operations with stakeholders to ensure an efficient and timely flow of construction sequence and operations.

G. The Contractor's Baseline Schedule must be submitted to the Commissioner and accepted, prior to the commencement of construction as required by the Contract Documents. The Contractor's Baseline Schedule must show all work to be completed within the contract time limit. Further, the Baseline Schedule must be coded to allow the Schedule to be summarized by Milestone, Phase and Project Area.

2.0 PHASING SCHEDULE

Elements of the various phases of work, as shown on the Construction Phasing plan, must be constructed in accordance with the schedule outlined in this Section. The "Duration" shown in each phase of the Work is the maximum time allowed for completion. Furthermore, each phase of the work must be completed within the allotted calendar days from the issuance of the NTP by the Commissioner. For the purpose of bidding, the Contractor must assume the Phases of Work will be adhered to in the order as described in Sections 7.0, Project Phasing.



3.0 PHASING & MILESTONE RESTRICTIONS

The following general work restriction notes are applicable to all construction work.

1. The plan was developed in conjunction with a Construction Safety Phasing Plan (CSPP). All the documents are to be used in conjunction with one another to ensure compatibility between construction and airport operations.

2. The Contractor must not enter a runway safety area (RSA), taxiway object free area (TOFA) or taxiway safety area (TSA) without closure of the affected runway or taxiway. Entering these areas requires approval by the Commissioner. All taxiway and runway closures must be coordinated through the Short Term Operational Phasing (STOP) Committee prior to the start of any work. Closure hours for Night Time work are typically between the hours of 10:30 p.m. and 6:00 a.m.

3. STOP Committee meetings are held every Monday morning at 8:00 a.m. at the Department of Aviation (CDA) atrium, located at the base of the CDA Tower, across from Terminal Two near the Hilton Hotel. The Contractor will be responsible for the completion of all forms required by this committee and the assemblage of all the executed forms into a STOP Meeting binder (commonly referred to as the “Dig Book”) which will require signatures and formal approval by the General Contractor, Construction Manager, FAA and the CDA. The Dig Book must be signed by the Commissioner, granting “authorization to commence work”, prior to the commencement of any work within the air operations area (AOA), or the Landside area. The Dig Book must also be kept onsite by the Contractor until the work is completed. It is suggested that the Contractor allow at least one month for the assemblage and approval of all STOP requirements.

4. The Contractor will have access onto the airfield through any approved guard post locations and will use airfield service roads to access the project work areas. The Contractor will not access the airport movement areas without coordinated CDA escorts.

5. Utility service connections will be available no later than sixty (60) days following the completion of the utility infrastructure and facilities per the contract documents and as required by the utility service provider. The Contractor will be responsible for all utility installation costs, connection fees, and usage costs until the date of substantial completion. At substantial completion, all utility services will be transferred from the Contractor to the City, or third party as directed. This does not apply to the Contractor’s field office. The Contractor will retain responsibility for all utility costs associated with the field office and termination. These services will not be turned over to the City.

6. The Contractor must restrict movement of equipment, personnel, and material stockpiles so as to not penetrate NAVAID critical areas at any time.

7. The Contractor staging and storage areas must be contained within the project limits, or as identified in the contract documents.

8. The Contractor must not stage any materials, equipment, facilities, or appurtenances within twenty-five (25) feet of an air operations area (AOA) fence.

9. All existing and proposed service roads, "airside" and "landside" within the limits of work must be maintained by the Contractor to the satisfaction of the Commissioner. This maintenance is to be considered incidental to the contract and will include sweeping and pothole repair as required. In addition, all service roads must remain open for airport traffic during the performance of the work. Where services roads are impacted by the Contractor's activities, the Contractor must maintain traffic at all times. When it is deemed acceptable by the Commissioner, traffic may be reduced to one lane with traffic controlled by traffic control devices and flaggers. Maintenance of traffic and any associated flaggers and traffic control will be considered incidental to the contract unless otherwise identified in the contract documents.

10. The Contractor shall cooperate with the CDA, airline tenants, other airport users, and other Contractors on the airport including the City of Chicago, FAA and airline Contractors. The Contractor will be required to share work areas with other Contractors.

11. Commonwealth Edison (Com Ed) must be notified seventy-two (72) hours in advance of any construction within twenty-five (25) feet of any Com Ed infrastructure or equipment or construction of any Com Ed infrastructure or facilities per the contract documents. Com Ed may require a Com Ed inspector on-site during construction activities in close proximity to Com Ed infrastructure or equipment. Peoples Gas and AT&T have similar requirements.

12. The Contractor must notify and obtain approval from the FAA (through the CM) at least seven (7) days (excluding Saturdays, Sundays, and Holidays) prior to entering existing FAA facilities to perform work or investigation. However, this request does not guarantee access to FAA facilities on the date requested. The FAA requires the submission of the "request for assistance" form. The form must be submitted five (5) business days in advance, weekends and holidays excluded.

13. The Contractor must adhere to FAA FAR Part 139, FAA Advisory Circular 150/5370-2 (latest edition), the CSPP and specification M-103 when working within the air operations area (AOA). Any grading or vegetation disturbance resulting from activities by the Contractor must be restored to prior existing conditions and meet FAA FAR Part 139 standards.

14. The Contractor must restrict equipment heights around active Runways in accordance with the FAA Part 77 surface detail as shown in the drawings and the requirements of the FAA 7460-1 notice of proposed construction or alteration for this project. The Contractor shall coordinate with the CM on exact equipment height limitations for each work area.

15. The Contractor shall allow sufficient time for FAA inspection, punch list work and FAA final acceptance of work that may be related to their facilities or adjacent areas.

16. The Contractor must provide all temporary circuits to maintain airfield lighting circuits impacted by construction activities associated with this project. All work associated with these temporary circuits is incidental to the project cost.

17. Construction activities must be performed in a manner that is planned for construction and airfield operational safety within the active airfield. The Contractor must follow the construction phasing as presented in these documents to ensure safe airfield operations and construction safety. The Contractor is not allowed to deviate from the phasing documents unless a revised plan is developed by the Contractor and reviewed and accepted by the Commissioner. If the Contractor elects to deviate from the phasing plan provided in the contract documents, the Contractor will provide the alternate construction phasing plan, alternate construction safety and phasing plan (CSPP) and alternate safety plan compliance document (SPCD) for the Commissioner’s review and acceptance.

18. The Contractor must coordinate all work with the Commissioner to meet the requirements of adjacent O'Hare Modernization Program (OMP) projects, Capital Improvement Program (CIP) projects, Term projects, JOC projects, and Terminal Five Expansion.

19. The Contractor is to field verify existing conditions, including but not limited to grading, utilities and pavement demolition limits, prior to the start of work.

20. The scheduling of work within the glide slope critical areas, or runway approach areas, must be approved by the Commissioner in coordination with the FAA and Chicago Department of Aviation. This includes a minimum 30-day advanced notice prior to commencing work in these critical areas.

21. Work within restricted aircraft operation areas must be performed as night work unless otherwise approved by the Commissioner in writing. Refer to specification section N-100, Night Construction, for additional information.

22. The RSA, TSA, ROFA and TOFA limits shown on the plans vary for each phase of the project to accommodate aircraft operations during construction. The Commissioner may revise these limits as necessary for the project without additional cost to the contract.

23. The following clarifies matters regarding materials management:

    A. Topsoil may be available for use by this contract, if desired. Topsoil may be taken from OMP designated stockpile numbers 18, 85 and 89. The Contractor will be responsible to restore the site with 4" of topsoil, seed and blanket. Stockpile numbers 18 and 89 are available through Guard Post No. 12; access via Wolf Road is not allowed.

    B. Airport suitable borrow sources are not available.

    C. Any excess site excavation must be disposed of legally, offsite. Onsite airport stockpiles are not available for additional material storage.

    D. Excess asphalt product may be re-used by the Contractor in accordance with plans and specifications, or for temporary access roads in approved applications. However, excess materials must be disposed of legally offsite.

    E. Excess clean, concrete materials may be hauled on the airfield to CY-3 (Crusher Yard 3). All materials must be delivered in sizes no larger than 2' x 2'. Access to CY-3 is available through Guard Post No. 12. The Airport does not anticipate having concrete material available for others to crush and use.

    F. A concrete batch plant location will be made available for the Contractor to use at the southeast corner of Montrose and Spine Road. The Contractor will be required to restore the site to its original condition upon completion of the work.

24. Aircraft / Construction Interface Flaggers per CSPP.

4.0 NOTICE OF AWARD

The Contractor, upon receipt of the Notice of Award shall prepare the following submittals, to include but not limited to:

A. Construction Operations Plan per General Conditions Section IV.D.1., within fifteen (15) days from the issuance of the Notice of Award;
B. Exhibit A, Anticipated Workforce Projection Form per General Conditions Section IV.D.2., within seven (7) calendar days from the issuance of the Notice of Award;
C. Source of Materials per General Conditions Section VI.E.2., no later than thirty (30) days after contract award;
D. Key Personnel per General Conditions Section VII.B.1., upon award of the contract;
E. Qualifications of Scheduler per General Conditions Section VIII.E.2.b., within five (5) calendar days after contract award;
F. Baseline Schedule per General Conditions Section VIII.E.4.a., within fifteen (15) days from issuance of the Notice of Award;

G. Contract Price Breakdown per General Conditions Section IX.B.1., within fifteen (15) calendar days from the Notice of Award;
H. Site Specific Safety Program per General Conditions XIV.B.1.a., at least thirty (30) calendar days prior to the start of work; and
I. Quality Control Plan per the Technical Specifications Section Q-100, Section 1.01.C, to be presented at the Pre-Construction Conference.

5.0 NOTICE TO PROCEED

The Contractor, upon receipt of the Notice-to-Proceed shall prepare the following submittals, but not limited to:

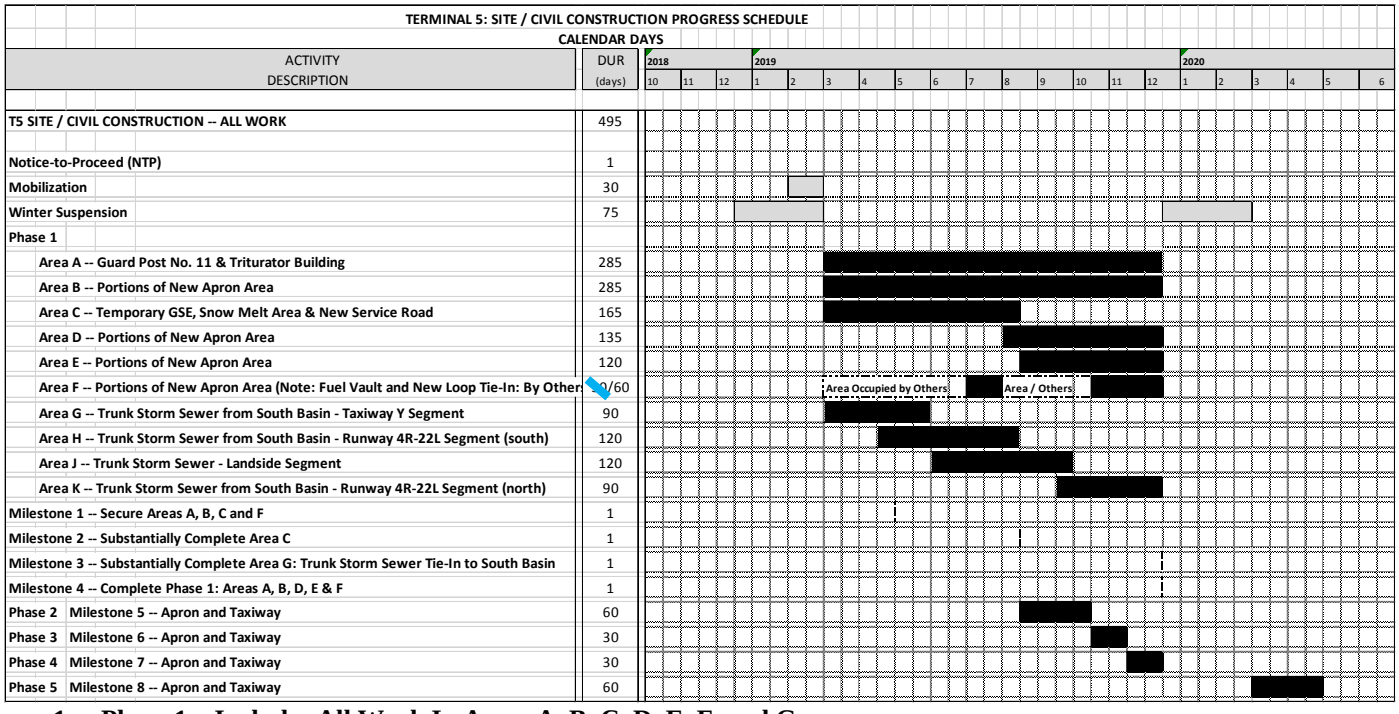
A. Subcontract per General Conditions Section V.C.1., within fifteen (15) days prior to the effective date stated in the Notice-to-Proceed; and
B. FAA Form 7460-1 per General Conditions section XV.C.3., on or before the date of the Notice-to-Proceed.

6.0 MOBILIZATION

A. Because the exact timing for the award of this Contract is unknown, the City of Chicago reserves the right to extend or shorten the Mobilization Period to position the project for a successful start. If the award occurs during Winter Suspension, as defined in Part 2 of the General Conditions, the Contractor may commence limited Contract work, so long as the City and the Contractor mutually agree to the start date.

B. During the Mobilization Period, the contractor will submit shop drawings, obtain ID Badges, procure materials, perform survey layouts, and conduct other approved activities. The Contractor must prepare AOA fencing reconfiguration plans during this time for submission to the TSA. This work will not affect or impact aircraft operations. In addition, the contractor shall establish and prepare staging areas for this Contract and a separate onsite staging area (minimum size: 150' x 150') for the sole use of the Fueling Contractor (a separate Contract administered by others).

7.0 PROJECT PHASING DESCRIPTIONS



1. Phase 1 – Includes All Work In Areas A, B, C, D, E, F, and G
285 Days (Exceptions as Noted)

Phase 1 work is intended to commence immediately after the Mobilization Period ends on March 1, 2019, with exception of Area G, which is required to commence immediately upon the issuance of the Notice to Proceed. All Areas within Phase 1 are described in detail on the following pages.

2. Secure Areas A, B, C and F

Milestone 1 / 60 Days (From release to start work)

This Milestone is required to successfully secure the **Landside Construction Zones** and **Establish Project Entry Points** for Areas A, B, C and F. Areas D and E remain active and are not available at this time.

A. Work shall include the following primary activities:
   a. Establish two (2) temporary guard booths:
      i. One booth at Spine Road and Montrose Avenue for construction traffic only (non-secure)
      ii. One booth at the southern entrance to the jobsite between Landside areas and the AOA (secure)
   b. Re-align AOA fencing to establish the Landside work area
   c. Begin removal of existing structures, fencing, foundations, pavements; perform clearing and grubbing
   d. Additional work may occur as defined in the Contract and in accordance with contractor's approved schedule.

B. Refer to Area B for requirements related to maintaining existing traffic routes which presently dissect the site.

3. Area A – Construct New Triturator Building and New Guard Post No. 11

Milestone 4 / ~~255~~ 285 Days

A. Area A is not available until March 1, 2019.
B. Area A has a duration of two hundred eighty-five (285) days and shall be completed as part of **Milestone 4**, along with Areas B, D, E and F.
C. Work for Milestones 4 shall include the following activity:

   a. New Triturator Building and related components

   b. New Guard Post 11 and related components
   c. Temporary and permanent access roads, maintaining existing traffic flow during all times, including access to the existing ATS Facility and the nearby Fire Lane
   d. Removal of existing structures, fencing, foundations, pavements; perform clearing and grubbing
   e. Drainage, paving, fencing, lighting, landscaping and related contract work
   f. **The Contractor is advised that the natural gas piping work by the local Utility Company will also occur in this Area. The Contractor must coordinate his / her work with the Utility and allow appropriate time for the Utility to complete their work**.
   g. The Contractor shall maintain existing Guard Post No. 11 until the new Guard Post is fully functional.
   h. Once the new Guard Post 11 is functional, the Triturator site will no longer be Landside, and access will require all tardes to have proper credentials for operating on the AOA.
   i. Demolition of the existing Triturator Building is not in this scope of work.

4. Area B -- New Apron Area

Milestone 4 / 285 Days

A. Area B is available upon conclusion of the Mobilization Period.
B. Area B shall have a duration of two hundred eighty-five (285) days and shall successfully complete portions of **New Apron.**
C. Work shall include the following activity:
   a. Construction of a temporary landside road connecting Old Cargo Road to Old Spine Road. The contractor must maintain the current traffic configuration through Area B and the fully functional use of Old Cargo Road and Spine Road until the new temporary road is constructed, striped and signed. Upon completion of the new temporary road, the contractor will be expected to take full possession of

the site, securing the entire construction zone. Unimpeded access to the existing ATS Facility must be maintained during construction, on a twenty-four (24) hour basis.

b. Removal of existing structures, fencing, foundations, pavements; perform clearing and grubbing
c. New taxiway pavements and apron areas
d. Maintain the unimpeded flow of airfield vehicular traffic around the site during all times.
e. Drainage and electric
f. Pavement markings and removals
g. Scheduling and sequencing work to accommodate the fuel system installation (by others)

5. Area C – Temporary GSE and Snow Melt Areas

Milestone 2 / 165 Days

A. Area C is available upon conclusion of the Mobilization Period and shall commence at the same time as Area B.
B. Area C shall have a duration of one hundred sixty-five (165) days and shall successfully complete the **New GSE Area, New Snow Melt Area** and Delineate the **New Service Road** that travels through the area.
C. Work shall include the following activity:
   a. Demolition
   b. Fencing
   c. New taxiway pavements and apron areas
   d. New and temporary pavements, as required, to maintain the unimpeded flow of airfield vehicular traffic around the site during all times.
   e. Drainage and electric
   f. Pavement markings and removals
   g. Scheduling and sequencing work to accommodate the fuel system installation (by others)
   h. Upon completion of this phase, there are no new aircraft positions in service.

6. Area D – New Apron Area
Milestone 4 / 135 Days

A. Area D is not available until ~~March 31~~August 1, 2019
B. Area D shall have a duration of one hundred-five (135) days and shall successfully complete portions of **New Apron.**
C. Work shall include the following activity:
   a. Demolition
   b. Fencing
   c. New apron areas
   d. New and temporary pavements, as required, to maintain the unimpeded flow of airfield vehicular traffic around and through the site during all times.
   e. Drainage and electric
   f. Pavement markings and removals
   g. Scheduling and sequencing work to accommodate the fuel system installation (by others)

7. Area E -- New Apron Area

Milestone 4 / 120 Days

A. Area E is not available until after the Substantial Completion of Phase 1, Area C, Milestone 2.
B. Area E shall have a duration of one hundred twenty (120) days. Upon the completion of Area C, the Contractor will have to wait an additional seven (7) days for the relocation of existing GSE operations and equipment. This Area shall successfully complete portions of **New Apron.**
C. Work shall include the following activity:
   a. Demolition
   b. Fencing
   c. New apron areas

d. New and temporary pavements, as required, to maintain the unimpeded flow of airfield vehicular traffic around the site during all times.

e. Drainage and electric

f. Pavement markings and removals

g. Scheduling and sequencing work to accommodate the fuel system installation (by others)

8. Area F -- New Apron Area

Milestone 4 / 60 Days

A. Area F is not available until one hundred twenty (120) days from the end of Mobilization.

~~8.~~ The Fueling Contractor will occupy Area F for the first 120 days from the start of construction to complete the majority of the ISO-6 Vault and as much other work as time permits within the Area. Upon completion of the 120 days, this Contract will have access to Area F for 60 days to complete surrounding pavements, in close coordination with the Fueling Contractor's needs. ~~**Area F -- New Apron Area**~~

~~**Milestone 4 / 30 & 60 Days**~~

~~A. Area F is not available until one hundred twenty (121) days from the end of Mobilization and shall have two intermittent durations.~~

~~B. The Fueling Contractor will occupy Area F for the first 120 days from the start of construction to complete the majority of the ISO-6 Vault and as much other work as time permits within the Area. Upon completion of the 120 days, this Contract will have access to Area F for 60 days to complete surrounding pavements, in close coordination with the Fueling Contractor's needs. Next, the Fueling Contractor will have access to Area F for 75 days to complete tie ins, testing and flushing within Area F. Lastly, this Contract will have the balance of time in Area F to complete all remaining concrete paving, sawing, sealing and striping.~~

~~C.~~B. This Area shall successfully complete portions of **New Apron.**

~~D.~~C. Work shall include the following activity:

a. Demolition
b. Fencing
c. New apron areas
d. Drainage and electric
e. Pavement markings
f. Scheduling and sequencing work to accommodate the fuel system installation (by others)

9. Area G – New Trunk Storm Sewer from South Basin – Taxiway Y Segment

Milestone 3 / 90 Days

A. Area G is available upon the issuance of the Notice to Proceed and all work for installation of the pipe under Taxiway Y shall be completed in ninety (90) days, but shall be closely coordinated with Airfield Operations, and may be subject to limited availability due to the potential time of year in which the Contract is awarded. However, the Contractor shall be prepared to execute the work as depicted in the Contract documents and will not be entitled to any additional time or compensation for any delays that may be incurred as the result of the weather, or the potentially restricted availability of support services to facilitate the work.

B. Work shall include the following activities:

a. Install barricades and remove markings to create work area
b. Open two pits for jack and bore operation
c. Install sewer drain pipe and associated structures
d. Temporary and unimpeded access to existing CDA and FAA facilities
e. All required safety measures, temporary roads and pavements
f. Restore markings and graded areas
g. Clean area and remove barricades for aircraft operations

10. Area H – New Trunk Storm Sewer from South Basin – Runway 4R-22L Segment (South)

Milestone 3 / 120 Days

A. Area H is available upon the issuance of the Notice to Proceed and all work for installation of the pipe under Runway 4R-22L and shall be completed in one hundred twenty (120) days, but shall be closely coordinated with Airfield Operations, and may be subject to limited availability due to the potential time of year in which the Contract is awarded. However, the Contractor shall be prepared to execute the work as depicted in the Contract documents and will not be entitled to any additional time or compensation for any delays that may be incurred as the result of the weather, or the potentially restricted availability of support services to facilitate the work.

B. Work shall include the following activities:
   a. Install barricades and remove markings to create work area
   b. Open pit for jack and bore operation
   c. Install sewer drain pipe and associated structures
   d. Installation and removal of temporary and permanent fencing
   e. Temporary and unimpeded access to existing CDA and FAA facilities
   f. All required safety measures, temporary roads and pavements
   g. Restore markings and graded areas
   h. Clean area and remove barricades for aircraft operations

11. Area J – New Trunk Storm Sewer from South Basin – Landside Segment

Milestone 3 / 120 Days

A. Area J is available upon the issuance of the Notice to Proceed and all work for installation of the pipe at the landside segment aligned parallel to Runway 4R-22L and through the tenant parking lot and shall be completed in one hundred twenty (120) days, but shall be closely coordinated with Landside Operations, and may be subject to limited availability due to the potential time of year in which the Contract is awarded. However, the Contractor shall be prepared to execute the work as depicted in the Contract documents and will not be entitled to any additional time or compensation for any delays that may be incurred as the result of the weather, or the potentially restricted availability of support services to facilitate the work.

B. Work shall include the following activities:
   a. Install barricades and remove markings to create work area
   b. Install sewer drain pipe and associated structures
   c. Temporary and unimpeded access to existing CDA and FAA facilities
   d. Installation and removal of temporary and permanent fencing
   e. All required safety measures, temporary roads and pavements
   f. Restore pavements, electrical, signage, markings and graded areas
   g. Clean area and remove barricades for aircraft operations

12. Area K – New Trunk Storm Sewer from South Basin – Runway 4R-22L Segment (North)

Milestone 3 / 90 Days

A. Area K is available upon the issuance of the Notice to Proceed and all work for installation of the pipe under Runway 4R-22L to Manhole Number H2028.17-101 and shall be completed in ninety (90) days, but shall be closely coordinated with Airfield Operations, and may be subject to limited availability due to the potential time of year in which the Contract is awarded. However, the Contractor shall be prepared to execute the work as depicted in the Contract documents and will not be entitled to any additional time or compensation for any delays that may be incurred as the result of the weather, or the potentially restricted availability of support services to facilitate the work.

B. Work shall include the following activities:
   a. Install barricades and remove markings to create work area
   b. Open pit for jack and bore operation
   c. Install sewer drain pipe and associated structures
   d. Installation and removal of temporary and permanent fencing
   e. Temporary and unimpeded access to existing CDA and FAA facilities
   f. All required safety measures, temporary roads and pavements

g. Restore markings and graded areas
h. Clean area and remove barricades for aircraft operations

C. Areas G-K include the installation of the new trunk storm sewer between the South Detention Basin and the MH No. H2028.17-101. If the ~~new Trunk~~permanent Storm Sewer tie-in is not completed by **October 16th, 2019**, the contractor shall make provisions to tie the new site storm sewer system temporarily into the existing drainage system to facilitate the airport's snow melting operations. Temporary connections and related work, including the removal of same, shall be performed at the Contractor's expense should temporary work become necessary.

13. Areas A, B, D, E and F – New Apron Areas

Milestone 4 / Time Varies

A. Upon completion of Areas A, B, (C previously in use) D, E and F, the newly constructed apron shall be Substantially Complete, open and functional to accommodate the following aircraft positions:
   a. Hardstand positions M101, 102, 103, 103A and 104
   b. Relocated M23 for the A380
   c. Relocated M22 for the B777
B. Throughout Areas A, B, D, E and F, the Contractor shall closely coordinate their work with the Fueling Contractor to allow for sufficient time and access for tie-ins, testing and related flushing activities at each fuel hydrant pit.

14. Phase 2 – Apron and Taxiway
Milestone 5 / 60 Days

A. Phase 2 shall not commence until the completion of Phase 1, Area C, and will have a duration of sixty (60) days.
B. This phase shall successfully complete **One (1) New Hardstand Position**. In addition, this phase includes **Pavement Markings and Removals at Night** in multiple locations to delineate new aircraft positions, taxiway centerlines and roadway limits as noted below and as shown in the Contract documents. Prior to the commencement of Phase 2 work, the contractor must successfully execute the work described below in item D., descriptions a., b. and c.

C. Upon completion of this phase, constructed apron shall accommodate positions for aircraft as follows:
   A. Position M25 is relocated to the new pavement for the 747-8
   B. Old Position M25 is eliminated
   C. Old Position M24 is adjusted for the A380 (angled NE)

D. Work shall include the following activity:
   a. Pavement striping, removals and signage adjustments to facilitate the closing of TW V7
   b. **Night Work** for the pavement marking of temporary Taxiway V and V6 centerlines, and related taxiway lighting and signage modifications; striping removal as required
   c. **Night Work** for airfield barricade placement to clearly delineate the AOA construction work zone
   d. Demolition
   e. Apron and taxiway pavements
   f. Drainage and electric
   g. Additional airfield pavement markings and removals for the following (**at Night**):
      i. To delineate the new centerline and edge for TW's V6 and V8
      ii. For the closing of TW V7
      iii. To delineate new service road limits behind gate M24
   h. Airfield signage and lighting for new pavements (**at Night**)
   i. Grading and restoration (**at Night**)

15. Phase 3 – Apron & Taxiway (Night Work)
Milestone 6 / 30 Days

A. Phase 3 shall not commence until the successful completion of Phase 2, Milestone 5, and will have a duration of thirty (30) days.
B. This phase shall successfully complete **Additional Airfield Pavement** providing aircraft movement flexibility. In addition, this phase includes **Pavement Markings and Removals (at Night)** in multiple locations to delineate new aircraft positions, taxiway centerlines and roadway limits.
C. Upon completion of this phase, apron constructed shall accommodate positions for aircraft as follows:
   A. Position M25 is extended further to the west for the A380 (east-west direction)
   B. Position M24 is adjusted for the 787-8 (east-west direction)
D. Work shall include the following activity and all work shall be performed as **Night Work,** as defined elsewhere in the contract documents:

   a. Airfield barricade placement, temporary closure of TW V6, pavement markings, removals and related adjustments to taxiway lighting and signage
   b. Demolition
   c. Apron and taxiway pavements
   d. Drainage and electric
   e. Pavement markings and removals for the following:
      i. To delineate the new centerlines for TW V
      ii. For the closing of TW V7
      iii. For the temporary taxilane centerline, south of gates M19 and M20
      iv. To delineate new service road limits
      v. For new hardstand positions

16. Phase 4 – Apron and International Taxilane (Night Work)
Milestone 7 / 30 Days

A. Phase 4 shall not commence until the successful completion of Phase 3, Milestone 6, and will have a duration of thirty (30) days.
B. This phase will successfully complete **Additional Airfield Pavements** adjacent to (west of) Phase 3, allowing the **International Taxilane** to be fully functional upon completion. It is the overall intent of the project phasing sequence for Phase 4 to be completed at the same time as Phase 1, Milestone 5. In addition, it is the City's intent for the adjacent Terminal Five Expansion to commence upon completion of Phases 1 and 4.
C. Upon completion of this phase, the International Taxilane will be open to aircraft movements in the east-west direction.
D. Work shall include the following activity and shall be performed as **Night Work,** as defined elsewhere in the contract documents:

   a. Airfield barricade placement, pavement markings and removals, and related adjustments to taxiway lighting and signage
   b. Demolition
   c. Drainage and electric
   d. Apron and taxiway pavements
   e. Pavement markings and removals

17. Phase 5 – Apron (Night Work)
Milestone 8 / ~~30~~ 60 Days

A. Phase 5 shall not commence until the successful completion of Phase 4, Milestone 7, and will have a duration of sixty (60) days.
B. This phase will successfully complete **Apron Pavement** adjacent to (north of) Phase 4, providing additional flexibility.

C. Work shall include the following activity and shall be performed as **Night Work,** as defined elsewhere in the contract documents:
   a. Airfield barricade placement, pavement markings and removals, and related adjustments to taxiway lighting and signage
   b. Demolition
   c. Fencing
   d. Drainage and electric
   e. Apron pavements
   f. Pavement markings and removals

D. Upon completion of this Phase, apron constructed shall accommodate positions for aircraft as follows:

8.0 LIQUIDATED DAMAGES

A. As provided for in Article VIII., Section A., Paragraph 4, of Part Two of the Contract, liquidated damages shall be assessed as shown on the table found on page S4-11 for all work associated with Volume 1 Plans and Specifications.

Note: Nothing herein shall be construed as limiting the right of the City to recover from the Contractor any and all amounts due or to come due, and any and all costs and expenses sustained by the City for improper performance hereunder, repudiation of the Contract by the Contractor, failure to perform or breach or breaches in any other respect, including but not limited to, defective workmanship or materials.

MILESTONE	LIQUIDATED DAMAGES	
Milestone 1 Areas A, B, C & F: Secure	$ 1,000	Per Day
Milestone 2 Area C: Temp GSE & Snow Melt	$ 5,000	Per Day
Milestone 3 Area G: Trunk Storm Sewer	$ 2,500	Per Day
Milestone 4 Phase 1: Areas A, B, D, E & F	$ 5,000	Per Day
Milestone 5 Phase 2: Apron & Taxiway	$ 2,500	Per Day
Milestone 6 Phase 3: Apron & Taxiway	$ 2,500	Per Day
Milestone 7 Phase 4: Apron & Taxiway	$ 2,500	Per Day
Milestone 8 Phase 5: Apron & Taxiway	$ 2,500	Per Day

In accordance with the Technical Specifications N-100, Night Work Construction in an active Runway safety area and Taxiway object free area is work to be accomplished between the hours of 10:30 PM and 6:00 AM unless noted otherwise in these contract documents and as approved by Airport Operations. Failure to restore active Runway Safety Areas and Taxiway Object Free Areas to full operational capability by 6:00 AM will result in assessment of Liquidated Damages as follows:

A. Failure to Open a Runway on Time

- $10,000.00 for the first 15 minutes (or increments of) beyond 6:00 AM.
- $5,000.00 for every 15 minutes (or increments of) thereafter.

B. Failure to Open a Taxiway on Time
- $5,000.00 for the first 15 minutes (or increments of) beyond 6:00 AM.
- $2,500.00 for every 15 minutes (or increments of) thereafter.

C. The official time will be determined by the Airport Operations. Night Work Liquidated Damages are independent of Liquidated Damages by Milestone for Contract Work.

D. The Contractor will be liable to an assessment of $10,000 per each and every occurrence where an employee or piece of equipment is within the restricted zones or Taxiway or Runways without permission of the Airport Operations. These assessments will be deducted from monies owed to the Contractor under this contract. In addition, any fines levied by the FAA or the Airport Authority due to improper conduct by the Contractor will be forwarded to the Commissioner for payment by the Contractor.

9.0 WEATHER DAYS

No additional time will be granted for weather delays associated with this contract. All Work must be completed within the time period indicated in the Contract. However, weather events, which are exceptionally irregular, are excluded. An exceptional weather event shall be defined as an event that prevents work on one (1) or more Critical Path activities for eleven (11) or more consecutive planned workdays. Planned workdays shall be indicated on the three-week look-ahead schedule. The eleventh (11th) consecutive planned workday prevented from occurring by an exceptional irregular weather event shall be grounds for requesting a time extension for that day.

10.0 HOLIDAY MORATORIUMS AND WINTER CONSTRUCTION

FAA-mandated Holiday Moratorium (work suspensions) dates during the Thanksgiving and Christmas Holidays will affect work. This project will also observe a Winter Suspension period. The anticipated dates are as follows:

A. Thanksgiving Moratorium

Work on this Contract will be underway through the 2018 and 2019 the Thanksgiving and Christmas Moratoriums. However, typically about 10-11 days (later weeks of November) of work stand down occur, with work only permitted by an approved FAA Waiver. In 2018, the anticipated work stand-down period will be from November 16, 6 PM CST through November 26, 2 AM CST. The 2019 Moratoriums will be similar to that of 2018.

B. Christmas Moratorium

The Christmas Moratorium typically lasts about 15 days from late December to first week of January. In 2018, it is anticipated that the work stand-down period will be on or around December 21, 2017 at 6 PM CST through January 2, 2019 at 2 AM CST. For the 2019 Christmas Moratorium, dates and times would be similar, however, exact dates are not known at this time.

C. Winter Suspension

Work on this project is subject to an annual winter suspension period between December 15th and March 15th. Any additional costs incurred as a result of performing winter work should be included in the associated pay items. Additionally, no additional time will be granted for weather days or exceptional weather events during this period. Any work activities performed during the winter suspension period, is solely at the Contractor's discretion. The Commissioner reserves the right to make any area not available due to winter conditions, for which the Contractor will not receive additional compensation.

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VOL. III-B DIVISION 16 - ELECTRICAL

RECYCLED CRUSHED CONCRETE AND ASPHALT
SECTION 02245

PART 1 DESCRIPTION

1.01 GENERAL

A. Furnish all labor, materials, equipment, and processes required for the setting up, operating and removal of a portable crushing plant and associated equipment capable of producing crushed recycled concrete and crushed and/or screened recycled asphalt pavement in accordance with this specification. This work will include site restoration at the end of operations.

1.02 DESCRIPTION OF WORK

A. The Contractor will be responsible for setting up a portable crushing plant and associated equipment on the project work site, at a location as determined by the Commissioner; crushing all PCC pavement material removed to IDOT CA-6 or Recycled Concrete Base (RCB); and leaving properly constructed separate stockpiles of the products for utilization on the project by the Contractor or others. Only concrete from O'Hare Airport projects is to be utilized in crushing operations.

B. Recycled Concrete Base (RCB) must meet the following gradation:

Sieve Size	**Percent Passing**
4"	100
3"	60 - 100
¾"	30 - 70
½"	20 - 60
#4	35 maximum percent passing
#40	20 maximum percent passing
#200	0 - 5.0

C. The RCB will be subject to acceptance testing procedures by the Commissioner. Crushing operation at the jobsite will be subject to monitoring by the Commissioner to ensure that the material is clean and meets the requirements. Uniformity in production of clean

recycled concrete and uniformity of placement in the field free of segregation are required. Precautions shall be taken to avoid segregation of material in the stockpile or during placement. RCB must be free of reinforcing bars, PVC pipes, RAP, metals, geotextile fabric, and other objectionable materials.

D. Upon completion of the crushing operations, the Contractor must remove the crushing plant, associated equipment and any necessary site utilities from airport property and restore the site at no additional cost to the Commissioner.

1.03 RELATED WORK

Section 01111 – Air Quality - Equipment Emissions

Section 01355 – Local/Regional Materials

Section 01356 – Recycled Content

Section 01524 – Construction Waste Management

Section M-103 – Airport Safety and Security

Section P-154 – Frost Protection Course

Section P-156 – Temporary Air and Water Pollution, Soil, Erosion, and Sediment Control

Section Q-100 – Contractor Quality Control Program

1.04 SUBMITTALS

A. Prior to beginning the work, the Contractor must submit a Work Plan at the Pre-Construction conference to the Commissioner for approval. The Work Plan must include a description of all equipment and processes that will be utilized to crush the concrete and asphalt to the specified gradations, estimated daily production, expected duration of crushing operations, estimated total quantities of each aggregate gradation, estimated duration of mobilization and demobilization, removal of steel and deleterious materials, set up and calibration of weighing equipment, and stockpile management. No work is to commence until the Work Plan has been approved by the Commissioner.

B. The Contractor must submit a Dust Control Plan for the methods for accomplishment for the alleviation and prevention of dust nuisance

originating from construction operations within the project limits. The Contractor must have a sufficient number of operating vacuum power sweepers and operators on the job site at all times.

C. The Contractor must submit a Waste Management Plan and comply with reporting requirements in accordance with Section 01524 – Construction Waste Management.

D. CA-6 and RCB shall be accepted for gradation as specified herein. Sampling locations shall be determined on a random basis in accordance with statistical procedures contained in ASTM D3665. Sampling of aggregates shall be in accordance with ASTM D75.

E. The Contractor must submit a sieve analysis per ASTM C 136 for every 2500 tons of aggregate produced, or a minimum of one test every two weeks, whichever is more frequent, for each gradation. The analysis will show that the product meets the gradation of CA-6; conforming to the Article 1004 of the Illinois Department of Transportation; Standard Specifications for Road and Bridge Construction, latest edition. Recycled Concrete Base (RCB) must meet the gradation shown in Paragraph 1.02.B.

F. Comply with all applicable City, State and Federal governmental regulations regarding crushing operations. This includes but is not limited to: Illinois Environmental Protection Agency (IEPA) Joint Construction and Lifetime Operating Permit for Portable Emissions Unit; City of Chicago Department of Environment (DOE) Construction Site Reprocessing Authorization Application Requirements (Crushing Authorization) and Installation Permit Application for Processing Equipment or Area (Crushing Equipment Installation Permit), as well as applicable IDOT Policy Memorandums regarding recycling Portland cement concrete into aggregate. The Contractor must obtain all required permits and submit copies to the Commissioner before starting any pre-processing or crushing operations.

PART 2 PRODUCTS

2.01 MATERIALS

The Contractor must satisfy himself as to the nature of the recyclable materials stockpiles located as referenced above and provide all required labor, materials, equipment and processes in order to maximize the amount of coarse aggregate concrete product produced so that the production of crushed concrete is optimized for CA-6 or RCB.

A. It is the responsibility of the Contractor to determine how much, if any, of the stockpiled materials is not suitable for crushing, and remove such material prior to crushing operations. The Contractor must dispose of the unsuitable material off site at no additional cost to the City.

B. Crushed recycled concrete having a gradation of CA-6, shall conform to Article 1004 of the Illinois Department of Transportation; Standard Specifications for Road and Bridge Construction, latest edition.

C. Crushed recycled concrete having a gradation of RCB, conforming to Paragraph 1.02.B.

D. The Contractor is to only use materials in the crushing and screening operations as generated from the project work site. The products must be crushed from clean rubble obtained from pavement removal or foundations. This does not include “tilt-up” type walls, light weight low strength concrete, concrete pipe, manholes, or bricks. These materials will not be crushed to produce recycled aggregates and must be disposed of off Airport Property as directed by the Commissioner at no additional cost to the Contract.

PART 3 EQUIPMENT

3.01 GENERAL

A. Provide a portable tracked or wheel mounted jaw type crusher with a minimum size of 32” x 58” capable of handling larger sized concrete in order to maximize the amount of coarse product produced. For RCB production, essentially all the source pile will be produced as RCB. The Commissioner will periodically check the crushing operations and percentages of RCB and CA-6 gradations produced. Oversized product is to be re-fed through the jaw crusher. A grizzly screen may be required for removals. The Commissioner will make the final determination of the adequacy of the Contractor’s crushing operations.

B. Crusher and screen(s) to be track or wheel mounted in order to facilitate quick site movement as directed by the Commissioner. The equipment must be capable of being portable enough to facilitate movements of short distances on site in order to better access the recyclable materials stockpiles and accommodate operational constraints of an active airport, if so directed by the Commissioner, without any additional mobilization/demobilization costs to the City.

C. A magnetic or other suitable device or method of separating steel from

the concrete and asphalt to be crushed into the aggregate gradations listed must be employed. Hand picking may also be required in order to remove steel/metals. The Contractor must take possession of the steel/metals for legal recycling off the airport property at his discretion. No steel/metals are to remain on the airport property. Comply with the requirements of Section 01524 – Construction Waste Management.

D. Verification of production for payment purposes will be through the means of a belt scale located on the jaw type crusher discharge belt. The scale must be initially calibrated by a certified outside agency or calibration service utilizing weights traceable to the National Institute of Standards and Technology (NIST) in the presence of the Commissioner. Thereafter, the belt scale must be re-calibrated weekly by the Contractor, in the presence of the Commissioner, to ensure accurate measurement. The scale must have a digital display and be read daily in the presence of the Commissioner for verification and be capable of printing weigh tickets for submission to the Commissioner on a daily basis.

E. Equipment and fuel shall comply with the requirements of Section 01111 – Construction Air Quality-Diesel Vehicle Emission Controls.

PART 4 OPERATION/PRODUCTION

4.01 GENERAL

A. The Contractor will be operating his equipment on and in the vicinity of an operating airport. The Contractor will be required to carry out his operations in a manner that will minimize interference with air traffic, and will be required to cooperate with the FAA, Airport Operations, the Commissioner, the Chicago Department of Aviation, the airlines, surrounding communities and other contractors working in the area. The Contractor must not interfere with any public access along any public street at any time and obtain any necessary permits and submit copies to the Commissioner. Comply with requirements of Section M-103 – Airport Safety and Security.

B. The Commissioner will periodically check the crushing operations and percentages and quality of products produced. The Commissioner will make the final determination of the adequacy of the Contractor's operations and the amounts and proportions of products being produced.

C. The first pass of the jaw type crusher is to be screened over a portable tracked or wheel mounted screen in order to remove deleterious

material. Oversized product is to be re-fed through the jaw type crusher. Remove deleterious materials separated in the crushing process and dispose of these materials in accordance with Paragraph 2.01.B. The use of a grizzly screen may be required for this operation. Hand picking may also be required in order to remove deleterious materials such as reinforcing bars, PVC pipes, geotextile fabric, etc.

D. The Contractor is to visually survey the feed stockpiles and modify his processes as required and furnish equipment and labor capable of removing, minimizing or distributing any deleterious materials or RAP in a random manner in the finished product. Comply with applicable IDOT Policy Memorandums regarding recycling Portland cement concrete into aggregate. Use of a grizzly screen may be required. Maintain stockpiles in order to minimize the incorporation of deleterious material.

E. The Contractor must properly manage and secure all stockpiles. Sites for stockpiles must be cleaned of deleterious materials which could contaminate the stockpiles. Separate free-draining stockpiles free of segregation must be provided for the various products produced. Stockpiles must be kept separate to prevent intermingling at the base. If partitions are used, they must be of sufficient heights to prevent intermingling. Maintain haul roads in the vicinity of access to stockpiles. When loading out of stockpiles, the vertical faces must be limited to reasonable heights to eliminate segregation due to tumbling. Maintain height of stockpiles to prevent segregation and comply with Airport Operations or FAA height restrictions. Segregation or degradation due to improper handling, stockpiling or loading out of stockpiles will be just cause for rejection of the material. The Commissioner will make the final determination as to the acceptability of each product.

F. The Contractor must protect any and all existing utilities and facilities to remain on the site. The Contractor must contact J.U.L.I.E. and/or DIGGER, as appropriate, the Chicago Department of Aviation, FAA and any other entity as required to locate and mark all utilities in the vicinity of the Work, prior to any activity. Provide the Commissioner with applicable J.U.L.I.E./DIGGER locate numbers.

PART 5 METHOD OF MEASUREMENT

5.01 MEASUREMENT

A. Measurement will be made for On-Site Mobilization, De-Mobilization, and Site Restoration as a lump sum.

B. The quantity of crushed product will be recorded by the number of tons of crushed product placed in the finished product stockpiles through the means of a belt scale located on the jaw crusher discharge belt. The belt scale must be read daily in presence of the Commissioner and a printed ticket provided daily to the Commissioner for each product produced.

PART 6 BASIS OF PAYMENT

6.01 PAYMENT

A. Payment will be made at the Contract unit price per lump sum for On-Site Mobilization, De-Mobilization, and Site Restoration. The price is full compensation of furnishing all equipment and materials; for all preparation, pre-processing and processing of recycled materials; removal of all deleterious materials within the Airport; removing and recycling steel/metals off of the Airport; and for all labor, equipment, tools, incidentals and all work necessary to complete the item. The work shall include relocation of crushing equipment and site facilities to another location on the work site for project phasing operations. This work will include removal of the crushing equipment and any necessary site facilities and site restorations at the end of operations.

B. Payment will be made at the Contract unit price per ton of crushed product to be used as CA-6 accepted by the Commissioner. The price is full compensation for furnishing all equipment and materials; for all preparation, pre-processing and processing of the recycled materials; removal and disposal of deleterious materials ~~within~~ off of the Airport; removing and recycling steel/metals off of the Airport; and for all labor, equipment, tools, incidentals and all work necessary to complete the item. This work will include removal of the crushing equipment and of any necessary site facilities and site restorations at the end of operations.

C. Payment will be made at the Contract unit price per ton of crushed product to be used as RCB accepted by the Commissioner. The price is full compensation for furnishing all equipment and materials; for all preparation, pre-processing and processing of the recycled materials; removal and disposal of deleterious materials ~~within~~ off of the Airport; removing and recycling steel/metals off of the Airport; and for all labor, equipment, tools, incidentals and all work necessary to complete the item. This work will include removal of the crushing equipment and of any necessary site facilities and site restorations at the end of operations.

D. Payment will be made under:

ITEM NO.	DESCRIPTION	UOM
02245-01	ON-SITE CRUSHER MOBILIZATION, DE-MOBILIZATION, AND SITE RESTORATION	LS
02245-02	CRUSHED AGGREGATE, CA-6	TON
02245-03	CRUSHED AGGREGATE, RCB	TON

END OF SECTION 02245

RETAINING WALLS
SECTION 03600

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes all work necessary to design, detail, and construct Retaining Walls 1, 2 and 3 to the lines and grades shown on the Contract Drawings and to provide anchorage slab and barrier as required on the Contract Drawings. Design, detailing, and construction of Retaining Wall 2 must be coordinated with Jet Blast Protection Fence foundation by others.

1.02 PREQUALIFIED RETAINING WALL SYSTEMS

A. The Illinois Department of Transportation (IDOT) maintains a list of pre-qualified design concepts and/or proprietary products allowed for Mechanically Stabilized Earth (MSE) Retaining Walls.

B. These systems have been reviewed for structural feasibility and adequacy only. Presence on this list shall in no case relieve the Contractor of the site specific design or QC/QA requirements stated herein.

1.03 SUBMITTALS.

A. Submittals shall include all shop drawings and design computations for MSE Retaining Walls. The submittals shall address all details, dimensions, quantities, general notes, and cross sections necessary to construct the retaining wall. The submittal shall be submitted to the Commissioner for review and approval no later than 90 days prior to construction of the retaining wall. Approval shall be contingent upon acceptance by the utilities and/or public agencies involved. Both the computations and the shop drawings shall be prepared and sealed by an Illinois Licensed Structural Engineer. All designs shall be according to the AASHTO design code specified on the plans, except as modified herein.

B. Shop Drawings for MSE Retaining Walls. Before fabrication begins, the Contractor shall submit duplicate prints of shop drawings to the Commissioner for review and preliminary approval. Discrepancies in the contract plans or existing conditions discovered during preparation of the shop drawings shall be reported to the Commissioner for resolution prior to submitting the shop drawings for review and

approval. These drawings shall be on full size sheets, 22 x 34 in. or reduced size sheets, 11 x 17 in. Each full or reduced size sheet shall provide adequate space for review and approval stamps at the lower right hand corner. Both lettering and details shall ensure legibility for review and reproduction after microfilming. All drawings shall be completely titled according to the contract plans including wall number, contract number, and shall pertain to only one wall. If the submitted shop drawings have significant discrepancies, revised sets shall be submitted until details comply with the contract requirements. After all review comments have been addressed and preliminary approval is given, the Contractor shall furnish six or more full or reduced size prints of the drawings as directed by the Commissioner, and these shall be distributed and become a part of the contract. Changes to previously approved shop drawings shall be subject to the approval of the Commissioner, and the Commissioner shall be supplied with a record of all such changes.

All modifications based on Illinois Department of Transportation pre-qualified design concepts and/or proprietary products for MSE Retaining Walls, such as altered reinforcement geometry, or size and spacing, shall be summarized and the list included with the initial review submittal.

1.03 WARRANTIES AND GUARANTEES

A. Warranties for materials that have special Manufacturer's Warranties, which may originate in part or in whole with the manufacturer or the fabricator, must be passed through the Contractor to the ~~Department~~ Commissioner.

B. The Contractor must repair or replace defective materials and workmanship during the Contract Period and for one year from the date of Substantial Completion of the Project. Defective material and workmanship include, but are not limited to, the following:

1. Defective materials and workmanship is that material or workmanship that does not meet the requirements of the Contract Documents; or is unacceptable to the Commissioner.

1.04 RELATED WORK:

A. As specified in the following divisions:

1. Division 2 – Site Construction

2. Section P-610 – Structural Portland Cement Concrete

3. Section F-165 – Jet Blast Protection Fence

PART 2 PRODUCTS

2.01 MECHANICALLY STABILIZED EARTH RETAINING WALLS

A. Mechanically stabilized earth (MSE) walls shall consist of a MSE wall design, concrete leveling pad, precast concrete face panels, a soil reinforcing system, select fill, concrete coping (when specified), and any other construction accessories necessary to construct the wall. The material, fabrication, and construction shall also meet the requirements specified by the supplier of the wall system selected by the Contractor. The options for MSE wall systems shall be according to Section 1.02 of this Specification. Materials used shall conform to IDOT Standard Specifications for Road and Bridge Construction Article 522.02.

B. Design computations and shop drawings shall be submitted according to Section 1.03 of this Specification. The Contractor shall be responsible for all internal stability aspects of the wall design and shall submit to the Commissioner computations for each designed wall section. The Department will be responsible for the analysis of settlement, bearing capacity, and overall slope stability. The wall shall not be designed for seismic loading unless noted on the plans. For design purposes of the wall system, embankment placed behind the reinforced volume of select fill shall be assumed to have a unit weight of 120 lb/cu ft and an effective friction angle of 30 degrees.

External loads, such as those applied through structure foundations, from traffic or railroads, slope surcharge, etc., shall be accounted for in the internal stability design. Typical roadway live load surcharge and construction loads should be considered. Anchorage slab bearing and sliding forces are shown on drawings. Jet Blast Protection Fence foundation loads and details must be coordinated with the fence supplier, Aircraft gravity loads are assumed no closer than 100 feet from face of wall. The presence of all appurtenances behind, in front of, mounted upon, or passing through the wall volume such as drainage structures, utilities, structure foundation elements, or other items shall be accounted for in the internal stability design of the wall.

The design of the soil reinforcing system shall be according to the applicable AASHTO LRFD Bridge Design Specifications for inextensible steel or extensible geosynthetic reinforcement criteria.

The shop drawings shall show the limits of soil reinforcement and stations where changes in length and/or size of soil reinforcement occur. All details of the soil reinforcement placement around all appurtenances located behind, on top of, or passing through the soil reinforced wall volume such as parapets with anchorage slabs, coping, foundations, and utilities, etc., shall be addressed. Modifications to the design of these appurtenances to accommodate a particular system shall be submitted to the Commissioner.

The equivalent uniform applied service (unfactored) nominal bearing pressure shall be shown for each designed wall section.

C. The reduced section of the soil reinforcing system shall be sized to allowable stress levels at the end of a 75-year design life. The design life for epoxy and aluminizing shall be assumed to be 16 years. The corrosion protection for the balance of the design life shall be provided using a sacrificial steel thickness computed for all surfaces.

D. To prevent out of plane panel rotations, the soil reinforcement shall be connected to the standard full height panels at a minimum of two different elevations, vertically spaced between 15 and 30 in. apart.

The panels shall be erected so that the horizontal panel joint line is discontinuous at every other panel. This shall be accomplished by alternating standard height and half height panel placement along the leveling pad. Panels above the lowest level shall be standard size, except as required to satisfy the top of exposed panel line shown on the plans.

At locations where the plans specify a change of panel alignment creating an included angle of 150 degrees or less, precast corner joint elements will be required. This element shall separate the adjacent panels by creating a vertical joint secured by means of separate soil reinforcement.

Isolation or slip joints, which are similar to corner joints in design and function, may be required to accommodate differential settlement at locations indicated on the plans or as recommended by the wall supplier. Wall panels with areas greater than 30 sq ft may require additional slip joints to account for differential settlement. The maximum standard panel area shall not exceed 60 sq ft.

PART 3 EXECUTION

3.01 GENERAL

A. The Contractor shall obtain technical assistance from the supplier prior to and during wall erection to ensure proper construction of the wall.

B. The foundation soils supporting the structure shall be graded for a width equal to or exceeding the length of the soil reinforcement. Prior to wall construction, the foundation soils shall be compacted according to IDOT Standard Specifications for Road and Bridge Construction Section 205, except the minimum required compaction shall be 95 percent of maximum density as determined by Illinois Modified AASHTO T 99. Any foundation soils found to be unsuitable shall be removed and replaced, as directed by the Commissioner. Unsuitable material shall be disposed of according to IDOT Standard Specifications for Road and Bridge Construction Article 202.03.

C. The select fill shall be defined as the material placed in the reinforced volume behind the wall panels or sacrificial facing.

D. The concrete leveling pads shall have a minimum thickness of 6 in. and shall be placed according to IDOT Standard Specifications for Road and Bridge Construction Section 503. The top of the leveling pad shall be located at or below the theoretical top of the leveling pad line shown on the plans. The theoretical top of leveling pad line shall be 3 1/2 ft below finished grade line at the front face of the wall.

E. As select fill material is placed behind a panel, the panel shall be maintained in its proper position according to the supplier specifications. A 3/4 in. joint separation shall be provided between all adjacent face panels to prevent direct concrete to concrete contact. This gap shall be maintained by the use of bearing pads and/or alignment pins.

F. The back of all panel joints shall be covered by a geotextile filter material attached to the panels with a suitable adhesive. The minimum fabric width shall be 12 in. and laps shall be a minimum of 6 in. No adhesive will be allowed directly over the joints.

G. Where concrete coping or barrier is specified, the panels shall extend up into the coping or barrier as shown on the Contract Drawings. The top of the panels may be level or sloped to satisfy the top of exposed panel line shown on the plans. Cast-in-place concrete will not be an acceptable replacement for panel areas below the top of exposed panel line.

H. The select fill and embankment placement shall closely follow the erection of each lift of panels. At each soil reinforcement level, the fill material shall be leveled and compacted before placing and attaching the soil reinforcing system. The soil reinforcement and the select fill shall be placed according to the supplier's recommended procedures, except the lifts for select fill shall not exceed 10 in. loose measurement. Embankment shall be constructed according to IDOT Standard Specifications for Road and Bridge Construction Section 205.

I. At the end of each day's operations, the Contractor shall shape the last level of select fill to permit runoff of rainwater away from the wall face. Select fill shall be compacted according to IDOT Standard Specifications for Road and Bridge Construction Section 205, except the minimum required compaction shall be 95 percent of maximum density as determined by Illinois Modified AASHTO T 99, except select fill gradations CA 7, 8, 11, 13, 14, 15, and 16 shall be compacted, using a growth curve or other method, to a density acceptable to the Commissioner. For fine aggregates, the minimum percent of maximum density, as determined by Illinois Modified AASHTO T 99, may be increased as specified by the Commissioner if needed to achieve the required friction angle. Select fill compaction shall be accomplished without disturbance or distortion of the soil reinforcing system or panels. Compaction of the 3 ft wide strip adjacent to the backside of the facing shall be achieved using a lightweight mechanical tamper, roller, or vibratory system.

3.02 CONSTRUCTION TOLERANCECS.

A. Construction tolerances shall be as follows:

1. Vertical and horizontal alignment of the wall shall be within 3/4 in. of the plan location when measured along a 10 ft straightedge.

2. The maximum allowable offset in any panel joint shall be 3/4 in.

3. The overall vertical (plumbness from top to bottom) shall not exceed 1/2 in. per 10 ft of wall height.

4. The precast face panels shall be within 1 in. of the plan offset at any location to ensure proper wall location at the top of the wall.

B. Failure to meet these tolerances may require modifications to the wall up to and including removal and reinstallation of the affected portions of the wall.

PART 4 METHOD OF MEASUREMENT

4.01 MEASUREMENT

A. Retaining walls must be measured as lump sum to execute all required work specified herein.

PART 5 BASIS OF PAYMENT

5.01 PAYMENT

A. Payment for Retaining Walls will be made at the Contract Lump Sum Price for each wall, measured as specified herein. This price shall be full compensation for furnishing all materials and for all design, submittals, coordination, site preparation, excavation, backfilling and placing of the materials, concrete anchorage slabs and barriers, and any other items as may be required to complete the work as shown on the Contract Drawings and in conformance with this specification, and for all labor, equipment, and tools necessary to complete the walls.

B. Payment will be made under:

ITEM NO.	DESCRIPTION	UOM
03600-01	RETAINING WALL 1	L.S.
03600-02	RETAINING WALL 2	L.S.
03600-03	RETAINING WALL 3	L.S.

END OF SECTION 03600

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PAINTS AND COATINGS
SECTION 09900

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Work under this Section is subject to the requirements of the Contract Documents.

B. Furnish and install Paints and Coatings Work as shown on the Drawings and as specified herein, including but not limited to the following:

1. Surface preparation and field application of paints and coatings.

C. Install products and materials (furnished in other Sections) as shown on the Drawings and as specified herein, including but not limited to the following:

1.02 RELATED WORK

A. As specified in the following divisions:

1. Section 5 - Metals

2. Section 8 – Doors and Windows

3. Section 9 – Finishes

1.03 REFERENCES

A. ASTM D 16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.

B. ASTM D 2016 - Test Method for Moisture Content of Wood.

C. AWWA (American Water Works Association) - C204 - Chlorinated Rubber-Alkyd Paint Systems for the Exterior of Above Ground Steel Water Piping.

D. AWWA (American Water Works Association) - D102 - Painting Steel Water Storage Tanks.

E. NACE (National Association of Corrosion Engineers) - Industrial Maintenance Painting.

F. NPCA (National Paint and Coatings Association) - Guide to U.S. Government Paint Specifications.

G. PDCA (Painting and Decorating Contractors of America) - Painting - Architectural Specifications Manual.

H. SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual.

1.04 SUBMITTALS

A. Submit the following

1. Samples and/or Product Data

a. Product Data

(1) Provide data on all finishing products.
(2) Manufacturer's Instructions indicating special surface preparation procedures and substrate conditions requiring special attention.

b. Samples

(1) Three sets of sample, at least 1”x 1/2”, showing all colors and textures available for initial selection.
(2) Submit three (3) samples, 8½”x11” in size illustrating color and texture for each color selected.

B. Test Reports

a. Submit certification that products meet or exceed the specified requirements.

2. Manufacturers Certification

a. Submit certification that products meet or exceed the specified requirements.

(1) Indicating special surface preparation procedures, substrate conditions requiring special attention that apply to this Project.

1.05 QUALITY CONTROL

A. Manufacturer Qualifications: manufacturers of paints and coatings must be performed only by a qualified manufacturer. The term qualified means experienced in performing the Work required by this Section. The qualified manufacturer must have a minimum of ten (10) years documented experience on Projects similar in size and scope to this Project. The manufacturer must submit evidence of such qualifications upon request by the Commissioner.

B. Contractor Qualifications: Application of paints and coatings must be performed only by a qualified applicator. The term qualified means experienced in performing the Work required by this Section. The qualified applicator must have a minimum of five (5) years documented experience on Projects similar in size and scope to this Project. The applicator must submit evidence of such qualifications upon request by the Commissioner.

C. Perform Work in accordance with the latest edition, of the appropriate divisions, of the following:

1. Applicable Sections of the City of Chicago Building Codes for flame and smoke rating requirements for finishes.

2. Applicable Federal, State and local laws and regulations regarding the use of volatile organic compounds and hazardous materials.

1.06 DELIVERY, STORAGE AND HANDLING

A. Materials must be delivered to the Project in sealed containers bearing Manufacturer's name and material identification, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing. Materials must be stored in strict accordance with the Manufacturer's printed directions, copies of which must be furnished to the Commissioner.

1. Store paint materials at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by Manufacturer's instructions.

2. All paints, varnishes, enamels, lacquers, stains and similar materials must be delivered in the original containers with the

seals unbroken and label intact and with the Manufacturer's instructions printed thereon.

B. Protection - Protect materials against all damage by an approved means during transportation, storage and erection and until completion of construction work. All unsatisfactory materials must be removed from the premises, and all damaged materials replaced with new materials.

C. Access and Storage Areas

1. All access routes and storage areas must be subject to the approval of the Commissioner in order to reduce interference with Airport Operations.

1.07 WARRANTIES AND GUARANTEES

A. Paints and coatings must be covered under Contractors general construction warranty.

1.08 EXTRA MATERIALS AND SPARE PARTS

A. Provide 1 gallon (4L) of each color, type, and surface texture to the Commissioner.

1. Label each container with color, type, texture, and room locations in addition to the manufacturer's label.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product Manufacturer.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product Manufacturer.

C. Minimum Application Temperatures for Latex Paints

1. 45 degrees F (7 degrees C) for interiors; 50 degrees F (10 degrees C) for exterior; unless required otherwise by Manufacturer's instructions.

D. Minimum Application Temperature for Varnish and Finishes

1. 65 degrees F (18 degrees C) for interior or exterior, unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 foot candles (860 lx) measured mid-height at substrate surface.

1.10 SPECIAL REQUIREMENTS

A. Field Measurements - Before proceeding with the fabrication of the work, the Contractor must verify all dimensions and take such measurements as are required for proper fabrication and installation of the work.

B. Coordination - Coordinate Work of this Section with related Work specified in the other divisions/Sections of the Contract Documents.

C. The Contractor must prior to starting any work meet with the Commissioner to review in detail and to agree upon a program for scheduling work so as to make certain that the various stages of the work must not interfere with the normal conduct of business.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Products of one of the following Manufacturers will be acceptable:

1. Benjamin Moore & Co., Montvale, NJ 07645.

2. Detroit Graphite Co. (B Valspar Co.)

3. The Glidden Co., Cleveland, OH 44115.

4. PPG Industries, Inc., Pittsburgh, PA 15272.

5. Pratt & Lambert Specialty Products, Cleveland, OH 44115.

6. Rust-Oleum Corp., Vernon Hills, IL 60061.

7. Sherwin-Williams Company, Cleveland, OH 44115.

8. Tnemec Co., Inc., Kansas, MO 64120.

B. The Contractor is advised that some of the above manufacturer's products may be specifically specified to meet required conditions and surface coatings.

2.02 PAINT AND COATING MATERIALS

A. All painting materials, must be of the best quality, and will be approved by the Commissioner. They must bear identifying labels on the containers with the Manufacturer's instructions printed thereon.

B. Paint must not be settled badly, caked or thickened in the container, must be readily dispersed with a paddle to a smooth consistency and must have excellent application properties.

C. Paint must arrive on the job color-mixed except for tinting of undercoats and possible thinning.

D. All thinning and tinting materials must be as recommended by the manufacturer for the particular material thinned or tinted.

E. It must be the responsibility of the applicator to see that all mixed colors match the color selection made by the Commissioner, prior to application of the coating.

F. Coatings - Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating; good flow and brushing properties; capable of drying or curing free of streaks or sags.

G. Accessory Materials - Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

H. Patching Materials - Latex filler.

I. Fastener Head Cover Materials -Latex filler.

2.03 SHOP PRIMERS

A. Review all Sections for shop primed products to be finish coated under this Section (such as doors and frames or casework) and coordinate with providers of these products to assure that all prime coats are compatible with the intended finish coats and meet the requirements of this Section.

PART 3 EXECUTION

3.01 INSPECTION

A. Inspect and verify that all surfaces conform to the manufacturer's requirements for that specific substrate.

B. Before commencing installation, examine substrate surfaces to determine that they are free of conditions which might be detrimental to proper and timely completion of the work. Start of work must indicate acceptance of the substrate.

C. Test shop applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the manufacturer's recommended level or below the following maximums, whichever is more restrictive:

1. Plaster and Gypsum Wallboard - 12 percent.

2. Masonry, Concrete, and Concrete Unit Masonry - 12 percent.

3. Concrete Floors - 8 percent.

3.02 WORKMANSHIP - GENERAL

A. Only skilled mechanics must be employed. Application may be by brush, roller or spray, upon approval from the Commissioner.

B. The Contractor must furnish the Commissioner a schedule showing when he/she expects to have completed the respective coats of paint for the various areas and surfaces. This schedule must be kept current as the job progresses.

C. The Contractor must protect its work at all times, and must protect all adjacent work and materials by suitable covering or other method during progress of his work. Upon completion of the Work, he/she must remove all paint and varnish spots from floors, glass and other surfaces. He/she must remove from the premises all rubbish and must leave its part of the work in clean, orderly and acceptable condition.

D. Remove and protect hardware, accessories, device plates, lighting fixtures, factory finished work, and similar items; or provide ample in-place protection. Upon completion of each space, carefully replace all removed items.

E. Remove electrical panel box covers and doors before painting wall. Paint separately and re-install after all paint is dry.

F. All materials must be applied under adequate illumination, evenly spread and smoothly flowed on to avoid runs, sags, holidays, brush marks, air bubbles and excessive roller stipple.

G. Coverage hide must be complete. When color, stain, dirt, or undercoats show through final coat of paint, the surface must be covered by additional coats until the paint film is of uniform finish, color, appearance and coverage, at no additional cost to the City.

H. All coats must be dry to Manufacturers recommendations before applying succeeding coats.

I. All suction spots or "hot spots" in plaster and/or cement after the application of the first coat must be touched up before applying the second coat.

J. All surfaces, unless otherwise excluded, must be painted. Surfaces or items which may be adjacent to areas to be painted, but not identified in the Schedule of Painting tabulation must be painted or finished as adjacent work. Note - All colors are to be selected by the Commissioner.

K. After prime coat has been applied over any wall or ceiling surfaces, surfaces must be examined and all voids and depressions spackled and touched up before proceeding with final coating.

L. Tint each successive coat so that it is possible to determine how many coats have been applied.

3.03 PREPARATION OF SURFACES

A. Prepare all surfaces according Manufacturer's written requirements but not less than the following:

1. General:

a. Surfaces must be clean, dry and adequately protected from dampness.

b. Surface must be free of any foreign materials which must adversely affect adhesion or appearance of applied coating.

c. Mildew must be removed and the surface neutralized per the coating manufacturers recommendations.

d. Efflorescence on any area must be corrected before painting.

e. Where existing surfaces have been painted and new painting is required where indicated on the Drawings and in the "Room Finish Schedule" the following guide may be used to determine the degree of surface preparation required after making a thorough inspection of the old coating.

Surface Condition	Preparation
75% Intact	Remove failed portions of coating by specified method and spot prime bare areas.
Less than 75% intact	Total removal by surface preparation method specified
Brittle, eroded or underfilm rusting	Total removal by surface preparation method specified.

2. Drywall

a. Fill all minor irregularities with spackling paste and sand to a smooth level surface. Exercise care to avoid raising nap of paper.

3. Concrete, Masonry

a. Patch large openings and holes and finish flush with adjacent surface. After priming, fill any remaining small holes with prepared patching material.

b. Acid etch concrete floor surface, scheduled for painting, with solution of one part 32% muriatic acid to three parts water. Flush floor with clean water and allow to dry thoroughly before painting. Check the pH#, if not neutral then correct by using 3% solution of T.S.P. or ammonium hydroxide. The etched surface should look uniform in sheen and feel like l00 grit abrasive paper.

c. Remove form oil from poured-in-place concrete by washing concrete with xylol, or exempt type form oil solvent, or as required for complete removal.

d. These surfaces must be dry. No painting will be done until surfaces have cured for 28 days and are dry.

4. Ferrous Metal Surfaces

a. Remove dirt and grease with mineral spirits and wipe dry with clean cloths.

b. Remove rust, mill scale and defective paint down to sound surfaces or bare metal using scraper, sandpaper or wire brush as necessary. Grind, disc sand, etc. if necessary, to prevent “photographing” thru finish coats.

c. Touch up all bare metal and damaged shop coats with specified Shop Coat Primer.

d. The surface preparation must also be in strict accord with the recommendations set forth in "Surface Preparation Specifications" issued by the "Steel Structures Painting Council" (SSPC latest issue), Pittsburgh, PA 15213.

5. Galvanized Metal Surfaces

a. Remove dirt and grease with mineral spirits and wipe dry with clean cloths.

3.04 WORKMANSHIP FOR EXTERIOR PAINTING

A. Exterior Painting

1. Must not be done when the surface temperature is below that indicated by the Manufacturer but not below 50 degrees F, while the surface is damp, or during cold, rainy or frosty weather. The substrate temperature must be as indicated by the Manufacturer, but not more than 5 degrees F above the Dew Point temperature while painting and during the coatings cure.
2. Avoid painting surfaces while they are exposed to hot sun.

B. Exterior Doors

1. Must have top, bottoms, and side edges finished the same as the exterior faces of these doors.

3.05 WORKMANSHIP FOR INTERIOR PAINTING

A. Interior Doors

1. Must be sealed on the tops and bottoms with the prime coat only. Side edges of interior doors must be finished as faces of these doors.

B. Enamel or varnish finish applied to wood or metal must be used with fine sandpaper and then cleaned between coats to produce an even surface.

3.06 WORKMANSHIP FOR MECHANICAL AND ELECTRICAL EQUIPMENT PAINTING

A. Refer to Division 15000 and Division 16000 for schedule of color coding and identification banding of equipment, duct work, piping, and conduit.

B. Paint shop primed equipment. Do not paint shop prefinished items occurring at interior areas.

C. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

D. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, and etc. except where items are prefinished.

E. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint, to visible surfaces. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.

F. Paint exposed conduit and electrical equipment occurring in finished areas.

G. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

H. Color code equipment, piping, conduit, and exposed duct work in accordance with requirements indicated. Color band and identify with flow arrows, names and numbering.

I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

J. Do not paint any moving parts or items whose function will be damaged by painting them.

3.07 SCHEDULE OF PAINTING

A. The following is a general guide to the extent of painting, finishing, and decorating required, but is not necessarily limited to the items listed. Refer to Room Finish Schedules and all notes on the Drawings and herein specified.

B. Except as noted otherwise, the paint products indicated in the following schedule are by Pratt and Lambert and are intended as examples of type, quality and performance required. Products by any other manufacturer listed in this Section which meet or exceed the performance of the example products listed and are of the same type and quality will be acceptable.

C. Paint as follows:

1. New Standard Gypsum Board Surfaces - Paint Finish - Acrylic, 3-coat, Semi-Gloss.

    a. First coat - SUPrime “4”

    b. Second & Third Coats - Accolade Interior Enamel – Semi-Gloss

2. New W.R. Gypsum Board-Surfaces - Paint Finish – Acrylic, 3-coat, Semi-Gloss.

    a. Back paint all W.R. Gypsum Board before erection with one coat of SUPrime “11”.

    b. Exposed surface to receive

        (1) First coat - SUPrime “4”
        (2) Second & Third Coats Accolade Interior Enamel – Semi-Gloss

3. Metal Surfaces - Ferrous - Exposed to Public View, (Except Handrailings) – Alkyd Enamel, 3-coat, Gloss.

    a. First coat - SUPrime “9”

    b. Second and Third coat - Permalize - Gloss

4. Metal Surfaces - Aluminum - only for ducts & conduits exposed to public view (Same as for item - "Metal Surfaces Ferrous")

5. Ferrous Metal Handrailings – Epoxy, 2 or 3-coat, Gloss

    a. For Existing or New Handrailing - prepare per Manufacturer’s written requirements but not less than

remove rust spots and loose paint, with wire brush and sandpaper, clean with mineral spirits and remove all rust spots.

(1) First Coat - Zinc-Rich Urethane Primer Coat - Tneme-Zinc 90-97 (by Tnemec)
(2) Second Coat - Polyamide Epoxy Intermediate Coat - Hi-Build Epoxoline 66 (by Tnemec)
(3) Third Coat: Where handrail is exposed to UV light, provide a third coat of Aliphatic Acrylic Urethane Top Coat - Endura-Shield 1075 (by Tnemec)

6. Galvanized Surfaces - Exposed to Public View – Alkyd Enamel, 3-coat, Gloss

a. Conform to Manufacturer's requirements for surface preparation:

b. First Coat - Moore's Ironclad Galvanized Metal Primer SUPrime "3".

c. Second and Third Coat - Permalize - Gloss

7. Galvanize Steel Handrails – Epoxy, 3-coat, Gloss

a. Primer Coat - Polyamide Epoxy Prime Coat - Hi-Build Epoxoline 66 (by Tnemec)

b. Second Coat: Polyamide Epoxy Intermediate Coat - Hi-Build Epoxoline 66 (by Tnemec)

c. Third Coat: Where handrail is exposed to UV light, provide a third coat of Aliphatic Acrylic Urethane Top Coat - Endura-Shield 1075 (by Tnemec)

8. Masonry - Paint Finish – Acrylic, 2 of 3-coat, Semi-Gloss.

a. New Masonry

(1) First coat - Pro-Hide Silver Heavy Duty Block Filler
(2) Second & Third Coats - Accolade Interior Enamel – Semi-Gloss

9. Insulation - exposed to public view, fabric cover – Acrylic, 2-coat, Semi-Gloss.

a. First coat - SUPrime "1"

b. Second coat - Accolade Interior Enamel – Semi-Gloss

10. Concrete Walls, Ceilings and Base – Epoxy Finish – Semi-Gloss.

a. First Coat – Macropoxy 646 Fast Cure Epoxy (Sherwin-Williams: B58W00610).

b. Second Coat – Macropoxy 646 Fast Cure Epoxy (Sherwin-Williams: B58W00610).

3.08 CLEANING

A. Oily or paint filled rags, waste and other combustible materials must be deposited in metal containers with tight fitting lids and same disposed of daily.

B. Just prior to final completion and acceptance, the Contractor must examine all painted and finished surfaces and retouch or refinish as necessary and required to leave all surfaces in perfect condition.

C. Upon completion of work, the Contractor must remove all paint and varnish spots from floors, glass and other surfaces and remove all rubbish and accumulated materials of whatever nature from premises and leave work in a clean, orderly and acceptable condition.

3.09 GENERAL CLEAN-UP

A. All rubbish and debris resulting from the Work of this Section must be collected, removed from the site and disposed of legally.

B. All work areas must be left in a broom clean condition.

PART 4 METHOD OF MEASUREMENT

4.01 MEASUREMENT:

A. Paints and Coatings are not measured separately for payment, but will be considered included in Specification 01026 – Triturator Building.

PART 5 BASIS OF PAYMENT

5.01 PAYMENT:

A. Paints and coatings are not paid for separately, but will be considered included in Specification 01026 – Triturator Building.

END OF SECTION 09900

TOILET ACCESSORIES
SECTION 10810

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Work under this Section is subject to the requirements of the Contract Documents.

B. Furnish and install Toilet Accessories as shown on the Drawings and as specified herein, including but not limited to the following:

1. Toilet, ~~[bath,] [shower,] [~~and~~]~~ ~~[~~washroom~~]~~ accessories.

2. Grab bars.

3. Attachment hardware.

~~4.~~

~~C.Install products and materials (furnished in other Sections) as shown on the Drawings and as specified herein, including but not limited to the following:~~

~~1.~~

1.02 RELATED WORK:

A. As specified in the following divisions:

1. Division 8 - Doors and Windows

2. Division 9 - Finishes

~~3.Division 12 - Furnishings~~

1.03 REFERENCES:

A. ANSI A117.1 - Safety Standards for the Handicapped.

~~B. ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.~~

C.B. ASTM A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

B.C. ASTM A480 - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.

B.D. ASTM A879 - Standard Specification for Steel Sheet, zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface.

~~C.ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.~~

~~G. ASTM A269 - Seamless and Welded Austenitic Stainless Steel Tubing for General Service.~~

~~H. ASTM A366 - Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.~~

~~I. ASTM B456 - Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.~~

~~J. NEMA LD-3 - High Pressure Decorative Laminates.~~

1.04 SUBMITTALS:

A. Submit the following:

1. Shop Drawings:

a. Manufacturer's installation instructions - Indicate special procedures and perimeter conditions requiring special attention.

2. Samples and/or Product Data:

a. Product Data:

(1) Provide data on accessories describing size, finish, details of function, attachment methods.

b. Samples:

(1) Submit three samples of each component, illustrating color and finish.

3. Test Reports:

a. Submit test reports necessary to show compliance with the Contract Documents.

~~b.~~

4. Manufacturers Certification:

a. Submit certification that products meet or exceed the specified requirements.

~~b.~~

5. Operation and Maintenance Manuals:

a. Provide maintenance instruction.

1.05 QUALITY CONTROL:

A. Manufacturer Qualifications: Fabrication of toilet accessories must be performed only by a qualified fabricator. The term qualified means experienced in performing the Work required by this Section. The qualified fabricator must have a minimum of ten (10) years documented experience on Projects similar in size and scope to this Project. The fabricator must submit evidence of such qualifications upon request by the Commissioner.

B. Contractor Qualifications: Installation of toilet accessories must be performed only by a qualified Installer. The term qualified means experienced in performing the Work required by this Section. The qualified installer must have a minimum of five (5) years documented experience on Projects similar in size and scope to this Project. The installer must submit evidence of such qualifications upon request by the Commissioner.

C. Perform Work in accordance with the latest edition, of the appropriate divisions, of the following:

1. Conform to ANSI A117.1 code for access for the handicapped.

1.06 DELIVERY, STORAGE AND HANDLING:

A. Materials must be delivered to the Project and stored in strict accordance with the manufacturer's printed directions, copies of which must be furnished to the Commissioner.

B. Protection - Protect materials against all damage by an approved means during transportation, storage and erection and until completion

of construction work. All unsatisfactory materials must be removed from the premises, and all damaged materials replaced with new materials.

C. Access and Storage Areas:

1. All access routes and storage areas must be subject to the approval of the Commissioner in order to reduce interference with Airport Operations.

1.07 WARRANTIES AND GUARANTEES:

~~A. The following materials have special Manufacturer's Warranties for the periods listed with each item, which may originate, in part or in whole, with the manufacturer or the fabricator and such warranties must be passed through the Contractor to the Department;~~

~~B.~~A. The Contractor must repair or replace defective materials and workmanship during the Contract Period and for one (1)~~—~~ year~~s~~ from the date of Substantial Completion of the Project. ~~Defective material and workmanship include, but are not limited to, the following:~~

1.08 EXTRA MATERIALS AND SPARE PARTS:

A. (Not Used)

1.09 ENVIRONMENTAL REQUIREMENTS:

A. (Not Used)

1.10 SPECIAL REQUIREMENTS:

A. Field Measurements - Before proceeding with the fabrication of the work, the Contractor must verify all dimensions and take such measurements as are required for proper fabrication and installation of the work.

B. Coordination - Coordinate work of this Section with adjacent work of other trades.

~~C.~~

PART 2 PRODUCTS

2.01 APPROVED MANUFACTURERS:

A. Products of one of the following Manufacturers will be acceptable:

1. Accessory Specialties Inc., Yonkers, NY 10701,

2. Bobrick Washroom Equipment, Inc., North Hollywood, CA 91605, or

3. Bradley Corp., Menomonee Falls, WI 53051.

2.02 TYPE AND QUALITY:

A. For purposes of designating type and quality of the product specified, Drawings and Specifications are based on the products of (Bobrick Washroom Equipment, Inc., North Hollywood, CA 91605)

2.03 MATERIALS:

A. Stainless steel - AISI Type 302 or 304, No. 4 satin finish unless otherwise indicated. All stainless steel must be the same type except as approved in writing by the Commissioner.

~~B. Brass - Cast or forged quality alloy complying with Fed. Spec. WW-P-541.~~

~~C. Sheet steel - Cold rolled, commercial quality material complying with ASTM A 366.~~

~~D. Chrome plated finish - Nickel and chromium electro-deposited on metal complying with ASTM B 456, Type SC 2, US 26D unless otherwise indicated.~~

~~E. Baked enamel finish - Factory applied, baked acrylic enamel coating, gloss white unless otherwise indicated.~~

2.04 FABRICATION:

A. Weld and grind joints of fabricated components, smooth.

B. Form exposed surfaces from single sheet of stock, free of joints. Form surfaces flat without distortion. Maintain surfaces without scratches or dents.

C. Fabricate grab bars of tubing, free of visible joints, return to wall with end attachment flanges. Form bar with 1-1/2" (38.1mm) clear of wall surface with Knurl grip surfaces.

D. Shop assemble components and package complete with anchors and fittings.

~~E. Provide steel anchor plates, adapters, and anchor components for installation.~~

2.05 ACCESSORIES:

A. TS-8: Surface mounted~~Recessed stainless steel combination~~ paper towel dispenser~~ and waste receptacle~~ - Bobrick B-2623~~944~~.

B. TS-4: Surface mounted~~Recessed~~ stainless steel ~~combination~~ feminine napkin-tampon disposal~~vendor~~ - Bobrick B-254~~352~~.

~~C.Partition mounted stainless steel napkin disposal for two toilet compartments - Bobrick B-354. Provide single faced stainless steel partition mounted napkin disposal where indicated on the Drawings - Bobrick B-3544.~~

~~D.~~C. TS-3: Surface mounted ~~stainless steel shelf and~~ toilet tissue dispenser - Bobrick B-288~~40~~.

~~E.~~D. TA-1, TA-2: Stainless steel grab bar - With concealed mounting, 1-1/2" diameter with peened non-slip gripping surface. Configurations and locations must be as shown on the Drawings - Bobrick Series 68~~2~~06.

~~F.Recessed stainless steel medicine cabinet - Bobrick B-398.~~

~~G.~~E. TS-7 Surface mounted~~Recessed~~ stainless steel soap dispenser - Bobrick B-2112~~305~~.

~~H.~~F. TS-5: Stainless steel angle framed tilt mirror - 48~~72~~" x 18~~24~~" for over lavatories~~, 20" x 60" for locker rooms,~~ with concealed wall hanger for theft proof mounting - Bobrick Series B-2930. ~~Provide stainless steel angle mirror-shelf combination, 16" x 24" where indicated on the Drawings - Bobrick Series B-292,~~

~~H.~~G. TS-6: ADA Underlavatory Guard: Insulating pipe covering for supply and drain piping assemblies that prevents direct contact with and burns from piping; allow service access without removing coverage. Material and finish: Antimicrobial, molded plastic, white color - Truebro by IPS Corporation.

~~I.Solid aluminum satin finish hook and bumper - Bobrick B-212.~~

~~J.~~H. TA-10: Heavy duty, double robe hook with concealed mounting - Bobrick B-6727~~2116~~.

~~K.Stainless steel shower curtain rod - with concealed mounting - Bobrick B-207.~~

~~L.Stainless steel towel bar - Bobrick B-6747 x 18".~~

~~M.Recessed soap dish - Bobrick B-843.~~

~~N.Shower drying seat - Bobrick B-5091.~~

~~O.Surface mounted warm air hair dryer - Bobrick B-230.~~

~~P.Stainless steel custodian's shelf - With mop and broom holder and rag hooks - Bobrick E-224 x 30. Provide one (1) unit at each mop basin.~~

~~Q.~~I. TS-9: Surface mounted~~Recessed~~ waste receptacle ~~—~~ Bobrick B-279~~Watrous 34l3~~.

2.06 KEYING:

A. Supply 6 keys for each accessory to Commissioner.

B. ~~[~~Master key~~] [Key]~~ all accessories.

2.07 FINISHES:

~~A. Galvanizing - ASTM A123 to 1.25 oz/sq yd (380 g/sq m). Galvanize ferrous metal and fastening devices.~~

~~B. Shop Primed Ferrous Metals - Pretreat and clean, spray apply one coat primer and bake.~~

~~C. Enamel - Pretreat to clean condition, apply one coat primer and minimum two coats [epoxy] [electrostatic] baked enamel.~~

~~D. Chrome/Nickel Plating - ASTM B456, Type SC 2 [satin] [polished] finish.~~

~~E.~~A. Stainless Steel - ~~[~~No. 4 satin luster~~] [Polished]~~ finish.

~~F. Back paint components where contact is made with building finishes to prevent electrolysis.~~

PART 3 EXECUTION

3.01 INSPECTION:

A. Before commencing installation, examine substrate surfaces to determine that they are free of conditions, which might be detrimental to proper and timely completion of the Work. Start of Work must indicate acceptance of the substrate.

3.02 PREPARATION:

~~A. Deliver inserts and rough-in frames to site for timely installation.~~

~~B.~~A. Provide templates and rough-in measurements as required.

3.03 INSTALLATION:

A. Install concealed mounting devices and fasteners fabricated of the same material as the accessories ~~or of galvanized steel~~.

B. Install exposed mounting devices and fasteners finished to match the accessories.

C. Provide theft-resistant fasteners for all accessory mountings.

D. Secure accessories in accordance with approved shop Drawings and manufacturer's printed directions. Location of accessories must be as shown on the Drawings and must not interfere with door swing or other movable parts of the building.

E. After installation, protect accessories from damage and soiling. Before final acceptance thoroughly clean and restore accessories to their proper finish.

3.04 ACCESSORY MOUNTING HEIGHTS:

A. Unless otherwise shown, specified or directed, mounting heights for accessories must meet at ADAAG requirements and be as indicated on the drawings.~~follows:~~

~~1.Combination paper towel dispenser and waste receptacle - 5'-0" from finish floor to top of unit. Combination feminine napkin-tampon vendor - 5'-0" from finish floor to top of unit.~~

~~2.Napkin disposal - 2'-9" from finish floor to top of unit.~~

~~3.Shelf and toilet tissue dispenser - 2'-6" from finish floor to top of shelf.~~

~~4.Grab bar - 2'-9" from finish floor to center-line of bar.~~

~~5.Recessed medicine cabinet - 6'-0" from finish floor to top of unit.~~

~~6.Recessed soap dispenser - 5" from top of lavatory deck to bottom of unit.~~

~~7.Mirror - 72" x 24" must be 6'-8" from finish to top of mirror.~~

~~8.Mirror and shelf - 16" x 24" must be 6'-0" from finish floor to top of mirror.~~

~~9.Hook and bumper - 5'-6" from finish floor to centerline of unit.~~

~~10.Robe hook - 6'-0" from finish floor to centerline of unit.~~

~~11.Shower curtain rod - 6'-4" from finish floor to centerline of rod.~~

~~12.Towel bar - 3'-6" from finish floor to centerline of bar.~~

~~13.Recessed soap dish - 3'-6" from finish floor to top of unit.~~

~~14.Shower drying seat - 1'-6" from finish floor to top of seat.~~

~~15.Hair dryer - 6'-8" men, 5'-11" women.~~

~~16.Custodian's shelf - 6'-0".~~

3.05 GENERAL CLEAN-UP:

A. All rubbish and debris resulting from the Work of this Section must be collected~~,~~ and removed from the site and disposed of legally.

B. All work areas must be left in a broom clean condition.

END OF SECTION 10810

PREFABRICATED MODULAR CONTROL BOOTHS
SECTION 13128

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes furnished and installed prefabricated steel control booths such as guard booths, construction vehicle inspector/supervisor booths complete with concrete foundation (island), crash block, manual guard booth swing gate, guard booth traffic signal, and other appurtenances shown on the Drawings.

B. Toilet facility fixtures, piping, and accessories as indicated on the Drawings and specified herein must be included with the prefabricated control booth.

C. Conduits for telephone, complete intercom system and wiring as indicated on the Drawings and as specified herein.

~~D. Signage mounting brackets for signs mounted to top and side of control booths.~~

~~E.~~D. Booths will be furnished complete with factory installation and wiring of all electrical and HVAC equipment as specified herein and called for on the Contract Drawings.

~~F.~~E. Power supply rack including meter and distribution panels to be installed on island.

~~G.~~F. Conduits, junction boxes, etc. for complete raceways for power and control to the two security gates (provided by others). Contractor to coordinate all requirements with installer.

1.02 RELATED DOCUMENTS

A. Related Sections include the following:

1. Division 15 Sections for mechanical and plumbing requirements
2. Division 16 Sections for electrical requirements.

1.03 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide controls booths capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Wind Loads: Determine loads based on the following minimum design wind pressures:

   a. Uniform pressure of 30 lbf/sq. ft., acting inward or outward.

B. Thermal Movements: Provide control booths that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.

   1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

~~C. Bullet Resisting Construction: Exterior wall panels, door and glazing are to meet U. L. 752 Level III standards for bullet resisting construction requirements.~~

1.04 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for control booths.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

   1. For installed products indicated to comply with design loads, include structural analysis calculations and drawings ~~data~~ signed and sealed by ~~the~~ a ~~qualified professional~~ Licensed Structural E~~e~~ngineer in the State of Illinois responsible for their preparation.

   2. Submit drawings showing location of all underground connections for coordination with field conduit and piping.

C. Maintenance Data: For control booths to include in maintenance manuals.

D. Warranties: Special warranties specified in this Section.

1.05 QUALITY CONTROL

A. Source Limitations: Obtain control booths through one source from a single manufacturer.

B. Product Options: Information on Drawings and in Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.

1. Do not modify intended aesthetic effects, as judged solely by the Commissioner, except with Commissioner's approval. If modifications are proposed, submit comprehensive explanatory data to Commissioner for review.

C. Welding: Qualify procedures and personnel according to the following:

1. AWS D1.1, "Structural Welding Code – Steel"
2. AWS D1.3, "Structural Welding Code – Sheet Steel."

D. Regulatory Requirements: Where control booths are indicated to comply with accessibility requirements, comply with FED-STD-795, "Uniform Federal Accessibility Standards."

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use. All electrical materials and methods must meet the requirements of Division 16 of these specifications and all local governing codes.

F. Safety Glass: All glazing must be insulated safety glass ~~meet U. L. 752 Bullet Resistance Level III standards~~ as shown on the drawings.

1. Subject to compliance with requirements, permanently mark safety glass with certification label of the Safety Glazing Certification Council or another certification agency acceptable to authorities having jurisdiction.

G. Codes: The installed booth including all Mechanical, Electrical, and Plumbing work and equipments will meet or exceed the requirements of the Chicago Building codes, Ordinances and Safety Requirements.

1.06 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls, columns, and other construction contiguous with control booths by field measurements before fabrication and indicate measurements on Shop Drawings.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating control booths without field measurements. Coordinate wall, floor, and other contiguous construction to ensure that actual dimensions correspond to established dimensions.

1.07 COORDINATION

A. Coordinate installation of anchorages for control booths. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete. Deliver such items to Project site in time for installation.

1.08 WARRANTY

A. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace wall panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.02 MATERIALS

A. Aluminum: Alloy and temper recommended by aluminum producer and manufacturer for type of use and finish indicated, and as follows:

1. Sheet: ASTM B 209

2. Rolled Tread Plate: ASTM B 632/B 632M, Alloy 6061-T4 or 6061-T6.

B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.

C. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, commercial quality, G90 coating designation; mill phosphatized.

D. Galvanized, Rolled Steel Tread Plate: ASTM A 786/A 786M, rolled from steel plate complying with ASTM A 572/A 572M, Grade 55; hot-dip galvanized according to ASTM A 123/A 123M.

E. Steel Structural Tubing: ASTM A 500, Grade B, hot-dip galvanized according to ASTM A 123/A 123M.

F. Stainless-Steel Sheet: ASTMA 666, Type 316.

G. Plastic Laminate: NEMA LD 3, HGS or HGL grade.

H. Plywood: DOC PS 1, Exterior grade.

I. Particleboard: ANSI A208.1, Grade M-2.

J. Safety Glass: All exterior glazing to be insulated safety glass. ~~bullet resisting laminated glass, safety glazing, and must meet U. L. 752 Bullet Resistance Level III standards.~~ All exterior glazing must be applied with a tinted sun glare control film that rejects 75% infrared light and ultra-violet rays.

K. Anchorages: Provide factory installed stainless steel angles for anchoring control booths. Contractor to provide and install stainless steel expansion anchors.

2.03 PREFABRICATED CONTROL BOOTHS, GENERAL

A. General: Provide a complete, integrated set of manufacturer's standard, mutually dependent components that form a completely assembled, prefabricated control booth, ready for installation on Project site. Control booths must be capable of withstanding structural

and other loads indicated, thermally induced movement, and exposure to weather without failure or infiltration of water into booth interior. Include structural framing, roof and wall panels, door(s), windows, signage mounting brackets and all accessories complying with requirements indicated.

1. Building Style: As indicated on Drawings
2. Doors: As indicated on Drawings.
3. ADA Accessible or Standard (non –ADA accessible) Toilet Facilities: As indicated on Drawings.
4. All electrical devices, conduit, wire and connections as indicated on contract drawings.

B. Fixed Windows: Steel sash frames glazed with interior aluminum stops as indicated on the Drawings.

1. Finish: Painted
2. Corner Shape: Manufacturer's standard

C. Work Counters: Full width of control booth, reinforced; with 16-inch wide storage drawer below each counter, and 2" diameter access opening for electrical cords at each rear corner of counter.

1. Material: Painted galvanized steel sheet
2. Depth: As indicted on the Drawings

D. Electrical Power Service:

1. Provide 100A, 120/208 V., 20 one-pole spaces, 1 Phase, 3 Wire Electrical Panel with bolt on breakers, main copper bus, separate copper neutral and ground busses, and 100 Amp main breaker included (Square D, General Electric, or Eaton/Cutler Hammer/Westinghouse) as indicated in the Floor plans and panel schedule. The enclosure must be Stainless Steel with gasket, located as indicated on the Drawings
2. Provide four (4) 120 V GFI specification grade receptacles each on a dedicated 20A circuit, for booths without toilet facilities
3. Provide four (4) 120 V GFI specification grade receptacles each on a dedicated 20A circuit, for booths with toilet facilities.
4. Provide 6" D x 18"W x 20"H stainless steel power junction box to be located under counter
5. Provide 6" D x 18"W x 20"H stainless steel communications junction box to be located under counter
6. ~~Provide warning and barrier toggle switches with stainless steel junction box and cover~~
7. ~~Provide gate controllers, stainless steel junction box and cover with S. S. mounting plates~~
8. ~~8.~~6. Provide sleeves for incoming and outgoing conduit for power and communications as indicated in the Drawings

9.7. Provide conduits and pre-wires for the following electrical equipment and devices and connected to Electrical Panel in corresponding Booth

a. Roof mounted A/C unit

b. Surface, wall mounted heater in Guard Room

c. Receptacle outlets (specification grade – typical)

d. Lighting fixture and switch

e. Barrier and Warning selector switches

f. Point of use, 2 ½ gallon electric water heater (for booths with toilet facilities only)

g. Exhaust fan (for booths with toilet facilities only)

h. Hand dryer (for booths with toilet facilities only)

i. Power junction box

j. Communications junction box

k. Gate controllers and associated controls accessories as indicated on the Drawings

l. Wall mounted heater in toilet

10.8. Provide conduit sleeves as indicated in the electrical drawing.

E. Lighting Fixtures:

Booth Lighting – One (1) ceiling-mounted fluorescent light fixture, 48 inches long, with acrylic lens and two 32 watt lamps in each fixture. Provide single-pole switch mounted adjacent to door to control lighting fixture.

Accessible Toilet Lighting (where designated): One (1) ceiling mounted fluorescent light fixture, 48 inches long, with arcrylic lens and two 32 watt lamps in each fixture. Provide single pole switch mounted adjacent to door to control lighting fixture.

Toilet Lighting (where designated): One (1) ceiling mounted fluorescent light fixture, 24 inches long, with acrylic lens and one 17 watt lamp. Provide single pole switch mounted adjacent to door to control lighting fixture.

Exterior Lighting – Two (2) wall mounted weather-proof 100 watt induction wall pack fixtures with photo cell as illustrated on the Drawings. Esco, Lumec, or Cooper Lighting.

Manufacturers – Lighting fixtures to be Metalux surface commercial wrap type fixture with energy saving ballast, 120 volt or Lithonia, Holophane, Lightolier of similar product.

F. Heating Unit: Wall-mounted electric heater, with wall mounted on/off switch only, 208V, 1 Phase, 5000 watt, as indicated on the contract documents, with fan forced operation. Enclose heater in enameled steel cabinet and surface ceiling mount. Marley Electric, Series 500 or Qmark or Berko.

G. Cooling Unit: Roof-mounted, thermostatically controlled, 208 volt, air-conditioning unit with 13,500 BTU cooling capacity as indicated on the Contract documents.

H. Conduits for Telephone and Intercom

1. Provide and install a minimum of ¾ inch GRS conduit for telephone from the HUB building to each guard and CVIA booth in the Guard Post area. Coordinate layout of the conduit with the electrical Drawings and terminate at the under counter communication junction box as indicated on the Drawings.

2. The telephone wiring and equipment will be provided and installed by others.

I. Electrical Grounding: As shown on the Drawings

J. Intercom System

1. Provide and install a complete intercom system between all guard and Construction Vehicle Inspection (CVIA) booths in the Guard Post area including equipment, conduit, and wiring.

2. The intercom system includes a flush mount Master Station (8031 MS) mounted to a 5 gang surface wall-mount box for above counter booth wall installation at each guard booth and CVIA booth location. The Master Station must allow hands free conversation with dial input programmed for selection of booths at a given Guard Post area. Each Master to have “All Call” feature.

The intercom system includes an Intercom Exchange unit (8000 EX) located in the Guard Post Hub Building. The unit can be wall or rack mounted and powered from a 120V outlet on the Hub Building’s UPS panel. The exchange unit must store and execute the system operating instructions, perform all call

routing and power distribution functions for the connected Master Stations.

3. Per the manufacturer's recommendations and based on distance of cable runs, each Master Station will be wired to the Intercom Exchange unit via CAT 5 cable terminated with mini-clamp connectors.

4. The intercom system must match and be compatible with current intercom equipment at the O'Hare International Airport Guard Post 1. Acceptable manufacturers are: TOA Electronics, Inc., 1350 Bayshore Highway, Suite 270, Burlingame, CA 94010; AIPHONE, 1700 130th Ave. NE, Bellevue, WA 98005.

K. Plumbing:

1. Able to connect 4" sanitary sewer and 1½" water sources (where designated)

2. Plumbing fixtures (WC, Water Heater, & LAV) and all exposed piping must be installed as per ADA Standards

3. 2 ½ gallon, point of use water heater – Ariston (under-sink electric heater), Stiebel Eltron or GE

4. All internal cold/hot water piping and sanitary/vent piping

5. 4" vent thru roof

6. All rough plumbing must be concealed in a chase

7. Floor drains – Coordinate with drainage and plumbing plans

L. Toilet Exhaust: Wall mounted exhaust fan of 80 cfm capacity at 0.25 S. P. (where designated), controlled with light by manual ON/OFF wall switch.

M. Toilet heating and ventilation: Wall mounted, thermostatically controlled, 208-V, 1500-W electric heater with fan forced operation. Enclose heater in enameled steel cabinet and mount at 2' – 0" above finished floor.

N. Accessories for Toilet Rooms:

1. Mirror Unit: Provide mirror unit complying with the following:

a. Stainless Steel, Angle-Framed Mirror: Fabricate frame

from minimum nominal 0.05-inch thick stainless steel angles, with square corners mitered, welded, and ground smooth.

b. Size: As indicated on the Drawings.

2. Liquid Soap Dispenser:

a. Description: Designed for dispensing soap in liquid or lotion form.

b. Mounting: Horizontally oriented, surface mounted.

c. Materials: Smooth, No. 4, satin finish.

3. Grab Bar: Provide stainless-steel grab bar complying with the following:

a. Stainless-Steel Nominal Thickness: Minimum 0.05 inch.

b. Mounting: Concealed with manufacturer's standard flanges and anchors.

c. Gripping Surfaces: Smooth, satin finish on ends and slip-resistant texture in grip area.

d. Outside Diameter: 1½ inches.

e. Configuration and Length: As indicated on Drawings.

4. Warm-Air Dryer (where designated): Provide warm-air dryer complying with the following:

a. Automatic Hand Dryer: Surface-mounted, warm-air hand dryer with no-touch operation controlled by electronic sensor and with manufacturers' standard, white-painted metal cover.

5. Waste Receptacle:

a. Mounting: Freestanding

b. Minimum Capacity: 3 Gallon

6. Vendor:

a. Type: Sanitary napkin and tampon

b. Mounting: Surface mounted

c. Operation: No coin (free)

d. Exposed Material and Finish: Stainless steel, No. 4 finish

e. Lockset: Tumbler type with separate lock and key for coin box

7. Under Lavatory Guard:

a. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping, and allow service access without removing coverings.

b. Material and Finish: Antimicrobial, molded-plastic, white.

~~O. Surface Mounted Signage:~~

~~1. The base metal for all signs will be #16 gauge porcelain enameling grade steel conforming to ASTM A424.~~

~~2. Provide signage as indicated on drawings~~

~~3. Colors: Colors used for signage must be approved by the Commissioner prior to fabrication.~~

~~P. Roof Mounted Signage Brackets:~~

~~1. Signage mounting brackets are to be furnished and installed by Prefabricated Control Booth Manufacturer to hold signage as specified or shown on the Drawings.~~

~~2. Furnish and install signage mounting brackets designed to withstand the wind loads indicated in the "Performance Requirements" Article of this specification section.~~

~~3. Signs to be mounted in brackets are 60 inch by 69 inch by 1/8 inch in size.~~

~~4. Coordinate sign location with rooftop mechanical equipment.~~

~~5. Indicate signage mounting bracket locations on shop drawings.~~

~~Q. Side Mounted Signage Brackets:~~

~~1. Signage mounting brackets are to be furnished and installed by Prefabricated Control Booth Manufacturer to hold signage as specified or shown on the Drawings.~~

~~2. Furnish and install signage mounting brackets designed to withstand the wind loads indicated in the "Performance Requirements" Article of this specification section.~~

~~3. Signs to be mounted in brackets are 24 inch by 12 inch by 1/8 inch, 18 inch by 30 inch by 1/8 inch, and 36 inch by 28 inch by 1/8 in size or as specified in the Drawings.~~

~~4. Coordinate sign location with other structures/items in the islands. Signs must be located so that their visibility is not obstructed.~~

~~5. Indicate signage mounting bracket locations on shop drawings. Brackets must be mounted in such a way that the signage will not be bent or warped from a straight plane.~~

~~R.~~O. Fire Extinguisher: Provide 1 fire extinguisher per each booth as follows: Clean-Agent type in Steel Container: UL-rated 1-A:10-B:C, 10-lb nominal capacity, with HFC blend agent and inert material in enameled-steel container; with pressure-indicating gage.

~~S.~~P. Accessories: Provide the following for each control booth:

1. Ventilation fan
2. Ionization smoke detector, 120 V
3. Intercom

~~T.~~Q. Rubber Floor Mat: Provide heavy-duty raised dot rubber mat (Flexi Tile PVC) where shown on the Drawings

~~U.~~R. Other Accessories: As shown on the Drawings

2.04 PREFABRICATED STEEL CONTROL BOOTHS

A. Available Manufacturers:

1. B.I.G. Enterprises, Inc.
2. Delta Scientific Corporation
3. Intertex Companies
4. Mardan Fabricators, Inc.
5. Parking Booth Company, Inc.
6. Par-Kut International, Inc.
7. Porta-King Building Systems

B. Structural Framework: Fabricated from 2-by-2-by-12 gauge steel structural or mechanical tubing. Connect framework by welding.

C. Base/Floor Assembly: Height as indicated on the Drawings consisting of perimeter frame welded to structural framework of booth. Fabricate frame from 2-by-4-inch 10 gauge galvanized-steel structural tubing; C-shaped structural steel channels; or structural-steel angles. Include anchor clips fabricated from 3/8-inch thick stainless steel plate, predrilled and welded to base exterior.

1. Subfloor and Finished Floor: 9 gauge, galvanized, rolled steel tread plate.

D. Wall Panel Assembly: Assembly consisting of exterior face panel fabricated from 12 gauge minimum galvanized steel sheet; and interior face panel fabricated from 16 gauge minimum galvanized steel sheet; with 2-inch thick, rigid fiberglass or polystyrene board insulation in cavity between exterior and interior face panels.

1. Thermal Resistance Value (R-Value): As indicated on the Drawings

2. Exterior wall panels to meet U. L. 752 Level III Standards

E. Flat Roof/Ceiling Assembly: Consisting of exterior roof panels, interior ceiling panels, and insulation (R-17 minimum) between exterior and interior panels; sloped to drain at booth perimeter.

1. Exterior Roof Panel: Fabricated from galvanized steel sheet to match exterior wall panel thickness; with EPDM membrane, continuously welded seams, and full-perimeter gutter.

2. Interior Ceiling Panel: Fabricated from galvanized steel sheet to match interior wall panel thickness; with insulation in cavity between ceiling and roof.

3. Canopy Fascia: Fabricated from galvanized steel sheet to match exterior wall panel thickness, of manufacturer's standard design.

   a. Height: As indicated on the Drawings.

   b. Overhang: As indicated on the Drawings.

   c. ~~3' x 6'~~ Canopy: As indicated on the Drawings. Braced as required.

4. Downspouts: Integral, extending 3 inches beyond booth walls.

5. Roof scuppers.

F. Sliding Door: Top suspended from aluminum track with ball-bearing rollers; 1-3/4 inches thick; tubular-frame design fabricated from stainless steel; with top half of door glazed. Equip door with deadlock, lock support, guide hardware, and full weather stripping. Door and glazing to meet U. L. 752 Level III Standards.

1. Glazing: Fixed unit with bullet resisting laminated glass, safety glazing meeting U. L. 752 Bullet Resistance Level III Standards. The exterior glazing must be applied with a tinted sun glare control film that rejects 75% infrared light and ultra-violet rays.
2. Deadlock: Mortised, laminated hook bolt type; with removable cylinder capable of being master keyed.

G. Swinging Door: 1-3/4 inches thick; tubular-frame design fabricated from stainless steel. Equip door with deadlock, three butt hinges, and closer.

1. Glazing: Fixed unit with 6-mm-thick, clear tempered float glass.

2. Locksets: Mortised, with lever handle and removable cylinder capable of being master keyed.

a. Bathroom door function: ANSI Type F02

H. Finish: finish interior metal surfaces, including structural framework, walls, canopy, and ceiling with rust-inhibitive epoxy primer and one finish coat of industrial acrylic epoxy.

1. Color: As selected by the Commissioner from manufacturer's full range.

2.05 FABRICATION

A. Fabricate control booths completely in factory.

B. Preglaze windows and doors at factory.

C. Prewire control booths at factory, ready for connection to service at Project site.

D. Fabricate control booths with forklift pockets in base of booth.

2.06 PAINTS AND SEALANTS

A. All paints and sealants will comply with the following requirements:

B. For interior applications use adhesives and sealants that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Wood Glues: 30 g/L
2. Metal to Metal Adhesives: 30 g/L
3. Adhesives for Porous Materials (Except Wood): 50 g/L
4. Subfloor Adhesives: 50 g/L
5. Plastic Foam Adhesives: 50 g/L
6. VCT and Asphalt Tile Adhesives: 50 g/L
7. Cove Base Adhesives: 50 g/L
8. Multipurpose Construction Adhesives: 70 g/L
9. Fiberglass Adhesives: 80 g/L
10. Contact Adhesive: 250 g/L
11. Plastic Cement Welding Compounds: 350 g/L
12. ABS Welding Compounds: 400 g/L
13. CPVC Welding Compounds: 490 g/L
14. PVC Welding Compounds: 510 g/L
15. Adhesive Primer for Plastic: 650 g/L
16. Sealants: 250 g/L
17. Sealant Primers for Nonporous Substrates: 250 g/L
18. Sealant primers for Porous Substrates: 775 g/L

C. For interior applications use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and the following chemical restrictions:

1. Flat Paints and Coatings: VOC not more than 50 g/L
2. Non-Flat Paints and Coatings: VOC not more than 150 g/L
3. Anti-Corrosive Coatings: VOC not more than 250 g/L
4. Varnishes and sanding Sealers: VOC not more than 350 g/L
5. Stains: VOC not more than 250 g/L
6. Aromatic Compounds: Paints and coatings will not contain more than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
7. Restricted Components: Paints and coatings will not contain any of the following:

    a. Acrolein
    b. Acrylonitrile
    c. Antimony
    d. Benzene
    e. Butyl benzyl phthalate
    f. Cadmium
    g. Di (2-ethylhexyl) phthalate

h. Di-n-butyl phthalate
i. Di-n-octyl phthalate
j. 1, 2-dichlorobenzene
k. Diethyl phthalate
l. Dimethyl phthalate
m. Ethylbenzene
n. Formaldehyde
o. Hexavalent chromium
p. Isophorone
q. Lead
r. Mercury
s. Methyl ethyl ketone
t. Methyl isobutyl ketone
u. Methylene chloride
v. Naphthalene
w. Touluene (methylbenzene)
x. 1, 1, 1-trichloroethane
y. Vinyl chloride

D. Do not use composite wood and agrifiber products that contain urea-formaldehyde resin.

2.07 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearances of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if hey are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Aluminum Finishes: Finish designations prefixed by AA comply with the system established by the aluminum Association for designating aluminum finishes.

1. Class II, Clear anodic finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

D. Galvanized Steel Sheet Finishes: Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be

applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.

1. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

2. Acrylic Epoxy Finish: Apply manufacturer's standard Acrylic Epoxy finish complying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

E. Stainless-Steel Finishes:

1. Paint Finish:

a. Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas.

b. Acrylic Epoxy Finish: Apply manufacturer's standard Acrylic Epoxy finish complying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

2. Bright, Directional Satin Finish: No. 4

a. Remove tool and die marks and stretch lines or blend into finish.

b. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

c. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.

2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION:

A. Unless indicated otherwise in the structural drawings and details for the concrete island on which the booth will be mounted, at a minimum, install control booths on 6-inch thick concrete bases that are 12 inches larger than booths roof line dimensions in both width and length.

B. Set control booths plumb and aligned. Level base plates true to plane with full bearing on concrete bases.

C. Fasten control booths to concrete bases with expansion anchors.

D. Connect electrical power service to power distribution system according to requirements specified in Division 16 and as shown on the contract documents.

E. Install fire extinguisher at accessible location, as shown on the Drawings.

F. Connect piping to all plumbing fixtures in compliance with the Chicago code requirements.

G. Install the intercom system in the entire Guard Post area including conduit and wiring to the Intercom Exchange unit located at the HUB building. Install the system as per intercom manufacturer's recommendation and as shown on the Drawings. The manufacturer/supplier of the intercom system will be required at the project site prior to or during the commissioning to program the system per CDA requirements and to instruct CDA personnel on its operation. There will be no separate payment for the manufacturer/supplier site visit and technical training and the cost will be included in the unit price for the booth. Test the equipment and installation to ensure that the system is operating as designed prior to the commissioning and turn over to the Commissioner.

3.03 ADJUSTING AND CLEANING

A. Adjust doors, operable windows, and hardware to operate smoothly, easily, properly, and without binding. Confirm that locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

C. After completing installation, inspect exposed finishes and repair damaged finishes.

4 METHOD OF MEASUREMENT

A. Measurement shall be lump sum per guard booth in place, completed and accepted. All components, materials, equipment, etc. specified in this section shall be included in this unit. Included in this item shall be the electrical power supply rack, electrical panels, CT cabinet and meter enclosure to be installed near the guard booth along with all conduit disconnects, junction boxes etc. as required for power and control of the two security gates.

5 BASIS OF PAYMENT

A. Payment will be made at the Contract unit price for each complete Guard Booth. The price will be full compensation for furnishing all materials; for all preparation, assembly and installation; and for labor, equipment, tools, accessories, and work necessary to complete the Guard Booth as required by these specifications, and/or as shown on the Drawings.

ITEM NO	DESCRIPTION	UOM
13128-01	GUARD BOOTH	LS

END OF SECTION 13128

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FIRE DETECTION AND ALARM
SECTION 16742

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes a Class 1, zoned, noncoded, UL-certified, microprocessor-based, addressable system, with multiplexed signal transmission, dedicated to fire-alarm service only.

1. Scope – New Building: Provide a new fire alarm system complete with all fire alarm device layout as required by City of Chicago Fire Prevention Bureau and Mayor's Office of People with Disabilities.

B. Supervisory sprinkler and smoke duct detector systems shall be of the addressable type and shall be separately identified at the panel and the annunciator panel.

C. Complete and operational fire alarm system will consist of the following:

1. Fire-alarm control panel.
2. Manual fire-alarm boxes.
3. Smoke detectors.
4. Duct detectors.
5. Heat detectors.
6. Notification appliances.
7. Backlit remote annunciator.
8. Addressable interface device.
9. Sprinkler valve supervisory system, control panel and annunciator.
10. City fire alarm box tie and disconnect panel.
11. Trouble bell stations.
12. Data Gathering Panels
13. Power Supplies/Battery System

D. Duct smoke detectors shall be furnished, installed and wired by Division 16. Division 16 Contractor to interface with the fan systems to which they are connected, and shall be monitored through the Digital Control System. Refer to Division 15 Section "Building Automation System (BAS) - Basic Materials, Interface Devices and Sensors." Duct smoke detectors shall be connected to the fire alarm control panel by Division 16 as defined by the City of Chicago, Smoke Detectors shall initiate a supervisory alarm.

1.02 DEFINITIONS

A. Definitions in NFPA 72 apply to fire-alarm terms used in this Section.

B. FCP: Fire alarm control panel.

C. Addressable Analog System: Utilizing a signaling method characterized by the simultaneous or sequential transmission, or both, and the reception of multiple signals in a communication channel, including means for positively identifying each signal.

D. FAA: Fire alarm annunciator panel.

E. FCP: Fire alarm control panel.

F. NAC:Notification appliances circuit.

G. IAC: Initiating appliances circuit.

H. SSA: Sprinkler supervisory system annunciator.

I. SSCP: Sprinkler supervisory system control panel.

J. SLC: Signaling line circuit.

K. CBT - City fire alarm box tie and disconnect panel.

L. LED: Light-emitting diode.

M. NICET: National Institute for Certification in Engineering Technologies.

N. Pathway Class Designations.

1. Pathways shall be designated as Class A, Class B, Class C, Class D, Class E, or Class X, depending on their performance.

O. Signaling Line Circuit – Addressable Loop

1. Class A. A pathway shall be designated as Class A when it performs as follows:

a. It includes a redundant path.
b. Operational capability continues past a single open.
c. Conditions that affect the intended operation of the path are annunciated.
d. Isolator module located every 15 devices.

P. Notification Appliance Circuits, and Initiating Device Circuits

1. Class B. A pathway shall be designated as Class B when it performs as follows:

a. It does not include a redundant path.

b. Operational capability stops at a single open.
c. Conditions that affect the intended operation of the path are annunciated.

Q. WLAN, LAN, Internet Wireless or POTS

1. Class C. A pathway shall be designated as Class C when it performs as follows:

a. It includes one or more pathways where operational capability is verified via end-to-end communication, but the integrity of individual paths is not monitored.
b. A loss of end-to-end communication is annunciated.

R. Unsupervised Circuits

1. Class E. A pathway shall be designated as Class E when it is not monitored for integrity.

S. Panel to Panel to Annunicator (SLC old Class A, Style 7)

1. Class X. A pathway shall be designated as Class X when it performs as follows:

a. It includes a redundant path.
b. Operational capability continues past a single open or short-circuit.
c. Conditions that affect the intended operation of the path are annunciated.

1.03 SUBMITTALS

A. General Submittal Requirements:

1. All submittals shall be approved by the City of Chicago Bureau of Fire Prevention and Bureau of Electrical Inspection prior to the beginning of any work.
2. Shop Drawings shall be prepared by persons with the following qualifications:

a. Trained and certified by manufacturer in fire-alarm system design.
b. NICET-certified fire-alarm technician, Level III minimum.

B. Submission to the City of Chicago Bureau of Fire Prevention and Bureau of Electrical Inspection:

1. Submit detailed drawings in accordance with the BFP’s procedures and requirements for the fire alarm plan review.
2. Provide identical submittal to the Architect for concurrent review.

3. Upon receipt of the comments from BFP, submit a copy of all the annotated drawings or correction sheets to the Architect.
4. Incorporate all comments into the detailed drawings and resubmit to the BFP until approval is obtained.

C. Product Data: For each type of product indicated. Provide manufacturers product data sheets, showing the types and models and manufacturer's installation/instruction of all equipment, devices and wire/cable proposed. Evidence of FM & ULI Listings and local approvals shall be submitted with the data sheets. Catalog numbers alone are not acceptable. Each document shall be highlighted indicating the model proposed, specific data, and cross out items that are not applicable for the work.

D. Shop Drawings: For fire-alarm system. Include plans, elevations, sections, details, and attachments to other work.

1. Comply with the requirements of the City of Chicago Bureau of Fire Prevention and recommendations in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72.
2. Include voltage drop calculations for notification appliance circuits. Provide circuit calculations that include all system requirements including any requirements for notification appliance circuits, or any other auxiliary function powered by the system. All notification appliance circuit(s) shall be sized with 10% voltage drop at 24 volts.
3. Include battery-size calculations. Battery calculations shall list the type of devices and modules, quantities, unit and extended amperage draw for quiescent and alarm conditions, total amperage draw and battery amp/hour rating. For design criteria, the battery amp/hour rating listed by the manufacturer shall be de-rated by 20%. Include all system requirements including any requirements for visual signaling appliances, or any other auxiliary function powered by the system.
4. Include system operation description: Detailed description for this Project, including method of operation and supervision of each type of circuit and sequence of operations for manually and automatically initiated system inputs and outputs. Manufacturer's standard descriptions for generic systems are not acceptable.
5. Include system riser diagram with device addresses, conduit sizes, cable and wire type and sizes.
6. Include wiring diagrams: power, signal and control wiring. Include diagrams for equipment and for system with all terminals and connections identified. Show wiring color code.
7. Include performance parameters and installation details for each detector, verifying that each detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
8. Include device address list: Coordinate with final system programming.
9. Point List: Provide complete zone list each initiating zone (device address), annunciator zone, custom message descriptor, notification

appliance circuits, auxiliary function circuit, and the specific device associated with each function or zone. Descriptors shall be based on Room Signage Numbers.

10. Include floor plans to indicate final outlet locations showing address of each addressable device. Show size and route of cable and conduits.
11. Submit electronic copy of drawings, on CD or DVD, to Architect.

E. Qualification Data: For Installer.

F. Field Test Reports: Submit test reports documenting the activities and procedures specified. Submit reports within two weeks of completion of start-up procedures.

G. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," deliver copies to the Board Authorized Representative, Architect and to the City of Chicago Bureau of Fire Prevention and Bureau of Electrical Inspection. Provide six (6) copies of materials, both hardcopy and electronic, in format required by Board Authorized Representative. Include the following:

1. Comply with the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72 and City of Chicago Bureau of Fire Prevention requirements.
2. Provide "Record of Completion Documents" according to City of Chicago Bureau of Fire Prevention and NFPA 72 article "Permanent Records" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter.
3. Provide "Maintenance, Inspection and Testing Records" according to City of Chicago Bureau of Fire Prevention and NFPA 72 article of the same name and include the following:
4. Frequency of testing of installed components.
5. Frequency of inspection of installed components.
6. Requirements and recommendations related to results of maintenance.
7. Manufacturer's user training manuals.
8. Manufacturer's required maintenance related to system warranty requirements.
9. Provide spare parts data. Provide the name, addresses, and telephone numbers of service organizations that carry stock of repair parts for the system to be furnished.
10. Abbreviated operating instructions for mounting at fire-alarm control unit.

H. Training Reports: Submit reports on training documenting topic covered, dates and attendance.

I. Software and Firmware Operational Documentation:

1. Software operating and upgrade manuals.
2. Program Software Backup: Complete with data files, in format required by Board Authorized Representative.
3. Device address list.
4. Printout of software program.

1.04 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installation shall be by personnel certified by NICET as fire-alarm Level III technician.
2. As a precondition to the contract, the Installer shall be regularly engaged in the design, servicing, installation and testing of fire detection and alarm notification systems, shall have at least five years of experience in the installation of fire detection and alarm notification systems.
3. Shop Drawings shall be prepared by persons with the following qualifications:
4. Trained and certified by manufacturer in fire-alarm system design.
5. NICET-certified fire-alarm technician, Level III minimum.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in the Chicago Electrical Code, and marked for intended location and application.

C. Comply with City of Chicago Building Code.

D. Comply with NFPA 72, current Edition.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver fire alarm system components and devices in original factory shipping cartons, with original labels intact.

B. Handle fire alarm system components and devices in accordance with manufacturer's written instructions, to avoid damage.

C. Store fire alarm system components and devices indoors in clean, dry space with uniform temperature to prevent condensation. Protect fire alarm system components and devices from exposure to dirt, fumes, water, corrosive substances, and physical damage.

D. Install temporary plastic covers on smoke detectors. Remove covers immediately before final system testing.

1.06 PROJECT CONDITIONS

1.07 SEQUENCING AND SCHEDULING

1.08 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Lamps for Annunciator Unit: Quantity equal to 10 percent of amount installed, but no fewer than 1 unit.
2. Smoke Detectors, Heat Detectors: Quantity equal to 10 percent of amount of each type installed, but no fewer than 1 unit of each type.
3. Detector Bases: Quantity equal to 5 percent of amount of each type installed, but no fewer than 1 unit of each type.
4. Keys and Tools: Two extra sets for access to locked and tamper-proof components.
5. Audible and Visual Notification Appliances: Quantity equal to 5 percent of each type installed, but no fewer than 1 unit of each type.

1.09 MAINTENANCE SERVICE

A. Maintenance Service Contract: Provide maintenance of fire alarm systems and equipment for a period of 12 months commencing with Preliminary Acceptance/Substantial Completion, using factory-authorized service representatives.

1. Basic services: Respond to service calls within 24 hours of notification of system trouble. Adjust and replace defective parts and components with original manufacturer's replacement parts, components, and supplies.
2. Additional Services: Perform services within the above 12-month period not classified as routine maintenance or as warranty work when authorized in writing. Compensation for additional services must be agreed upon in writing prior to performing services. Provide in the 11 month of the 12 months commencing with Substantial Completion a Test, Inspect and Report of the fire alarm system. Renewal of Maintenance Service Contract: No later than 60 days prior to the expiration of the 1 Year System Warranty contract, deliver to the Board a proposal to provide contract maintenance and repair services for an additional two-year term which includes labor rates for Year 2 and 3 of Warranty Period. The Board will be under no obligation to accept maintenance service contract renewal proposal.
3. Software Service Agreement:
4. Comply with UL 864.
5. Technical Support: Beginning with Preliminary Acceptance/Substantial Completion, provide software support for one year.

6. Upgrade Service: Update software to latest version at Project completion. Install and program software upgrades that become available within one year from date of Substantial Completion.
7. Provide 30 days notice to Owner to allow scheduling and access to system.

1.010 WARRANTY

A. Warranty all materials, installation and workmanship for three (3) years from date of acceptance, unless otherwise specified. Provide a copy of the manufacturers' warranty with closeout documentation the operation and installation manuals as required in Division 01 Sections “Closeout Procedures” and “Operation and Maintenance Data”.

B. The System Supplier shall maintain a service organization with adequate spare parts stock within 50 miles of the installation. Any defects that render the system inoperative shall be repaired within 24 hours of the Owner notifying the contractor.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Siemens Building Technologies, Inc.
2. Edwards Systems Technology, EST, A UTC Fire & Security Company.
3. Notifire

2.02 SYSTEMS OPERATIONAL DESCRIPTION

A. Class I system fire-alarm signal initiation shall be by one or more of the following devices:

1. Manual stations.
2. Heat detectors.
3. Smoke detectors.
4. Automatic sprinkler system water flow.
5. Heat detectors in elevator shafts, as allowed by Authority Having Jurisdiction.

B. Fire-alarm signal shall initiate in the general alarm condition the following actions or sequence of operations:

1. Continuously operate alarm notification appliances.
2. Identify alarm at fire-alarm control unit and local remote annunciator.

3. Transmit an alarm signal to the Fire Department via City Tie Connection.
4. Unlock electric door locks in designated egress paths.
5. Transmit signal to the Building Automation System to switch heating, ventilating, and air-conditioning equipment controls to fire-alarm mode.
6. Record events in the system memory.

C. General alarm initiation on SSCP and SSA shall be by the following conditions:

1. Fire pump run condition.
2. Flow Switch activation.

D. Supervisory signal initiation on SSCP shall be by one or more of the following devices and actions:

1. Valve supervisory switch.
2. Fire-pump power failure, including a dead-phase or phase-reversal condition.
3. Provide a dedicated 20 amp, 120 volt, single-phase branch circuit with 2 #12 & 1 #12 ground in a ¾" conduit to fire pump controller for local supervisory power. This circuit shall be fed from an emergency panel where possible. The conduit shall be factory painted RED and clearly identified to read "Fire Pump Local Supervisory 120VAC circuit. This is to power a local pump run/power failure alarm that is built into the controller, separate from flow bells & the building alarm system.

E. Supervisory signal initiation on SSCP shall initiate the following actions:

1. Initiate supervisory audible and visible signal indication on SSCP and SSA.

F. System trouble signal initiation shall be by one or more of the following devices and actions:

1. Open circuits, shorts, and grounds in designated circuits.
2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
3. Loss of primary power at fire-alarm control unit.
4. Ground or a single break in fire-alarm control unit internal circuits.
5. Abnormal ac voltage at fire-alarm control unit.
6. Break in standby battery circuitry.
7. Failure of battery charging.
8. Abnormal position of any switch at fire-alarm control unit or annunciator.
9. System Trouble Signal Actions: Initiate notification appliance and annunciate at FCP, or SSCP and respective local remote annunciators.

G. Priority of Signals: Automatic response functions shall be accomplished by the first zone initiated. Alarm functions resulting from initiation by the first zone shall not be altered by subsequent alarms. An alarm signal shall be the highest

priority. Supervisory or trouble signals shall have second- and third-level priority. Signals of a higher level priority shall take precedence over signals of lower priority even though the lower priority condition occurred first. Annunciate all alarm signals regardless of priority or order received.

H. Noninterfering: Provide zoned, powered, wired, and supervised system so a signal on one zone does not prevent the receipt of signals from any other zone. All zones shall be manually resettable from the FCP after the initiating device or devices have been restored to normal. Systems that require the use of batteries or battery backup for the programming function are not acceptable.

I. Silencing at control panel: Switches shall provide capability for acknowledgment of alarm; supervisory, trouble, and other specified signals at the FCP or SSCP; and capability to silence the local audible signal and light an LED (light emitting diode). Subsequent zone alarms shall cause the audible signal to sound again until silenced in turn by switch operation. Restoration to normal of alarm, supervisory, and trouble conditions shall extinguish the associated LED and cause the audible signal to sound again until the restoration is acknowledged by switch operation.

J. The system shall have spare installed capacity enabling it to support a twenty percent (20%) increase in initiating, control and indicating device circuits. Spare circuit capacity shall be evenly distributed throughout the system.

K. Annunciators shall have an additional fifty percent (50%) spare spaces available for future building additions.

L. Fire Alarm Control Panel shall monitor the following functions:

1. Monitor Duct Detectors in supervisory mode only.

2.03 FIRE-ALARM CONTROL UNITS (FCP AND SSCP)

A. General Requirements for Fire-Alarm Control Unit:

1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864 and listed and labeled by an NRTL.
2. System software and programs shall be held in flash electrically erasable programmable read-only memory (EEPROM), retaining the information through failure of primary and secondary power supplies.
3. Include a real-time clock for time annotation of events on the event recorder and printer.
4. Addressable initiation devices that communicate device identity and status.
5. Smoke sensors shall additionally communicate sensitivity setting.
6. Temperature sensors shall additionally test for and communicate the sensitivity range of the device.

B. Cabinet: Lockable steel enclosure. Arrange panel so all operations required for testing or for normal care and maintenance of the system are performed from the front of the enclosure. If more than a single unit is required to form a complete control panel, provide exactly matching modular unit enclosures. Provide cabinets large enough to accommodate all components and to allow ample gutter space for interconnection of panels as well as field wiring. Identify each enclosure and each component by an engraved red laminated phenolic resin nameplate. Lettering on the enclosure nameplate shall not be less than 1 inch high. Identify individual components and modules within the cabinets by engraved laminated phenolic resin nameplates.

C. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.

1. Annunciator and Display: Liquid-crystal type, 2 line(s) of 80 characters, minimum.
2. Keypad: Arranged to permit entry and execution of programming, display, and control commands.

D. Circuits:

1. Initiating Device, and Signaling Line Circuits: NFPA 72 2010.
2. Initiating Device Circuits: Class B.
3. Addressable Loop Signaling Line Circuits: Class A.
4. Provide isolator module every 15 devices.
5. Signaling Line Circuit (Network Data, Panels and Annunciators): Class X.
6. Notification Appliance: Circuits: NFPA 72, Class B.

E. Notification Appliance Circuit: Operation pattern shall be as directed by the City of Chicago Bureau of Fire Prevention and Fire Department.

F. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to City Fire Department via City Tie Fire Alarm Box using direct wire connection.

G. Primary Power: 24-V dc obtained from 120-V ac service that is to be connected to the building source of the emergency power and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals and supervisory signals shall be powered by 24-V dc source. The fire alarm control panel shall be fed from a 20 amp, 120VAC, single-phase branch circuit breaker. This circuit breaker must be permanently identified in “RED” and shall be provided with a permanent identification label that reads “FIRE ALARM CIRCUIT”.

1. Alarm current draw of entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.

H. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.

I. Automatic transfer switch: Transfer the load to the battery without loss of signals or status indications in the event of failure of primary power.

J. Batteries: System control equipment shall receive secondary operating power from batteries integral to the equipment. Power Supply for Supervision Equipment: Supply for audible and visual equipment for supervision of the ac power shall be from a dedicated dc power supply, and power for the dc component shall be from the ac supply. Provide sufficient capacity to operate the complete system in normal or supervisory (non-alarm) mode for a period of 24 hours. Following this period of operation on battery power, the batteries shall have sufficient capacity to operate all components of the system, including all alarm indicating devices in alarm or supervisory mode for a period of 15 minutes.

K. Battery Charger: Solid state, fully automatic, variable charging rate type. Provide for 150 percent of the connected system load while maintaining the batteries at full charge. In the event batteries are fully discharged the charger shall recharge them fully within four hours. Charger output shall be supervised as part of system power supply supervision.

L. Surge Protection:

1. Install surge protectors recommended by control panel manufacturer. Install on all system wiring external to the building housing the control panel.

M. Instructions: Computer printout or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.

N. Systems: Alarm and supervisory systems in FCP/SSCP shall be completely separate and independent. The alarm initiating zone boards in the FCP/SSCP shall consist of plug-in cards. Construction requiring removal of field wiring for module removal is not acceptable.

O. Control Modules: Types and capacities to perform all functions of the fire alarm system. Provide local, visible, and audible signals to notify of any alarm, supervisory, and trouble condition. Provide each type of audible alarm with a distinctly different sound.

P. Indicating Lights: Provide individual alarm and trouble LED for each zone. Provide a System LED test switch for each FCP/SSCP section that will illuminate all LED devices on that section of the control panel. Alarm and

supervisory signals shall light a red LED of the associated zone. Trouble signals shall light an amber LED for the associated zone.

Q. Smoke/Fire Zones

1. Additional zones shall be dedicated to:

a. Each electrical equipment room.
b. Each mechanical/pump room.
c. Each telephone/data room.

2.04 MANUAL FIRE-ALARM BOXES

A. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes shall be metallic finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box.

1. Double-action mechanism requiring two actions to initiate an alarm, pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.
2. Approved by the City of Chicago Bureau of Fire Prevention.
3. Stations requiring the breaking of the glass panel are not acceptable.
4. Station Reset: Resetting the manual fire alarm stations after operation shall require the use of a key. Manual stations which use a screwdriver or allen wrench for reset are not acceptable. Keyed the same as FCP/SSCP.
5. Indoor Protective Shield: Factory-fabricated clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm. Lifting the cover actuates an integral battery-powered audible horn intended to discourage false-alarm operation.

2.05 SYSTEM SMOKE DETECTORS

A. Requirements for Analog Addressable System Smoke Detectors:

1. Comply with UL 268; operating at 24-V dc, nominal.
2. Intelligent Addressable Analog Type: Designed to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
3. Multipurpose type, containing the following:

a. Integrated Addressable Module: Arranged to communicate detector status (normal, alarm, dirty, trouble or maintenance) to the FCP.
b. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.

c. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
d. Integral Visual-Indicating Light: Blinking LED type indicating detector is communicating properly and turn RED in alarm.

4. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
5. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:

a. Primary status.
b. Device type.
c. Present average value.
d. Present sensitivity selected.
e. Sensor range (normal, dirty, etc.).

B. Duct Detectors

1. Division 16 to provide addressable control relay for FCP monitoring.
2. Division 16 to provide remote alarm indicator/test switch, which indicates activation of detector.
3. Duct Smoke Detector Test Station
4. Flush wall mounted except surface wall mounted or group wall mounted or grouped FATC flush door mounted in mechanical equipment rooms.
5. Alarm/power LED.
6. Keyed test switch.
7. Stainless steel faceplate.
8. White lettering on red nameplate identifying associated duct smoke detector.

2.06 HEAT DETECTORS

A. General Requirements for Analog Addressable Heat Detectors: Comply with UL 521.

B. Heat Detector, Combination Type: Actuated by either a fixed temperature of 135 deg F or a rate of rise per minute. Fixed temperature sensing shall be independent from rate-of rise sensing.

1. Mounting: Twist-lock base interchangeable with smoke-detector bases.
2. Integrated Addressable Heat Detector: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
3. Provide devices in ordinary ambient temperature rooms.

C. Heat Detector, Fixed-Temperature Type: Actuated by temperature that exceeds a fixed temperature of 190 deg F.

1. Mounting: Twist-lock base interchangeable with smoke-detector bases.
2. Integrated Addressable Heat Detector: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
3. Provide devices in high ambient temperature rooms.

2.07 NOTIFICATION APPLIANCES

A. General Requirements for Notification Appliances: Connected to notification appliance signal circuits, zoned as indicated, equipped for mounting as indicated and with screw terminals for system connections.

1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated and with screw terminals for system connections.

B. Trouble Bells: Electric-vibrating, 24-V dc, under-dome type; with provision for housing the operating mechanism behind the bell. Bells shall produce a sound-pressure level of 94 dBA, measured 10 feet from the bell. 4-inch size, unless otherwise indicated. Bells are weatherproof where indicated.

C. Audible Alarm-Indicating Devices (Horns): Comply with UL 464; factory finish: red. Devices shall be constructed for safe use in boiler rooms, kitchens and exterior locations without impairing the quality of tone reproduction in ambient conditions ranging from 30 degrees Fahrenheit to 150 degrees Fahrenheit. Horns shall be sound level setting of 92dB at 10 feet using the coded signal prescribed in UL 464 Test Protocol. Horn shall mount to surface or flush box. When flush mounted, the Horn shall extend less than one inch from the wall.

1. Horns shall be field configurable for continuous, temporal, or march time pattern.
2. In temporal or march time mode horn operation shall be synchronized.

D. Visible Notification Appliances: Xenon strobe lights comply with UL 1971, with clear or nominal white polycarbonate lens. The word "FIRE" is engraved in minimum 1-inch- high letters on the lens.

1. Rated Light Output: 15/30/75/110 cd, selectable in the field.
2. Mounting: Wall mounted unless otherwise indicated.
3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
4. Flashing shall be synchronized with other units in common viewing areas per ADA and NFPA 72. Provide properly sized outlet box to accommodate synchronizing device on strobe circuit.
5. Strobe Leads: Factory connected to screw terminals.
6. Mounting Faceplate: Factory finished, red.

2.08 NAC POWER SUPPLY:

A. The NAC power supply shall be independent unit that will provide power to visual strobe notification appliances. It shall be possible to configure NAC power supply activated from intelligent synchronized modules. The power supply NAC's must be configurable to operate independently at any one of the following rates: continuous synchronized, or 3-3-3 temporal. Fault conditions on the power supply shall not impede alarm activation of host NAC circuits or other power supplies. The NAC power supply must be able to provide concurrent power for notification devices, security devices, access control equipment and auxiliary devices such as door holders. . All the NAC Power Supplies shall be synchronized. The power supply shall support up to 24 amp hour batteries.

1. Power supply shall be minimum of 8 amps and UL 864 Listed.
2. Four independent 2 amp NAC circuits. Each being configurable as auxiliary power.
3. All circuits shall be synchronized.

2.09 WATERFLOW SWITCHES AND AIR PRESSURE SWITCHES

A. Provided and installed by Division 13, wired by Division 16.

2.010 SPRINKLER VALVE TAMPER SWITCHES

A. Provided and installed by Division 13, wired by Division 16.

2.011 REMOTE ANNUNCIATORS: FAA, SSA.

A. Provide separate annunciators for FAA and SSA, as required and approved by the Chicago Bureau of Fire Prevention.

B. Description: Annunciator functions shall match those of fire-alarm control units (FCP and SSCP) for alarm, supervisory, and trouble indications.

C. Annunciator shall be as approved by the City of Chicago Fire Prevention Bureau: indicate the alarm and supervisory zones by means of a white translucent rectangle illuminated from behind. Zone shall be identified by opaque black lettering on the rectangular indicator. Lettering shall be 1/2 inch minimum.

1. Mounting: **Surface** cabinet, NEMA 250, Type 1.

D. Display Type and Functional Performance: Alphanumeric display and LED indicating lights shall match those of fire-alarm control unit. Provide status indication with separate annunciation for each zone. Provide controls to acknowledge, silence, reset, and test functions for alarm, supervisory, and trouble signals.

2.012 ADDRESSABLE INTERFACE DEVICE

A. Description: Microelectronic monitor module, NRTL listed for use in providing a system address for alarm-initiating devices for wired applications with normally open contacts.

2.013 CITY TIE CONNECTION

A. Unit shall contain key operated cut-off (disconnect) switch, trouble bell, trouble lamp and all necessary appurtenances to transmit signal intelligence from the local system to the City fire alarm network system.

B. Furnish with the unit: externally mounted trouble bell, alarm lamp and silencing switch.

2.014 SMS SYSTEM TIE IN

A. Per the city of Chicago Fire Department at O'Hare all Fire Alarm points must be point specific. Each individual fire point must report alarm, supervisory and trouble back to the SMS system alarm table. All points must be shown on the SMS system floor graphics.

B. Required equipment for the SMS Tie-in.

1. 1 PXC Modular Controller (Ethernet Controller)
2. 1 XLS FIRE Driver
3. 1 RMP Module
4. 1 PXC19 Enclosure

C. PXC modular enclosure to be installed next to the FACP. Run 2 CAT6 cables from PXC Modular Controller to the CDA network switch (by others).

2.015 SPRINKLER SYSTEM REMOTE INDICATORS

A. Remote status and alarm indicator and test stations, with LED indicating lights. Light is connected to flash when the associated device is in an alarm or trouble mode. Lamp is flush mounted in a single-gang wall plate. A red, laminated, phenolic-resin identification plate at the indicating light identifies, in engraved white letters, device initiating the signal and room where the valve is located. The identification plate also designates protected spaces downstream from the water-flow switch.

2.016 DEVICE WIRE GUARDS

A. Description: Welded wire mesh of size and shape for the notification device, smoke detector, or other device requiring protection.

1. Factory fabricated and furnished by manufacturer of device.

2. Finish: Paint of color to match the protected device.

2.017 WIRE AND CABLE

A. Wire and cable for fire alarm systems shall be UL listed and labeled as complying with CCBC, Article 760.

B. Signaling Line Circuits: Twisted, shielded pair, or solid copper conductor, not less than No. 14 AWG, or size as recommended by system manufacturer.

C. Non-Power-Limited Circuits: Solid-copper conductors with 600-V rated, 75 deg C, color-coded insulation.

1. Low-Voltage Circuits: No. 14 AWG, minimum.
2. Line-Voltage Circuits: No. 12 AWG, minimum.

2.018 SPARE CAPACITY

A. Provide twenty percent (20%) spare capacity in all panels, annunciators, on every SLC and NAC for future expansion.

PART 3 - EXECUTION

3.01 EQUIPMENT INSTALLATION

A. Comply with Chicago Building Code and NFPA 72 for installation of fire-alarm equipment.

B. Smoke- or Heat-Detector Spacing:

1. Comply with NFPA 72, "Smoke-Sensing Fire Detectors" Section in the "Initiating Devices" Chapter, for smoke-detector spacing.
2. Comply with NFPA 72, “Heat-Sensing Fire Detectors” Section in the “Initiating Devices” Chapter, for heat-detector spacing.
3. Smooth ceiling spacing shall not exceed 30 feet.
4. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas shall be determined according to Appendix B in NFPA 72.
5. HVAC: Locate detectors not closer than 3 feet from air-supply diffuser or return-air opening.
6. Lighting Fixtures: Locate detectors not closer than 12 inches from any part of a lighting fixture.

C. Remote Status and Alarm Indicators: Install near each sprinkler water-flow switch and valve-tamper switch that is not readily visible from normal viewing position.

D. Audible Alarm-Indicating Devices: Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille, at height indicated in the Drawings.

E. Visible Alarm-Indicating Devices: Install at height indicated in the Drawings.

F. Device Location-Indicating Lights: Locate in public space near the device they monitor.

G. FCP/SSCP, door holder relay panel: **Surface** mounted, with tops of cabinets not more than 72 inches above the finished floor.

H. FAA/SSA: Install with top of panel not more than 72 inches above the finished floor.

3.02 CONNECTIONS

A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, comply with requirements in Division 08 Section "Door Hardware." Connect hardware and devices to fire-alarm system.

1. Verify that hardware and devices are NRTL listed for use with fire-alarm system in this Section before making connections.

B. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 3 feet from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.

1. Supervisory connections at valve supervisory switches.
2. Supervisory connections at fire-pump power failure including a dead-phase or phase-reversal condition.

a. Supervisory connection with Duct Detectors.
b. BAS system interconnections.

C. System Trouble Bell: Furnish and install, where shown the drawings, a semi-flush mounted, 6-inch diameter, red trouble bell. Immediately adjacent to each trouble bell location, install a sign with a red background and 1/2-inch black lettering engraved as follows: “FCP (or SSCP or DSCP) TROUBLE BELL”.

D. City Tie Trouble Bell: Furnish and install, where shown the drawings, a semi-flush mounted, 6-inch diameter, red trouble bell. Immediately adjacent to each trouble bell location, install a sign with a red background and 1/2-inch black lettering engraved as follows: “CITY TIE TROUBLE BELL”.

E. Immediately adjacent to each trouble bell location, provide a trouble bell silence switch mounted on a single gang plate with the following features: A switch to

silence the bell, a red light to indicate when the bell is silenced, and a momentary switch to test the trouble bell.

3.03 WIRING INSTALLATION

A. Install wiring according to the following:

1. City of Chicago Building Code
2. NECA 1.

B. Wiring Method: Install wiring in metal raceway according to Division 26 Section "Raceways and Boxes for Electrical Systems."

1. Fire alarm circuits and equipment control wiring associated with the fire alarm system shall be installed in a dedicated raceway system. This system shall not be used for any other wire or cable.

C. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by manufacturer. Install conductors parallel with or at right angles to sides and back of the enclosure. Bundle, lace, and train conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with the fire alarm system to terminal blocks. Mark each terminal according to the system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.

D. Cable Taps: Use numbered terminal strips in junction, pull, and outlet boxes, cabinets, or equipment enclosures where circuit connections are made.

E. Color-Coding: Color-code fire alarm conductors differently from the normal building power wiring. Use one color-code for alarm circuit wiring and a different color-code for supervisory circuits. Color-code audible alarm-indicating circuits differently from alarm-initiating circuits. Use different colors for visible alarm-indicating devices. Paint fire alarm system junction boxes and covers red. Identify the accessible raceway with color-coded, self-adhesive red vinyl tape applied in bands.

F. Install separate and completely independent conduits for fire alarm and sprinkler supervisory systems.

3.04 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 16 Section "Identification for Electrical Systems."

B. Install framed instructions in a location visible from fire-alarm control unit.

3.05 GROUNDING

A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

3.06 CLEANING

A. On completion of installation, vacuum dirt and debris from interiors; do not use compressed air to assist in cleaning.

B. Inspect exposed surfaces and repair damaged finishes to match original factory finishes.

C. Prior to the acceptance testing, remove plastic covers from smoke detectors.

3.07 CONTRACTOR START UP AND REPORTING

A. Field tests shall be witnessed by Owner Representative, City of Chicago Bureau of Electrical Inspections and City of Chicago Bureau of Fire Prevention.

B. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:

1. Before requesting final approval of the installation, submit a written statement using the form for Record of Completion shown in NFPA 72 and as required by the City of Chicago Bureau of Fire Prevention.
2. Perform each electrical test and visual and mechanical inspection listed in NFPA 72 and as required by the City of Chicago Bureau of Fire Prevention.
3. Certify compliance with test parameters. All tests shall be conducted under the direct supervision of a NICET technician certified under the Fire Alarm Systems program at Level III.
4. Visual Inspection: Conduct visual inspection prior to testing.
5. Inspection shall be based on completed Record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" Table in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter and as required by the City of Chicago Bureau of Fire Prevention.

a. Comply with "Visual Inspection Frequencies" Table in the "Inspection" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.

6. Pretesting:

    a. Upon completing installation of the system, align, adjust, and balance the system and perform complete pretesting.
    b. Determine, through pretesting, the conformance of the system to the requirements of the Drawings and Specifications.
    c. Prepare forms for systematic recording of pretest results.
    d. Report of Pretesting: After pretesting is complete, provide a letter certifying the installation is complete and fully operable. The letter shall include the names and titles of the witnesses to the preliminary tests.

7. Final Test Notice: Provide 10 days minimum notice in writing when the system is ready for final acceptance testing.
8. Minimum System Tests: Test the system in accordance with the procedures outlined in NFPA 72 Chapter 10 and as required by the City of Chicago Bureau of Fire Prevention.
9. Minimum required tests are but not limited to the ones listed below:

    a. Correct deficiencies observed in pretesting.
    b. Replace malfunctioning or damaged items with new and retest until satisfactory performance and conditions are achieved.
    c. Verify the absence of unwanted voltages between circuit conductors and ground.
    d. Test all conductors for short circuits utilizing an insulation testing device.
    e. With each circuit pair, short circuit at the far end of the circuit and measure the circuit resistance with an ohmmeter. Record the circuit resistance of each circuit on the record drawings.
    f. Verify the control units are in the normal condition as detailed in the manufacturer's operating and maintenance manual.
    g. Test initiating and indicating circuits for proper signal transmission under open circuit conditions. One connection each should be opened at not less than 10 percent of the initiating and indicating devices. Proper signal transmission in accordance with class of wiring used shall be observed.
    h. Test each initiating and indicating device for alarm operating and proper response at the control unit. Test smoke detectors with actual products of combustion.
    i. Test the system for all specified functions in accordance with the manufacturer's operating and maintenance manual. Systematically initiate specified functional performance items at each station including making all possible alarm and monitoring initiations and using all communications options. For each item, observe related performance at all devices required to be affected by the item under all system sequences. Observe displays, signal tones, and

annunciator indications. Observe all voice audio for routing, clarity, quality, freedom from noise and distortion, and proper volume level.

j. Test both primary power and secondary power. Verify, by test, the secondary power system is capable of operating the system for the period and in the manner specified.

10. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" as required in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72 and the "Inspection and Testing Form" as required in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
11. Provide all documentation as required by the City of Chicago Bureau of Fire Prevention.
12. Reacceptance Testing:

    a. Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.
    b. Tag all equipment and stations and other components at which tests have been satisfactorily completed. Place tags upon completion of tests.

D. Fire-alarm system will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

3.08 COMMISSIONING AND DEMONSTRATION

A. Provide the services of a factory-authorized service representative to demonstrate and train The Board's maintenance personnel as specified below.

1. Train The Board's maintenance personnel in the procedures and schedules involved in operating, troubleshooting, servicing, and preventive maintaining of the system. Include City of Chicago Bureau of Fire Prevention requirements. Provide a minimum of 8 hours' training.
2. Schedule training with the Board at least seven days in advance.
3. Occupancy Adjustments: When requested within one year of date of Substantial Completion, provide on-site assistance in adjusting sound levels and adjusting controls to suit actual occupied conditions. Provide up to three visits to the site for this purpose.

B. Train Owner's maintenance personnel on procedures and schedules for starting up and shutting down, troubleshooting, servicing, and maintaining the equipment. The training shall occur after the startup report has been provided to the owner and the trainer will provide two (2) Installation and Operations manuals for the use of the owner’s personnel during training. Provide a minimum of two (2) sessions of four (4) hours of training. Provide no more than one training session per day.

1. Training Agenda:

    a. Format shall be an outline broken up into (2) 4 hour sessions.
    b. The material to be covered shall be sub divided into the description of the material to be covered for each 15 minutes intervals.
    c. The descriptions shall include not only the material to be covered but also its location in the Installation and Operations manuals, including Section and page number.

2. Documentation of training: After each 4 hour session the engineer shall initial and date the items on the training agenda that were covered that day.

A. Review data in maintenance manuals. Refer to Division 01 Section "Operation and Maintenance Data." All required and recommended maintenance will be reviewed as well as operational trouble shooting. If the IOM does not include a written trouble shooting guide one will be provided.

B. Demonstrate proper operation of equipment to commissioning agent or designated owners personnel. The scope of the demonstration will include functional performance requirements under both local and building automation control as well as any commissioning requirements in Division 01 or 15.

END OF SECTION 16742

FROST PROTECTION COURSE
SECTION P-154

PART 1 DESCRIPTION

1.01 GENERAL

A. This item consist of a subbase course, hereinafter referred to as the frost protection course, composed of granular materials constructed on a prepared subgrade or underlying course or stabilization course in accordance with these Specifications, and in conformity with the dimensions and typical cross section shown on the Drawings, or as directed by the Commissioner. The work under this Section is subject to the requirements of the Contract Documents.

1.02 RELATED WORK

A. As specified in the following Sections:

1. Section P-152 Excavation and Embankment
2. Section P-629 Geotextile Fabric
3. Section 02245 Recycled Crushed Concrete and Asphalt

PART 2 MATERIALS

2.01 GENERAL:

A. The frost protection material must consist of crushed stone or crushed recycled concrete having a gradation of CA-6, Recycled Concrete Base (RCB) or as specified on the Drawings, conforming to the requirements of the Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction (S.S.R.B.C.), latest edition. The material must be Class D quality or better. The portion of the frost protection material passing a No. 40 sieve must have a plasticity index of not more than 4 when tested in accordance with ASTM D 4318.

B. The materials to be used for Stabilization Stone must consist of crushed stone or crushed recycled concrete having a gradation of CA-6 as directed by the Commissioner, quality Class D or better, conforming to the requirements of Article 1004.01 of the S.S.R.B.C.

C. Where crushed recycled concrete (CA-6 and RCB) are used for frost protection course or stabilization stone, they must be produced on site

by the Contractor by crushing Portland cement concrete from the O'Hare stockpiles only. They must be crushed from clean rubble obtained from pavement removal or foundations from O'Hare Airport projects. Refer to relevant provisions of Section 02245 Recycled Crushed Concrete and Asphalt.

D. Recycled Concrete Base (RCB) used as frost protection subbase under runway and taxiway shoulders must meet the following gradation:

Sieve Size	Percent Passing
4"	100
3"	60 - 100
¾"	30 - 70
½"	20 - 60
#4	35 maximum percent passing
#40	20 maximum percent passing
#200	0 - 5.0

1. The RCB will be subject to acceptance testing procedures by the Commissioner. Crushing operation at the jobsite will be subject to monitoring by the Commissioner to ensure that the material is clean and meets the requirements. Uniformity in production of clean recycled concrete and uniformity of placement in the field free of segregation are required. Precautions shall be taken to avoid segregation of material in the stockpile or during placement. RCB must be free of reinforcing bars, PVC pipes, RAP, metals, geotextile fabric, and other objectionable materials.

E. For the material to be used for the geotextile fabric, see Section P-629.

PART 3 CONSTRUCTION METHODS

3.01 GENERAL:

A. The frost protection course must be placed where designated on the Drawings or as directed by the Commissioner. The material must be shaped and thoroughly compacted within the tolerances specified.

B. Stabilization stone must only be placed in areas of severely adverse subgrade conditions and as directed by the Commissioner.

C. Granular subbases which, due to grain sizes or shapes, are not sufficiently stable to support without movement the construction equipment, must be mechanically stabilized to the depth necessary to provide such stability as directed by the Commissioner. The mechanical stabilization must principally include the addition of a fine-grained medium to bind the particles of the subbase material sufficiently to furnish a bearing strength, so that the course will not deform under the traffic of the construction equipment. The addition of the binding medium to the subbase material must not increase the soil constants of that material above the limits specified.

D. The frost protection course and stabilization stone must be placed in accordance with the requirements of Section 311 of the S.S.R.B.C. for Type B except as modified herein.

3.02 OPERATION IN PITS:

A. All work involved in clearing and stripping pits and handling unsuitable material encountered must be performed by the Contractor at his/her expense. The frost protection and stabilization stone material must be obtained from pits or sources that have been accepted by the Commissioner. The material in the pits must be excavated and handled in such a manner that a uniform and satisfactory product can be secured.

3.03 PREPARING UNDERLYING COURSE:

A. Before any frost protection or stabilization stone material is placed, the underlying course must be prepared and conditioned as specified. The course must be checked and accepted by the Commissioner before placing and spreading operations are started. The subgrade must be compacted in accordance with the requirements of Section P-152 "Excavation and Embankment." Immediately before placement of the frost protection course, the subgrade must be proof-rolled with a 25 ton or heavier pneumatic tired roller making at least 8 passes over the entire area in alternate (perpendicular) directions or a fully loaded semi-truck loaded to the legal limit at the Commissioner’s discretion.

B. Grade control between the edges of the pavement must be by means of grade stakes, steel pins, or forms placed in lanes parallel to the centerline of the pavement and at intervals which will permit string lines or check boards to be placed between the stakes, pins, or forms.

C. In areas where the Commissioner directs the Contractor to over-excavate below subgrade level and backfill the over-excavation with stabilization stone, the stabilization stone must be placed on a layer of non-woven geotextile filter fabric per Section P-629, leveled and compacted to make the subgrade firm and stable. Areas of undercut of 6 inches or less must be stabilized with CA-6, crushed stone or crushed recycled concrete and areas of undercut greater than 6 inches must be stabilized with crushed stone or crushed recycled concrete,. All undercut and backfill work to be directed by the Commissioner.

D. To protect the subgrade and to ensure proper drainage, the spreading of the frost protection course must begin along the centerline of the pavement on a crowned section or on the high side of pavements with a one-way slope.

3.04 MATERIALS ACCEPTANCE IN EXISTING CONDITION:

A. When the entire frost protection or stabilization stone material is secured in a uniform and satisfactory condition and contains approximately the required moisture, such approved material may be moved directly to the spreading equipment for placing. The material may be obtained from gravel pits, stockpiles, or may be produced from a crushing and screening plant with the proper blending. The materials from these sources must meet the requirements for gradation, quality, and consistency. It is the intent of this section of the Specifications to secure materials that will not require further mixing. The moisture content of the material must be approximately that required to obtain maximum density. Any minor deficiency or excess of moisture may be corrected by surface sprinkling or by aeration. In such instances, some mixing or manipulation may be required, immediately preceding the rolling, to obtain the required moisture content. The final operation must be blading or dragging, if necessary, to obtain a smooth uniform surface true to line and grade.

3.05 PLANT MIXING:

A. When materials from several sources are to be blended and mixed, the material must be processed in a central or travel mixing plant. The material must be thoroughly mixed with the required amount of water. After the mixing is complete, the material must be transported to and spread on the underlying course without undue loss of the moisture content.

3.06 GENERAL METHODS FOR PLACING:

A. The frost protection course must be constructed in layers. Any layer must be not more than 6 inches thickness for CA-6; nor more than 12 inches for RCB. The material, as spread, must be of uniform gradation with no pockets of fine or coarse materials. The frost protection course, unless otherwise permitted by the Commissioner, must not be spread more than 2,000 square yards in advance of the rolling. Any necessary sprinkling must be kept within this limit. No material will be placed in snow or on a soft, muddy, or frozen course.

B. When more than one layer is required, the construction procedure described herein must apply similarly to each layer.

C. During the placing and spreading, sufficient caution must be exercised to prevent the incorporation of subgrade, shoulder, or foreign material in the frost protection course mixture.

D. Where geotextile fabric is required to be placed under the frost protection course, it must be placed over the subgrade in accordance with the manufacturer's recommendations and Section P-629. The fabric must be non-woven. In areas of undercut and backfill, the fabric must be placed over the backfill at the top of subgrade level. The frost protection course material must be back-dumped on the fabric in a sequence of operations beginning at the outer edges of the area with subsequent placement toward the middle. Dumping of the material directly on the fabric will only be permitted to establish an initial working platform. No vehicles or construction equipment will be allowed on the fabric prior to the placement of the frost protection course. Fabric which is damaged during installation or subsequent placement of frost protection course must be repaired or replaced by the Contractor at his own expense to the satisfaction of the Commissioner.

3.07 FINISHING AND COMPACTING:

A. After spreading or mixing, the material must be thoroughly compacted by rolling and sprinkling, when necessary. Sufficient rollers must be furnished to adequately handle the rate of placing and spreading of the frost protection course.

B. The field density of the compacted material under aircraft pavements must be at least 100 percent of the maximum density of laboratory specimens prepared from samples of the subbase material delivered to the jobsite for CA-6 material. The laboratory specimens must be compacted and tested in accordance with ASTM D 1557. The in-place

field density shall be determined using a nuclear gage in accordance with ASTM D6938.

C. The course must not be rolled when the underlying course is soft or yielding or when the rolling causes undulation in the subbase. When the rolling develops irregularities to the CA-6 that exceed 1/2-inch when tested with a 16-foot straightedge, the irregular surface must be loosened and then refilled with the same kind of material as that used in constructing the course and again rolled as required above. Irregularities in the RCB placement must not exceed ½ inch and must be checked by means of surveying.

D. The field density of the compacted CA-6 material for runway and taxiway shoulders, FAA access roads, haul roads and service roads must be at least 95% of the maximum density of laboratory specimens when compacted and tested in accordance with ASTM D1557. The in-place field density shall be determined using a nuclear gage in accordance with ASTM D6938.

E. Verification of consolidation and interlocking of the RCB will be performed via a rolling pattern procedure. The rolling pattern will be developed by recording the number of passes of a vibratory roller needed to ensure proper consolidation and interlocking of the RCB material using survey elevation data**.** The RCB will be installed in twelve (12) inch lifts and rolled an acceptable number of times until survey data shows that the consolidation of the material is negligible and to the acceptance of the Commissioner. The specified number of passes, determined by the rolling pattern, will be the required amount of passes used for the RCB material and that particular vibratory roller for the project. If the Contractor wishes to change vibratory rollers during the project, then a new rolling pattern must be developed. The Contractor must verify the rolling pattern once per week or every time a new piece of equipment is used. The rolling pattern development must be performed in the presence of and to the satisfaction of the Commissioner. The Contractor will perform a rolling pattern verification whenever the Commissioner deems it is needed to properly control the process or the Commissioner deems the process out of control.

F. Along places inaccessible to rollers, the subbase material must be tamped thoroughly with mechanical or hand tampers.

G. Sprinkling during rolling, if necessary, must be in the amount and by equipment acceptable to the Commissioner. Water must not be added in such a manner or quantity that free water will reach the underlying layer and cause it to become soft.

3.08 ACCEPTANCE SAMPLING AND TESTING

A. CA-6and RCB shall be accepted for gradation and density or consolidation as specified herein. Sampling locations shall be determined on a random basis in accordance with statistical procedures contained in ASTM D3665. Sampling of aggregates shall be in accordance with ASTM D75.

B. One gradation test per ASTM C136 must be run per 5000 tons per aggregate type delivered or a minimum of one test per week, whichever is more frequent, or when materials substantially change as determined by the Commissioner. The aggregate type will be accepted for gradation when it falls within the limits and tolerances specified for CA-6and RCB. If the proper gradation is not attained, the gradation test will be repeated. A material that does not pass the gradation after retest shall be rejected and replaced by the Contractor at the Contractor's expense.

C. For CA-6, each lift must be tested for density; a minimum of one test must be taken for each 250 cubic yards of material placed per layer, or as directed by the Commissioner. The material will be accepted for density when the field density is at least the specified percent of the maximum density of the laboratory specimen prepared from samples delivered to the job site. If the specified density is not attained, the material shall be reworked and additional random density tests made. This procedure shall be followed until the specified density is reached.

D. Consolidation of the RCB will be accepted if the proper rolling pattern had been utilized during the installation of the material, all aggregate interlock is complete and the consolidation effort has been checked. The consolidation effort will be checked via the survey data per P-154.3.07.F every 400 LF/lift installed.

3.09 SURFACE TEST:

A. After the course is completely compacted, the surface must be tested for smoothness and accuracy of grade and crown; any portion found to lack the required smoothness or to fail in accuracy of grade or crown must be scarified, reshaped, recompacted, and otherwise manipulated as the Commissioner may direct until the required smoothness and accuracy are obtained. The finished surface must not be above the theoretical vertical grade and may not vary more than 1/2-inch when tested with a 16 foot straightedge applied parallel with, and at right angles to the centerline. Surface test may be made by means of survey and/or templates.

3.10 THICKNESS:

A. The thickness of the completed subbase course must be determined by depth tests, survey, or cores conducted by the Contractor taken at intervals so each test must represent no more than 500 square yards. When the deficiency in thickness is more than 1/2 inch, the Contractor must correct such areas by scarifying, adding satisfactory mixture, rolling, sprinkling, reshaping, and finishing in accordance with these Specifications. The Contractor must replace at his/her expense the frost protection material where borings are taken for test purposes.

3.11 PROTECTION:

A. Work on frost protection course must not be conducted during freezing temperature nor when the subgrade is wet. When the subbase material contains frozen material or when the underlying course is frozen, the construction must be stopped.

3.12 MAINTENANCE:

A. Following the final shaping of the material, the subbase must be maintained throughout its entire length by the use of standard motor graders and rollers until, in the judgment of the Commissioner, the frost protection course meets all requirements and is acceptable for the construction of the next course. The Contractor is totally responsible for the preparation, maintenance and protection of the frost protection course and no additional compensation will be considered for any reworking of the material for any reason.

PART 4 METHOD OF MEASUREMENT

4.01 MEASUREMENT:

A. The measurement of Frost Protection Course CA-6 to be paid shall be the number of square yards of frost protection course of a nominal thickness (or the number of cubic yards of frost protection course material of a variable thickness based on average cross sectional area per Drawing dimensions multiplied by the length) placed, compacted and accepted in the completed course. The quantity of frost protection course material will be measured in final position based on surface area, or by means of average end areas computed from depth dimensions in the Drawings. Frost protection materials will not be included in any other excavation quantities.

B. The measurement of Placement of Frost Protection Course, RCB, Crushed Recycled Concrete to be paid shall be the number of square

yards of Frost Protection Course, RCB of a nominal thickness (or the number of cubic yards of frost protection course material of a variable thickness based on average cross sectional area per Drawing dimensions multiplied by the length) placed, compacted and accepted in the completed course. The quantity of Frost Protection Course, RCB material will be measured in final position based on surface area, or by means of average end areas computed from depth dimensions in the Drawings. Frost protection materials will not be included in any other excavation quantities.

C. Measurement of Supply Off-Site CA-6 Crushed Stone Material for payment shall be the number of tons of material delivered and accepted. Measurement shall be computed from truck weight delivery tickets obtained from a scale certified in accordance with State of Illinois requirements.

PART 5 BASIS OF PAYMENT

5.01 PAYMENT:

A. Payment will be made at the Contract unit price per cubic yard for Frost Protection Course, CA-6 Crushed Stone. This price will be full compensation for furnishing geotextile fabric, all preparation, hauling, placing and compacting of these materials; and for all labor, equipment, tools, and all work necessary to complete the item.

B. Payment will be made at the Contract unit price per cubic yard for Placement of Frost Protection Course, RCB, Crushed Recycled Concrete. This price will be full compensation for furnishing ~~crushed recycled concrete and~~ geotextile fabric; for all preparation, hauling, placing and compacting of these materials; and for all labor, equipment, tools, and all work necessary to complete the item. Contractor will utilize on-site crushed recycled material for this pay item.

C. Payment for the Supply Off-Site CA-6 Crushed Stone Material shall be made at the Contract unit price bid per ton of Off-Site CA-6 Crushed Stone Material. This price will be full compensation for furnishing and hauling to work site all off-site CA-6 crushed stone material. This pay item shall be used in the event on-site crushed recycled material is not available.

D. Payment will be made under:

ITEM NO.	DESCRIPTION	UOM
P-154-01	FROST PROTECTION COURSE, CA-6 CRUSHED STONE	CY
P-154-02	PLACEMENT OF FROST PROTECTION COURSE, RCB, CRUSHED RECYCLED CONCRETE	CY
P-154-03	SUPPLY OFF-SITE CA-6 CRUSHED STONE MATERIAL	TON

END OF SECTION P-154

SITE DEMOLITION
SECTION X-100

PART 1 DESCRIPTION

1.01 GENERAL

A. This Section includes all the work required to demolish and remove existing Surface Structures indicated on the Contract Plans. Surface Structures include, but are not limited to, trees, guardrail, fence, blast fence concrete retaining walls, PCC barriers, parking bumpers, bollards, site debris, concrete pads, signs, above ground storage tanks and road signs.

B. This Section includes all work required to demolish and remove existing Underground Structures indicated on the Contract Plans. Underground Structures include, but are not limited to, existing manholes, valve vaults, inlets, catch basins, inspection holes, hand holes, underground storage tanks, existing foundations, basements, and vaults.

C. This Section includes all work required to demolish and remove Underground Utilities indicated on the Plans. Underground Utilities include, but are not limited, to fire hydrants, pipes, water valves, gas valves, culverts, storm sewer, underdrains, sanitary sewer, water lines, lift stations, pumps, meters, and natural gas lines.

D. This Section includes all work required to demolish and remove Electrical Utilities indicated on the Plans. Electrical Utility removal include, but is not limited to, CECO (Overhead and underground), electrical cables, telephone ductbanks, FAA ductbanks, COMED ductbanks, ducts, light poles, and light bases with and without lights, conduits, lighting base cans, fixtures, and transformers as shown in the Plans.

E. Any other miscellaneous items within the limits of pavement demolition must be removed.

F. The Contractor must provide connection between limits of removal of these items to existing utilities that are to remain in service. Disruption of service shall be minimal and coordinated with the Commissioner.

G. Contractor must conform to the Building Code of the City of Chicago for Demolition of Structures, safety of adjacent structures and dust control.

H. Contractor must notify affected utility companies before starting work and comply with their requirements for protection and or termination of facilities. Contractor must protect all existing utilities to remain and existing utilities to be demolished until they are demolished. Disconnection to electric and telecommunication service to the existing guard post and fence security gates must be coordinated with the Commissioner.

I. All equipment to be used on the Project must comply with the height restrictions of the FAA 7460 permit.

J. Blasting will not be permitted.

1.02 RELATED WORK

A. As specified in the following divisions:

1. Section 01524 – Construction Waste Management

2. Section 02705 – Abandoning Existing Storm-Sanitary Sewer System and Structures

3. Section L-108 – Installation of Underground Cable for Airports

4. Section L-110 – Installation of Airport Underground Electrical Duct

5. Section P-152 – Excavation and Embankment

6. Section P-157 – Trench Backfilling

1.03 QUALITY CONTROL

A. Contractor Qualifications: Site Demolition must be performed by a qualified demolitionist. The term qualified means experienced in performing the Work required by this Section. The qualified demolitionist must have a significant number years documented experience on Projects similar in size and scope to this Project. The

demolitionist must submit evidence of such qualifications upon request by the Commissioner.

B. Perform Work in accordance with the latest edition, of the appropriate divisions, of the following:

1. EPA – Environmental Protection Agency (Federal). Comply with governing EPA notification regulations before starting demolition. Comply with hauling and disposal and regulations of authorities having jurisdiction.

PART 2 MATERIALS

2.01 GRANULAR BACKFILL

A. Granular backfill must conform to IDOT Standard Specification, Section 209 or 311, Type CA-6, and P-157 Trench Backfill. Recycled or virgin is allowed.

B. Acceptable fill as defined in Section P-152.1.03.B.1.a

PART 3 CONSTRUCTION METHODS

3.01 DEMOLITION REQUIREMENTS

A. Contractor must:

1. Contractor must submit a demolition plan prior to starting work in the field.
2. Conduct demolition operations to minimize interference with adjacent structures, utilities or appurtenances.
3. Cease operations immediately if adjacent structures appear in danger. Notify the Commissioner. Do not resume operations until directed.
4. Sprinkle work with water to minimize dust. Provide hoses and water connections for this purpose. If water is to be supplied from a fire hydrant, then backflow preventers must be used. Water trucks may also be needed.
5. Obtain the Commissioner's acceptance of any new and/or temporary AOA perimeter fencing before removing existing AOA fence.
6. Ensure utilities remain in service throughout demolition. Where maintaining service is not feasible, the Contractor must notify affected parties, the utility provider and the Commissioner 72 hours prior to the start work.

7. Provide, maintain, and operate temporary facilities necessary to maintain operation of existing utilities at demolition and/or project phase limits. This includes, but not limited to, storm sewer, sanitary sewer, water service and communications/electrical service.

8. Contractor should reference specification Section 02710 Dust Control and Section 01524 Construction Waste Management for disposal requirements of non- hazardous construction debris and demolition waste.

B. Existing Concrete Structures Removal:

1. Existing structures must be removed to at least 1 ft below the proposed elevation subgrade or ground surface. Portions of existing structures below this elevation that interfere with the proposed construction shall also be removed.

2. Method of removal. Equipment and methods used for removing existing concrete structures must be such as to prevent cracking, shattering or spalling of the concrete remaining in place. Breaking concrete by means of a ball breaker or a gravity drop hammer will not be permitted.

3. Partial removal of structures. Where portions of existing structures are to remain in service, portions to be removed must be removed in such a manner as to leave the structure undamaged and in proper condition for the use contemplated. Any damage to the portions remaining in service must be repaired by the Contractor at its own expense. Old concrete must be carefully removed to the lines designated unless otherwise directed by the Commissioner. Prior to concrete removal, a saw cut of approximately ¾-inch deep must be made along all boundaries of full-depth removal areas adjacent to areas to remain in place. The concrete must then be removed with jackhammers not heavier than the nominal 45-pound class and suitable hand tools. Final removal at the designated lines of full-depth removal must be accomplished by 15-pound chipping hammers or hand tools, with particular care being exercised at the top of the wall to avoid breakage beyond the designated removal line. The surfaces presented as a result of this removal must be reasonably true and even, with sharp straight corners that will permit a neat and workmanlike joint with the new construction or be satisfactory for the purpose intended. Where existing bars are to extend from the remaining portions of existing structures into new construction, the concrete must be

removed so as to leave the projecting bars clean and undamaged. All newly exposed concrete and exposed reinforcement bars to be incorporated into new concrete must be blast cleaned.

Upon removal of the falsework, the bottom surfaces of the new concrete, adjacent to remaining portions of existing concrete, must be inspected with hammer sounding to detect loose and delaminated areas. Those areas must be removed as directed by the Commissioner. All removed areas 1-inch or deeper must be repaired with an approved method. This removal and repair must be completed to the satisfaction of the Commissioner.

4. Where airfield lights, transformers, or other structures are indicated on the plans to be salvaged, care must be taken to protect the structures from damage during salvage operations. Salvaged structures are to be delivered to the CDA or FAA at a location approved by the Commissioner.

3.02 EXISTING SITE STRUCTURES

A. Contractor must demolish and completely remove existing surface structures where indicated. Contractor must properly dispose demolished and removed items in accordance with these Specifications.

3.03 EXISTING UTILITIES

A. Contractor must demolish and completely remove existing utilities where indicated. Contractor must cap and abandon in place utilities where indicated. Utilities must include, but not limited to, hydrants, underground piping, conduit and cables, mechanical and electrical systems indicated to be removed. Contractor must coordinate with existing utility owners for shut-off of services if lines are active and for cut-off and sealing or capping (Commonwealth Edison Co., Ameritech, Peoples Gas, etc).

3.04 CLOSING ABANDONED UNDERGROUND UTILITIES

A. Contractor must permanently close open ends of abandoned underground utilities indicated to remain with the following materials to withstand backfill pressures which may result after closing.

B. Close open ends of conduit and pipe with caps, plugs or other suitable method for the type and size of material as acceptable to the Commissioner. Wooden caps or plugs are not acceptable.

C. Close open ends of concrete and masonry utilities 2'-0" diameter or smaller with not less than 8 inches thick concrete bulkheads, constructed to completely close the openings.

D. Submit details for closure of concrete or masonry utilities larger than 2'-0" to the Commissioner for review.

E. Cables in abandoned ductbank must be removed from termination point to termination point.

3.05 REMOVAL OF ABANDONED UNDERGROUND UTILITIES

A. Contractor must remove underground utility lines and structures indicated to be removed in their entirety. Backfill must be placed in layers not to exceed 6" and compacted to 95% of the maximum density determined by ASTM D 1557. See Section P-157.

3.06 FILL

A. All areas excavated below the elevation indicated on the Drawings such as former basements, manholes and like areas must be filled with granular backfill to the indicated elevation in six (6) inch lifts and compacted to 95% of the maximum density determined by ASTM D 1557. This work must be done in accordance with the material requirements of Specification P-157 Trench Backfilling.

B. Large excavations may be backfilled per Specification P-152 in lieu of granular backfill subject to the discretion of the Commissioner.

3.07 RELOCATE EX UTILITIES AND APPURTNANCES

A. Materials that are to be salvaged under the contract and which the Commissioner deems fit for reuse must be carefully removed in transportable sections and stockpiled near the site at a location designated by the commissioner.

B. If the material for reuse is unfit, through no fault of the Contractor, the material shall be disposed of in accordance with these specifications.

C. When the Contractor damages or destroys such material, the Contractor must repair or replace the material in a manner satisfactory to the Commissioner.

D. Existing hydrants must be carefully disconnected from the existing water main at the existing auxiliary valve. The Contractor must close the auxiliary valve and install cap and thrust block on the open end. The hydrant is the property of the CDA and must be delivered to the

Commissioner; the Contract may reuse hydrants as specified in the Contract Documents.

3.08 UTILITY CONFLICT AND UNFORESEEN CONDITIONS

A. An allowance amount has been established for Utility Conflicts or Unforeseen Conditions. The directed removal or demolition of unforeseen material, including, but not limited to, foundations, former basements, existing debris piles, recycled materials, and underground structures, which require demolition, relocations, adjustment or tie-in connections will be removed demolished to at least two (2) feet below the proposed excavation grades during construction of the proposed improvement in the Contract Documents.

B. The Allowance is required to cover the cost of any required demolition, removal, relocation, adjustment, or tie-in connection, providing labor, materials, equipment, expendables, and services for the utility or obstruction encountered. The disposition of the encountered utility conflict or unforeseen condition will be determined at the sole discretion of the Commissioner. Such unforeseen removals are not indicated in the Plans. Items identified on the plans for removal will be paid in accordance with the applicable pay item. The Contractor will not proceed to perform any such Work without written permission from the Commissioner and Chief Procurement Officer.

C. The Contractor will be responsible to notify the Commissioner when a utility conflict or unforeseen condition is encountered and to receive written permission from the Commissioner and Chief Procurement Officer to proceed with the Work. The Work will be paid for as shown in Article X, “Changes in the Work,” of Part 2, General Conditions.

PART 4 METHOD OF MEASUREMENT

4.01 MEASUREMENTS

A. Removal – Surface Structures will be measured per lump sum and will include removal of trees, guardrail, fence, blast fence concrete retaining walls, PCC barriers, parking bumpers, bollards, site debris, concrete pads, signs, above ground storage tanks and road signs

B. Removal – Underground Structures will be measured per lump sum and will include removal of manholes, valve vaults, inlets, catch basins, inspection holes, hand holes, underground storage tanks, existing foundations, basements, and vaults.

C. Removal – Underground Utilities will be measured per lump sum and will include removal of fire hydrants, pipes, water valves, gas valves, culverts, storm sewer, underdrains, sanitary sewer, water lines, lift stations, pumps, meters, and natural gas lines.

D. Removal – Electric Utilities will be measured per lump sum and will include removal of CECO (Overhead and underground), electrical cables, telephone ductbanks, FAA ductbanks, COMED ductbanks, ducts, light poles, and light bases with and without lights, concrete backfill, conduits, lighting base cans, guidance sign and base, fixtures, and transformers. Blank plates shall be provided and installed as noted.

E. Guidance Sign and Base removal will include sign and base removal, its conduit and wiring removed to the nearest light base while insuring the integrity of the remaining circuit, and the resulting hole backfilled and finished surface area restored in accordance with the Project Specifications and as directed by the Commissioner. The removed sign will be delivered to the Commissioner.

F. No separate payment will be made for granular backfill material used to fill removed utility lines and structures.

G. Unforeseen Demolition: When an unforeseen demolition of material or utilities is encountered which is not shown in the Drawings, and for which no pay item exists, notification to the Commissioner is required. Work will not commence until written permission is received. The Contractor will perform the required Work for the disposition of the encountered unforeseen utility or obstruction as "Allowance for Utility Conflicts or Unforeseen Conditions", per allowance, and measurement of this Work will be as described in Article X, "Changes in the Work", of the Part 2, General Conditions of the Contract.

PART 5 BASIS OF PAYMENT

5.01 PAYMENTS

A. Payment for removal of trees, guardrail, fence, blast fence concrete retaining walls, PCC barriers, parking bumpers, bollards, site debris, concrete pads, signs, above ground storage tanks and road signs will be included in a lump sum pay item for Removal – Surface Structures. Such payment will be payment in full for all labor, equipment, materials, and permits, for all work necessary to remove and dispose of the item. Removal of crushed granular back fill and stockpiled crushed aggregate base course is not payed for under this section.

B. Payment for removal of manholes, valve vaults, inlets, catch basins, inspection holes, hand holes, underground storage tanks, existing foundations, basements, and vaults will be included in a lump sum pay item for Removal – Underground Structures. Such payment will be payment in full for all labor, equipment, materials, and permits, for all work necessary to remove and dispose of the item, and for all excavation, backfill, and compaction.

C. Payment for removal of fire hydrants, pipes, water valves, gas valves, culverts, storm sewer, underdrains, sanitary sewer, water lines, lift stations, pumps, meters, and natural gas lines will be included in a lump sum pay item for Removal – Underground Utilities. Such payment will be payment in full for all labor, equipment, materials, and permits, for all work necessary to remove and dispose of the item, and for all excavation, backfill, and compaction, for all cutting and capping of pipe where indicated on the plans.

D. Payment for removal of CECO (Overhead and underground), electrical cables, telephone ductbanks, FAA ductbanks, COMED ductbanks, ducts, light poles, and light bases with and without lights, conduits, lighting base cans, fixtures, and transformers will be included in a lump sum pay item for Removal – Electric Utilities. Such payment will be payment in full for all labor, equipment, materials and permits, for all disconnection of light, sign base, circuit, or cable, removal and disposal of the cable, wiring, conduit, duct, base can, blank plates, fixture, transformers, lights, light poles, backfill and compaction.

E. Payment for removal of Guidance Sign and Base will be included in a lump sum pay item for Removal – Electric Utilities.

F. The Commissioner and the FAA reserve the right to salvage any items from demolition. The Contractor must salvage manhole frame and covers and fire hydrants. The Contractor must deliver salvaged material to a site within the limits of O'Hare airport property as instructed by the Commissioner.

G. Unforeseen Demolition: The Contractor must receive written permission from the Commission to proceed with the work. The work will be paid for under Allowance for Utility Conflicts or Unforeseen Conditions Specification 01010-07 as shown in the General Conditions, Article X, Changes in Work, 3. Time and Materials Not to Exceed Basis.

H. Payment will be made under:

ITEM NO.	DESCRIPTION	UOM
X-100-01	REMOVAL – SURFACE STRUCTURES	LS
X-100-02	REMOVAL – UNDERGROUND STRUCTURES	LS
X-100-03	REMOVAL – UNDERGROUND UTILITIES	LS
X-100-04	REMOVAL – ELECTRIC UTILITIES	LS

END OF SECTION X-100

	SHEET NO.	SHEET TITLE
+	CG-817	INTERMEDIATE CONDITIONS EROSION CONTROL PLAN TRUNK LINE
	CG-841	STORMWATER POLLUTION PREVENTION PLAN NOTES
	CG-842	STORMWATER POLLUTION PREVENTION PLAN NOTES
	CG-843	STORMWATER POLLUTION PREVENTION PLAN NOTES
	CG-844	EROSION CONTROL NOTES
	CG-860	EROSION CONTROL DETAILS
	CG-861	EROSION CONTROL DETAILS
	CG-862	EROSION CONTROL DETAILS
	CG-863	EROSION CONTROL DETAILS
	CG-864	EROSION CONTROL DETAILS
	CT-100	PROPOSED PLAN AND PROFILE KEY PLAN
	CT-101	PROPOSED PLAN AND PROFILE INTERNATIONAL TAXILANE
	CT-102	PROPOSED PLAN AND PROFILE TAXIWAY CROSS-OVERS
	CT-103	PROPOSED PLAN AND PROFILE INTERNATIONAL TAXILANE
	CT-104	PROPOSED PLAN AND PROFILE LOADING DOCK ACCESS
	CT-105	PROPOSED PLAN AND PROFILE BALMORAL AVE
	CT-106	PROPOSED PLAN AND PROFILE ATS FIRE LANE
	CT-110	CROSS SECTIONS INTERNATIONAL TAXILANE KEY PLAN
	CT-111	CROSS SECTIONS INTERNATIONAL TAXILANE WEST BASELINE
	CT-112	CROSS SECTIONS INTERNATIONAL TAXILANE WEST BASELINE
	CT-113	CROSS SECTIONS INTERNATIONAL TAXILANE WEST BASELINE
	CT-114	CROSS SECTIONS INTERNATIONAL TAXILANE WEST BASELINE
	CT-115	CROSS SECTIONS INTERNATIONAL TAXILANE WEST BASELINE
	CT-116	CROSS SECTIONS INTERNATIONAL TAXILANE WEST BASELINE
	CT-117	CROSS SECTIONS INTERNATIONAL TAXILANE WEST BASELINE
	CT-118	CROSS SECTIONS INTERNATIONAL TAXILANE CENTER BASELINE
	CT-119	CROSS SECTIONS INTERNATIONAL TAXILANE CENTER BASELINE
	CT-120	CROSS SECTIONS INTERNATIONAL TAXILANE CENTER BASELINE
	CT-121	CROSS SECTIONS INTERNATIONAL TAXILANE CENTER BASELINE
	CT-122	CROSS SECTIONS INTERNATIONAL TAXILANE CENTER BASELINE
	CT-123	CROSS SECTIONS INTERNATIONAL TAXILANE CENTER BASELINE
	CT-124	CROSS SECTIONS INTERNATIONAL TAXILANE CENTER BASELINE
	CT-125	CROSS SECTIONS INTERNATIONAL TAXILANE CENTER BASELINE
	CT-126	CROSS SECTIONS INTERNATIONAL TAXILANE CENTER BASELINE
	CT-127	CROSS SECTIONS INTERNATIONAL TAXILANE CENTER BASELINE
	CT-128	CROSS SECTIONS INTERNATIONAL TAXILANE EAST BASELINE
	CT-129	CROSS SECTIONS INTERNATIONAL TAXILANE EAST BASELINE
	CT-130	CROSS SECTIONS INTERNATIONAL TAXILANE EAST BASELINE
	CT-131	CROSS SECTIONS INTERNATIONAL TAXILANE EAST BASELINE
	CT-132	CROSS SECTIONS INTERNATIONAL TAXILANE EAST BASELINE
	CT-133	CROSS SECTIONS INTERNATIONAL TAXILANE EAST BASELINE
	CT-134	CROSS SECTIONS INTERNATIONAL TAXILANE EAST BASELINE
	CT-135	CROSS SECTIONS INTERNATIONAL TAXILANE EAST BASELINE
	CT-136	CROSS SECTIONS INTERNATIONAL TAXILANE EAST BASELINE
	CT-137	CROSS SECTIONS INTERNATIONAL TAXILANE EAST BASELINE
	CT-138	CROSS SECTIONS INTERNATIONAL TAXILANE EAST BASELINE
	CT-139	CROSS SECTIONS INTERNATIONAL TAXILANE EAST BASELINE
	CT-140	CROSS SECTIONS INTERNATIONAL TAXILANE EAST BASELINE
	CT-141	CROSS SECTIONS INTERNATIONAL TAXILANE NORTH BASELINE
	CT-142	CROSS SECTIONS INTERNATIONAL TAXILANE NORTH BASELINE
	CT-143	CROSS SECTIONS INTERNATIONAL TAXILANE NORTH BASELINE
	CT-144	CROSS SECTIONS INTERNATIONAL TAXILANE SOUTH BASELINE
	CT-145	CROSS SECTIONS INTERNATIONAL TAXILANE SOUTH BASELINE
	CT-146	CROSS SECTIONS INTERNATIONAL TAXILANE SOUTH BASELINE
	CT-147	CROSS SECTIONS INTERNATIONAL TAXILANE SOUTH BASELINE
	CT-148	CROSS SECTIONS INTERNATIONAL TAXILANE SOUTH BASELINE
	CT-149	CROSS SECTIONS INTERNATIONAL TAXILANE SOUTH BASELINE
	CT-150	CROSS SECTIONS INTERNATIONAL TAXILANE SOUTH BASELINE
	CT-151	CROSS SECTIONS INTERNATIONAL TAXILANE SOUTH BASELINE
	CT-152	CROSS SECTIONS INTERNATIONAL TAXILANE SOUTH BASELINE
	CT-153	CROSS SECTIONS INTERNATIONAL TAXILANE SOUTH BASELINE
	CT-154	CROSS SECTIONS INTERNATIONAL TAXILANE SOUTH BASELINE
	CT-201	AIRCRAFT PARKING PLAN
	CT-202	AIRCRAFT FLEET MIX
	CS-400	FENCING OVERALL AND KEY PLAN
	CS-401	FENCING PLAN
	CS-402	FENCING PLAN
	CS-403	FENCING PLAN
	CS-404	FENCING PLAN
	CS-405	FENCING PLAN
	CS-411	JET BLAST PROTECTION FENCE
	CS-420	FENCING DETAILS
	CS-421	FENCING DETAILS
*	CS-422	FENCING DETAILS
	LP-100	LANDSCAPE OVERALL AND KEY PLAN
	LP-101	LANDSCAPE PLAN
	LP-102	LANDSCAPE PLAN
	LP-103	LANDSCAPE PLAN
	LP-105	LANDSCAPE PLAN
	LP-106	LANDSCAPE PLAN
	LP-107	LANDSCAPE PLAN
	S-100	RETAINING WALLS 1 AND 2
	S-101	RETAINING WALL 3
	S-102	RETAINING WALL DETAILS
	ED-100	EXISTING ELECTRICAL OVERALL REMOVAL AND KEY PLAN
	ED-101	ELECTRICAL EXISTING AND REMOVAL PLAN
	ED-102	ELECTRICAL EXISTING AND REMOVAL PLAN
	ED-103	ELECTRICAL EXISTING AND REMOVAL PLAN
	ED-104	ELECTRICAL EXISTING AND REMOVAL PLAN
	ED-105	ELECTRICAL EXISTING AND REMOVAL PLAN
	ED-106	ELECTRICAL EXISTING AND REMOVAL PLAN
	ED-107	ELECTRICAL EXISTING AND REMOVAL PLAN

	SHEET NO.	SHEET TITLE
	EA-200	PROPOSED AIRFIELD ELECTRICAL OVERALL AND KEY PLAN
	EA-201	AIRFIELD LIGHTING PLAN
	EA-202	AIRFIELD LIGHTING PLAN
	EA-206	AIRFIELD LIGHTING PLAN
	EA-207	AIRFIELD LIGHTING PLAN
	EA-250	PROPOSED AIRFIELD SIGNING OVERALL AND KEY PLAN
	EA-251	AIRFIELD SIGNING PLAN
	EA-252	AIRFIELD SIGNING PLAN
	EA-256	AIRFIELD SIGNING PLAN
	EA-257	AIRFIELD SIGNING PLAN
	EA-300	PROPOSED AIRFIELD LIGHTING CIRCUIT HOMERUN PLAN
	EA-301	PROPOSED AIRFIELD LIGHTING CIRCUIT HOMERUN PLAN
	EA-302	PROPOSED AIRFIELD LIGHTING CIRCUIT HOMERUN PLAN
	EA-401	AIRFIELD LIGHTING SYMBOL LEGEND
	EA-501	AIRFIELD LIGHTING AND SIGNAGE DETAILS
	EA-502	AIRFIELD LIGHTING AND SIGNAGE DETAILS
	EA-503	SALCV REGULATOR ROOM POWER PLAN
	EA-504	SALCV CABLE VAULT POWER PLAN
	EA-510	AIRFIELD LIGHTING AND SIGNAGE DETAILS - STD
	EA-511	AIRFIELD LIGHTING AND SIGNAGE DETAILS - STD
	EA-601	AIRFIELD LIGHTING SCHEDULE
	EA-602	AIRFIELD SIGNAGE SCHEDULE
	EA-603	AIRFIELD LIGHTING CCR LOAD SCHEDULE
	EA-604	AIRFIELD LIGHTING CCR LOAD SCHEDULE
	ES-200	OVERALL APRON ELECTRICAL AND PHOTOMETRIC KEY PLAN
	ES-201	ELECTRICAL PLAN
	ES-202	ELECTRICAL PLAN
	ES-203	ELECTRICAL PLAN
	ES-204	ELECTRICAL PLAN
	ES-205	ELECTRICAL PLAN
	ES-501	ELECTRICAL DETAILS
	ES-502	FUEL ELECTRICAL DETAILS
	ES-503	FUEL ELECTRICAL DETAILS
	ES-504	COMED ELECTRICAL DETAILS
	ES-505	COMED ELECTRICAL DETAILS
	ES-510	ELECTRICAL DETAILS - STD
	ES-511	ELECTRICAL DETAILS - STD
	ES-512	ELECTRICAL DETAILS - STD
	ES-513	ELECTRICAL DETAILS - STD
	ES-514	ELECTRICAL DETAILS - STD
	ES-515	ELECTRICAL DETAILS - STD
	ES-601	ELECTRICAL DIAGRAM AND PANEL SCHEDULES
	ES-602	ELECTRICAL/LIGHTING SCHEDULES
	T-100	EXISTING TELECOM. OVERALL REMOVAL AND KEY PLAN
	T-101	TELECOMMUNICATIONS EXISTING AND REMOVAL PLAN
	T-102	TELECOMMUNICATIONS EXISTING AND REMOVAL PLAN
	T-103	TELECOMMUNICATIONS EXISTING AND REMOVAL PLAN
	T-104	TELECOMMUNICATIONS EXISTING AND REMOVAL PLAN
	T-105	TELECOMMUNICATIONS EXISTING AND REMOVAL PLAN
	T-200	PROPOSED TELECOM. OVERALL AND KEY PLAN
	T-201	PROPOSED TELECOMMUNICATIONS PLAN
	T-202	PROPOSED TELECOMMUNICATIONS PLAN
	T-203	PROPOSED TELECOMMUNICATIONS PLAN
	T-204	PROPOSED TELECOMMUNICATIONS PLAN
	T-205	PROPOSED TELECOMMUNICATIONS PLAN

NOTE:
* FOR REFERENCE ONLY, WORK BY OTHERS
\+ ISSUED FOR 60% DESIGN REVIEW (SOUTH TRUNK SEWER)

	SHEET NO.	SHEET TITLE
		TRITURATOR AND GUARD POST 11 DRAWINGS
	G-002	SYMBOLS, GENERAL NOTES
	G-003	ABBREVIATIONS
2	LS-101	LIFE SAFETY PLAN - 1
	A-101	TRITURATOR BUILDING FLOOR PLANS
	A-102	GUARD POST 11 PRE-FAB BUILDING PLANS & ELEVATIONS
	A-141	TRITURATOR BUILDING ROOF PLAN & DETAILS
	A-142	TRITURATOR BUILDING ROOF DETAILS
	A-143	TRITURATOR BUILDING ROOF DETAILS
	A-201	TRITURATOR BUILDING ELEVATIONS
	A-202	TRITURATOR BUILDING ELEVATIONS
	A-301	TRITURATOR BUILDING SECTIONS
	A-401	TRITURATOR BUILDING ENLARGED RESTROOM PLANS & ELEVATIONS
	A-501	DETAILS
	A-601	SCHEDULES
	AS-001	GENERAL NOTES
	AS-101	TRITURATOR FOUNDATION PLAN
	AS-102	TRITURATOR SLAB PLAN
	AS-201	TRITURATOR WALL PLAN
	AS-202	MEZZANINE SLAB PLANS
	AS-203	ROOF TRITURATOR PLAN
	AS-301	TYPICAL FOUNDATION DETAILS
	AS-302	TRITURATOR FOUNDATION SECTIONS & DETAILS
	AS-401	TYP CMU SECTIONS & DETAILS
	AS-402	TYP CMU WALL SECTIONS & DETAILS
	AS-403	TYP CMU WALL SECTIONS & DETAILS
	AS-404	CONCRETE SECTIONS & DETAILS
	AS-405	FRAMING SECTIONS & DETAILS
	AS-406	MEZANINE SECTIONS & DETAILS
	M-001	LEGENDS & ABBREVATIONS
	M-101	FIRST FLOOR MECHANICAL PLAN
	M-102	MEZZANINE MECHANICAL AND DUCTWORK PLAN
	M-103	NATURAL GAS PIPING PLAN
	M-104	MECHANICAL ROOF PLAN
	M-501	MECHANICAL DETAILS
	M-601	MECHANICAL SCHEDULES
	FP-001	FIRE SPRINKLER NOTES, LEGEND & DETAILS
	FP-101	FIRE SPRINKLER PLAN
	P-001	PLUMBING LEGEND, NOTES & ABBREVATIONS
	P-101	PLUMBING DOMESTIC WATER SUPPLY PIPING PLAN
	P-102	PLUMBING SANITARY WASTE AND VENT PIPING PLAN
	P-103	PLUMBING ROOF PLAN
	P-501	PLUMBING DETAILS
	P-502	PLUMBING DETAILS
	P-503	PLUMBING WASTE & VENT RISER DIAGRAM
	P-504	PLUMBING HOT & COLD WATER RISER DIAGRAM
	P-601	PLUMBING SCHEDULES
	E-001	ELECTRICAL NOTES, LEGEND, AND ABBREVIATIONS
	E-101	LIGHTING PLANS
	E-102	POWER AND TELECOMM. PLANS
	E-103	POWER, TELECOMM., AND LIGHTNING PROTECTION PLAN
	E-601	ELECTRICAL SCHEDULES AND DIAGRAM
	E-602	ELECTRICAL DIAGRAMS AND DETAILS
	E-603	ELECTRICAL DIAGRAMS AND DETAILS
	FA-101	FIRE ALARM

CHICAGO DEPARTMENT OF AVIATION

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APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

INDEX OF SHEETS

DESIGNED:	DRAWN:	CHECKED:
KRP	KRP	PD

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO.: GI-102
REVISION: 1

8/16/2018 4:24:53 PM
Projects\602766.00_ORDT5\600_CADD\05_Official\02 Sheets\CP-H2028_17-00-GI-1024INDEX.dgn

CONSTRUCTION PHASING NOTES AND SCHEDULE, CONT.

PROJECT PHASING DESCRIPTIONS, CONT.

PHASE 1, CONT.

AREA C- TEMPORARY GSE AND SNOWMELT AREAS
MILESTONE 2/ 165 DAYS

AREA C IS AVAILABLE UPON CONCLUSION OF THE MOBILIZATION PERIOD AND SHALL COMMENCE AT THE SAME TIME AS AREA B. AREA C SHALL HAVE A DURATION OF ONE HUNDRED SIXTY-FIVE (165) DAYS AND SHALL SUCCESSFULLY COMPLETE THE NEW GSE AREA, NEW SNOW MELT AREA AND DELINEATE THE NEW SERVICE ROAD THAT TRAVELS THROUGH THE AREA.

WORK SHALL INCLUDE THE FOLLOWING ACTIVITIES:

A. DEMOLITION
B. FENCING
C. NEW TAXIWAY PAVEMENTS AND APRON AREAS
D. NEW AND TEMPORARY PAVEMENTS, AS REQUIRED, TO MAINTAIN THE UNIMPEDED FLOW OF AIRFIELD VEHICULAR TRAFFIC AROUND THE SITE DURING ALL TIMES.
E. DRAINAGE AND ELECTRIC
F. PAVEMENT MARKINGS AND REMOVALS
G. SCHEDULING AND SEQUENCING WORK TO ACCOMMODATE THE FUEL SYSTEM INSTALLATION (BY OTHERS).

UPON COMPLETION OF THIS PHASE, THERE ARE NO NEW AIRCRAFT POSITIONS IN SERVICE.

AREA D- NEW APRON AREA
MILESTONE 4/ 120 DAYS

AREA D IS NOT AVAILABLE UNTIL AUGUST 1, 2019 AND SHALL HAVE A DURATION OF ONE HUNDRED-THIRTY FIVE (135) DAYS. AREA D SHALL SUCCESSFULLY COMPLETE PORTIONS OF NEW APRON. 2

WORK SHALL INCLUDE THE FOLLOWING ACTIVITIES:

A. DEMOLITION
B. FENCING
C. NEW APRON AREAS
D. NEW AND TEMPORARY PAVEMENTS, AS REQUIRED, TO MAINTAIN THE UNIMPEDED FLOW OF AIRFIELD VEHICULAR TRAFFIC AROUND AND THROUGH THE SITE DURING ALL TIMES.
E. DRAINAGE AND ELECTRIC
F. PAVEMENT MARKINGS AND REMOVALS
G. SCHEDULING AND SEQUENCING WORK TO ACCOMMODATE THE FUEL SYSTEM INSTALLATION (BY OTHERS)

AREA E- NEW APRON AREA
MILESTONE 4/ 120 DAYS

AREA E IS NOT AVAILABLE UNTIL AFTER THE SUBSTANTIAL COMPLETION OF PHASE 1, AREA C, MILESTONE 2. AREA E SHALL HAVE A DURATION OF ONE HUNDRED-TWENTY (120) DAYS. UPON THE COMPLETION OF AREA C, THE CONTRACTOR WILL HAVE TO WAIT AN ADDITIONAL SEVEN (7) DAYS FOR THE RELOCATION OF EXISTING GSE OPERATIONS AND EQUIPMENT. THIS AREA SHALL SUCCESSFULLY COMPLETE PORTIONS OF NEW APRON.

WORK SHALL INCLUDE THE FOLLOWING ACTIVITIES:

A. DEMOLITION
B. FENCING
C. NEW APRON AREAS
D. NEW AND TEMPORARY PAVEMENTS, AS REQUIRED, TO MAINTAIN THE UNIMPEDED FLOW OF AIRFIELD VEHICULAR TRAFFIC AROUND THE SITE DURING ALL TIMES.
E. DRAINAGE AND ELECTRIC
F. PAVEMENT MARKINGS AND REMOVALS
G. SCHEDULING AND SEQUENCING WORK TO ACCOMMODATE THE FUEL SYSTEM INSTALLATION (BY OTHERS)

AREA F- NEW APRON AREA
MILESTONE 4/ 60 DAYS

AREA F IS NOT AVAILABLE UNTIL ONE HUNDRED-TWENTY (120) DAYS FROM THE END OF MOBILIZATION. THE FUELING CONTRACTOR WILL OCCUPY AREA F FOR THE FIRST 120 DAYS FROM THE START OF CONSTRUCTION TO COMPLETE THE MAJORITY OF THE ISO-6 VAULT AND AS MUCH OTHER WORK AS TIME PERMITS WITHIN THE AREA. UPON THE COMPLETION OF THE 120 DAYS, THIS CONTRACT WILL HAVE ACCESS TO AREA F FOR 60 DAYS TO COMPLETE SURROUNDING PAVEMENTS, IN CLOSE COORDINATION WITH THE FUELING CONTRACTOR'S NEEDS. 2
THIS AREA SHALL SUCCESSFULLY COMPLETE PORTIONS OF NEW APRON.

WORK SHALL INCLUDE THE FOLLOWING ACTIVITIES:

A. DEMOLITION
B. FENCING
C. NEW APRON AREAS.
D. DRAINAGE AND ELECTRIC
E. PAVEMENT MARKINGS
F. SCHEDULING AND SEQUENCING WORK TO ACCOMMODATE THE FUEL SYSTEM INSTALLATION (BY OTHERS)

AREA G- NEW TRUNK STORM SEWER FROM SOUTH BASIN- TAXIWAY Y SEGMENT
90 DAYS

AREA G IS AVAILABLE UPON THE ISSUANCE OF THE NOTICE TO PROCEED AND ALL WORK FOR INSTALLATION OF THE PIPE UNDER TAXIWAY Y SHALL BE COMPLETED IN NINETY (90) DAYS, BUT SHALL BE CLOSELY COORDINATED WITH AIRFIELD OPERATIONS, AND MAY BE SUBJECT TO LIMITED AVAILABILITY DUE TO THE POTENTIAL TIME OF YEAR IN WHICH THE CONTRACT IS AWARDED. HOWEVER, THE CONTRACTOR SHALL BE PREPARED TO EXECUTE THE WORK AS DEPICTED IN THE CONTRACT DOCUMENTS AND WILL NOT BE ENTITLED TO ANY ADDITIONAL TIME OR COMPENSATION FOR ANY DELAYS THAT MAY BE INCURRED AS THE RESULT OF THE WEATHER, OR THE POTENTIALLY RESTRICTED AVAILABILITY OF SUPPORT SERVICES TO FACILITATE THE WORK.

AREA G SHALL REMAIN AVAILABLE FOR AREA H RECEIVING OPERATIONS ONLY AND SHALL BE CLEAR OF ALL UNECESSARY EQUIPMENT AND MATERIALS DURING AREA H WORK.

AREA G, CONT.

AREA G INSTALLS THE SEGMENT OF THE NEW TRUNK STORM SEWER UNDER TAXIWAY Y.

WORK SHALL INCLUDE THE FOLLOWING ACTIVITIES:

A. INSTALL BARRICADES AND REMOVE MARKINGS TO CREATE WORK AREA
B. OPEN TWO PITS FOR JACK AND BORE OPERATION
C. INSTALL SEWER DRAIN PIPE AND ASSOCIATED STRUCTURES
D. TEMPORARY AND UNIMPEDED ACCESS TO EXISTING CDA AND FAA FACILITIES
E. ALL REQUIRED SAFETY MEASURES, TEMPORARY ROADS AND PAVEMENTS
F. RESTORE MARKINGS AND GRADED AREAS
G. CLEAN AREA AND REMOVE BARRICADES FOR AIRCRAFT OPERATIONS

AREA H- NEW TRUNK STORM SEWER FROM SOUTH BASIN- RUNWAY 4R-22L SEGMENT (SOUTH) / 120 DAYS

AREA H IS AVAILABLE UPON THE ISSUANCE OF THE NOTICE TO PROCEED, BUT SHALL BE CLOSELY COORDINATED WITH AIRFIELD OPERATIONS, AND MAY BE SUBJECT TO LIMITED AVAILABILITY DUE TO THE POTENTIAL TIME OF YEAR IN WHICH THE CONTRACT IS AWARDED. HOWEVER, THE CONTRACTOR SHALL BE PREPARED TO EXECUTE THE WORK AS DEPICTED IN THE CONTRACT DOCUMENTS AND WILL NOT BE ENTITLED TO ANY ADDITIONAL TIME OR COMPENSATION FOR ANY DELAYS THAT MAY BE INCURRED AS THE RESULT OF THE WEATHER, OR THE POTENTIALLY RESTRICTED AVAILABILITY OF SUPPORT SERVICES TO FACILITATE THE WORK.

AREA H INSTALLS THE SEGMENT OF THE NEW TRUNK STORM SEWER UNDER RUNWAY 4R-22L.

WORK SHALL INCLUDE THE FOLLOWING ACTIVITIES:

A. INSTALL BARRICADES AND REMOVE MARKINGS TO CREATE WORK AREA
B. OPEN PIT FOR JACK AND BORE OPERATION
C. INSTALL SEWER DRAIN PIPE AND ASSOCIATED STRUCTURES
D. INSTALLATION AND REMOVAL OF TEMPORARY AND PERMANENT FENCING
E. TEMPORARY AND UNIMPEDED ACCESS TO EXISTING CDA AND FAA FACILITIES
F. ALL REQUIRED SAFETY MEASURES, TEMPORARY ROADS AND PAVEMENTS
G. RESTORE MARKINGS AND GRADED AREAS
H. CLEAN AREA AND REMOVE BARRICADES FOR AIRCRAFT OPERATIONS

AREA J- NEW TRUNK STORM SEWER FROM SOUTH BASIN- LANDSIDE SEGMENT
120 DAYS

AREA J SHALL BE CLOSELY COORDINATED WITH LANDSIDE OPERATIONS, AND MAY BE SUBJECT TO LIMITED AVAILABILITY DUE TO THE POTENTIAL TIME OF YEAR IN WHICH THE CONTRACT IS AWARDED. HOWEVER, THE CONTRACTOR SHALL BE PREPARED TO EXECUTE THE WORK AS DEPICTED IN THE CONTRACT DOCUMENTS AND WILL NOT BE ENTITLED TO ANY ADDITIONAL TIME OR COMPENSATION FOR ANY DELAYS THAT MAY BE INCURRED AS THE RESULT OF THE WEATHER, OR THE POTENTIALLY RESTRICTED AVAILABILITY OF SUPPORT SERVICES TO FACILITATE THE WORK.

AREA J INSTALLS THE LANDSIDE SEGMENT OF THE NEW TRUNK STORM SEWER ALIGNED PARALLEL TO RUNWAY 4R-22L AND THROUGH THE TENANT PARKING LOT.

WORK SHALL INCLUDE THE FOLLOWING ACTIVITY:

A. INSTALL BARRICADES TO CREATE WORK AREA
B. INSTALL SEWER DRAIN PIPE AND ASSOCIATED STRUCTURES
C. INSTALLATION AND REMOVAL OF TEMPORARY AND PERMANENT FENCING
D. TEMPORARY AND UNIMPEDED ACCESS TO EXISTING CDA AND FAA FACILITIES
E. ALL REQUIRED SAFETY MEASURES, TEMPORARY ROADS AND PAVEMENTS
F. RESTORE PAVEMENTS, ELECTRICAL, SIGNAGE, MARKINGS AND GRADED AREAS
G. CLEAN AREA AND REMOVE BARRICADES

AREA K- NEW TRUNK STORM SEWER FROM SOUTH BASIN- RUNWAY 4R-22L SEGMENT (NORTH) / 90 DAYS

AREA K SHALL START PRIOR TO PHASE 2 WORK BUT ALL THE WORK NEAR THE END OF RUNWAY 22L SHALL OCCUR AT THE SAME TIME AS PHASE 2, AND BE CLOSELY COORDINATED WITH AIRFIELD OPERATIONS, AND MAY BE SUBJECT TO LIMITED AVAILABILITY DUE TO THE POTENTIAL TIME OF YEAR IN WHICH THE CONTRACT IS AWARDED. HOWEVER, THE CONTRACTOR SHALL BE PREPARED TO EXECUTE THE WORK AS DEPICTED IN THE CONTRACT DOCUMENTS AND WILL NOT BE ENTITLED TO ANY ADDITIONAL TIME OR COMPENSATION FOR ANY DELAYS THAT MAY BE INCURRED AS THE RESULT OF THE WEATHER, OR THE POTENTIALLY RESTRICTED AVAILABILITY OF SUPPORT SERVICES TO FACILITATE THE WORK.

WORK SHALL INCLUDE THE FOLLOWING ACTIVITY:

A. MAIN TRUNK SEWER AND ASSOCIATED CONNECTIONS
B. PAVEMENT REMOVAL AND REPLACEMENT IN PARKING LOT
C. INSTALLATION AND REMOVAL OF TEMPORARY AND PERMANENT FENCING
D. TEMPORARY AND UNIMPEDED ACCESS TO EXISTING CDA AND FAA FACILITIES
E. ALL REQUIRED SAFETY MEASURES AND TEMPORARY ROADS
F. RESTORE PAVEMENTS, ELECTRICAL, SIGNAGE, MARKINGS AND GRADED AREAS
G. CLEAN AREA AND REMOVE BARRICADES

AREAS A,B,D, E AND F- NEW APRON AREAS
MILESTONE 4 / TIME VARIES

UPON COMPLETION OF AREAS A, B, (C PREVIOUSLY IN USE) D, E AND F, THE NEWLY CONSTRUCTED APRON SHALL BE SUBSTANTIALLY COMPLETE, OPEN AND FUNCTIONAL TO ACCOMMODATE THE FOLLOWING AIRCRAFT POSITIONS:

A.HARDSTAND POSITIONS M101, 102, 103, 103A AND 104
B.RELOCATED M23 FOR THE A380
C.RELOCATED M22 FOR THE B777

THROUGHOUT AREAS A, B, D, E AND F, THE CONTRACTOR SHALL CLOSELY COORDINATE THEIR WORK WITH THE FUELING CONTRACTOR TO ALLOW FOR SUFFICIENT TIME AND ACCESS FOR TIE-INS, TESTING AND RELATED FLUSHING ACTIVITIES AT EACH FUEL HYDRANT PIT.

PHASE 2 - APRON AND TAXIWAY
MILESTONE 5/ 60 DAYS

PHASE 2 SHALL NOT COMMENCE UNTIL THE COMPLETION OF PHASE 1, AREA C, AND WILL HAVE A DURATION OF SIXTY (60) DAYS. THIS PHASE SHALL SUCCESSFULLY COMPLETE ONE (1) NEW HARDSTAND POSITION. IN ADDITION, THIS PHASE INCLUDES PAVEMENT MARKINGS AND REMOVALS AT NIGHT IN MULTIPLE LOCATIONS TO DELINEATE NEW AIRCRAFT POSITIONS, TAXIWAY CENTERLINES AND ROADWAY LIMITS AS NOTED BELOW AND AS SHOWN IN THE CONTRACT DOCUMENTS. PRIOR TO THE COMMENCEMENT OF PHASE 2 WORK, THE CONTRACTOR MUST SUCCESSFULLY EXECUTE THE WORK DESCRIBED BELOW IN DESCRIPTIONS A., B. AND C.

WORK SHALL INCLUDE THE FOLLOWING ACTIVITY:

A. PAVEMENT STRIPING, REMOVALS AND SIGNAGE ADJUSTMENTS TO FACILITATE THE CLOSING OF TW V7
B. NIGHT WORK FOR WORK WITHIN RUNWAY AREA, THE PAVEMENT MARKING OF TEMPORARY TAXIWAY V AND V6 CENTERLINES, AND RELATED TAXIWAY LIGHTING AND SIGNAGE MODIFICATIONS; STRIPING REMOVAL AS REQUIRED
C. NIGHT WORK FOR AIRFIELD BARRICADE PLACEMENT TO CLEARLY DELINEATE THE AOA CONSTRUCTION WORK ZONE
D. DEMOLITION
E. APRON AND TAXIWAY PAVEMENTS
F. DRAINAGE AND ELECTRIC
G. ADDITIONAL AIRFIELD PAVEMENT MARKINGS AND REMOVALS FOR THE FOLLOWING (AT NIGHT):
   i. TO DELINEATE THE NEW CENTERLINE AND EDGE FOR TW'S V6 AND V8
   ii. FOR THE CLOSING OF TW V7
   iii. TO DELINEATE NEW SERVICE ROAD LIMITS BEHIND GATE M24
   iv. AIRFIELD SIGNAGE AND LIGHTING FOR NEW PAVEMENTS (AT NIGHT)
   v. GRADING AND RESTORATION (AT NIGHT)

UPON COMPLETION OF THIS PHASE, CONSTRUCTED APRON SHALL ACCOMMODATE POSITIONS FOR AIRCRAFT AS FOLLOWS:

1. POSITION M25 IS RELOCATED TO THE NEW PAVEMENT FOR THE 747-8
2. OLD POSITION M25 IS ELIMINATED
3. OLD POSITION M24 IS ADJUSTED FOR THE A380 (ANGLED NE)

PHASE 3 - APRON AND TAXIWAY (NIGHT WORK)
MILESTONE 6/ 30 DAYS

PHASE 3 SHALL NOT COMMENCE UNTIL THE SUCCESSFUL COMPLETION OF PHASE 2, MILESTONE 6, AND WILL HAVE A DURATION OF THIRTY (30) DAYS. THIS PHASE SHALL SUCCESSFULLY COMPLETE ADDITIONAL AIRFIELD PAVEMENT PROVIDING AIRCRAFT MOVEMENT FLEXIBILITY. IN ADDITION, THIS PHASE INCLUDES PAVEMENT MARKINGS AND REMOVALS (AT NIGHT) IN MULTIPLE LOCATIONS TO DELINEATE NEW AIRCRAFT POSITIONS, TAXIWAY CENTERLINES AND ROADWAY LIMITS.

UPON COMPLETION OF THIS PHASE, APRON CONSTRUCTED SHALL ACCOMMODATE POSITIONS FOR AIRCRAFT AS FOLLOWS:

A. POSITION M25 IS EXTENDED FURTHER TO THE WEST FOR THE A380 (EAST-WEST DIRECTION)

B. POSITION M24 IS ADJUSTED FOR THE 787-8 (EAST-WEST DIRECTION)

WORK SHALL INCLUDE THE FOLLOWING ACTIVITY AND ALL WORK SHALL BE PERFORMED AS NIGHT WORK, AS DEFINED ELSEWHERE IN THE CONTRACT DOCUMENTS:

A. AIRFIELD BARRICADE PLACEMENT, TEMPORARY CLOSURE OF TW V6, PAVEMENT MARKINGS, REMOVALS AND RELATED ADJUSTMENTS TO TAXIWAY LIGHTING AND SIGNAGE
B. DEMOLITION
C. APRON AND TAXIWAY PAVEMENTS
D. DRAINAGE AND ELECTRIC
E. PAVEMENT MARKINGS AND REMOVALS FOR THE FOLLOWING:

   i. TO DELINEATE THE NEW CENTERLINES FOR TW V
   ii. FOR THE CLOSING OF TW V7
   iii. FOR THE TEMPORARY TAXILANE CENTERLINE, SOUTH OF GATES M19 AND M20
   iv. TO DELINEATE NEW SERVICE ROAD LIMITS
   v. FOR NEW HARDSTAND POSITIONS

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BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:
O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:
CONSTRUCTION PHASING NOTES AND SCHEDULE

DESIGNED:	DRAWN:	CHECKED:
KW	KW	MW

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. GC-202
REVISION 1

10/4/2018 4:09:59 PM
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MATCHLINE SEE SHEET CP-104

MATCHLINE SEE SHEET CP-101

N 1933318.04
E 1107017.92

N 1933317.16
E 1107014.02

INTERNATIONAL TAXILANE

8.00' (TYP)

STRUCTURAL MOMENT SLAB
(SEE SHEET S-102)

SINGLE FACE BARRIER W/
TYPE B SECURITY FENCE
MOUNTED ON RETAINING WALL
(SEE SHEET S-101)

SNOW REMOVAL AREA

N 1933114.79
E 1108013.45

N 1933110.28
E 1107993.36

N 1933106.51
E 1107976.56

20.69'
TRANSITION
TO EXISTING

MANNHEIM RD

SINGLE FACE
BARRIER LIMIT
N 1933019.08
E 1108043.50

N 1933012.79
E 1108015.26

8.00'
PAVED
SHOULDER

N 1933106.42
E 1107598.67

N 1933106.12
E 1107559.08

N 1933103.32
E 1107546.67

HMA SHOULDER

N 1933108.56
E 1107874.20

50.00' R

N 1933069.51
E 1107923.37

6.00'
PAVED
SHOULDER

60.00'

N 1932882.70
E 1106989.22

47.00'

95.00'

HMA SHOULDER

40.00'

67.00'

95.00'

324.00'

61.50'

TAXIWAY V8

N 1932942.35
E 1107408.91

100.00' R

N 1932916.52
E 1107374.74

N 1932893.60
E 1107324.92

N 1932832.56
E 1107286.50

N 1932835.70
E 1107118.09

N 1932799.14
E 1107281.85

40.00'

N 1932685.66
E 1107327.44

N 1932735.20
E 1107300.02

N 1932768.96
E 1107152.11

HMA SHOULDER

N 1932636.21
E 1107425.23

N 1932625.26
E 1107448.50

N 1932611.34
E 1107450.34

N 1932684.09
E 1107073.07

N 1932701.70
E 1107119.13

N 1932734.12
E 1107135.02

N 1932685.88
E 1107374.03

N 1932660.88
E 1107374.20

TAXIWAY V

N 1932703.17
E 1107309.12

N 1932660.89
E 1107399.95

N 1932635.89
E 1107400.22

N 1932561.34
E 1107450.78

N 1932561.55
E 1107477.44

230.00' R

PERMANENT PAVEMENT
LIMIT (SEE CP-202)

HMA SHOULDER LIMIT (TYP)

N 1932611.21
E 1107425.53

CONTRACT PAVEMENT
LIMIT - MATCH EXISTING
JOINT (SE CP-202)

TAXIWAY V

N 1932460.47
E 1107476.69

N 1932460.79
E 1107519.55

R.O.W.

N 1932727.82
E 1108000.09

N 1932741.01
E 1108058.62

NOTES
1. SEE SHEET CP-202 FOR PAVEMENT TYPES AND JOINT LIMITS.
2. SEE SHEET CP-302 FOR AIRSIDE PAVEMENT MARKING DETAILS AND DIMENSIONS.

0 25 50

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2	10/9/18	ADDENDUM 2
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PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

PROPOSED ROADWAY/AIRFIELD GEOMETRY

DESIGNED:	DRAWN:	CHECKED:
MG	MG	MW

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO.: CP-102
REVISION: 1

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MATCHLINE SEE SHEET CP-204

MATCHLINE SEE SHEET CP-201

JOINT TYPE 'A'

20.00' (TYP)

TYPE D AOA FENCE INSTALLED ON TEMPORARY CONCRETE BARRIER

1 @ 24.00'

72 PANELS @ 20' EA = 1440.00'

20.00' (TYP)

DIRECTION OF PAVING

ISOLATION VALVE PIT NO. 6 SEE FUELING SHEETS

43 PANELS @ 20' EA = 860.00'

15 PANELS @ 20' EA = 300.00'

25 PANELS @ 20' EA = 500.00'

2 EQ @ 20.89'

VARIES

25.00'

JOINT TYPE 'A-1'

JOINT TYPE 'A-1'

DIRECTION OF PAVING

JOINT TYPE 'A'

JOINT TYPE 'A'

INSTALL TWO ROWS OF TRANSITION SLABS FOR FUTURE REMOVAL BY OTHER PROJECT (SEE SHEET CP-212)

TAXIWAY V8

25.00'

DIRECTION OF PAVING

24.67'

25' ± (TYP.)

JOINT TYPE 'A-2'

TAXIWAY V

TAXIWAY V

3 EQ @ 16.43'

20.00' (TYP)

20.00' (TYP)

VARIES

THICKENED EDGE ISOLATION JOINT TYPE A-1 REFER TO "ANCHORAGE SLAB AND SINGLE FACE BARRIER" DETAIL ON SHEET S-102

MANNHEIM RD

VARIES

JOINT TYPE 'A-1'

PAVED SHOULDER

BITUMINOUS SNOW ROAD SHOULDER

ASPHALT PAVEMENT TRANSITION TO EXISTING SPINE ROAD MATCH EXISTING SPINE ROAD PAVEMENT SECTION

6.00' SHOULDER WIDTH (BOTH SIDES)

12.50' TYP.

15.00' TYP.

BITUMINOUS SNOW ROAD SHOULDER

DIRECTION OF PAVING

BITUMINOUS SNOW ROAD SHOULDER

R.O.W.

6.02'

1 @ 16.02'

MATCH AT EXISTING JOINT

JOINT TYPE 'A'

SNOW ROAD EXISTING PAVEMENT SECTION IS APPROX. 10" PCC/8" CA-6

0 25 50

N

NOTE

1. FOR PAVING GEOMETRY, SEE SHEETS CP-100 THRU CP-105
2. FOR REINFORCMENT DETAILS ON THE CATCH BASIN AND INSPECTION HOLE SEE SQUARE / RECTANGLE BOX OUT DETAIL ON SHEET CP-213
3. DURING PAVING ACTIVITIES, CONTRACTOR SHALL PROTECT ALL FAA AND AT&T MANHOLES AND FIBER OPTIC CABLES AS SHOWN IN THE COMPOSITE UTILITIES EXISTING AND REMOVAL PLANS SHEETS CU-100 THRU CU-105

LEGEND

- CONCRETE PAVEMENT FOR APRON AND TAXILANE AIRCRAFT PAVEMENT (HEAVY DUTY)
- BITUMINOUS SHOULDER FOR RUNWAY/TAXIWAYUSING RECYCLED CONCRETE BASE (RCB)
- FLEXIBLE PAVEMENT FOR AIRSIDE & LANDSIDE SERVICE ROADWAYS
- FLEXIBLE PAVEMENT FOR PARKING LOTS
- CONCRETE FOR GUARD BOOTH STANDING AREA
- BITUMINOUS SNOW ROAD SHOULDER
- CONCRETE PAVEMENT FOR AIRSIDE & LANDSIDE SERVICE ROADWAYS
- R REINFORCED SLAB (SEE SHEET CP-213)
- T TRANSITION SLAB (JOINT TYPE A-2)
- RT REINFORCED TRANSITION SLAB
- Ⓒ DOWELED CONTRACTION JOINT (TYPE C)
- Ⓔ DOWELED CONSTRUCTION JOINT (TYPE E)
- Ⓖ DOWELED CONSTRUCTION JOINT (TYPE G)

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CHICAGO DEPARTMENT OF AVIATION

O'HARE INTERNATIONAL AIRPORT
CITY OF CHICAGO

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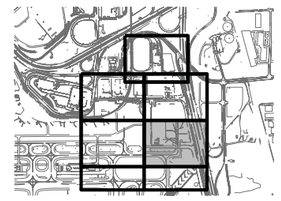


APPROVED AS WORKING PLAN BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION SITE/CIVIL PACKAGE

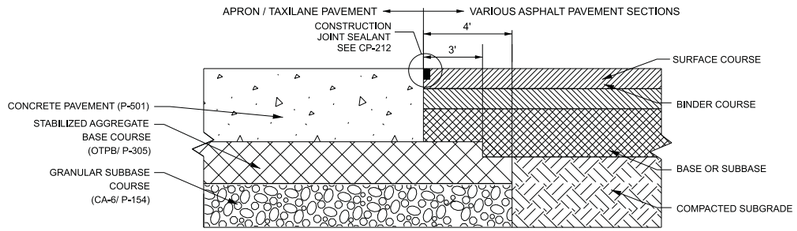
SHEET TITLE:

PROPOSED PAVING AND JOINTING PLAN

DESIGNED:	DRAWN:	CHECKED:
MW	SB	MW

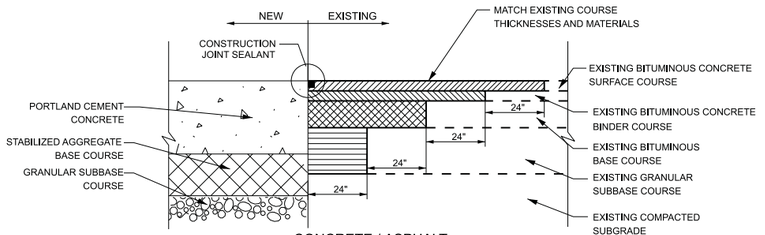
PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. CP-202
REVISION 1



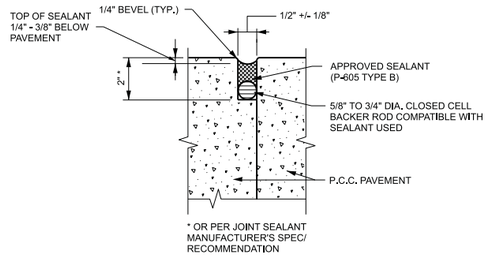
NOTES:
1. VARIOUS ASPHALT SECTIONS INCLUDE
   A. APRON/ TAXILANE SHOULDER
   B. BITUMINOUS PAVED SHOULDER
   C. PARKING LOTS
   D. ANY TEMPORARY ASPHALT CONSTRUCTION OR RAMP
2. FOR REINFORCERED CONCRETE PANELS, SEE PAVING SHEETS CP-201-205

CONCRETE / ASPHALT JOINT TYPE A
(NOT TO SCALE)



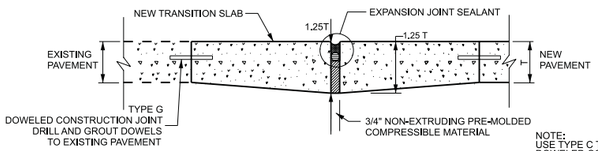
CONCRETE / ASPHALT JOINT TYPE B

NOTE:
USE WHEN CONCRETE IS INSTALLED ADJACENT TO EXISTING ASPHALT TO REMAIN



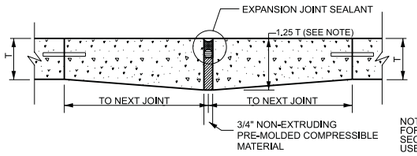
* OR PER JOINT SEALANT MANUFACTURER'S SPEC/ RECOMMENDATION

CONSTRUCTION JOINT SEALANT



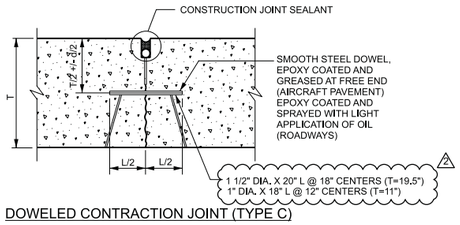
NOTE:
USE TYPE C TRANSVERSE DOWELED CONTRACTION JOINT

THICKENED EDGE ISOLATION JOINT ADJACENT TO EXISTING PAVEMENT (TYPE A-2) USE FOR TRANSITION SLAB

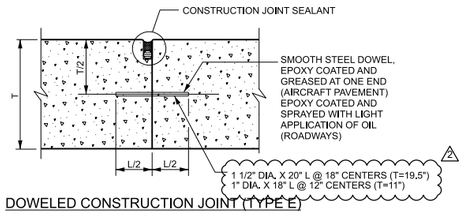


NOTE:
FOR JOINTS BETWEEN PAVEMENT SECTIONS WITH DIFFERENT THICKNESSES, USE T VALUE OF THICKER PAVEMENT

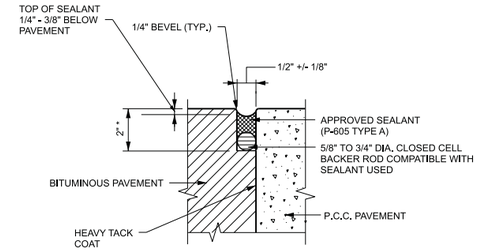
THICKENED EDGE ISOLATION JOINT (TYPE A-1)



DOWELED CONTRACTION JOINT (TYPE C)



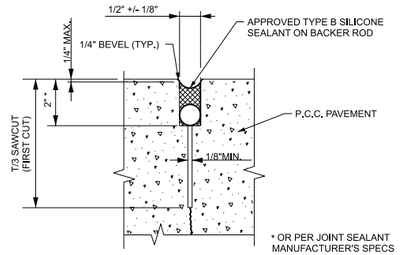
DOWELED CONSTRUCTION JOINT (TYPE E)



* OR PER JOINT SEALANT MANUFACTURER'S SPEC/ RECOMMENDATION

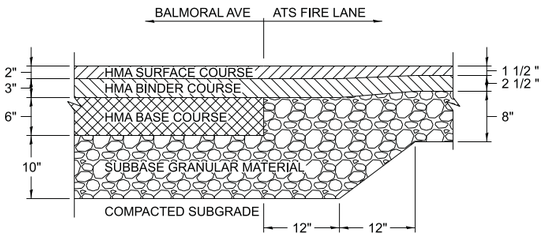
CONSTRUCTION JOINT SEALANT (CONCRETE AGAINST BITUMINOUS)

JOINT SEALANTS
(NOT TO SCALE)

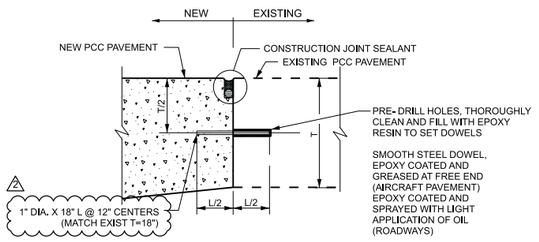


* OR PER JOINT SEALANT MANUFACTURER'S SPECS

CONTRACTION JOINT SEALANT



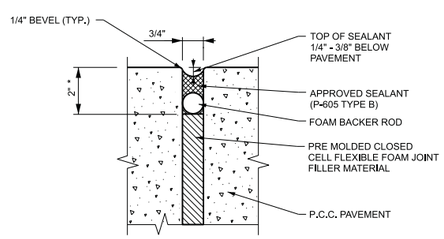
PAVEMENT TRANSITION
BALMORAL AVE TO ATS FIRE LANE
(NOT TO SCALE)



T = THICKNESS OF EXISTING PAVEMENT TO BE VERIFIED IN FIELD

DOWELED CONSTRUCTION JOINT (TYPE G)

JOINT DETAILS
(NOT TO SCALE)



EXPANSION JOINT SEALANT

JOINT SEALANTS
(NOT TO SCALE)

CHICAGO DEPARTMENT OF AVIATION
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APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
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1	8/21/18	ISSUED FOR BID

PROJECT NAME:
O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:
PAVING DETAILS

DESIGNED:	DRAWN:	CHECKED:
MW	SB	SM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO.: CP-212
REVISION: 1

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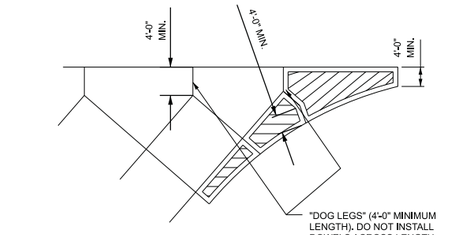
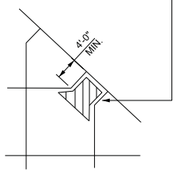
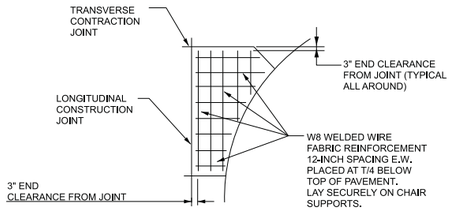


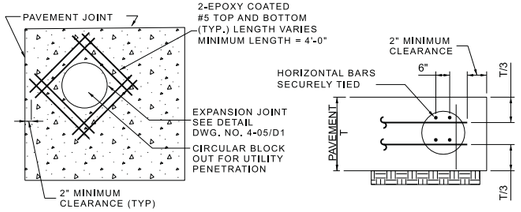
NOTES:

1. LONG AND THIN STRIPS AND ODD SHAPED PARTIAL PANELS (REPRESENTED BY HATCHED AREA) SHALL BE REINFORCED WITH WELDED WIRE REINFORCEMENT
2. JOINT TYPES AND SPACING ARE SHOWN ON JOINTING PLAN SHEET

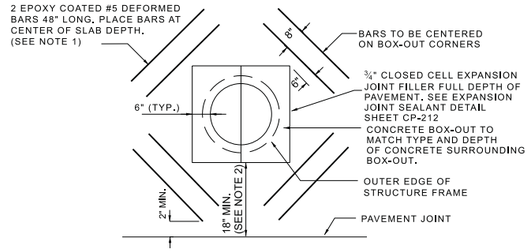




TYPICAL FILLET AND REINFORCEMENT DETAILS
(NOT TO SCALE)



CIRCULAR BLOCK OUT

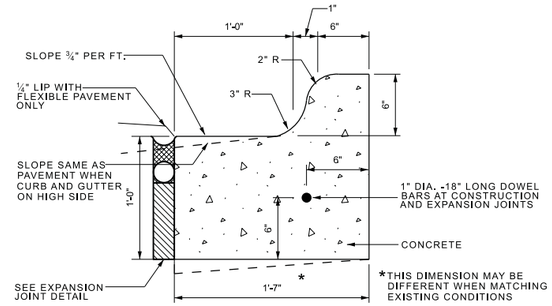


SQUARE / RECTANGLE BOX OUT

NOTES:

1. BARS SHALL NOT CROSS PAVEMENT JOINTS. ADJUST BARS SO THAT THEY ARE A MINIMUM OF 2" FROM THE PAVEMENT JOINT. THE BARS SHALL BE SECURELY TIED TO WELL ANCHORED CHAIRS OR VERTICAL SUPPORTS TO KEEP ASSEMBLY IN POSITION WITHOUT DISPLACEMENT.
2. IF THE TYPICAL SIZE OF BOX-OUT FALLS WITHIN 18" OF JOINT, EXTEND THE BOX OUT SO THAT THE PAVEMENT JOINT FORMS ONE SIDE OF THE BOX-OUT. THIS WORK TO BE DONE WITH THE APPROVAL OF COMMISSIONER.
3. SHOULD A DRAINAGE STRUCTURE FALL ON THE PAVEMENT JOINT, THE BOX-OUT SHALL EXTEND INTO BOTH ADJOINING PAVEMENT SECTIONS AS DETAILED ABOVE.
4. ALL LABOR AND MATERIALS NECESSARY TO PERFORM THE PAVEMENT BOX-OUT WORK DESCRIBED ABOVE AND AS REQUESTED BY THE OWNER SHALL BE INCIDENTAL TO THE COST OF PAVEMENT.

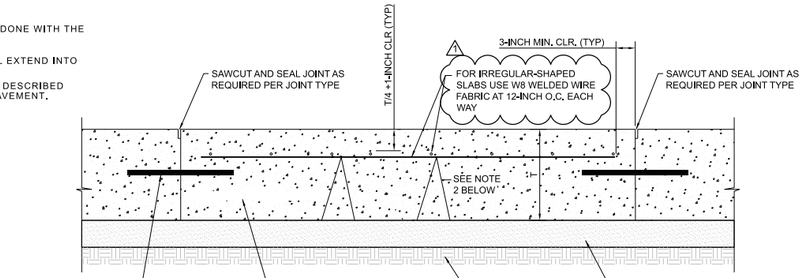
TYPICAL JOINT AND REINFORCEMENT DETAILS AROUND PAVEMENT PENETRATIONS AND BOX- OUTS
(NOT TO SCALE)



CURB AND GUTTER DETAIL

WHEN CURB AND GUTTER IS ADJACENT TO CONCRETE PAVEMENT, PROVIDE THE SAME TYPE OF JOINTS USED ON PAVEMENT.

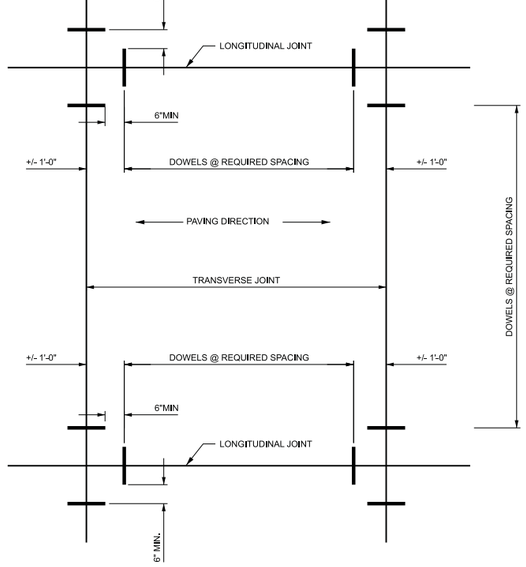
WHEN CURB AND GUTTER IS ADJACENT TO FLEXIBLE PAVEMENT, PROVIDE CONSTRUCTION JOINT EVERY 15 FEET.



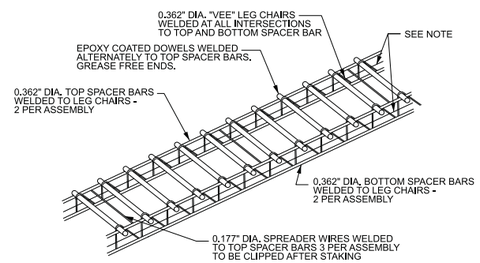
NOTES:

1. IRREGULAR SHAPED SLABS SHALL BE DEFINED AS NON-RECTANGULAR SHAPED SLABS OR SLABS WITH LENGTH TO WIDTH RATIO EXCEEDING 1.25.
2. BAR MATS SHALL BE SUPPORTED WITH CHAIRS NO MORE THAN 3 FEET APART.
3. T = 19.5 INCHES FOR NEW PAVEMENT

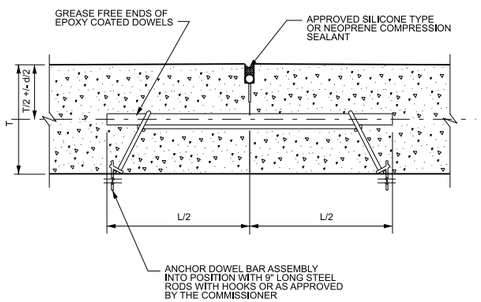
PCC PAVEMENT REINFORCEMENT
N.T.S.



TYPICAL DOWEL BAR PLACEMENT DETAIL AT JOINT CORNERS
(NOT TO SCALE)



NOTE:
ADDITIONAL 0.362" DIA. SPACER IS REQUIRED FOR THE DOWEL BAR BASKET ASSEMBLY FOR THE 19.5" P.C.C. PAVEMENT. BARS WELDED TO LEG CHAIRS - 2 PER ASSEMBLY.



TYPICAL DOWEL BAR ASSEMBLY
(NOT TO SCALE)

2

CHICAGO DEPARTMENT OF AVIATION

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APPROVED AS WORKING PLAN
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REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
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PROJECT NAME:
O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:
PAVING DETAILS

DESIGNED:	DRAWN:	CHECKED:
MW	SB	SM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. CP-213
REVISION 1

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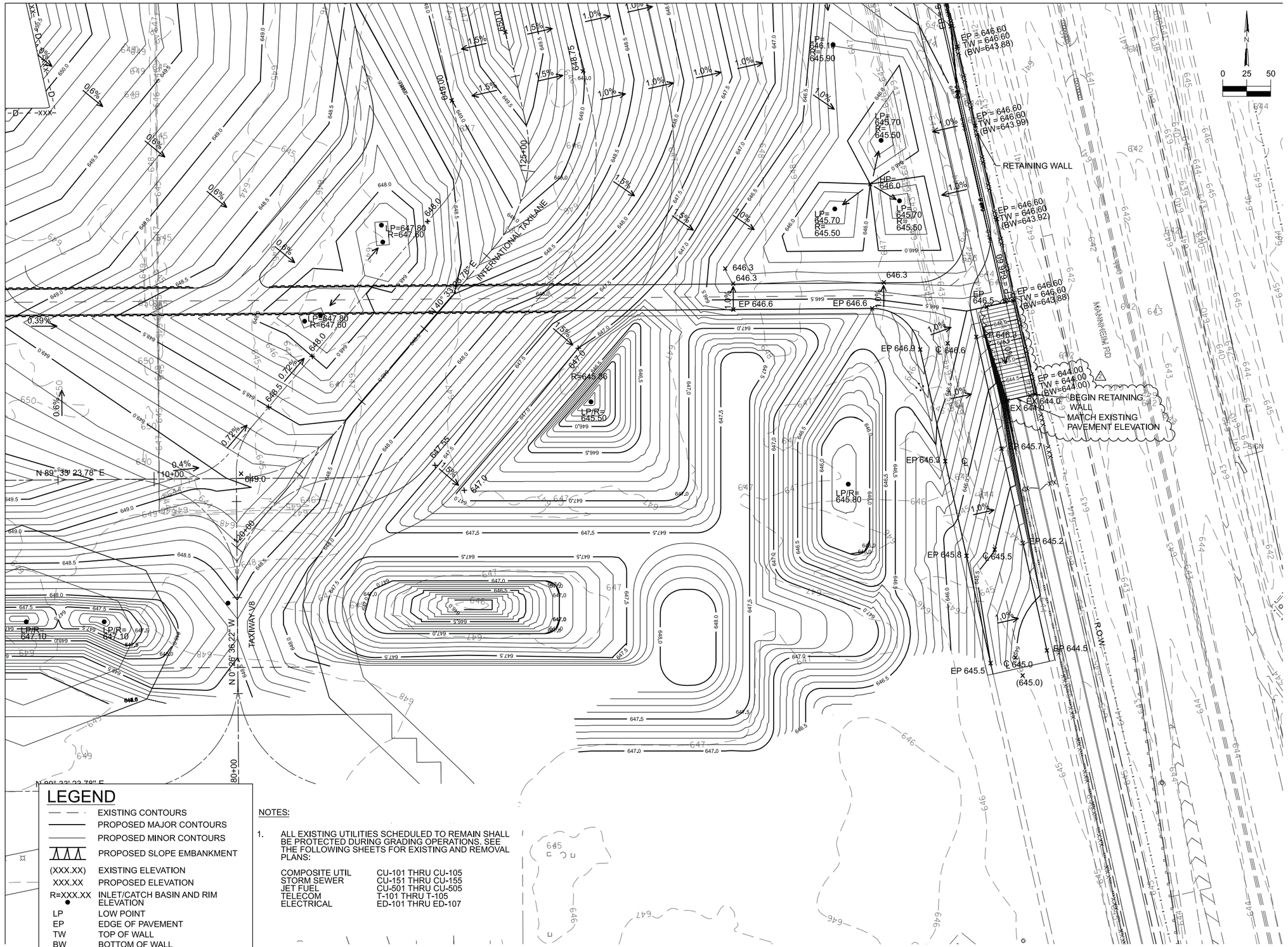
MATCHLINE SEE SHEET CG-204

MATCHLINE SEE SHEET CG-201



LEGEND

	EXISTING CONTOURS
	PROPOSED MAJOR CONTOURS
	PROPOSED MINOR CONTOURS
	PROPOSED SLOPE EMBANKMENT
(XXX.XX)	EXISTING ELEVATION
XXX.XX	PROPOSED ELEVATION
R=XXX.XX ●	INLET/CATCH BASIN AND RIM ELEVATION
LP	LOW POINT
EP	EDGE OF PAVEMENT
TW	TOP OF WALL
BW	BOTTOM OF WALL

NOTES:

1. ALL EXISTING UTILITIES SCHEDULED TO REMAIN SHALL BE PROTECTED DURING GRADING OPERATIONS. SEE THE FOLLOWING SHEETS FOR EXISTING AND REMOVAL PLANS:

COMPOSITE UTIL	CU-101 THRU CU-105
STORM SEWER	CU-151 THRU CU-155
JET FUEL	CU-501 THRU CU-505
TELECOM	T-101 THRU T-105
ELECTRICAL	ED-101 THRU ED-107

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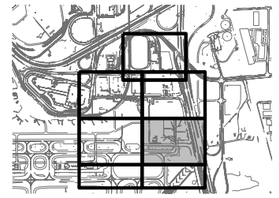

APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

PROPOSED GRADING PLAN

DESIGNED:	DRAWN:	CHECKED:
PD	KRP	JM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. CG-202
REVISION 1

MATCHLINE SEE SHEET CS-404

MATCHLINE SEE SHEET CS-401

TEMPORARY TYPE D FENCE
N: 1933312.24
E: 1107024.35

INTERNATIONAL TAXILANE

TAXIWAY V8

TAXIWAY V

TAXIWAY V

TYPE B FENCE
MOUNTED TO SINGLE FACE BARRIER

CONCRETE BOLLARD
(4 EA @ FIRE HYDRANT)

MANNHEIM RD

END TYPE B FENCE
MOUNTED TO S.F.B.
BEG TYPE A FENCE
END RET WALL
N: 1933019.38
E: 1108044.80

TYPE A FENCE

16' TYPE A VEHICLE GATE ARRANGEMENT

END TYPE A FENCE
BEG TYPE A GATE
N: 1932925.33
E: 1108055.19

SIGN

END TYPE A FENCE
BEG EX TYPE A FENCE
N: 1932919.65
E: 1108030.32

TYPE A FENCE
N: 1932927.73
E: 1108065.71

END TYPE A GATE
BEG TYPE A FENCE
N: 1932921.77
E: 1108039.59

R.O.W.

EX TYPE A FENCE

0 25 50

LEGEND

—xxx——xx—	TYPE A FENCE
—xx——xx—	TYPE B FENCE
—x——x—	TYPE C FENCE
- -xxx- - -D-	TEMPORARY TYPE D FENCE

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Projects\602766.00_ORDT\5600_CADD\05_Official\02 Sheets\CP-H2028_17-00-CS-402-FENCE PLAN.dgn

CHICAGO DEPARTMENT OF AVIATION

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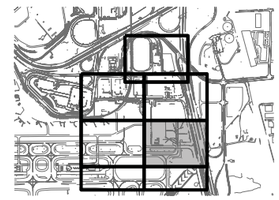

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BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
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TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

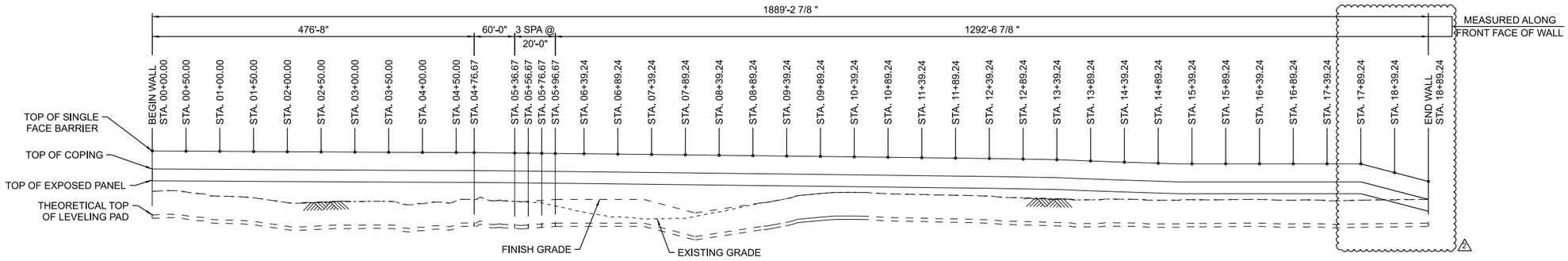
SHEET TITLE:

FENCING PLAN

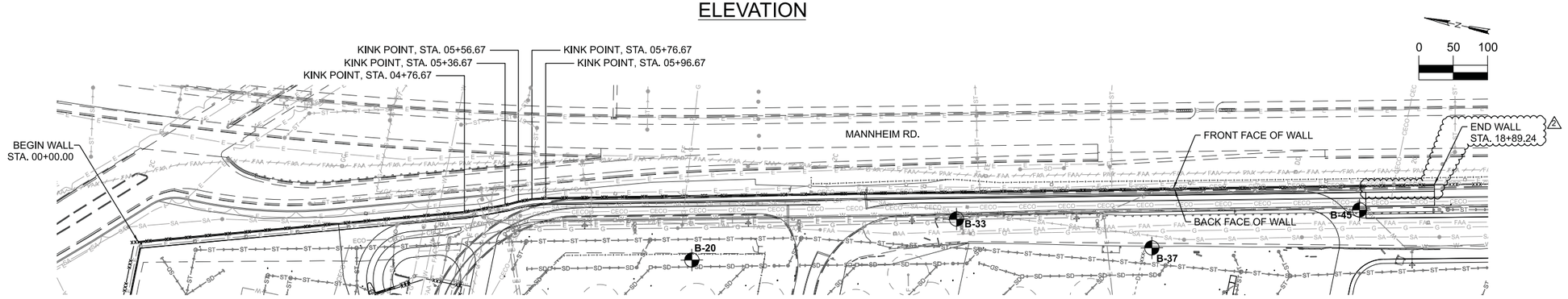
DESIGNED:	DRAWN:	CHECKED:
KRP	KRP	PD

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO.	REVISION
CS-402	1



ELEVATION



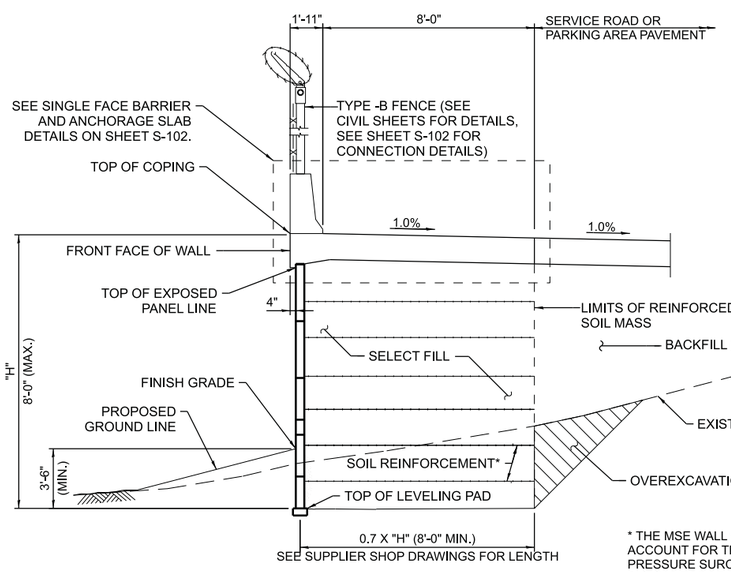
PLAN

ELEVATIONS ALONG RETAINING WALL

NORTHING AND EASTING PROVIDED AT FRONT FACE OF WALL AT BEGIN AND END OF WALL AND AT KINK POINTS.

STATION	NORTHING	EASTING	ELEVATION TOP OF COPING	ELEVATION TOP OF EXPOSED PANEL LINE	ELEVATION FINISH GRADE
00+00.00	1934846.251	1107572.141	648.50	646.75	645.22
00+50.00			648.48	646.73	644.85
01+00.00			648.45	646.70	644.47
01+50.00			648.42	646.67	643.97
02+00.00			648.39	646.64	643.47
02+50.00			648.36	646.61	643.58
03+00.00			648.34	646.59	643.69
03+50.00			648.32	646.57	643.56
04+00.00			648.29	646.54	643.42
04+50.00			648.28	646.53	643.60
04+76.67	1934391.0396	1107713.5642	648.27	646.52	643.76
05+36.67	1934335.3232	1107735.6982	648.23	646.48	643.43
05+56.67	1934317.4566	1107744.6798	648.19	646.44	643.28
05+76.67	1934298.8935	1107752.2688	648.16	646.41	643.08
05+96.67	1934279.6206	1107757.7887	648.14	646.39	644.00
06+39.24			648.10	646.35	644.00
06+89.24			648.04	646.29	644.00
07+39.24			647.98	646.23	644.00
07+89.24			647.94	646.19	642.80
08+39.24			647.88	646.13	642.00
08+89.24			647.81	646.06	643.00
09+39.24			647.75	646.00	643.30
09+89.24			647.69	645.94	644.90
10+39.24			647.63	645.88	645.02
10+89.24			647.57	645.82	644.83
11+39.24			647.51	645.76	644.70
11+89.24			647.44	645.69	644.60
12+39.24			647.38	645.63	644.41
12+89.24			647.34	645.59	644.28
13+39.24			647.28	645.53	644.13
13+89.24			647.08	645.33	644.02
14+39.24			646.91	645.16	643.93
14+89.24			646.73	644.98	643.90
15+39.24			646.60	644.85	643.89
15+89.24			646.60	644.85	643.96
16+39.24			646.60	644.85	643.94
16+89.24			646.60	644.85	643.93
17+39.24			646.60	644.85	643.90
17+89.24			646.60	644.85	643.88
18+39.24			645.30	643.55 (Below Grade)	643.04
18+89.24	1933019.4999	1108045.3658	644.00	642.25 (Below Grade)	644.00

2



TYPICAL WALL SECTION

(LOOKING SOUTH)

DESIGN STRESSES

FIELD UNITS:
f'c = 3,500 psi
fy = 60,000 psi

NOTES:

1. HORIZONTAL DIMENSIONS ARE MEASURED ALONG FRONT FACE OF WALL.
2. COVER FROM THE FACE OF CONCRETE TO FACE OF REINFORCEMENT BARS SHALL BE 3" FOR SURFACES FORMED AGAINST EARTH AND 2" FOR ALL OTHER SURFACES UNLESS OTHERWISE SHOWN. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4"X 45° CHAMFER, EXCEPT WHERE SHOWN OTHERWISE. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL.
3. ALL CONSTRUCTION JOINTS SHALL BE BONDED.
4. REINFORCEMENT BAR BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE LATEST "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315.
5. CONTRACTOR SHALL NOT SCALE DIMENSIONS FROM THE CONTRACT PLANS FOR CONSTRUCTION PURPOSES. SCALES SHOWN ARE FOR INFORMATION ONLY.
6. NO CONSTRUCTION JOINTS EXCEPT THOSE SHOWN ON THE PLANS WILL BE ALLOWED UNLESS APPROVED BY THE ENGINEER.
7. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO STARTING CONSTRUCTION. CONTACT 811 CHICAGO AT (312)744-7000.
8. THE SOIL BORING LOGS REPRESENT POINT INFORMATION. PRESENTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN THE EXACT LOCATION OF THE BORING.
9. SLIPFORMING OF THE PARAPET IS NOT ALLOWED.
10. JOINTS IN MOMENT SLAB TO COINCIDE WITH LOCATIONS OF LIGHT POLE FOUNDATIONS. PROVIDE JOINT FILLER AROUND ALIGHT POLE FOUNDATION. COORDINATE WITH ELECTRICAL DRAWING ES-205.

* THE MSE WALL SUPPLIERS INTERNAL DESIGN SHALL ACCOUNT FOR THE ANCHORAGE SLABS BEARING PRESSURE SURCHARGE OF 1.0 KSF AND HORIZONTAL SLIDING FORCE OF 0.5 KIPS/FT OF WALL.

** OVEREXCAVATION BEYOND STRUCTURE EXCAVATION. THIS AREA NOT MEASURED FOR PAYMENT. BACKFILL OVEREXCAVATION WITH SAME MATERIAL USED FOR SELECT FILL USED IN MSE WALL.

CHICAGO DEPARTMENT OF AVIATION

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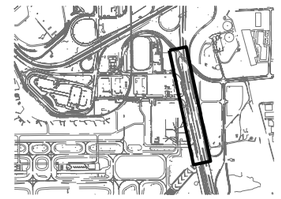

APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

RETAINING WALL 3

DESIGNED:	DRAWN:	CHECKED:
RH	CH	PF

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. S-101
REVISION 1

MATCHLINE SEE SHEET ED-103

DEMOLISH EXISTING EFSO SYSTEM

DEMOLISH EXISTING AIRFIELD LIGHTING SYSTEM

DEMOLISH EXISTING GUIDANCE SIGN FOUNDATION

DEMOLISH EXISTING AIRFIELD LIGHTING SYSTEM

TAXIWAY V5

TAXIWAY V6

TAXIWAY V

TAXIWAY V

TAXIWAY Y

ADJUST/EXISTING HOLD PAD LIGHT (HPL) (TYP). SEE NOTE 3.

REMOVE EXISTING HOLD PAD LIGHT (HPL) (TYP). SEE NOTE 4.

MATCHLINE SEE SHEET ED-102

LEGEND

- × × × LINEAR ITEM REMOVAL
- / / / LINEAR ITEM ABANDON IN PLACE
- Ⓐ / REL / REC ADJUST/RELOCATE/RECONSTRUCT EX. STRUCTURE (SEE SHEET GI-108 FOR LEGEND)
- R xx REMOVE EX. STRUCTURE (SEE SHEET GI-108 FOR LEGEND)

N

0 25 50

NOTES:

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING WORK.
2. SEE THE FOLLOWING SHEETS FOR EXISTING AND REMOVAL PLANS

COMPOSITE UTIL:	CU-101 THRU CU-105
STORM SEWER:	CU-151 THRU CU-155
JET FUEL:	CU-501 THRU CU-505
TELECOM.:	T-101 THRU T-105

3. FOR HOLD PAD PERIMETER LIGHTS TO BE ADJUSTED, REMOVE LIGHT FIXTURE AND TRANSFORMER AND INSTALL A BLANK COVER ON EXISTING BASE CAN.(ITEM PAID UNDER X-100-04.) 2
4. FOR HOLD PAD PERIMETER LIGHTS TO BE REMOVED, REMOVE LIGHT FIXTURE AND TRANSFORMER, CORE OUT EXISTING BASE CAN, PLUG CONDUITS AND FILL CORE WITH CONCRETE.(ITEM PAID UNDER X-100-04.) 2

CHICAGO DEPARTMENT OF AVIATION

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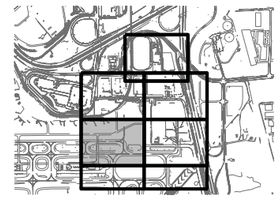

APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

ELECTRICAL EXISTING AND REMOVAL PLAN

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. ED-101
REVISION 1

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MATCHLINE SEE SHEET ED-104

MATCHLINE SEE SHEET ED-101

LEGEND

- × × × LINEAR ITEM REMOVAL
- / / / LINEAR ITEM ABANDON IN PLACE
- Ⓐ / REL / REC ADJUST/RELOCATE/RECONSTRUCT EX. STRUCTURE (SEE SHEET GI-108 FOR LEGEND)
- R XX REMOVE EX. STRUCTURE (SEE SHEET GI-108 FOR LEGEND)

NOTES:

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING WORK.
2. SEE THE FOLLOWING SHEETS FOR EXISTING AND REMOVAL PLANS

COMPOSITE UTIL:	CU-101 THRU CU-105
STORM SEWER:	CU-151 THRU CU-155
JET FUEL:	CU-501 THRU CU-505
TELECOM.:	T-101 THRU T-105

3. FOR HOLD PAD PERIMETER LIGHTS TO BE ADJUSTED, REMOVE LIGHT FIXTURE AND TRANSFORMER AND ~~INSTALL A BLANK COVER ON~~ EXISTING BASE CAN.(ITEM PAID UNDER X-100-04) Δ2
4. FOR HOLD PAD PERIMETER LIGHTS TO BE REMOVED, REMOVE LIGHT FIXTURE AND TRANSFORMER, CORE OUT EXISTING BASE CAN, ~~PLUG CONDUITS AND FILL CORE WITH~~ CONCRETE.(ITEM PAID UNDER X-100-04) Δ2

DEMOLISH EXISTING ELECTRIC

DEMOLISH EXISTING ELECTRIC

DEMOLISH EXISTING GUIDANCE SIGN FOUNDATION

DEMOLISH EXISTING GUIDANCE SIGN FOUNDATION

DEMOLISH EXISTING AIRFIELD LIGHTING SYSTEM

DEMOLISH EXISTING AIRFIELD LIGHTING SYSTEM

DEMOLISH EXISTING GUIDANCE SIGN FOUNDATION

DEMOLISH EXISTING CECO ELECTRIC

REMOVAL OF CECO TRANSFORMER TO BE COMPLETED BY COMED

PROTECT EXISTING CED

ADJUST EXISTING HOLD PAD LIGHT (HPL) (TYP). SEE NOTE 3.

REMOVE EXISTING HOLD PAD LIGHT (HPL) (TYP). SEE NOTE 4.

TAXIWAY V

TAXIWAY V

MANNHEIM RD

SPINE RD

R.O.W.

SIGN

0 25 50

N

CHICAGO DEPARTMENT OF AVIATION

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BY:

REV	DATE	DESCRIPTION
Δ2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

ELECTRICAL EXISTING AND REMOVAL PLAN

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. ED-102
REVISION 1

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MATHCLINE SEE SHEET ED-105

MATCHLINE SEE SHEET ED-104

MATCHLINE SEE SHEET ED-101

LEGEND

- × × × LINEAR ITEM REMOVAL
- / / / LINEAR ITEM ABANDON IN PLACE
- (A) / REL / REC ADJUST/RELOCATE/RECONSTRUCT EX. STRUCTURE (SEE SHEET GI-108 FOR LEGEND)
- R XX REMOVE EX. STRUCTURE (SEE SHEET GI-108 FOR LEGEND)

0 25 50

NOTES:

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING WORK.
2. SEE THE FOLLOWING SHEETS FOR EXISTING AND REMOVAL PLANS

   COMPOSITE UTIL: CU-101 THRU CU-105
   STORM SEWER: CU-151 THRU CU-155
   JET FUEL: CU-501 THRU CU-505
   TELECOM.: T-101 THRU T-105
3. CONTRACTOR SHALL DE-ENERGIZE EXISTING BALMORAL AVE LIGHTING CIRCUIT AT CONTROLLER SHOWN ON ED-105 PRIOR TO START OF CIRCUIT ADJUSTMENT AND DEMOLITION. PRESERVE EXISTING ELECTRICAL CONNECTIONS TO ALL EXISTING FIXTURES TO REMAIN.

BALMORAL AVE

CONTRACTOR SHALL PROTECT AND MAINTAIN EXISTING BALMORAL AVE LIGHTING CIRCUIT

ABANDON EXISTING ELECTRIC

DEMOLISH EXISTING ELECTRIC

ABANDON EXISTING CECO ELECTRIC

OLD CARGO RD

DEMOLISH EXISTING CECO ELECTRIC SEE NOTE 4

ABANDON EXISTING ELECTRIC

ABANDON EXISTING ELECTRIC

ABANDON EXISTING ELECTRIC

ABANDON EXISTING ELECTRIC

DEMOLISH EXISTING ELECTRIC

R.O.W.

SIGN

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CHICAGO DEPARTMENT OF AVIATION

O'HARE INTERNATIONAL AIRPORT
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REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

ELECTRICAL EXISTING AND REMOVAL PLAN

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. ED-103
REVISION 1

MATCHLINE SEE SHEET ED-105

MATCHLINE SEE SHEET ED-103

MATCHLINE SEE SHEET ED-102

BALMORAL AVE

PROTECT EXISTING ELECTRIC DUCT

PROTECT EXISTING CECO ELECTRIC

PROTECT EXISTING FAA

DEMOLISH EXISTING ELECTRIC

DEMOLISH EXISTING OVERHEAD ELECTRIC

DEMOLISH EXISTING ELECTRIC

DEMOLISH EXISTING CECO ELECTRIC

OLD CARGO RD

DEMOLISH EXISTING CECO ELECTRIC

DEMOLISH EXISTING CECO ELECTRIC

DEMOLISH EXISTING ELECTRIC

DEMOLISH EXISTING ABANDONED ELECTRIC

PROTECT EXISTING CECO ELECTRIC

PROTECT EXISTING FAA

PR. R.O.W.

R.O.W.

SERVICE RD

SPINE RD

MANNHEIM RD

0 25 50

LEGEND

- × × × LINEAR ITEM REMOVAL
- / / / LINEAR ITEM ABANDON IN PLACE
- (A) / REL / REC ADJUST/RELOCATE/RECONSTRUCT EX. STRUCTURE (SEE SHEET GI-108 FOR LEGEND)
- R XX REMOVE EX. STRUCTURE (SEE SHEET GI-108 FOR LEGEND)

NOTES:

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING WORK.
2. SEE THE FOLLOWING SHEETS FOR EXISTING AND REMOVAL PLANS

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   STORM SEWER: CU-151 THRU CU-155
   JET FUEL: CU-501 THRU CU-505
   TELECOM.: T-101 THRU T-105
3. CONTRACTOR SHALL DE-ENERGIZE EXISTING BALMORAL AVE LIGHTING CIRCUIT AT CONTROLLER SHOWN ON ED-105 PRIOR TO START OF CIRCUIT ADJUSTMENT AND DEMOLITION. PRESERVE EXISTING ELECTRICAL CONNECTIONS TO ALL EXISTING FIXTURES TO REMAIN.
4. CONTRACTOR SHALL COORDINATE WITH COMED FOR DEMOLITION AND RECONSTRUCTION OF COMED MANHOLES. COMED TO RELOCATE AND RECONSTRUCT COMED MANHOLES AND CABLES PRIOR TO CONTRACTOR DEMOLISHING ANY COMED FACILITIES.

CHICAGO DEPARTMENT OF AVIATION

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BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

ELECTRICAL EXISTING AND REMOVAL PLAN

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. ED-104
REVISION 1

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LEGEND

- LINEAR ITEM REMOVAL
- LINEAR ITEM ABANDON IN PLACE
- (A) / REL / REC — ADJUST/RELOCATE/RECONSTRUCT EX. STRUCTURE (SEE SHEET GI-108 FOR LEGEND)
- R xx — REMOVE EX. STRUCTURE (SEE SHEET GI-108 FOR LEGEND)

NOTES:

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING WORK.
2. SEE THE FOLLOWING SHEETS FOR EXISTING AND REMOVAL PLANS

COMPOSITE UTIL:	CU-101 THRU CU-105
STORM SEWER:	CU-151 THRU CU-155
JET FUEL:	CU-501 THRU CU-505
TELECOM.:	T-101 THRU T-105

3. CONTRACTOR SHALL DE-ENERGIZE EXISTING BALMORAL AVE LIGHTING CIRCUIT AT CONTROLLER PRIOR TO START OF CIRCUIT ADJUSTMENT AND DEMOLITION. PRESERVE EXISTING ELECTRICAL CONNECTIONS TO ALL EXISTING FIXTURES TO REMAIN.
4. CONTRACTOR SHALL COORDINATE WITH COMED FOR DEMOLITION AND RECONSTRUCTION OF COMED MANHOLES. COMED TO RELOCATE AND RECONSTRUCT COMED MANHOLES AND CABLES PRIOR TO CONTRACTOR DEMOLISHING ANY COMED FACILITIES.

EXISTING BALMORAL AVE LIGHTING CONTROLLER. SEE NOTE 3.

PROTECT EXISTING ELECTRIC

PROTECT EXISTING CECO ELECTRIC

DEMOLISH EXISTING ELECTRIC

SEE PROPOSED ELECTRICAL PLAN FOR CONNECTION TO PROPOSED DUCT

DEMOLISH EXISTING ELECTRIC

R.O.W.

0 25 50

MATCHLINE SEE SHEET ED-103 AND ED-104

CHICAGO DEPARTMENT OF AVIATION

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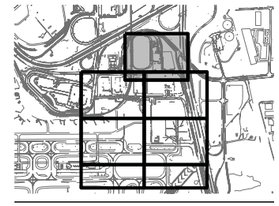

APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

ELECTRICAL EXISTING AND REMOVAL PLAN

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. ED-105
REVISION 1

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MATCHLINE SEE SHEET ED-101

MATCHLINE SEE SHEET ED-107

TAXIWAY N

TAXIWAY Y

TAXIWAY Y5

ADJUST EXISTING HOLD PAD LIGHT (HPL) (TYP). SEE NOTE 3.

REMOVE EXISTING HOLD PAD LIGHT (HPL) (TYP). SEE NOTE 4.

EMH23
PW387
PW2602

EMH22
PW387
PW2602

(4") COM
20" STEEL CASING

COM-H6130.050-43

NOTES:

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING WORK.
2. SEE THE FOLLOWING SHEETS FOR EXISTING AND REMOVAL PLANS

   COMPOSITE UTIL: CU-101 THRU CU-105
   STORM SEWER: CU-151 THRU CU-155
   JET FUEL: CU-501 THRU CU-505
   TELECOM.: T-101 THRU T-105
3. FOR HOLD PAD PERIMETER LIGHTS TO BE ADJUSTED, REMOVE LIGHT FIXTURE AND TRANSFORMER AND INSTALL A BLANK COVER ON EXISTING BASE CAN.(ITEM PAID UNDER X-100-04.)
4. FOR HOLD PAD PERIMETER LIGHTS TO BE REMOVED, REMOVE LIGHT FIXTURE AND TRANSFORMER, CORE OUT EXISTING BASE CAN, PLUG CONDUITS AND FILL CORE WITH CONCRETE.(ITEM PAID UNDER X-100-04.) (2)

LEGEND

- × × × LINEAR ITEM REMOVAL
- / / / LINEAR ITEM ABANDON IN PLACE
- (A) / (REL) / (REC) ADJUST/RELOCATE/RECONSTRUCT EX. STRUCTURE (SEE SHEET GI-108 FOR LEGEND)
- (R)xx REMOVE EX. STRUCTURE (SEE SHEET GI-108 FOR LEGEND)

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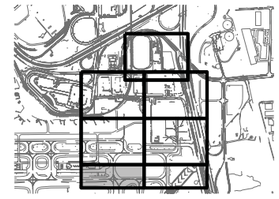

APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

ELECTRICAL EXISTING AND REMOVAL PLAN

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. ED-106
REVISION 1

MATCHLINE SEE SHEET ED-102

MATCHLINE SEE SHEET ED-106

ADJUST EXISTING HOLD PAD LIGHT (HPL) (TYP). SEE NOTE 3.

TAXIWAY V

TAXIWAY N

RUNWAY 22L

TMH234
PW1457-2

LEGEND

- × × × LINEAR ITEM REMOVAL
- / / / LINEAR ITEM ABANDON IN PLACE
- (A) / (REL) / (REC) ADJUST/RELOCATE/RECONSTRUCT EX. STRUCTURE (SEE SHEET GI-108 FOR LEGEND)
- (R)xx REMOVE EX. STRUCTURE (SEE SHEET GI-108 FOR LEGEND)

NOTES:

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING WORK.
2. SEE THE FOLLOWING SHEETS FOR EXISTING AND REMOVAL PLANS

   COMPOSITE UTIL: CU-101 THRU CU-105
   STORM SEWER: CU-151 THRU CU-155
   JET FUEL: CU-501 THRU CU-505
   TELECOM.: T-101 THRU T-105
3. FOR HOLD PAD PERIMETER LIGHTS TO BE ADJUSTED, REMOVE LIGHT FIXTURE AND TRANSFORMER AND INSTALL A BLANK COVER ON EXISTING BASE CAN.(ITEM PAID UNDER X-100-04) 2
4. FOR HOLD PAD PERIMETER LIGHTS TO BE REMOVED, REMOVE LIGHT FIXTURE AND TRANSFORMER, CORE OUT EXISTING BASE CAN, PLUG CONDUITS AND FILL CORE WITH CONCRETE.(ITEM PAID UNDER X-100-04) 2

CHICAGO DEPARTMENT OF AVIATION

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APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:
O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:
ELECTRICAL EXISTING AND REMOVAL PLAN

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. ED-107
REVISION 1

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MATCH LINE SEE SHEET ES-203

COMM ROOM #2408

EXISTING EFSO-019

EXISTING EFSO-018

2" CONDUIT HOMERUN TO EFSO CONTROL PANEL IN ROOM #2408 ROUTED THROUGH BUILDING ABOVE CEILING

2 BY FULEING CONTRACTOR

WALL-MOUNTED JB

PROPOSED EFSO HANDHOLE EHH-H2028.17-001. SEE DETAILS ON SHEET ES-502

EHH-H2028.17-002

2 PROPOSED 2-WAY CONDUIT IN EXISTING PCC PAVEMENT. SEE DETAIL ON SHEET EA-501

EHH-H2028.17-003

CAP DUCTBANK AT PROPOSED PAVEMENT LIMITS FOR CONTINUATION IN BUILDING PACKAGE. ALL WIRING REQUIRED FOR CATHODIC PROTECTION SYSTEM SHALL BE LEFT IN CONDUIT. CONDUIT SHALL BE TEMPORARILY EXTENDED ABOVE GROUND AND PROTECTED.

PROPOSED 1-WAY 2" DUCTBANK FOR CATHODIC PROTECTION SYSTEM

EXISTING ISO-5 TO REMAIN

INTERNATIONAL TAXILANE

100+00

105+00

170+00

TAXIWAY V

TAXIWAY Y

TMH230
PW1457-2

MATCHLINE SEE SHEET ES-202

CONDUIT SCHEDULE FOR DUCTBANK SECTIONS

DUCT BANK	NO. OF CONDUITS	CONDUCTORS	CONDUIT SIZE	REFERENCE SHEET
1	2	6 STRAND SM FIBER OPTIC CABLE (EFSO)	2"	ES-510: 6-04-03
		EMPTY	2"	
2 15	2	6 STRAND SM FIBER OPTIC CABLE (EFSO)	2"	EA-501
		EMPTY	2"	

NOTES:

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING WORK.
2. SEE THE FOLLOWING SHEETS FOR PROPOSED UTILTY PLANS
   GRADING: CG-201 THRU CG-205
   COMPOSITE UTIL: CU-201 THRU CU-205
   STORM SEWER: CG-301 THRU CG-305
   JET FUEL: CU-271 THRU CU-275
   AFL/AFS: EA-201/251 THRU EA-207/257
   TELECOM: T-201 THRU T-205
3. DUCTBANK FOR EFSO FIBER TO BE INSTALLED BY CONTRACTOR. FUELING CONTRACTOR TO INSTALL ALL CABLES.
4. REFER TO SHEET ES-603 FOR HANDHOLE, MANHOLE, AND LIGHT POLE SCHDULES.

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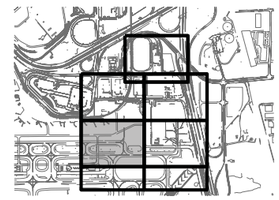

APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

ELECTRICAL PLAN

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. ES-201
REVISION 1

MATCHLINE SEE SHEET ES-205

MATCHLINE SEE SHEET ES-203

MATCHLINE SEE SHEET ES-202

N 89° 22' 09" E

POLE-008

EHH-H2028.17-018

EHH-H2028.17-017

EHH-H2028.17-012

EHH-H2028.17-020

EHH-H2028.17-019

POLE-005

ADJUST EXISTING EHH-H2028.17-022

ADJUST EXISTING EHH-H2028.17-021

ADJUST EXISTING EMH-H2028.17-004

EHH-H2028.17-013

EFSO CABINET

ADJUST EXISTING EMH-H2028.17-003

PROPOSED 1-WAY 2" DUCTBANK FOR CATHODIC PROTECTION SYSTEM

CATHODIC PROTECTION SYSTEM TRANSFORMER

EFSO-030

EHH-H2028.17-011

EHH-H2028.17-047

APRON LIGHT POLE, EFSO, AND CATHODIC PROTECTION CONFIGURATION

PROPOSED EFSO CONTROL PANEL IN CLIMATE CONTROLLED CABINET

0 25 50

N

EHH-H2028.17-046

POLE-004

EFSO-031

EHH-H2028.17-010

TYPICAL APRON LIGHT POLE AND EFSO CONFIGURATION

R.O.W.

SERVICE RD

EHH-H2028.17-045

POLE-003

EFSO-032

EHH-H2028.17-009

MANNHEIM RD

EHH-H2028.17-044

POLE-002

EFSO-033

EHH-H2028.17-008

ADJUST EXISTING EMH-H2028.17-002

N: 1933601.505'
E: 1107665.072'

EHH-H2028.17-043

EFSO-034

POLE-001

EHH-H2028.17-007

N 12° 42' 12.29" W

130.00

INTERNATIONAL TAXILANE

CONDUIT SCHEDULE FOR DUCTBANK SECTIONS

DUCT BANK	NO. OF CONDUITS	CONDUCTORS	CONDUIT SIZE	REFERENCE SHEET
①	2	6 STRAND SM FIBER OPTIC CABLE	2"	ES-510: 6-04-03
		EMPTY	2"	
③	2	4#12 (EFSO)	2"	ES-510: 6-04-03
		2#8, 1#8G	2"	
④	2	8#12 (EFSO)	2"	ES-510: 6-04-03
		4#8, 1#8G	2"	
⑤	2	12#12 (EFSO)	2"	ES-510: 6-04-03
		6#8, 1#8G	2"	
⑥	2	16#12 (EFSO)	2"	ES-510: 6-04-03
		6#8, 1#8G	2"	
⑦	2	8#12 (EFSO)	2"	ES-510: 6-04-03
		2#8, 1#8G	2"	
⑨	2	8#8, 2#10, 1#8G	2"	ES-510: 6-04-02
		3#6, 6#10, 1#8G	2"	
⑪	1	2#8, 1#8G	2"	ES-501
⑬	2	BY OTHERS	5"	ES-505: C4090
		BY OTHERS	5"	

NOTES:

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING WORK.
2. SEE THE FOLLOWING SHEETS FOR PROPOSED UTILTY PLANS
   GRADING: CG-201 THRU CG-205
   COMPOSITE UTIL: CU-201 THRU CU-205
   STORM SEWER: CG-301 THRU CG-305
   JET FUEL: CU-271 THRU CU-275
   AFL/AFS: EA-201/251 THRU EA-207/257
   TELECOM: T-201 THRU T-205
3. DUCTBANK FOR EFSO FIBER TO BE INSTALLED BY CONTRACTOR. FUELING CONTRACTOR TO INSTALL ALL CABLES.
4. REFER TO SHEET ES-602 FOR HANDHOLE, MANHOLE, AND LIGHT POLE SCHDULES.

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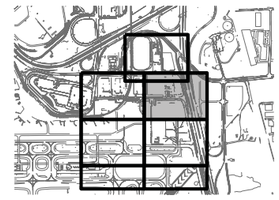

APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

ELECTRICAL PLAN

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. ES-204
REVISION 1

NOTES:

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING WORK.
2. SEE THE FOLLOWING SHEETS FOR PROPOSED UTILTY PLANS

GRADING:	CG-201 THRU CG-205
COMPOSITE UTIL:	CU-201 THRU CU-205
STORM SEWER:	CG-301 THRU CG-305
JET FUEL:	CU-271 THRU CU-275
AFL/AFS:	EA-201/251 THRU EA-207/257
TELECOM:	T-201 THRU T-205

3. DUCTBANK FOR EFSO FIBER TO BE INSTALLED BY CONTRACTOR. FUELING CONTRACTOR TO INSTALL ALL CABLES.
4. REFER TO SHEET ES-602 FOR HANDHOLE, MANHOLE, AND LIGHT POLE SCHDULES.

CONDUIT SCHEDULE FOR DUCTBANK SECTIONS

DUCT BANK	NO. OF CONDUITS	CONDUCTORS	CONDUIT SIZE	REFERENCE SHEET
①	2	6 STRAND SM FIBER OPTIC CABLE	2"	ES-510: 6-04-03
		EMPTY	2"	
⑥	2	16#12 (EFSO)	2"	ES-510: 6-04-03
		6#8, 1#8G	2"	
⑦	2	8#12 (EFSO)	2"	ES-510: 6-04-03
		2#8, 1#8G	2"	
⑧	2	4#12 (EFSO)	2"	ES-510: 6-04-03
		2#8, 1#8G	2"	
⑨	2	8#8, 1#8G	2"	ES-510: 6-04-02
		EMPTY	2"	
⑩	2	8#8, 2#10, 1#8G	4"	ES-510: 6-04-02
		3#6, 6#10, 1#8G	4"	
⑪	1	2#8, 1#8G	2"	ES-501
⑫	2	4-500KCMIL, 1#3G	4"	ES-510: 6-04-02
		EMPTY	4"	
⑬	2	BY OTHERS	5"	ES-505: C4090
		BY OTHERS	5"	

TYPICAL C&G CARGO AREA LIGHTPOLE CONFIGURATION

TYPICAL MSE WALL CARGO AREA LIGHTPOLE CONFIGURATION

PROPOSED COMED TRANSFORMER AND SWITCHGEAR WITH 4" BOLLARDS

MATCHLINE SEE SHEET ES-203 AND ES-204

CHICAGO DEPARTMENT OF AVIATION

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APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:
O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:
ELECTRICAL PLAN

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. ES-205
REVISION 1

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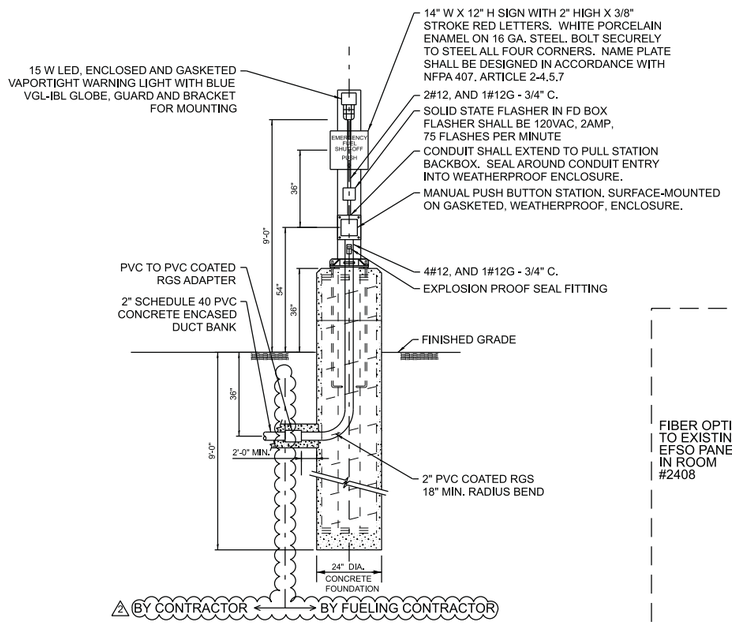
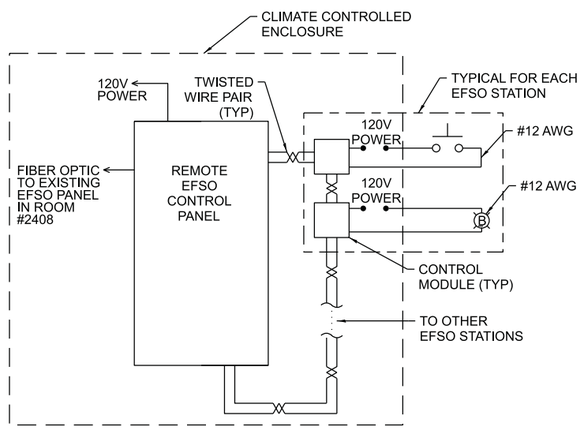


NOTES

1. FOR FOUNDATION STRUCTURAL DETAILS, SEE CDA STD DETAIL 06-07-05A ON SHEET ES-515.

POLE-MOUNTED EFSO STATION DETAIL

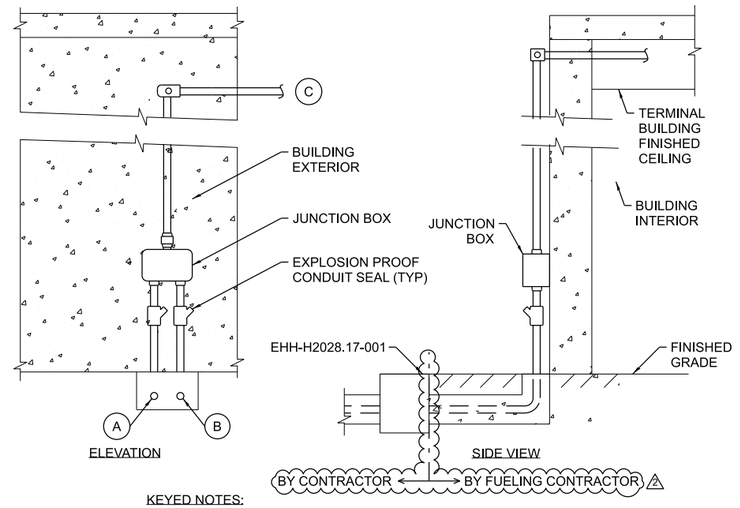
NOT TO SCALE



EFSO CONTROL DIAGRAM

NOT TO SCALE

NOTE:
ALL WORK SHOWN ON THIS SHEET TO BE COMPLETED BY FUELING CONTRACTOR BUT COORDINATED BY THE CONTRACTOR UNLESS OTHERWISE NOTED 2



KEYED NOTES:

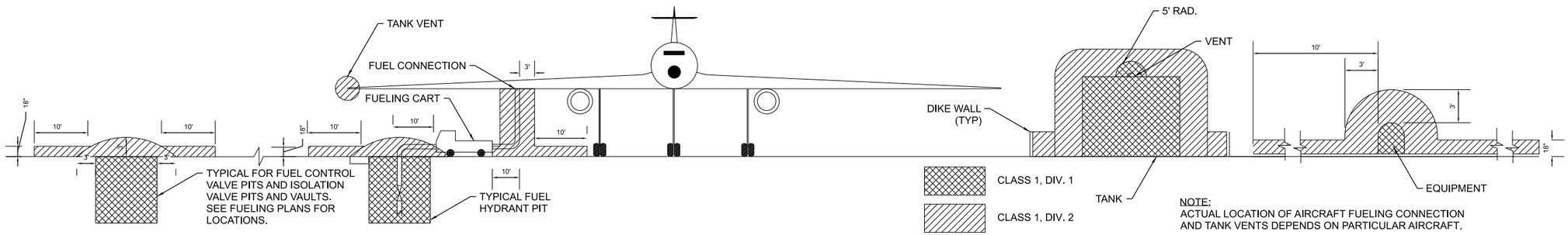
(A) 2" CONDUIT WITH SINGLE MODE 6 STRAND FIBER

(B) 2" EMPTY CONDUIT

(C) 2" CONDUIT WITH SINGLE MODE 6 STRAND FIBER ROUTED THROUGH BUILDING ABOVE CEILING TO EXISTING CONTROL PANEL IN ROOM #2408

CONDUIT PENETRATION THRU TERMINAL BUILDING EXTERIOR WALL

NOT TO SCALE



NOTE:
ACTUAL LOCATION OF AIRCRAFT FUELING CONNECTION AND TANK VENTS DEPENDS ON PARTICULAR AIRCRAFT.

HAZARDOUS AREA CLASSIFICATIONS

NOT TO SCALE

CHICAGO DEPARTMENT OF AVIATION

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APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

FUEL ELECTRICAL DETAILS

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO.: ES-502
REVISION: 1

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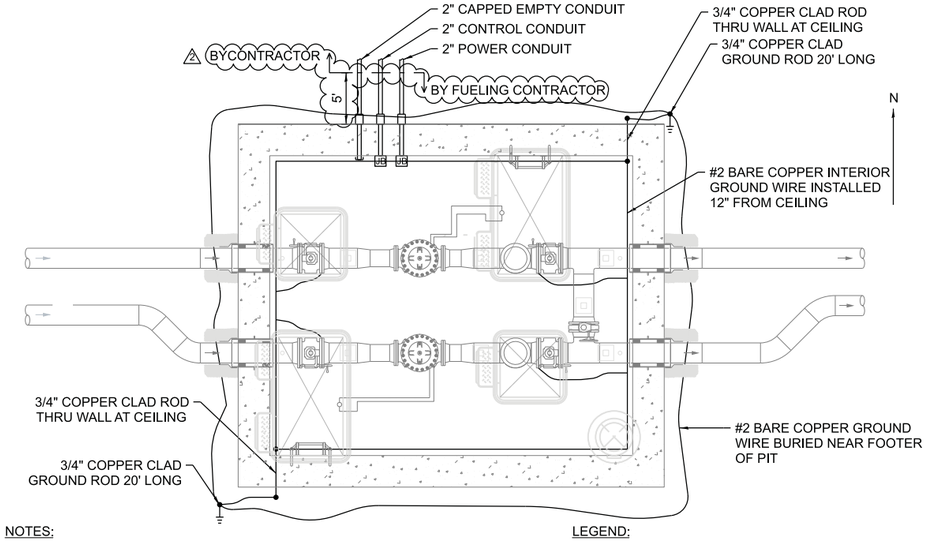


NOTES:

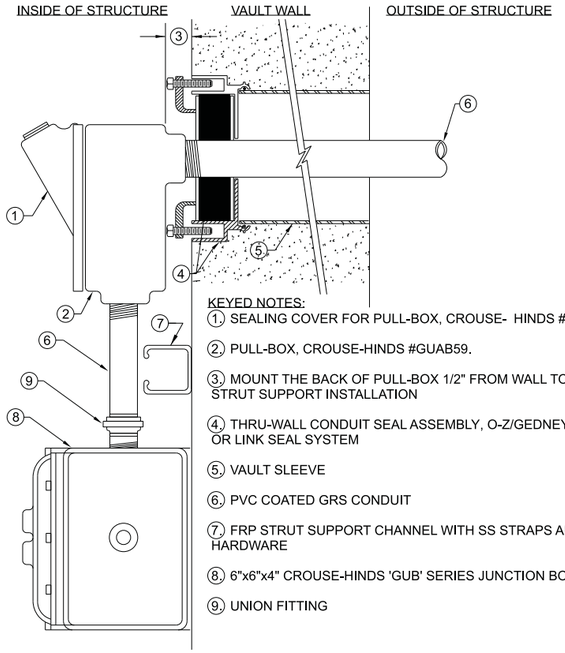
1. PER DETAIL ON SHEET ES-502, ALL EQUIPMENT IN VAULT SHALL BE RATED FOR CLASS I, DIV 1, GROUP D AREA
2. ALL ELECTRICAL AND CONTROL SYSTEMS FOR ISO-6 TO BE INSTALLED WITH NEW T5 BUILDING EXPANSION
3. FOR MECHANICAL DETAILS, REFER TO SHEET CU-502
4. GROUND WIRES TO INTERNAL PIPING TO BE INSTALLED SO CATHODIC PROTECTION SYSTEM IS NOT COMPROMISED.

LEGEND:

- JB — JUNCTION BOX (SEE DETAIL THIS SHEET)
- • — EXOTHERMIC WELD

DETAIL - ISOLATION VALVE PIT FOR ISO-6

NOT TO SCALE

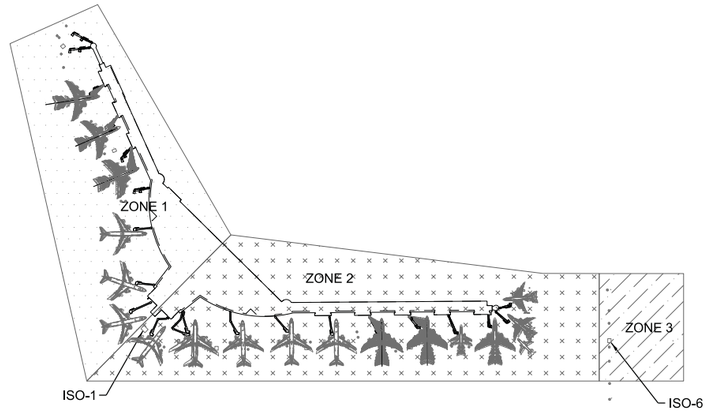


KEYED NOTES:

1. SEALING COVER FOR PULL-BOX, CROUSE- HINDS #GUA092.
2. PULL-BOX, CROUSE-HINDS #GUAB59.
3. MOUNT THE BACK OF PULL-BOX 1/2" FROM WALL TO ALLOW FOR STRUT SUPPORT INSTALLATION
4. THRU-WALL CONDUIT SEAL ASSEMBLY, O-Z/GEDNEY #FSK SERIES OR LINK SEAL SYSTEM
5. VAULT SLEEVE
6. PVC COATED GRS CONDUIT
7. FRP STRUT SUPPORT CHANNEL WITH SS STRAPS AND HARDWARE
8. 6"x6"x4" CROUSE-HINDS 'GUB' SERIES JUNCTION BOX
9. UNION FITTING

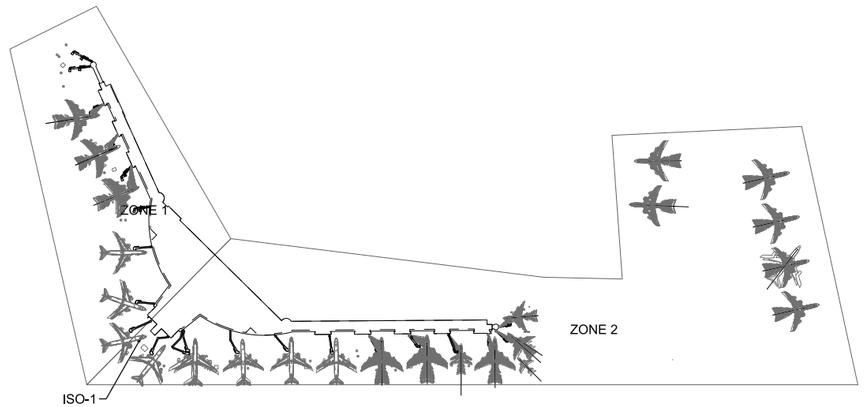
CONDUIT PENETRATION THRU ISO-6 WALL

NOT TO SCALE



EXISTING EFSO ZONES

NOT TO SCALE



PROPOSED EFSO ZONES

NOT TO SCALE

EFSO PROGRAMMING NOTES:

1. DURING THIS PROJECT THE EFSO SYSTEM SHALL BE TEMPORARILY PROGRAMMED AS NOTED BELOW TO ALLOW FOR OPERATION OF THE FUELING SYSTEM AT THE NEW REMOTE GATES DURING THE CONSTRUCTION OF THE T5 BUILDING EXTENSION. DURING THE CONSTRUCTION OF THE T5 BUILDING, THE NEW ISO-6 PIT WILL OPERATE AS A NON EFSO OPERATED MECHANICAL ISOLATION VALVE PIT. FURTHER PHASING AND PROGRAMMING REQUIREMENTS FOR THE EFSO SYSTEM WILL BE INCLUDED IN THE T5 BUILDING EXTENSION PACKAGE.
2. AFTER EXISTING ISO-6 HAS BEEN DECOMMISSIONED, THE EFSO SYSTEM SHALL BE REPROGRAMMED TO REMOVE ALL FUNCTIONS CURRENTLY USED FOR ISO-6.
3. PRIOR TO OPENING OF THE NEW REMOTE PARKING POSITIONS, THE NEW EFSO STATIONS SHALL BE PROGRAMMED AND TESTED.
4. THE FINAL CONFIGURATION OF THE OPERATIONAL ZONES OF THE EFSO SYSTEM ARE SHOWN IN THE DETAILS. ISO-1 SHALL BE USED FOR ISOLATION OF THE FUELING SYSTEM AS SHOWN.

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APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
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PROJECT NAME:
O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:
FUEL ELECTRICAL DETAILS

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO.: ES-503
REVISION: 1

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ELECTRICAL HANDHOLE SCHEDULE

HANDHOLE #	NORTHING	EASTING	EX. RIM ELEV.	PROP. RIM ELEV.	STRUCTURE TYPE	REFERENCE SHEET: DETAIL
EHH-H2028.17-001	1933387.53	1106137.64	N/A	651.1	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-002	1933373.26	1106448.26	N/A	649.6	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-003	1933375.23	1106728.48	N/A	650.3	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-004	1933375.13	1107028.48	N/A	650.1	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-005	1933375.04	1107310.58	N/A	648.6	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-006	1933374.95	1107579.52	N/A	648.9	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-007	1933479.51	1107898.83	N/A	646.7	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-008	1933682.10	1107852.61	N/A	647.1	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-009	1933912.12	1107800.81	N/A	647.3	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-010	1934145.21	1107747.98	N/A	647.7	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-011	1934316.06	1107702.00	N/A	647.8	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-012	1934367.37	1107555.39	N/A	648.0	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-013	1934363.70	1107087.66	N/A	649.5	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-014	1934308.29	1106874.44	N/A	650.2	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-015	1934105.05	1106850.14	N/A	650.5	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-016	1933969.06	1106828.50	N/A	646.5	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-017	1934376.28	1107712.53	N/A	648.3	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-018	1934378.89	1107611.03	N/A	647.7	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-019	1934378.68	1107388.98	644.5	648.1	PROP. ROAD HANDHOLE	ES-512: 6-06-07R, 6-06-08R
EHH-H2028.17-020	1934376.38	1107278.32	644.6	645.2	PROP. ROAD HANDHOLE	ES-512: 6-06-07R, 6-06-08R
EHH-H2028.17-021	1934374.83	1107148.33	644.0	644.2	EXIST. HANDHOLE	EXISTING
EHH-H2028.17-022	1934373.12	1107003.33	643.7	643.5	EXIST. HANDHOLE	EXISTING
EHH-H2028.17-023	1934371.58	1106873.40	643.3	642.9	EXIST. HANDHOLE	EXISTING
EHH-H2028.17-024	1934370.50	1106782.49	N/A	642.4	PROP. ROAD HANDHOLE	ES-512: 6-06-07R, 6-06-08R
EHH-H2028.17-025	1934442.51	1107606.31	N/A	647.8	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-026	1934493.56	1107562.23	N/A	648.3	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-027	1934551.17	1107656.49	N/A	648.3	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-028	1934622.39	1107634.30	N/A	648.4	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-029	1934694.14	1107612.11	N/A	648.4	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-030	1934765.68	1107589.83	N/A	648.4	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-031	1934841.28	1107566.48	N/A	648.4	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-032	1934844.03	1107433.74	N/A	648.3	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-033	1934762.52	1107430.63	N/A	648.3	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-034	1934678.16	1107431.49	N/A	648.3	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-035	1934593.75	1107432.29	N/A	648.2	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-036	1934502.50	1107433.24	N/A	648.2	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-037	1934487.43	1107499.20	N/A	647.7	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-038	1933126.70	1108015.15	N/A	643.9	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-039	1933200.06	1107998.42	N/A	643.9	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-040	1933272.97	1107982.67	N/A	643.9	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-041	1933346.43	1107965.01	N/A	643.9	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-042	1933419.60	1107948.37	N/A	646.6	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
EHH-H2028.17-043	1933488.65	1107900.53	N/A	646.8	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-044	1933691.24	1107854.31	N/A	647.2	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-045	1933921.26	1107802.50	N/A	647.8	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-046	1934154.35	1107749.67	N/A	647.7	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
EHH-H2028.17-047	1934308.73	1107708.23	N/A	647.4	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R

ELECTRICAL MANHOLE SCHEDULE

MANHOLE #	NORTHING	EASTING	EX. RIM ELEV.	PROP. RIM ELEV.	STRUCTURE TYPE	REFERENCE SHEET: DETAIL
EMH-H2028.17-001	1933121.35	1107997.12	643.9	646.4	REC. EXIST. COMED MH	BY COMED
EMH-H2028.17-002	1933677.25	1107871.87	643.8	647.2	REC. EXIST. COMED MH	BY COMED
EMH-H2028.17-003	1934310.43	1107724.55	643.1	648.0	REC. EXIST. COMED MH	BY COMED
EMH-H2028.17-004	1934350.05	1107116.79	644.1	649.4	REC. EXIST. COMED MH	BY COMED

LIGHT POLE SCHEDULE

POLE #	NORTHING	EASTING	GRADE ELEV.	LUMINAIRE MTG. HT (FT.)	ELEV. @ TOP LUMINAIRE
001	1933483.25	1107892.75	646.7	40	686.7
002	1933685.84	1107846.54	647.0	55	702.0
003	1933915.84	1107794.62	647.3	70	717.3
004	1934148.97	1107742.00	647.6	70	717.6
005	1934323.94	1107697.72	647.8	70	717.8
006	1934313.22	1106879.22	650.2	70	720.2
007	1934110.03	1106850.56	650.5	70	720.5
008	1934378.68	1107388.98	648.1	30	678.1
009	1934372.43	1106787.07	642.4	30	672.4
010	1934437.03	1107610.49	647.7	30	677.7
011	1934502.21	1107577.39	648.4	30	678.4
012	1934554.96	1107655.39	648.3	30	678.3
013	1934626.19	1107633.21	648.4	30	678.4
014	1934697.95	1107610.97	648.4	30	678.4
015	1934769.45	1107588.75	648.5	30	678.5
016	1934845.05	1107565.27	648.3	30	678.3
017	1934844.00	1107429.78	648.3	30	678.3
018	1934758.54	1107430.62	648.2	30	678.2
019	1934674.19	1107431.50	648.2	30	678.2
020	1934589.80	1107432.38	648.2	30	678.2
021	1934498.58	1107433.31	648.2	30	678.2
022	1933122.86	1108016.05	643.9	20	663.9
023	1933196.21	1107999.31	643.9	20	663.9
024	1933269.11	1107982.67	643.9	20	663.9
025	1933342.57	1107965.90	643.9	20	663.9
026	1933415.74	1107949.25	646.6	20	666.6

LUMINAIRE LOCATION SUMMARY (COORDINATES IN FEET)

NO.	POLE	CKT	TYPE	NORTHING	EASTING	MTG. HT (FT.)	ORIENT (DEG.)	TILT (DEG.)
LUM-001	POLE-001	PNL 'B' - 10,12	3	1933483.25	1107892.75	40	245.00	65
LUM-002	POLE-001	PNL 'B' - 10,12	3	1933483.25	1107892.75	40	220.00	65
LUM-003	POLE-001	PNL 'B' - 10,12	3	1933483.25	1107892.75	40	195.00	65
LUM-004	POLE-001	PNL 'B' - 10,12	3	1933483.25	1107892.75	40	170.00	65
LUM-005	POLE-002	PNL 'B' - 6,8	3	1933685.84	1107846.54	55	245.00	65
LUM-006	POLE-002	PNL 'B' - 6,8	3	1933685.84	1107846.54	55	220.00	65
LUM-007	POLE-002	PNL 'B' - 6,8	3	1933685.84	1107846.54	55	195.00	65
LUM-008	POLE-002	PNL 'B' - 6,8	3	1933685.84	1107846.54	55	170.00	65
LUM-009	POLE-003	PNL 'B' - 6,8	3	1933915.84	1107794.62	70	275.00	65
LUM-010	POLE-003	PNL 'B' - 6,8	3	1933915.84	1107794.62	70	225.00	60
LUM-011	POLE-003	PNL 'B' - 6,8	3	1933915.84	1107794.62	70	190.00	60
LUM-012	POLE-003	PNL 'B' - 6,8	3	1933915.84	1107794.62	70	155.00	60
LUM-013	POLE-004	PNL 'B' - 6,8	3	1934148.97	1107742.00	70	270.00	60
LUM-014	POLE-004	PNL 'B' - 6,8	3	1934148.97	1107742.00	70	245.00	60
LUM-015	POLE-004	PNL 'B' - 6,8	3	1934148.97	1107742.00	70	215.00	60
LUM-016	POLE-004	PNL 'B' - 6,8	3	1934148.97	1107742.00	70	185.00	60
LUM-017	POLE-005	PNL 'B' - 2,4	3	1934323.94	1107697.72	70	260.00	60
LUM-018	POLE-005	PNL 'B' - 2,4	3	1934323.94	1107697.72	70	235.00	60
LUM-019	POLE-005	PNL 'B' - 2,4	3	1934323.94	1107697.72	70	210.00	60
LUM-020	POLE-005	PNL 'B' - 2,4	3	1934323.94	1107697.72	70	185.00	60
LUM-021	POLE-006	PNL 'B' - 2,4	3	1934313.22	1106879.22	70	357.50	70
LUM-022	POLE-006	PNL 'B' - 2,4	3	1934313.22	1106879.22	70	333.00	65
LUM-023	POLE-006	PNL 'B' - 2,4	3	1934313.22	1106879.22	70	309.00	60
LUM-024	POLE-006	PNL 'B' - 2,4	3	1934313.22	1106879.22	70	285.00	60
LUM-025	POLE-007	PNL 'B' - 2,4	3	1934110.03	1106850.56	70	40.00	65
LUM-026	POLE-007	PNL 'B' - 2,4	3	1934110.03	1106850.56	70	12.00	65
LUM-027	POLE-007	PNL 'B' - 2,4	3	1934110.03	1106850.56	70	344.00	65
LUM-028	POLE-007	PNL 'B' - 2,4	3	1934110.03	1106850.56	70	315.00	65
LUM-029	POLE-008	EXISTING	2	1934378.68	1107388.98	30	90.00	0
LUM-030	POLE-009	EXISTING	2	1934372.43	1106787.07	30	90.00	0
LUM-031	POLE-010	PNL 'B' - 1,3	2	1934437.03	1107610.49	30	193.00	0
LUM-032	POLE-010	PNL 'B' - 1,3	2	1934437.03	1107610.49	30	73.00	0
LUM-033	POLE-010	PNL 'B' - 1,3	2	1934437.03	1107610.49	30	313.00	0
LUM-034	POLE-011	PNL 'B' - 5,7	2	1934502.21	1107577.39	30	121.00	0
LUM-035	POLE-011	PNL 'B' - 5,7	2	1934502.21	1107577.39	30	306.00	0
LUM-036	POLE-012	PNL 'B' - 1,3	2	1934554.96	1107655.39	30	195.00	0
LUM-037	POLE-013	PNL 'B' - 1,3	2	1934626.19	1107633.21	30	202.00	0
LUM-038	POLE-014	PNL 'B' - 1,3	2	1934697.95	1107610.97	30	200.00	0
LUM-039	POLE-015	PNL 'B' - 1,3	2	1934769.45	1107588.75	30	202.00	0
LUM-040	POLE-016	PNL 'B' - 1,3	2	1934845.05	1107565.27	30	234.00	0
LUM-041	POLE-017	PNL 'B' - 5,7	2	1934844.00	1107429.78	30	315.00	0
LUM-042	POLE-018	PNL 'B' - 5,7	2	1934758.54	1107430.62	30	0.00	0
LUM-043	POLE-019	PNL 'B' - 5,7	2	1934674.19	1107431.50	30	0.00	0
LUM-044	POLE-020	PNL 'B' - 5,7	2	1934589.80	1107432.38	30	0.00	0
LUM-045	POLE-021	PNL 'B' - 5,7	2	1934498.58	1107433.31	30	315.00	0
LUM-046	N/A	EXISTING	4	EXISTING	EXISTING	EXISTNG	EXISTING	0
LUM-047	N/A	EXISTING	4	EXISTING	EXISTING	EXISTNG	EXISTING	0
LUM-048	N/A	EXISTING	4	EXISTING	EXISTING	EXISTNG	EXISTING	0
LUM-049	N/A	EXISTING	4	EXISTING	EXISTING	EXISTNG	EXISTING	0
LUM-050	N/A	EXISTING	4	EXISTING	EXISTING	EXISTNG	EXISTING	0
LUM-051	N/A	EXISTING	4	V.I.F.	V.I.F.	V.I.F.	PER PLANS	0
LUM-052	N/A	EXISTING	4	V.I.F.	V.I.F.	V.I.F.	PER PLANS	0
LUM-053	N/A	EXISTING	4	V.I.F.	V.I.F.	V.I.F.	PER PLANS	0
LUM-054	N/A	EXISTING	4	V.I.F.	V.I.F.	V.I.F.	PER PLANS	0
LUM-055	N/A	EXISTING	4	V.I.F.	V.I.F.	V.I.F.	PER PLANS	0
LUM-056	POLE-022	PNL 'B' -10,12	1	1933122.86	1108016.05	20	191.00	0
LUM-057	POLE-023	PNL 'B' -10,12	1	1933196.21	1107999.31	20	191.00	0
LUM-058	POLE-024	PNL 'B' -10,12	1	1933269.11	1107982.67	20	191.00	0
LUM-059	POLE-025	PNL 'B' -10,12	1	1933342.57	1107965.90	20	191.00	0
LUM-060	POLE-026	PNL 'B' -10,12	1	1933415.74	1107949.25	20	191.00	0

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG NUMBER	LAMP	VOLTAGE	FIXTURE WATTAGE	LLF	MOUNTING	QTY	DESCRIPTION
1	LITHONIA LIGHTING	DSX1 LED 30C 1000 40K T4M MVOLT	LED	208V	105	0.80	POLE-MOUNTED	5	ROADWAY LIGHT WITH AN 8' MAST ARM
2	LITHONIA LIGHTING	DSX1 LED 40C 1000 40K T4M MVOLT	LED	208V	138	0.80	POLE-MOUNTED	17	ROADWAY LIGHT WITH AN 8' MAST ARM
3	LITHONIA LIGHTING	HLF2 LED P2 40K MNFL MVOLT FV	LED	208V	487	0.80	POLE-MOUNTED	28	FLOODLIGHT WITH A FULL VISOR
4	LITHONIA LIGHTING	DSX1 LED 30C 1000 40K T4M MVOLT	LED	208V	105	0.80	POLE-MOUNTED	13	TRACK STRUCTURE-MOUNTED LIGHT

CHICAGO DEPARTMENT OF AVIATION

O'HARE INTERNATIONAL AIRPORT
CITY OF CHICAGO

RAHM EMANUEL
MAYOR

JAMIE L. RHEE
COMMISSIONER

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T: 312.432.4180
F: 312.432.4184

TYLIN INTERNATIONAL
200 S. WACKER DR.
SUITE 1400
CHICAGO, IL 60606
TEL: 312-777-2900

APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:
O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:
ELECTRICAL/LIGHTING SCHEDULES

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO.: ES-602
REVISION: 1

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MATCH LINE SEE SHEET T-203

MATCHLINE SEE SHEET T-202

COMMUNICATION HANDHOLE SCHEDULE						
HANDHOLE #	NORTHING	EASTING	EX. RIM ELEV.	PROP. RIM ELEV.	STRUCTURE TYPE	REFERENCE SHEET: DETAIL
THH-H2028.17-001	1932804.75	1106700.00	N/A	648.7	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
THH-H2028.17-002	1933439.72	1106841.44	N/A	649.2	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R

344 LF

THH-H2028.17-002

364 LF

2 PROPOSED 4-WAY 4" DUCTBANK WITH 3 - 1.25" INNERDUCTS PER 4" CONDUIT. SEE DETAIL 6-04-03 ON SHEET ES-510

INTERNATIONAL TAXILANE

INTERNATIONAL TAXILANE

INTERNATIONAL TAXILANE

INTERNATIONAL TAXILANE

100+00

105+00

170+00

INETERCEPT EXISTING TELELCOM DUCTBANK AT PROPOSED THH-H2028.17-001

TAXIWAY V5

TAXIWAY V5

TAXIWAY V7

TAXIWAY V7

TAXIWAY V

TAXIWAY V

NOTES:

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING WORK.
2. SEE THE FOLLOWING SHEETS FOR PROPOSED UTILTY PLANS

COMPOSITE UTIL:	CU-201 THRU CU-205
STORM SEWER:	CG-301 THRU CG-305
JET FUEL:	CU-271 THRU CU-275
ELECTRICAL:	ES-201 THRU ES-205
AFL/AFS:	EA-201/251 THRU EA-207/257

0 25 50

CHICAGO DEPARTMENT OF AVIATION

O'HARE INTERNATIONAL AIRPORT
CITY OF CHICAGO

RAHM EMANUEL
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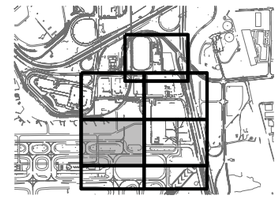
TEL: 312-777-2900



APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

PROPOSED TELECOMMUNICATIONS PLAN

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO.: T-201
REVISION: 1

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MATCHLINE SEE SHEET T-204

MATCHLINE SEE SHEET T-201

CAP DUCTBANK AT PROPOSED PAVEMENT LIMITS FOR CONTINUATION IN BUILDING PACKAGE

292 LF

326 LF

THH-H2028.17-004

2 PROPOSED 4-WAY 4" DUCTBANK WITH 3 - 1.25" INNERDUCTS PER 4" CONDUIT. SEE DETAIL 6-04-03 ON SHEET ES-510

187 LF

344 LF

THH-H2028.17-003

125+00

INTERNATIONAL TAXILANE

110+00

120+00

180+00

TAXIWAY V8

TAXIWAY V

TAXIWAY V

RECONSTRUCT EXISTING FAA HH-10
SEE SCHEDULE THIS SHEET

RECONSTRUCT EXISTING FAA HH-09
SEE SCHEDULE THIS SHEET

MANNHEIM RD

R.O.W.

SIGN

N

0 25 50

NOTES:

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING WORK.
2. SEE THE FOLLOWING SHEETS FOR PROPOSED UTILTY PLANS

COMPOSITE UTIL:	CU-201 THRU CU-205
STORM SEWER:	CG-301 THRU CG-305
JET FUEL:	CU-271 THRU CU-275
ELECTRICAL:	ES-201 THRU ES-205
AFL/AFS:	EA-201/251 THRU EA-207/257

COMMUNICATION HANDHOLE SCHEDULE

HANDHOLE #	NORTHING	EASTING	EX. RIM ELEV.	PROP. RIM ELEV.	STRUCTURE TYPE	REFERENCE SHEET: DETAIL
THH-H2028.17-003	1933141.72	1107184.67	N/A	648.5	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
THH-H2028.17-004	1933283.26	1107305.79	N/A	648.5	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
FAA HH-09	1933016.42	1107989.09	644.0	643.6	REC. EXIST. FAA HH	EXISTING
FAA HH-10	1933338.12	1107918.50	646.1	646.1	REC. EXIST. FAA HH	EXISTING

CHICAGO DEPARTMENT OF AVIATION

O'HARE INTERNATIONAL AIRPORT
CITY OF CHICAGO

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MAYOR

JAMIE L. RHEE
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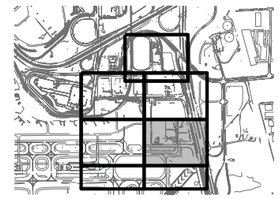

APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

PROPOSED TELECOMMUNICATIONS PLAN

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO.: T-202
REVISION: 1

10/4/2018 6:13:05 PM
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SEE SHEET T-205

NOTES:

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING WORK.
2. SEE THE FOLLOWING SHEETS FOR PROPOSED UTILITY PLANS

COMPOSITE UTIL:	CU-201 THRU CU-205
STORM SEWER:	CG-301 THRU CG-305
JET FUEL:	CU-271 THRU CU-275
ELECTRICAL:	ES-201 THRU ES-205
AFL/AFS:	EA-201/251 THRU EA-207/257

3. CONTRACTOR TO PULL NEW 24-STRAND SM FIBER CABLE FROM EXISTING BUILDING 521 TO NEW GUARD POST #11 AND TRITURATOR

COMMUNICATION HANDHOLE SCHEDULE

HANDHOLE #	NORTHING	EASTING	EX. RIM ELEV.	PROP. RIM ELEV.	STRUCTURE TYPE	REFERENCE SHEET: DETAIL
THH-H2028.17-011	1934367.62	1106792.99	N/A	642.2	PROP. ROAD HANDHOLE	ES-511: 6-06-07R, ES-512: 6-06-
THH-H2028.17-012	1934354.33	1106455.44	N/A	643.2	PROP. ROAD HANDHOLE	ES-511: 6-06-07R, ES-512: 6-06-

CONDUIT SCHEDULE FOR DUCTBANK SECTIONS

DUCT BANK	NO. OF CONDUITS	CONDUCTORS	CONDUIT SIZE	REFERENCE SHEET
①	2	24-STRAND SM FIBER CABLE	4"	ES-510: 6-04-03
		EMPTY	4"	

PROPOSED 340 LF IN 2-WAY 4" DUCTBANK WITH 3-1.25" INNERDUCTS PER 4" CONDUIT. SEE DETAIL 6-04-03 ON SHEET ES-510.

PROPOSED 65 LF IN 2-WAY 4" DUCTBANK WITH 3-1.25" INNERDUCTS PER 4" CONDUIT. SEE DETAIL 6-04-03 ON SHEET ES-510.

PULL NEW 24-STRAND SM FIBER CABLE INTO BUILDING. PROVIDE 300 LF OF CABLE FOR CONNECTION IN BUILDING.

PROPOSED 335 LF IN 2-WAY 4" DUCTBANK, WITH 3-1.25" INNERDUCTS PER 4" CONDUIT. SEE DETAIL 6-04-03 ON SHEET ES-510

PROPOSED 4-WAY 4" DUCTBANK WITH 3 - 1.25" INNERDUCTS PER 4" CONDUIT. SEE DETAIL 6-04-03 ON SHEET ES-510

CAP DUCTBANK AT PROPOSED PAVEMENT LIMITS FOR CONTINUATION IN BUILDING PACKAGE

284 LF

THH-H2028.17-012

THH-H2028.17-011

BALMORAL AVE

2205+00

305+00

300+00

TERMINAL 5 ARRIVALS/DEPAR

TERMINAL ACCESS DR

ATS LIGHT RAIL

SIGN

MATCHLINE SEE SHEET T-204

MATCHLINE SEE SHEET T-201

CHICAGO DEPARTMENT OF AVIATION

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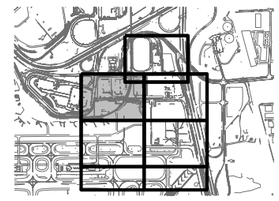

APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

PROPOSED TELECOMMUNICATIONS PLAN

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO.: T-203
REVISION: 1

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MATCHLINE SEE SHEET T-205

MATCHLINE SEE SHEET T-203

MATCHLINE SEE SHEET T-202

BALMORAL AVE

THH-H2028.17-008

THH-H2028.17-009

PROPOSED 135 LF TELECOM TO GUARD POST #11 AND TRITURATOR BUILDING

PROPOSED 4-WAY 4" DUCTBANK, WITH 3 - 1.25" INNERDUCTS PER 4" CONDUIT. SEE DETAIL 6-04-03 ON SHEET ES-510

PROPOSED 308 LF TELECOM IN 2-WAY 4" DUCTBANK, WITH 3 -1.25" INNERDUCTS PER 4" CONDUIT. SEE DETAIL 6-04-02 ON SHEET ES-510

232 LF

THH-H2028.17-007

292 LF

THH-H2028.17-006

284 LF

PROPOSED 4-WAY 4" DUCTBANK WITH 3 - 1.25" INNERDUCTS PER 4" CONDUIT. SEE DETAIL 6-04-03 ON SHEET ES-510

292 LF

THH-H2028.17-005

292 LF

INTERNATIONAL TAXILANE

130-00

RECONSTRUCT EXISTING FAA HH-12 SEE SCHEDULE THIS SHEET

RECONSTRUCT EXISTING FAA HH-11 SEE SCHEDULE THIS SHEET

R.O.W.

MANNHEIM RD

FAA

0 25 50

COMMUNICATION HANDHOLE SCHEDULE

HANDHOLE #	NORTHING	EASTING	EX. RIM ELEV.	PROP. RIM ELEV.	STRUCTURE TYPE	REFERENCE SHEET: DETAIL
FAA HH-11	1933771.63	1107812.60	643.8	647.2	REC. EXIST. FAA HH	EXISTING
FAA HH-12	1934174.31	1107747.13	641.1	647.7	REC. EXIST. FAA HH	EXISTING
THH-H2028.17-005	1933568.54	1107247.58	N/A	648.7	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
THH-H2028.17-006	1933853.82	1107189.34	N/A	648.6	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
THH-H2028.17-007	1934139.10	1107131.14	N/A	649.0	PROP. AIRCRAFT-RATED HH	ES-512: 6-06-09R THRU 6-06-12R
THH-H2028.17-008	1934371.61	1107129.34	N/A	644.3	PROP. ROAD HANDHOLE	ES-511: 6-06-07R, ES-512: 6-06-08R
THH-H2028.17-009	1934375.26	1107437.15	N/A	648.5	PROP. ROAD HANDHOLE	ES-511: 6-06-07R, ES-512: 6-06-08R

CONDUIT SCHEDULE FOR DUCTBANK SECTIONS

DUCT BANK	NO. OF CONDUITS	CONDUCTORS	CONDUIT SIZE	REFERENCE SHEET
1	2	24-STRAND SM FIBER CABLE	4"	ES-510: 6-04-03
		EMPTY	4"	

NOTES:

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING WORK.
2. SEE THE FOLLOWING SHEETS FOR PROPOSED UTILTY PLANS

   COMPOSITE UTIL: CU-201 THRU CU-205
   STORM SEWER: CG-301 THRU CG-305
   JET FUEL: CU-271 THRU CU-275
   ELECTRICAL: ES-201 THRU ES-205
   AFL/AFS: EA-201/251 THRU EA-207/257
3. CONTRACTOR TO PULL NEW 24-STRAND SM FIBER CABLE FROM EXISTING BUILDING 521 TO NEW GUARD POST #11 AND TRITURATOR

CHICAGO DEPARTMENT OF AVIATION

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APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
1	8/21/18	ISSUED FOR BID
2	10/9/18	ADDENDUM 2

PROJECT NAME:

O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:

PROPOSED TELECOMMUNICATIONS PLAN

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. T-204
REVISION 1

10/4/2018 6:13:04 PM
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NOTES:

1. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING WORK.

2. SEE THE FOLLOWING SHEETS FOR PROPOSED UTILTY PLANS

COMPOSITE UTIL:	CU-201 THRU CU-205
STORM SEWER:	CG-301 THRU CG-305
JET FUEL:	CU-271 THRU CU-275
ELECTRICAL:	ES-201 THRU ES-205
AFL/AFS:	EA-201/251 THRU EA-207/257

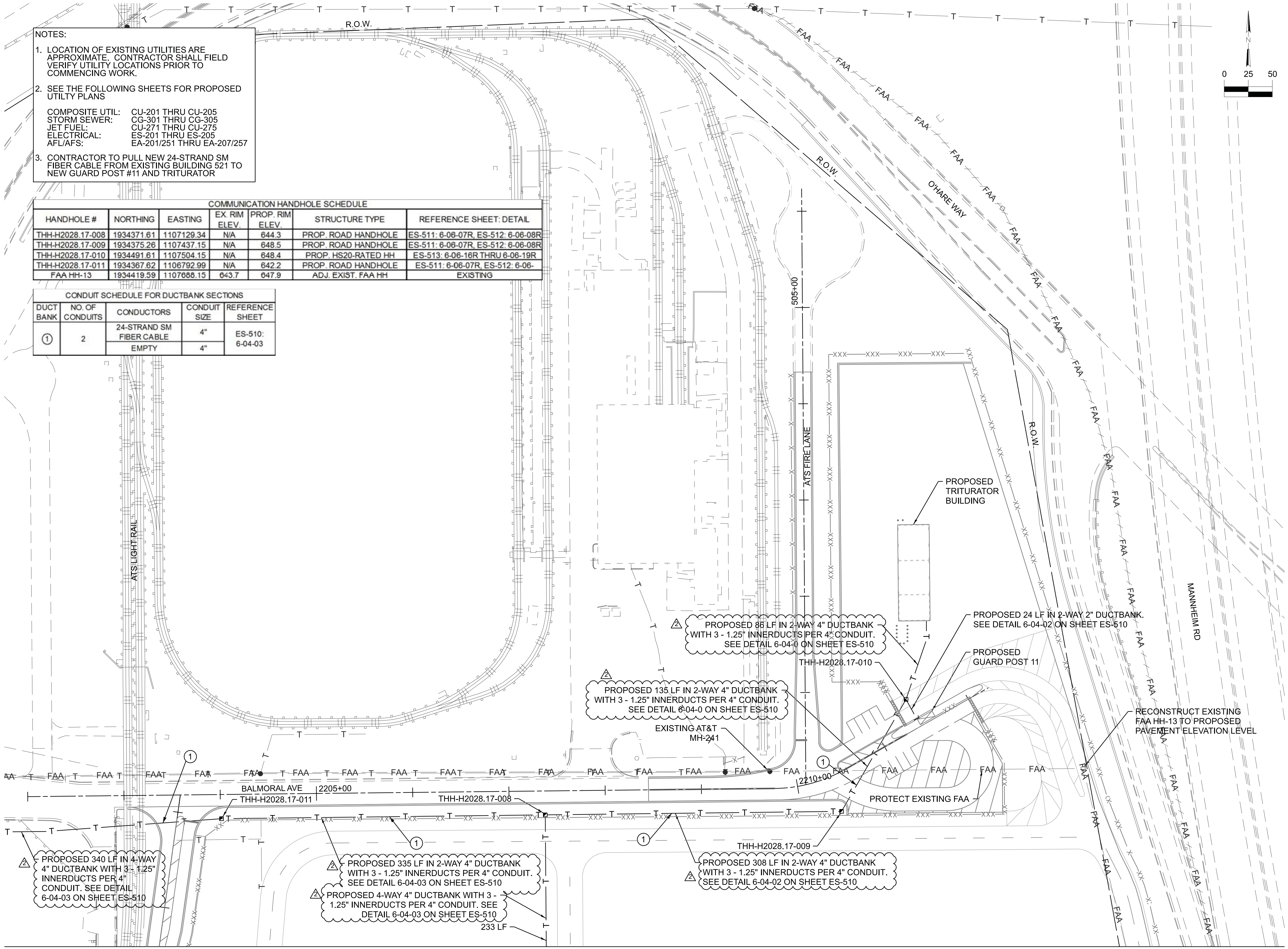
3. CONTRACTOR TO PULL NEW 24-STRAND SM FIBER CABLE FROM EXISTING BUILDING 521 TO NEW GUARD POST #11 AND TRITURATOR

COMMUNICATION HANDHOLE SCHEDULE

HANDHOLE #	NORTHING	EASTING	EX. RIM ELEV.	PROP. RIM ELEV.	STRUCTURE TYPE	REFERENCE SHEET: DETAIL
THH-H2028.17-008	1934371.61	1107129.34	N/A	644.3	PROP. ROAD HANDHOLE	ES-511: 6-06-07R, ES-512: 6-06-08R
THH-H2028.17-009	1934375.26	1107437.15	N/A	648.5	PROP. ROAD HANDHOLE	ES-511: 6-06-07R, ES-512: 6-06-08R
THH-H2028.17-010	1934491.61	1107504.15	N/A	648.4	PROP. HS20-RATED HH	ES-513: 6-06-16R THRU 6-06-19R
THH-H2028.17-011	1934367.62	1106792.99	N/A	642.2	PROP. ROAD HANDHOLE	ES-511: 6-06-07R, ES-512: 6-06-
FAA HH-13	1934419.59	1107668.15	643.7	647.9	ADJ. EXIST. FAA HH	EXISTING

CONDUIT SCHEDULE FOR DUCTBANK SECTIONS

DUCT BANK	NO. OF CONDUITS	CONDUCTORS	CONDUIT SIZE	REFERENCE SHEET
1	2	24-STRAND SM FIBER CABLE	4"	ES-510: 6-04-03
		EMPTY	4"	



MATCHLINE SEE SHEET T-203 AND T-204

CHICAGO DEPARTMENT OF AVIATION

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APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:
O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION SITE/CIVIL PACKAGE

SHEET TITLE:
PROPOSED TELECOMMUNICATIONS PLAN

DESIGNED:	DRAWN:	CHECKED:
SF	SF	BLM

PROJECT NO.: H2028.17-00
DATE: 8/21/2018

SHEET NO. T-205
REVISION 1

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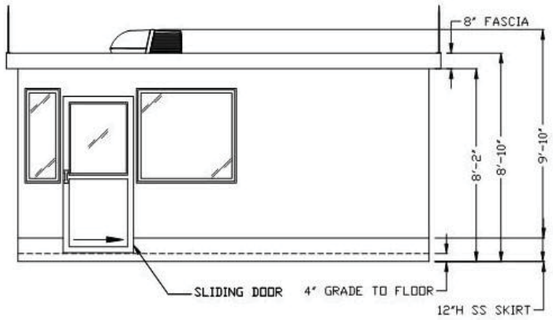
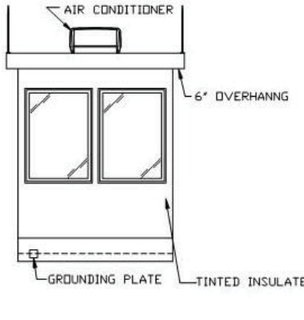
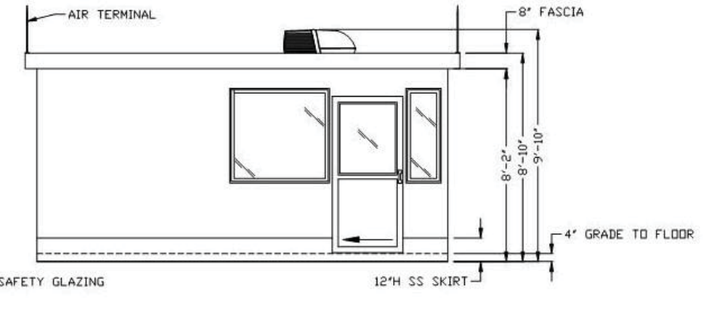


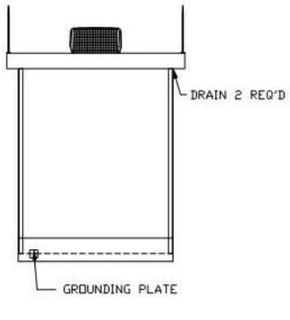
E1 ELEVATION



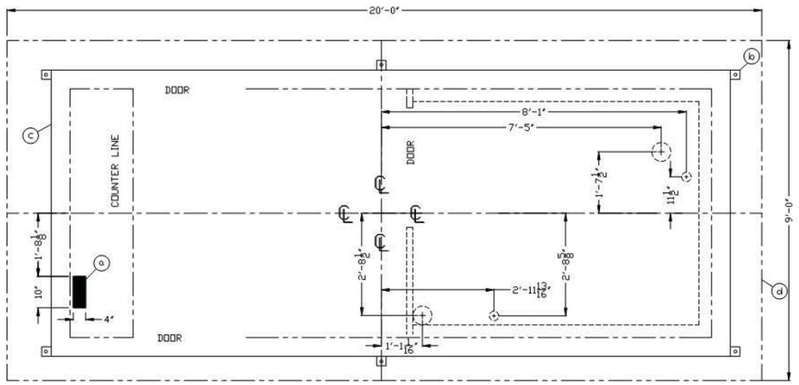
E2 ELEVATION

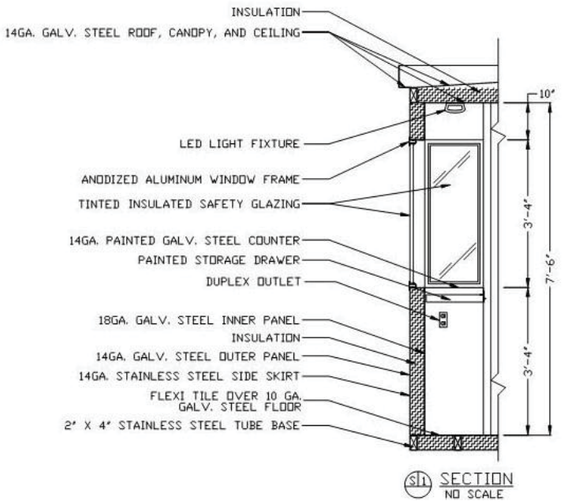


E3 ELEVATION



E4 ELEVATION





S1 SECTION
NO SCALE

BUILDING BASE KEYNOTE LEGEND

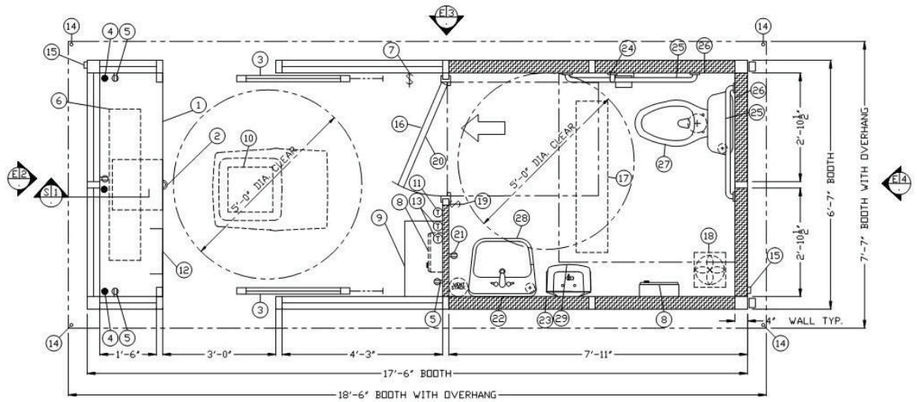
A) SLOT IN FLOOR FOR ELECTRICAL SERVICE ENTRANCE TO C.B. PANEL
B) 6 NO. STEEL ANCHOR CLIPS. CONTRACTOR TO PROVIDE ANCHOR BOLTS AS SPECIFIED BY THE BUILDING MANUFACTURER. BUILDING TO BE ANCHORED AFTER FINAL LOCATION.
C) LINE INDICATES OUTER EDGE OF BUILDING.
D) LINE OF SUGGESTED MINIMUM FOUNDATION SLAB. COORDINATE WITH CIVIL DRAWINGS

BUILDING PLAN KEYNOTE LEGEND

1. METAL COUNTER @ ADA COMPLIANT HT.
2. STORAGE DRAWER TO BE OFFSET TO ONE SIDE
3. SLIDING STEEL DOOR WITH WEATHERSTRIPPING PROVIDED.
4. HOLE IN COUNTER FOR DROP CORDS. PROVIDE 3 MIN.
5. PROVIDE 4# DUPLEX OUTLETS BELOW COUNTER
6. INTERIOR LIGHT BY BUILDING MANUFACTURER.
7. WALL SWITCH FOR INTERIOR LIGHT.
8. WALL MOUNTED HEATER BY BUILDING MANUFACTURER
9. BOOK SHELF.
10. AIR CONDITIONER BY BUILDING MANUFACTURER
11. WALL MOUNTED A/C THERMOSTAT BY BUILDING MANUFACTURER
12. ELECTRICAL PANEL
13. WALL MOUNTED HEATER THERMOSTAT BY BUILDING MANUFACTURER
14. LIGHTNING PROTECTION
15. GROUNDING PLATE FOR LIGHTNING PROTECTION SYSTEM
16. 36" MTL. DOOR WITH WEATHERSTRIPPING & ADA ACCESSIBLE HARDWARE.
17. RESTROOM LIGHT BY MANUFACTURER.
18. RESTROOM EXHAUST FAN.
19. RESTROOM LIGHT SWITCH MOUNTED AT ADA ACCESSIBLE HEIGHT
20. COAT HOOKS (2#) MOUNTED ON DOOR @ ADA ACCESSIBLE HEIGHT.
21. GFCI ELECTRICAL OUTLET.
22. MIRROR MOUNTED @ ADA ACCESSIBLE HEIGHT.
23. PAPER TOWEL DISPENSER MOUNTED AT ADA ACCESSIBLE HEIGHT.
24. TOILET PAPER HOLDER MOUNTED AT ADA ACCESSIBLE HEIGHT.
25. STAINLESS STEEL GRAB BARS MOUNTED PER ADA REQUIREMENTS.
26. WHITE FIBERGLASS REINF. PANEL BACK SPLASH.
27. ADA COMPLIANT W/C.
28. ADA COMPLIANT LAVATORY SINK & FAUCET
29. POINT-OF-USE WATER HEATER.

NOTES

A. G. C. TO COORDINATE & CONFIRM PLACEMENT OF IN-SLAB UTILITIES WITH GUARD BOOTH MANUFACTURER.
B. PAINT FINISHES TO BE FACTORY APPLIED. USE COLOR: MED. ANSI GRAY 1072
C. GLAZING TO BE GRAY TINTED INSULATED SAFETY GLASS SET IN ANODIZED ALUMINUM WINDOW FRAMES.
D. ELECTRICAL WIRING PROVIDED BY MANUFACTURER TO MEET ALL APPLICABLE CODE REQUIREMENTS.
E. ADEQUATE LIFTING RINGS FOR SITE INSTALATION ARE TO BE PROVIDED WITH GUARD BOOTH.



E1 PLAN VIEW

THE GUARD POST 11 PRE-FAB BUILDING PLANS AND ELEVATIONS (SHEET A-102) ARE PROVIDED FOR GENERAL ARRANGEMENT OF THE REQUIRED PREFABRICATED GUARD POST. IF ANY DISCREPANCY EXISTS BETWEEN THE GUARD POST 11 PRE-FAB BUILDING PLANS AND ELEVATIONS (SHEET A-102) AND SPECIFICATION SECTION 13128 - PREFABRICATED MODULAR CONTROL BOOTH, THE SPECIFICATION SECTION 13128 HAS HIERARCHY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THE GUARD BOOTH MEETS THE REQUIREMENTS OF SPECIFICATION SECTION 13128 AND THE NATIONAL AND LOCAL BUILDING CODES.

CHICAGO DEPARTMENT OF AVIATION
O'HARE INTERNATIONAL AIRPORT
CITY OF CHICAGO
O'HARE MODERNIZATION PROGRAM

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APPROVED AS WORKING PLAN
BY:

REV	DATE	DESCRIPTION
2	10/9/18	ADDENDUM 2
1	8/21/18	ISSUED FOR BID

PROJECT NAME:
O'HARE INTERNATIONAL AIRPORT

TERMINAL 5 - M EXTENSION
SITE/CIVIL PACKAGE

SHEET TITLE:
GUARD POST 11 PRE-FAB BUILDING PLANS & ELEVATIONS

DESIGNED:	DRAWN:	CHECKED:
APK	APK	DLB

PROJECT NO.: H2028.17-00
DATE: 8/25/2018

SHEET NO. A-102
REVISION 1