CONSTRUCTION PLANS

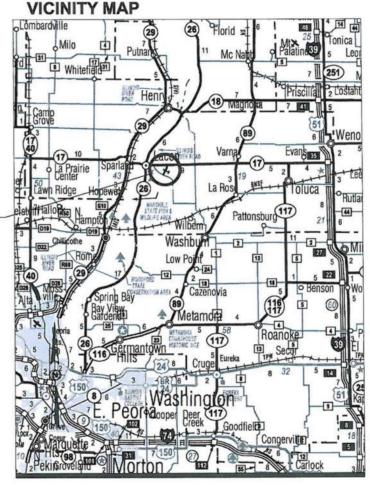
REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

MARSHALL COUNTY AIRPORT BOARD MARSHALL COUNTY AIRPORT (C75) LACON, MARSHALL COUNTY, ILLINOIS

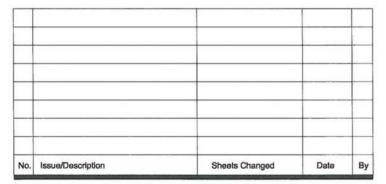
IDA PROJECT NO. C75-4625

NOVEMBER 16, 2018

MARSHALL COUNTY -



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NOTICE TO CONTRACTORS AND BIDDERS

THESE CONSTRUCTION PLANS RELY UPON THE SPECIAL PROVISIONS AND THE SPECIFICATIONS TO PROVIDE FOR A COMPLETE DESCRIPTION OF THE WORK AND CONSTRUCTION REQUIREMENTS. THE PLANS SHALL ONLY BE USED IN COMBINATION WITH ALL CONTRACT DOCUMENTS.

PLANS PREPARED BY:



HANSON PROFESSIONAL SERVICES INC. 1525 South Sixth Street Springfield, Illinois 62703-2883 Telephone: 217.788.2450 Fax: 217.788.2503







INDEX OF SHEETS

SHEET INDEX AND SUMMARY OF QUANTITIES

CONSTRUCTION SAFETY NOTES & DETAILS

SITE AND SAFETY PLAN NOTES

SCOPE OF WORK PLAN
PHASING PLAN - PHASE 1

PHASING PLAN - PHASE 2
PHASING PLAN - PHASE 3

PHASING PLAN - PHASE 4

SHEET NO. TITLE

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COVER SHEET

BASE BID

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
AR110551	EXTEND DUCT	LINEAR FOOT	14.00
AR150510	ENGINEER'S FIELD OFFICE	LUMP SUM	1.00
AR150520	MOBILIZATION	LUMP SUM	1.00
AR150530	TRAFFIC MAINTENANCE	LUMP SUM	1.00
AR152410	UNCLASSIFIED EXCAVATION	CUBIC YARD	1,200.00
AR152442	OFFSITE BORROW EXCAVATION	CUBIC YARD	843.00
AR156510	SILT FENCE	LINEAR FOOT	1,104.00
AR162504	CLASS E FENCE 4'	LINEAR FOOT	141.00
AR162604	CLASS E GATE - 4'	EACH	1.00
AR162716	ELECTRIC GATE - 16'	EACH	1.00
AR162900	REMOVE CLASS E FENCE	LINEAR FOOT	60.00
AR162908	REMOVE ELECTRIC GATE	EACH	1.00
AR201661	CLEAN & SEAL BITUMINOUS CRACKS	LINEAR FOOT	703.00
AR209608	CRUSHED AGG. BASE COURSE - 8"	SQUARE YARD	4,057.00
AR401613	BIT. SURF. CSE METHOD I, SUPERPAVE	TON	781.00
AR401650	BITUMINOUS PAVEMENT MILLING	SQUARE YARD	720.00
AR401660	SAW & SEAL BIT. JOINTS	LINEAR FOOT	222.00
AR401900	REMOVE BITUMINOUS PAVEMENT	SQUARE YARD	3,116.00
AR602510	BITUMINOUS PRIME COAT	GALLON	1,164.00
AR603510	BITUMINOUS TACK COAT	GALLON	690.00
AR620520	PAVEMENT MARKING-WATERBORNE	SQUARE FOOT	658.00
AR701012	12" PVC STORM SEWER	LINEAR FOOT	128.00
AR701512	12" RCP, CLASS IV	LINEAR FOOT	81.00
AR701841	CONCRETE CRADLE/COLLAR	EACH	1.00
AR701900	REMOVE PIPE	LINEAR FOOT	149.00
AR705630	UNDERDRAIN INSPECTION HOLE	EACH	1.00
AR751411	INLET-TYPE A	EACH	1.00
AR751412	INLET-TYPE B	EACH	1.00
AR751903	REMOVE MANHOLE	EACH	1.00
AR752412	PRECAST REINFORCED CONC. FES 12"	EACH	3.00
AR752512	GRATING FOR CONC. FES 12"	EACH	3.00
AR752612	CONCRETE HEADWALL 12"	EACH	1.00
AR800907	INFILTRATION TRENCH	LINEAR FOOT	269.00
AR901510	SEEDING	ACRE	0.83
AR905510	TOPSOILING (FROM ON SITE)	CUBIC YARD	468.00
AR908510	MULCHING	ACRE	0.83
AR910230	HANDICAP SIGN	EACH	2.00

ADDITIVE ALTERNATE NO. 1

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
AS152410	UNCLASSIFIED EXCAVATION	CUBIC YARD	12.00
AS162504	CLASS E FENCE 4'	LINEAR FOOT	295.00
AS162900	REMOVE CLASS E FENCE	LINEAR FOOT	271.00
AS209608	CRUSHED AGGREGATE BASE COURSE - 8"	SQUARE YARD	12.00
AS401613	BIT. SURF. CSE METHOD I, SUPERPAVE	TON	3.00
AS401900	REMOVE BITUMINOUS PAVEMENT	SQUARE YARD	63.00
AS602510	BITUMINOUS PRIME COAT	GALLON	4.00
AS603510	BITUMINOUS TACK COAT	GALLON	2.00
AS901510	SEEDING	ACRE	0.01
AS905510	TOPSOILING (FROM ON SITE)	CUBIC YARD	6.00
AS908510	MULCHING	ACRE	0.01

ADDITIVE ALTERNATE NO. 2

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
AT152410	UNCLASSIFIED EXCAVATION	CUBIC YARD	363.00
AT209608	CRUSHED AGG. BASE COURSE - 8"	SQUARE YARD	1,294.00
AT401613	BIT. SURF. CSE METHOD I, SUPERPAVE	TON	233.00
AT401660	SAW & SEAL BIT. JOINTS	LINEAR FOOT	51.00
AT401900	REMOVE BITUMINOUS PAVEMENT	SQUARE YARD	1,410.00
AT602510	BITUMINOUS PRIME COAT	GALLON	379.00
AT603510	BITUMINOUS TACK COAT	GALLON	190.00
AT901510	SEEDING	ACRE	0.03
AT905510	TOPSOILING (FROM ON SITE)	CUBIC YARD	15.00
AT908510	MULCHING	ACRE	0.03



Offices Nationwide www.hanson-inc.com

Hanson Professional Services Inc. 1525 S. 6th Street Springfield, IL 62703 phone: 217-788-2450 fax: 217-788-2503

Illinois Licensed Professional Service Corporation #184-001084



Marshall County Airport 1315 Illinois 17 Lacon, Illinois 61540 phone: 309-246-2870

REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029

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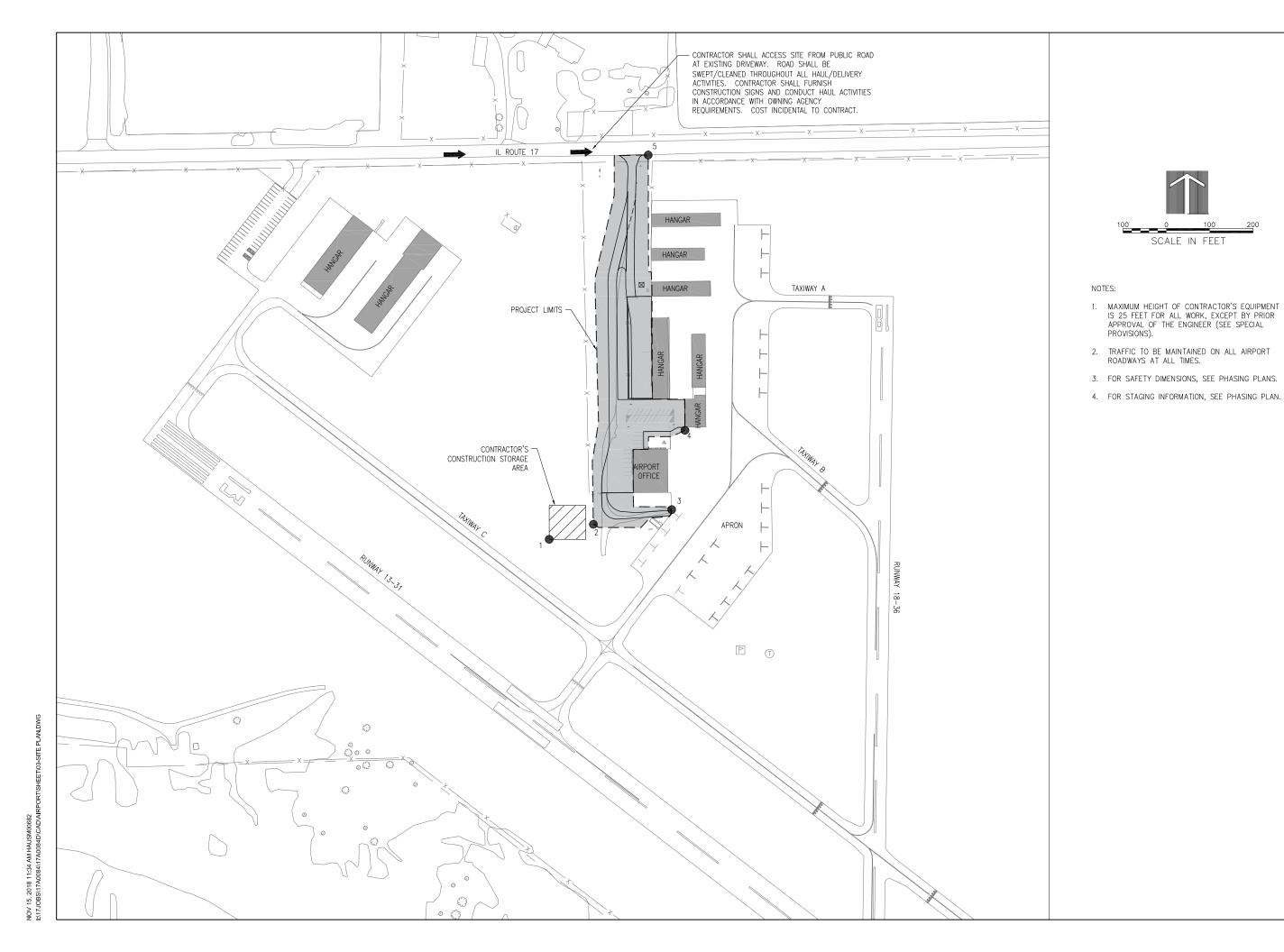
DESIGN BY: LDH 10/9/18

DRAWN BY: LDH 10/9/18

REVIEWED BY: KMS 10/18/18

SHEET TITLE

SHEET INDEX AND SUMMARY OF QUANTITIES





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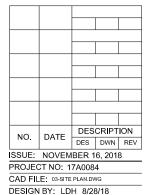


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SHEET TITLE

DRAWN BY: LDH 8/28/18
REVIEWED BY: KMS 10/18/18

SITE PLAN

THIS PROJECT IS TO REALIGN THE AIRPORT ENTRANCE ROAD AND REHABILITATE THE PARKING LOT AT MARSHALL COUNTY AIRPORT INCLUDING, AMONG OTHER INCIDENTAL WORK, THE FOLLOWING ITEMS:

- PLACEMENT OF TEMPORARY SOIL EROSION CONTROL MEASURES
- MILLING OR REMOVAL OF EXISTING PAVEMENTS.
- . CRACK REPAIR OF EXISTING PAVEMENTS TO REMAIN.
- FARTH EXCAVATION AND EMBANKMENT FOR NEW PAVEMENT SECTION
- REMOVAL OF EXISTING FENCE AND ELECTRIC GATE.
- . PLACEMENT OF NEW FENCE AND ELECTRIC GATE IN NEW LOCATION.
- PLACEMENT OF AGGREGATE BASE COURSE AND BITUMINOUS PAVEMENT.
- PLACEMENT OF PAVEMENT MARKINGS.
- . TOPSOILING, SEEDING AND MULCHING IN ALL DISTURBED AREAS, INCLUDING ALONG NEW PAVEMENT

THIS PROJECT ALSO INCLUDES TWO (2) ADDITIVE ALTERNATES. ADDITIVE ALTERNATE NO. 1 IS THE REMOVAL AND RELOCATION OF THE REMAINING FENCE IN THE FRONTAL AREA AND INCLUDES AMONG OTHER INCIDENTAL WORK. THE FOLLOWING ITEMS:

- REMOVAL OF EXISTING FENCE.
- PLACEMENT OF NEW FENCE IN A NEW LOCATION

ADDITIVE ALTERNATE NO. 2 IS THE REMOVAL AND REPLACEMENT OF THE HANGAR PAVEMENT NEAR THE ENTRANCE ROAD AND INCLUDES AMONG OTHER INCIDENTAL WORK, THE FOLLOWING ITEMS:

- REMOVAL OF EXISTING PAVEMENTS.
- EARTH EXCAVATION FOR NEW PAVEMENT SECTION.
- PLACEMENT OF AGGREGATE BASE COURSE AND BITUMINOUS PAVEMENT.

PROTECTION OF EXISTING AIRPORT FACILITIES

THE CONTRACTOR IS TO BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND LIGHTING EQUIPMENT; DRIVEWAY AND ROAD PAVEMENT AND SHOULDERS; RUNWAY, TAXIWAY AND APRON PAVEMENTS AND SHOULDERS; RUNWAY, TAXIWAY AND AIRPORT LIGHTING EQUIPMENT; AND SEEDED AND TURFED AREAS THAT ARE UTILIZED IN OR AFFECTED BY THE CONTRACTOR'S ACTIVITIES. ITEMS DAMAGED BY THE CONTRACTOR ARE TO BE REPAIRED AT CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE AIRPORT MANAGER AND THE OWNER'S REPRESENTATIVE.

IN ADDITION, WHEN CONDITIONS DICTATE OR AS DETERMINED BY THE AIRPORT MANAGER OR THE OWNER'S REPRESENTATIVE, THE CONTRACTOR SHALL BE REQUIRED TO USE A PICK-UP TYPE SWEEPER IN ALL ACTIVE CONSTRUCTION AIRFIELD PAVEMENT AREAS. THE CONTRACTOR WILL BE REQUIRED TO HAVE A SWEEPER AVAILABLE FOR USE AT ALL TIMES. THE COST OF SWEEPING SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

CONTRACTOR'S ACCESS AND TEMPORARY FACILITIES

CONTRACTOR'S ACCESS TO THE PROJECT WHEN ON AIRPORT PROPERTY IS SHOWN ON SHEET 3. CONTRACTOR'S ACCESS TO THE AIRPORT ITSELF IS TO BE PROVIDED BY PUBLIC RIGHTS-OF-WAY. THE CONTRACTOR IS TO SECURE ALL NECESSARY PERMITS FOR THE USE OF ANY PUBLIC RIGHTS-OF-WAY AND IS TO MAINTAIN TRAFFIC ON THESE PUBLIC ROADS AT ALL TIMES, WITH THE COSTS OF PERMITTING, CLEANING AND REPAIRING OF PAVEMENT DAMAGED BY CONTRACTOR'S ACTIVITIES INCIDENTAL TO THE CONTRACT. USE OF AND REPAIRS TO ANY PUBLIC FACILITIES ARE TO BE COMPLETED TO THE SATISFACTION OF THE FACILITY'S OWNER

THE CONTRACTOR IS TO PROVIDE TEMPORARY CONSTRUCTION ROADS WITHIN THE CONSTRUCTION LIMIT LINES AS MAY BE REQUIRED BY HIS ACTIVITIES. HEAVY VEHICLES SHALL NOT CROSS EXISTING PAVEMENT SURFACES EXCEPT AS APPROVED BY THE AIRPORT MANAGER AND THE OWNER'S REPRESENTATIVE. ANY DAMAGE TO PAVEMENTS THAT MAY OCCUR BY THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE AIRPORT MANAGER AND THE OWNER'S REPRESENTATIVE. FOR HAUL ROUTES MADE BY THE CONTRACTOR THROUGH GRASSED AREAS, CONTRACTOR SHALL GRADE, LEVEL, TOPSOIL, SEED AND MULCH AT THE END OF THE PROJECT, COST INCIDENTAL TO THE CONTRACT

THE CONTRACTOR IS TO PROVIDE AN EQUIPMENT STORAGE AND PARKING AREA AT THE LOCATIONS SHOWN ON SHEET 3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE ACCESS ROADS AND THE STORAGE AREA DURING CONSTRUCTION AND TO RESTORE THE AREAS AT PROJECT COMPLETION TO CONDITIONS SUITABLE TO THE AIRPORT MANAGER AND THE OWNER'S REPRESENTATIVE. AT THE AIRPORT MANAGER'S DISCRETION, THE TEMPORARY FACILITIES MAY REMAIN, BUT THEY MUST BE LEFT IN CONDITIONS SUITABLE TO THE AIRPORT MANAGER. THE COST OF PROVIDING, MAINTAINING AND RESTORING THE TEMPORARY FACILITIES IS INCIDENTAL TO THE CONTRACT.

RESPONSIBILITY FOR EXISTING UTILITIES

THE LOCATION, SIZE AND/OR TYPE OF MATERIAL OF EXISTING UNDERGROUND OR OVERHEAD UTILITIES AS MAY BE INDICATED ON THESE CONSTRUCTION PLANS IS NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE PROJECT ENGINEER HAVE INDEPENDENTLY VERIFIED THIS INFORMATION AND NEITHER ASSUMES ANY RESPONSIBILITY WHATSOEVER IN RESPECT TO THE ACCURACY, SUFFICIENCY OR COMPLETENESS OF THE INFORMATION AND GIVE NO EXPRESSED OR IMPLIED GUARANTEE THAT ANY CONDITIONS INDICATED ARE REPRESENTATIVE OF ACTUAL CONDITIONS TO BE ENCOUNTERED.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES, INCLUDING SERVICE CONNECTIONS TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AND AGENCIES OF HIS CONSTRUCTION PLANS AND SHALL OBTAIN FROM EACH PARTY DETAILED INFORMATION AND ASSISTANCE RELATIVE TO THE LOCATION OF ALL UTILITIES AND THE WORKING SCHEDULE OF ANY REMOVALS OR ADJUSTMENTS REQUIRED OF THE UTILITY. THE CONTRACTOR SHALL CONTACT J.U.L.I.E. (PHONE 800-892-0123) TO ASSIST IN THE ABOVE.

THE CONTRACTOR SHALL PROTECT ANY FACILITIES TO THE SATISFACTION OF THE UTILITY OR OWNING-AGENCY WITH THE COST OF ANY REQUIRED PROTECTION TO BE INCIDENTAL TO THE CONTRACT. IN THE EVENT A UTILITY LINE OR SERVICE IS UNEXPECTEDLY ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE AND THE UTILITY COMPANY OR AGENCY OF JURISDICTION. ANY SUCH UTILITIES DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO SERVICE AT ONCE.

EXISTING BENCHMA	RKS		
DESCRIPTION	NORTHING	EASTING	ELEV.
"LACPORT" NGS MONUMENT	1,585,214.74	2,512,982.03	565.35
"LACPORT AZ" NGS MONUMENT	1,587,067.56	2,510,579.08	536.53

	RUNWAY END (COORDINATES	
DESCRIPTION	LATITUDE	LONGITUDE	ELEVATION (MSL)
RUNWAY END 13	41° 01′ 18.4776 N	89° 23' 29.6968 W	538.5 FT
RUNWAY END 31	41° 00′ 54.0500 N	89° 22' 48.6361 W	584.5 FT
RUNWAY END 18	41° 01′ 21.3180 N	89° 23' 07.6656 W	554.2 FT
RUNWAY END 36	41° 00' 59.5990 N	89° 23' 08.3412 W	547.7 FT



PROJECT IS LOCATED IN NORTHWEST 1/4 OF SECTION 31, HOPEWELL TOWNSHIP, MARSHALL COUNTY

- 1. VERTICAL COORDINATES ARE IN NGVD 29. HORIZONTAL COORDINATES ARE IN STATE PLANE NAD 83 ILLINOIS WEST
- 2. STATIONS, OFFSETS AND ELEVATIONS SHOWN ARE IN FEET.
- 3. THE AIRPORT REFERENCE CODE FOR RUNWAY 18-36 IS A-I. RUNWAY 18 AND RUNWAY 36 BOTH HAVE A VISUAL APPROACH
- 4. THE AIRPORT REFERENCE CODE FOR RUNWAY 13-31 IS B-I. RUNWAY 31 HAS A NON-PRECISION APPROACH WITH VISIBILITY MINIMUM OF 1 MILE WHILE RUNWAY 13 HAS A VISUAL APPROACH.

REALIGN AIRPORT **ENTRANCE ROAD;** RECONSTRUCT AIRCRAFT HANGAR **PAVEMENT**

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Illinois Licensed

#184-001084

1525 S. 6th Street Springfield, IL 62703

Hanson Professional Services Inc.

Professional Service Corporation

MADSHALL COUNTY AIRDOUT BOARD

IDA No: C75-4625

Contract No. MA029

NO. DATE DESCRIT....

DES DWN REV DESCRIPTION ISSUE: NOVEMBER 16, 2018

PROJECT NO: 17A0084 CAD FILE: 04-GENNOTES.DWG DESIGN BY: LDH 8/28/18 DRAWN BY: LDH 8/28/18 REVIEWED BY: KMS 10/18/18

SHEET TITLE

SITE AND SAFETY PLAN NOTES

						OBJECT INFORMATION	DN					
ITEM NO.	DESCRIPTION	MOBILITY	GROUND ELEVATION	OBJECT ELEVATION	LATITUDE	LONGITUDE	RUNWAY 13-31 STATION	RUNWAY 13-31 OFFSET	RUNWAY 13-31 EXIST EL.	RUNWAY 18-36 STATION	RUNWAY 18-36 OFFSET	RUNWAY 18-36 EXIST EL.
1	CONSTRUCTION EQUIPMENT	STATIONARY	549.0	574.0	41° 01' 15.8404" N	89° 23' 17.7902" W	144+16.71	353.8	548.0	118+56.25	762.8	555.5
2	CONSTRUCTION EQUIPMENT	MOVING	551.1	576.1	41° 01' 16.1739" N	89° 23' 16.4553" W	143+57.10	443.6	548.0	118+92.41	661.3	555.5
3	CONSTRUCTION EQUIPMENT	MOVING	554.1	579.1	41° 01' 16.4938" N	89° 23' 14.0888" W	142+34.44	581.1	549.5	119+29.04	480.7	555.5
4	CONSTRUCTION EQUIPMENT	MOVING	556.1	581.1	41° 01' 18.3009" N	89° 23' 13.6688" W	143+22.09	744.8	549.0	121+12.64	452.8	555.0
5	CONSTRUCTION EQUIPMENT	MOVING	545.4	570.4	41° 01' 24.5925" N	89° 23' 14.7026" W	147+77.74	1196.6	544.0	127+47.36	547.0	555.0

CONSTRUCTION OF THE PROJECT SHALL BE PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH THE GUIDELINES SPECIFIED IN FAA ADVISORY CIRCULAR 150/5370-2 (CURRENT ISSUE) AND THE AIRPORT RULES AND REGULATIONS. ANY CONTRACTOR ACTIVITIES REQUIRED FOR PROJECT SAFETY SHALL BE PROVIDED BY THE CONTRACTOR AND BE INCIDENTAL TO THE CONTRACT.

SEQUENCE OF CONSTRUCTION

TO MINIMIZE DISRUPTIONS OF AIRPORT OPERATIONS, CONSTRUCTION OPERATIONS MUST BE CONTROLLED THROUGHOUT THE PROJECT'S DURATION, AND WORK MUST BE COMPLETED EXPEDITIOUSLY. A CONSTRUCTION PHASING PLAN DETAILING THE SEQUENCING OF THE CONTRACTOR'S WORK THROUGHOUT THE PROJECT IS INCLUDED IN THE PLANS. THE CONTRACTOR SHALL PROVIDE HIS WRITTEN ACCEPTANCE OF THE PROJECT CONSTRUCTION PHASING PLAN AT THE PRE—CONSTRUCTION CONFERENCE. ANY AND ALL CHANGES TO THE CONSTRUCTION PHASING PLAN THAT MAY BE REQUESTED BY THE CONTRACTOR MUST BE APPROVED BY THE PROJECT ENGINEER AND THE AIRPORT OWNER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SUFFICIENT ADVANCE NOTICE OF ANY PROPOSED PHASING CHANGE TO PERMIT CONSIDERATION AND APPROVAL BY THE PROJECT ENGINEER AND THE AIRPORT OWNER. THE CONTRACTOR SHALL NOT BE ENTITLED TO ANY EXTRA COMPENSATION, NOR EXTENSION TO THE CONTRACTOR THE REQUISED APPROVALS. THE CONTRACTOR SHALL EXPEDITE WORK AT THOSE STAGES WHERE ACTIVE TAXIWAYS, HANGAR ACCESS, APRONS, ROADWAYS OR PARKING LOTS MUST BE CLOSED, TO MINIMIZE THE LENGTH OF TIME THAT AIRPORT OPERATIONS ARE RESTRICTED.

AT THE PRE-CONSTRUCTION CONFERENCE, THE CONTRACTOR SHALL PROVIDE A CONTRACTOR COORDINATION PLAN THAT COORDINATES HIS WORK WITH THE WORK OF HIS SUBCONTRACTORS AND THE WORK OF OTHER CONTRACTORS OF OTHER ON-GOING AIRPORT PROJECTS.

RUNWAY CLOSURE

NO RUNWAY CLOSURES WILL BE PERMITTED AS PART OF THIS PROJECT.

TEMPORARY BARRICADES

THE CONTRACTOR SHALL FURNISH BARRICADES FOR ANY AIRFIELD OR ROADWAY PAVEMENT TO BE CLOSED BY HIS WORK. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO FURNISH, PLACE AND MAINTAIN BARRICADES AS SHOWN IN DETAIL B, THIS SHEET, AND AS DIRECTED BY THE RESIDENT ENGINEER AND AIRPORT DIRECTOR. THE COST OF THESE ITEMS, AND THEIR MAINTENANCE, IS TO BE PAID FOR UNDER AR150530 TRAFFIC MAINTENANCE. ANY WORK THAT REQUIRES PORTIONS OF AN ACTIVE RUNWAY, TAXIWAY OR APRON TO BE CLOSED MUST BE COMPLETED EXPEDITIOUSLY TO MINIMIZE DISRUPTION TO AIRCRAFT OPERATIONS.

VEHICULAR TRAFFIC CONTROL

THE CONTRACTOR SHALL ERECT AND MAINTAIN, AT NO COST TO THE CONTRACT, DIRECTIONAL AND INFORMATIONAL SIGNS FOR THE CONTRACTOR'S ACCESS ROUTES AT THE EXISTING CONSTRUCTION ENTRANCES AND FOR THE CONTRACTOR'S ROUTE WITHIN THE AIRPORT OPERATIONS AREA, AS NOTED ON THE PLANS OR AS DIRECTED BY THE RESIDENT ENGINEER. WHERE CONTRACTOR EQUIPMENT IS OPERATING WITHIN ACTIVE AIRCRAFT OPERATIONS AREAS, RADIO—EQUIPMED FLAGGERS SHALL BE FURNISHED BY THE CONTRACTOR. CONTINUOUS PAVEMENT SWEEPING SHALL BE FURNISHED TO REMOVE DEBRIS FROM ACTIVE AIRCRAFT MOVEMENT PATHS. THE COST OF TRAFFIC CONTROL/FLAGGERS AND PAVEMENT SWEEPING SHALL BE PAID UNDER ITEM ARTSOGSO TRAFFIC MAINTENANCE.

AIRFIELD OPERATIONAL SAFETY DURING CONSTRUCTION

THE CONTRACTOR SHALL NOT HAVE ACCESS TO ANY PART OF THE ACTIVE AIRFIELD (RUNWAYS, TAXIWAYS OR APRONS) FOR ANY EQUIPMENT OR PERSONNEL WITHOUT THE APPROVAL OF THE RESIDENT ENGINEER AND THE AIRPORT OWNER. ACTIVITIES WITHIN THE AIRPORT OPERATIONS AREA (AOA) ARE SUBJECT TO FEDERAL ACCESS CONTROL. BECAUSE OF THE HIGH REQUIREMENTS FOR AIRPORT SECURITY AND SAFETY, THE FOLLOWING REQUIREMENTS MUST BE ADHERED TO:

- ALL EMPLOYEES OF THE CONTRACTOR SHALL PARK THEIR PERSONAL VEHICLES IN THE DESIGNATED EQUIPMENT PARKING AND STORAGE AREA. EACH PERSON OR VEHICLE
 ENTERING THE CONTRACTOR AREA SHALL DO SO IN ACCORDANCE WITH THE POLICIES AND PROCEDURES OF THE AIRPORT OWNER. THE CONTRACTOR WILL TRANSPORT THE
 WORKERS FROM THE PARKING AREAS TO THE WORK AREA. ONLY CONTRACTOR VEHICLES WILL BE ALLOWED OUTSIDE OF THE PROPOSED EQUIPMENT STORAGE AND PARKING
 AREAS.
- SHOULD ANY CONTRACTOR PERSONNEL BE IDENTIFIED AS NONCOMPLIANT WITH ANY VEHICLE DRIVING SAFETY REQUIREMENTS IN THIS PROJECT SAFETY PLAN OR IN THE AIRPORT VEHICLE OPERATIONS REGULATIONS, SUCH DRIVERS SHALL BE PENALIZED BY RESCISSION OF THEIR ON-AIRPORT DRIVING PRIVILEGES, AND THEIR ACCESS TO THE CONSTRUCTION LIMIT AFRA WHEN OPERATING VEHICLES SHALL BE REVOKED.
- THE CONTRACTOR WILL BE REQUIRED TO BE IN CONTACT WITH AIRPORT OPERATIONS. THIS WILL KEEP THE CONTRACTOR IN CONTACT WITH AIRPORT PERSONNEL AND ENABLE THE AIRPORT PERSONNEL TO IMMEDIATELY CONTACT THE CONTRACTOR IN CASE OF AN AERONAUTICAL EMERGENCY THAT WOULD REQUIRE ACTION BY THE CONTRACTOR AND/OR HIS PERSONNEL

THE CONTRACTOR SHALL REMAIN WITHIN THE CONSTRUCTION LIMITS LINE SHOWN IN THE PLANS. WHEN OUTSIDE THESE LIMITS, ALL CONTRACTOR ACTIVITIES SHALL REMAIN MORE THAN 250 FEET FROM THE CENTERLINE AND 300 FEET FROM THE END OF ACTIVE RUNWAY 13-31 AND 125 FEET FROM THE CENTERLINE AND 240 FEET FROM THE END OF RUNWAY 18-36. FOR WORK NEAR TAXIWAYS, AND APRONS, THE CONTRACTOR'S PERSONNEL AND EQUIPMENT MUST REMAIN AT LEAST 44.5 FEET FROM CENTERLINE OF ACTIVE CATEGORY I TAXIWAYS, AND TEN (10) FEET FROM ACTIVE PARONS. WHEN CONSTRUCTION OPERATIONS MUST BE CONDUCTED WITHIN THESE SEPARATIONS, THE PAVEMENT MUST BE CLOSED TO AIRCRAFT ACTIVITY BY THE CONTRACTOR BY PROVIDING TEMPORARY BARRICADES AS SHOWN IN THE PLANS, AND IN THE CASE OF RUNWAY PAVEMENTS, CLOSED RUNWAY MARKERS. WHEN HAUL VEHICLES ARE PERMITTED TO CROSS ACTIVE AIRFIELD PAVEMENTS, THE CONTRACTOR WILL PROVIDE POSITIVE CONTROL OF CONSTRUCTION VEHICLES USING RADIO-EQUIPPED FLAGGERS. CONTRACTOR SHALL ESTABLISH AND MAINTAIN RADIO CONTACT WITH MARSHALL COUNTY AIRPORT UNICOM (122.8 MHz). ALL CONTRACTOR'S SHALL BAVE THE RIGHT-OF-WAY.

NO CLOSURE OF ANY RUNWAY WILL BE PERMITTED FOR THIS PROJECT, EXCEPT AS SHOWN IN THE PHASING PLANS.

THE CONTRACTOR SHALL KEEP ALL OF HIS EQUIPMENT AND PERSONNEL AT LEAST 15 FEET FROM THE EDGE OF ANY ACTIVE ROADWAY OR AUTO PARKING PAVEMENT. WHEN HIS ACTIVITIES REQUIRE WORKING WITHIN 15 FEET OF THE ROAD/PAVEMENT EDGE, THE CONTRACTOR SHALL PROVIDE FOR TRAFFIC CONTROL IN ACCORDANCE WITH IDOT SPECIFICATIONS (HIGHWAY STANDARDS).

OPEN TRENCHES, EXCAVATIONS AND STOCKPILED MATERIAL AT THE CONSTRUCTION SITE SHALL BE DELINEATED WITH THE USE OF BARRICADES DURING HOURS OF RESTRICTED VISIBILITY AND/OR DARKNESS. NO OPEN TRENCHES SHALL BE ALLOWED WITHIN THE RUNWAY SAFETY AREA (RSA) OR THE TAXIWAY SAFETY AREA (TSA) WHEN THE RUNWAY OR TAXIWAY IS OPEN TO AIR TRAFFIC (INCLUDING OVERNIGHT). THE RSA IS DEFINED AS 75 FEET FROM THE CENTERLINE AND 300 FEET FROM THE END OF RUNWAY 13-31 AND 60 FEET FROM THE CENTERLINE AND 240 FEET FROM THE END OF RUNWAY 18-36. THE TSA IS MEASURED AT 24.5 FEET FROM THE CATEGORY I TAXIWAY CENTERLINE, AND 39.5 FEET FROM THE CATEGORY II TAXIWAY CENTERLINE, AND 39.5 FEET FROM THE CATEGORY II TAXIWAY CENTERLINE, AND 59 FEET FROM THE CATEGORY II TAXIWAY CENTERLINE, AND 59 FEET FROM THE CATEGORY II TAXIWAY CENTERLINE. NO VERTICAL DROP OF GREATER THAN 3-INCHES IN HEIGHT FROM PAVEMENT EDGE TO EARTH GRADE OR EARTH GRADE TO EARTH GRADE TO EARTH GRADE OR THE RAPID COVERING OF TRENCHES OR EARTH DROPS IN THE EVENT OF UNEXPECTED WORK STOPPAGES FOR WEATHER OR AIRPORT EMERGENCIES.

WHEN NOT IN USE AND DURING NONWORKING HOURS, CONTRACTOR'S EQUIPMENT SHALL BE PARKED WITHIN THE CONTRACTOR'S EQUIPMENT STORAGE AND PARKING AREAS. THE EQUIPMENT STORAGE AND PARKING AREAS ARE TO BE LOCATED AS SHOWN ON THE PHASING PLAN. THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING THE CONSTRUCTION ENTRANCES IN GOOD CONDITION. THE COST OF MAINTAINING THE CONSTRUCTION ENTRANCE AND CONTRACTOR AREAS IS TO BE INCIDENTAL TO THE CONTRACT. THE CONTRACTOR SHALL PROTECT ALL FXISTING PAYEMENT FORES FROM DAMAGE FROM CONSTRUCTION FOLIPMENT AND HALL VEHICLES.

AT NO TIME SHALL THE CONTRACTOR CONDUCT ANY ACTIVITIES OR OPERATE OR PARK EQUIPMENT SO AS TO OBSTRUCT ACTIVE PART 77 AIRPORT IMAGINARY SURFACES OR THE RUNWAY PROTECTION ZONES (RPZ) AS DELINEATED IN THE PLANS. CONTRACTOR'S EQUIPMENT SHALL EXTEND NO HIGHER THAN 25 FEET. CRANES SHALL NOT BE USED DURING INSTRUMENT WEATHER CONDITIONS OR AT NIGHT. CRANES SHALL BE LOWERED WHEN NOT IN USE.

BEFORE REOPENING TEMPORARILY CLOSED PAVEMENTS, THE CONTRACTOR SHALL INSPECT AND CLEAN, AS NECESSARY, THE PAVEMENT TO ASSURE THAT NO MATERIALS OR OBJECTS THAT MAY DAMAGE AIRCRAFT OR VEHICLES REMAIN. ANY REQUIRED CLEANING SHALL BE TO THE SATISFACTION OF THE RESIDENT ENGINEER AND AIRPORT OWNER AND IS INCIDENTAL TO THE CONTRACT.

ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE APPROVED PROJECT SAFETY PLAN, ISSUED BY THE ILLINOIS DIVISION OF AERONAUTICS.

FAILURE TO USE THESE PRESCRIBED PROCEDURES OR ADHERE TO THE SAFETY REQUIREMENTS WILL RESULT IN THE SUSPENSION OF WORK.

NOTIFICATIONS BY CONTRACTOR

THE CONTRACTOR MUST NOTIFY THE RESIDENT ENGINEER AND THE AIRPORT OWNER 3 DAYS IN ADVANCE OF ANY REQUIRED PARTIAL OR COMPLETE CLOSING OF ANY RUNWAY, TAXIWAY OR APRON. THE DATE, TIME AND SCHEDULED DURATION OF THE CLOSING MUST BE APPROVED BY THE RESIDENT ENGINEER AND THE AIRPORT OWNER. THE CONTRACTOR SHALL NOTIFY THE RESIDENT ENGINEER AND AIRPORT OWNER 3 DAYS IN ADVANCE OF THE CONTRACTOR'S CLOSING OF OTHER ACTIVE ROADWAYS, AIRFIELD OR ROADWAY LIGHTING CIRCUITS, OR OTHER AIRPORT FACILITIES.

CONTRACTOR'S USE OF SITE

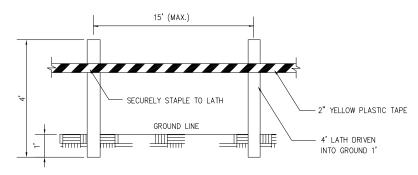
CONTRACTOR'S ACCESS TO THE PROJECT WHEN ON AIRPORT PROPERTY IS SHOWN IN THE PLANS. CONTRACTOR'S ACCESS TO THE AIRPORT ITSELF IS TO BE PROVIDED BY PUBLIC RIGHTS-OF-WAY. THE CONTRACTOR IS TO SECURE ALL NECESSARY PERMITS FOR THE USE OF ANY PUBLIC RIGHTS-OF-WAY AND IS TO MAINTAIN TRAFFIC ON THESE PUBLIC ROADS AT ALL TIMES, WITH THE COSTS OF PERMITTING, CLEANING AND REPAIRING OF PAVEMENT DAMAGED BY CONTRACTOR'S ACTIVITIES INCIDENTAL TO THE CONTRACT. USE OF AND REPAIRS TO ANY PUBLIC FACILITY'S OWNER.

THE CONTRACTOR IS TO PROVIDE TEMPORARY CONSTRUCTION ROADS WITHIN THE CONSTRUCTION LIMIT LINES AS MAY BE REQUIRED BY HIS ACTIVITIES. HEAVY VEHICLES SHALL NOT CROSS EXISTING PAVEMENT SURFACES EXCEPT AS APPROVED BY THE AIRPORT OWNER AND THE RESIDENT ENGINEER. ANY DAMAGE TO PAVEMENTS THAT MAY OCCUR BY THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE AIRPORT OWNER AND THE RESIDENT ENGINEER. FOR HAUL ROUTES MADE BY CONTRACTOR THROUGH GRASSED AREAS, CONTRACTOR SHALL GRADE, LEVEL, TOPSOIL, SEED AND MULCH AT THE END OF THE PROJECT, COST INCIDENTAL TO THE CONTRACT.

THE CONTRACTOR IS TO PROVIDE AN EQUIPMENT STORAGE AND PARKING AREA AT THE LOCATIONS SHOWN IN THE PLANS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE ACCESS ROADS AND THE STORAGE AREA DURING CONSTRUCTION AND TO RESTORE THE AREAS AT PROJECT COMPLETION TO CONDITIONS SUITABLE TO THE AIRPORT OWNER AND THE RESIDENT ENGINEER. AT THE AIRPORT OWNER'S DISCRETION, THE TEMPORARY FACILITIES MAY REMAIN, BUT THEY MUST BE LEFT IN CONDITIONS SUITABLE TO THE AIRPORT OWNER. THE COST OF PROVIDING, MAINTAINING AND RESTORING THE TEMPORARY FACILITIES IS INCIDENTAL TO THE CONTRACT.

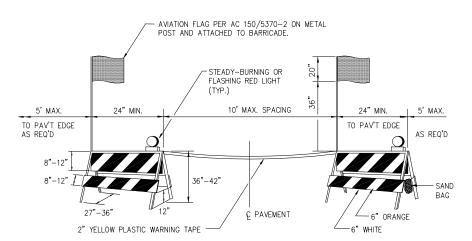
UTILITY OUTAGES AND SHUTDOWNS

THE CONTRACTOR SHALL PROVIDE 3 DAYS PRIOR NOTICE OF ANY OUTAGES OR SHUTDOWNS TO THE OWNER AND THE AGENCY OWNING THE AFFECTED UTILITY. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY CONNECTIONS OR OTHER MEASURES AS MAY BE REQUIRED TO MAINTAIN SERVICE AS MAY BE REQUIRED BY THE OWNING AGENCY AT NO COST TO THE OWNER.



MATERIALS ARE TO BE APPROVED BY ENGINEER PRIOR TO INSTALLATION. COST OF MATERIALS, INSTALLATION, RELOCATION AND MAINTENANCE OF LATHING AND WARNING TAPE IS TO BE INCIDENTAL TO THE CONTRACT.

<u>DETAIL A</u> LATHING AND WARNING TAPE



BARRICADES ARE TO BE OF IDOT TYPE II. A STEADY—BURNING OR FLASHING RED LIGHT FACING PASSING TRAFFIC IS TO BE MOUNTED ABOVE THE TOP OF EACH BARRICADE FRAME. THE BARRICADE IS TO BE STABILIZED FROM WIND BY SANDBAGS PLACED ON THE FRAME OR OTHER METHODS APPROVED BY THE RESIDENT ENGINEER. NO PART OF THE REFLECTORIZED PORTION OF THE BARRICADE IS TO BE OBSTRUCTED IN ANY MANNER. COST OF FURNISHING, INSTALLING, RELOCATING, MAINTAINING AND REMOVING BARRICADES IS TO BE PAID FOR UNDER ITEM ARTSO530 TRAFFIC MAINTENANCE.

<u>DETAIL B</u> STANDARD PAVEMENT BARRICADE

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Marshall County Airport 1315 Illinois 17 Lacon, Illinois 61540 phone: 309-246-2870

REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029

NO. DATE DESCRIPTION
DES DWN REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084

CAD FILE: 05-SAFETY.DWG
DESIGN BY: LDH 8/28/18

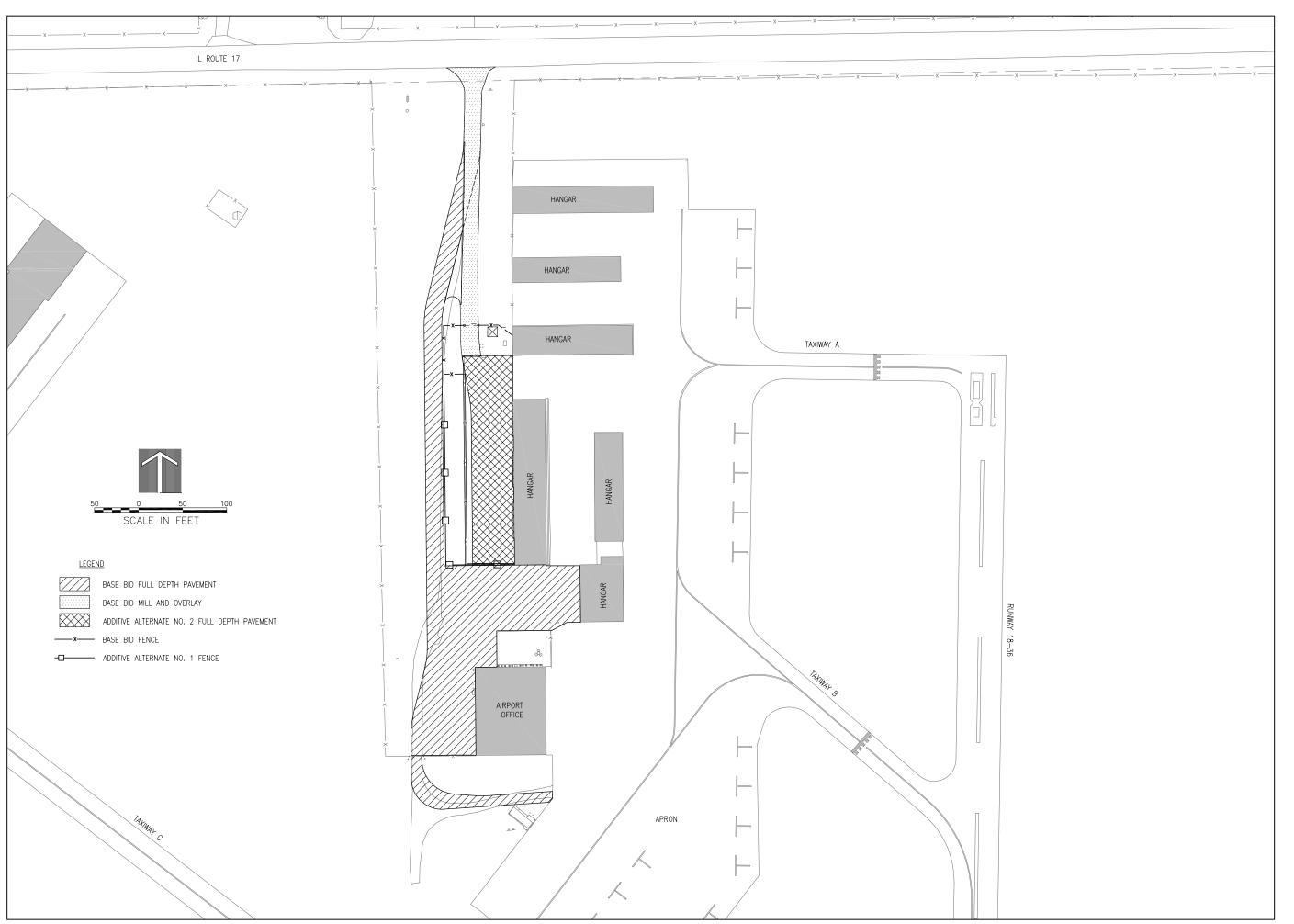
DRAWN BY: LDH 8/28/18

CONSTRUCTION SAFETY NOTES & DETAILS

REVIEWED BY: KMS 10/18/18

SHEET TITLE

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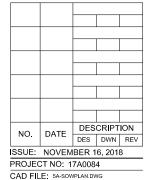


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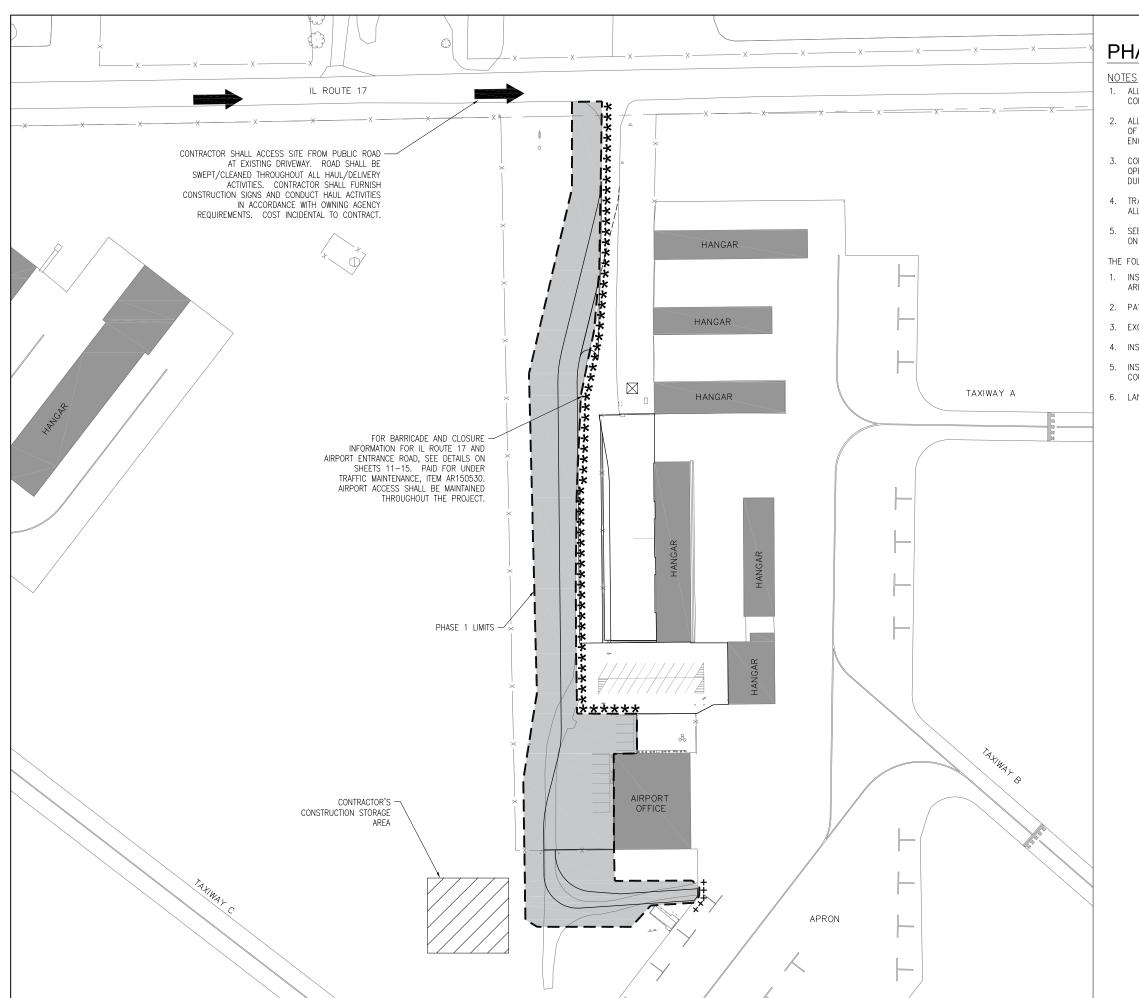


DESIGN BY: LDH 8/30/18
DRAWN BY: LDH 8/30/18
REVIEWED BY: KMS 10/18/18

EVIEWED BY: KMS

SHEET TITLE

SCOPE OF WORK PLAN



PHASE 1

- 1. ALL CONTRACTOR ACTIVITIES SHALL TAKE PLACE WITHIN CONSTRUCTION LIMIT LINES AS SHOWN.
- ALL CONSTRUCTION EQUIPMENT WILL BE LIMITED TO A HEIGHT OF 25 FEET UNLESS PRIOR APPROVAL GIVEN BY THE ENGINEER (SEE SPECIAL PROVISIONS).
- 3. CONTRACTOR'S EQUIPMENT MAY NOT DISRUPT FLIGHT OPERATIONS ON RUNWAY 13-31 OR 18-36 AT ANY TIME DURING PHASE 1.
- 4. TRAFFIC TO BE MAINTAINED ON ALL AIRPORT ROADWAYS AT
- 5. SEE CONSTRUCTION SITE PLAN ON SHEET 3, GENERAL NOTES ON SHEET 4 AND SAFETY NOTES ON SHEET 5.

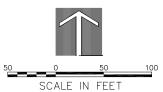
THE FOLLOWING ITEMS ARE TO BE COMPLETED IN PHASE 1:

- 1. INSTALL EROSION CONTROL MEASURES FOR ENTIRE PROJECT
- 2. PAVEMENT REMOVAL WITHIN PHASE 1 LIMITS.
- 3. EXCAVATION/EMBANKMENT WITHIN PHASE 1 LIMITS.
- 4. INSTALL DRAINAGE STRUCTURES WITHIN PHASE 1 LIMITS.
- INSTALL AGGREGATE AND FIRST LIFT OF HMA SURFACE COURSE WITHIN PHASE 1 LIMITS.
- 6. LANDSCAPE WITHIN PHASE 1 LIMITS.

LEGEND

*** STANDARD BARRICADES

+++++ LOW-PROFILE BARRICADES





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REALIGN AIRPORT **ENTRANCE ROAD**; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

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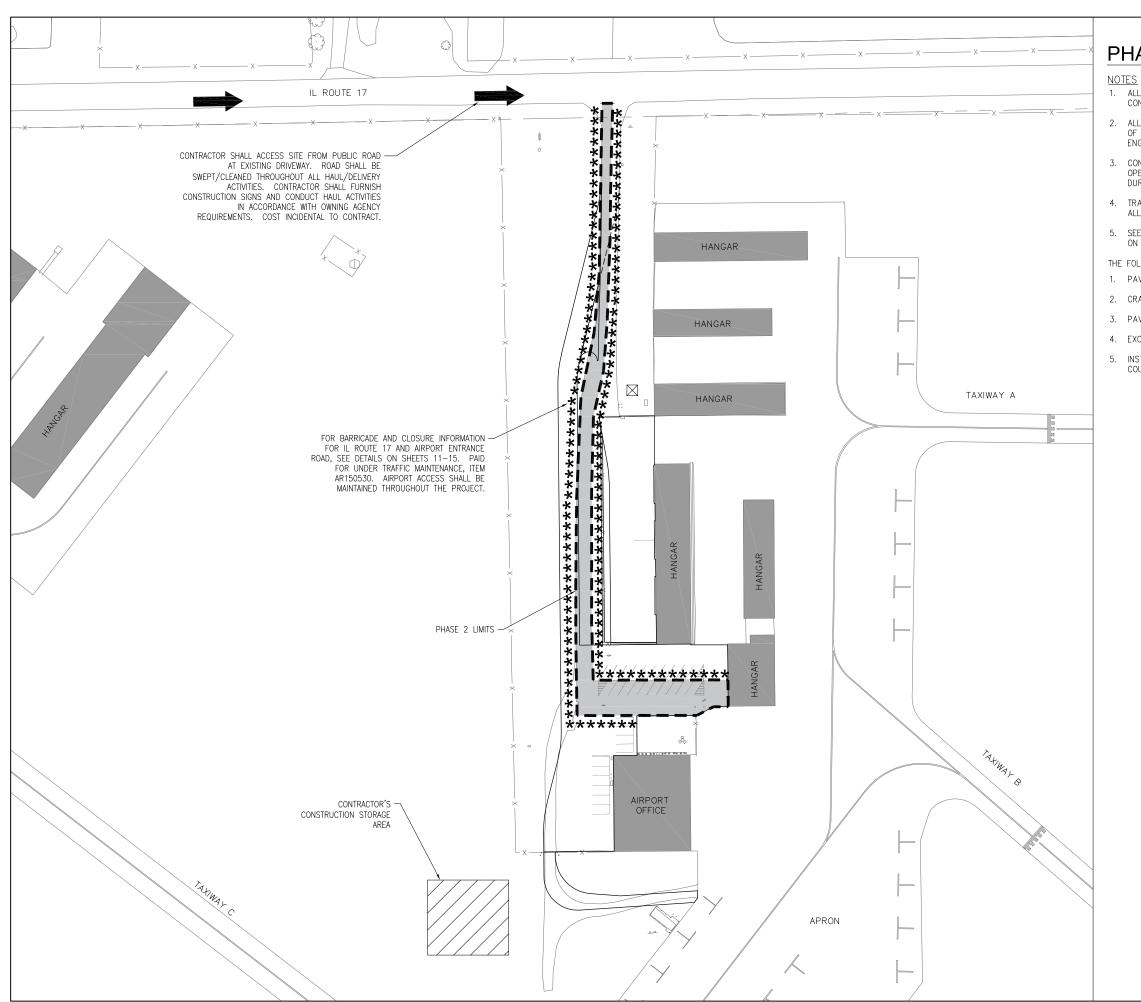
Contract No. MA029

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DESIGN BY: LDH 8/28/18 DRAWN BY: LDH 8/28/18 REVIEWED BY: KMS 10/18/18

SHEET TITLE



PHASE 2

- 1. ALL CONTRACTOR ACTIVITIES SHALL TAKE PLACE WITHIN CONSTRUCTION LIMIT LINES AS SHOWN.
- ALL CONSTRUCTION EQUIPMENT WILL BE LIMITED TO A HEIGHT OF 25 FEET UNLESS PRIOR APPROVAL GIVEN BY THE ENGINEER (SEE SPECIAL PROVISIONS).
- 3. CONTRACTOR'S EQUIPMENT MAY NOT DISRUPT FLIGHT OPERATIONS ON RUNWAY 13-31 OR 18-36 AT ANY TIME DURING PHASE 2.
- 4. TRAFFIC TO BE MAINTAINED ON ALL AIRPORT ROADWAYS AT ALL TIMES.
- 5. SEE CONSTRUCTION SITE PLAN ON SHEET 3, GENERAL NOTES ON SHEET 4 AND SAFETY NOTES ON SHEET 5.

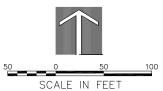
THE FOLLOWING ITEMS ARE TO BE COMPLETED IN PHASE 2:

- 1. PAVEMENT MILLING WITHIN PHASE 2 LIMITS.
- 2. CRACK REPAIR WITHIN PHASE 2 LIMITS.
- 3. PAVEMENT REMOVAL WITHIN PHASE 2 LIMITS.
- 4. EXCAVATION WITHIN PHASE 2 LIMITS.
- 5. INSTALL AGGREGATE AND FIRST LIFT OF HMA SURFACE COURSE WITHIN PHASE 2 LIMITS.

LEGEND

*** STANDARD BARRICADES

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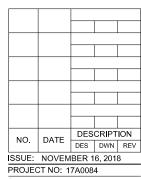


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REALIGN AIRPORT **ENTRANCE ROAD**; RECONSTRUCT AIRCRAFT HANGAR **PAVEMENT**

IDA No: C75-4625

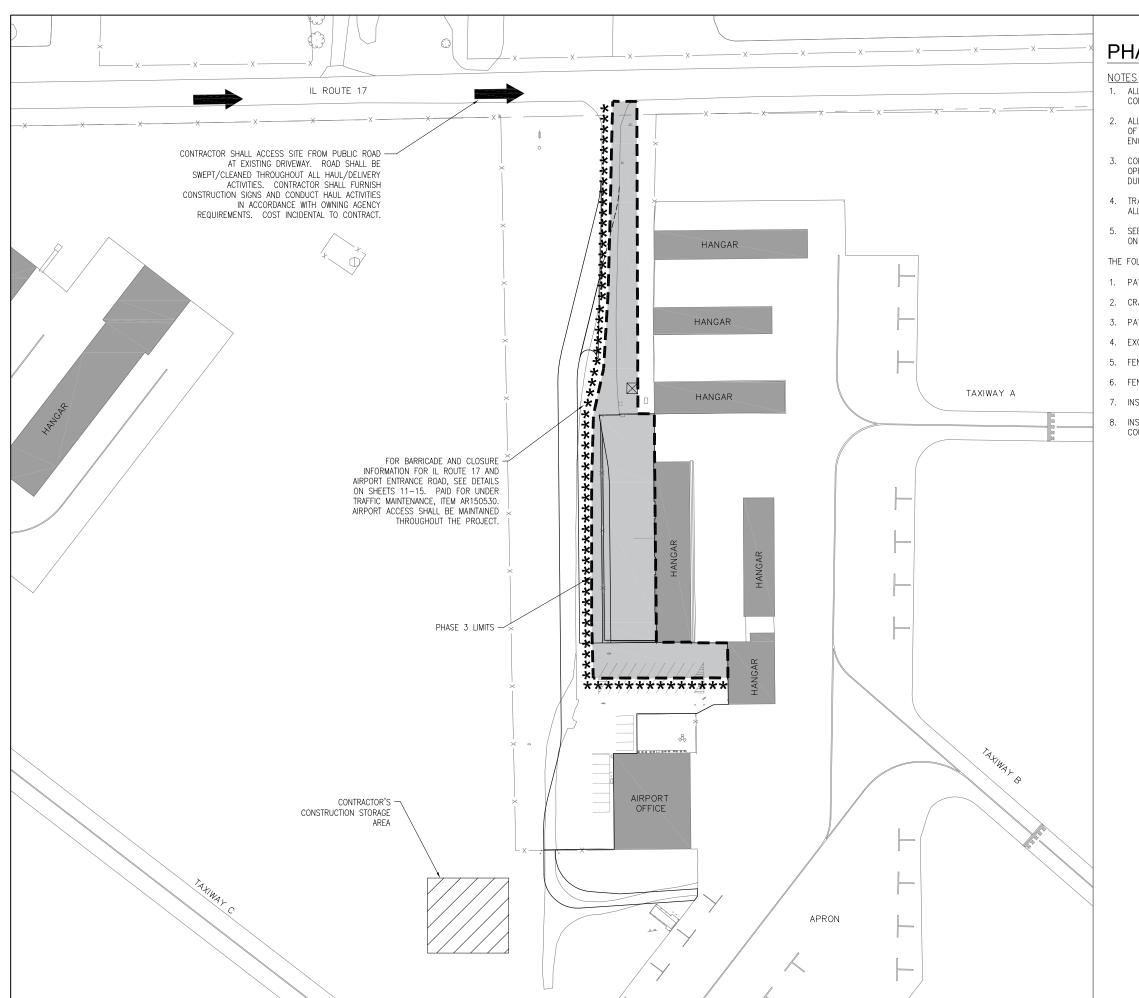
Contract No. MA029



CAD FILE: 07-PHASING.DWG DESIGN BY: LDH 8/28/18

DRAWN BY: LDH 8/28/18 REVIEWED BY: KMS 10/18/18

SHEET TITLE





- 1. ALL CONTRACTOR ACTIVITIES SHALL TAKE PLACE WITHIN CONSTRUCTION LIMIT LINES AS SHOWN.
- ALL CONSTRUCTION EQUIPMENT WILL BE LIMITED TO A HEIGHT OF 25 FEET UNLESS PRIOR APPROVAL GIVEN BY THE ENGINEER (SEE SPECIAL PROVISIONS).
- 3. CONTRACTOR'S EQUIPMENT MAY NOT DISRUPT FLIGHT OPERATIONS ON RUNWAY 13-31 OR 18-36 AT ANY TIME DURING PHASE 3.
- 4. TRAFFIC TO BE MAINTAINED ON ALL AIRPORT ROADWAYS AT
- 5. SEE CONSTRUCTION SITE PLAN ON SHEET 3, GENERAL NOTES ON SHEET 4 AND SAFETY NOTES ON SHEET 5.

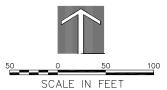
THE FOLLOWING ITEMS ARE TO BE COMPLETED IN PHASE 3:

- 1. PAVEMENT MILLING WITHIN PHASE 3 LIMITS.
- 2. CRACK REPAIR WITHIN PHASE 3 LIMITS.
- 3. PAVEMENT REMOVAL WITHIN PHASE 3 LIMITS.
- 4. EXCAVATION WITHIN PHASE 3 LIMITS.
- 5. FENCE AND GATE REMOVAL WITHIN PHASE 3 LIMITS.
- 6. FENCE AND GATE INSTALLATION WITHIN PHASE 3 LIMITS.
- 7. INSTALL DRAINAGE STRUCTURES WITHIN PHASE 3 LIMITS.
- 8. INSTALL AGGREGATE AND FIRST LIFT OF HMA SURFACE COURSE WITHIN PHASE 3 LIMITS.

LEGEND

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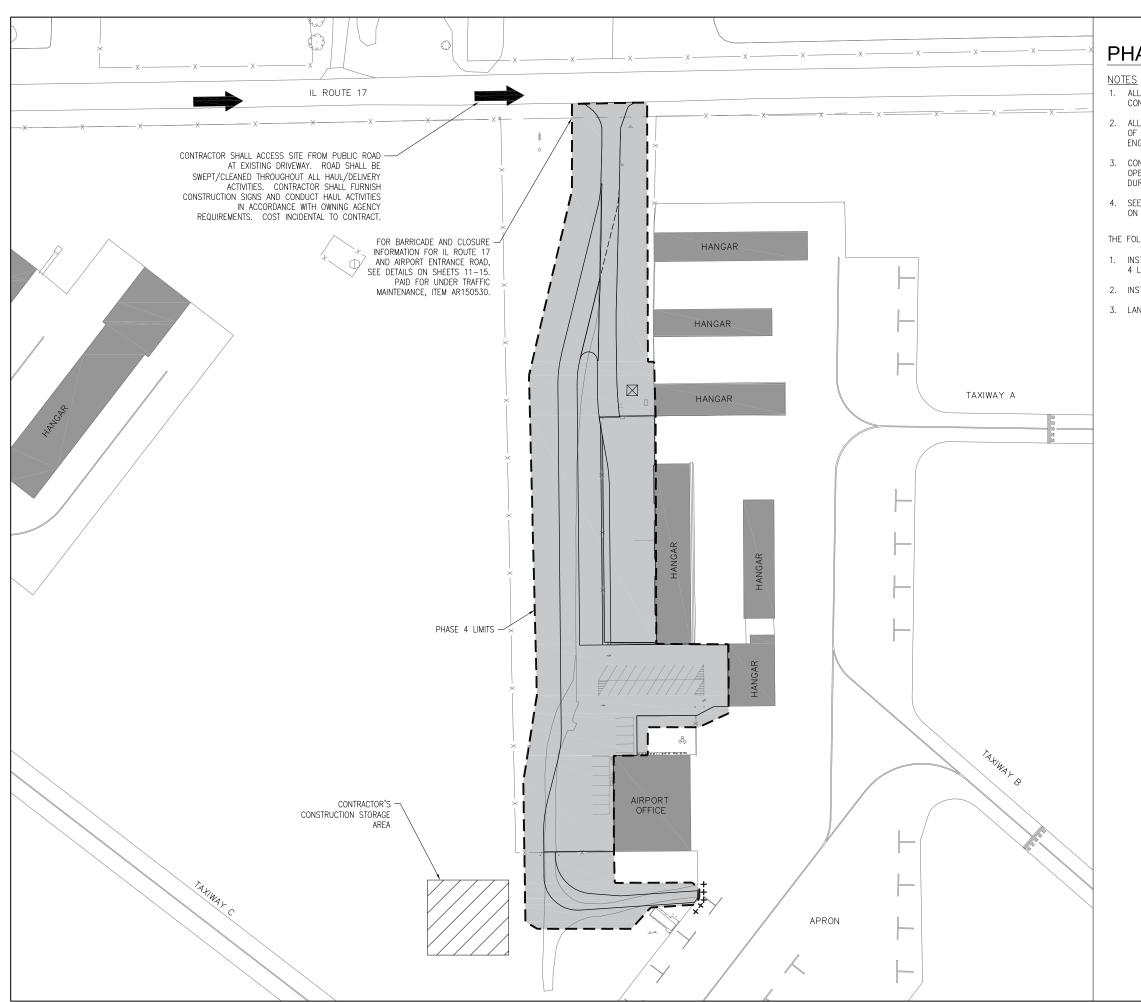
Contract No. MA029

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SHEET TITLE



PHASE 4

- 1. ALL CONTRACTOR ACTIVITIES SHALL TAKE PLACE WITHIN CONSTRUCTION LIMIT LINES AS SHOWN.
- ALL CONSTRUCTION EQUIPMENT WILL BE LIMITED TO A HEIGHT OF 25 FEET UNLESS PRIOR APPROVAL GIVEN BY THE ENGINEER (SEE SPECIAL PROVISIONS).
- CONTRACTOR'S EQUIPMENT MAY NOT DISRUPT FLIGHT OPERATIONS ON RUNWAY 13-31 OR 18-36 AT ANY TIME DURING PHASE 4.
- 4. SEE CONSTRUCTION SITE PLAN ON SHEET 3, GENERAL NOTES ON SHEET 4 AND SAFETY NOTES ON SHEET 5.

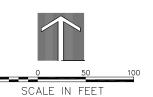
THE FOLLOWING ITEMS ARE TO BE COMPLETED IN PHASE 4:

- 1. INSTALL FINAL LIFT OF HMA SURFACE COURSE WITHIN PHASE 4 LIMITS.
- 2. INSTALL PAVEMENT MARKING WITHIN PHASE 4 LIMITS.
- 3. LANDSCAPING WITHIN PHASE 4 LIMITS.

<u>LEGEND</u>

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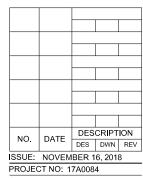


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IDA No: C75-4625

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PROJECT NO: 17A0084

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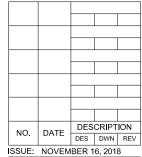


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IDA No: C75-4625

Contract No. MA029



PROJECT NO: 17A0084

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Professional Service Corporation #184-001084

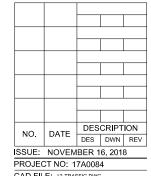


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IDA No: C75-4625

Contract No. MA029



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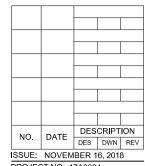


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PROJECT NO: 17A0084

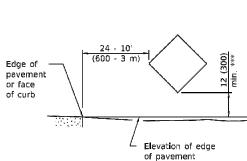
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SHEET TITLE

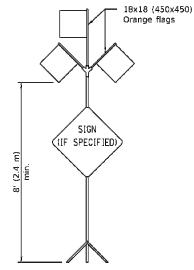
POST MOUNTED SIGNS

** When curb or paved shoulder are present this dimension shall be 24 (600) to the face of curb or 6' (1.8 m) to the outside edge of the paved shoulder.

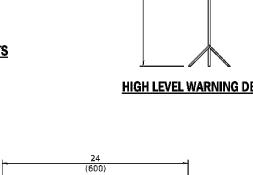


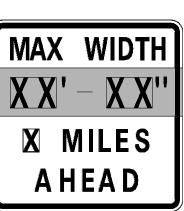
SIGNS ON TEMPORARY SUPPORTS

*** When work operations exceed four days, this dimension shall be 5' (1.5 m) min. If located behind other devices, the height shall be sufficient to be seen completely above the devices.



HIGH LEVEL WARNING DEVICE

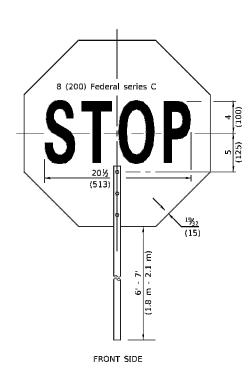




W12-I103-4848

WIDTH RESTRICTION SIGN

XX'-XX" width and X miles are variable.



(125) (180) Federal series B (400)

REVERSE SIDE

FLAGGER TRAFFIC CONTROL SIGN

ROAD CONSTRUCTION NEXT X MILES

CONSTRUCTION

G20-I104(0)-6036

G20-I105(0)-6024

This signing is required for all projects 2 miles (3200 m) or more in length.

ROAD CONSTRUCTION NEXT X MILES sign shall be placed 500' (150 m) in advance of proiect limits.

END CONSTRUCTION sign shall be erected at the end of the job unless another job is within 2 miles (3200 m).

Dual sign displays shall be utilized on multilane highways.

WORK LIMIT SIGNING

WORK W21-III5(0)-3618 ZONE SPEED LIMIT R2-1-3648 PHOTO R10-I108p-3618 **** ENFORCED

\$XXX FINE R2-I106p-3618

Sign assembly as shown on Standards or as allowed by District Operations.

MINIMUM

END WORK ZONE SPEED LIMIT

G20-I103-6036

This sign shall be used when the above sign assembly is used.

HIGHWAY CONSTRUCTION SPEED ZONE SIGNS

**** R10-I108p shall only be used along roadways under the juristiction of the State.

TRAFFIC CONTROL **DEVICES**

(Sheet 2 of 3)

STANDARD 701901-07

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REALIGN AIRPORT **ENTRANCE ROAD**; RECONSTRUCT AIRCRAFT HANGAR **PAVEMENT**

IDA No: C75-4625

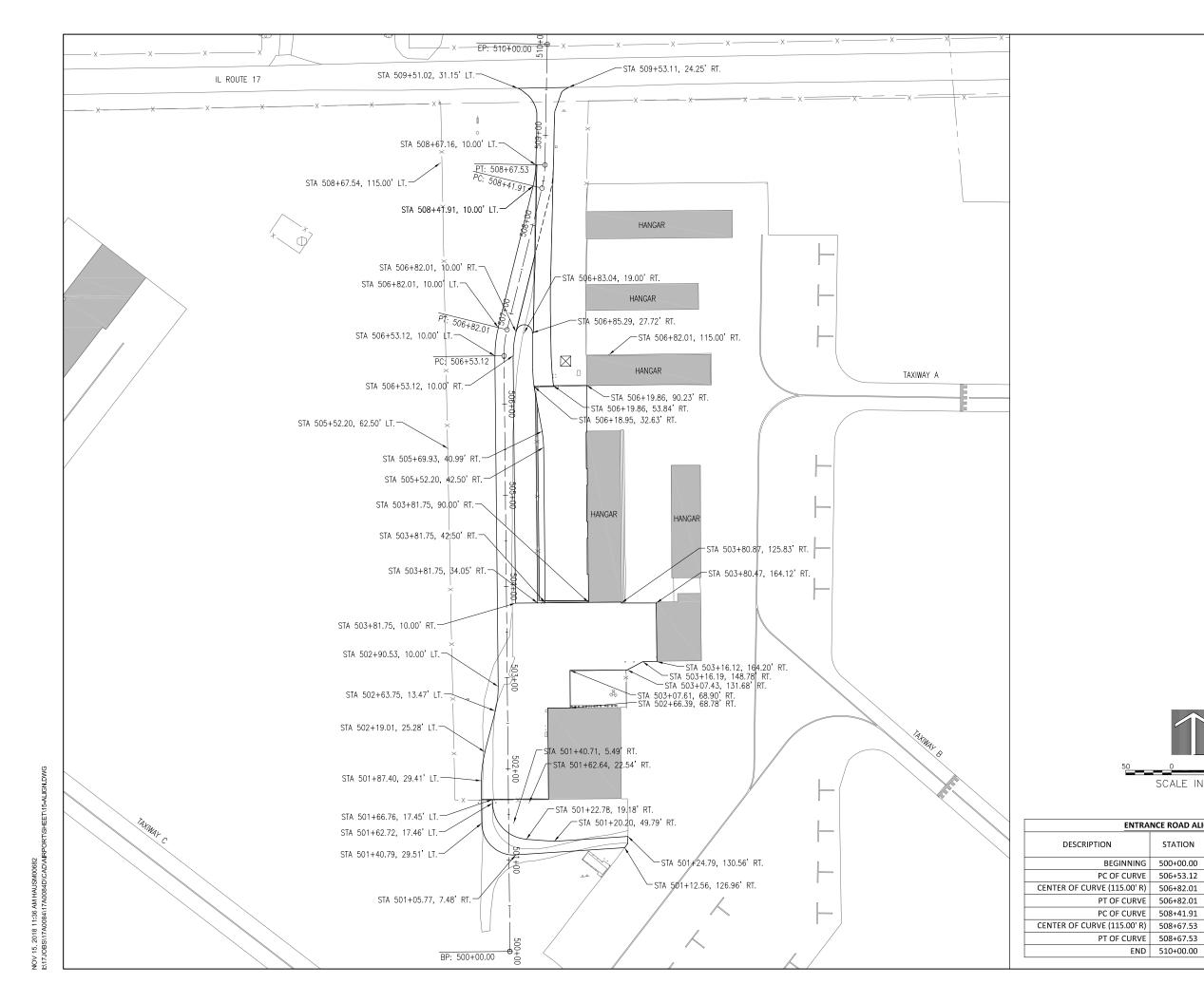
Contract No. MA029

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- 1	ISSUE:	NOVEM	BER 1	6, 201	8
	PROJEC	CT NO: 1	7A008	4	

CAD FILE: 14-TRAFFIC.DWG

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SHEET TITLE





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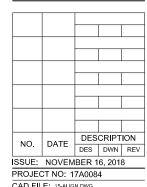


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REALIGN AIRPORT **ENTRANCE ROAD**; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029



CAD FILE: 15-ALIGN.DWG

DESIGN BY: LDH 8/30/18 DRAWN BY: LDH 8/30/18 REVIEWED BY: KMS 10/18/18

SHEET TITLE

SCALE IN FEET

ENTRANCE ROAD ALIGNMENT DATA

STATION

506+82.01

506+82.01

508+41.91

508+67.53

END 510+00.00

BEGINNING 500+00.00

PROJECT COORDINATES

EASTING

2511517.530

2511511.112

2511626.106

2511514.442

2511552.675

2511441.011

2511555.991

2511558.453

NORTHING

1586738.323

1587391.407

1587392.537

1587420.035

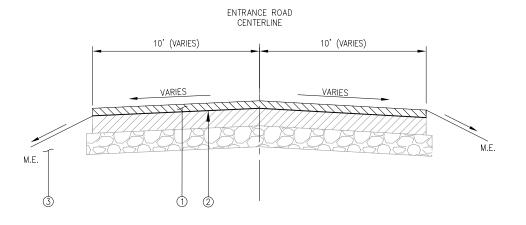
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1587600.650

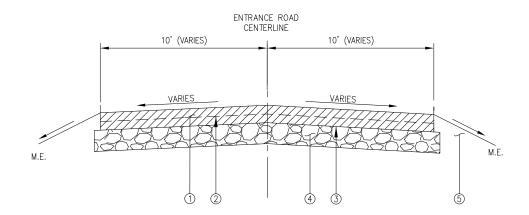
1587733.092

PAVEMENT LAYOUT



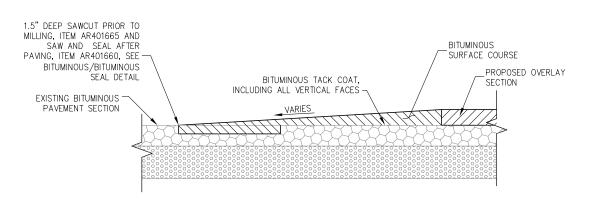
TYPICAL SECTION - ENTRANCE ROAD

- PROPOSED 1.5 INCH NOMINAL DEPTH MILLING AND 1.5 INCH BITUMINOUS SURFACE COURSE, ITEM AR401650 AND AR401613
- 2) PROPOSED BITUMINOUS TACK COAT, ITEM AR603510
- 3 PROPOSED TOPSOILING, SEEDING AND MULCHING, ITEM AR90510, AR901510, AND APONES10

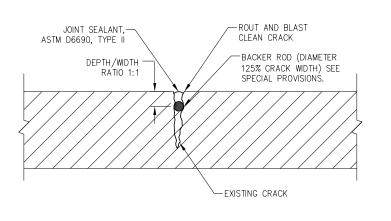


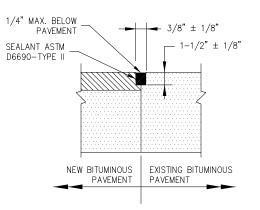
TYPICAL SECTION - ENTRANCE ROAD, PARKING LOT, HANGAR PAVEMENTS

- ① PROPOSED 3.0 INCH BITUMINOUS SURFACE COURSE, PLACED IN TWO LIFTS, ITEM AR401613
- 2 PROPOSED BITUMINOUS TACK COAT, ITEM AR603510
- 3 PROPOSED BITUMINOUS PRIME COAT, ITEM AR602510
- 4 PROPOSED 8.0 INCH CRUSHED AGGREGATE BASE COURSE, ITEM AR209608
- PROPOSED TOPSOILING, SEEDING AND MULCHING, ITEM AR90510, AR901510, AND



BITUMINOUS TAPER DETAIL





NOTE:

ALL BITUMINOUS/BITUMINOUS JOINT SEALING TO BE PAID UNDER SAW AND SEAL BITUMINOUS JOINTS, ITEM AR401660.

CLEAN AND SEAL CRACKS

BITUMINOUS/BITUMINOUS SEAL

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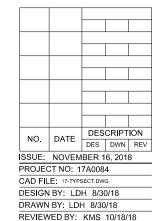


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REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

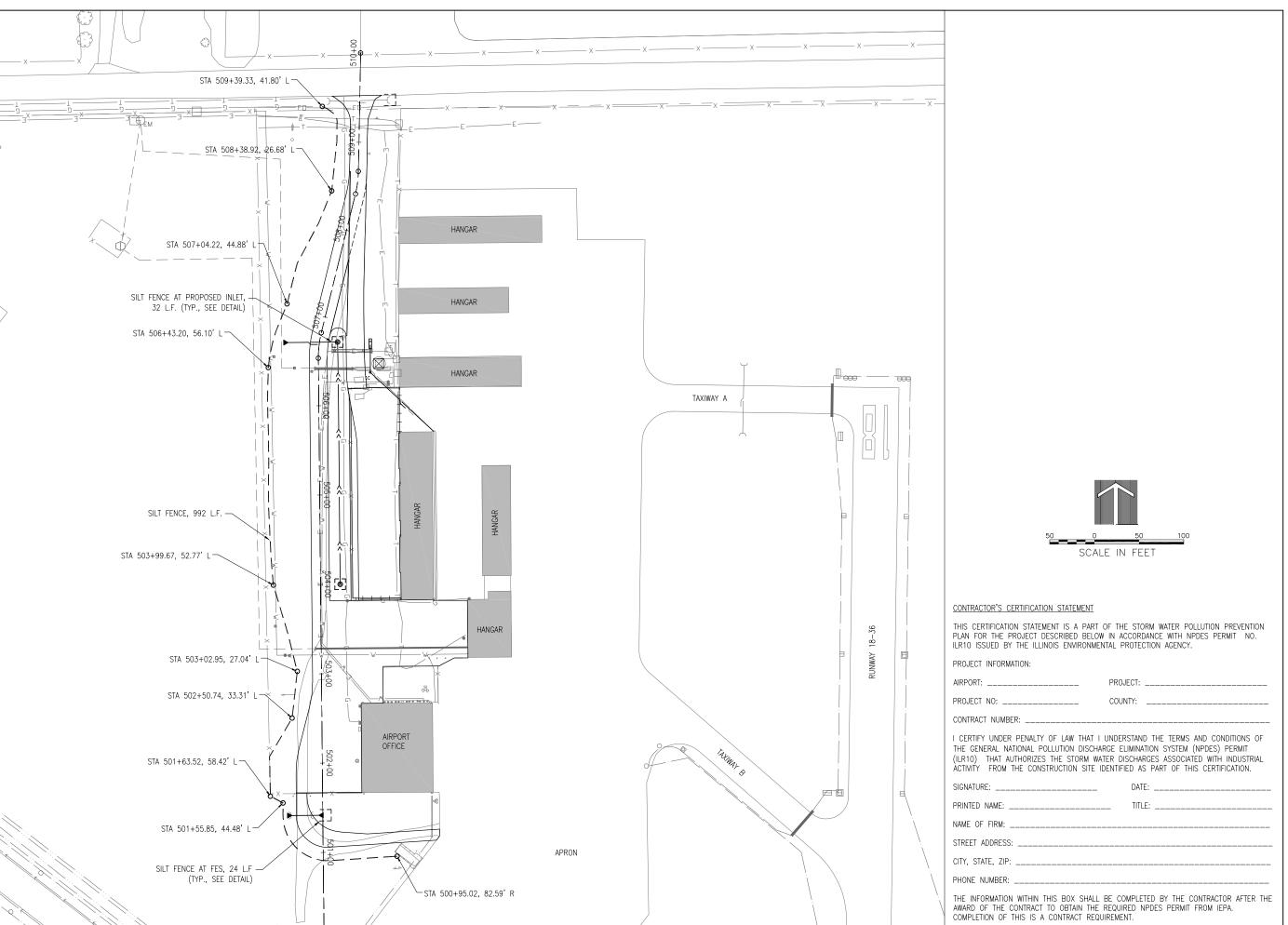
Contract No. MA029



TYPICAL SECTION

SHEET TITLE

AND PAVEMENT DETAILS





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REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

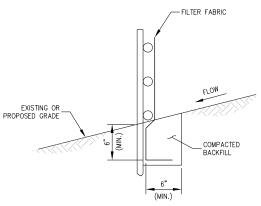
IDA No: C75-4625

Contract No. MA029

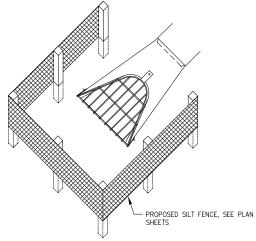
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SSUE:	NOVEM	BER 1	6, 201	8
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DESIGN	BY: LD	H 8/3	0/18	
DRAWN	BY: LDI	H 8/30)/18	
REVIEW	/ED BY:	KMS	10/18/	18

STORMWATER POLLUTION PREVENTION PLAN

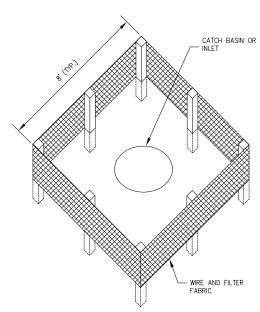
SHEET TITLE



FABRIC ANCHOR DETAIL



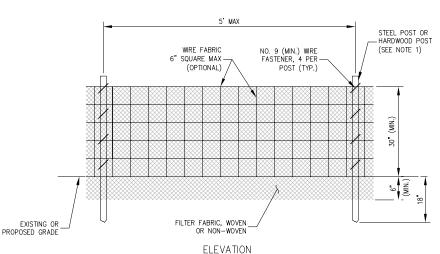
SILT FENCE PLACEMENT AT FLARED END SECTIONS (FES)



NOTES:

- 1. FILTER FABRIC SHALL BE EMBEDDED 8" INTO THE SOIL.
- 2. INSPECTION SHALL BE FREQUENT AND REPAIR/REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
- SILT FENCE SHALL BE REMOVED WHEN IT HAS SERVED ITS USEFULNESS AT THE DIRECTION OF THE AIRPORT REPRESENTATIVE OR OWNER SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE. CONTRACTOR SHALL PLACE SEED AND MULCH PER LANDSCAPING PLAN. COST OF REMOVAL SHALL BE INCLUDED IN THE CONTRACT UNIT
- AREAS DISTURBED OUTSIDE OF CONSTRUCTION LIMITS DURING PLACEMENT OF INLET PROTECTION TO BE RE-GRADED, SEEDED AND MULCHED, COST INCIDENTAL TO
- 5. FENCE AND POSTS SHALL BE REMOVED WHEN DIRECTED AT PROJECT END.
- 6. PAID UNDER AR156510 SILT FENCE.

SILT FENCE AT MANHOLES IN PERVIOUS AREAS



NOTES:

- 1. FENCE POST SHALL BE EITHER STEEL "T" LINE POST OR HARDWOOD POST WITH A MINIMUM SECTIONAL AREA OF 2.0 SQUARE INCHES. A CARPENTER'S (NOMINAL) 2"x2" POST WILL MEET
- 2. TOP AND BOTTOM WIRE OF WIRE FABRIC SHALL BE MINIMUM GAGE NO. 9. INTERMEDIATE WIRES OF THE WIRE FABRIC SHALL BE MINIMUM GAGE NO. 11.
- 3. WIRE FABRIC SHALL BE SECURELY FASTENED TO FENCE POSTS WITH NO. 9 GAGE WIRE MINIMUM. FOUR (4) FASTENERS PER POST REQUIRED.
- FILTER FABRIC SHALL BE SECURELY FASTENED TO WIRE FABRIC AND POSTS WITH TIES OR STAPLES SPACED AT 12" APART AT THE TOP, MIDDLE AND BOTTOM.
- WHEN TWO SECTIONS OF FILTER FABRIC MEET, THEY SHALL BE OVERLAPPED BY 6" AND FOLDED AND ATTACHED TO THE WIRE FABRIC AT A POST.
- 6. FILTER FABRIC SHALL BE IN ACCORDANCE WITH SPECIAL PROVISIONS WITH APPARENT OPENING SIZE (AOS) OF AT LEAST 40 FOR NONWOVEN AND WOVEN. THE FABRIC MUST MEET THE APPLICABLE STANDARDS OF AASHTO 288-00 (Article IV, Section B.1.j.1.f.i, AS AMENDED), OR
- 7. A MAXIMUM OF 5 FEET IS USED FOR POST-TO-POST SPACING.
- 8. SOIL DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE EROSION. SOIL STABILIZATION MEASURES SHALL CONSIDER THE TIME OF YEAR, SITE CONDITIONS AND THE USE OF TEMPORARY OR PERMANENT MEASURES.
- 9. ALL STORM SEWERS THAT ARE OR WILL BE FUNCTIONING DURING CONSTRUCTION SHALL BE PROTECTED BY AN APPROPRIATE SEDIMENT CONTROL MEASURE.
- 10. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY GRADING WORK IN THE AREA TO BE PROTECTED. PERIODIC INSPECTION SHALL BE PERFORMED AND REQUIRED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN EVENT.
- 11. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED AND REPLACED
- 12. IF DEWATERING SERVICES ARE USED, ADJOINING PROPERTIES AND DISCHARGE LOCATIONS SHALL BE PROTECTED FROM EROSION. DISCHARGES SHALL BE ROUTED THROUGH AN EFFECTIVE SEDIMENT CONTROL MEASURE (E.G. SEDIMENT TRAP, SEDIMENT BASIN, OR OTHER APPROPRIATE
- 13. FENCE POSTS SHALL BE REMOVED WHEN DIRECTED AT PROJECT END.
- 14. THE EROSION CONTROL MEASURES INDICATED ON THE PLANS ARE THE MINIMUM REQUIREMENTS. ADDITIONAL MEASURES MAY BE REQUIRED, AS DIRECTED BY THE ENGINEER OR GOVERNING

SEDIMENTATION AND EROSION CONTROL NOTES:

A. SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF HYDROLOGIC DISTURBANCE OF UPLAND AREAS.

INSPECTIONS AND DOCUMENTATION SHALL BE PERFORMED. AT A MINIMUM:

- B. FOR THOSE DEVELOPMENTS THAT REQUIRE A DESIGNATED EROSION CONTROL INSPECTOR (DECI),
 - UPON COMPLETION OF SEDIMENT AND RUNOFF CONTROL MEASURES (INCLUDING PERIMETER CONTROLS AND DIVERSIONS), PRIOR TO PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR
- AFTER EVERY SEVEN (7) CALENDAR DAYS OR STORM EVENT WITH GREATER THAN 0.5 INCH OF
- C. SOIL DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE EROSION. IF STRIPPING, CLEARING, GRADING, OR LANDSCAPING ARE TO BE DONE IN PHASES, THE PERMITTEE SHALL PLAN FOR APPROPRIATE SOIL EROSION AND SEDIMENT CONTROL MEASURES.
- D. A STABILIZED MAT OF CRUSHED STONE MEETING IDOT GRADATION CA-01 UNDERLAIN WITH FILTER A STABLIZED MAY OF CROSSING STORE WITH THE ILLINOIS URBAN MANUAL, OR OTHER APPROPRIATE MEASURE(S) AS APPROVED BY THE ENFORCEMENT OFFICER, SHALL BE INSTALLED AT ANY POINT WHERE TRAFFIC WILL BE ENTERING OR LEAVING A CONSTRUCTION SITE. SEDIMENT OR SOIL REACHING AN IMPROVED PUBLIC RIGHT OF WAY, STREET, ALLEY OR PARKING AREA SHALL BE REMOVED BY SCRAPING OR STREET CLEANING AS ACCUMULATIONS WARRANT AND TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL
- E. TEMPORARY DIVERSIONS SHALL BE CONSTRUCTED AS NECESSARY TO DIRECT ALL RUNOFF FROM HYDROLOGICALLY DISTURBED AREAS TO AN APPROPRIATE SEDIMENT TRAP OR BASIN.
- F. DISTURBED AREAS SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT MEASURES WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE END OF ACTIVE HYDROLOGIC DISTURBANCE OR REDISTURBANCE
- G. ALL STOCKPILES SHALL HAVE APPROPRIATE MEASURES TO PREVENT EROSION. STOCKPILES SHALL NOT BE PLACED IN FLOOD PRONE AREAS OR WETLANDS AND DESIGNATED BUFFERS.
- H. SLOPES STEEPER THAN 3H:1V SHALL BE STABILIZED WITH APPROPRIATE MEASURES AS APPROVED BY
- APPROPRIATE EROSION CONTROL BLANKET SHALL BE INSTALLED ON ALL INTERIOR DETENTION BASIN SIDE SLOPES BETWEEN THE NORMAL WATER LEVEL AND HIGH WATER LEVEL.
- J. STORM SEWERS THAT ARE OR WILL BE FUNCTIONING DURING CONSTRUCTION SHALL BE PROTECTED BY AN APPROPRIATE SEDIMENT CONTROL MEASURE.
- K. IF DEWATERING SERVICES ARE USED, ADJOINING PROPERTIES AND DISCHARGE LOCATIONS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION. DISCHARGES SHALL BE ROUTED THROUGH AN APPROVED ANIONIC POLYMER DEWATERING SYSTEM OR A SIMILAR MEASURE AS APPROVED BY THE ENFORCEMENT OFFICER. DEWATERING SYSTEMS SHOULD BE INSPECTED DAILY DURING OPERATIONAL PERIODS. THE ENFORCEMENT OFFICER, OR APPROVED REPRESENTATIVE, MUST BE PRESENT AT THE
- L. IF INSTALLED SOIL EROSION AND SEDIMENT CONTROL MEASURES DO NOT MINIMIZE SEDIMENT LEAVING THE DEVELOPMENT SITE, ADDITIONAL MEASURES SUCH AS ANIONIC POLYMERS OR FILTRATION SYSTEMS MAY BE REQUIRED BY THE ENFORCEMENT OFFICER.
- M. ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES MUST BE MAINTAINED AND REPAIRED AS NEEDED. THE PROPERTY OWNER SHALL BE ULTIMATELY RESPONSIBLE FOR MAINTENANCE AND
- N. ALL TEMPORARY SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED.
- O. THE FROSION CONTROL MEASURES INDICATED ON THE PLANS ARE THE MINIMUM REQUIREMENTS. ADDITIONAL MEASURES MAY BE REQUIRED, AS DIRECTED BY THE ENGINEER, ENFORCEMENT OFFICER, OR OTHER GOVERNING AGENCY.

STORM WATER POLLUTION PREVENTION NOTES

GENERAL
THE CONTRACTOR SHALL IMPLEMENT ALL PROVISIONS OF THE CONTRACT DOCUMENTS TO ASSURE THAT
THE CONTRACTOR SHALL IMPLEMENT ALL PROVISIONS OF THE CONTRACT DOCUMENTS TO ASSURE THAT STORM WATER POLLUTION PREVENTION ITEMS ARE CONSTRUCTED AND MAINTAINED IN A TIMELY MANNER SEDIMENTATION MUST NOT BE TRANSPORTED OFF THE CONSTRUCTION SITE. PERMANENT DRAINAGE FEATURES AND VEGETATIVE MEASURES SHALL BE PROVIDED AS SOON AS POSSIBLE.

 $\underline{\text{THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES IS INCIDENTAL TO } \\ \underline{\text{THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES IS INCIDENTAL } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES IS INCIDENTAL } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES IS INCIDENTAL } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES IS INCIDENTAL } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION } \\ \underline{\text{TO THE MAINTENANCE OF ALL STORM } \\ \underline{\text{TO THE M$

POLLUTION PREVENTION MEASURES

THE CONTRACTOR SHALL BE REQUIRED TO IMPLEMENT AND MAINTAIN STORM WATER POLLUTION PREVENTION PRACTICES AND MEASURES PRIOR TO THE STRIPPING OF EXISTING VEGETATION WHEREVER POSSIBLE AND AS SOON AS CONSTRUCTION PERMITS IN OTHER AREAS. POLLUTION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, INCLUDING THESE CONSTRUCTION PLANS, AND WITH STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY, CURRENT ISSUE. THE CONTRACTOR SHALL ADJUST HIS OPERATIONS AND IMPLEMENT
POLLUTION CONTROL MEASURES SO THAT NO RUNOFF FROM STRIPPED AREAS WILL LEAVE THE CONSTRUCTION SITE OTHER THAN THROUGH SEDIMENT TRAPS OR OTHER SUITABLE CONTROL MEASURES

POLLUTION CONTROL ITEMS SHALL BE PROVIDED AS NOTED ON THE STORM WATER POLLUTION PREVENTION PLAN AND IN THE STORM WATER POLLUTION PREVENTION DETAILS AND AS DIRECTED BY THE ENGINEER. THE LIMITS OF SUCH MEASURES SHALL BE STAKED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. SUCH LIMITS MAY BE ADJUSTED BY THE ENGINEER TO ACCOUNT FOR ACTUAL SITE CONDITIONS EXPERIENCED DURING CONSTRUCTION. ADDITIONAL COMPENSATION FOR MEASURES EXCEEDING THE PLAN QUANTITIES WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR EACH ITEM.

THE CONTRACTOR IS TO MAINTAIN AND ADJUST, REPAIR OR REPLACE ALL POLLUTION PREVENTION MEASURES AS REQUIRED OR AS DIRECTED BY THE ENGINEER UNTIL PERMANENT VEGETATION HAS BEEN ESTABLISHED. MAINTENANCE OF POLLUTION CONTROL MEASURES IS TO BE PROVIDED AT NO ADDITIONAL COST TO THE

ADDITIONAL STORMWATER POLLUTION PREVENTION MEASURES ARE EXISTING ON SITE LOCATED AT DRAINAGE FACILITIES AND ALONG THE PROPERTY LINE

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REALIGN AIRPORT **ENTRANCE ROAD;** RECONSTRUCT AIRCRAFT HANGAR **PAVEMENT**

IDA No: C75-4625

Contract No. MA029

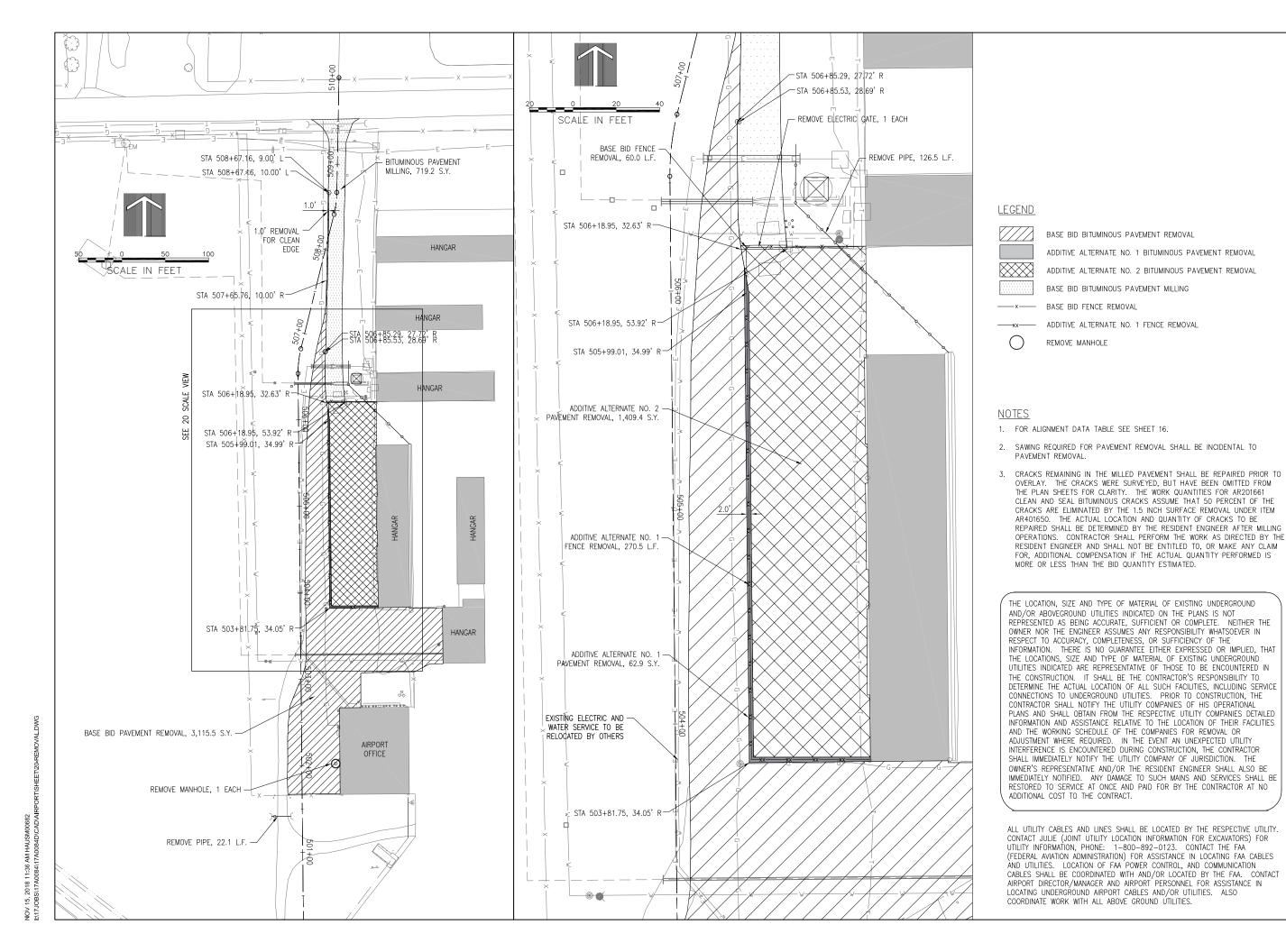
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CAD FILE: 19-SWPPPDET.DWG DESIGN BY: LDH 8/30/18 DRAWN BY: LDH 8/30/18

REVIEWED BY: KMS 10/18/18

SHEET TITLE

SWPPP DETAILS





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REALIGN AIRPORT **ENTRANCE ROAD;** RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029

NO. DATE DESCRIPTION.

DES DWN REV ISSUE: NOVEMBER 16, 2018

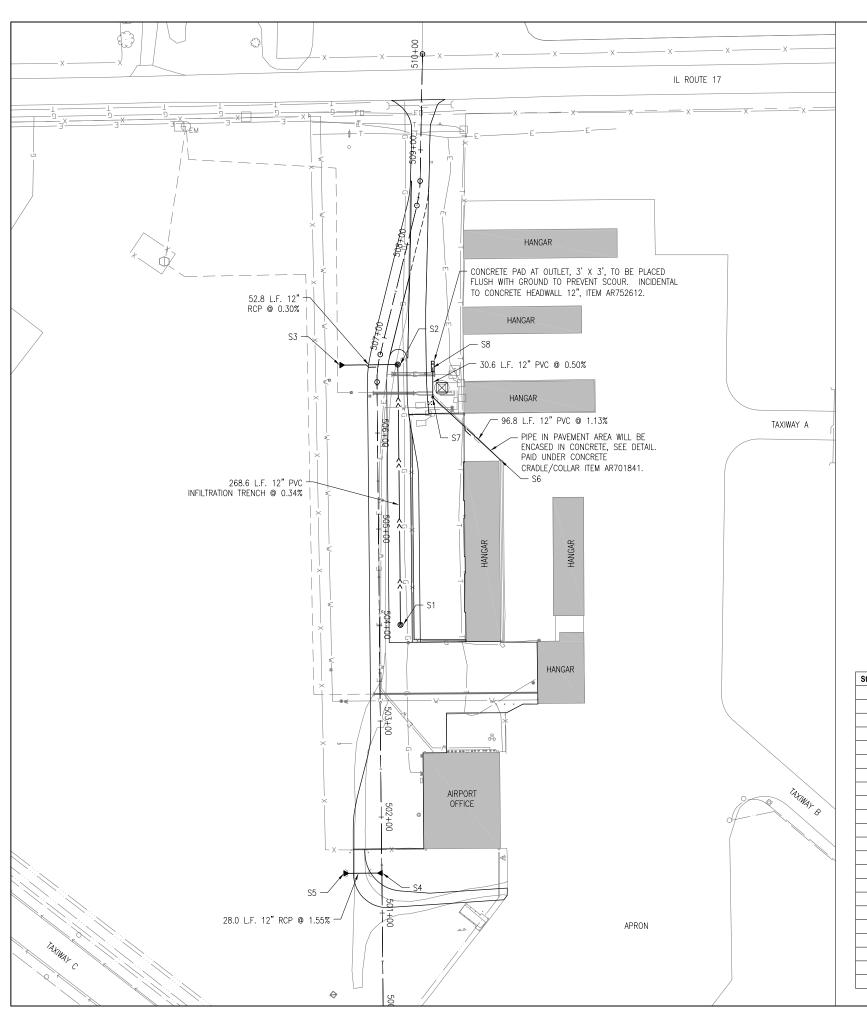
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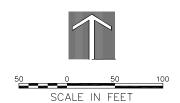
DRAWN BY: LDH 8/30/18 REVIEWED BY: KMS 10/18/18

SHEET TITLE

REMOVAL PLAN

20





<u>LEGEND</u>

PROPOSED STORM SEWER

Structure	Station	Offse	Offset Type		Rim El. Invert El.		Pipe Pay Length	Size	Туре	Slope %	
S1	504+00.00	22.0	RT	Inlet Type A	554.05		552.30				
								268.6	12.0	PVC	0.34
S2	506+75.00	20.0	RT	Inlet Type B	553.14	S	551.38				
						W	551.28				
								52.8	12.0	RCP	0.30
S3	506+66.51	39.6	LT	FES			551.10				
S4	501+41.64	0.5	RT	FES			550.14				
								28.0	12.0	RCP	1.55
S5	501+41.70	39.5	LT	FES			549.52				
S6	505+70.17	128.2	RT	Pipe End			554.10				
								96.8	12.0	PVC	1.13
S7	506+36.72	57.9	RT	Inspection Hole	554.66		553.01				
								30.6	12.0	PVC	0.50
S8	506+81.33	56.5	RT	Concrete Headwall			552.86				



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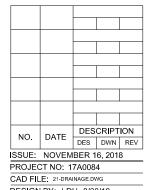


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REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029



PROJECT NO: 17A0084

CAD FILE: 21-DRAINAGE DWG

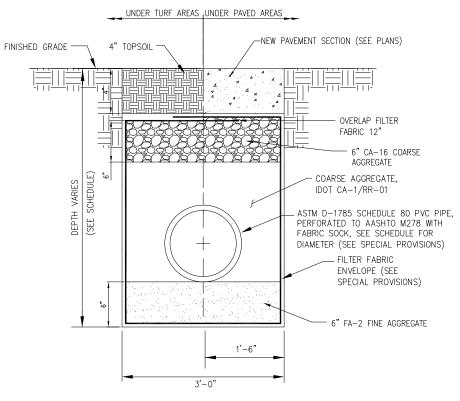
DESIGN BY: LDH 8/30/18

DRAWN BY: LDH 8/30/18

REVIEWED BY: KMS 10/18/18

SHEET TITLE

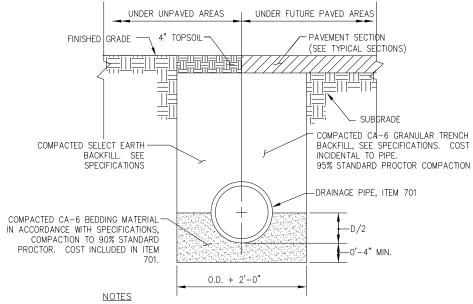
DRAINAGE PLAN AND SCHEDULE



NOTES

- UNSUITABLE MATERIAL ENCOUNTERED DURING PLACEMENT OF BEDDING SHALL BE REMOVED AND REPLACED.
- 2. DO NOT COMPACT SOIL PLACED ABOVE THE AGGREGATE.
- SEPARATE PAYMENT FOR COARSE AND FINE AGGREGATES, FILTER FABRIC ENVELOPE, PVC PIPE, AND FABRIC SOCK WILL NOT BE MADE BUT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE PER LINEAR FOOT OF INFILTRATION TRENCH.
- 4. SEE SPECIAL PROVISIONS.

INFILTRATION TRENCH



- UNSUITABLE MATERIAL ENCOUNTERED DURING PLACEMENT OF BEDDING SHALL BE REMOVED AND REPLACED.
- 2. WITHIN 3 FEET OF FUTURE PAVED AREA, GRANULAR BACKFILL IS TO BE USED INSTEAD OF EARTH BACKFILL.
- AT CONTRACTOR'S OPTION, IDOT CONTROLLED LOW STRENGTH MATERIAL WITH A HIGH EARLY STRENGTH, "FLASH FILL", MAY BE USED INSTEAD OF GRANULAR TRENCH BACKFILL UNDER PAVEMENTS.
- 4. CA-7 BEDDING MAY BE PERMITTED IN CERTAIN CONDITIONS AS SPECIFIED IN STANDARD SPECIFICATIONS.

PIPE TRENCH



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REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029

NO. DATE DESCRIPTION
DES DWN REV
ISSUE: NOVEMBER 16, 2018
PROJECT NO: 1740084

PROJECT NO: 17A0084
CAD FILE: 22-DRN DET.DWG
DESIGN BY: LDH 8/30/18

DRAWN BY: LDH 8/30/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

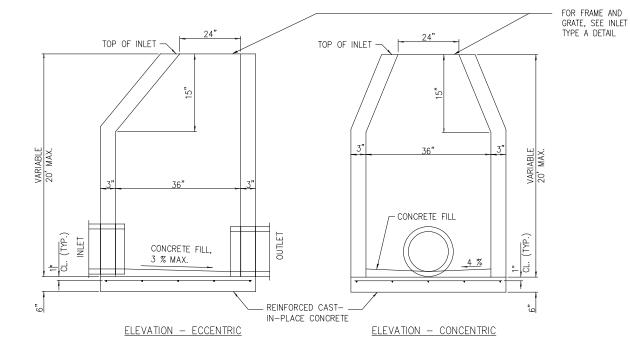
DRAINAGE DETAILS

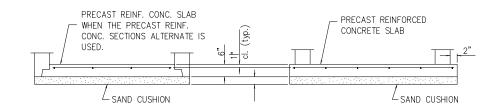
ALTERNATE METHODS

- 1. SEE DRAINAGE AND UNDERDRAIN SCHEDULE FOR LOCATION, SIZE AND NUMBER OF PIPE CONNECTIONS.
- 2. INLETS TO BE PRECAST REINFORCED CONCRETE SECTIONS (T = 5").

INLET TYPE A

(IDOT STANDARD 602301)





ALTERNATE BOTTOM SLAB

NOTES:

- 1. BOTTOM SLABS SHALL BE REINFORCED WITH A MINIMUM OF 0.20 SQ. IN./FT. IN BOTH DIRECTION WITH A MAXIMUM SPACING OF 12".
- 2. BOTTOM SLABS MAY BE CONNECTED TO THE RISER AS DETERMINED BY THE FABRICATOR; HOWEVER, ONLY A SINGLE ROW OF REINFORCEMENT AROUND THE PERIMETER MAY BE UTILIZED.
- 3. SEE STANDARD 602601 FOR OPTIONAL PRECAST REINFORCED CONCRETE FLAT SLAB TOP

INLET TYPE B

(IDOT STANDARD 602306)



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REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029

NO. DATE DESCRIPTION.

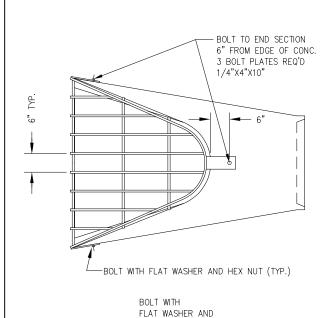
DES DWN REV DESCRIPTION ISSUE: NOVEMBER 16, 2018

PROJECT NO: 17A0084 CAD FILE: 23-DRN DET.DWG

DESIGN BY: LDH 8/30/18 DRAWN BY: LDH 8/30/18 REVIEWED BY: KMS 10/18/18

SHEET TITLE

DRAINAGE DETAILS



HEX NUT - TYP.

H-RARS

INCHES

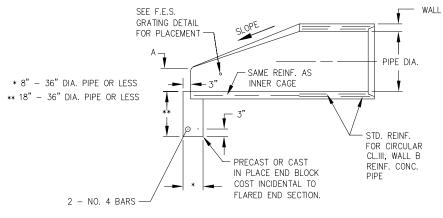
1/4" x 4" x 4"

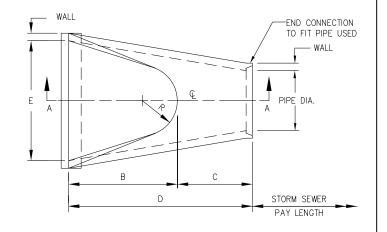
PLATE WASHER

V-BAR

SIZE

V-BARS





SECTION A-A

TOP VIEW

PIPE DIA.	WALL	А	В	С	D	E	R	SLOPE
12"	2"	4"	2'-0"	4'-0 7/8"	6'-0 7/8"	2'-0"	9"	3: 1
15"	2 1/4"	6"	2'-3"	3'-10"	6'-1"	2'-6"	11"	3: 1
18"	2 1/2"	9"	2'-3"	3'-10"	6'-1"	3'-0"	12"	3: 1
21"	2 3/4"	9"	2'-11"	3'-2"	6'-1"	3'-6"	13"	3: 1
24"	3"	9 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"	14"	3:1
27"	3 1/4"	10 1/2"	4'-0"	2'-1 1/2"	6'-1 1/2"	4'-6"	14 1/2"	3:1
30"	3 1/2"	1'-0"	4'-6 1/2"	1'-7 3/4"	6'-1 3/4"	5'-0"	15"	3:1
33"	3 3/4"	1'-1 1/2"	4'-10 1/2"	3'-3 1/4"	8'-1 3/4"	5'-6"	17 1/2"	3:1
36"	4"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	6'-0"	20"	3: 1
42"	4 1/2"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	22"	3:1
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	22"	3:1
54"	5 1/2"	2'-3"	5'-5"	2'-11"	8'-4"	7'-6"	24"	2.4:1

H-BARS REQ'D. INCHES INCHES 12 1/2ø 5/8ø 1/2 1/2 4 1/2 15 1/2ø 5/8ø .3 1/2 18 1/2ø 5/8ø 4 1/2 21 1/2ø 5/8ø 1/2 5 1/2 5 24 5/8ø 3/4ø 27 5/8ø 3/4ø 4 1/2 5 1/2 30 3/4ø 1/2 5 1/2 5/8ø 36 3/4ø 1ø 3/4 8 3/4 42 3/4ø 1ø 8 48 3/4 3/4ø 1ø 8 54 3/4ø 1-1/2 PIPE 3/4

H-BAR

SIZE

1-1/2" R

→ WALL

- OPTIONAL 24 BAR DIA. MIN. SPLICE

"A"

DIM.

8

END VIEW

BOLT

DIA

3/4

No. OF

NOT

24 X 38

ELLIPTICAL

- 1. BARS AND PLATES ARE HOT ROLLED STEEL.
- 2. BARS, PLATES, PIPE AND BOLTS ARE GALVANIZED.

3/4ø

3. SEE SPECIAL PROVISIONS FOR COORDINATION WITH GRATING AND FLARED END SECTION.

1ø

<u>NOTES</u>

- 1. GRATING SHALL BE PAID FOR UNDER ITEM AR752518.
- 2. THE END BLOCK SHALL BE PLACED PRIOR TO THE INSTALLATION OF THE FLARED END SECTION. THE END BLOCK SHALL BE BACKFILLED IN ACCORDANCE WITH ARTICLE 502.10 OF IDOT SPECIFICATIONS, WITH COST INCIDENTAL TO FLARED END SECTION.
- PRECAST CONCRETE FLARED END SECTIONS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-170 CLASS III, WALL B REINFORCED CONCRETE PIPE.
- 4. MODIFICATION IS DUE TO THE RELOCATION OF THE CONNECTION POINT BETWEEN THE GRATE AND THE FLARED END SECTION.
- 5. SEE SPECIAL PROVISIONS FOR COORDINATION WITH GRATING AND FLARED END SECTION.

PRECAST CONCRETE FLARED END SECTION

(IDOT STANDARD 542301-MODIFIED)

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REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029

NO.	DATE	DESCRIPTION				
140.	DAIL	DES	DWN	REV		
ISSUE:	NOVEM	BER 1	6, 201	8		
DDO IFOT NO. 474 0004						

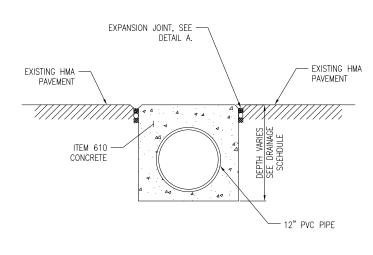
ISSUE: NOVEMBER 16, 20
PROJECT NO: 17A0084
CAD FILE: 24-DRN DET.DWG
DESIGN BY: LDH 8/30/18

DRAWN BY: LDH 8/30/18

REVIEWED BY: KMS 10/18/18

SHEET TITLE

DRAINAGE DETAILS

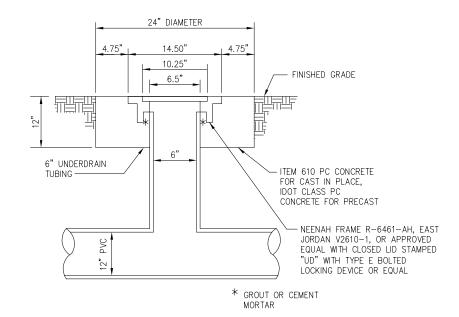


NOTES:

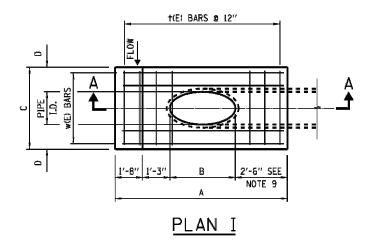
- ALL REMOVAL, CONCRETE AND JOINT MATERIAL TO BE INCIDENTAL TO CONCRETE CRADLE/COLLAR, ITEM AR701841.
- 2. 12" PVC PIPE PAID UNDER ITEM AR701012.

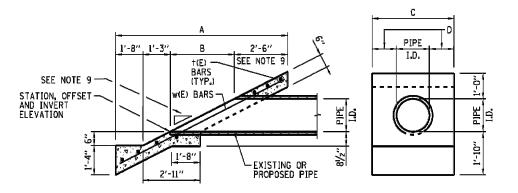
1/4" RADIUS OR CHAMFER 3/4" ± 1/8" 3/4" ± 1/8" NON-EXTRUDED PREMOLDED COMPRESSIBLE MATERIAL ASTM D6690, TYPE II DETAIL "A" (NOT TO SCALE)

CONCRETE CRADLE/COLLAR



UNDERDRAIN INSPECTION HOLE





SECTION A-A

ELEVATION

TABLES FOR DIMENSIONS, REINFORCEMENT AND QUANTITIES FOR ONE SLOPED HEADWALL TYPE I

SLOPED HEADWALL DIMENSION TABLE - TYPE I							
PIPE I.D.	А	В	C	D			
6"	6'-8"	1'-3"	2'-6"	1'-0"			
12"	7'-11''	2'-6"	3'-0"	1'-0"			
15"	8'-7"	3'-2"	3′-9″	1'-3"			
18"	9'-2"	3'-9"	4'-6"	1'-6"			

PIPE	RE:	NFORCM	ENT BARS
	MARK(E)	NO. & SIZE	LENGTH
6"	†6	7-#4	2'-2"
U	w6	4-#4	6'-8''
12"	†12	7-#4	2'-8''
12	w12	4-#4	8'-2''
15"	+15	7-#4	3'-5''
10	w15	4-#4	8'-11''
18"	†18	7-#4	4'-2''
10	₩18	4-#4	9'-6"

DESIGN NO.	INSIDE DIA. OF PIPE	CONC. 1 HDWL. (CU. YD.)	REINF. BARS. 1 HDWL. (POUND)
F-6-2	6"	0.5	29
F-12-2	12"	0.6	35
F-15-2	15"	0.8	40
F-18-2	18"	1.0	45

SLOPED HEADWALL TYPE I

(ILLINOIS TOLLWAY STANDARD B9-04)
PAID UNDER ITEM AR752612 CONCRETE HEADWALL 12"

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IDA No: C75-4625

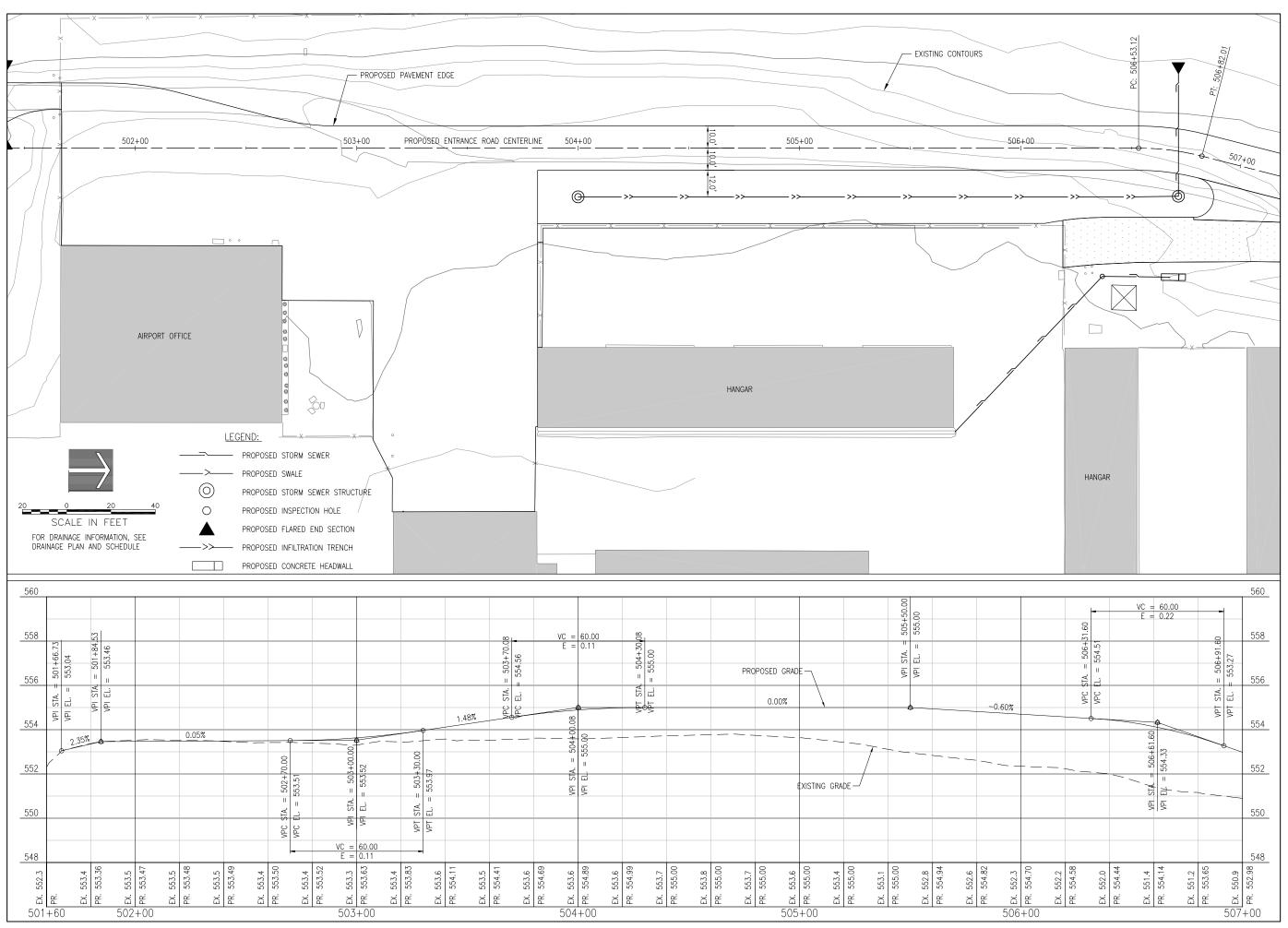
Contract No. MA029

NO.	DATE	DES	CRIPT	ION		
NO.	DAIL	DES	DWN	REV		
ISSUE:	NOVEM	BER 1	6, 201	8		
PROJEC	PROJECT NO: 17A0084					
CAD FILE: 25-DRN DET.DWG						
DESIGN BY: LDH 8/30/18						
DRAWN BY: LDH 8/30/18						

DRAINAGE DETAILS

REVIEWED BY: KMS 10/18/18

SHEET TITLE





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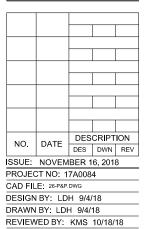


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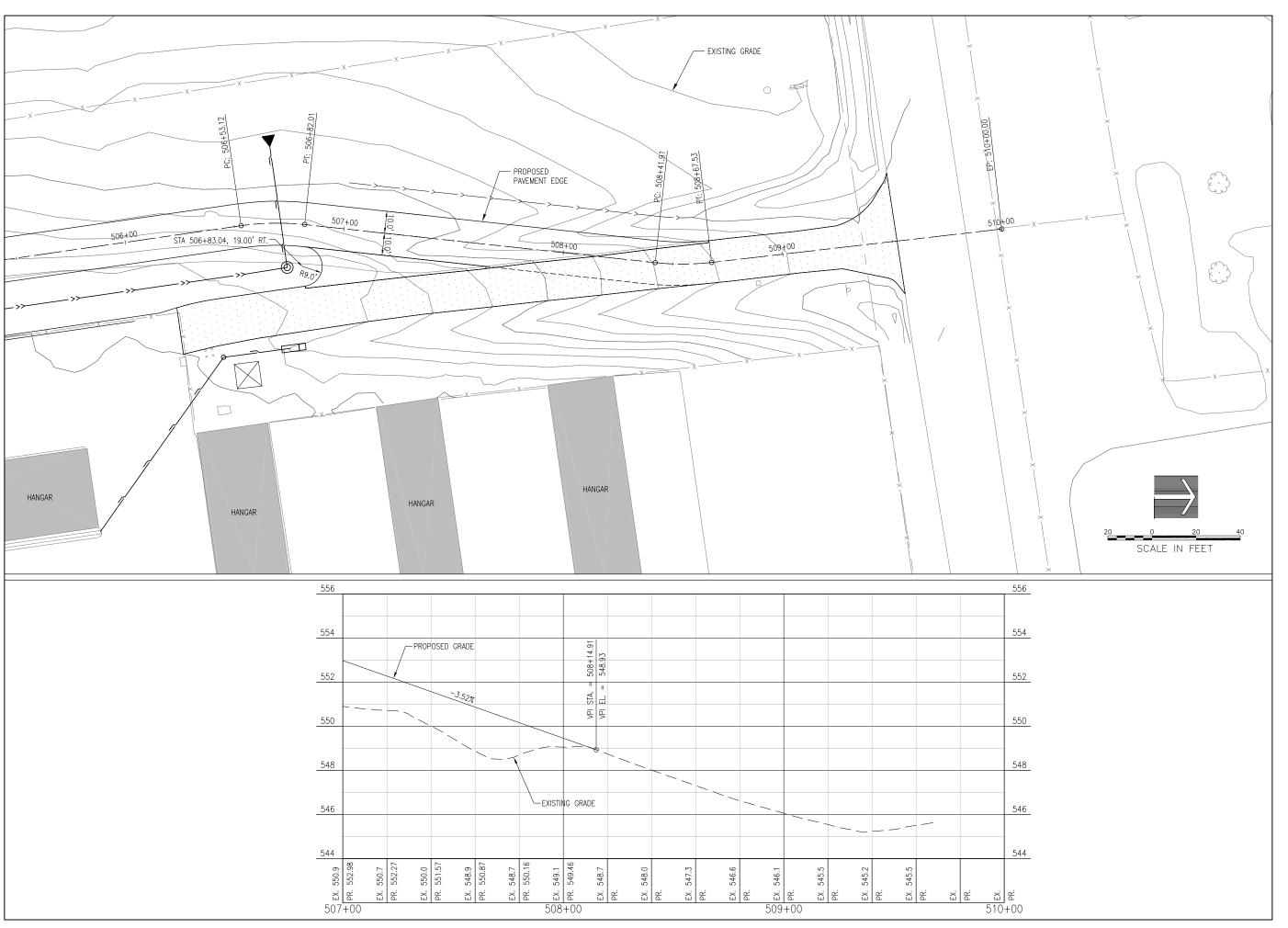
IDA No: C75-4625

Contract No. MA029



SHEET TITLE

PLAN & PROFILE -STA. 501+60 THRU 507+00





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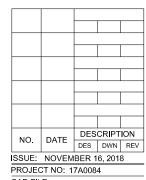


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IDA No: C75-4625

Contract No. MA029



PROJECT NO: 17A0084

CAD FILE: 27-P8P.DWG

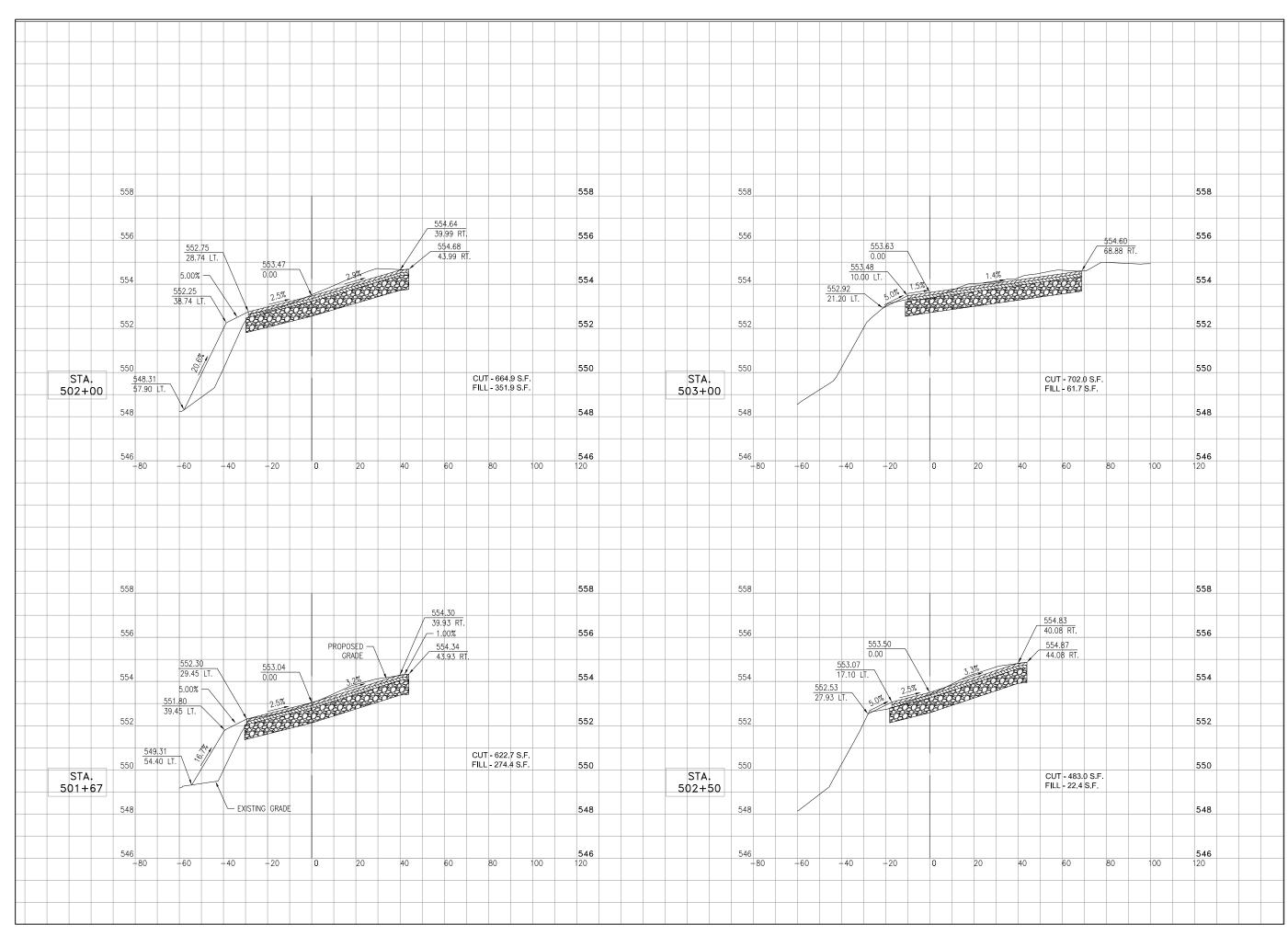
DESIGN BY: LDH 9/7/18

DRAWN BY: LDH 9/7/18

REVIEWED BY: KMS 10/18/18

SHEET TITLE

PLAN & PROFILE -STA. 507+00 THRU 510+00





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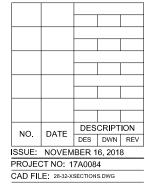


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REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

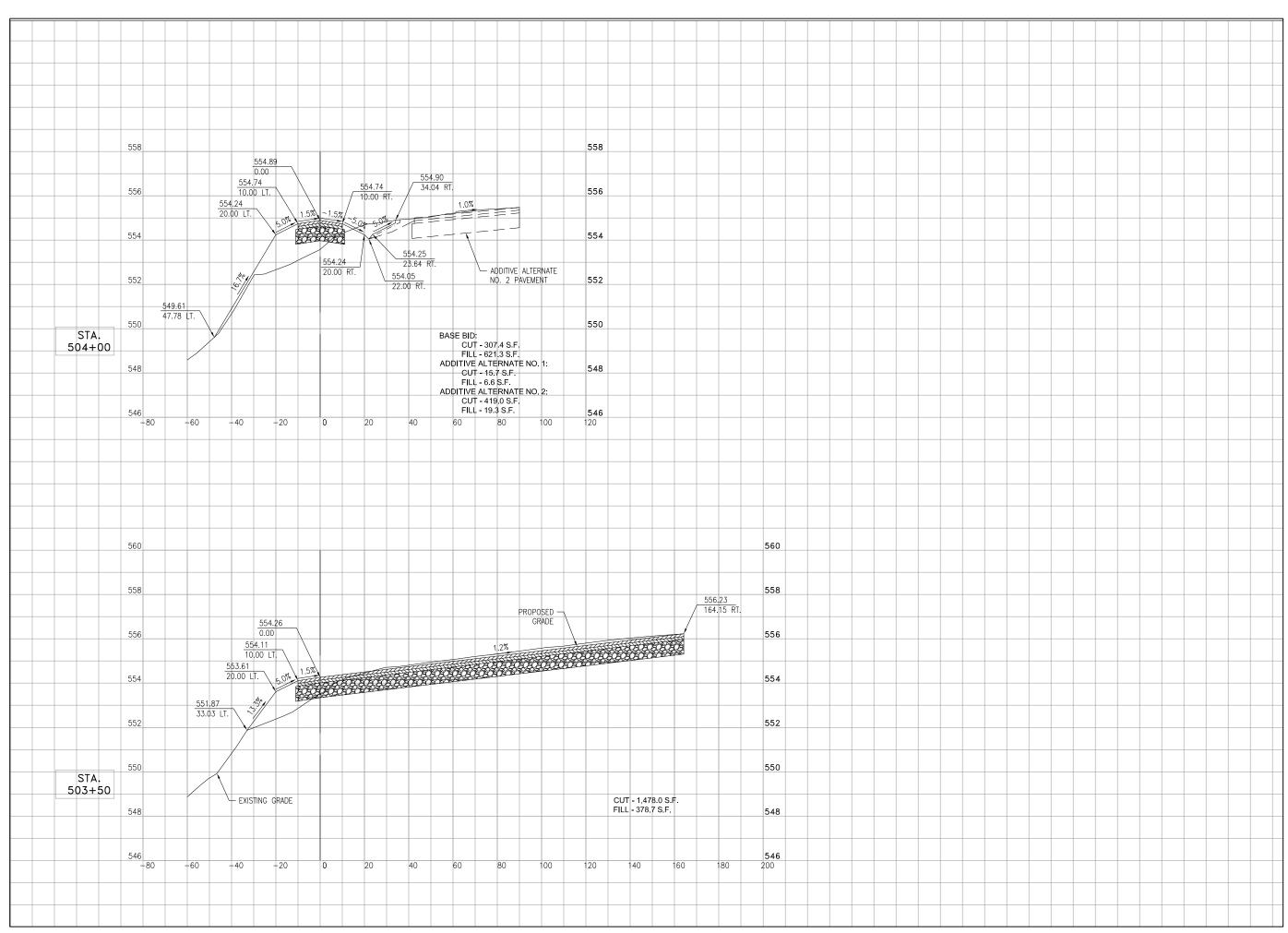
Contract No. MA029



CAD FILE: 28-32-XSECTIONS.DWG
DESIGN BY: LDH 9/6/18
DRAWN BY: LDH 9/6/18
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SHEET TITLE

CROSS SECTIONS -STA. 501+67 THRU 503+00





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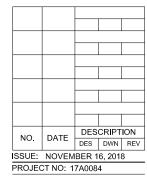


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IDA No: C75-4625

Contract No. MA029



PROJECT NO: 17A0084

CAD FILE: 28-32-XSECTIONS DWG

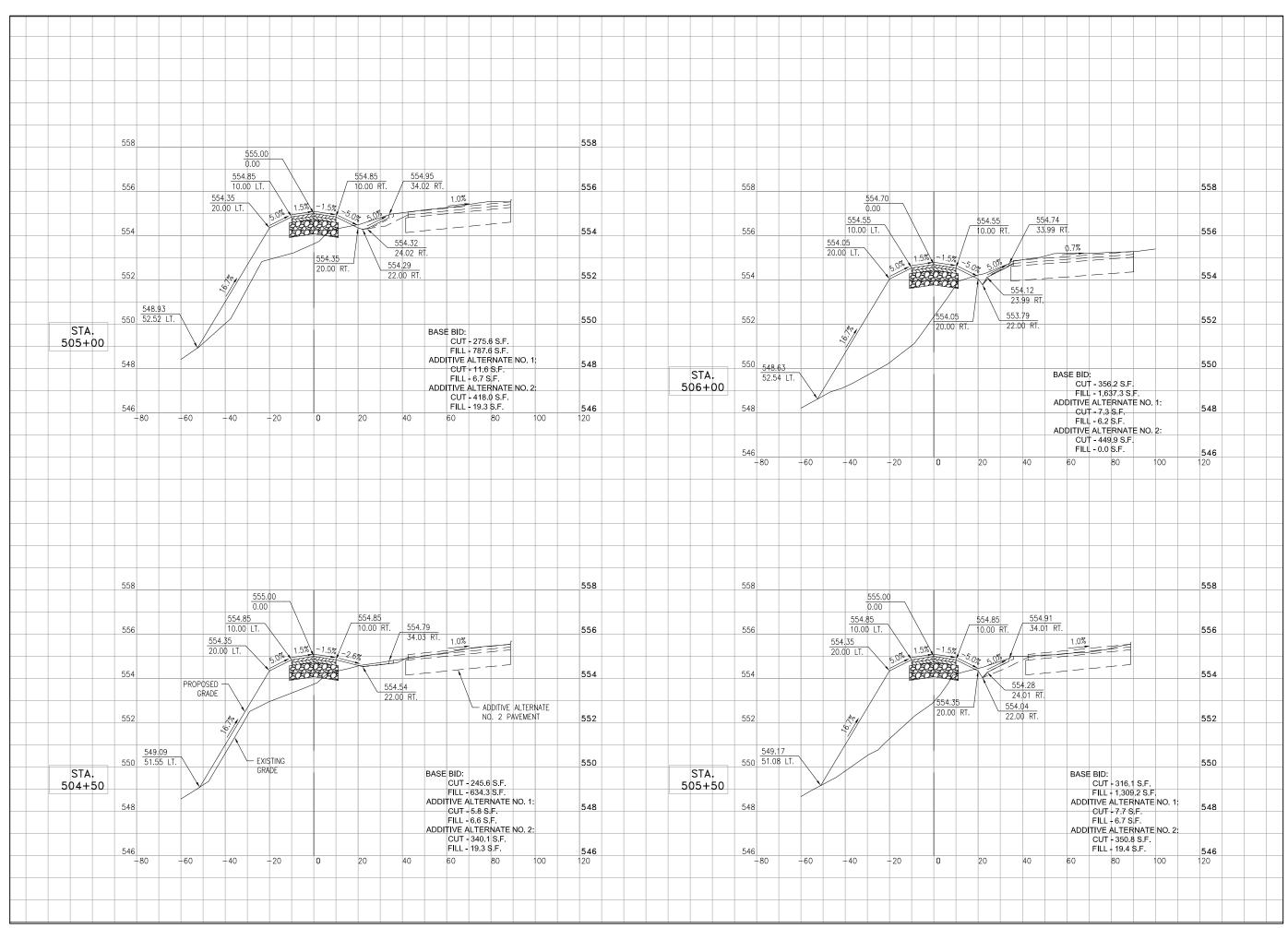
DESIGN BY: LDH 9/6/18

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SHEET TITLE

CROSS SECTIONS -STA. 503+50 THRU 504+00





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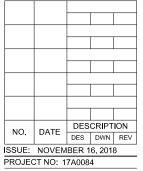


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IDA No: C75-4625

Contract No. MA029



PROJECT NO: 17A0084

CAD FILE: 28-32-XSECTIONS.DWG

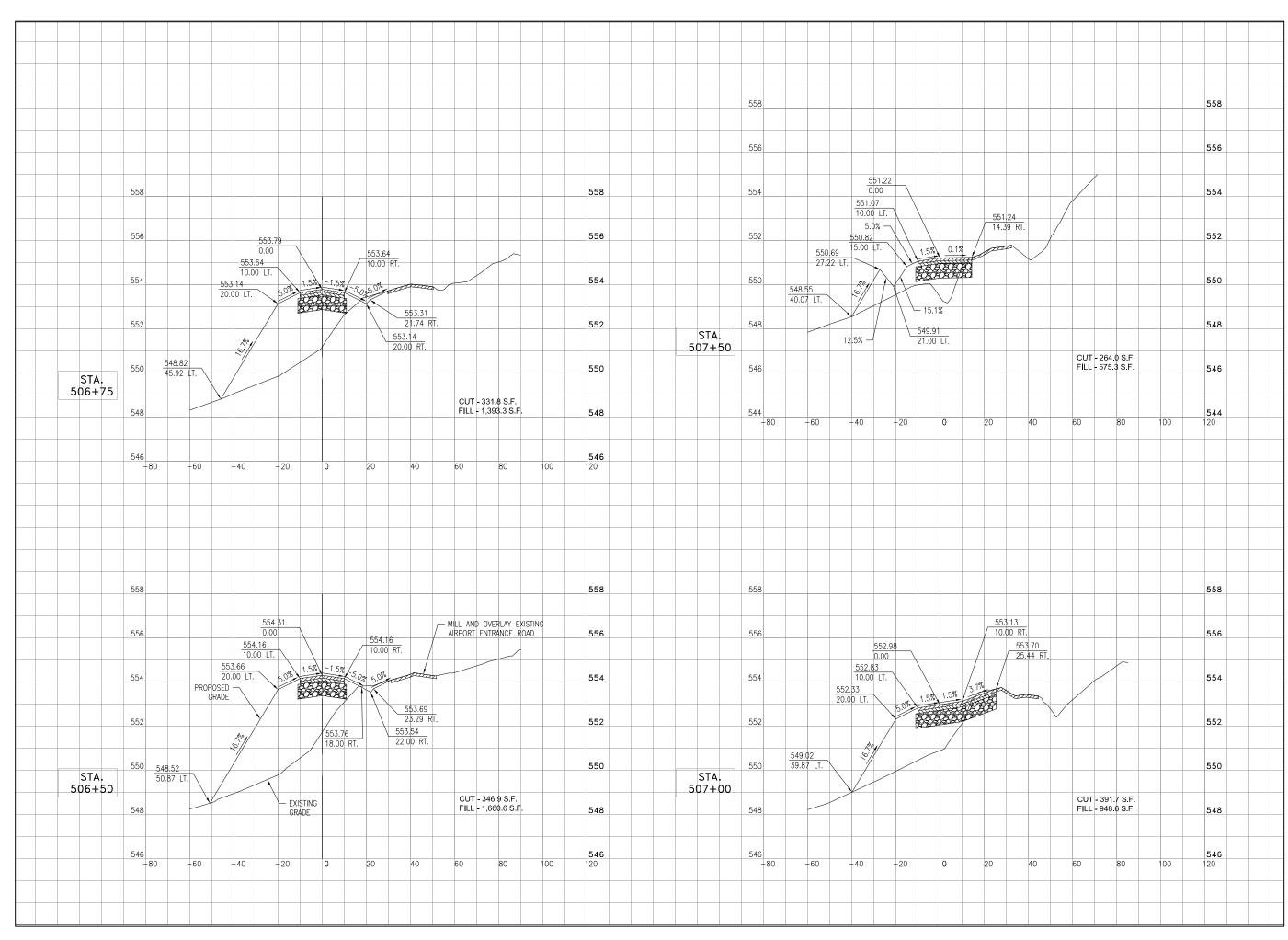
DESIGN BY: LDH 9/6/18

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SHEET TITLE

CROSS SECTIONS -STA. 504+50 THRU 506+00





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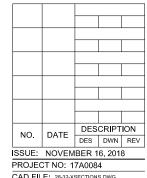


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IDA No: C75-4625

Contract No. MA029



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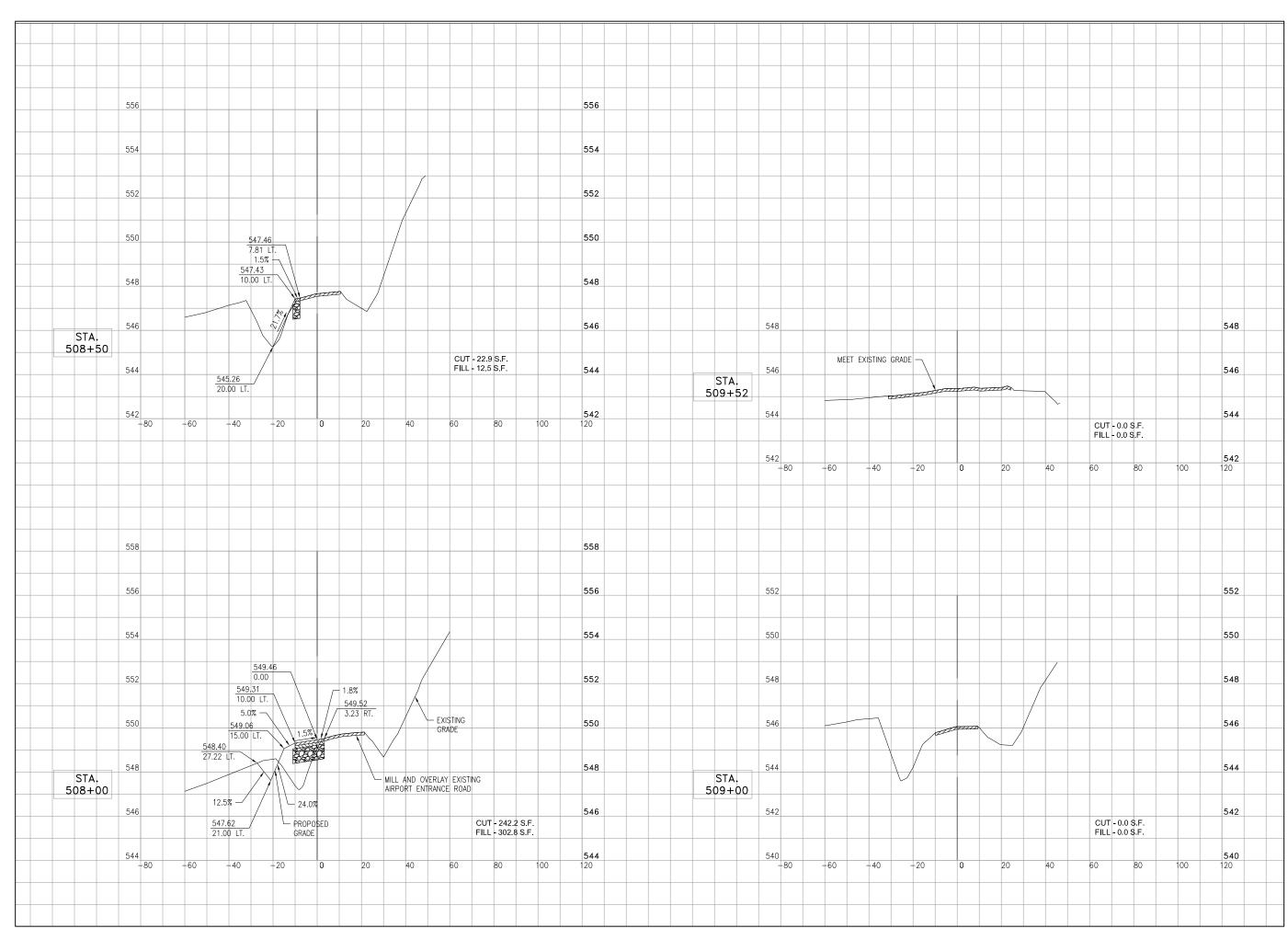
DESIGN BY: LDH 9/6/18

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SHEET TITLE

CROSS SECTIONS -STA. 506+50 THRU 507+50





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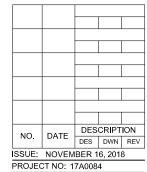


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IDA No: C75-4625

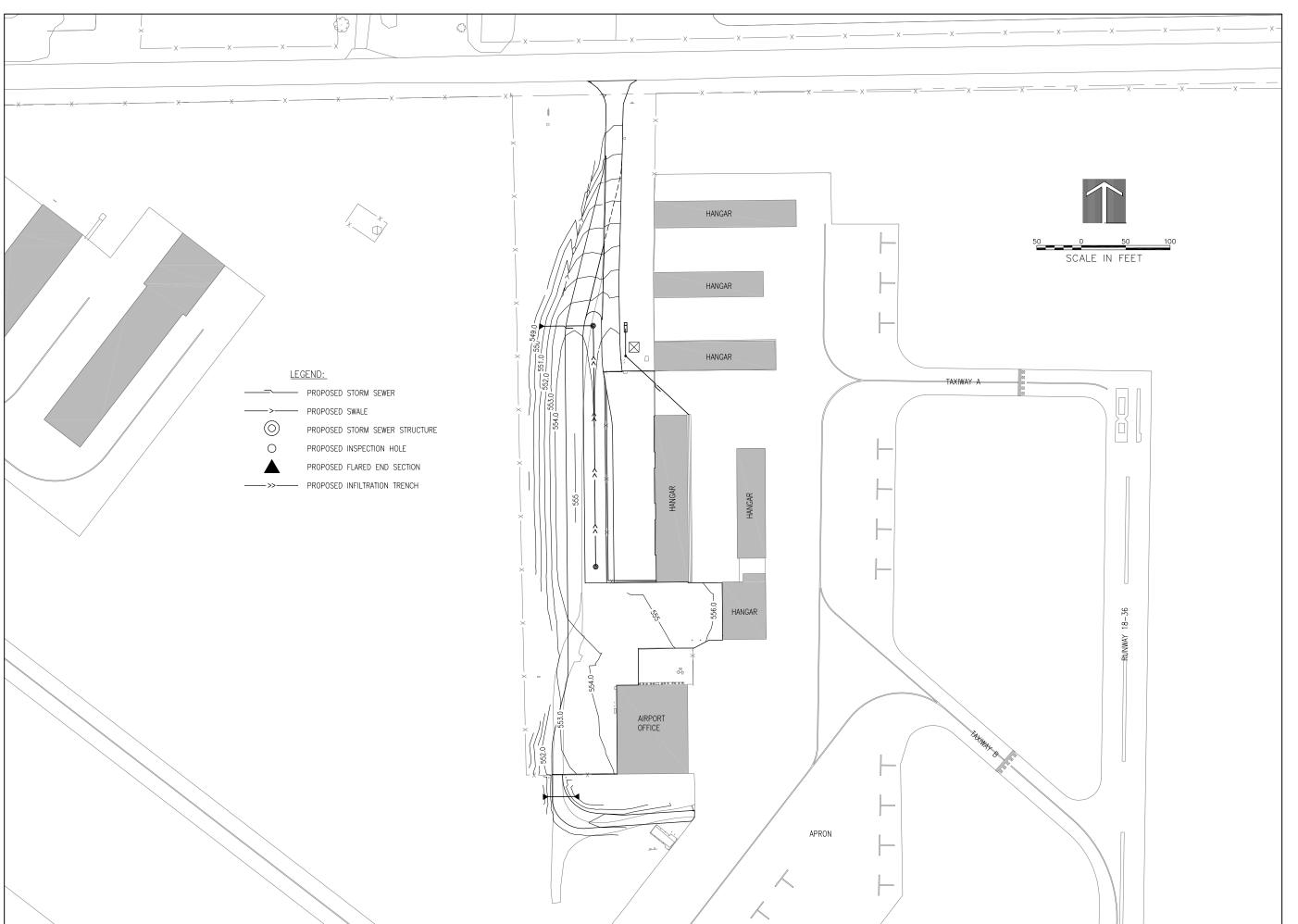
Contract No. MA029



PROJECT NO: 17A0084
CAD FILE: 28-32-XSECTIONS.DWG
DESIGN BY: LDH 9/6/18
DRAWN BY: LDH 9/6/18
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SHEET TITLE

CROSS SECTIONS -STA. 508+00 THRU 509+52





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REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR **PAVEMENT**

IDA No: C75-4625

Contract No. MA029

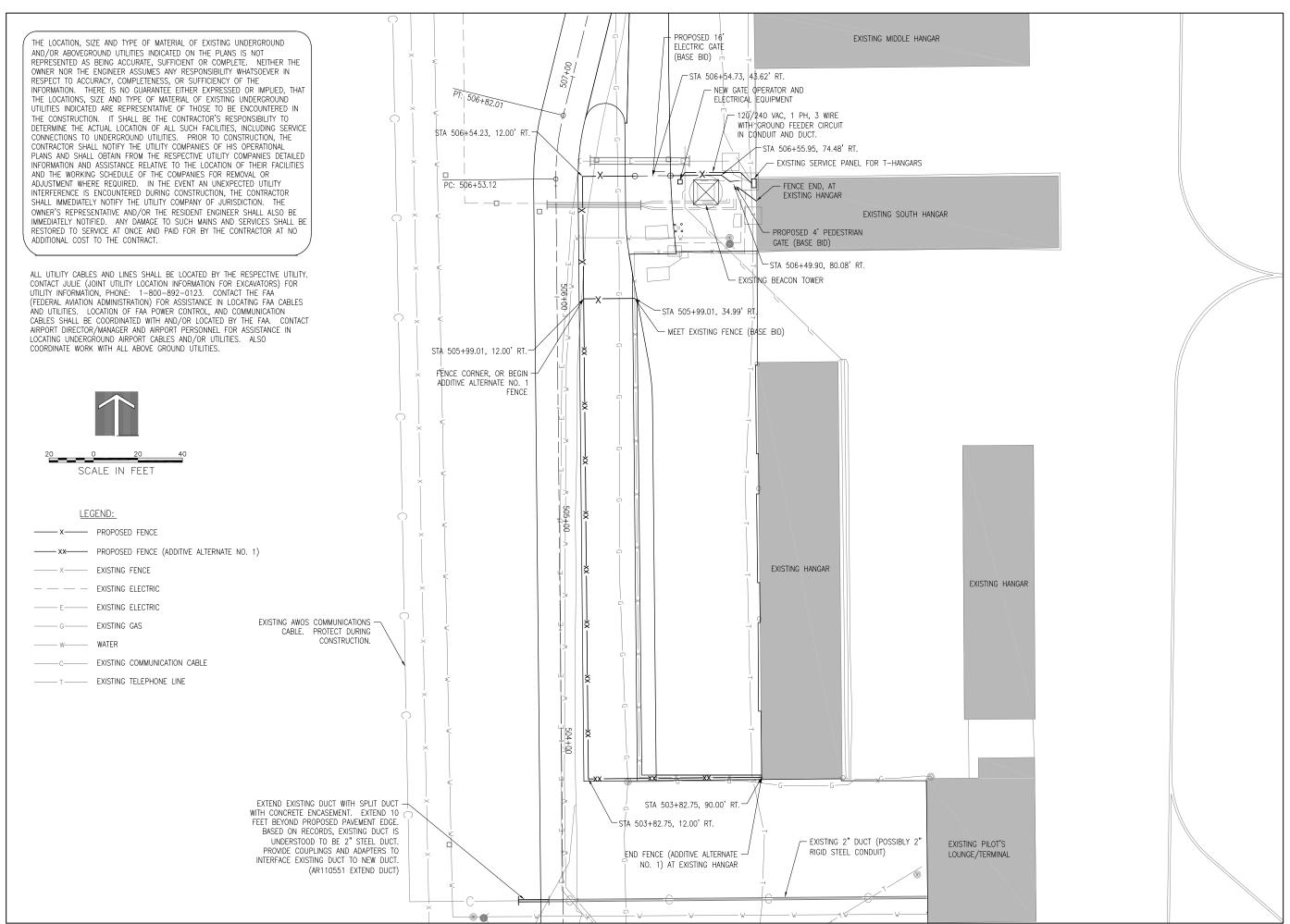


CAD FILE: 33-GRADING PLAN DWG

DESIGN BY: LDH 9/10/18 DRAWN BY: LDH 9/10/18 REVIEWED BY: KMS 10/18/18

SHEET TITLE

GRADING PLAN





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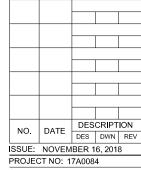


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Contract No. MA029



CAD FILE: 34-FENCINGPLAN.DWG DESIGN BY: LDH 9/10/18

DRAWN BY: LDH 9/10/18 REVIEWED BY: KMS 10/18/18

SHEET TITLE

FENCING PLAN

FABRIC — THE FABRIC MAY BE WOVEN WITH EITHER ZINC COATED STEEL WIRE OR ALUMINUM—ALLOY WIRE IN A 2—INCH MESH. COATED WIRE AND ALUMINUM—ALLOY SHALL HAVE A DIAMETER OF 0.148 INCHES. THE FABRIC SHALL MEET THE FOLLOWING REQUIREMENTS:

- ZINC-COATED STEEL FABRIC SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 181, TYPE 1, CLASS D. THE FABRIC SHALL BE GALVANIZED AFTER WEAVING.
- ALUMINUM-COATED STEEL FABRIC SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 181
 TYPE II. THE UNIT WEIGHT OF THE COATING SHALL BE DETERMINED IN ACCORDANCE WITH AASHTO
 T 213. THE ALUMINUM-COATED STEEL FABRIC SHALL BE GIVEN A CLEAR ORGANIC COATING AFTER
 FABRICATION.
- ALUMINUM-ALLOY FABRIC SHALL BE MADE FROM WIRE CONFORMING TO THE REQUIREMENTS OF AASHTO M 181 TYPE III
- 4. VINYL-COATED FABRIC IS NOT INCLUDED.
- ZINC-5% ALUMINUM-MISCHMETAL ALLOY-COATED STEEL SHALL CONFORM TO THE REQUIREMENTS
 OF ASTM F 1345, CLASS 2.

METAL POSTS — METAL POSTS (LINE, CORNER, END, PULL AND GATE POSTS) SHALL BE THE SHAPES, DIMENSIONS, AND WEIGHT SHOWN IN THE TABLES WITHIN IDOT STANDARD 664001-02 — CHAIN LINK FENCE, FOR THE SHAPES IDENTIFIED BELOW.

- STEEL PIPE, TYPE A, SHALL BE HOT-DIPPED GALVANIZED CONFORMING TO THE REQUIREMENTS
 OF ASTM F 1083.
- 2. STEEL PIPE, TYPE B, SHALL BE MANUFACTURED FROM COLD ROLLED ELECTRIC RESISTANCE WELDED, HEATED AND TEMPERED STEEL. THE STEEL STRIP USED IN THE MANUFACTURE OF THE PIPE SHALL CONFORM TO ASTM A 569 OR ASTM A 607. THE WALL THICKNESS SHALL NOT BE LESS THAN THAT SHOWN IN THE TABLES. THE PRODUCT OF THE YIELD STRENGTH AND SECTION MODULUS OF THE PIPE SHALL NOT BE LESS THAN THAT OF THE PIPE MEETING THE REQUIREMENTS OF ASTM F 1083.

THE PROTECTIVE COATINGS SHALL BE AS FOLLOWS:

- EXTERNAL AND INTERNAL HOT-DIPPED ZINC COATING ACCORDING TO ASTM F1083.
 EXTERNAL COATING SHALL BE IN-LINE HOT-DIPPED ZINC COATING AFTER FABRICATION FOLLOWED
- EXTERNAL COATING SHALL BE IN-LINE HOT-DIPPED ZINC COATING AFTER FABRICATION FOLLOWED BY A CHROMATE CONVERSION COATING WITH AN ELECTROSTATIC THERMOPLASTIC FINISH. THE ZINC COATING SHALL BE NOT LESS THAN .9 OUNCES PER SQUARE FOOT OF SURFACE. THE CHROMATE COATING WEIGHT SHALL BE 30 MICROSPAMS + .0002 INCHES
- COATING WEIGHT SHALL BE 30 MICROGRAMS + .0002 INCHES.

 THE INTERNAL SURFACE SHALL BE GIVEN CORROSION PROTECTION BY IN-LINE APPLICATION OF A FULL ZINC BASE ORGANIC COATING AFTER FABRICATION. THE COATING SHALL BE 87% ZINC POWDER BY WEIGHT AND CAPABLE OF PROVIDING GALVANIC PROTECTION. THE THICKNESS SHALL BE A MINIMUM OF .5 MIL. THE EXTERNAL PROTECTIVE COATING SHALL BE CAPABLE OF WITHSTANDING THE FOIL OWING TESTS:

 EXPOSURE TEST
 ASTM
 DESIGNATION EXPOSURE TIME

 SALT SPRAY
 ASTM B 117
 1000 HRS. MIN.

 HUMIDITY
 ASTM G 23
 500 HRS. MIN.

 WEATHERING
 ASTM G 23
 500 HRS. MIN.

THE INTERNAL PROTECTIVE COATING SHALL BE CAPABLE OF WITHSTANDING EXPOSURE TO SALT SPRAY, ASTM B 117, FOR A MINIMUM OF 500 HOURS.

- 3. STEEL PIPE, TYPE C, SHALL BE MANUFACTURED BY ROLLED FORMING ALUMINIZED STEEL TYPE 2 STRIP AND ELECTRIC RESISTANCE WEIDING INTO TUBULAR FORM. THE OUTSIDE OF THE WELD AREA SHALL BE METALLIZED WITH COMMERCIALLY PURE ALUMINUM TO A THICKNESS SUFFICIENT TO PROVIDE RESISTANCE TO CORROSION EQUAL TO THAT OF THE REMAINDER OF THE OUTSIDE OF THE TUBE. THE ALUMINUM COATING WEIGHT SHALL BE A MINIMUM OF 0.75 OUNCES PER SQUARE FOOT, TRIPLE SPOT TEST, 0.70 OUNCES PER SQUARE FOOT SINGLE SPOT TEST, AS MEASURED IN ACCORDANCE WITH ASTM A 428. THE STEEL STRIP USED IN THE MANUFACTURE OF THE PIPE SHALL CONFORM TO ASTM A 787 TYPE 1 AND SHALL HAVE A MINIMUM YIELD STRENGTH OF 50,000 P.S.I. THE WEIGHT OF THE PIPE SHALL NOT BE LESS THAN THAT SHOWN ON THE PLANS AND THE PRODUCT OF THE YIELD STRENGTH AND SECTION MODULUS OF THE PIPE SHALL NOT BE LESS THAN THAT OF PIPE MEETING THE REQUIREMENTS OF ASTM A 120.
- 4. SQUARE HOLLOW STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 500, GRADE B OR ASTM A 501. THE TUBING SHALL BE GALVANIZED INSIDE AND OUTSIDE IN ACCORDANCE WITH AASHTO M 111, USING ZINC OF ANY GRADE CONFORMING TO THE REQUIREMENT OF AASHTO M 120. THE ZINC COATING SHALL NOT BE LESS THAN 2.0 OUNCES PER SQUARE FOOT OF SURFACE.
- 5. STRUCTURAL SHAPES SHALL BE EXCLUDED.

BOTTOM TENSION WIRE - THE BOTTOM TENSION WIRE SHALL BE #9 GAUGE CALVANIZED STEEL WIRE MEETING THE REQUIREMENTS OF AASHTO M 181, THE WIRE SHALL BE STRETCHED TIGHT WITH GALVANIZED TURNBUCKLES SPACED AT INTERVALS NOT MORE THAN 1,000 FEET. THE ZINC COATING SHALL BE NOT LESS THAN 12 OUNCES PER SOUARE FOOT OF SURFACE.

METAL BRACES - METAL BRACES SHALL HAVE THE SHAPES SHOWN ON THE PLANS AND AT THE DIMENSIONS SHOWN WITHIN THE TABLE WITHIN IDOT STANDARD 664001-02 - CHAIN LINK FENCE. THEY SHALL BE ACCORDING TO THE SPECIFICATIONS FOR METAL POSTS, EITHER STEEL PIPE, STRUCTURAL SHAPE OR ROLLED FORMED SECTION AND SHALL BE GALVANIZED AS SPECIFIED FOR METAL POSTS.

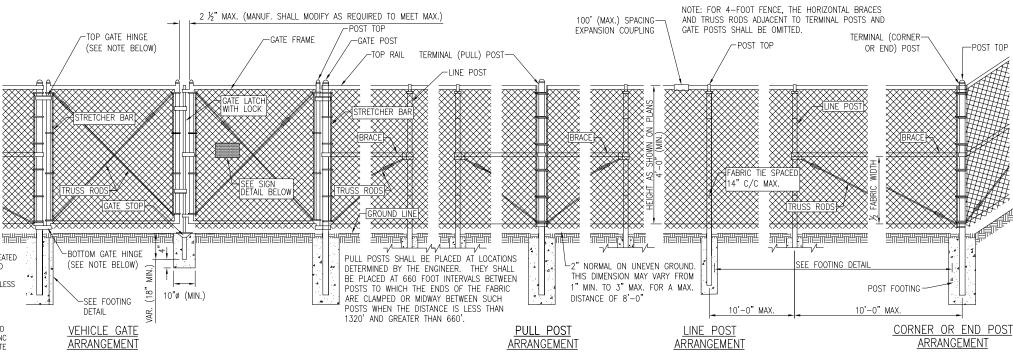
 ${\tt GATE}$ – THE GATE TYPE AND SIZE SHALL CONFORM TO THE DETAILS SHOWN ON THE PLANS AND AS PROVIDED IN THE SPECIAL PROVISIONS.

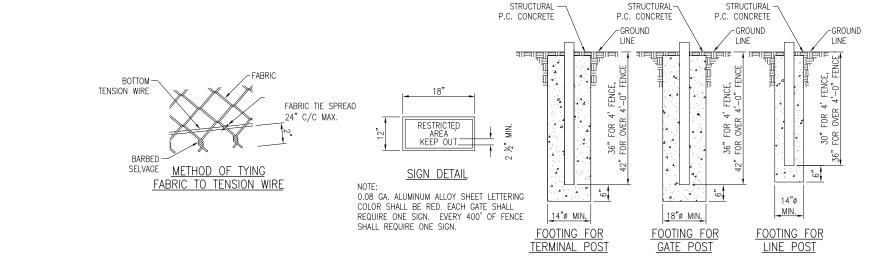
STRUCTURAL P.C. CONCRETE - THE STRUCTURAL P.C. CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF ITEM 610 OF THE STANDARD SPECIFICATIONS. A HIGH EARLY STRENGTH CONCRETE MAY BE USED. THE CONCRETE MIX DESIGN SHALL BE APPROVED FOR USE BY IDOT-AERONAUTICS PRIOR TO USING IT ON THE PROJECT.

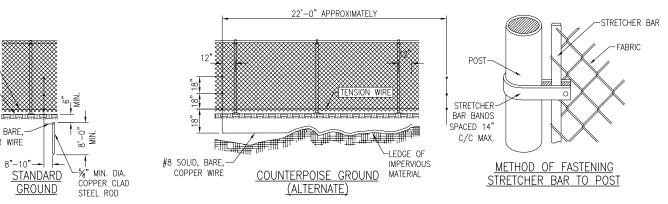
BOLTS AND NUTS — ALL BOLTS AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 307 AND SHALL BE ZINC-COATED IN ACCORDANCE WITH AASHTO M 298. CLASS 50 OR ASTM A 153.

WIRE TIES AND TENSION WIRE — WIRE FABRIC TIES, WIRE TIES, AND TENSION WIRE FURNISHED FOR USE IN CONJUNCTION WITH A GIVEN TYPE OF FABRIC SHALL BE OF THE SAME MATERIAL AND COATING WEIGHT IDENTIFIED WITH THE FABRIC TYPE. ZINC—COATED STEEL WIRE, ALUMINUM—COATED STEEL WIRE, AND ALUMINUM ALLOY WIRE SHALL CONFORM TO REQUIREMENTS OF AASHTO M 181, TYPE I CLASS 2 OR TYPE II. THE TOP TENSION WIRE WILL BE DELETED IN LIEU OF THE TOP RAIL WHEN TOP RAIL IS REQUIRED. THE BOTTOM TENSION WIRE IS REQUIRED.

TOP RAILS - THE TOP RAILS SHALL BE 1.66 INCH O.D., GALVANIZED OR ALUMINUM COATED PIPE HAVING A MINIMUM BENDING STRENGTH OF 202 LBS. AT THE CENTER OF A 10 FT. SPAN AND WILL BE REQUIRED.







PROTECTIVE ELECTRICAL GROUND

NERAL NOTE:

TENSION:

GROUND LINE

CONTINUOUS FENCE SHALL BE GROUNDED AT INTERVALS NOT EXCEEDING 500 FT IN URBAN AREAS AND 1,000 FT IN RURAL AREAS. THERE SHALL BE A GROUND WITHIN 100 FT OF CATES IN EACH SECTION OF THE FENCE ADJACCHT TO THE GATE. FENCE UNDER A POWER LINE SHALL BE GROUNDED BY THREE GROUNDS; ONE DIRECTLY UNDER THE CROSSING AND ONE ON EACH SIDE 25 FT TO 50 FT AWAY. A SINGLE GROUND SHALL BE LOCATED DIRECTLY UNDER EACH TELEPHONE WIRE OR CABLE CROSSING. THE COUNTERPOISE GROUND SHALL BE USED ONLY WHERE IT IS IMPOSSIBLE TO DRIVE A GROUND ROD. THE GROUND WIRE SHALL BE CONNECTED TO THE FABRIC AND TENSION WIRE WITH UL LISTED GROUNDING CONNECTORS OF CAST BRONZE BODY AND BRONZE OR STAINLESS STEEL BOLTS AND WASHERS. GROUNDING CONNECTORS SHALL BE SIZED AND SUITABLE FOR THE RESPECTIVE APPLICATION. CONNECTIONS TO GROUND RODS SHALL BE WITH UL LISTED GROUNDING CONNECTORS SUITABLE FOR EXOTHERMIC WELD TYPE CONNECTORS, CADWELD BY ERICO PRODUCTS, INC., DIRECT BURIAL IN EARTH OR SOLON, OHIO, (PHONE 1—800—248—9353), THERMOWELD BY CONTINENTAL INDUSTRIES, INC., TULSA, OKLAHOMA (PHONE 918—663—1440) OR ULTRAWELD BY HARGER, GRAYSLAKE, ILLINOIS (PHONE 1—800—842—7437). EXOTHERMIC WELD CONNECTIONS SHALL BE INSTALLED IN CONFORMANCE WITH THE RESPECTIVE MANUFACTURER'S DIRECTIONS USING MOLDS SUITABLE FOR EACH RESPECTIVE APPLICATION. GROUND RODS SHALL BE #6 AWG BARE SOLID COPPER CONDUCTOR.



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REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

-FARRIC

SPREAD

FABRIC TO PIPE

WHERE THE FENCE LINE HAS A CHANGE IN

ANGLE IS LESS THAN 15' AND EXISTING

DIRECTION OF 15' OR MORE A TERMINAL POST

CONDITIONS REQUIRE TERMINAL POST, THEY SHALL BE PLACED AS DIRECTED BY ENGINEER.

SHALL BE PLACED AS SHOWN ABOVE WHERE

24" C/C MAX

-TERMINAL POST

FENCE LINE

KNUCKLE-

TOP RAIL PIPE

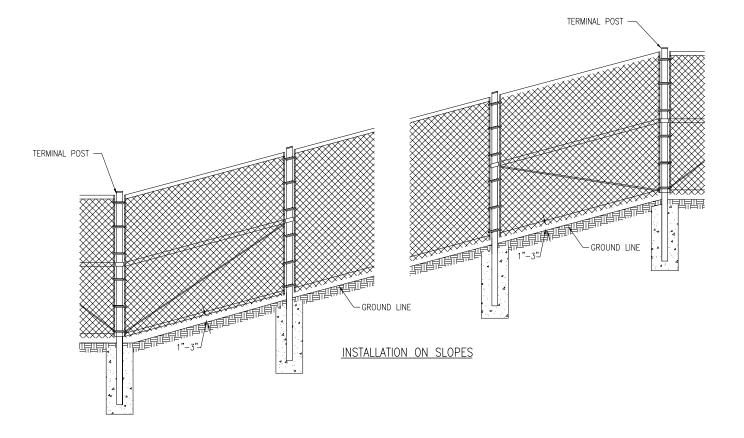
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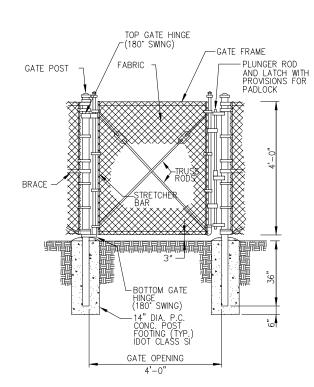
Contract No. MA029



FENCE DETAILS 01

SHEET TITLE





NOTE: 180' HINGES FOR GATES SHALL NOT BE AN "ADJUSTABLE ARM HINGE." INSTEAD HINGE SHALL BE HOOVER FENCE COMPANY'S BULLDOG CHAIN LINK GATE HINGE OR APPROVED EQUAL.

PEDESTRIAN GATE, 4 FOOT WIDE



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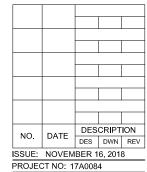


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REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029



CAD FILE: 36-FENCEDET.DWG
DESIGN BY: LDH 9/10/18
DRAWN BY: LDH 9/10/18

REVIEWED BY: KMS 10/18/18

SHEET TITLE

FENCE DETAILS 02

ELEC	CTRICAL LEGEND - ONE-LINE DIAGRAM		
	CABLE TERMINATOR/LUG		
***	TRANSFORMER		
_\	DISCONNECT SWITCH		
-\-	FUSIBLE DISCONNECT SWITCH		
	CIRCUIT BREAKER		
THERMAL MAGNETIC CIRCUIT BREAKER			
	FUSE		
↓	TRANSIENT VOLTAGE SURGE SUPPRESSOR OR SURGE PROTECTOR DEVICE		
#	GROUND – GROUND ROD, GROUNDING ELECTRODE, OR AT EARTH POTENTIAL		
Ø	INDICATING LIGHT		
M	MOTOR		
#	LOAD, MOTOR, # = HORSEPOWER		
	ELECTRIC UTILITY METER BASE		
0	JUNCTION BOX WITH SPLICE		
XXX	EQUIPMENT, XXX = DEVICE DESCRIPTION		
GND	GROUND BUS OR TERMINAL		
S/N	NEUTRAL BUS		
#	PANELBOARD WITH MAIN LUGS		
	PANELBOARD WITH MAIN BREAKER		
₩	FUSE PANEL WITH MAIN FUSE PULLOUT		
0	DUPLEX RECEPTACLE 120V SINGLE PHASE GROUNDING TYPE		
8	CONTROL STATION		
N EM	TRANSFER SWITCH		
G	ENGINE GENERATOR SET		

	ELECTRICAL LEGEND — SCHEMATIC			
	NORMALLY OPEN (N.O.) CONTACT			
→ ⊬	NORMALLY CLOSED (N.C.) CONTACT			
(S*)	STARTER COIL, * = STARTER NUMBER			
OL	OVERLOAD RELAY CONTACT			
(CR*)	CONTROL RELAY, * = CONTROL RELAY NUMBER			
(R*)	RELAY, * = RELAY NUMBER			
·	TOGGLE SWITCH / 2 POSITION SWITCH			
OFF AUTO	2-POSITION SELECTOR SWITCH			
HAND AUTO XOO OOO OOO OOO	3-POSITION SELECTOR SWITCH (H-O-A SHOWN)			
	2 POLE DISCONNECT SWITCH			
	3 POLE DISCONNECT SWITCH			
<u>~</u>	PHOTOCELL			
	TERMINAL BLOCK, * = TERMINAL NUMBER			
*	DEVICE TERMINAL, * = DEVICE TERMINAL NUMBER			
	INTERNAL PANEL WIRING			
	FIELD WIRING			
	FUSE			
GND	GROUND BUS OR TERMINAL			
S/N	NEUTRAL BUS			
#	GROUND, GROUND ROD, GROUND BUS			
0 0 0	INDUSTRIAL CONTROL RELAY OR LIGHTING CONTACTOR			
The part of the pa	S1 CUTOUT HANDLE REMOVED			
→ → → → → → → → → →	S1 CUTOUT HANDLE INSERTED			
2	N.O. THERMAL SWITCH			
-T	N.C. THERMAL SWITCH			
	L-830 SERIES ISOLATION TRANSFORMER			

	ELECTRICAL ABBREVIATIONS
A.F.F.	ABOVE FINISHED FLOOR
A, AMP	AMPERES
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
С	CONDUIT
СВ	CIRCUIT BREAKER
CKT	CIRCUIT
CR	CONTROL RELAY
CU	COPPER
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
ЕМ	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EOR	ENGINEER OF RECORD
EP	EXPLOSION PROOF
ES	EMERGENCY STOP
ETL	INTERTEK - ELECTRICAL TESTING LABS
ETM	ELAPSE TIME METER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
GRSC	GALVANIZED RIGID STEEL CONDUIT
HID	HIGH INTENSITY DISCHARGE
HOA	HAND OFF AUTOMATIC
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
J	JUNCTION BOX
KVA	KILOVOLT AMPERE(S)
KW	KILOWATTS
LC	LIGHTING CONTACTOR
LTFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT (UL LISTED)
LTG	LIGHTING
LP	LIGHTING PANEL
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCM	THOUSAND CIRCULAR MIL
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	METAL HALIDE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
NEC	NATIONAL ELECTRICAL CODE (NFPA 70)
NC	NORMALLY CLOSED
NO NO	NORMALLY OPEN
NTS	NOT TO SCALE
OHE	OVERHEAD ELECTRIC
OI L	OVERLOAD

OVERLOAD

PB	PULL BOX
PC	PHOTO CELL
PDB	POWER DISTRIBUTION BLOCK
PNL	PANEL
RCPT	RECEPTACLE
R	RELAY
S	STARTER
SPD	SURGE PROTECTION DEVICE
SPST	SINGLE POLE SINGLE THROW
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UG	UNDERGROUND
UGE	UNDERGROUND ELECTRIC
UL	UNDERWRITER'S LABORATORIES
٧	VOLTS
W/	WITH
W/0	WITHOUT
WP	WEATHER PROOF
XFER	TRANSFER
XFMR	TRANSFORMER
AIDD	ODT FOUIDMENT /FACILITY ADDDED//ATIONS
	ORT EQUIPMENT/FACILITY ABBREVIATIONS
ASOS	AUTOMATED SURFACE OBSERVING SYSTEM
ATCT	AIR TRAFFIC CONTROL TOWER
AWOS	AUTOMATED WEATHER OBSERVING SYSTEM
CCR	CONSTANT CURRENT REGULATOR
DME	DISTANCE MEASURING EQUIPMENT
FAR	FEDERAL AVIATION REGULATION
GS	GLIDE SLOPE FACILITY
HIRL	HIGH INTENSITY RUNWAY LIGHT
ILS	INSTRUMENT LANDING SYSTEM
IM	INNER MARKER
LIR	LOW IMPACT-RESISTANT
LOC	LOCALIZER FACILITY
MALS	MEDIUM INTENSITY APPROACH LIGHTING SYSTEM MEDIUM INTENSITY APPROACH LIGHTING SYSTEM
MALSR	WITH RUNWAY ALIGNMENT INDICATING LIGHTS
MIRL	MEDIUM INTENSITY RUNWAY LIGHT
MITL	MEDIUM INTENSITY TAXIWAY LIGHT
NDB	NON-DIRECTIONAL BEACON
PAPI	PRECISION APPROACH PATH INDICATOR
PLASI	PULSE LIGHT APPROACH SLOPE INDICATOR
RAIL	RUNWAY ALIGNMENT INDICATING LIGHTS
REIL	RUNWAY END IDENTIFIER LIGHT
RVR	RUNWAY VISUAL RANGE
VADI	VISUAL APPROACH DESCENT INDICATOR
VASI	VISUAL APPROACH SLOPE INDICATOR
VOR	VERY HIGH FREQUENCY OMNIDIRECTIONAL
wo	RANGE FACILITY

WC WIND CONE

ELECTRICAL ABBREVIATIONS (CONTINUED)

NOTES:

- 1. ALL ELECTRICAL EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES, AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, INTERTEK TESTING SERVICES VERIFICATION/ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- CONTRACTOR SHALL KEEP A COPY OF THE LATEST NEC IN FORCE ON SITE AT ALL TIMES DURING/CONSTRUCTION FOR USE AS A REFERENCE.
- 3. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT DIRECTOR/MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
- 4. COLOR CODE PHASE AND NEUTRAL CONDUCTOR INSULATION FOR NO. 6 AWG OR SMALLER. PROVIDE COLORED INSULATION OR COLORED MARKING TAPE FOR PHASE AND NEUTRAL CONDUCTORS FOR NO. 4 AWG AND LARGER. INSULATED GROUND CONDUCTORS SHALL HAVE GREEN COLORED INSULATION FOR ALL CONDUCTOR AWG AND/OR KCMIL TO COMPLY WITH NEC 250.119. NEUTRAL CONDUCTORS SHALL HAVE WHITE COLORED INSULATION FOR NO. 6 AWG AND SMALLER TO MEET THE REQUIREMENTS OF NEC 200.6. STANDARD COLORS FOR POWER WIRING AND BRANCH CIRCUITS SHALL BE AS FOLLOWS:

 120/240
 VAC, 1
 PHASE, 3
 WIRE

 PHASE A
 BLACK

 PHASE B
 RED

 NEUTRAL
 WHITE

 GROUND
 GREEN

- CONTRACTOR SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF NFPA 70E- STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE.
- 6. SEE RESPECTIVE SITE PLANS FOR SITE LEGEND INFORMATION.
- 7. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING, DISCONNECTING, RELOCATING, ADJUSTING, WORKING ON, INSTALLING, OR CONNECTING THE RESPECTIVE EQUIPMENT OR OTHER DEVICE.
- 8. HIGH VOLTAGE CIRCUITS (AIRFIELD LIGHTING 5000 VOLT SERIES CIRCUITS AND OTHER CIRCUITS RATED ABOVE 600 VOLTS) AND LOW VOLTAGE CIRCUITS (RATED 600 VOLTS AND BELOW) SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, DUCT, RACEWAY, JUNCTION STRUCTURE OR HANDHOLE.



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REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

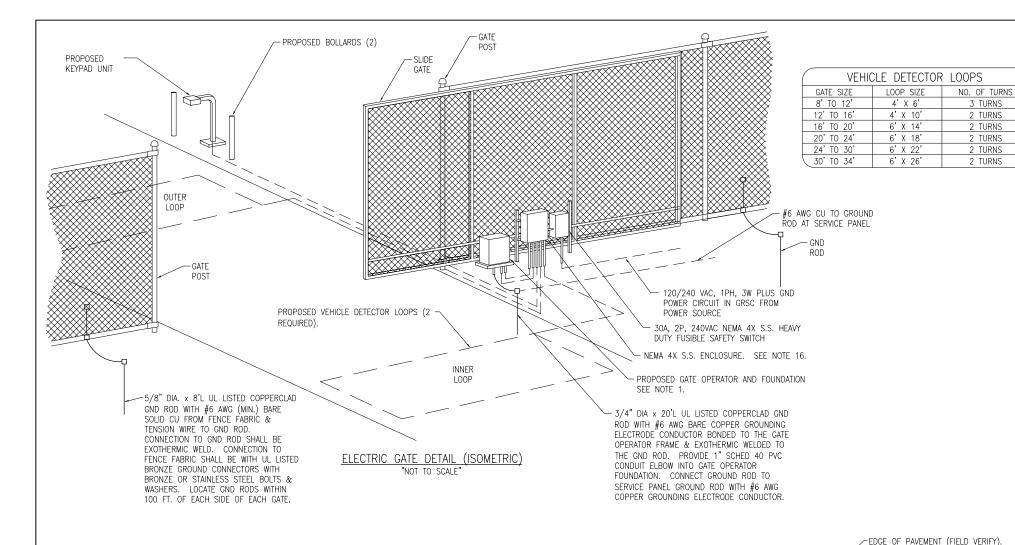
Contract No. MA029

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DESIGN BY: KNL 10/6/18 DRAWN BY: LDH 10/8/18 REVIEWED BY: KMS 10/18/18

SHEET TITLE

ELECTRICAL LEGEND AND ABBREVIATIONS





Moving Gate Can Cause Serious Injury or Death.

KEEP CLEAR! Gate may move at any time without prior warning.

Do not let children operate the gate or play in the gate area

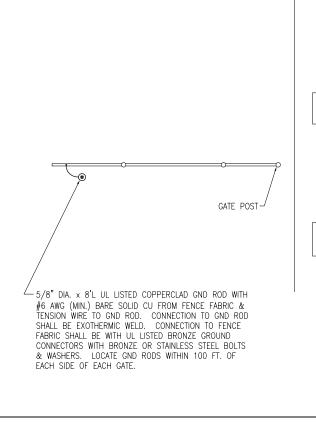
This entrance is for vehicles only.

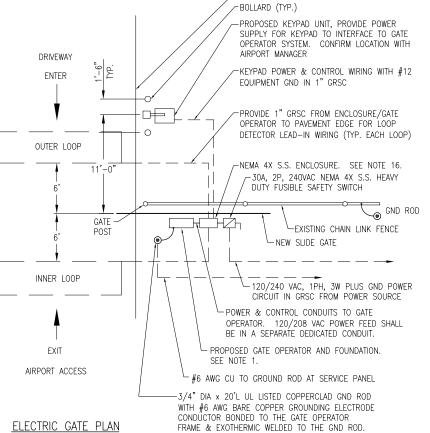
Pedestrians must use separate entrance.

WARNING SIGN DETAIL

<u>NOTES</u>

WARNING SIGNS/PLACARDS AS DETAILED ABOVE OR SIMILAR, SHALL BE INSTALLED WHERE CLEARLY VISIBLE ON BOTH SIDES OF EACH ELECTRIC SLIDE GATE. WARNING SIGNS SHALL BE WEATHERPROOF, CORROSION RESISTANT METAL AS DETAILED ABOVE, AND IN ACCORDANCE WITH THE RESPECTIVE GATE MANUFACTURER'S RECOMMENDATIONS.





"NOT TO SCALE

PROVIDE 1" SCHED 40 PVC CONDUIT ELBOW INTO

GATE OPERATOR FOUNDATION.

NOTES:

2 TURNS

2 TURNS

2 TURNS

2 TURNS

2 TURNS

- SEE SPECIAL PROVISION SPECS FOR REQUIREMENTS ON GATE & GATE OPERATOR
- ALL DIMENSIONS AND LAYOUT INFORMATION SHOWN SHOULD BE ADJUSTED AS RECOMMENDED BY THE MANUFACTURER. SEE SITE PLAN FOR GATE.
- CONCRETE FOUNDATIONS SHALL BE PROVIDED FOR THE SLIDE GATE OPERATOR UNIT. FOUNDATION FOR THE GATE OPERATOR SHALL BE 48" (MIN.) IN DEPTH AND OF THE SIZE RECOMMENDED BY THE MANUFACTURER.
- 1" GRS CONDUIT WILL BE REQUIRED BETWEEN THE SLIDE GATE OPERATOR INSTALLATION AND THE KEYPAD ACCESS CONTROL UNIT, THE PHOTO-ELECTRIC EYES, AND THE DETECTOR LOOPS. THE MINIMUM BURYING DEPTH IS 24". ALL METAL CONDUITS ENTERING THE GATE OPERATOR SHALL BE BONDED TO THE GATE OPERATOR FRAME WITH A #8 AWG (MIN.) COPPER BONDING JUMPER. CONFIRM CONTROL WIRING REQUIREMENTS WITH THE GATE OPERATOR SALES AND SERVICE
- 5. INSTALL KEYPAD FOUNDATION, PEDESTAL AND BOLLARDS AT GATE. FOUNDATION SHALL BE 48" (MIN.) IN DEPTH AS DETAILED HEREIN. INTERFACE KEYPAD INSTALLATION TO NEW GATE OPERATOR
- THE SLIDING GATE SHALL BE CANTILEVER TYPE OF THE SIZE CALLED FOR ON THE PLANS, SHALL HAVE AN ENCLOSED ROLLER ASSEMBLY WHICH IS PROTECTED FROM
- LOOP DETECTOR WIRING SHALL BE COMPATIBLE WITH THE DETECTOR AMPLIFIERS. INDUCTION LOOPS SHALL BE INSTALLED IN SAW CUT GROOVES CREATED BY THE CONTRACTOR IN THE ROAD SURFACE; SUCH GROOVES OF LENGTH, WIDTH, AND DEPTH AS REQUIRED BY THE MANUFACTURER OF THE LOOP CONTROL EQUIPMENT. LOOP DETECTOR WIRING SHALL BE INSTALLED IN ACCORDANCE WITH THE RESPECTIVE GATE OPERATOR AND/OR LOOP DETECTOR MANUFACTURER INSTRUCTIONS. CONTRACTOR SHALL SAW CUT APPROXIMATELY 6" MINIMUM DEPTH AT THE PAVEMENT EDGE SUCH THAT THE CONDUIT FOR THE LOOP DETECTOR LEAD-IN WIRING WILL NOT BE LESS THAN 6" BELOW GRADE AT THE INTERFACE POINT TO THE PAVEMENT. LOOP WIRES SHALL BE HELD IN PLACE IN THE BITUMINOUS/CONCRETE PAVEMENT BY COMPLETELY BACKFILLING AND COVERING SLOT WITH A SEALER RATED SUITABLE FOR THE RESPECTIVE APPLICATION, SEALER SHALL CONFORM TO THE REQUIREMENTS ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 1079 DETECTOR LOOP.
- CONTRACTOR SHALL COORDINATE ANY POWER OUTAGES TO EXISTING EQUIPMENT WITH THE RESPECTIVE OWNER'S REPRESENTATIVE AND THE AIRPORT MANAGER.
- INCLUDE AC SURGE PROTECTOR FOR THE GATE OPERATOR, UL 1449 SECOND EDITION LISTED, SURGE CURRENT RATING OF 40KA, SUITABLE FOR USE ON A 120/240 VAC, 1 PHASE, 3 WIRE SYSTEM; LIGHTNING PROTECTION CORP. MODEL LPC-11765U-13, JOSLYN MODEL 1265-21, OR APPROVED EQUAL. INCLUDE
- CONCRETE USED FOR INSTALLING THE GATE OPERATOR, ASSOCIATED EQUIPMENT, & FENCE SHALL MEET THE REQUIREMENTS OF STRUCTURAL PORTLAND CEMENT
- 11. ALL ELECTRICAL EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES, AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE UL LISTING, ETL LISTING, (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT
 - PROVIDE A WEATHERPROOF ENGRAVED PHENOLIC OR PLASTIC LEGEND PLATE FOR THE SAFETY SWITCH AT THE GATE OPERATOR NOTING THE VOLTAGE, AND RESPECTIVE POWER SOURCE CIRCUIT AND LOCATION.
- PAYMENT FOR ELECTRIC SLIDE GATE, GATE OPERATOR, AND ALL ASSOCIATED CONTROL & SAFETY DEVICES SHALL BE PER EACH, AND SHALL BE FULL COMPENSATION FOR ALL MATERIALS, EQUIPMENT, CABLE IN CONDUIT, DUCT, OR UNIT DUCT, GROUNDING, LABOR, TOOLS, COORDINATION, TESTING, AND INCIDENTALS REQUIRED TO PROVIDE THE GATE COMPLETE AND IN OPERATING CONDITION.
- 14. CONTROL CIRCUIT WIRING SHALL NOT BE ROUTED THROUGH THE SAFETY
- THE GUARD/BOLLARD POSTS SHALL BE 4" DIA. STEEL (HEAVY WALL) PIPE, CONCRETE FILLED, AND SHALL EXTEND FROM THE TOP OF THE CARD CONTROL UNIT TO A DEPTH OF 48" BELOW THE GROUND LINE. THE CONCRETE FOOTER DIMENSION SHALL BE AS DETAILED HEREIN. GUARD/BOLLARD POSTS SHALL BE PAINTED WITH YELLOW COLORED ENAMEL FINISH.
- ALL CONTROL POWER TRANSFORMERS, POWER SUPPLIES, RECEPTACLES, LOOP DETECTOR AMPLIFIERS, SECONDARY SAFETY DEVICE EQUIPMENT, AND ANY OTHER ASSOCIATED CONTROLS SHALL BE INSTALLED EITHER INSIDE THE GATE OPERATOR CONTROL PANEL OR INSIDE A SEPARATE NEMA 4 STAINLESS STEEL CONTROL PANEL ENCLOSURE. WHERE THE CONTROL EQUIPMENT IS TO BE INSTALLED INSIDE THE GATE OPERATOR CONTROL PANEL THE CONTRACTOR SHALL COORDINATE THIS WITH THE GATE OPERATOR MANUFACTURER AND THE RESPECTIVE GATE OPERATOR EQUIPMENT SUPPLIER. LOCATING THESE CONTROLS OUTSIDE OF GATE OPERATOR CONTROL PANEL BUT WITHIN THE GATE OPERATOR HOUSING WILL NOT MEET THIS REQUIREMENT



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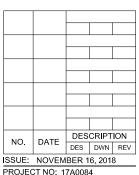


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REALIGN AIRPORT **ENTRANCE ROAD;** RECONSTRUCT AIRCRAFT HANGAR **PAVEMENT**

IDA No: C75-4625

Contract No. MA029



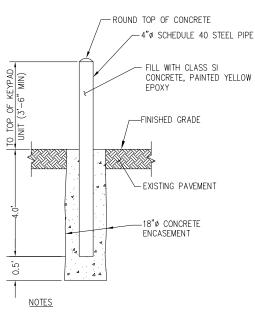
PROJECT NO: 17A0084 CAD FILE: 38-E-503.DWG

DESIGN BY: KNI 10/6/18 DRAWN BY: LDH 10/8/18

REVIEWED BY: KMS 10/18/18

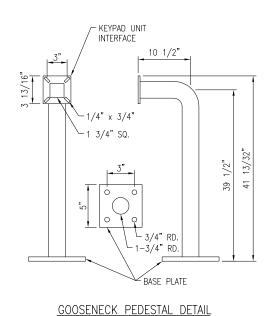
SHEET TITLE

PROPOSED SLIDE **GATE DETAILS**

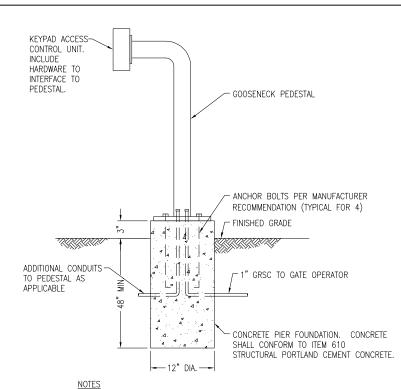


- 1. THE EXPOSED PORTION OF THE BOLLARD SHALL BE PAINTED YELLOW EPOXY.
- BOLLARD AND ASSOCIATED ITEMS ARE INCIDENTAL TO THE ELECTRIC SLIDING GATE UPGRADE.

BOLLARD DETAIL NOT TO SCALE

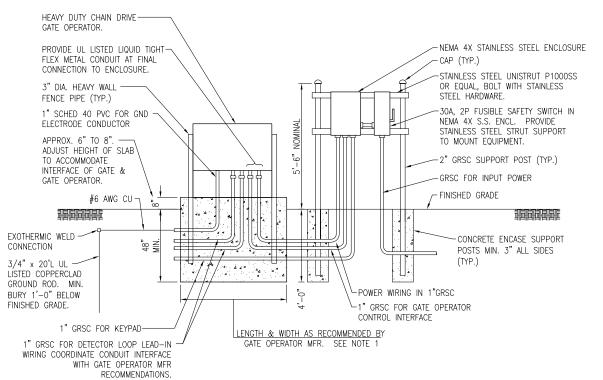


NOT TO SCALE



- PROPOSED KEYPAD WITH PEDESTAL & FOUNDATION WILL REQUIRE INTERFACE TO THE NEW GATE OPERATOR.
- INCLUDE #12 AWG EQUIPMENT GND WIRE TO KEYPAD.
 FACE OF KEYPAD SHALL NOT EXTEND BEYOND BOLLARDS.

KEYPAD ACCESS CONTROL UNIT PEDESTAL ELEVATION DETAIL NOT TO SCALE



NOTES

- FOUNDATION FOR GATE OPERATOR SHALL BE 48" MIN. IN DEPTH AND OF THE LENGTH & WIDTH RECOMMENDED BY THE MANUFACTURER. CONFIRM MOUNTING REQUIREMENTS WITH THE RESPECTIVE GATE OPERATOR MANUFACTURER
- 2. COORDINATE CONDUITS INTO FOUNDATION.
- CONFIRM CONDUIT SIZES AND WIRING REQUIREMENTS WITH THE GATE OPERATOR MFR.
 ADJUST/INCREASE CONDUIT SIZES WHERE APPLICABLE. REQUIREMENTS VARY BETWEEN
 DIFFERENT MANUFACTURERS.
- 4. ALL ENCLOSURES RATED NEMA 4, 4X SHALL HAVE WATERTIGHT HUBS AT CONDUIT ENTRANCES U.L. LISTED NEMA 4, 4X FOR THE RESPECTIVE ENCLOSURE, TO MAINTAIN THE NEMA 4, 4X RATING.
- 6. GATE WILL REQUIRE PHOTOELECTRIC EYE SECONDARY SAFETY DEVICES. PROVIDE CONDUITS BETWEEN GATE OPERATOR AND SAFETY DEVICES.

GATE OPERATOR FOUNDATION DETAIL

NOT TO SCALE

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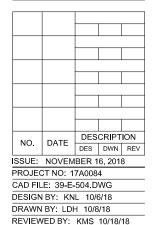


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REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

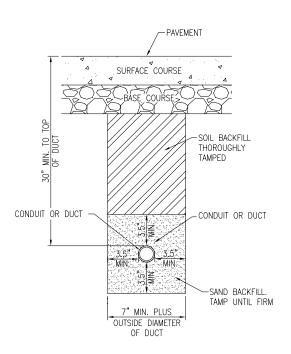
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Contract No. MA029

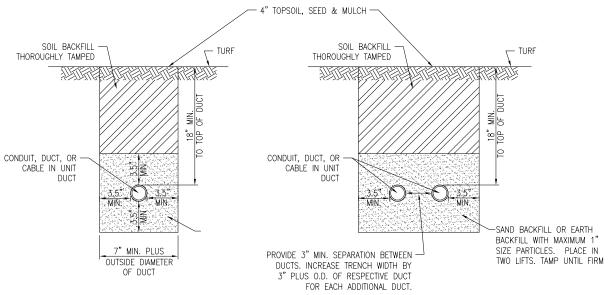


GATE OPERATOR DETAILS

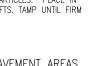
SHEET TITLE



CONDUIT IN TRENCH - PAVED AREAS "NOT TO SCALE"



CONDUIT IN TRENCH - NON-PAVEMENT AREAS "NOT TO SCALE"



4" TOPSOIL, SEED & MULCH -

PROVIDE 3" MIN. SEPARATION BETWEEN -

DUCTS. INCREASE TRENCH WIDTH BY

3" PLUS O.D. OF RESPECTIVE DUCT

FOR EACH ADDITIONAL DUCT.

SOIL BACKFILL THOROUGHLY TAMPED -



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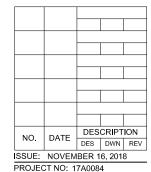
-SAND BACKFILL.

TAMP UNTIL FIRM

REALIGN AIRPORT **ENTRANCE ROAD;** RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029



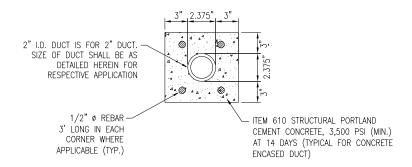
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SHEET TITLE

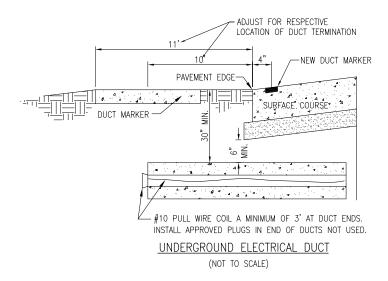
CONDUIT TRENCH DETAILS

NOTES:

- 1. DIMENSIONS FOR COVERAGE AND SEPARATION BETWEEN DUCTS ARE MINIMUM.
- 2. TRENCHES WITH MORE THAN TWO DUCTS OR CABLE IN UNIT DUCTS SHALL BE INCREASED 3" IN WIDTH PLUS DIAMETER OF RESPECTIVE DUCT FOR EACH ADDITIONAL CONDUIT, DUCT, OR CABLE IN UNIT DUCT; IF SPECIFIED ON PLANS TWO PARALLEL TRENCHES MAY BE CONSTRUCTED.
- 3. DEPTH OF TRENCHES SHALL BE AS SHOWN ABOVE UNLESS OTHERWISE SPECIFIED ON THE PLANS. MINIMUM COVER REQUIREMENTS FOR CABLES AND DUCTS AT AIRPORT RUNWAYS AND ADJACENT AREAS WHERE TRESPASSING IS PROHIBITED IS 18 INCHES PER NEC 300.5 AND 300.50. MINIMUM COVER REQUIREMENTS FOR DUCTS LOCATED BELOW PAVEMENT OR ROADWAYS IS 30". MINIMUM COVER REQUIREMENTS FOR DUCTS LOCATED IN AREAS SUBJECT TO FARMING IS 42". ADJUST/INCREASE BURIAL DEPTHS TO ACCOMMODATE SITE CONDITIONS, DRAINAGE AND/OR OBSTRUCTIONS. COVER IS DEFINED AS THE SHORTEST DISTANCE IN INCHES MEASURED BETWEEN A POINT ON THE TOP SURFACE OF ANY DIRECT-BURIED CONDUCTOR, CABLE, CONDUIT, OR OTHER RACEWAY AND THE TOP SURFACE OF FINISHED GRADE, CONCRETE OR SIMILAR COVER.
- 4. HIGH VOLTAGE CIRCUITS (AIRFIELD LIGHTING 5000 VOLT SERIES CIRCUITS AND/OR OTHER CIRCUITS RATED ABOVE 600 VOLTS) AND LOW VOLTAGE CIRCUITS (RATED 600 VOLTS AND BELOW) SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE,
- CONDUIT, DUCT, CABLE, AND/OR CABLE IN UNIT DUCT INTERFACE TO HANDHOLES, MANHOLES, SPLICE CANS, OR OTHER JUNCTION STRUCTURES WILL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE CABLE PAY ITEM OR RESPECTIVE DUCT PAY ITEM.
- 6. ALL DISTURBED SURFACES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. COST IS INCIDENTAL TO TRENCH.



1-WAY DUCT BANK (NOT TO SCALE)



DUCT BANK NOTES:

- 1. DIMENSIONS FOR CONCRETE COVERAGE AND SEPARATION BETWEEN DUCTS ARE MINIMUM.
- 2. INCLUDE DUCT SPACERS AS MANUFACTURED BY UNDERGROUND DEVICES INC., CARLON, OR APPROVED EQUAL TO MAINTAIN PROPER SEPARATION OF CONDUITS
- 3. PROVIDE REBAR WHERE APPLICABLE TO ACCOMMODATE INTERFACE OF CONCRETE ENCASED DUCT BANKS TERMINATING IN HANDHOLE OR MANHOLE. PROVIDE REBAR REINFORCEMENT WHERE DUCT BANK IS LOCATED BELOW PAVEMENT, REBAR SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 706, GRADE 60, OR ASTM A615, GRADE 60.

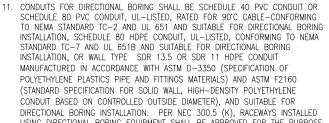
DUCT INSTALLATION NOTES

- ALL ELECTRICAL EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES, AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, INTERTEK TESTING SERVICES VERIFICATION/ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE
- CONTRACTOR SHALL KEEP A COPY OF THE LATEST NEC IN FORCE ON SITE AT ALL TIMES DURING CONSTRUCTION FOR USE AS A REFERENCE.
- CONTRACTOR SHALL COORDINATE WORK AND ANY POWER OUTAGES AND/OR SHUT DOWN OF SYSTEMS WITH THE RESPECTIVE FACILITY OWNER PERSONNEL AND THE AIRPORT MANAGER/DIRECTOR. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)
- THE LOCATION, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS IS NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATSOEVER IN RESPECT TO ACCURACY, COMPLETENESS, OR SUFFICIENCY OF THE INFORMATION. THERE IS NO GUARANTEE EITHER EXPRESSED OR IMPLIED, THAT THE LOCATIONS, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND UTILITIES INDICATED ARE REPRESENTATIVE OF THOSE TO BE ENCOUNTERED IN THE CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES, INCLUDING SERVICE CONNECTIONS TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES OF HIS OPERATIONAL PLANS AND SHALL OBTAIN FROM THE RESPECTIVE UTILITY COMPANIES DETAILED INFORMATION AND ASSISTANCE RELATIVE TO THE LOCATION OF THEIR FACILITIES AND THE WORKING SCHEDULE OF THE COMPANIES FOR REMOVAL OR ADJUSTMENT WHERE REQUIRED. IN THE EVENT AN UNEXPECTED UTILITY INTERFERENCE IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY COMPANY OF JURISDICTION. THE OWNER'S REPRESENTATIVE AND/OR THE RESIDENT ENGINEER SHALL ALSO BE IMMEDIATELY NOTIFIED. ANY DAMAGE TO SUCH MAINS AND SERVICES SHALL BE RESTORED TO SERVICE AT ONCE AND PAID FOR BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT. ALL UTILITY CABLES AND LINES SHALL BE LOCATED BY THE RESPECTIVE UTILITY. CONTACT JULIE (JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS) FOR UTILITY INFORMATION, PHONE: 1-800-892-0123. CONTACT THE FAA (FEDERAL AVIATION ADMINISTRATION) FOR ASSISTANCE IN LOCATING FAA CABLES AND UTILITIES. ALSO CONTACT AIRPORT DIRECTOR/MANAGER AND AIRPORT PERSONNEL FOR ASSISTANCE IN LOCATING UNDERGROUND AIRPORT CABLES AND/OR UTILITIES. ALSO COORDINATE WORK WITH ALL ABOVEGROUND UTILITIES.
- ADJUSTMENTS TO DUCT BANK ROUTES MIGHT BE REQUIRED TO ACCOMMODATE EXISTING SITE CONDITIONS AND UNDERGROUND LINES AND UTILITIES. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL COORDINATE DUCT ROUTE ADJUSTMENTS WITH THE RESIDENT ENGINEER/ RESIDENT TECHNICIAN AND THE AIRPORT MANAGER.
- CONTRACTOR SHALL LOCATE AND MARK ALL EXISTING CABLES, LINES, OR UTILITIES WITHIN 10 FT OF PROPOSED EXCAVATING/TRENCHING AREA. ANY CABLES, LINES, AND UTILITIES FOUND INTERFERING WITH PROPOSED EXCAVATION OR CABLE/TRENCHING SHALL BE HAND DUG AND EXPOSED. ANY DAMAGED CABLES OR OTHER UTILITIES SHALL BE IMMEDIATELY REPAIRED TO THE SATISFACTION OF THE RESPECTIVE OWNER'S REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE. THE RESIDENT ENGINEER/RESIDENT TECHNICIAN AND OWNER SHALL BE NOTIFIED IMMEDIATELY IF ANY CABLES OR OTHER UTILITIES ARE
- PAYMENT FOR LOCATING AND MARKING UNDERGROUND UTILITIES AND CABLES WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE DUCT INSTALLATION.
- THE CONTRACTOR WILL DETERMINE IF THERE IS A CONFLICT BETWEEN THE INSTALLATION OF THE PROPOSED ELECTRICAL DUCTS AND ANY EXISTING UTILITIES. HE WILL MAKE ALL NECESSARY ADJUSTMENTS IN DEPTH OF INSTALLATION TO AVOID ANY AND ALL PROPOSED UNDERGROUND IMPROVEMENTS
- CONDUITS FOR DIRECT BURIAL OR CONCRETE ENCASED DUCT BANK SHALL BE SCHEDULE 40 PVC CONDUIT, UL-LISTED, RATED FOR 90°C CABLE-CONFORMING TO NEMA STANDARD TC-2 AND UL 651, LISTED SUITABLE FOR UNDERGROUND USE EITHER DIRECT-BURIED OR ENCASED IN CONCRETE, OR SCHEDULE 40 (MINIMUM) HDPE CONDUIT, UL LISTED, CONFORMING TO NEMA STANDARD TC-7 AND UL 651B AND LISTED SUITABLE FOR UNDERGROUND USE; EITHER DIRECT BURY OR ENCASED IN CONCRETE.

- 10. NON-METALLIC SPILT DUCT SHALL BE USED TO EXTEND EXISTING DUCT THAT CONTAINS CABLES AND/OR FOR PROTECTION OF EXISTING CABLES AS DETAILED ON THE PLANS. NON-METALLIC SPLIT DUCT SHALL BE SCHEDULE 40 PVC DESIGNED FOR USE WITH POWER AND CONTROL CABLE APPLICATIONS. NON-METALLIC SPLIT DUCT SHALL BE SUITABLE FOR DIRECT BURIAL IN EARTH AND CONCRETE ENCASEMENT AND EXHIBIT SUPERIOR IMPACT STRENGTH. JOINTS SHALL BE SEALED WITH CORROSION-RESISTANT TAPE AND HEAVY-DUTY PLASTIC STRAPS AS RECOMMENDED BY THE SPLIT DUCT MANUFACTURER FOR THE APPLICATION. SPLIT DUCT SLEEVE COUPLINGS, DUCT SWEEPS, FITTINGS, AND ACCESSORIES SHALL BE BY THE SAME MANUFACTURER TO ASSURE SYSTEM INTEGRITY. NON-METALLIC SPLIT DUCT SHALL BE MANUFACTURED BY PRIME CONDUIT, INC., CARLON ELECTRICAL PRODUCTS, CANTEX INC., OR APPROVED EQUAL. INSTALL SPLIT DUCT AS DETAILED ON THE PLANS AND IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS FOR THE RESPECTIVE APPLICATION. PROVIDE ADAPTERS, COUPLINGS, AND FITTINGS TO ACCOMMODATE INTERFACE TO EXISTING DUCT OR CONDUIT. WHERE SPLIT DUCT IS TO BE CONCRETE-ENCASED, CONFIRM IT IS SUITABLE FOR THE RESPECTIVE APPLICATION WITH THE MANUFACTURER.
- SCHEDULE 80 PVC CONDUIT, UL-LISTED, RATED FOR 90°C CABLE-CONFORMING TO NEMA STANDARD TC-2 AND UL 651 AND SUITABLE FOR DIRECTIONAL BORING INSTALLATION, SCHEDULE 80 HDPE CONDUIT, UL-LISTED, CONFORMING TO NEMA STANDARD TC-7 AND UL 651B AND SUITABLE FOR DIRECTIONAL BORING INSTALLATION, OR WALL TYPE SDR 13.5 OR SDR 11 HDPE CONDUIT MANUFACTURED IN ACCORDANCE WITH ASTM D-3350 (SPECIFICATION OF POLYETHYLENE PLASTICS PIPE AND FITTINGS MATERIALS) AND ASTM F2160 (STANDARD SPECIFICATION FOR SOLID WALL, HIGH-DENSITY POLYETHYLENE CONDUIT BASED ON CONTROLLED OUTSIDE DIAMETER), AND SUITABLE FOR DIRECTIONAL BORING INSTALLATION. PER NEC 300.5 (K), RACEWAYS INSTALLED USING DIRECTIONAL BORING EQUIPMENT SHALL BE APPROVED FOR THE PURPOSE
- 12. INSTALLATION OF CONDUIT AND DUCTS SHALL CONFORM TO ITEM 110 AIRPORT UNDERGROUND ELECTRICAL DUCT BANKS AND CONDUITS.
- 13. MINIMUM COVER REQUIREMENTS TO TOP OF ELECTRICAL DUCT ENCASEMENT SHALL BE AS FOLLOWS:
- -18 IN. MIN. IN TURF AREAS AT AIRPORTS OR ADJACENT AREAS WHERE TRESPASSING IS PROHIBITED, AND NOT SUBJECT TO FARMING. -42 IN. MIN. IN AREAS SUBJECT TO FARMING.
- -30 IN. MIN. WHERE LOCATED BELOW PAVEMENT OR ROADWAY

WHERE DETAILED ON THE PLANS OR WHERE REQUIRED TO AVOID OBSTRUCTIONS, DUCTS SHALL BE BURIED DEEPER. COVER IS DEFINED AS THE SHORTEST DISTANCE IN INCHES MEASURED BETWEEN A POINT ON THE TOP SURFACE OF ANY DIRECT-BURIED CONDUCTOR, CABLE, CONDUIT, OR OTHER RACEWAY AND THE TOP SURFACE OF FINISHED GRADE, CONCRETE OR SIMILAR COVER.

- 14. WHERE CONCRETE-ENCASED DUCT INTERFACES TO AN ELECTRICAL HANDHOLE OR MANHOLE, THE CONCRETE ENCASEMENT SHALL BE INSTALLED UP TO TH RESPECTIVE HANDHOLE OR MANHOLE. PROVIDE BUSHINGS OR BELLS AT
- INSTALLED IN A MANNER THAT WILL NOT DAMAGE ANY EXISTING UNDERGROUND UTILITIES, AND SHALL NOT DISTURB OR DAMAGE THE RESPECTIVE PAVEMENT OR ROADWAY SURFACE. DUCTS SHALL BE DIRECTIONAL-BORED AT THE LOCATIONS SHOWN ON THE CONSTRUCTION PLANS. THE DUCTS WILL BE BORED AT A MINIMUM DEPTH OF 42 IN. BELOW THE RESPECTIVE PAVEMENT IT IS BEING
- AND/OR OTHER CIRCUITS RATED ABOVE 600 VOLTS) AND LOW VOLTAGE CIRCUITS (RATED 600 VOLTS AND BELOW) SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE.
- 19. HOMERUN CABLES FOR A RESPECTIVE CIRCUIT SHALL BE INSTALLED IN THE SAME RACEWAY OR DUCT.
- 20. COORDINATE DUCT INTERFACE TO MANHOLES AND HANDHOLES. FIELD CUT OPENINGS FOR CONDUITS AND DUCTS TO INTERFACE TO MANHOLES AND/OR HANDHOLES. CUT WALL OF RESPECTIVE HANDHOLE OR MANHOLE WITH A TOOL DESIGNED FOR MATERIAL TO BE CUT. SIZE HOLES FOR RESPECTIVE DUCTS, CONDUITS, AND TERMINATION FITTINGS AND SEAL AROUND PENETRATIONS. ALL CORING, INTERFACE, CUTTING, AND SEALING WILL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE DUCT INSTALLATION AND/OR RESPECTIVE HANDHOLE/MANHOLE INSTALLATION.
- 21. CONTRACTOR SHALL COORDINATE DUCT MARKING WITH AIRPORT.
- BOXES SHALL BE TAGGED TO IDENTIFY THE RESPECTIVE CABLE. A MINIMUM OF TWO TAGS SHALL BE PROVIDED ON EACH CABLE IN A MANHOLE; ONE AT THE CABLE ENTRANCE AND ONE AT THE CABLE EXIT. CABLE TAGS SHALL BE STAMPED BRASS TAGS OR OTHER WEATHERPROOF/WATERPROOF CORROSION RESISTANT MATERIAL.



CONDUIT TERMINATIONS IN ELECTRICAL HANDHOLES OR MANHOLES.

- 15. UNDERGROUND DUCTS INSTALLED BY DIRECTIONAL-BORING METHOD SHALL BE
- 16. A PULL WIRE SHALL BE INSTALLED IN EACH CONDUIT OR DUCT TO BE LEFT
- 17. HIGH VOLTAGE CIRCUITS (AIRFIELD LIGHTING 5000 VOLT SERIES CIRCUITS
- 18. CONTROL CABLES SHALL BE RUN IN SEPARATE DUCTS FROM POWER CABLES.

- 22. ALL POWER AND CONTROL CABLES IN HANDHOLES, MANHOLES, AND JUNCTION



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REALIGN AIRPORT **ENTRANCE ROAD;** RECONSTRUCT AIRCRAFT HANGAR **PAVEMENT**

IDA No: C75-4625

Contract No. MA029

NO.	DATE	DES	CRIPT	ION
NO.	DAIL	DES	DWN	REV
ISSUE:	NOVEM	BER 1	6, 201	8

PROJECT NO: 17A0084

CAD FILE: 40B-E-507-DETL.DWG DESIGN BY: KNI 10/8/18 DRAWN BY: LDH 10/8/18

REVIEWED BY: KMS 10/18/18

SHEET TITLE

DUCT BANK DETAILS AND NOTES

- CONTRACTOR SHALL KEEP A COPY OF THE LATEST NEC IN FORCE ON SITE AT ALL TIMES DURING CONSTRUCTION FOR USE AS A REFERENCE.
- 3. CONTRACTOR SHALL COORDINATE WORK AND ANY POWER OUTAGES AND/OR SHUT DOWN OF SYSTEMS WITH THE RESPECTIVE FACILITY OWNER PERSONNEL AND THE AIRPORT MANAGER/DIRECTOR. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
- 4. THE CONTRACTOR SHALL ASCERTAIN THAT ALL LIGHTING SYSTEM COMPONENTS FURNISHED BY HIM, INCLUDING FAA APPROVED EQUIPMENT, ARE COMPATIBLE IN ALL RESPECTS WITH EACH OTHER AND THE REMAINDER OF THE NEW/EXISTING SYSTEM. ANY NONCOMPATIBLE COMPONENTS FURNISHED BY THIS CONTRACTOR SHALL BE REPLACED BY HIM AT NO ADDITIONAL COST TO THE AIRPORT SPONSOR WITH A SIMILAR UNIT, APPROVED BY THE ENGINEER (DIFFERENT MODEL OR DIFFERENT MANUFACTURER) THAT IS COMPATIBLE WITH THE REMAINDER OF THE AIRPORT LIGHTING SYSTEM.
- IN CASE THE CONTRACTOR ELECTS TO FURNISH AND INSTALL AIRPORT LIGHTING EQUIPMENT REQUIRING ADDITIONAL WIRING, TRANSFORMERS, ADAPTORS, MOUNTINGS, ETC., TO THOSE SHOWN ON THE DRAWINGS AND/OR LISTED IN THE SPECIFICATION, ANY COST FOR THESE ITEMS SHALL BE INCIDENTAL TO THE EQUIPMENT COST.
- 6. THE CONTRACTOR INSTALLED EQUIPMENT (INCLUDING FAA APPROVED) SHALL NOT GENERATE ANY ELECTROMAGNETIC INTERFERENCE IN THE EXISTING AND/OR NEW COMMUNICATIONS, WEATHER, AIR NAVIGATION, AND AIR TRAFFIC CONTROL EQUIPMENT. ANY EQUIPMENT GENERATING SUCH INTERFERENCE SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST WITH THE EQUIPMENT MEETING THE APPLICABLE SPECIFICATIONS AND NOT GENERATING ANY INTERFERENCE
- 7. WHEN A SPECIFIC TYPE, STYLE, CLASS, ETC. OF FAA APPROVED EQUIPMENT IS SPECIFIED ONLY THAT TYPE, STYLE, CLASS, WILL BE ACCEPTABLE, EVEN THOUGH EQUIPMENT OF OTHER TYPES STYLES, CLASSES, ETC. MAY BE APPROVED.
- 3. ANY AND ALL INSTRUCTIONS FROM THE RESIDENT ENGINEER/TECHNICIAN TO THE CONTRACTOR REGARDING CHANGES IN OR DEVIATIONS FROM THE PLANS AND SPECIFICATIONS SHALL BE IN WRITING WITH COPIES SENT TO THE AIRPORT SPONSOR AND THE ILLINOIS DEPARTMENT OF TRANSPORTATION, DIVISION OF AERONAUTICS. THE CONTRACTOR SHALL NOT ACCEPT ANY VERBAL INSTRUCTIONS FROM THE RESIDENT ENGINEER/TECHNICIAN REGARDING ANY CHANGES FROM THE PLANS AND SPECIFICATIONS.
- 9. A MINIMUM OF THREE COPIES OF THE INSTRUCTION BOOK SHALL BE SUPPLIED WITH EACH DIFFERENT TYPE OF EQUIPMENT. THE BOOKS DESCRIBING A MORE SOPHISTICATED TYPE OF EQUIPMENT, SUCH AS REGULATORS, PAPI, REIL, ETC. AS A MINIMUM SHALL CONTAIN THE FOLLOWING:
 - A. A DETAILED DESCRIPTION OF THE OVERALL EQUIPMENT AND ITS INDIVIDUAL COMPONENTS.
 - B. THEORY OF OPERATION INCLUDING THE FUNCTION OF EACH COMPONENT.
 - C. INSTALLATION INSTRUCTION.
 - D. START-UP INSTRUCTIONS
 - E. PREVENTATIVE MAINTENANCE REQUIREMENTS.
- F. CHART FOR TROUBLE-SHOOTING.
- G. COMPLETE POWER AND CONTROL DETAILED WIRING DIAGRAM(S), SHOWING EACH CONDUCTOR/CONNECTION/COMPONENT "BLACK" BOXES ARE NOT ACCEPTABLE. THE DIAGRAM OF THE NARRATIVE SHALL SHOW VOLTAGE/CURRENTS/WAVE SHAPES AT STRATEGIC LOCATIONS TO BE USED WHEN CHECKING AND/OR TROUBLE-SHOOTING THE EQUIPMENT. WHEN THE EQUIPMENT HAS SEVERAL MODES OF OPERATION, SUCH AS SEVERAL BRIGHTNESS STEPS, THESE PARAMETERS SHALL BE INDICATED FOR ALL DIFFERENT MODES.
- H. PARTS LIST WHICH WILL INCLUDE ALL MAJOR AND MINOR COMPONENTS SUCH AS RESISTORS, DIODES, ETC. IT SHALL INCLUDE A COMPLETE NOMENCLATURE OF EACH COMPONENT AND, IF APPLICABLE, THE NAME OF ITS MANUFACTURER AND THE CATALOG NUMBER.
- I. SAFETY INSTRUCTIONS.

POWER AND CONTROL NOTES

- 1. PROVIDE LEGEND PLATES FOR ALL ELECTRICAL EQUIPMENT TO IDENTIFY FUNCTION, CIRCUIT VOLTAGE AND PHASE. WHERE THE EQUIPMENT CONTAINS FUSES, ALSO IDENTIFY THE FUSE OR FUSE LINK AMPERE RATING. WHERE THE EQUIPMENT DOES NOT HAVE SUFFICIENT AREA TO INSTALL LEGEND PLATES, THE LEGEND PLATES SHALL BE INSTALLED ON THE WALL NEXT TO THE UNIT. LEGEND PLATES SHALL BE WEATHERPROOF ENGRAVED PLASTIC OR PHENOLIC MATERIAL, 1/4" HIGH BLACK LETTERS ON A WHITE BACKGROUND UNLESS NOTED OTHERWISE. SECURE WITH WEATHERPROOF ADHESIVE AND MACHINE SCREWS. FURNISH ADDITIONAL LEGEND PLATES WHERE REQUIRED BY CODE, FOR ADDITIONAL EQUIPMENT, AS DETAILED HEREIN ON THE PLANS, AND AS NOTED IN THE SPECIAL PROVISION SPECIFICATIONS.
- 2. COLOR CODE ALL PHASE WIRING BY THE USE OF COLORED WIRE INSULATION AND/OR COLORED TAPE. WHERE TAPE IS USED, THE WIRE INSULATION SHALL BE BLACK. BLACK AND RED SHALL BE USED FOR PHASE CONDUCTORS ON 120/240VAC SINGLE-PHASE, THREE WIRE SYSTEMS. BLACK, RED, AND BLUE SHALL BE USED FOR PHASE CONDUCTORS ON 208/120VAC THREE-PHASE, FOUR WIRE SYSTEMS. NEUTRAL CONDUCTORS, SIZE NO. 6 AWG OR SMALLER, SHALL BE IDENTIFIED BY A CONTINUOUS WHITE OR NATURAL GRAY OUTER FINISH ALONG ITS ENTIRE LENGTH. NEUTRAL CONDUCTORS LARGER THAN NO. 6 AWG SHALL BE IDENTIFIED EITHER BY A CONTINUOUS WHITE OR NATURAL GRAY OUTER FINISH ALONG ITS ENTIRE LENGTH OR BY THE USE OF WHITE TAPE AT ITS TERMINATIONS AND INSIDE ACCESSIBLE WIREWAYS. INSULATED GROUND CONDUCTORS SHALL HAVE GREEN COLORED INSULATION FOR ALL CONDUCTOR SIZES (AWG OR KCMIL).
- 3. ALL BRANCH CIRCUIT CONDUCTORS CONNECTED TO A PARTICULAR PHASE SHALL BE IDENTIFIED WITH THE SAME COLOR. THE COLOR CODING SHALL BE EXTENDED TO THE POINT OF LITILIZATION
- IN CONTROL WIRING THE SAME COLOR SHALL BE USED THROUGHOUT THE SYSTEM FOR THE SAME FUNCTION, SUCH AS 10%, 30%, 100% BRIGHTNESS CONTROL, FTC
- LOW VOLTAGE (600 V.) AND HIGH VOLTAGE (5000 V.) CONDUCTORS SHALL BE INSTALLED IN SEPARATE WIREWAYS.
- NEATLY LACE WIRING IN DISTRIBUTION PANELS, WIREWAYS, SWITCHES AND JUNCTION/PULL BOXES.
- THE MINIMUM SIZE OF PULL/JUNCTION BOXES, REGARDLESS OF THE QUANTITY AND SIZE OF THE CONDUCTORS SHOWN, SHALL BE AS FOLLOWS:
 - IN STRAIGHT PULLS THE LENGTH OF THE BOX SHALL NOT BE LESS THAN EIGHT TIMES THE TRADE DIAMETER OF THE LARGER CONDUIT. THE TOTAL AREA (INCLUDING THE CONDUIT CROSS—SECTIONAL AREA) OF A BOX END SHALL BE AT LEAST 3 TIMES GREATER THAN THE TOTAL TRADE CROSS—SECTIONAL AREA OF THE CONDUITS TERMINATING AT THE END.
 - 8. IN ANGLE PULLS OR 'U' PULLS THE DISTANCE BETWEEN EACH CONDUIT ENTRY INSIDE THE BOX AND THE OPPOSITE WALL OF THE BOX SHALL NOT BE LESS THAN SIX (6) TIMES THE TRADE DIAMETER OF THE LARGEST CONDUIT. THIS DISTANCE SHALL BE INCREASED FOR ADDITIONAL ENTRIES BY THE AMOUNT OF THE SUM OF THE DIAMETERS OF ALL OTHER CONDUIT ENTRIES ON THE SAME WALL AS THE BOX. THE DISTANCE BETWEEN CONDUIT ENTRIES ENCLOSING THE SAME CONDUCTOR SHALL NOT BE LESS THAN SIX TIMES THE TRADE DIAMETER OF THE LARGEST CONDUIT.
- 8. A RUN OF CONDUIT BETWEEN TERMINATIONS AT EQUIPMENT ENCLOSURES, SQUARE DUCTS AND PULL/JUNCTION BOXES, SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF FOUR QUARTER BENDS (360 DEGREES TOTAL), INCLUDING THOSE BENDS LOCATED IMMEDIATELY AT THE TERMINATIONS, CAST, CONDUIT TYPE OUTLETS SHALL NOT BE TREATED AS PULL/JUNCTION BOXES.
- EQUIPMENT CABINETS SHALL NOT BE USED AS PULL/JUNCTION BOXES. ONLY WIRING TERMINATING AT THE EQUIPMENT SHALL BE BROUGHT INTO THESE FNCI OSURES.
- SPLICES AND JUNCTION POINTS SHALL BE PERMITTED ONLY IN JUNCTION BOXES, DUCTS EQUIPPED WITH REMOVABLE COVERS, AND AT EASILY ACCESSIBLE LOCATIONS.
- 11. CIRCUIT BREAKERS IN POWER DISTRIBUTION PANEL(S) SHALL BE THERMAL-MAGNETIC MOLDED CASE, PERMANENT TRIP WITH 100 AMPERE, MINIMUM FRAME.
- 12. DUAL LUGS SHALL BE USED WHERE TWO (2) WIRES, SIZE NO. 6 OR LARGER, ARE TO BE CONNECTED TO THE SAME TERMINAL.
- 13. ALL INTERIOR WALL MOUNTED EQUIPMENT ENCLOSURES SHALL BE MOUNTED ON HOT DIPPED GALVANIZED STEEL STRUT SUPPORT, OR STAINLESS STEEL STRUT SUPPORT, WITH CORROSION RESISTANT HARDWARE.
- 14. SUPPORT FOR EXTERIOR MOUNTED EQUIPMENT SHALL USE STAINLESS STEEL STRUT SUPPORT WITH STAINLESS STEEL HARDWARE. PROVIDE ZINC RICH PAINT APPLIED TO FIELD CUTS OF GALVANIZED STEEL SUPPORT TO MINIMIZE THE POTENTIAL FOR CORROSION PER THE RESPECTIVE STRUT SUPPORT MANUFACTURER'S RECOMMENDATIONS.

- 15. CONDUITS FOR ELECTRIC SERVICE ENTRANCE AND FEEDERS SHALL BE AS DETAILED HEREIN ON THE PLANS. WHERE GALVANIZED RIGID STEEL CONDUIT IS SPECIFIED IT SHALL HAVE THREADED FITTINGS. SET SCREW TYPE FITTINGS WILL NOT BE ACCEPTABLE. CONDUITS FOR UNDERGROUND APPLICATIONS SHALL BE AS DETAILED HEREIN. CONDUITS FOR GROUNDING ELECTRODE CONDUCTORS OR INDIVIDUAL GROUNDING CONDUCTORS SHALL BE SCHEDULE 40 OR SCHEDULE 80 PVC.
- 16. PROVIDE LIQUID TIGHT FLEXIBLE METAL CONDUIT AT CONNECTIONS TO EQUIPMENT SUBJECT TO VIBRATION OR WHERE FLEXIBILITY IS REQUIRED. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6, SUITABLE FOR GROUNDING, SUNLIGHT RESISTANT, AND RESISTANT TO OIL, GASOLINE, AND GREASE. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO MOTORS, TRANSFORMERS, & CONSTANT CURRENT REGULATORS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUITOR PER NEC 350.60. DO NOT INSTALL LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS NOT UL. LISTED. CONFIRM LIQUID—TIGHT FLEXIBLE METAL CONDUIT BEARS THE UL LABEL PRIOR TO INSTALLLING IT.
- 17. UNLESS OTHERWISE SHOWN, ALL EXPOSED CONDUITS SHALL BE RUN PARALLEL TO OR AT RIGHT ANGLES WITH THE LINES OF THE STRUCTURE.
- 18. ALL STEEL CONDUITS, FITTINGS, NUTS, BOLTS, ETC. SHALL BE GALVANIZED.
- USE CONDUIT BUSHINGS AT EACH CONDUIT TERMINATION. WHERE NO. 4 AWG OR LARGER UNDERGROUND WIRE IS INSTALLED, USE INSULATED BUSHINGS.
- 20. USE DOUBLE LOCK NUTS AT EACH CONDUIT TERMINATION.
- 21. WRAP ALL PRIMARY AND SECONDARY POWER CONNECTIONS WITH SUFFICIENT LAYERS OF HIGH VOLTAGE ELECTRICAL INSULATING TAPE (RUBBER SPLICING TAPE SUITABLE FOR PRIMARY ELECTRICAL INSULATION FOR SPLICING CABLE FROM 600 VOLTS TO 69,000 VOLTS) AND COVER WITH VINYL ELECTRICAL TAPE (ALL—WEATHER VINYL INSULATING TAPE SUITABLE FOR PROTECTIVE JACKETING FOR HIGH—VOLTAGE CABLE SPLICES AND REPAIRS) FOR FULL VALUE OF CABLE INSULATION VOLTAGE. PER ILLINOIS STANDARD SPECIFICATIONS FOR CONSTRUCTION OF AIRPORTS ITEM 108, ITEM 125 AND FAA AC 150/5370-10G ITEM L-108, HIGH VOLTAGE ELECTRICAL INSULATING TAPE SHALL BE 3M SCOTCH 23, 3M SCOTCH 130C OR APPROVED EQUIVALENT, AND VINYL ELECTRICAL TAPE SHALL BE 3M SCOTCH 88 OR APPROVED EQUIVALENT. TAPES MUST BE RATED SUITABLE FOR THE APPLICATION.
- 22. UNLESS OTHERWISE NOTED, ALL SINGLE CONDUCTOR CONTROL WIRING SHALL BE NO. 12 AWG. COPPER MINUMUM.
- 23. THE FOLLOWING SHALL APPLY TO RELAY/CONTACTOR PANELS/ENCLOSURES:
 - A. FOR INTERIOR LOCATIONS ALL COMPONENTS SHALL BE MOUNTED IN NEMA 12 (DUST TIGHT) ENCLOSURE(S) WITH VERTICALLY HINGED COVERS. FOR EXTERIOR/OUTDOOR LOCATIONS ALL COMPONENTS SHALL BE MOUNTED IN NEMA 4X STAINLESS STEEL ENCLOSURE(S) WITH VERTICALLY HINGED COVERS. ALL CONDUIT ENTRIES INTO NEMA 4, 4X ENCLOSURES SHALL HAVE NEMA 4 HUBS LISTED SUITABLE FOR THE RESPECTIVE ENCLOSURE TO MAINTAIN THE NEMA 4, 4X RATING OF THE ENCLOSURE.
 - B. THE ENCLOSURE(S) SHALL HAVE AMPLE SPACE FOR THE CIRCUIT COMPONENTS, TERMINAL BLOCKS AND INCOMING AND INTERNAL WIRING.
 - C. ALL CONTROL CONDUCTOR TERMINATIONS SHALL BE OF THE OPEN-EYE CONNECTOR/SCREW TYPE. SOLDERED CLOSED-EYE TERMINATIONS, OR TERMINATIONS WITHOUT CONNECTORS ARE NOT ACCEPTABLE.
 - WHEN THE ENCLOSURE COVER IS OPENED, ALL CIRCUIT COMPONENTS, WIRING AND TERMINALS SHALL BE EXPOSED AND ACCESSIBLE WITHOUT REMOVAL OF ANY PANELS, COVERS, ETC., EXCEPT THOSE COVERING HIGH VOLTAGE COMPONENTS.
 - E. ACCESS TO, OR REMOVAL OF A CIRCUIT COMPONENT OR TERMINAL BLOCK WILL NOT REQUIRE THE REMOVAL OF ANY OTHER CIRCUIT COMPONENT OR TERMINAL BLOCK.
 - . EACH CIRCUIT COMPONENT SHALL BE CLEARLY IDENTIFIED INDICATING ITS CORRESPONDING NUMBER SHOWN ON THE DRAWINGS AND ITS FUNCTION.
 - . A COMPLETE WIRING DIAGRAM SHALL BE MOUNTED ON THE INSIDE OF THE COVER. THE DIAGRAM SHALL REPRESENT EACH CONDUCTOR BY A SEPARATE LINE.
 - THE DIAGRAM SHALL IDENTIFY EACH CIRCUIT COMPONENT AN NUMBERING AND COLOR OF EACH TERMINAL CONDUCTOR AND TERMINAL.
 - I. ALL WIRING SHALL BE NEATLY TRAINED AND LACED.
 - . MINIMUM WIRE SIZE SHALL BE NO. 12 AWG.
- 24. FURNISH & INSTALL A WEATHERPROOF WARNING LABEL FOR EACH METER SOCKET, SERVICE DISCONNECT, SAFETY SWITCH, CUTOUT, PANELBOARD, & CONTROL PANEL TO WARN PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS, PER THE REQUIREMENTS OF NEC 110.16 "FLASH PROTECTION".

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Marshall County Airport 1315 Illinois 17 Lacon, Illinois 61540 phone: 309-246-2870

REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029

NO.	DATE	DES	CRIPT	ION		
NO.	DATE	DES	DWN	REV		
ISSUE: NOVEMBER 16, 2018						
PROJECT NO: 17A0084						
CAD FIL	.E: 41-E-	002.D	WG			

SHEET TITLE

ELECTRICAL NOTES

DESIGN BY: KNI 10/6/18

DRAWN BY: LDH 10/8/18

REVIEWED BY: KMS 10/18/18

EXISTING ELECTRICAL ONE LINE DIAGRAM FOR T-HANGAR SERVICE PANEL AND GATE OPERATOR



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NOTES:

 ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT DIRECTOR/MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE

RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND

LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION

2. CONTRACTOR SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF NFPA 70E - STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE.

3. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL

FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING,

DISCONNECTING, RELOCATING, ADJUSTING, WORKING ON, INSTALLING, OR CONNECTING

4. REMOVAL OF EXISTING ELECTRIC SLIDE GATE WILL BE PAID FOR UNDER ITEM AR162908

1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)

THE RESPECTIVE EQUIPMENT OR OTHER DEVICE.

- REMOVE ELECTRIC GATE.

REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

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NO. DATE | DESCRIPTION | DES | DWN | REV | ISSUE: NOVEMBER 16, 2018

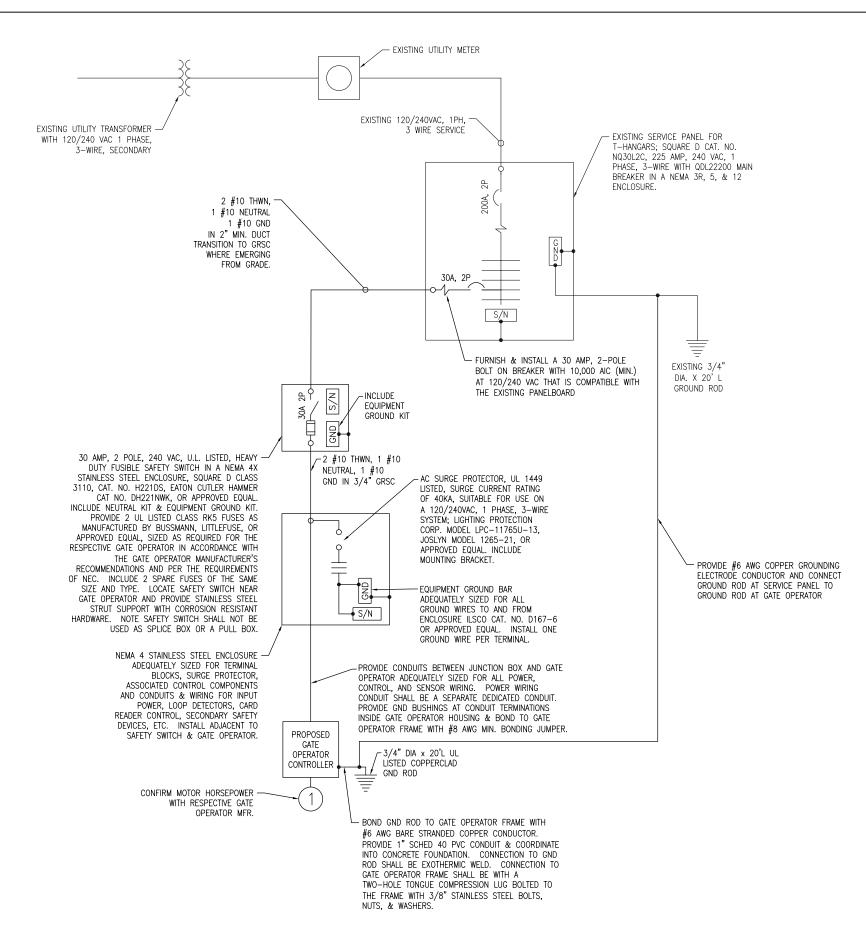
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CAD FILE: 42-E-601.DWG

DESIGN BY: KNL 10/6/18
DRAWN BY: LDH 10/8/18

REVIEWED BY: KMS 10/18/18

SHEET TITLE

EX. ELECTRICAL ONE-LINE FOR T-HNGR SERVICE PANEL & GATE OPERATOR



<u>NOTES</u>

- CONTRACTOR SHALL EXAMINE THE SITE TO DETERMINE EXISTING CONDITIONS
- SEE "ELECTRICAL LEGEND AND ABBREVIATIONS" SHEET FOR GENERAL NOTES AND REQUIREMENTS.
- 3. ALL ELECTRICAL EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70—NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, ETL LISTING, (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- 4. ALL EQUIPMENT SHOWN NOT LABELED AS EXISTING IS NEW.
- ALL CONTROL POWER TRANSFORMERS, POWER SUPPLIES, SIMPLEX RECEPTACLES, LOOP DETECTOR AMPLIFIERS, SECONDARY SAFETY DEVICE EQUIPMENT, AND ANY OTHER ASSOCIATED CONTROLS SHALL BE INSTALLED EITHER INSIDE THE GATE OPERATOR CONTROL PANEL OR INSIDE A SEPARATE NEMA 4 STAINLESS STEEL CONTROL PANEL ENCLOSURE. WHERE THE CONTROL EQUIPMENT IS TO BE INSTALLED INSIDE THE GATE OPERATOR CONTROL PANEL THE CONTRACTOR SHALL COORDINATE THIS WITH THE GATE OPERATOR MANUFACTURER AND THE RESPECTIVE GATE OPERATOR EQUIPMENT SUPPLIER. LOCATING THESE CONTROLS OUTSIDE OF GATE OPERATOR CONTROL PANEL BUT WITHIN THE GATE OPERATOR HOUSING WILL NOT MEET THIS REQUIREMENT.
- GATE OPERATORS SHALL BE RATED FOR THE RESPECTIVE VOLTAGE AVAILABLE AT THE SITE AND SHALL PROPERLY OPERATE ON THE RESPECTIVE NOMINAL VOLTAGE SYSTEM PLUS OR MINUS 10 PERCENT. CONTRACTOR SHALL CONFIRM WITH THE GATE OPERATOR MANUFACTURER THAT THE RESPECTIVE GATE OPERATOR HE SELECTS IS RATED SUITABLE FOR THE RESPECTIVE APPLICATION, IS SUITABLE AND COMPATIBLE WITH THE RESPECTIVE GATE, AND WILL OPERATE PROPERLY ON THE RESPECTIVE POWER SUPPLY. NOTE THE GATE OPERATOR MUST ALSO OPERATE PROPERLY ON STANDBY ENGINE GENERATOR POWER AND SHALL NOT REQUIRE MANUAL RESET DUE TO TRANSFER FROM UTILITY POWER TO STANDBY GENERATOR POWER OR BACK TO UTILITY POWER. THE GATE OPERATOR MUST NOT REQUIRE MANUAL RESET FOR MOMENTARY POWER OUTAGES. WHERE A POWER OUTAGE OCCUPS THE GATE OPERATOR SHALL AUTOMATICALLY RESUME NORMAL OPERATION UPON RESTORATION OF POWER.

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PROJEC	CT NO: 1	7A008	4		

PROJECT NO: 17A0084

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DRAWN BY: LDH 10/8/18

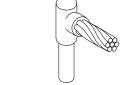
DRAWN BY: LDH 10/8/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

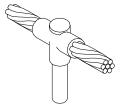
PROPOSED ELECTRICAL ONE-LINE FOR AIRPORT GATE

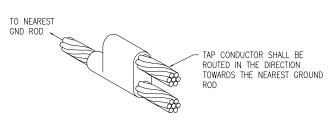
PROPOSED ELECTRICAL ONE—LINE FOR AIRPORT GATE OPERATOR
NOT TO SCALE

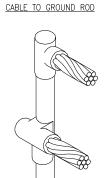




CABLE TO GROUND ROD







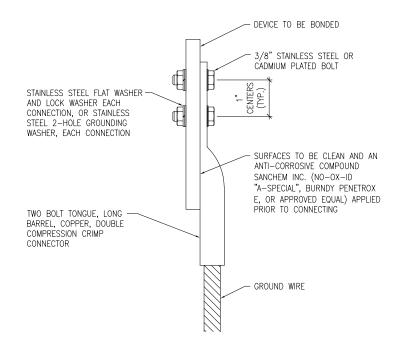
CABLES TO GROUND ROD

DETAIL NOTES

- ALL BELOW GRADE CONNECTIONS TO GROUND RODS & GROUND RING CONDUCTORS SHALL BE EXOTHERMIC WELD TYPE CONNECTIONS. EXOTHERMIC WELDS SHALL BE CADWELD AS MANUFACTURED BY PENTAIR ERICO. PRODUCTS, ULTRAWELD AS MANUFACTURED BY HARGER LIGHTNING PROTECTION & GROUNDING EQUIPMENT, THERMOWELD AS MANUFACTURED BY CONTINENTAL INDUSTRIES, OR APPROVED EQUAL. VERIFY PROPER SIZES, MOLDS, TYPES, AND REQUIREMENTS FOR THE RESPECTIVE APPLICATION WITH THE MANUFACTURER, AND INSTALL PER THEIR DIRECTIONS
- FOR APPLICATIONS TO GALVANIZED STEEL OR PAINTED STEEL, REMOVE GALVANIZING AND/OR PAINT & CLEAN THE SURFACE TO EXPOSE BARE STEEL BEFORE MAKING EXOTHERMIC WELD CONNECTION.
- INDIVIDUAL GROUNDING ELECTRODE CONDUCTORS SHALL NOT BE INSTALLED IN METAL CONDUIT. INSTALL GROUNDING ELECTRODE CONDUCTORS IN SCHED 40 PVC CONDUIT AS REQUIRED IN FOUNDATIONS, FOR PROTECTION, WHERE ENTERING ENCLOSURES, ETC. WHERE PLASTIC CONDUIT IS USED FOR INDIVIDUAL GROUND WIRES, DO NOT COMPLETELY ENCIRCLE THE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. WHERE METAL CLAMPS ARE INSTALLED USE NYLON BOLTS, NUTS, WASHERS, & SPACERS TO INTERRUPT A COMPLETE METALLIC PATH FROM ENCIRCLING THE CONDUIT.

EXOTHERMIC WELD DETAILS

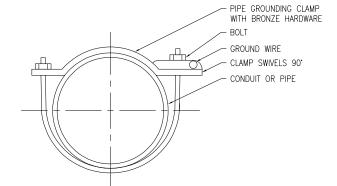
NOT TO SCALE

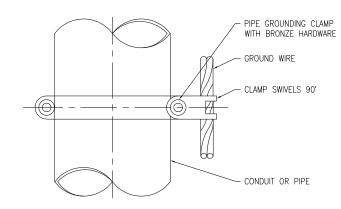


2 HOLE LONG BARREL COMPRESSION LUG TABLE (OR APPROVED EQUAL)						
WIRE SIZE	BURNDY CAT. NO.	THOMAS & BETTS CAT. NO.	PENN-UNION CAT. NO.			
#8 AWG STRANDED	YA8C-2TC38	256-30695-1157	BBLU-8D-2TC38			
#6 AWG SOLID	YA8C-2TC38 OR YGA6C-2TC38E2G1	(VERIFY WITH MFR)	(VERIFY WITH MFR)			
#6 AWG STRANDED	YA6C-2TC38	256-30695-1158	BBLU-6D-2TC38			
#4 AWG STRANDED	YA4C-2TC38	256-30695-1159	BBLU-4D-2TC38			
#2 AWG STRANDED	YA2C-2TC38	256-30695-1160	BBLU-2D-2TC38			
#2 AWG SOLID	YA3C-2TC38	256-30695-1160	BBLU-3D-2TC38			
#1/0 AWG STRANDED	YA25-2TC38	256-30695-1162	BBLU-1/0D-2TC38			
#2/0 AWG STRANDED	YA26-2TC38	256-30695-1116	BBLU-2/0D-2TC38			
#3/0 AWG STRANDED	YA27-2TC38	54816BE	BBLU-3/0D-2TC38			
#4/0 AWG STRANDED	YA28-2TC38	256-30695-1117	BBLU-4/0D-2TC38			

NOTES

- ALL CONNECTIONS TO GROUND BUS BAR SHALL BE WITH 2 HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE BUS BAR.
- GROUND WIRE CONNECTIONS TO EQUIPMENT SHALL BE WITH 2 HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE DEVICE OR WITH THE RESPECTIVE EQUIPT MANUFACTURER'S LUG OR TERMINAL WHERE
- GROUNDING ELECTRODE CONDUCTORS, BONDING JUMPERS, & INDIVIDUAL GROUND WIRES SHALL NOT BE INSTALLED IN METAL CONDUIT. WHERE PLASTIC CONDUIT IS USED FOR INDIVIDUAL GROUND WIRES, DO NOT COMPLETELY ENCIRCLE THE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. WHERE METAL CLAMPS ARE INSTALLED USE NYLON BOLTS, NUTS, WASHERS, & SPACERS TO INTERRUPT A COMPLETE METALLIC APTH FROM ENCIRCLING THE CONDUIT.
- ALL CONNECTIONS SHALL BE COATED WITH A CORROSION PREVENTATIVE COMPOUND (SANCHEM INC. NO-OX-ID "A-SPECIAL", BURNDY PENETROX E, OR APPROVED EQUAL) BEFORE JOINING. ALL COPPER BUS BARS SHALL BE CLEANED PRIOR TO MAKING CONNECTIONS TO REMOVE SURFACE OXIDATION. CLEAN SURFACES, OF RESPECTIVE DEVICES TO BE BONDED, TO BARE METAL, PER NEC 250-12.





PIPE GROUNDING CLAMP TABLE (OR APPROVED EQUAL)					
BURNDY CAT. NO.	THOMAS & BETTS CAT. NO.	PIPE SIZE			
GAR3902-BU	3902BU	1/2" - 1"			
GAR3903-BU	3903BU	1 1/4" - 2"			
GAR3904-BU	3904BU	2 1/2" - 3 1/2"			
GAR3905-BU	3905BU	4" - 5"			
GAR3906-BU	3906BU	6"			

NOTES

PIPE GROUNDING CLAMPS SHALL HAVE BRONZE HARDWARE, BE CORROSION RESISTANT, SUITABLE FOR DIRECT BURIAL IN EARTH OR CONCRETE, & UL467 LISTED.

> PIPE/CONDUIT GROUNDING CLAMP DETAIL NOT TO SCALE



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REALIGN AIRPORT **ENTRANCE ROAD;** RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029

NO.	NO. DATE	DES	CRIPT	ION
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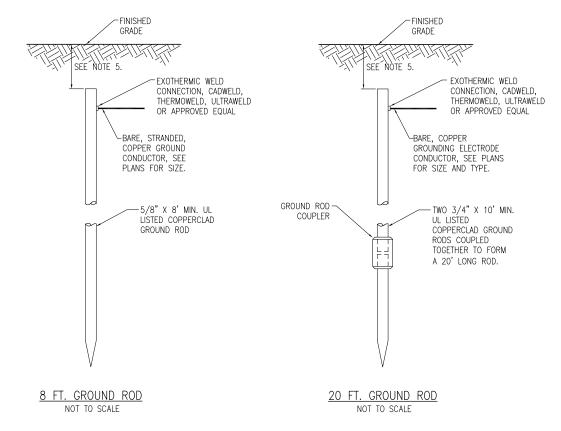
CAD FILE: 44-E-506.DWG DESIGN BY KNI 10/6/18 DRAWN BY: LDH 10/8/18 REVIEWED BY: KMS 10/18/18

SHEET TITLE

GROUNDING DETAILS

- 1. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL GROUNDING AS MAY BE NECESSARY OR REQUIRED TO MAKE A COMPLETE GROUNDING SYSTEM AS REQUIRED BY THE LATEST NATIONAL ELECTRICAL CODE (NFPA 70) IN FORCE AND AS DETAILED HEREIN. THE RELIABILITY OF THE GROUNDING SYSTEM IS DEPENDENT ON CAREFUL, PROPER INSTALLATION AND CHOICE OF MATERIALS. IMPROPER PREPARATION OF SURFACES TO BE JOINED TO MAKE AN ELECTRICAL PATH, LOOSE JOINTS OR CORROSION CAN INTRODUCE IMPEDANCE THAT WILL SERIOUSLY IMPAIR THE ABILITY OF THE GROUND PATH TO PROTECT PERSONNEL AND EQUIPMENT AND TO ABSORB TRANSIENTS THAT CAN CAUSE NOISE IN COMMUNICATIONS CIRCUITS. THE FOLLOWING FUNCTIONS ARE PARTICULARLY IMPORTANT TO ENSURE A RELIABLE GROUND SYSTEM:
- 2. FURNISH AND INSTALL GROUND RODS AS DETAILED HEREIN. GROUND RODS FOR ELECTRICAL INSTALLATIONS SHALL BE MINIMUM 3/4-IN. DIAMETER BY 20-FT LONG, UL-LISTED, COPPER CLAD WITH 10-MIL MINIMUM COPPER COATING (TWO 3/4-IN BY 10-FT LONG GROUND RODS COUPLED TOGETHER TO FORM A GROUND ROD 20 FEET IN LENGTH). GROUND RODS FOR FENCE GROUNDING SHALL BE 5/8-IN. DIAMETER BY 8-FT. LONG, UL LISTED, COPPER CLAD WITH 10-MILL MINIMUM COPPER COATING. GROUND RODS SHALL BE SPACED OR AS DETAILED ON THE RESPECTIVE PLANS, AND IN NO CASE SPACED LESS THAN ONE ROD LENGTH APART. ALL CONNECTIONS TO GROUND RODS, GROUND FIELDS, AND/OR THE GROUND RING SHALL BE MADE WITH EXOTHERMIC WELD TYPE CONNECTORS, CADWELD BY PENTAIR ERICO PRODUCTS, INC., THERMOWELD BY CONTINENTAL INDUSTRIES, ULTRAWELD BY HARGER, OR APPROVED EQUAL. EXOTHERMIC WELD CONNECTIONS SHALL BE INSTALLED IN CONFORMANCE WITH THE RESPECTIVE MANUFACTURER'S DIRECTIONS USING MOLDS AS REQUIRED FOR EACH RESPECTIVE APPLICATION. BOLTED CONNECTIONS WILL NOT BE PERMITTED AT GROUND RODS OR AT BURIED GROUNDING ELECTRODE CONDUCTORS.
- 3. CONTRACTOR SHALL TEST EACH MADE ELECTRODE GROUND ROD/GROUND FIELD/GROUND RING WITH AN INSTRUMENT SPECIFICALLY DESIGNED FOR TESTING GROUND FIELD SYSTEMS. IF GROUND RESISTANCE EXCEEDS 25 OHMS, CONTACT THE PROJECT ENGINEER FOR FURTHER DIRECTION. ALSO REFER TO EOR—47643 FOR ADDITIONAL INFORMATION ON GROUNDING REQUIREMENTS, WHERE APPLICABLE. COPIES OF GROUND ROD TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT ENGINEER/RESIDENT TECHNICIAN, AND THE PROJECT ENGINEER.
- ALL PRODUCTS ASSOCIATED WITH THE GROUNDING SYSTEM SHALL BE UL-LISTED AND LABELED.
- ALL BOLTED OR MECHANICAL CONNECTIONS SHALL BE COATED WITH A CORROSION PREVENTATIVE COMPOUND BEFORE JOINING, SANCHEM INC. "NO-OX-ID "A-SPECIAL" COMPOUND, BURNDY PENETROX E, OR APPROVED EQUAL
- METALLIC SURFACES TO BE JOINED SHALL BE PREPARED BY THE REMOVAL OF ALL NON-CONDUCTIVE MATERIAL, PER 2017 NATIONAL ELECTRICAL CODE ARTICLE 250-12. ALL COPPER BUS BARS MUST BE CLEANED PRIOR TO MAKING CONNECTIONS TO REMOVE SURFACE OXIDATION.
- 7. METALLIC RACEWAY FITTINGS SHALL BE MADE UP TIGHT TO PROVIDE A PERMANENT LOW IMPEDANCE PATH FOR ALL CIRCUITS. METAL CONDUIT TERMINATIONS IN ENCLOSURES SHALL BE BONDED TO THE ENCLOSURE WITH UL—LISTED FITTINGS SUITABLE FOR GROUNDING. PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPERS FOR ALL METAL CONDUITS ENTERING SERVICE EQUIPMENT (METER BASE, CT CABINET, MAIN SERVICE BREAKER ENCLOSURE, ETC.). PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPERS FOR ALL METAL CONDUITS ENTERING AN ENCLOSURE THROUGH CONCENTRIC OR ECCENTRIC KNOCKOUTS THAT ARE PUNCHED OR OTHERWISE FORMED SO AS TO IMPAIR THE ELECTRICAL CONNECTION TO GROUND. STANDARD LOCKNUTS OR BUSHINGS SHALL NOT BE THE SOLE MEANS FOR BONDING WHERE A CONDUIT ENTERS AN ENCLOSURE THROUGH A CONCENTRIC OR ECCENTRIC KNOCKOUT.
- 8. ALL CONNECTIONS, LOCATED ABOVE GRADE, BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS SHALL BE MADE USING UL—LISTED DOUBLE COMPRESSION CRIMP TYPE CONNECTORS OR UL—LISTED BOLITED GROUND CONNECTORS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, THOMAS AND BETTS, OR EQUAL. TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUES IN UL STANDARD 486A TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
- 9. ALL METAL EQUIPMENT ENCLOSURES, CONDUITS, CABINETS, BOXES, RECEPTACLES, MOTORS, ETC. SHALL BE BONDED TO THE RESPECTIVE GROUNDING SYSTEM.
- 10. PROVIDE ALL BOXES FOR PROPOSED OUTLETS, SWITCHES, CIRCUIT BREAKERS, ETC. WITH GROUNDING SCREWS. PROVIDE ALL PANELBOARD, SWITCHGEAR, ETC., ENCLOSURES WITH GROUNDING BARS WITH INDIVIDUAL SCREWS, LUGS, CLAMPS, ETC., FOR EACH OF THE GROUNDING CONDUCTORS THAT ENTER THEIR RESPECTIVE ENCLOSURES.
- 11. EACH NEW FEEDER CIRCUIT AND/OR BRANCH CIRCUIT SHALL INCLUDE AN EQUIPMENT GROUND WIRE. METAL RACEWAY OR CONDUIT SHALL NOT MEET THIS REQUIREMENT. THE EQUIPMENT GROUND WIRE FROM EQUIPMENT SHALL NOT BE SMALLER THAN ALLOWED BY 2017 NEC TABLE 250-122 "MINIMUM SIZE CONDUCTORS OR GROUNDING RACEWAY AND EQUIPMENT." WHEN CONDUCTORS ARE ADJUSTED IN SIZE TO COMPENSATE FOR VOLTAGE DROP, EQUIPMENT-GROUNDING CONDUCTORS SHALL BE ADJUSTED PROPORTIONATELY ACCORDING TO CIRCULAR MIL AREA. ALL EQUIPMENT GROUND WIRES SHALL BE COPPER, EITHER BARE OR INSULATED GREEN IN COLOR. WHERE THE EQUIPMENT GROUNDING CONDUCTORS ARE INSULATED, THEY SHALL BE IDENTIFIED BY THE COLOR GREEN, AND SHALL BE THE SAME INSULATION TYPE AS THE PHASE CONDUCTORS.

- 12. ALL EXTERIOR METAL CONDUIT, WHERE NOT ELECTRICALLY CONTINUOUS BECAUSE OF MANHOLES, HANDHOLES, NON-METALLIC JUNCTION BOXES, ETC., SHALL BE BONDED TO ALL OTHER METAL CONDUIT IN THE RESPECTIVE DUCT RUN, AND AT EACH END, WITH A COPPER-BONDING JUMPER SIZED IN CONFORMANCE WITH 2017 NEC 250-102. WHERE METAL CONDUITS TERMINATE IN AN ENCLOSURE (SUCH AS A MOTOR CONTROL CENTER, SWITCHBOARD, ETC) WHERE THERE IS NOT ELECTRICAL CONTINUITY WITH THE CONDUIT AND THE RESPECTIVE ENCLOSURE, PROVIDE A BONDING JUMPER FROM THE RESPECTIVE ENCLOSURE GROUND BUS TO THE CONDUIT SIZED PER 2017 NEC 250-102.
- 13. IT IS THE INTENT OF THIS SPECIFICATION THAT ALL MOTOR FRAMES, PUMP BASES ELECTRICAL EQUIPMENT ENCLOSURES, PANEL HOUSINGS, CONDUITS, BOXES, ETC. HAVE A CONTINUOUS COPPER WIRE GROUND CONNECTION AND SHALL BE POSITIVELY BONDED TO THE RESPECTIVE GROUNDING SYSTEM. CONDUIT CONNECTORS <u>WILL NOT BE CONSIDERED AS ADEQUATE GROUNDING</u>.
- 14. PROVIDE A POSITIVE GROUND BOND FOR ALL OUTLET BOXES, ELECTRICAL EQUIPMENT ENCLOSURES, GROUNDING RECEPTACLES, TOGGLE SWITCHES, ETC. INSTALL A GROUNDING CONDUCTOR IN ALL WIRE AND CABLE RACEWAYS. GROUND CONDUCTOR TO HAVE 600—VOLT INSULATION AND BE IDENTIFIED BY A CONTINUOUS GREEN COLOR COATING. THEY SHALL BE USED SOLELY FOR GROUNDING PURPOSES AND BE ENTIRELY SEPARATE FROM WHITE GROUNDED NEUTRAL CONDUCTOR, EXCEPT AT SUPPLY SIDE OF SERVICE DISCONNECTING MEANS, WHERE GROUNDING AND NEUTRAL SYSTEMS ARE TO BE CONNECTED TO SERVICE GROUND.
- 15. EACH AND ALL GROUNDED CASED AND METAL PARTS ASSOCIATED WITH ELECTRICAL EQUIPMENT SHALL BE TESTED FOR CONTINUITY OF CONNECTION WITH GROUND BUS SYSTEM BY CONTRACTOR IN PRESENCE OF OWNER'S REPRESENTATIVE.
- 6. ALL CONNECTIONS BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS ABOVE GRADE SHALL BE MADE USING BOLTED GROUND CONNECTORS. GROUND LUGS SHALL BE PROVIDED IN ALL ENCLOSURES AND WIRING TERMINATION JUNCTION BOXES. EQUIPMENT GROUNDS AND GROUNDING CONDUCTOR SHALL BE CONNECTED TO THESE GROUND LUGS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, DOSSERT CORPORATION, ILSCO CORPORATION, PENN—UNION CORPORATION, THOMAS & BETTS, OR APPROVED EQUAL.
- 17. BOND ALL NONCURRENT-CARRYING PARTS OF METAL EQUIPMENT TO GROUND SYSTEM.
- 18. BUILDING STRUCTURAL STEEL SYSTEM SHALL BE BONDED TO ELECTRICAL GROUND SYSTEM.
- INSTALL GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS AND SEPARATE GROUND CONDUCTORS IN SCHEDULE 40 OR SCHEDULE 80 PVC CONDUIT OR EXPOSED WHERE ACCEPTABLE TO LOCAL CODES. WHERE GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS OR INDIVIDUAL GROUND CONDUCTORS ARE RUN IN PVC CONDUIT, DO NOT COMPLETELY ENCIRCLE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. USE NON-METALLIC REINFORCED FIBERGLASS STRUT SUPPORT. WHERE METAL CONDUIT CLAMPS ARE INSTALLED, USE NYLON BOLTS, NUTS, WASHERS AND SPACERS TO INTERRUPT A COMPLETE METALLIC PATH FROM ENCIRCLING THE CONDUIT. THIS IS REQUIRED TO AVOID GIRDLING OF GROUND CONDUCTORS. GIRDLING OF A GROUND CONDUCTOR IS THE RESULT OF PLACING THE CONDUCTOR IN A RING OF MAGNETIC MATERIAL. THIS RING COULD BE A METALLIC CONDUIT, U-BOLT OR STRUT SUPPORT PIPE CLAMP, OR OTHER SUPPORT HARDWARE. THE RESULT OF GIRDLING GROUND CONDUCTORS SIGNIFICANTLY INCREASES THE INDUCTIVE IMPEDANCE OF THE GROUND CONDUCTOR. INDUCTIVE AND CAPACITIVE IMPEDANCE IS A TYPE OF RESISTANCE THAT OPPOSES THE FLOW OF ALTERNATING CURRENT. ANY INCREASE IN THE IMPEDANCE OF A GROUND CONDUCTOR REDUCES ITS ABILITY TO EFFECTIVELY MITIGATE RADIO FREQUENCY NOISE IN THE GROUND SYSTEM. THE CONDITION WHERE A GROUND CONDUCTOR IS GIRDLED DURING A LIGHTNING STRIKE RESULTS IN PHENOMENA KNOWN AS SURGE IMPEDANCE LOADING. SURGE IMPEDANCE LOADING IS A RESULT OF VOLTAGE AND CURRENT REACHING 500,000 VOLTS AND 10,000 AMPS FOR A SHORT DURATION. GIRDLING FURTHER INCREASES THE IMPEDANCE AT LIGHTNING FREQUENCIES OF 100 KILOHERTZ TO 100 MEGAHERTZ. AT THESE POWER AND FREQUENCY LEVELS ANY INCREASE IN THE IMPEDANCE OF THE GROUND CONDUCTOR MUST BE CONTROLLED. DURING LIGHTNING DISCHARGE CONDITIONS A LOW INDUCTIVE IMPEDANCE PATH IS MORE IMPORTANT THAN A LOW DC RESISTANCE PATH.
- 20. IF LOCAL CODES DICTATE THAT INDIVIDUAL GROUNDING CONDUCTORS MUST BE RUN IN METAL CONDUIT OR RACEWAY, THEN THE CONDUIT OR RACEWAY MUST BE BONDED AT EACH END OF THE RUN WITH A BONDING JUMPER SIZED EQUAL TO THE INDIVIDUAL GROUNDING CONDUCTOR OR AS REQUIRED BY 2017 NEC 250-102. NOTE THIS DOES NOT APPLY TO AC FOLIPMENT GROUNDING CONDUCTORS RUN WITH AC CIRCUITS.
- 21. NEVER REMOVE, ALTER, OR ATTEMPT TO REPAIR CONDUCTORS OR CONDUIT SYSTEMS PROVIDING GROUNDING OR ELECTRICAL BONDING FOR ANY ELECTRICAL EQUIPMENT UNTIL ALL POWER IS REMOVED FROM EQUIPMENT. WARN ALL PERSONNEL OF THE UNGROUNDED CONDITION OF THE EQUIPMENT. DISPLAY APPROPRIATE WARNING SIGNS, SUCH AS DANGER TAGS TO WARN PERSONNEL OF THE POSSIBLE HAZARDS.
- 22. WHERE A CONFLICT IS DETERMINED WITH RESPECT TO GROUNDING REQUIREMENTS PER MANUFACTURER INSTALLATION INSTRUCTIONS, NEC, AND/OR THE CONTRACT DOCUMENTS, CONTACT THE RESIDENT ENGINEER/RESIDENT TECHNICIAN OR PROJECT ENGINEER FOR FURTHER DIRECTIONS.
- 23. GROUND RODS SHALL BE MANUFACTURED IN THE UNITES STATES OF AMERICA FROM 100 PERCENT DOMESTIC STEEL TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENTS AND THE STEEL PRODUCTS PROCUREMENT ACT.



<u>NOTES</u>

- 1. TYPE AND MINIMUM NUMBER OF GROUND RODS SHALL BE AS SPECIFIED ON THE PLAN.
- . THE RESISTANCE TO GROUND OF THE GROUNDING SYSTEM SHALL NOT EXCEED 25 OHMS.
- COST OF GROUND RODS IS INCIDENTAL TO THE ASSOCIATED ITEMS REQUIRING GROUNDING UNLESS OTHERWISE SPECIFIED.
- GROUND RODS SHALL BE SPACED AS DETAILED ON THE PLANS AND SHALL NOT BE SPACED LESS THAN ONE ROD LENGTH APART.
- TOP OF GROUND RODS FOR ELECTRICAL INSTALLATIONS SHALL BE 12" MINIMUM BELOW GRADE UNLESS DETAILED OTHERWISE HEREIN. TOP OF GROUND RODS FOR FENCING APPLICATIONS (NON-ELECTRICAL INSTALLATIONS) SHALL BE 6" MINIMUM BELOW GRADE UNLESS DETAILED OTHERWISE HEREIN.
- 6. GROUND RODS FOR FENCING SHALL BE A MINIMUM 5/8-INCH DIAMETER BY 8-FT LONG UL LISTED COPPER CLAD.
- GROUND RODS FOR GATE OPERATORS AND OTHER ELECTRICAL EQUIPMENT SHALL BE A MINIMUM 3/4-INCH DIAMETER BY 20-FT LONG UL LISTED COPPER CLAD.

GROUND RODS

NOT TO SCALE

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Marshall County Airport 1315 Illinois 17 Lacon, Illinois 61540 phone: 309-246-2870

REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029

NO. DATE DESCRIPTION
DES DWN REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 45-E-003-GND.DWG

CAD FILE: 45-E-003-GND.DWG
DESIGN BY: KNL 10/6/18
DRAWN BY: LDH 10/8/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

GROUNDING NOTES



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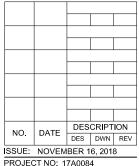


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REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029



PROJECT NO: 17A0084
CAD FILE: 47-MARKING.DWG
DESIGN BY: LDH 9/10/18

DRAWN BY: LDH 9/10/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

MARKING PLAN

ACCESSIBLE SPACE DETAIL

MARKING NOTES:

- 1. ALL WHITE AND YELLOW PAVEMENT MARKINGS TO INCLUDE REFLECTIVE GLASS SPHERES.
- 2. ALL MARKINGS TO BE WATERBORNE PAINT.
- 3. DIMENSIONS GIVEN TO CENTERLINE OF MARKING.



HANDICAP SIGN PANEL

R7-8il

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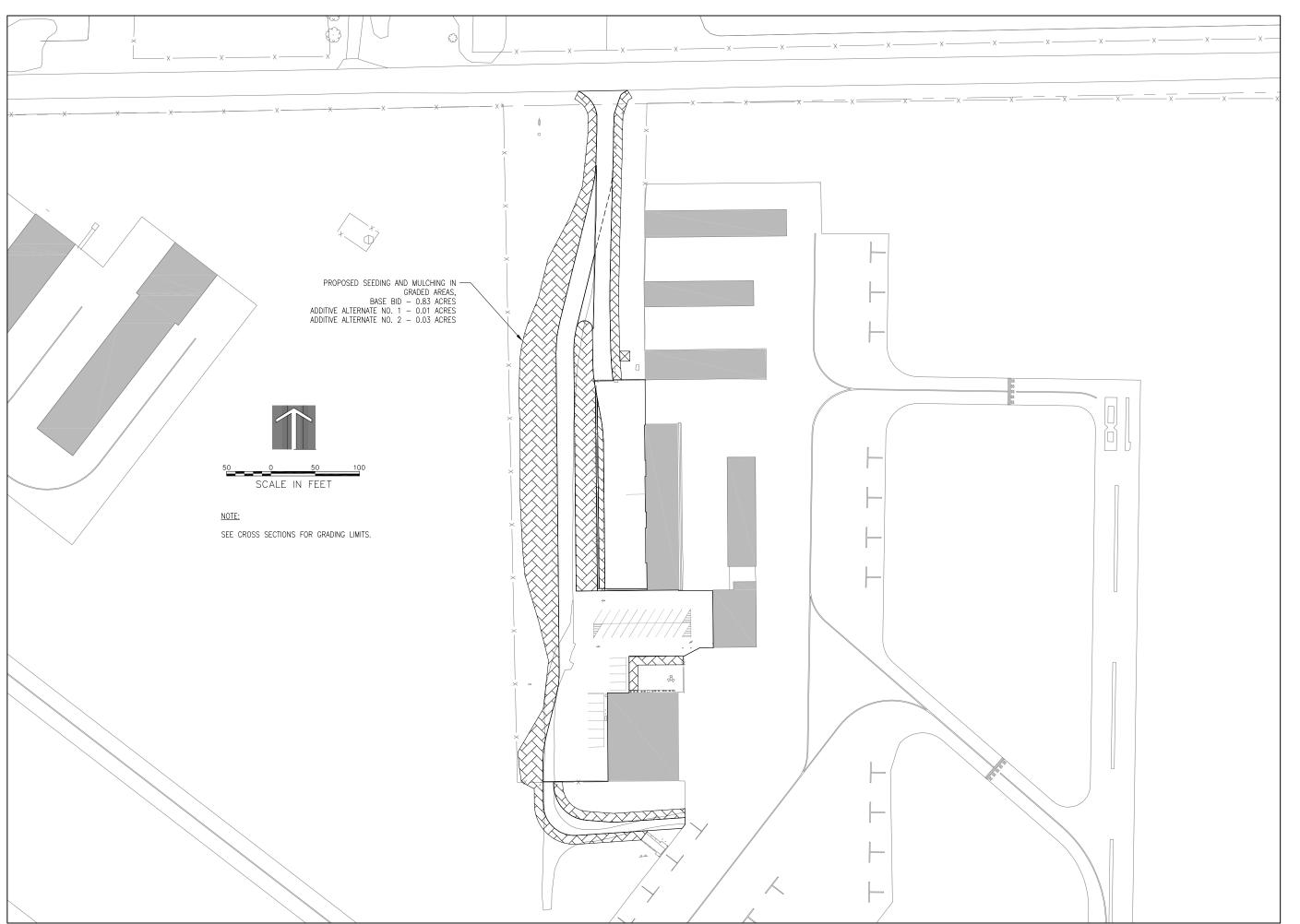
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SHEET TITLE

MARKING AND SIGN DETAILS





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IDA No: C75-4625

Contract No. MA029

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PROJECT NO: 17A0084				

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DESIGN BY: LDH 9/19/18 DRAWN BY: LDH 9/19/18 REVIEWED BY: KMS 10/18/18

SHEET TITLE

LANDSCAPING PLAN