

GENERAL NOTES

PROJECT DESCRIPTION

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.
- EARTH 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 EDGES.

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 BENCHMARKS

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

OBJECT INFORMATION

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



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

NOTES

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.



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

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018

PROJECT NO: 17A0084

CAD FILE: 04-GENNOTES.DWG

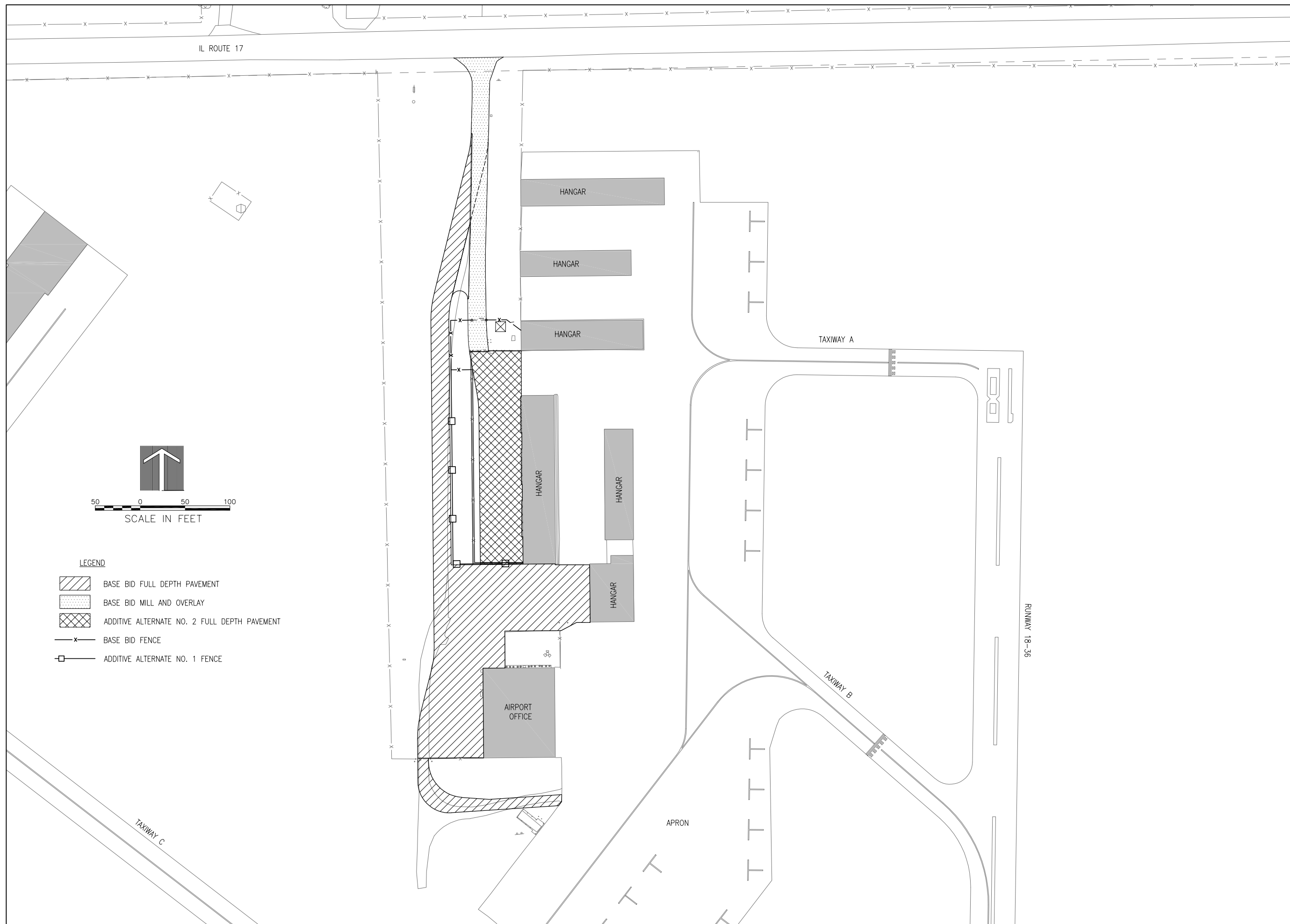
DESIGN BY: LDH 8/28/18

DRAWN BY: LDH 8/28/18

REVIEWED BY: KMS 10/18/18

SHEET TITLE

SITE AND SAFETY PLAN NOTES



**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: 5A-SOWPLAN.DWG
DESIGN BY: LDH 8/30/18
DRAWN BY: LDH 8/30/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

**SCOPE OF WORK
PLAN**

NOV 15, 2018 11:34 AM HAUSM00682
I:\17\JOBS\17A0084\17A0084\CAD\AIRPORT\SHEET\5A-SOWPLAN.DWG



PHASE 1

NOTES

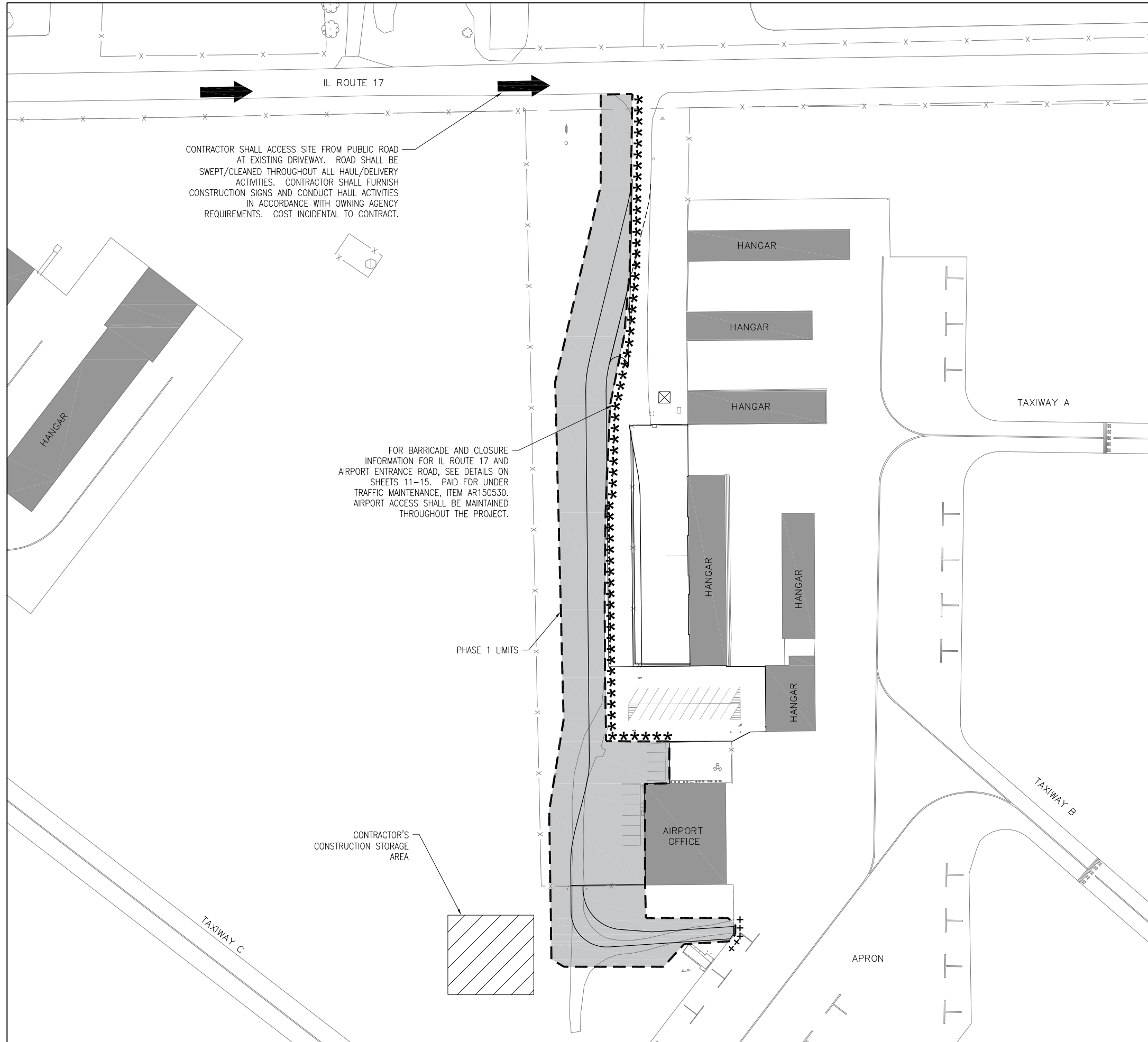
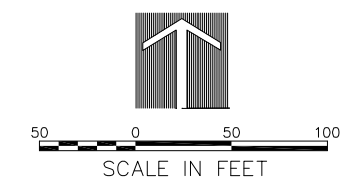
1. ALL CONTRACTOR ACTIVITIES SHALL TAKE PLACE WITHIN CONSTRUCTION LIMIT LINES AS SHOWN.
2. ALL CONSTRUCTION EQUIPMENT WILL BE LIMITED TO A HEIGHT OF 25 FEET UNLESS PRIOR APPROVAL GIVEN BY THE ENGINEER (SEE SPECIAL PROVISIONS).
3. CONTRACTOR'S EQUIPMENT MAY NOT DISRUPT FLIGHT OPERATIONS ON RUNWAY 13-31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

1. INSTALL EROSION CONTROL MEASURES FOR ENTIRE PROJECT AREA.
2. PAVEMENT REMOVAL WITHIN PHASE 1 LIMITS.
3. EXCAVATION/EMBANKMENT WITHIN PHASE 1 LIMITS.
4. INSTALL DRAINAGE STRUCTURES WITHIN PHASE 1 LIMITS.
5. 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



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: 06-PHASING.DWG
DESIGN BY: LDH 8/28/18
DRAWN BY: LDH 8/28/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

PHASING PLAN - PHASE 1

PHASE 2

NOTES

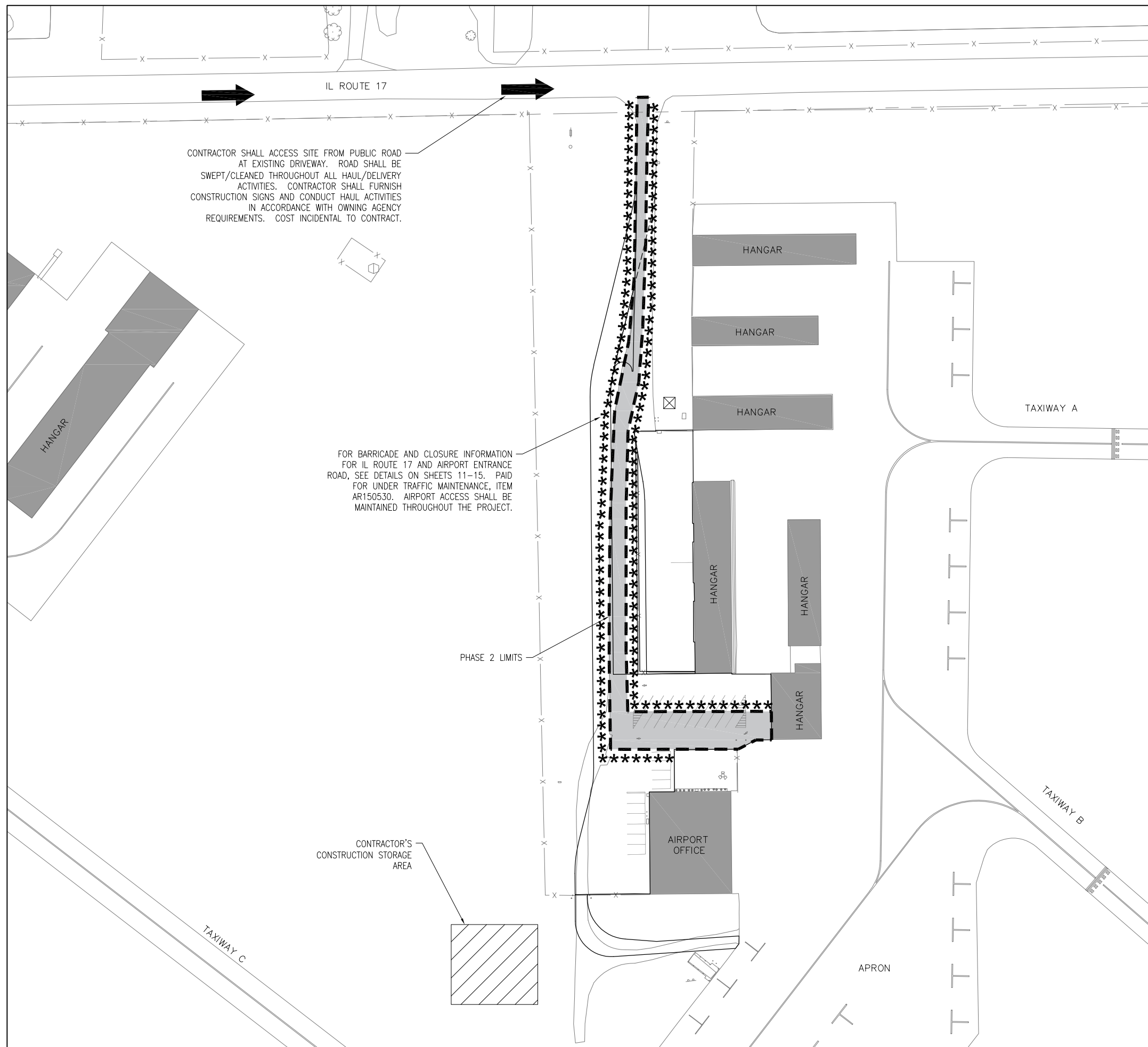
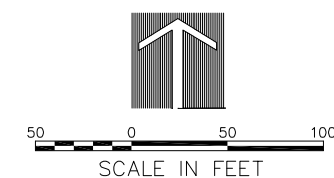
1. ALL CONTRACTOR ACTIVITIES SHALL TAKE PLACE WITHIN CONSTRUCTION LIMIT LINES AS SHOWN.
2. ALL CONSTRUCTION EQUIPMENT WILL BE LIMITED TO A HEIGHT OF 25 FEET UNLESS PRIOR APPROVAL GIVEN BY THE ENGINEER (SEE SPECIAL PROVISIONS).
3. CONTRACTOR'S EQUIPMENT MAY NOT DISRUPT FLIGHT OPERATIONS ON RUNWAY 13-31 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
- +++++ LOW-PROFILE BARRICADES



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: 07-PHASING.DWG

DESIGN BY: LDH 8/28/18

DRAWN BY: LDH 8/28/18

REVIEWED BY: KMS 10/18/18

SHEET TITLE

PHASING PLAN -
PHASE 2

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

IDA No: C75-4625

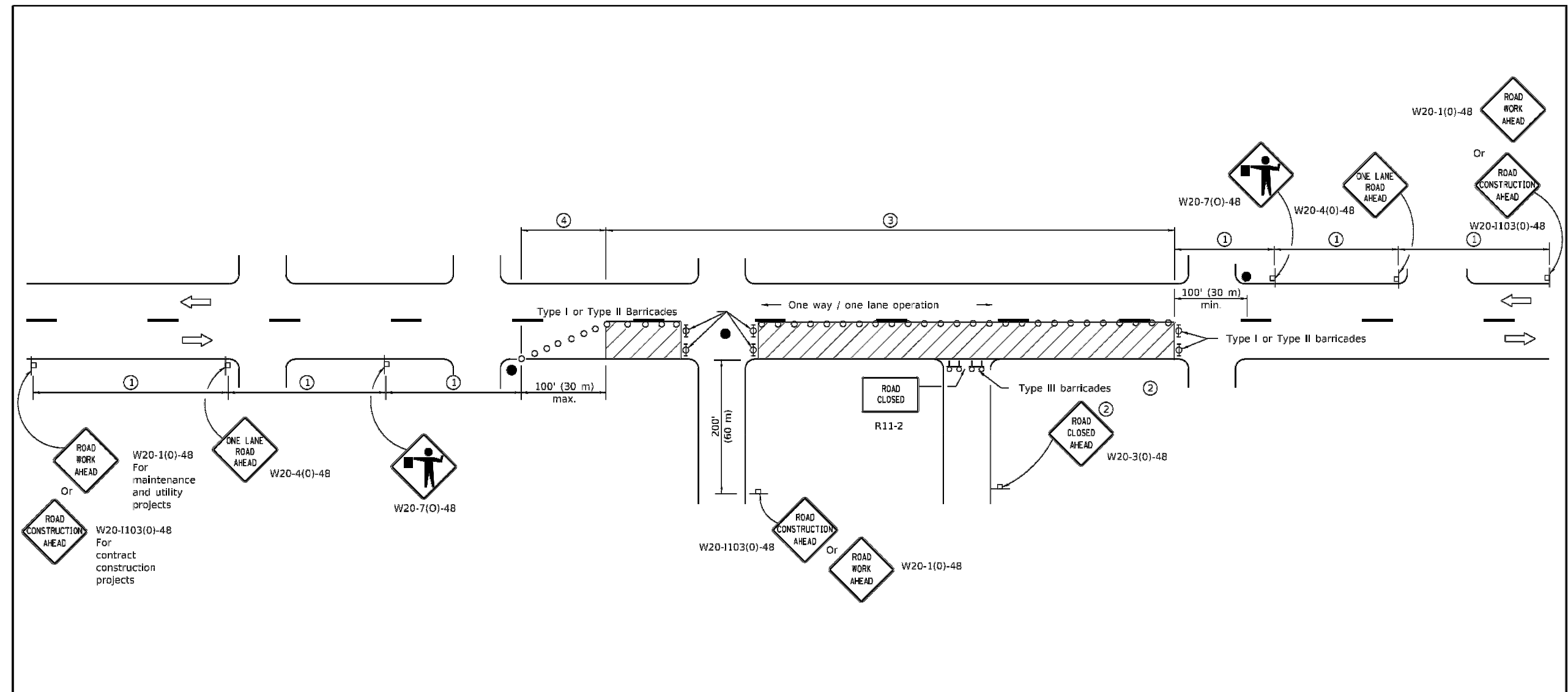
Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 10-TRAFFIC.DWG
DESIGN BY: LDH 8/30/18
DRAWN BY: LDH 8/30/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

TRAFFIC CONTROL
STANDARDS 01



Posted Speed	Sign Spacing
55	500' (150 m)
50-45	350' (100 m)
<45	200' (60 m)

- SYMBOLS**
- Work area
 - Cone, drum or barricade (not required for moving operations)
 - Sign on portable or permanent support
 - Flagger with traffic control sign
 - Barricade or drum with flashing light
 - Type III barricade with flashing lights

- ① Refer to SIGN SPACING TABLE for distances.
- ② For approved sideroad closures.
- ③ Cones at 25' (8 m) centers for 250' (75 m). Additional cones may be placed at 50' (15 m) centers. When drums or Type I or Type II barricades are used, the interval between devices may be doubled.
- ④ Cones, drums or barricades at 20' (6 m) centers.

GENERAL NOTES

This Standard is used where at any time, day or night, any vehicle, equipment, workers or their activities encroach on the pavement requiring the closure of one traffic lane in an urban area.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-11	Revised flagger sign.
1-1-09	Switched units to English (metric).
	Corrected sign No.'s.

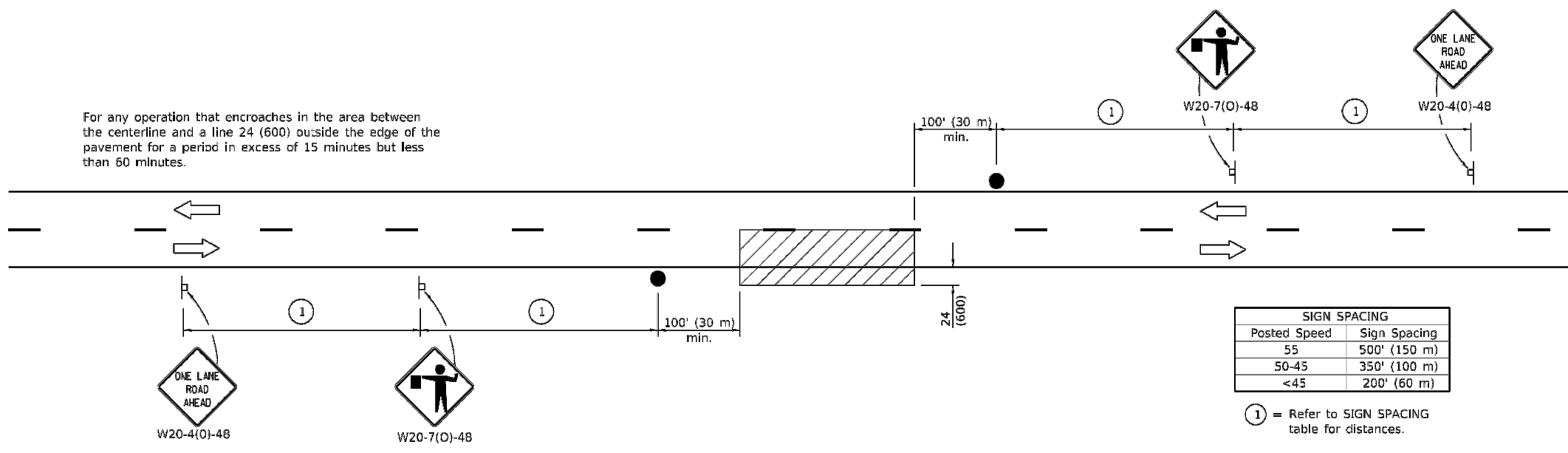
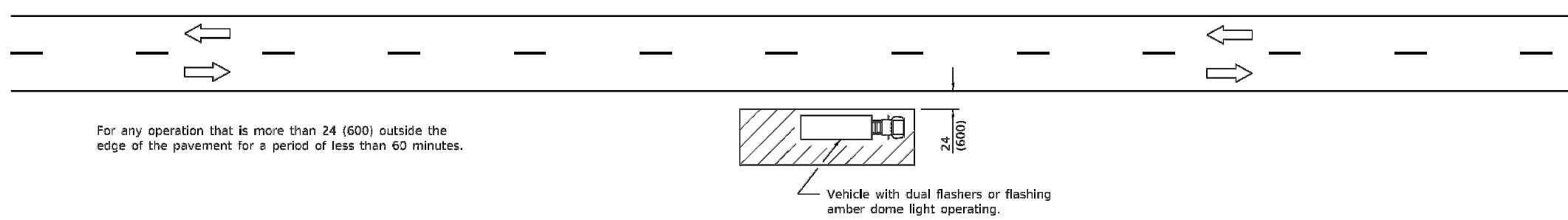
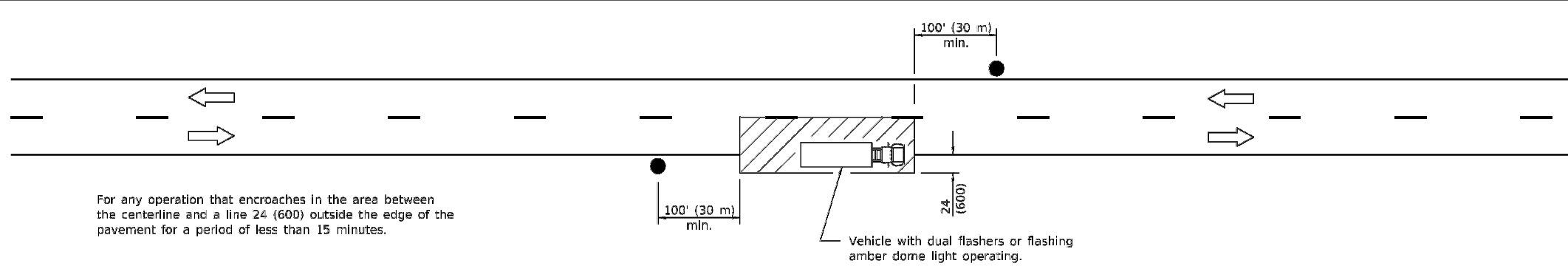
**URBAN LANE CLOSURE,
2L, 2W, UNDIVIDED**

STANDARD 701501-06

Illinois Department of Transportation

PASSED January 1, 2011
ENGINEER OF SAFETY ENGINEERING

APPROVED January 1, 2011
ENGINEER OF DESIGN AND ENVIRONMENT



TYPICAL APPLICATIONS

- Marking patches
- Field survey
- String line
- Utility operations
- Cleaning up debris on pavement

SYMBOLS

- Work area
- Sign on portable or permanent support
- Flagger with traffic control sign

DATE	REVISIONS
1-1-11	Revised flagger sign.
1-1-09	Switched units to English (metric).

All dimensions are in inches (millimeters) unless otherwise shown.

LANE CLOSURE, 2L, 2W, SHORT TIME OPERATIONS

STANDARD 701301-04

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: 11-TRAFFIC.DWG
DESIGN BY: LDH 8/30/18
DRAWN BY: LDH 8/30/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

TRAFFIC CONTROL STANDARDS 02

Illinois Department of Transportation

PASSED January 1, 2011
ENGINEER OF SAFETY ENGINEERING

APPROVED January 1, 2011
ENGINEER OF DESIGN AND ENVIRONMENT

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018

PROJECT NO: 17A0084

CAD FILE: 12-TRAFFIC.DWG

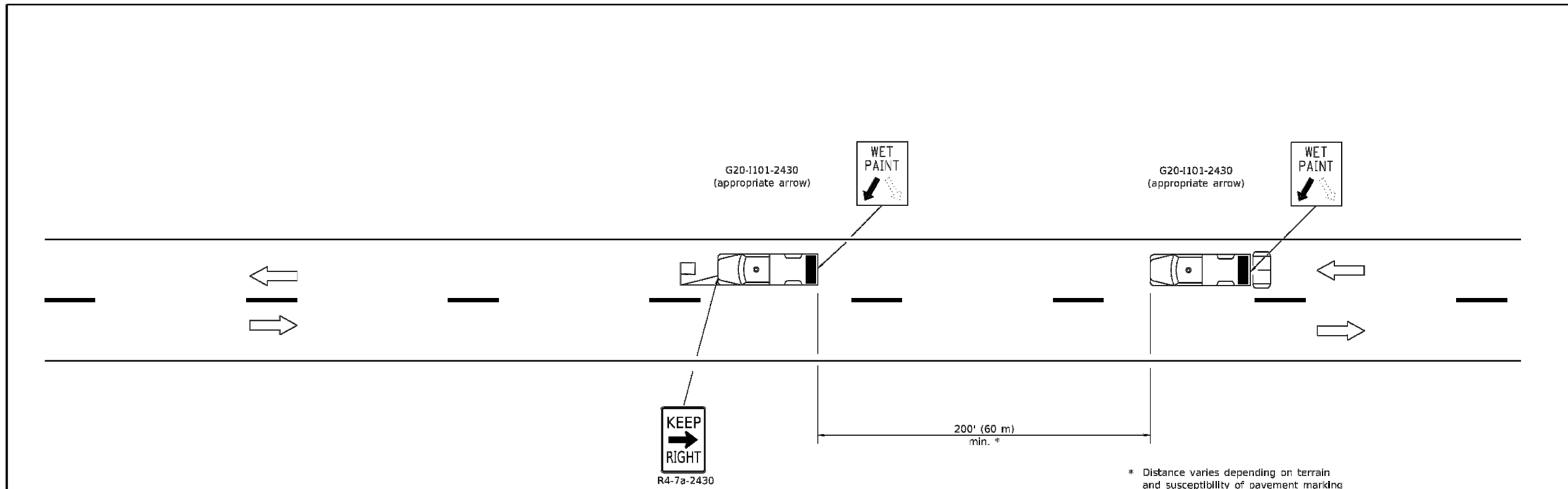
DESIGN BY: LDH 8/30/18

DRAWN BY: LDH 8/30/18

REVIEWED BY: KMS 10/18/18

SHEET TITLE





TRAFFIC CONTROL
STANDARDS 03



TYPICAL APPLICATIONS

- Landscaping work
- Utility work
- Pavement marking
- Weed spraying
- Roadometer measurements
- Debris cleanup
- Crack pouring

SYMBOLS

-  Arrow board (Hazard Mode only)
-  Truck with headlights, emergency flashers and flashing amber light. (visible from all directions)
-  18x18 (450x450) min. orange flag (use when guide wheel is used)
-  Truck mounted attenuator

GENERAL NOTES

This Standard is used where any vehicle, equipment, workers or their activities will require a continuous moving operation where the average speed is greater than 3 mph (5 km/h).

For shoulder operations not encroaching on the pavement, use DETAIL A, Standard 701426.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-09	Switched units to English (metric). Omitted Pass With Care sign.
1-1-00	Elim. speed restrictions in Standard title.

**LANE CLOSURE 2L, 2W
MOVING OPERATIONS-
DAY ONLY**

STANDARD 701311-03

Illinois Department of Transportation

PASSED January 1, 2009
ENGINEER OF OPERATIONS

APPROVED January 1, 2009
ENGINEER OF DESIGN AND ENVIRONMENT

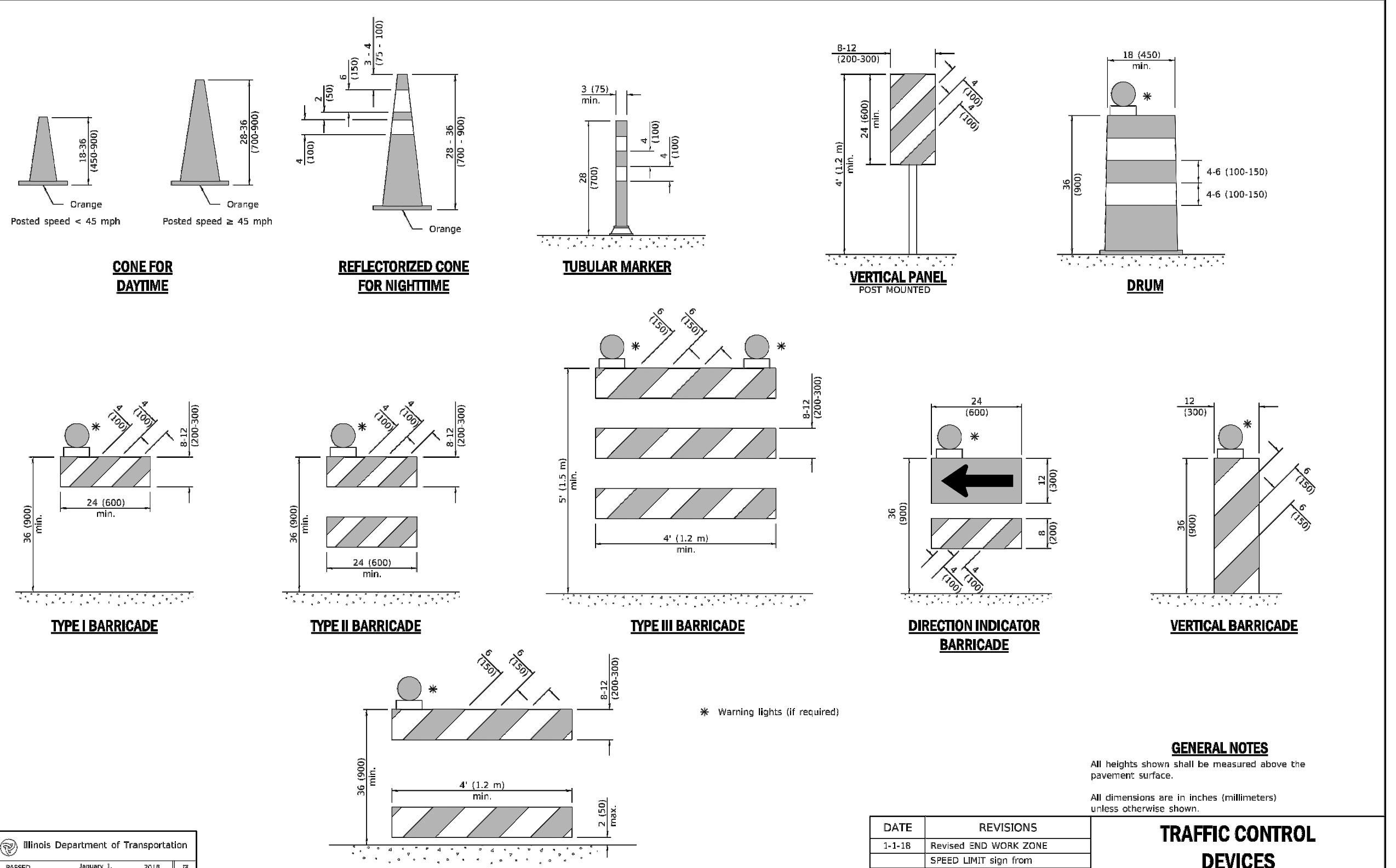
46P-1 (08/15)

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 13-TRAFFIC.DWG
DESIGN BY: LDH 8/30/18
DRAWN BY: LDH 8/30/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

TRAFFIC CONTROL
STANDARDS 04



GENERAL NOTES
All heights shown shall be measured above the pavement surface.
All dimensions are in inches (millimeters) unless otherwise shown.

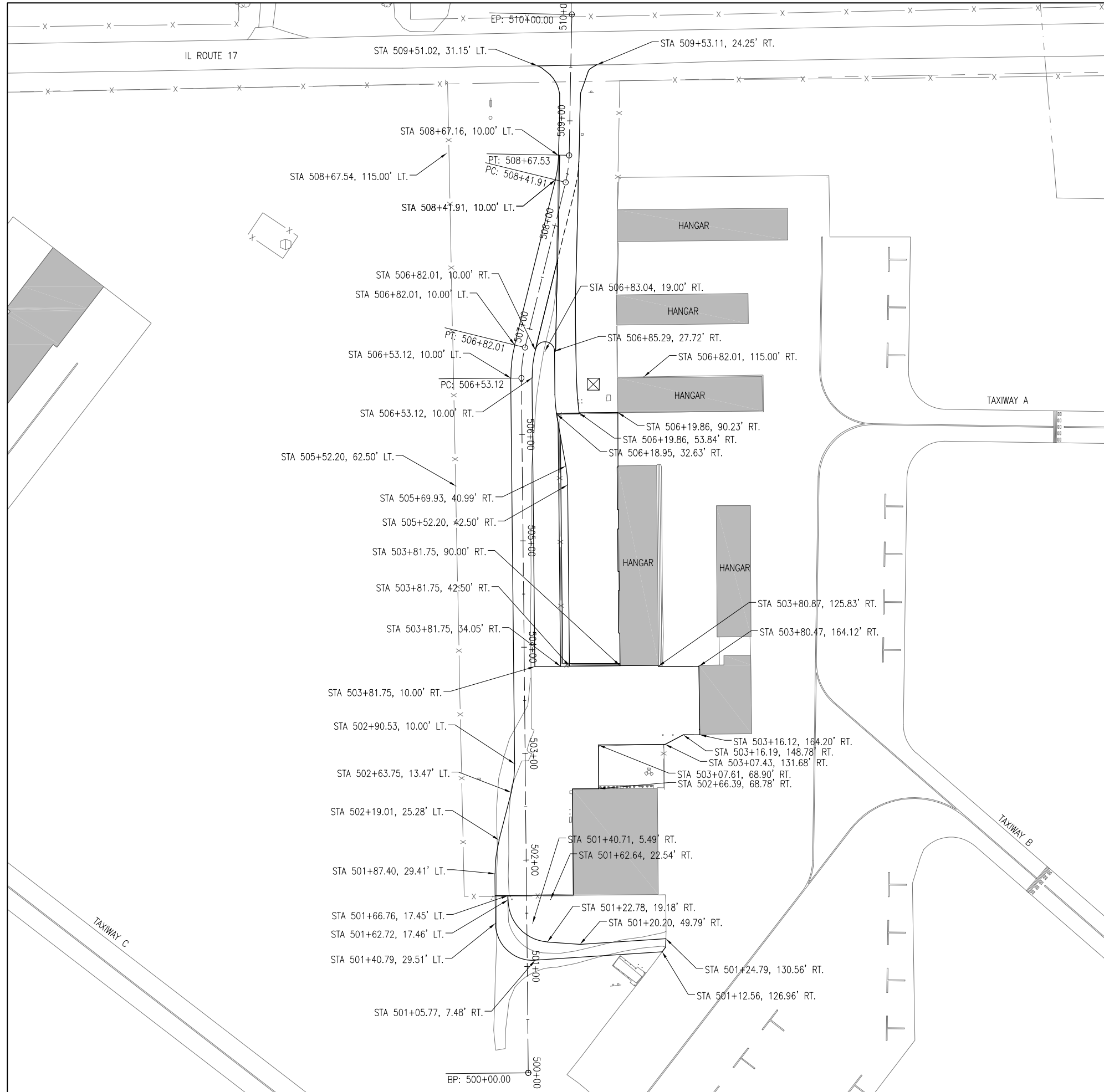
DATE	REVISIONS	TRAFFIC CONTROL DEVICES (Sheet 1 of 3) STANDARD 701901-07
1-1-18	Revised END WORK ZONE SPEED LIMIT sign from orange to white background.	
1-1-17	Changed FLEXIBLE DELINEATOR to TUBULAR MARKER.	

Illinois Department of Transportation

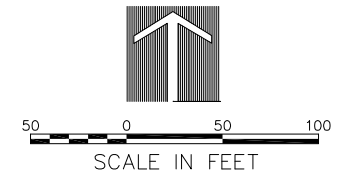
PASSED January 1, 2018
ENGINEER OF OPERATIONS

APPROVED January 1, 2018
ENGINEER OF DESIGN AND ENVIRONMENT

NOV 15, 2018 11:35 AM HAUSM00682 I:\17-JOBS\17A0084\CAD\AIRPORT\SHEET13-TRAFFIC.DWG



ENTRANCE ROAD ALIGNMENT DATA			
DESCRIPTION	STATION	PROJECT COORDINATES	
		NORTHING	EASTING
BEGINNING	500+00.00	1586738.323	2511517.530
PC OF CURVE	506+53.12	1587391.407	2511511.112
CENTER OF CURVE (115.00' R)	506+82.01	1587392.537	2511626.106
PT OF CURVE	506+82.01	1587420.035	2511514.442
PC OF CURVE	508+41.91	1587575.289	2511552.675
CENTER OF CURVE (115.00' R)	508+67.53	1587602.787	2511441.011
PT OF CURVE	508+67.53	1587600.650	2511555.991
END	510+00.00	1587733.092	2511558.453



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

IDA No: C75-4625

Contract No. MA029

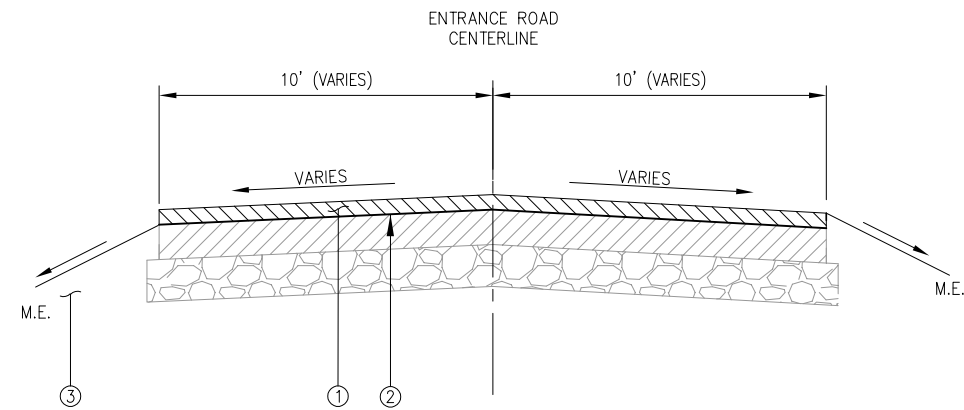
NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 15-ALIGN.DWG
DESIGN BY: LDH 8/30/18
DRAWN BY: LDH 8/30/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

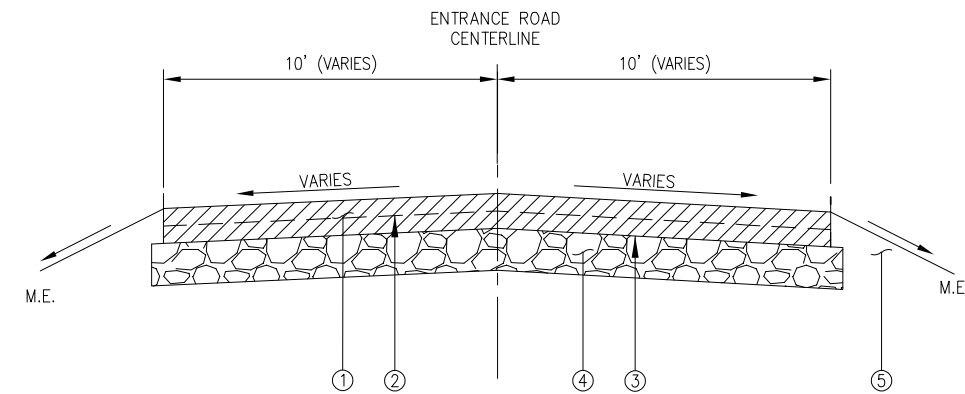
**PAVEMENT LAYOUT
AND ALIGNMENT
DATA**

NOV 15, 2018 11:36 AM HAUSM00682 I:\17-JOB\17A0084\17A0084\CAD\AIRPORT\SHEET15-ALIGN.DWG



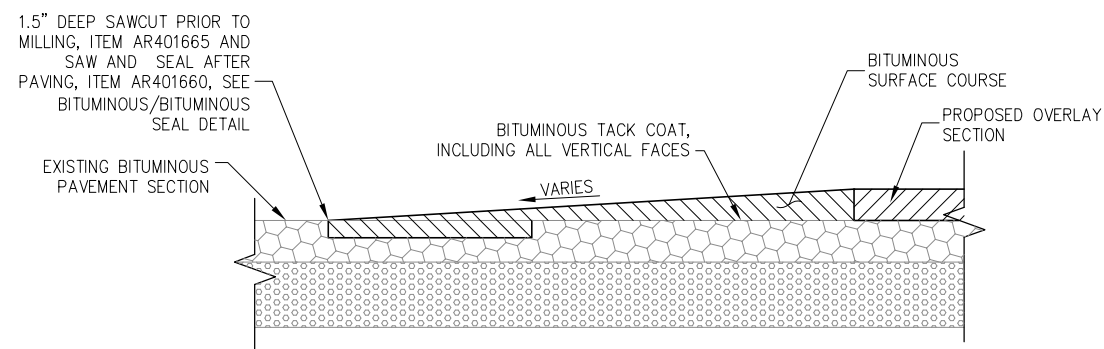
TYPICAL SECTION - ENTRANCE ROAD

- ① 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 AR908510.

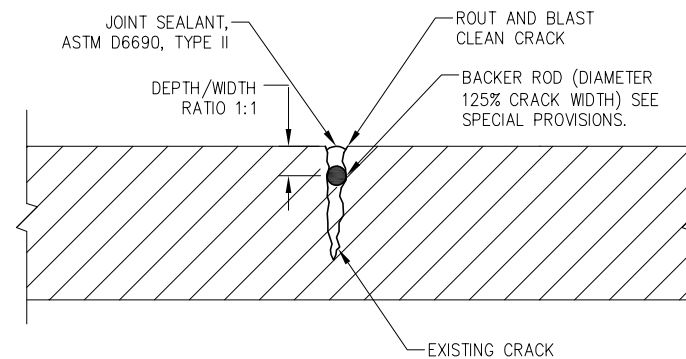


TYPICAL SECTION - ENTRANCE ROAD, PARKING LOT, HANGAR PAVEMENTS

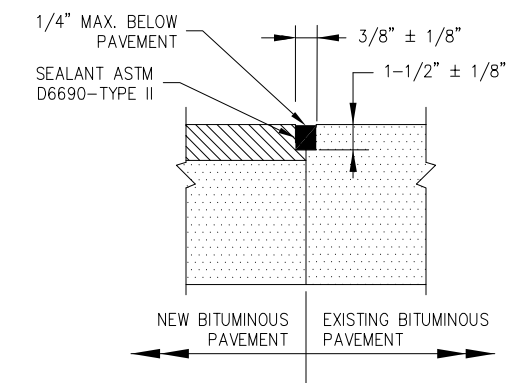
- ① PROPOSED 3.0 INCH BITUMINOUS SURFACE COURSE, PLACED IN TWO LIFTS, ITEM AR401613
- ② PROPOSED BITUMINOUS TACK COAT, ITEM AR603510
- ③ PROPOSED BITUMINOUS PRIME COAT, ITEM AR602510
- ④ PROPOSED 8.0 INCH CRUSHED AGGREGATE BASE COURSE, ITEM AR209608
- ⑤ PROPOSED TOPSOILING, SEEDING AND MULCHING, ITEM AR90510, AR901510, AND AR908510.



BITUMINOUS TAPER DETAIL



CLEAN AND SEAL CRACKS



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

BITUMINOUS/BITUMINOUS SEAL

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: 17-TYPSECT.DWG
DESIGN BY: LDH 8/30/18
DRAWN BY: LDH 8/30/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

TYPICAL SECTION AND PAVEMENT DETAILS

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018

PROJECT NO: 17A0084

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

SEDIMENTATION AND EROSION CONTROL NOTES:

- SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF HYDROLOGIC DISTURBANCE OF UPLAND AREAS.
- FOR THOSE DEVELOPMENTS THAT REQUIRE A DESIGNATED EROSION CONTROL INSPECTOR (DECI), INSPECTIONS AND DOCUMENTATION SHALL BE PERFORMED, AT A MINIMUM:
 - UPON COMPLETION OF SEDIMENT AND RUNOFF CONTROL MEASURES (INCLUDING PERIMETER CONTROLS AND DIVERSIONS), PRIOR TO PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING.
 - AFTER EVERY SEVEN (7) CALENDAR DAYS OR STORM EVENT WITH GREATER THAN 0.5 INCH OF RAINFALL OR LIQUID EQUIVALENT PRECIPITATION.
- 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.
- A STABILIZED MAT OF CRUSHED STONE MEETING IDOT GRADATION CA-01 UNDERLAIN WITH FILTER FABRIC AND IN ACCORDANCE 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 AREA.
- TEMPORARY DIVERSIONS SHALL BE CONSTRUCTED AS NECESSARY TO DIRECT ALL RUNOFF FROM HYDROLOGICALLY DISTURBED AREAS TO AN APPROPRIATE SEDIMENT TRAP OR BASIN.
- DISTURBED AREAS SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT MEASURES WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE END OF ACTIVE HYDROLOGIC DISTURBANCE OR REDISTURBANCE.
- ALL STOCKPILES SHALL HAVE APPROPRIATE MEASURES TO PREVENT EROSION. STOCKPILES SHALL NOT BE PLACED IN FLOOD PRONE AREAS OR WETLANDS AND DESIGNATED BUFFERS.
- SLOPES STEEPER THAN 3H:1V SHALL BE STABILIZED WITH APPROPRIATE MEASURES AS APPROVED BY THE ENFORCEMENT OFFICER.
- APPROPRIATE EROSION CONTROL BLANKET SHALL BE INSTALLED ON ALL INTERIOR DETENTION BASIN SIDE SLOPES BETWEEN THE NORMAL WATER LEVEL AND HIGH WATER LEVEL.
- STORM SEWERS THAT ARE OR WILL BE FUNCTIONING DURING CONSTRUCTION SHALL BE PROTECTED BY AN APPROPRIATE SEDIMENT CONTROL MEASURE.
- 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 COMMENCEMENT OF DEWATERING ACTIVITIES.
- 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.
- ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES MUST BE MAINTAINED AND REPAIRED AS NEEDED. THE PROPERTY OWNER SHALL BE ULTIMATELY RESPONSIBLE FOR MAINTENANCE AND REPAIR.
- 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.
- THE EROSION 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 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.

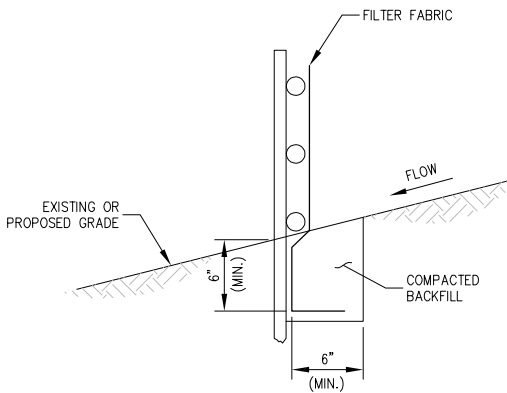
THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES IS INCIDENTAL TO THE ASSOCIATED ITEM.

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.

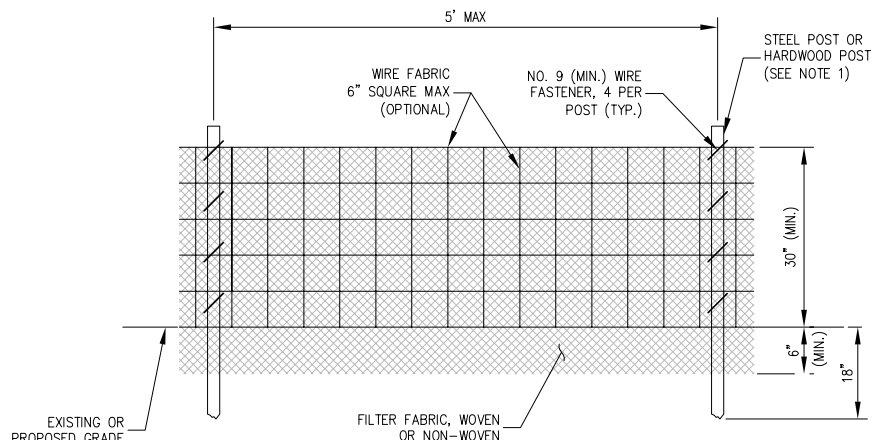
POLLUTION CONTROL ITEMS SHALL BE PROVIDED AS NOTED ON THE STORM WATER POLLUTION PREVENTION PLAN AND IN THE STORM WATER POLLUTION PREVENTION DETAILS AND AS DIRECTED BY THE ENGINEER. THE LIMITS OF SUCH MEASURES SHALL BE STAKED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. SUCH LIMITS MAY 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 CONTRACT.

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



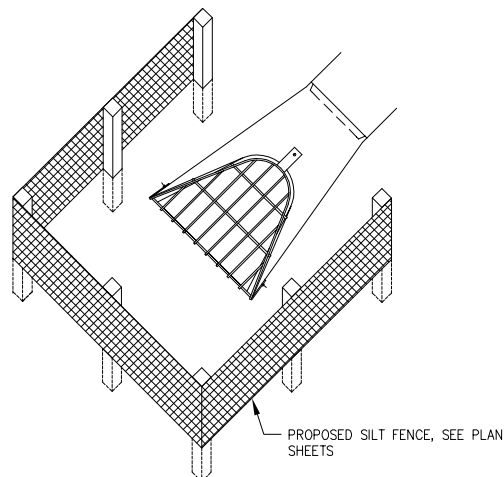
FABRIC ANCHOR DETAIL



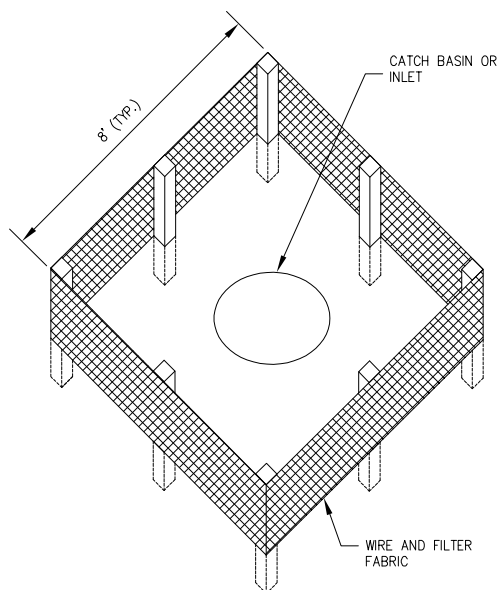
ELEVATION

NOTES:

- FENCE POST SHALL BE EITHER STEEL "1" LINE POST OR HARDWOOD POST WITH A MINIMUM SECTIONAL AREA OF 2.0 SQUARE INCHES. A CARPENTER'S (NOMINAL) 2"x2" POST WILL MEET SPECIFICATIONS.
- 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.
- 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.
- 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.1.1.f, AS AMENDED), OR EQUIVALENT.
- A MAXIMUM OF 5 FEET IS USED FOR POST-TO-POST SPACING.
- 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.
- ALL STORM SEWERS THAT ARE OR WILL BE FUNCTIONING DURING CONSTRUCTION SHALL BE PROTECTED BY AN APPROPRIATE SEDIMENT CONTROL MEASURE.
- 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.
- MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED AND REPLACED WHEN BULGES DEVELOP IN THE SILT FENCE.
- 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 MEASURE).
- FENCE POSTS SHALL BE REMOVED WHEN DIRECTED AT PROJECT END.
- THE EROSION CONTROL MEASURES INDICATED ON THE PLANS ARE THE MINIMUM REQUIREMENTS. ADDITIONAL MEASURES MAY BE REQUIRED, AS DIRECTED BY THE ENGINEER OR GOVERNING AGENCY.



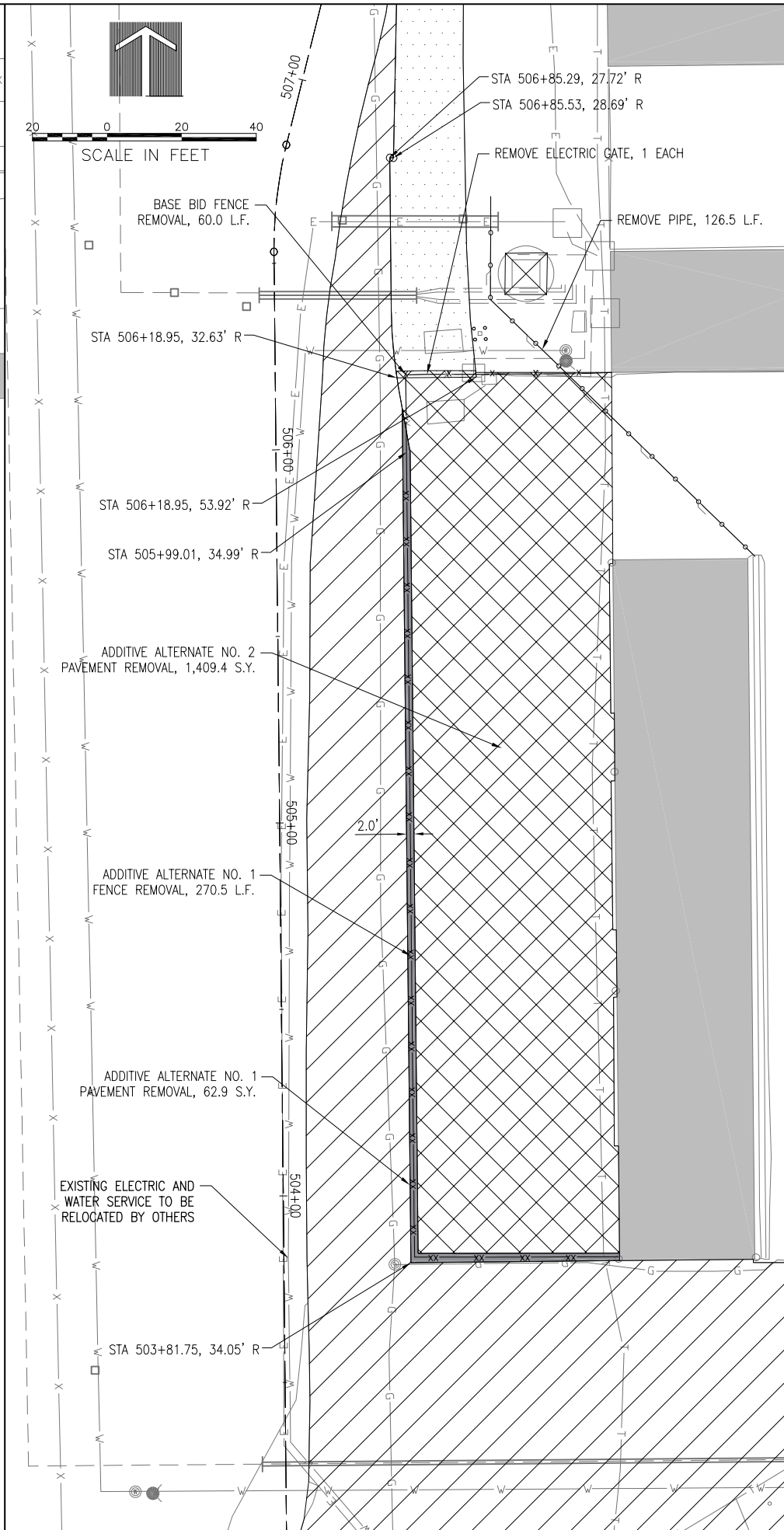
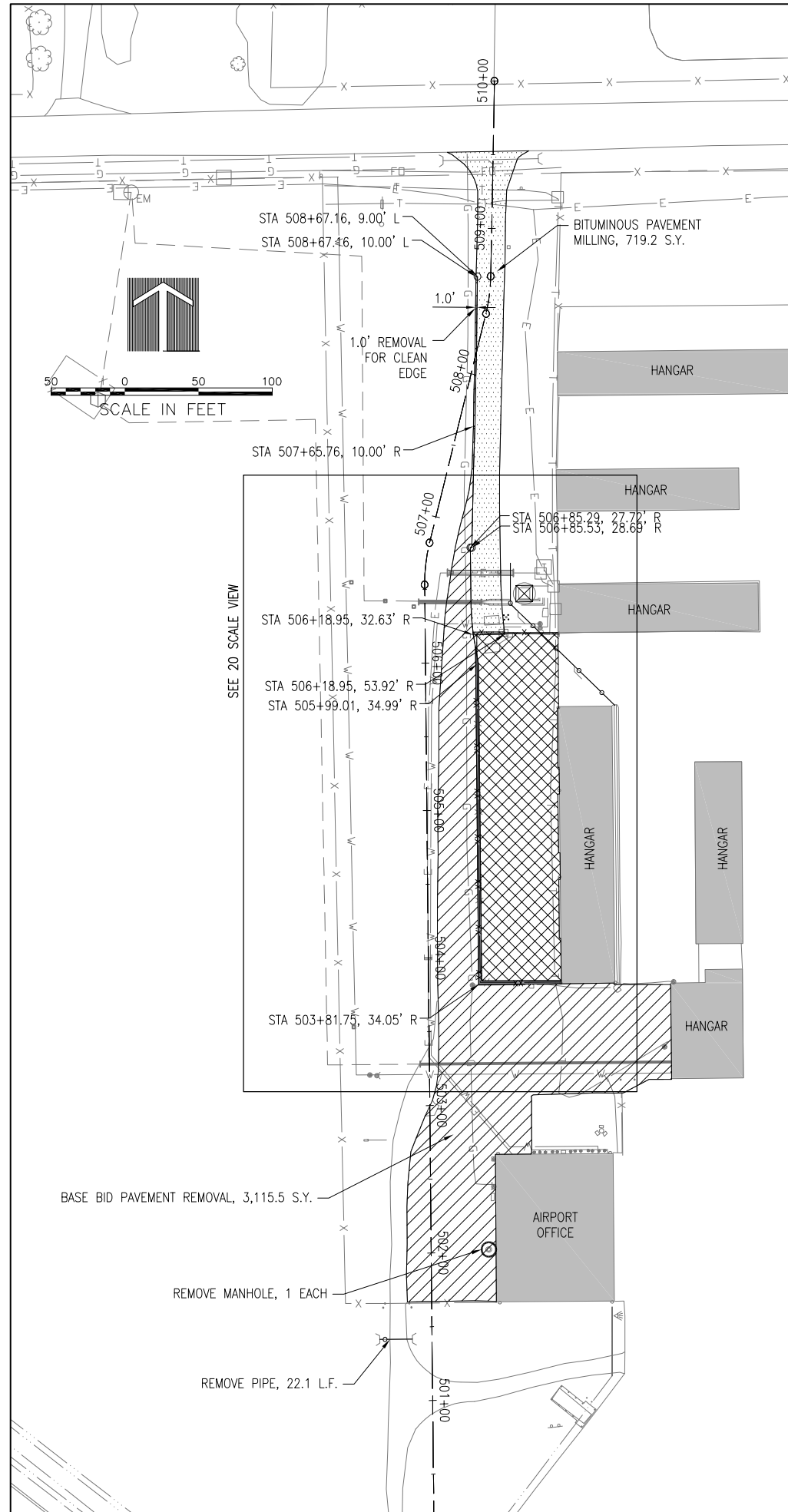
SILT FENCE PLACEMENT AT FLARED END SECTIONS (FES)



SILT FENCE AT MANHOLES IN PERVIOUS AREAS

NOTES:

- FILTER FABRIC SHALL BE EMBEDDED 8" INTO THE SOIL.
- 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 PRICE FOR SILT FENCE.
- AREAS DISTURBED OUTSIDE OF CONSTRUCTION LIMITS DURING PLACEMENT OF INLET PROTECTION TO BE RE-GRADED, SEEDED AND MULCHED, COST INCIDENTAL TO SILT FENCE.
- FENCE AND POSTS SHALL BE REMOVED WHEN DIRECTED AT PROJECT END.
- PAID UNDER AR156510 SILT FENCE.



LEGEND

- BASE BID BITUMINOUS PAVEMENT REMOVAL
- ADDITIVE ALTERNATE NO. 1 BITUMINOUS PAVEMENT REMOVAL
- ADDITIVE ALTERNATE NO. 2 BITUMINOUS PAVEMENT REMOVAL
- BASE BID BITUMINOUS PAVEMENT MILLING
- BASE BID FENCE REMOVAL
- ADDITIVE ALTERNATE NO. 1 FENCE REMOVAL
- REMOVE MANHOLE

NOTES

1. FOR ALIGNMENT DATA TABLE SEE SHEET 16.
2. SAWING REQUIRED FOR PAVEMENT REMOVAL SHALL BE INCIDENTAL TO PAVEMENT REMOVAL.
3. CRACKS REMAINING IN THE MILLED PAVEMENT SHALL BE REPAIRED PRIOR TO OVERLAY. THE CRACKS WERE SURVEYED, BUT HAVE BEEN OMITTED FROM THE PLAN SHEETS FOR CLARITY. THE WORK QUANTITIES FOR AR201661 CLEAN AND SEAL BITUMINOUS CRACKS ASSUME THAT 50 PERCENT OF THE CRACKS ARE ELIMINATED BY THE 1.5 INCH SURFACE REMOVAL UNDER ITEM AR401650. THE ACTUAL LOCATION AND QUANTITY OF CRACKS TO BE REPAIRED SHALL BE DETERMINED BY THE RESIDENT ENGINEER AFTER MILLING OPERATIONS. CONTRACTOR SHALL PERFORM THE WORK AS DIRECTED BY THE RESIDENT ENGINEER AND SHALL NOT BE ENTITLED TO, OR MAKE ANY CLAIM FOR, ADDITIONAL COMPENSATION IF THE ACTUAL QUANTITY PERFORMED IS MORE OR LESS THAN THE BID QUANTITY ESTIMATED.

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. LOCATION OF FAA POWER CONTROL, AND COMMUNICATION CABLES SHALL BE COORDINATED WITH AND/OR LOCATED BY THE FAA. CONTACT AIRPORT DIRECTOR/MANAGER AND AIRPORT PERSONNEL FOR ASSISTANCE IN LOCATING UNDERGROUND AIRPORT CABLES AND/OR UTILITIES. ALSO COORDINATE WORK WITH ALL ABOVE GROUND UTILITIES.

REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

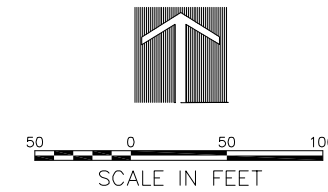
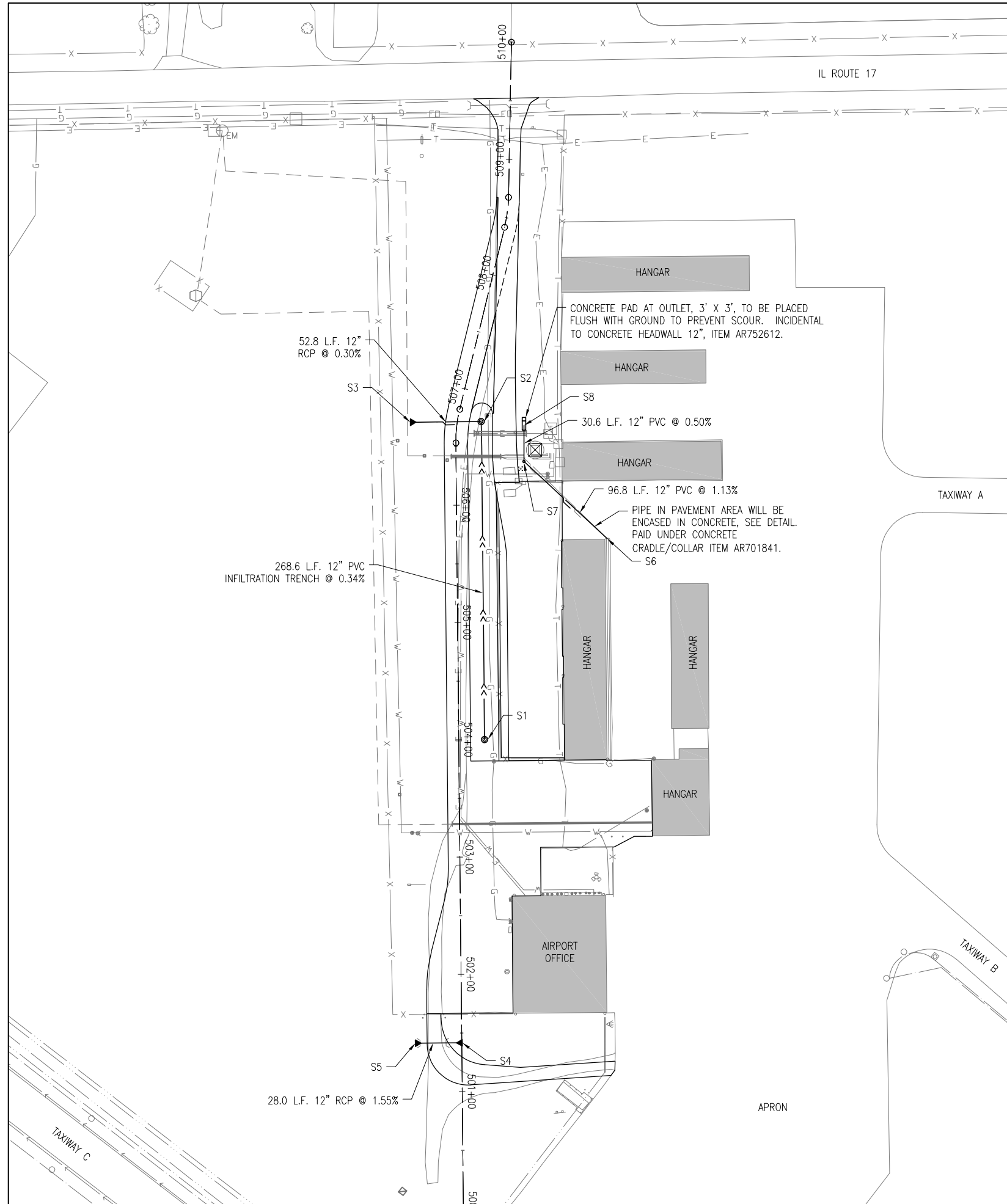
IDA No: C75-4625

Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

SHEET TITLE

REMOVAL PLAN



- LEGEND**
- PROPOSED STORM SEWER
 - PROPOSED INFILTRATION TRENCH

Structure	Station	Offset	Type	Rim EL.	Invert EL.	Pipe Pay Length	Size	Type	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			
S3	506+66.51	39.6	LT	FES	--	551.10			
S4	501+41.64	0.5	RT	FES	--	550.14			
S5	501+41.70	39.5	LT	FES	--	549.52	28.0	12.0	RCP 1.55
S6	505+70.17	128.2	RT	Pipe End	--	554.10			
S7	506+36.72	57.9	RT	Inspection Hole	554.66	553.01	96.8	12.0	PVC 1.13
S8	506+81.33	56.5	RT	Concrete Headwall	--	552.86	30.6	12.0	PVC 0.50

REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625
Contract No. MA029

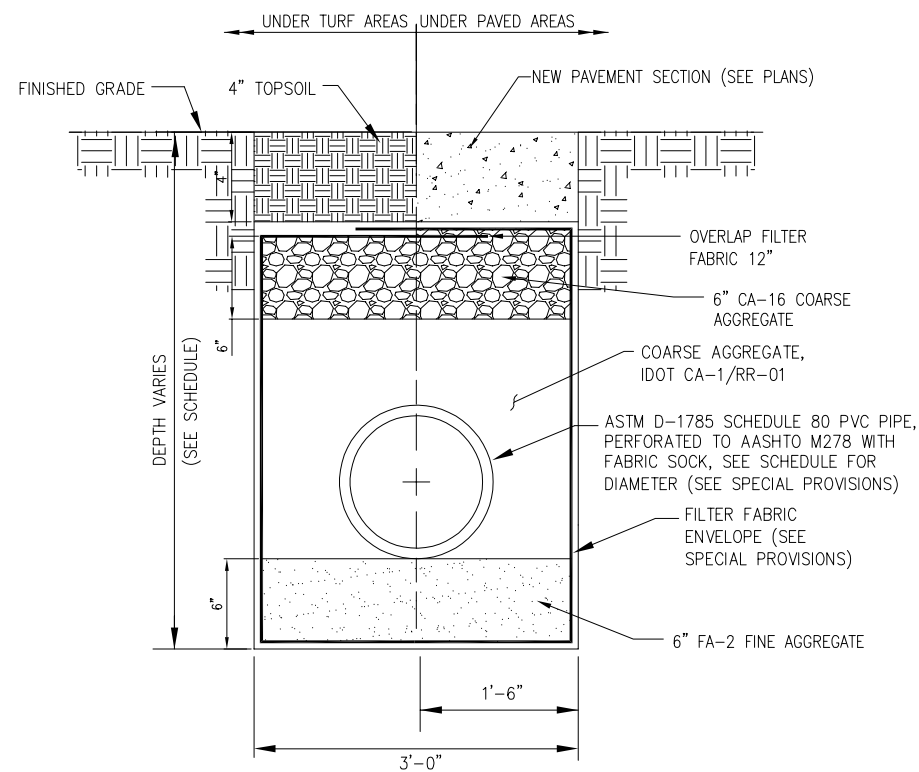
NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 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

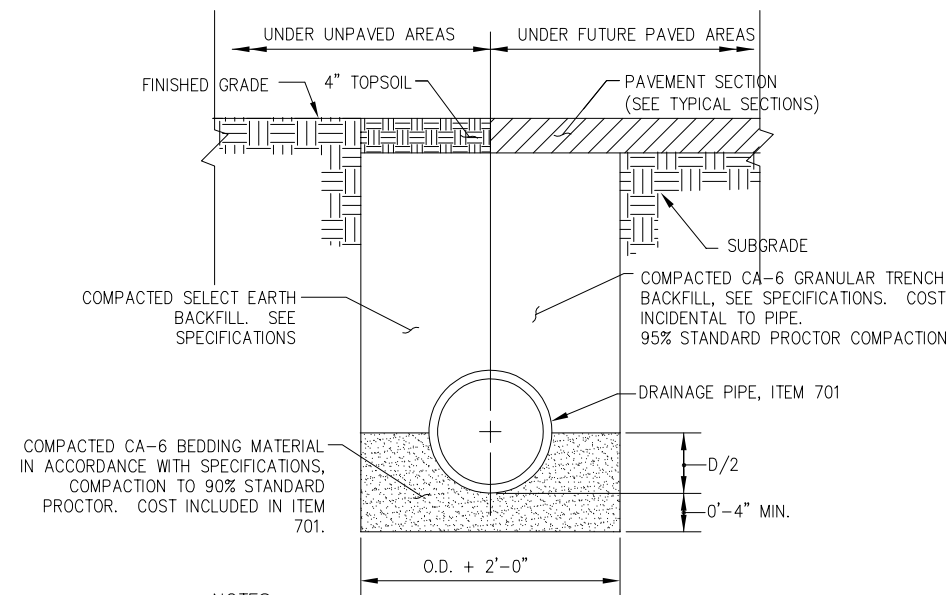
NOV 15, 2018 1:36 AM HAUSM00682 I:\17\JOBS\17A0084\17A0084\CAD\AIRPORT\SHEET21-DRAINAGE.DWG



NOTES

1. UNSUITABLE MATERIAL ENCOUNTERED DURING PLACEMENT OF BEDDING SHALL BE REMOVED AND REPLACED.
2. DO NOT COMPACT SOIL PLACED ABOVE THE AGGREGATE.
3. 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



NOTES

1. 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.
3. 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

REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

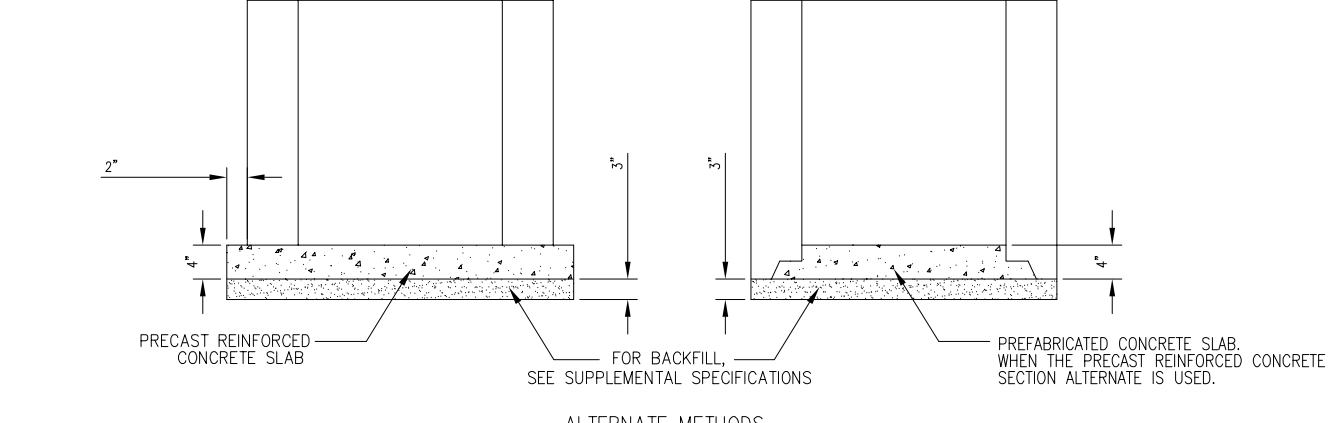
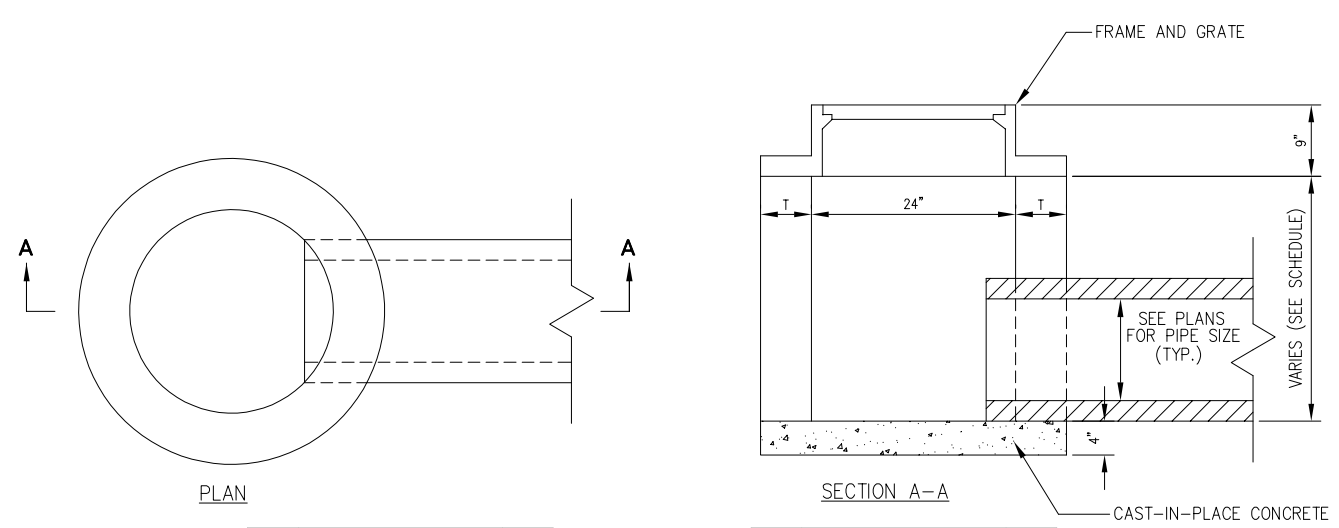
Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 22-DRN DET.DWG
DESIGN BY: LDH 8/30/18
DRAWN BY: LDH 8/30/18
REVIEWED BY: KMS 10/18/18

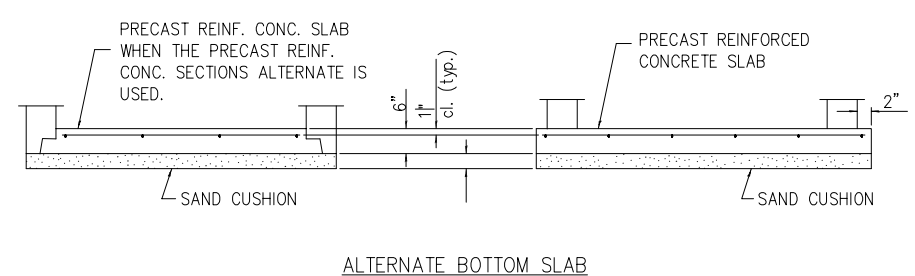
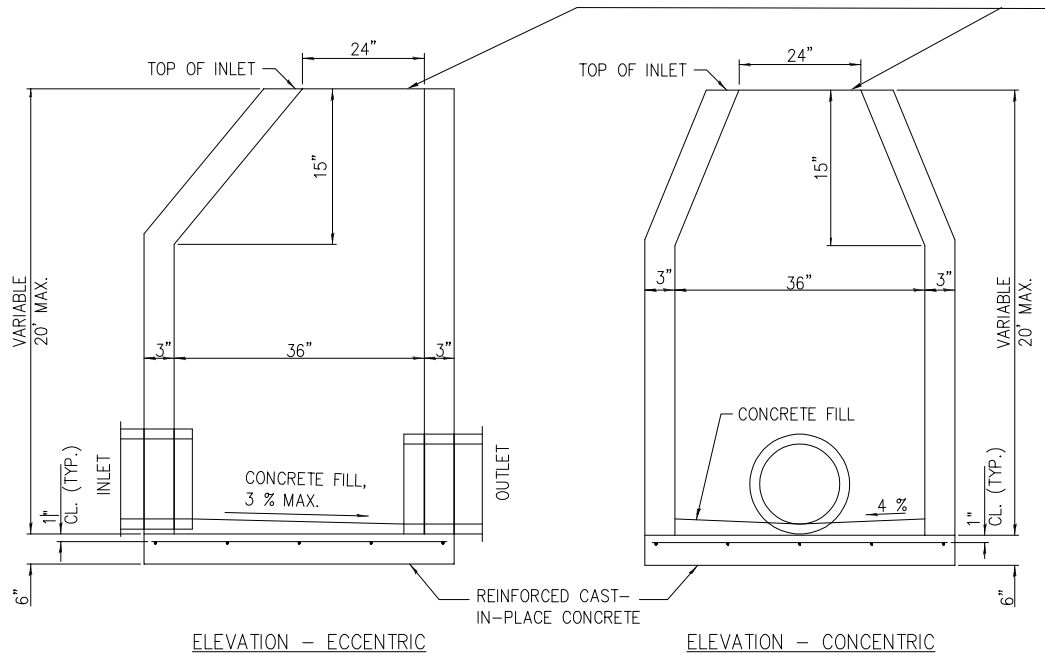
SHEET TITLE

DRAINAGE DETAILS
01



- NOTES**
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)



- 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)

FOR FRAME AND GRATE, SEE INLET TYPE A DETAIL

REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

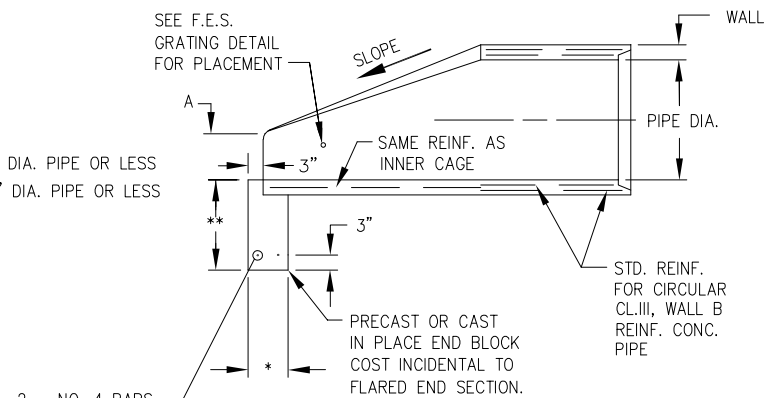
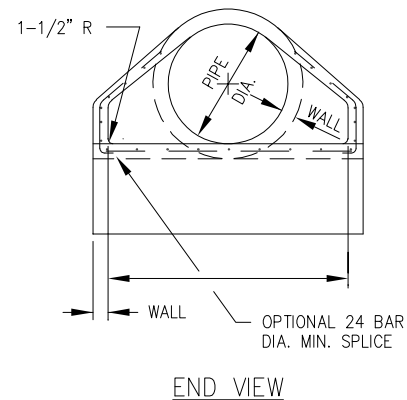
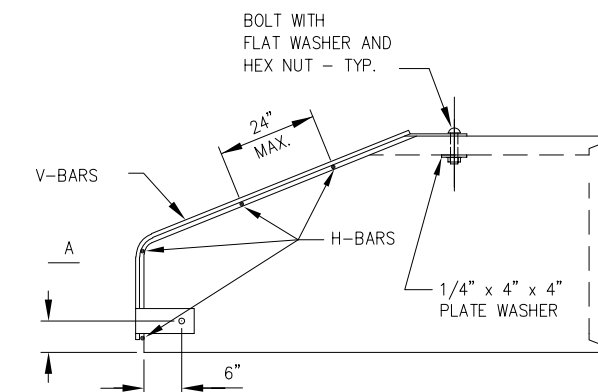
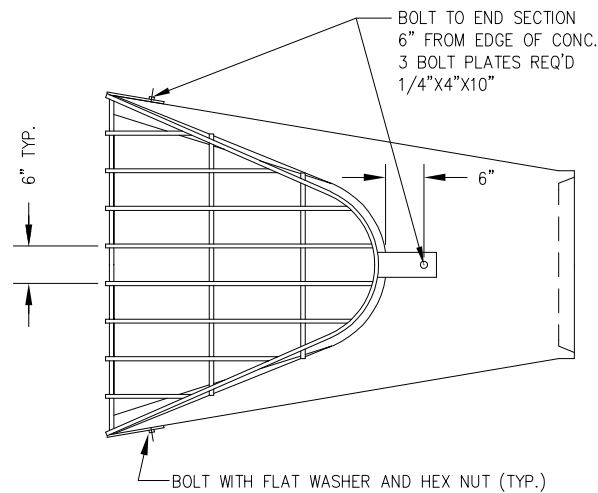
Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

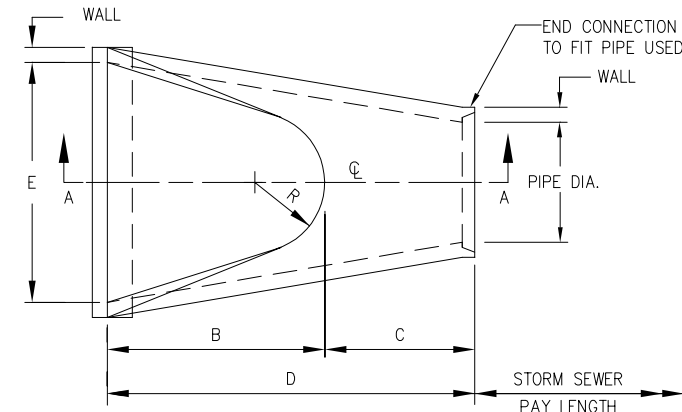
ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 23-DRN DET.DWG
DESIGN BY: LDH 8/30/18
DRAWN BY: LDH 8/30/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

DRAINAGE DETAILS
02



SECTION A-A



TOP VIEW

PIPE DIA.	WALL	A	B	C	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

NOTES

- GRATING SHALL BE PAID FOR UNDER ITEM AR752518.
- 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.
- MODIFICATION IS DUE TO THE RELOCATION OF THE CONNECTION POINT BETWEEN THE GRATE AND THE FLARED END SECTION.
- SEE SPECIAL PROVISIONS FOR COORDINATION WITH GRATING AND FLARED END SECTION.

PRECAST CONCRETE FLARED END SECTION

(IDOT STANDARD 542301-MODIFIED)

DIA. INCHES	V-BAR SIZE	H-BAR SIZE	No. OF H-BARS REQ'D.	"A" DIM. INCHES	
				BOLT DIA.	"A" DIM.
12	1/2φ	5/8φ	3	1/2	4
15	1/2φ	5/8φ	3	1/2	4 1/2
18	1/2φ	5/8φ	4	1/2	4 1/2
21	1/2φ	5/8φ	4	1/2	5
24	5/8φ	3/4φ	4	1/2	5
27	5/8φ	3/4φ	4	1/2	5 1/2
30	5/8φ	3/4φ	4	1/2	5 1/2
36	3/4φ	1φ	4	3/4	8
42	3/4φ	1φ	4	3/4	8
48	3/4φ	1φ	5	3/4	8
54	3/4φ	1-1/2 PIPE	5	3/4	8
24 X 38 ELLIPTICAL	3/4φ	1φ	5	3/4	8

NOTES

- BARS AND PLATES ARE HOT ROLLED STEEL.
- BARS, PLATES, PIPE AND BOLTS ARE GALVANIZED.
- SEE SPECIAL PROVISIONS FOR COORDINATION WITH GRATING AND FLARED END SECTION.

GRATING FOR FLARED END SECTION

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: 24-DRN DET.DWG

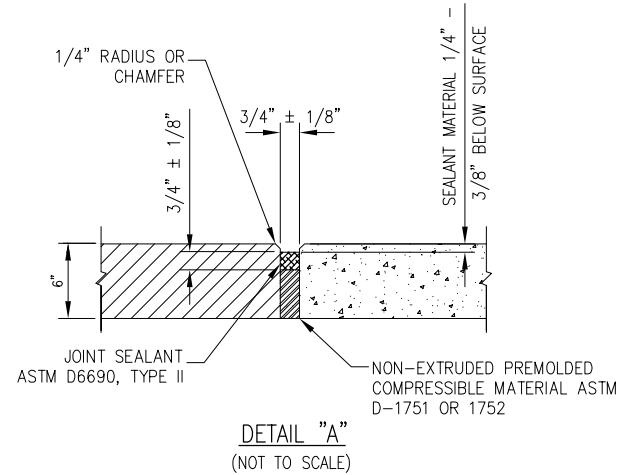
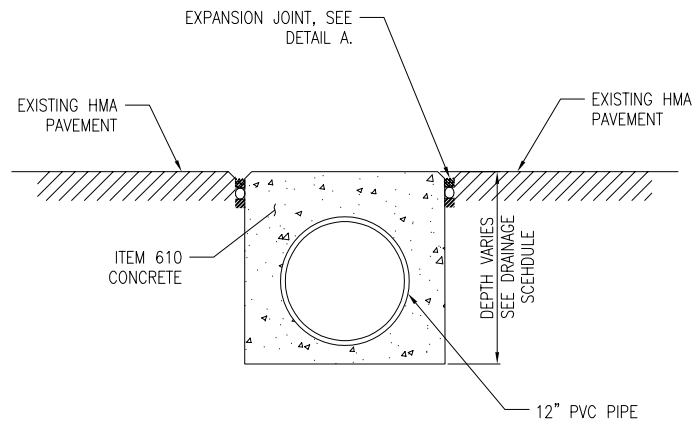
DESIGN BY: LDH 8/30/18

DRAWN BY: LDH 8/30/18

REVIEWED BY: KMS 10/18/18

SHEET TITLE

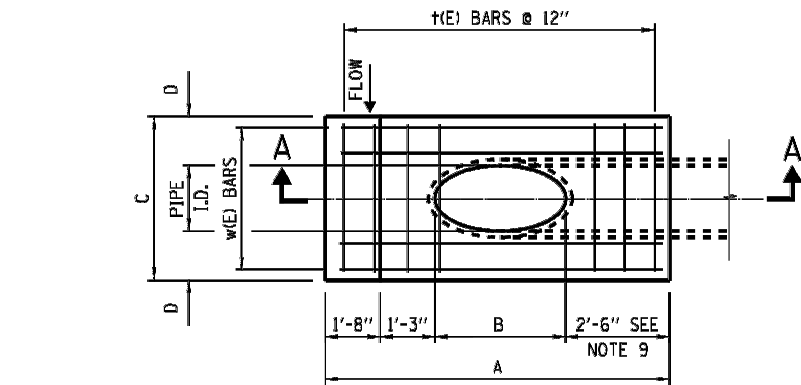
DRAINAGE DETAILS
03



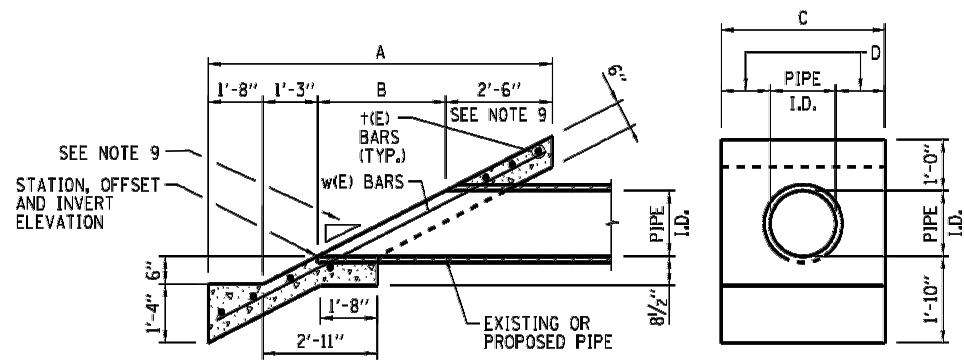
NOTES:

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

CONCRETE CRADLE/COLLAR

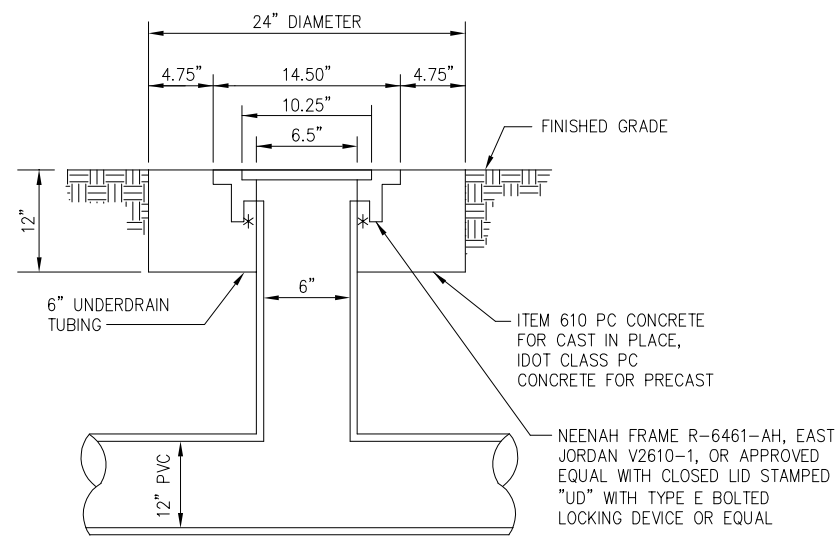


PLAN I



SECTION A-A

ELEVATION



UNDERDRAIN INSPECTION HOLE

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

SLOPED HEADWALL DIMENSION TABLE - TYPE I				
PIPE I.D.	A	B	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 I.D.	REINFORCEMENT BARS		
	MARK(E)	NO. & SIZE	LENGTH
6"	+6	7-#4	2'-2"
	w6	4-#4	6'-8"
12"	+12	7-#4	2'-8"
	w12	4-#4	8'-2"
15"	+15	7-#4	3'-5"
	w15	4-#4	8'-11"
18"	+18	7-#4	4'-2"
	w18	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"

REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

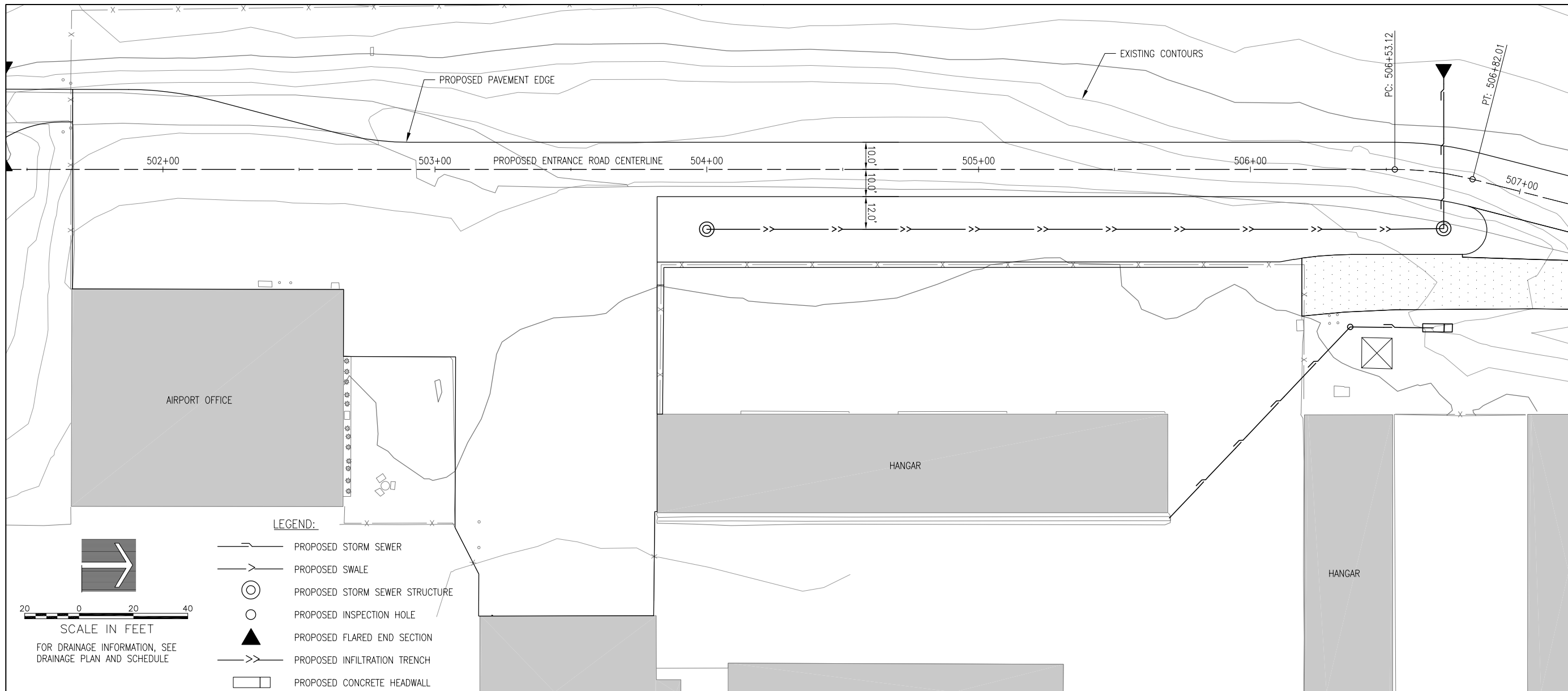
Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 25-DRN DET.DWG
DESIGN BY: LDH 8/30/18
DRAWN BY: LDH 8/30/18
REVIEWED BY: KMS 10/18/18

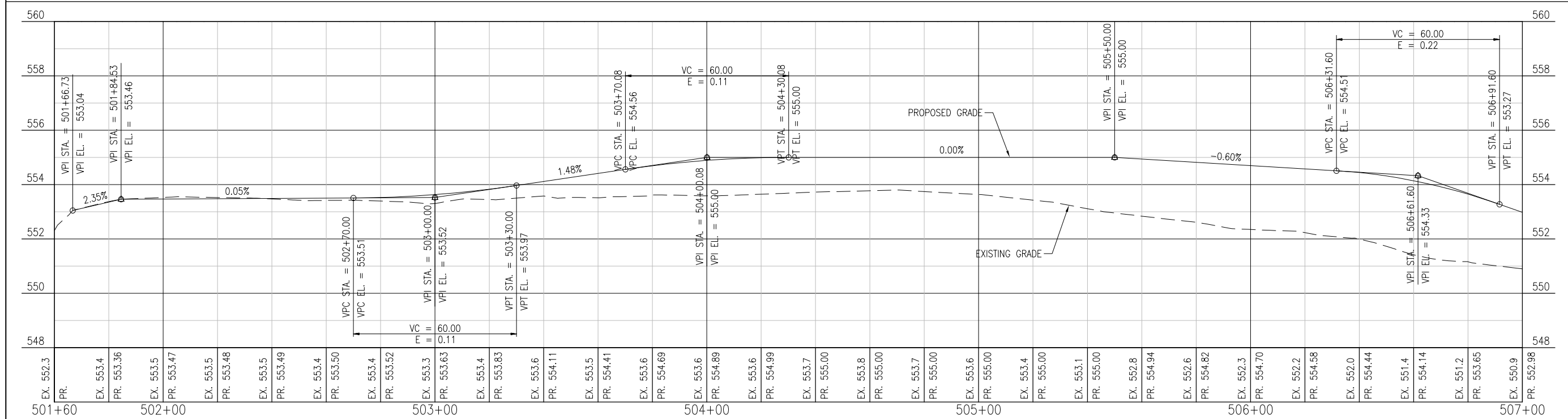
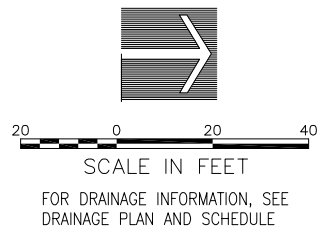
SHEET TITLE

DRAINAGE DETAILS 04



LEGEND:

- PROPOSED STORM SEWER
- PROPOSED SWALE
- PROPOSED STORM SEWER STRUCTURE
- PROPOSED INSPECTION HOLE
- PROPOSED FLARED END SECTION
- PROPOSED INFILTRATION TRENCH
- PROPOSED CONCRETE HEADWALL



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

IDA No: C75-4625

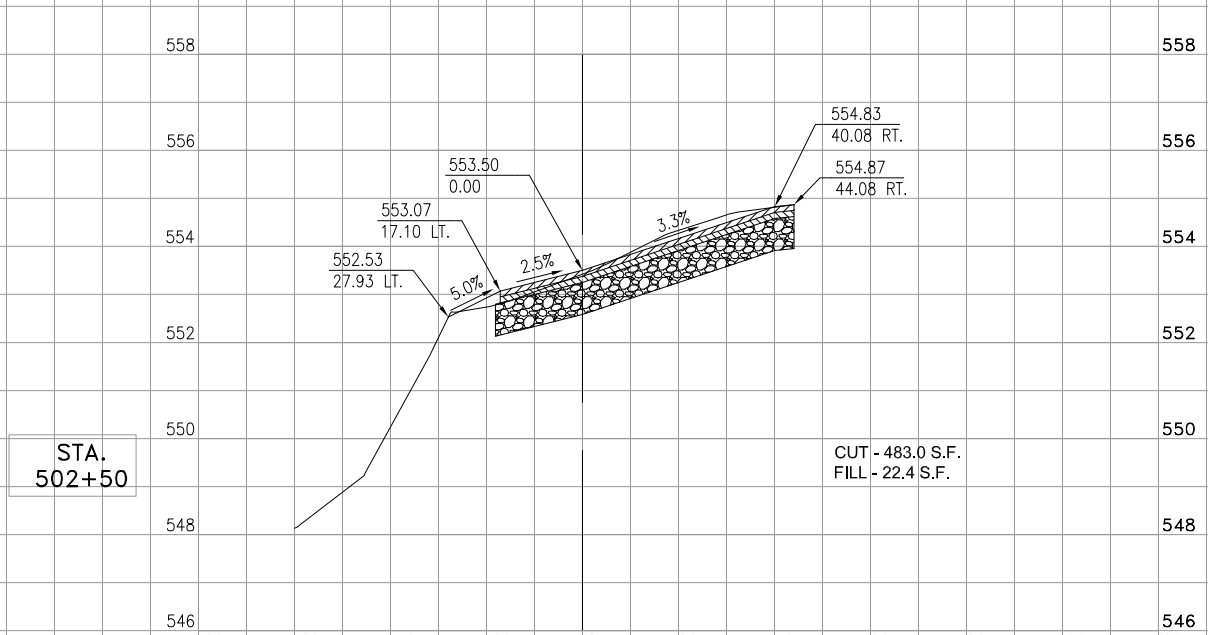
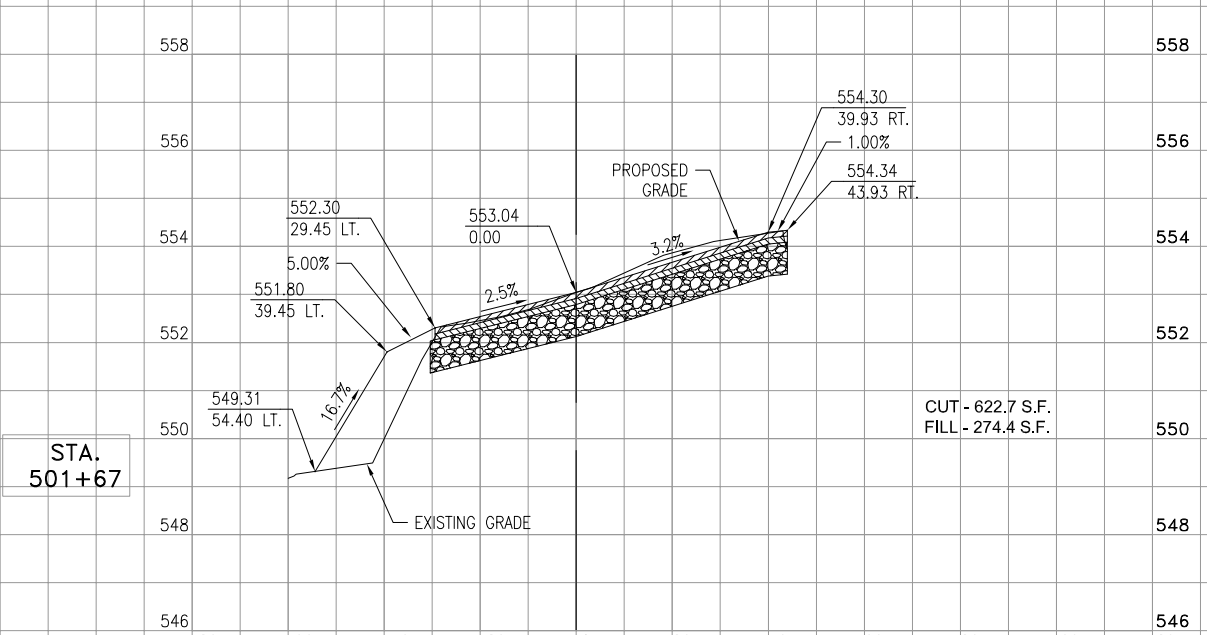
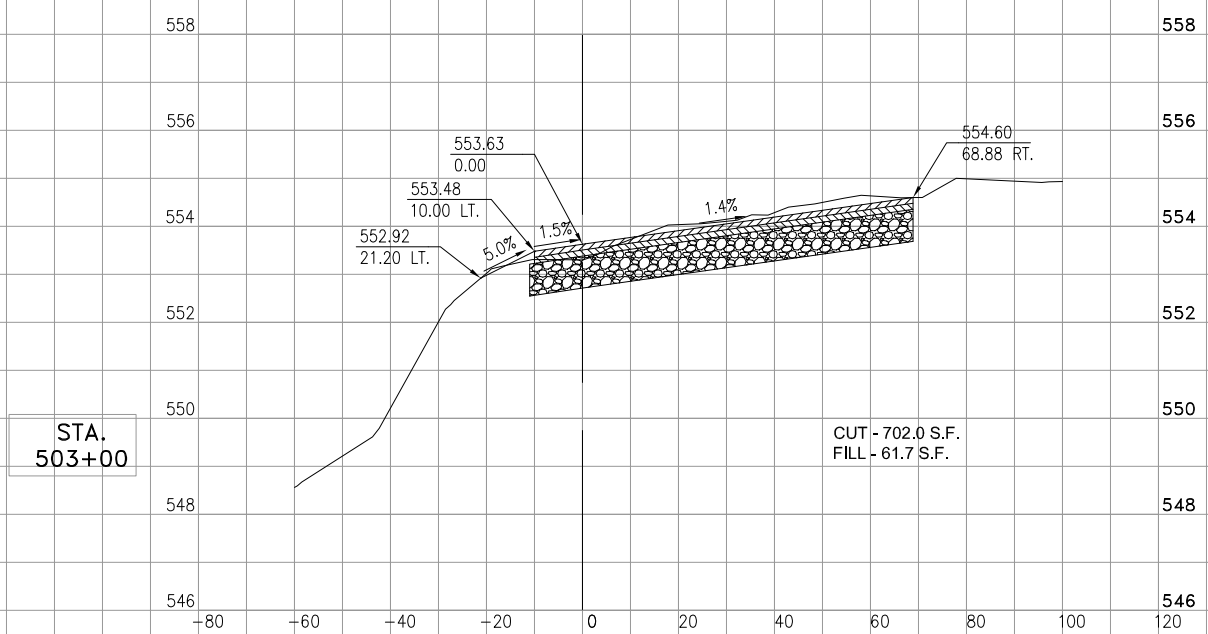
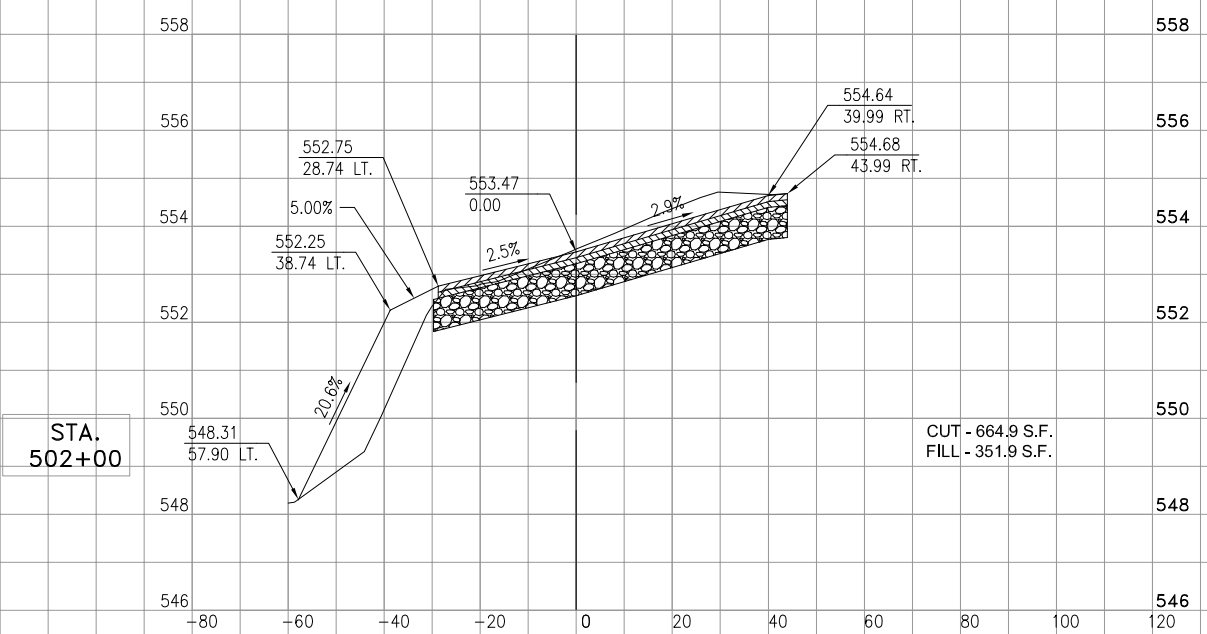
Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 26-P&P.DWG
DESIGN BY: LDH 9/4/18
DRAWN BY: LDH 9/4/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

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



REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

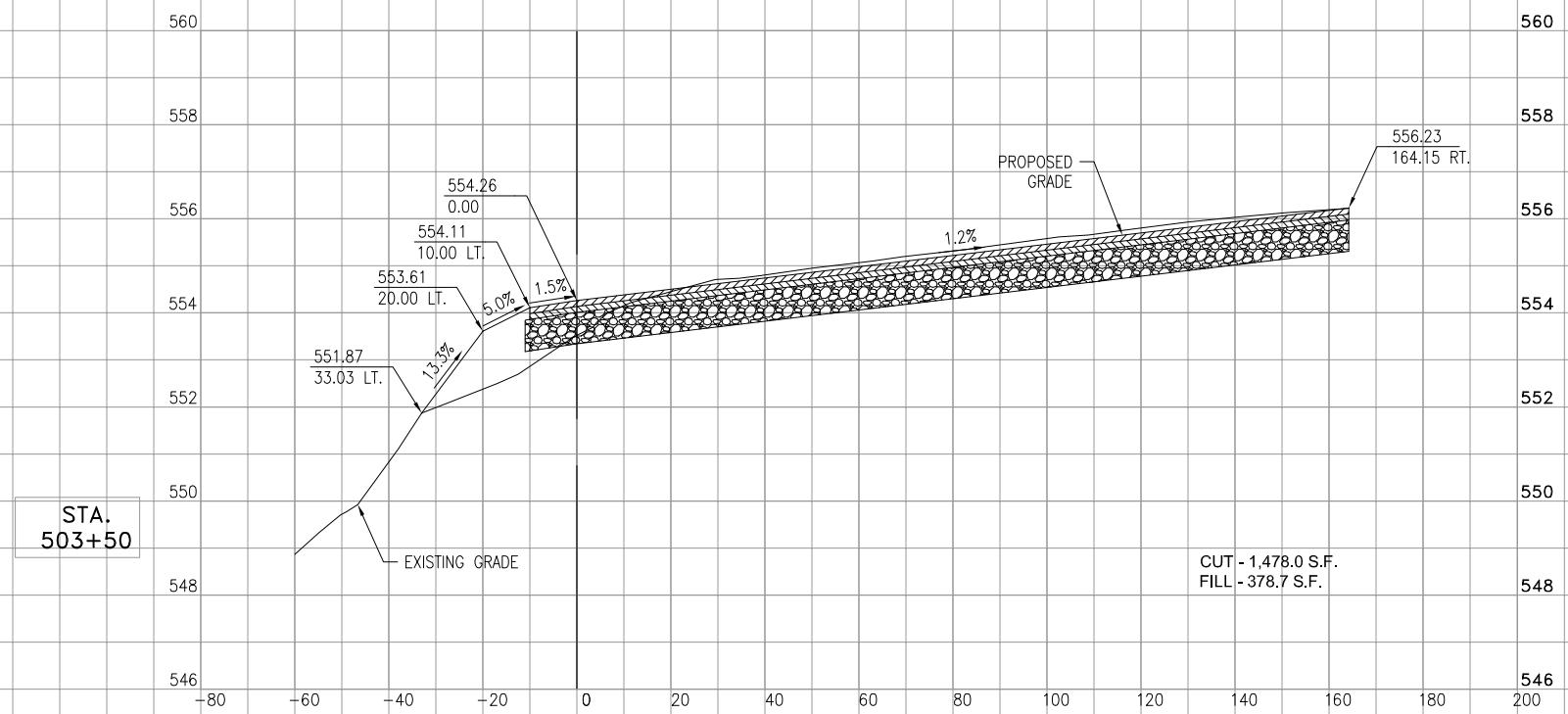
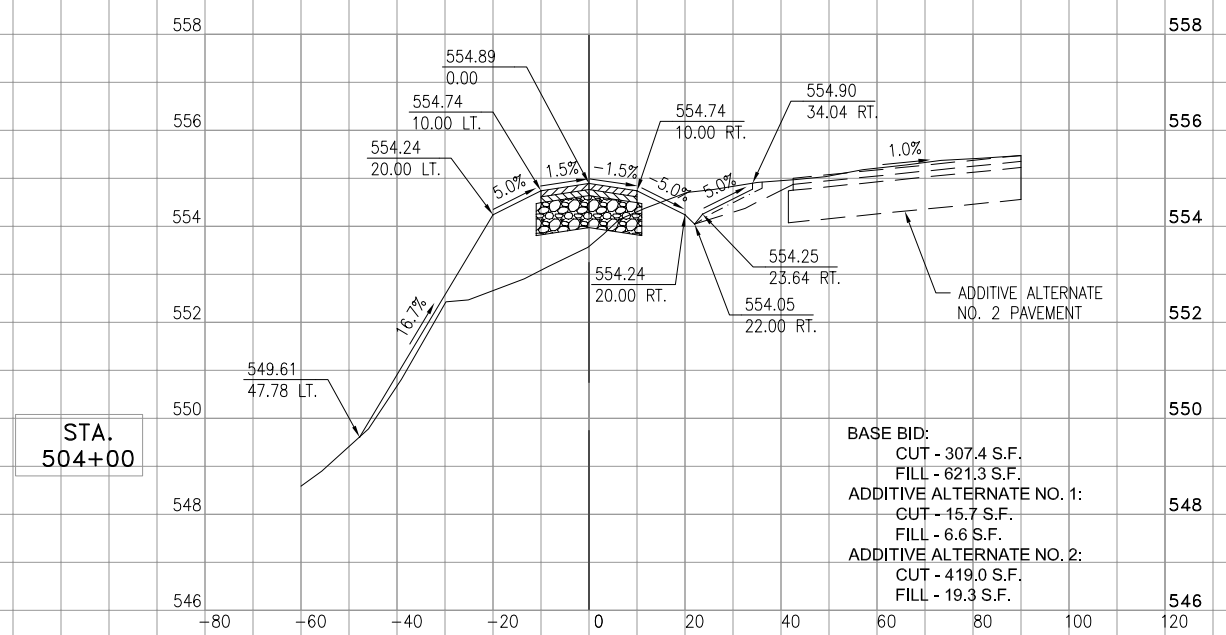
Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 28-32-XSECTIONS.DWG
DESIGN BY: LDH 9/6/18
DRAWN BY: LDH 9/6/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

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



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

IDA No: C75-4625

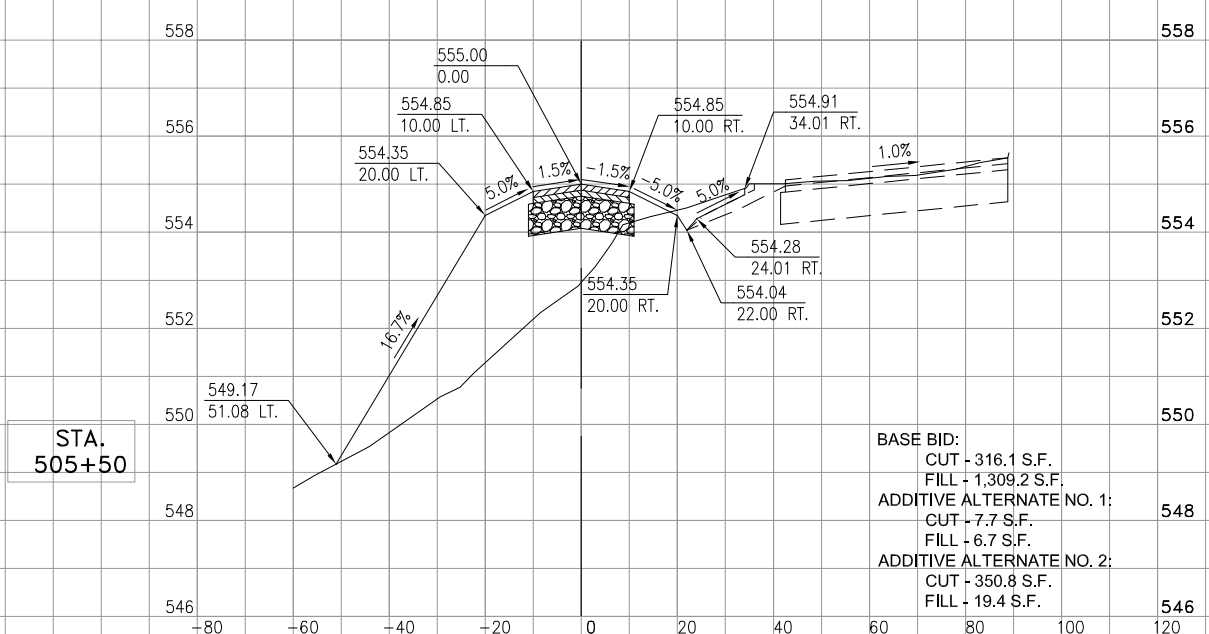
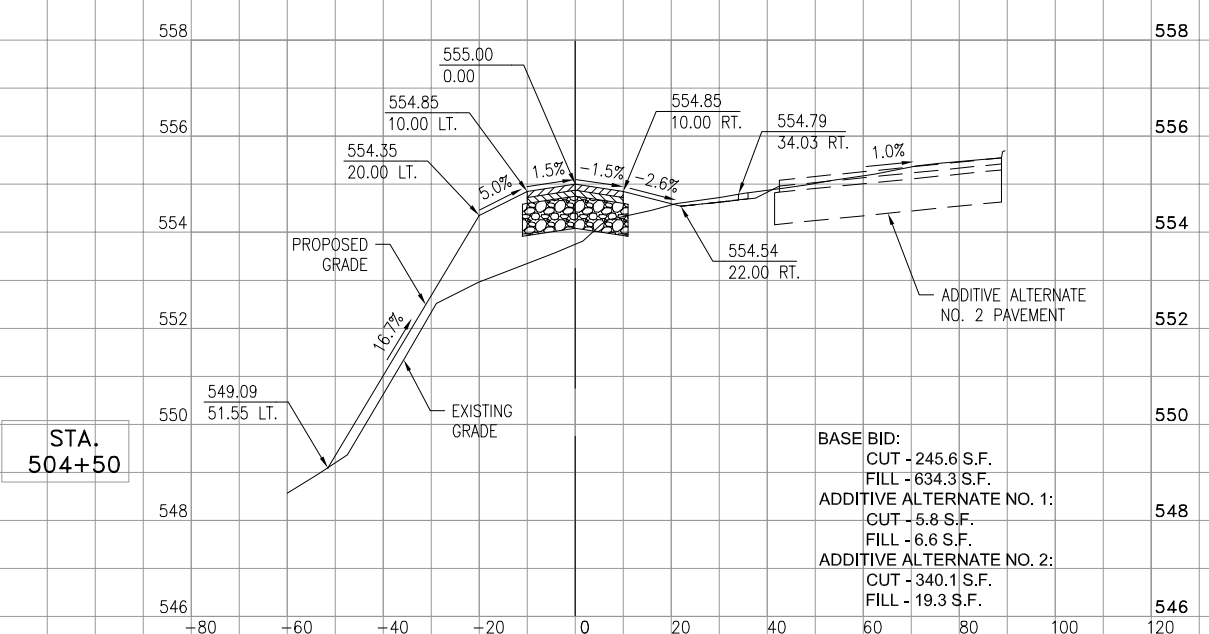
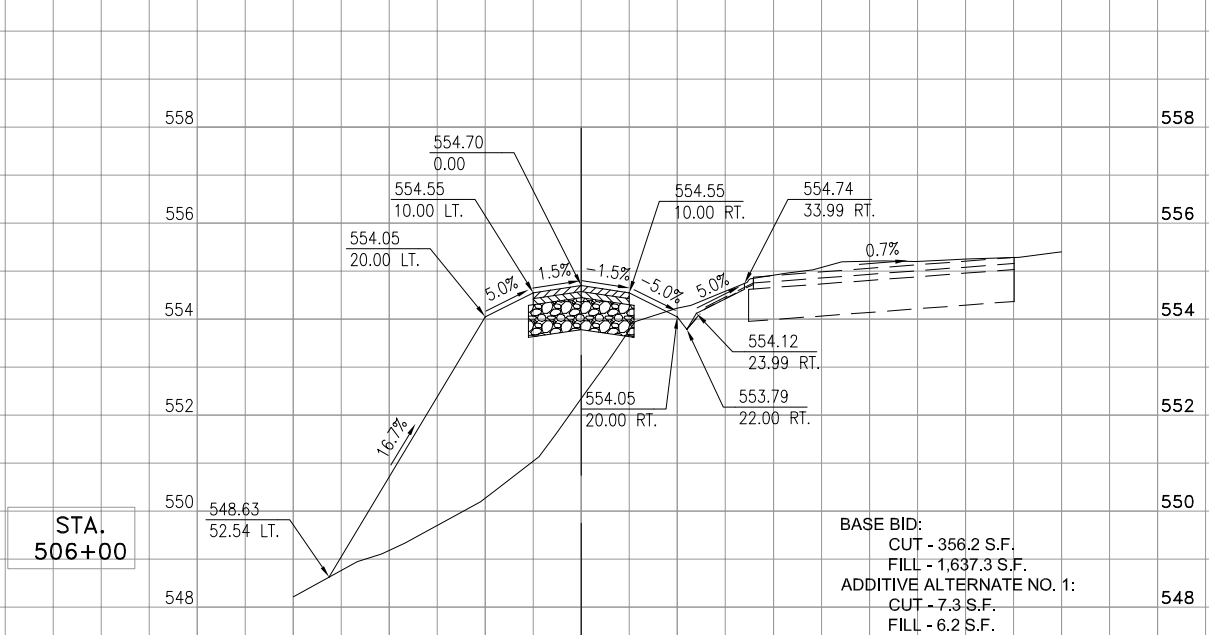
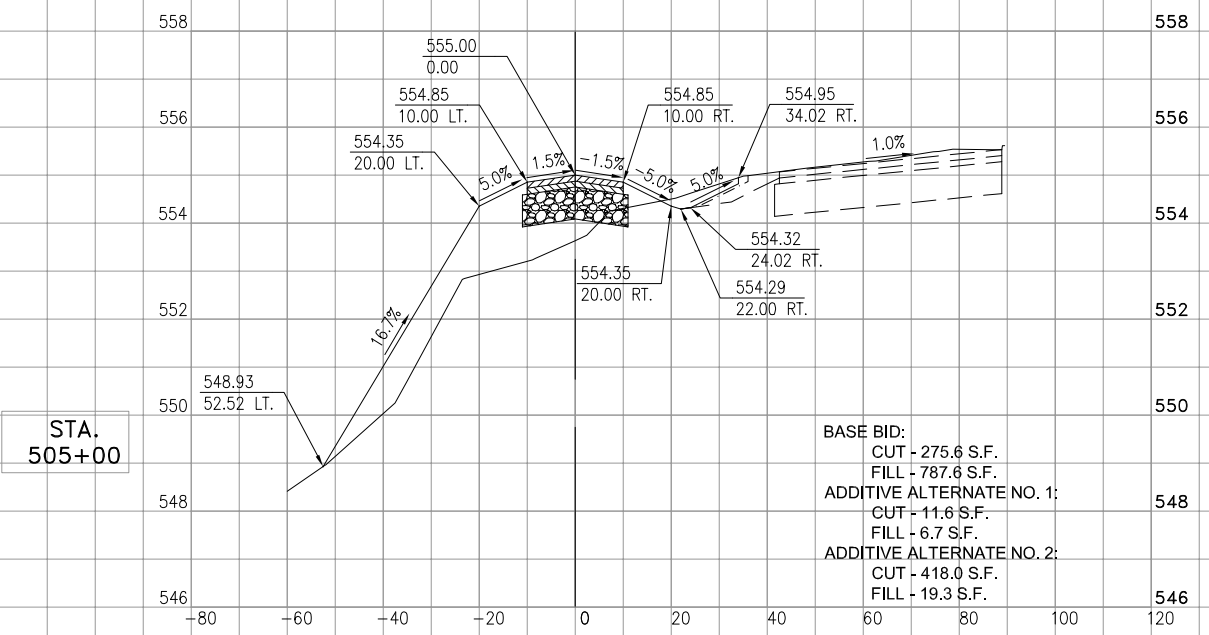
Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018
 PROJECT NO: 17A0084
 CAD FILE: 28-32-XSECTIONS.DWG
 DESIGN BY: LDH 9/6/18
 DRAWN BY: LDH 9/6/18
 REVIEWED BY: KMS 10/18/18

SHEET TITLE

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



REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

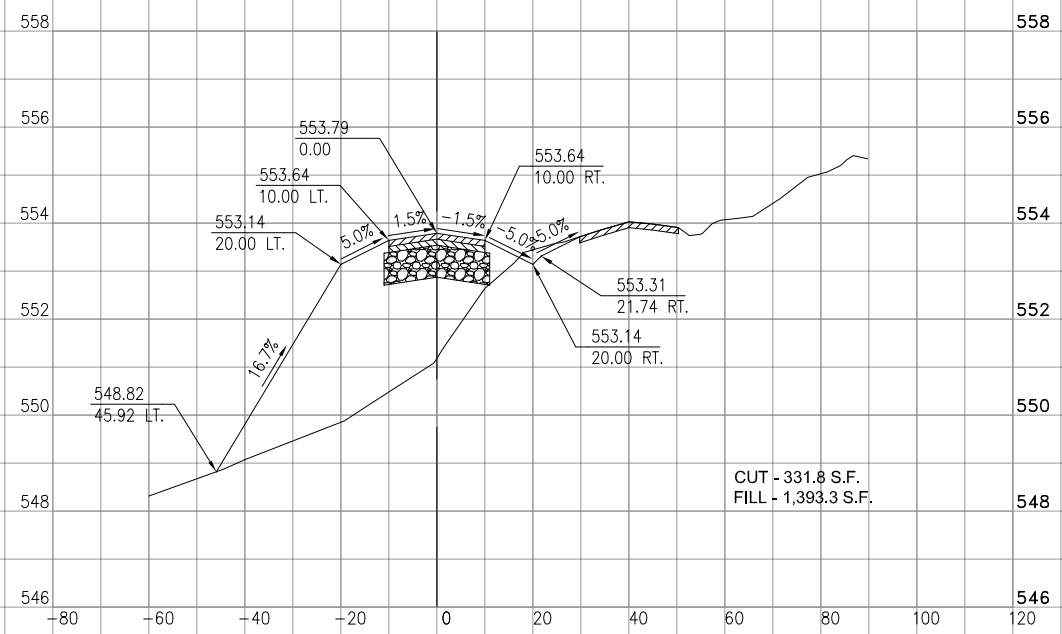
ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 28-32-XSECTIONS.DWG
DESIGN BY: LDH 9/6/18
DRAWN BY: LDH 9/6/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

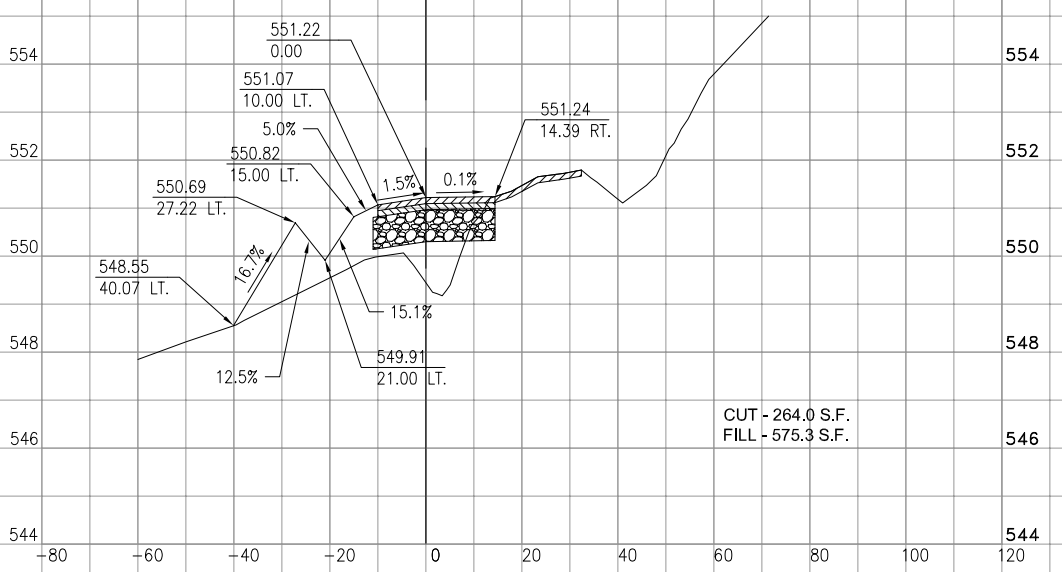
CROSS SECTIONS - STA. 504+50 THRU 506+00



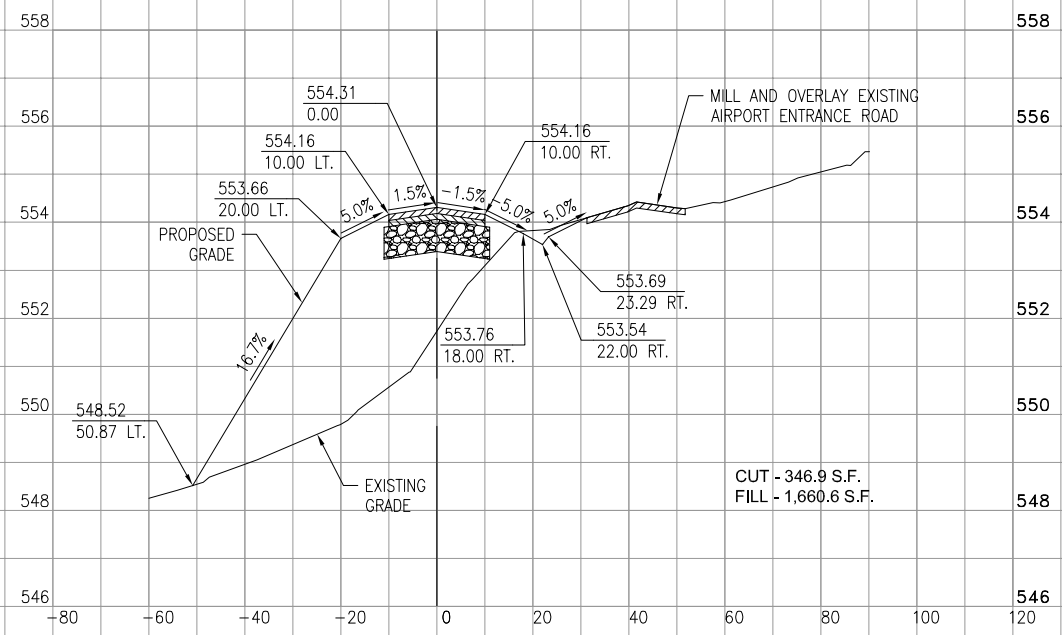
STA.
506+75



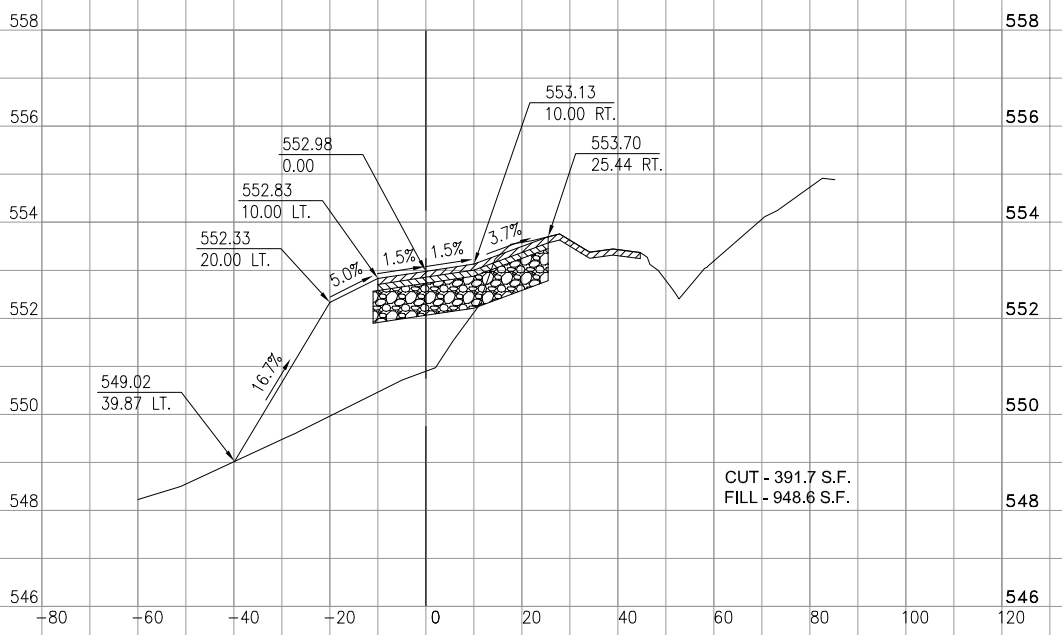
STA.
507+50



STA.
506+50



STA.
507+00



REALIGN AIRPORT
ENTRANCE ROAD;
RECONSTRUCT
AIRCRAFT HANGAR
PAVEMENT

IDA No: C75-4625

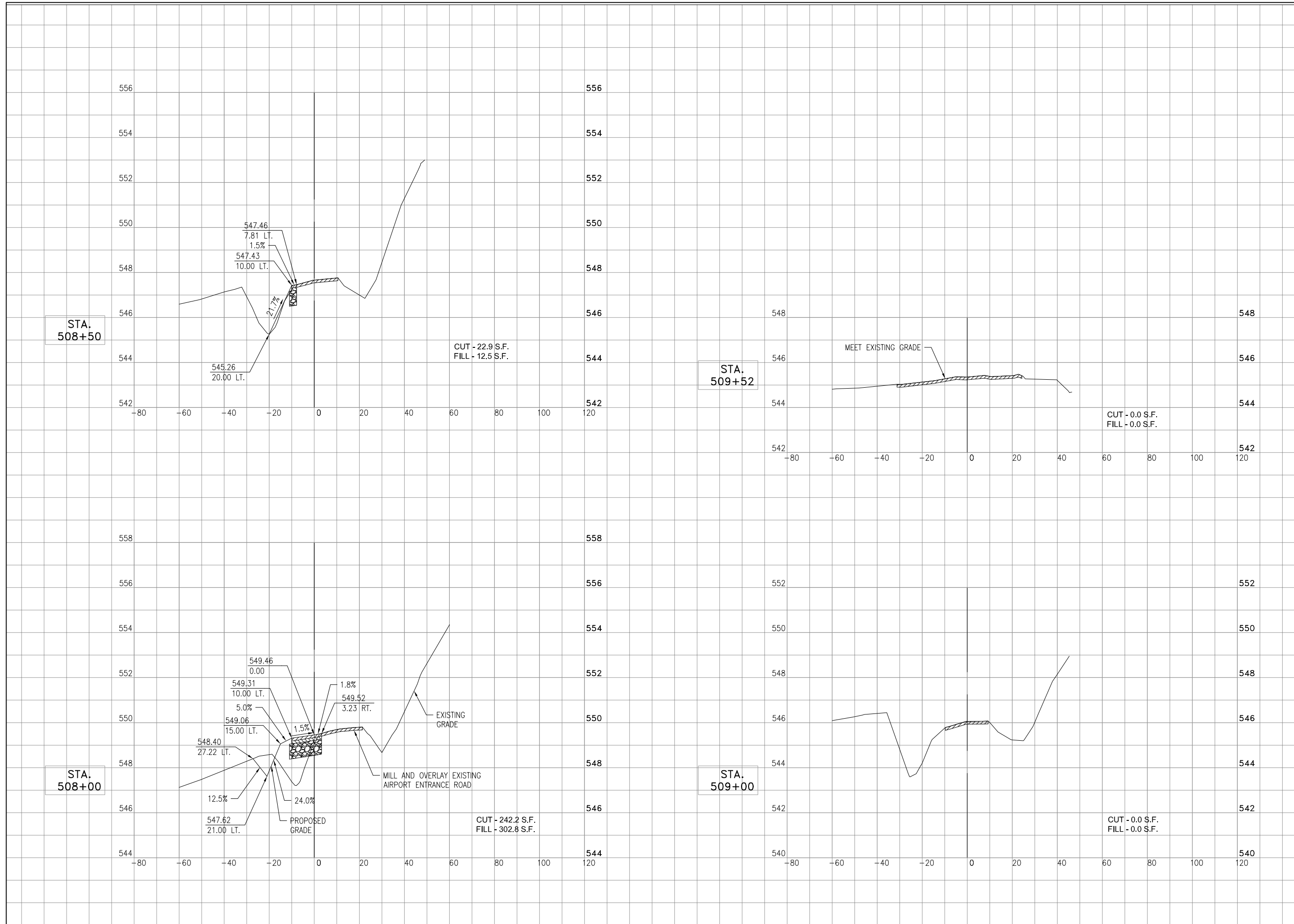
Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 28-32-XSECTIONS.DWG
DESIGN BY: LDH 9/6/18
DRAWN BY: LDH 9/6/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

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



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

IDA No: C75-4625

Contract No. MA029

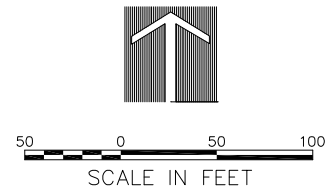
NO.	DATE	DESCRIPTION		
		DES	DWN	REV







ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 28-32-XSECTIONS.DWG
DESIGN BY: LDH 9/6/18
DRAWN BY: LDH 9/6/18
REVIEWED BY: KMS 10/18/18

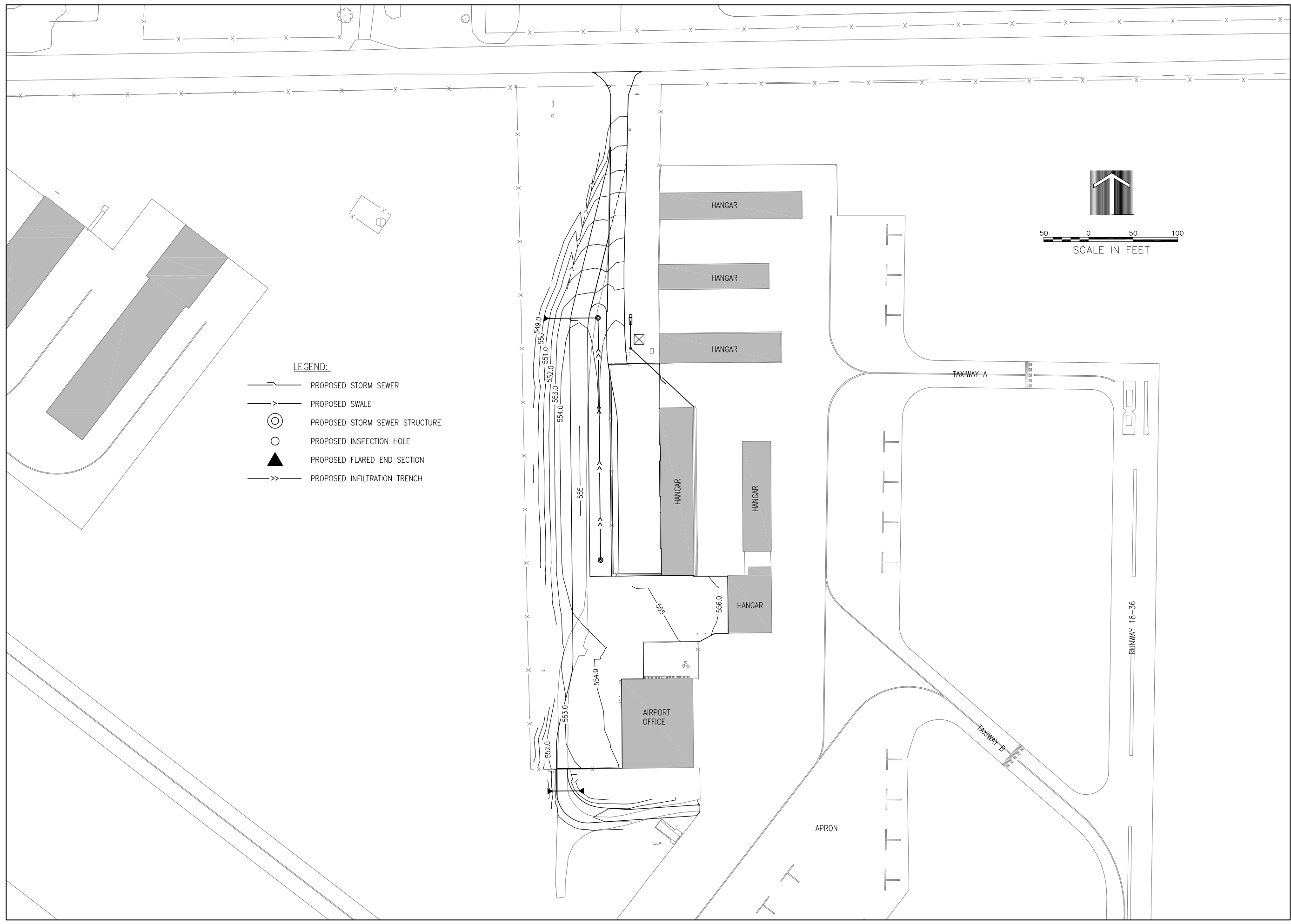
SHEET TITLE

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

NOV 15, 2018 11:37 AM HAUSM00682 I:\17-JOB\17A0084\CAD\AIRPORT\17A0084-32-XSECTIONS.DWG



- LEGEND:**
-  PROPOSED STORM SEWER
 -  PROPOSED SWALE
 -  PROPOSED STORM SEWER STRUCTURE
 -  PROPOSED INSPECTION HOLE
 -  PROPOSED FLARED END SECTION
 -  PROPOSED INFILTRATION TRENCH



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

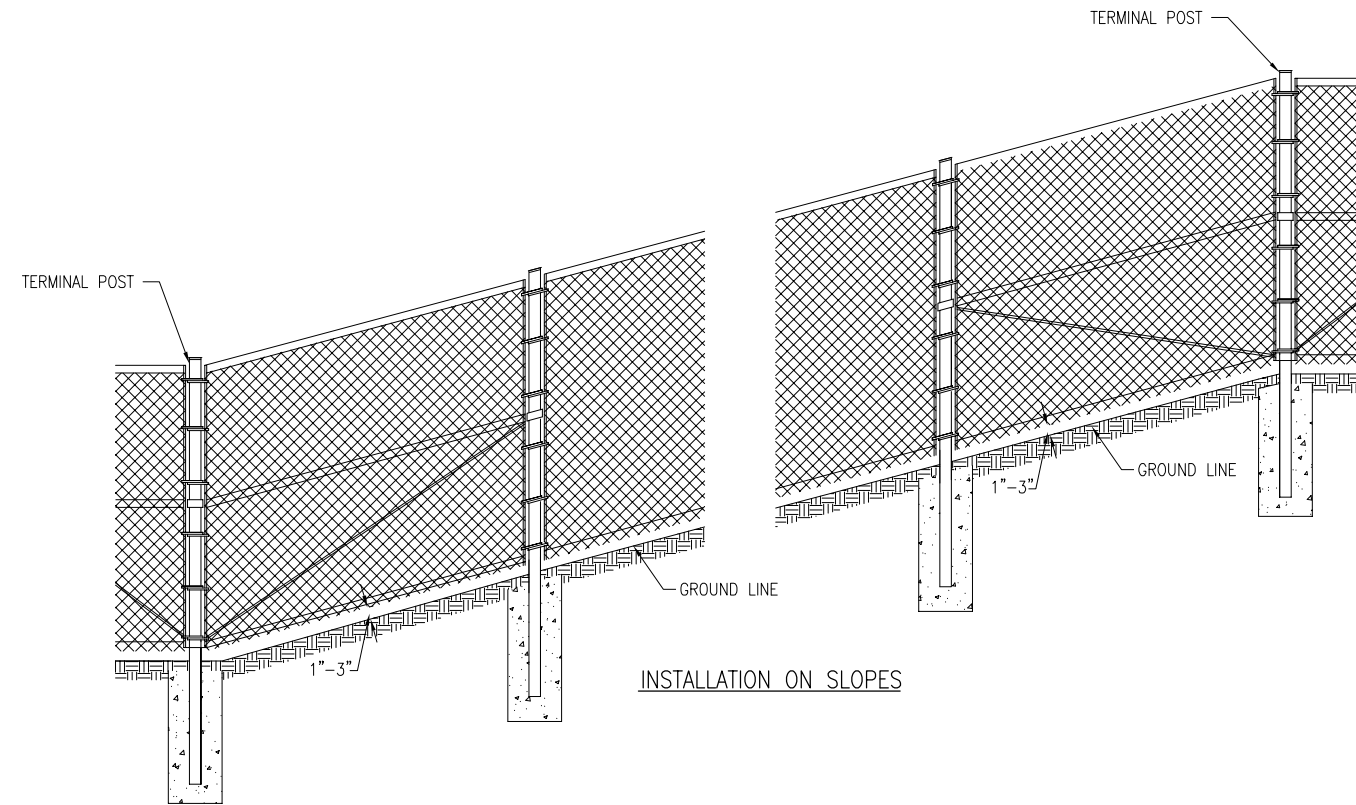
IDA No: C75-4625
Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

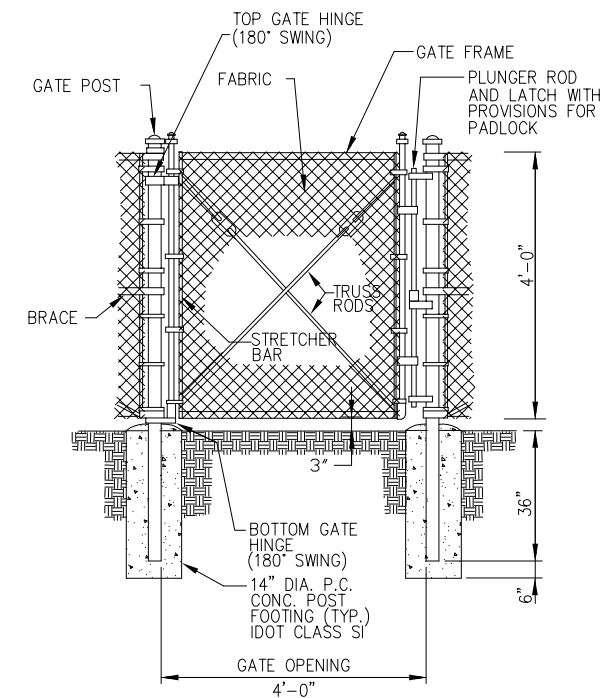
ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 33-GRADING PLAN.DWG
DESIGN BY: LDH 9/10/18
DRAWN BY: LDH 9/10/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

GRADING PLAN



INSTALLATION ON SLOPES



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

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: 36-FENCEDET.DWG

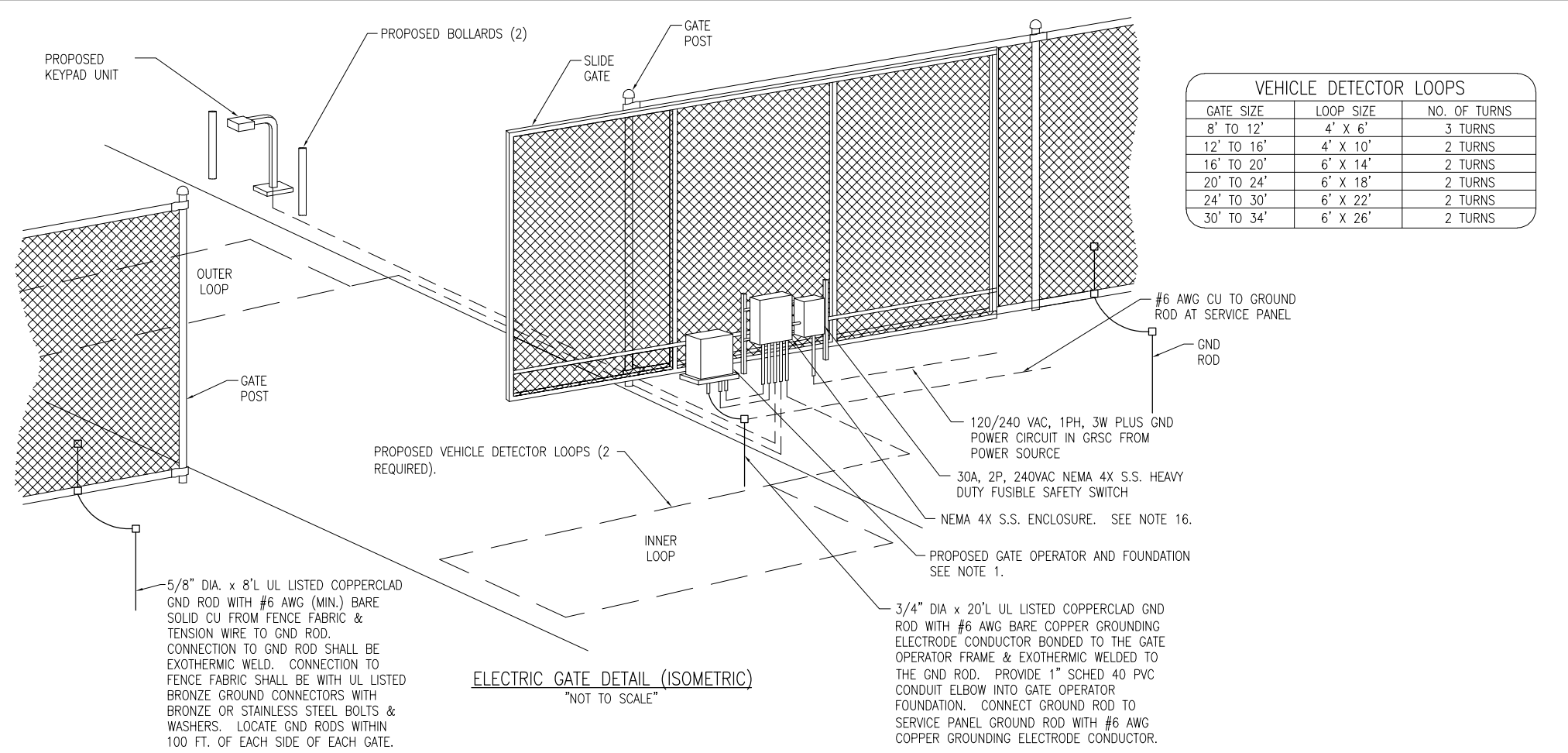
DESIGN BY: LDH 9/10/18

DRAWN BY: LDH 9/10/18

REVIEWED BY: KMS 10/18/18

SHEET TITLE

FENCE DETAILS 02



NOTES:

- SEE SPECIAL PROVISION SPECS FOR REQUIREMENTS ON GATE & GATE OPERATOR SYSTEM.
- 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 REPRESENTATIVE.
- 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 FREEZING RAIN AND SNOW.
- 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 MOUNTING BRACKET.
- CONCRETE USED FOR INSTALLING THE GATE OPERATOR, ASSOCIATED EQUIPMENT, & FENCE SHALL MEET THE REQUIREMENTS OF STRUCTURAL PORTLAND CEMENT CONCRETE ITEM 610.
- 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 BE PERMITTED.
- 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.
- CONTROL CIRCUIT WIRING SHALL NOT BE ROUTED THROUGH THE SAFETY SWITCH/DISCONNECT.
- 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.

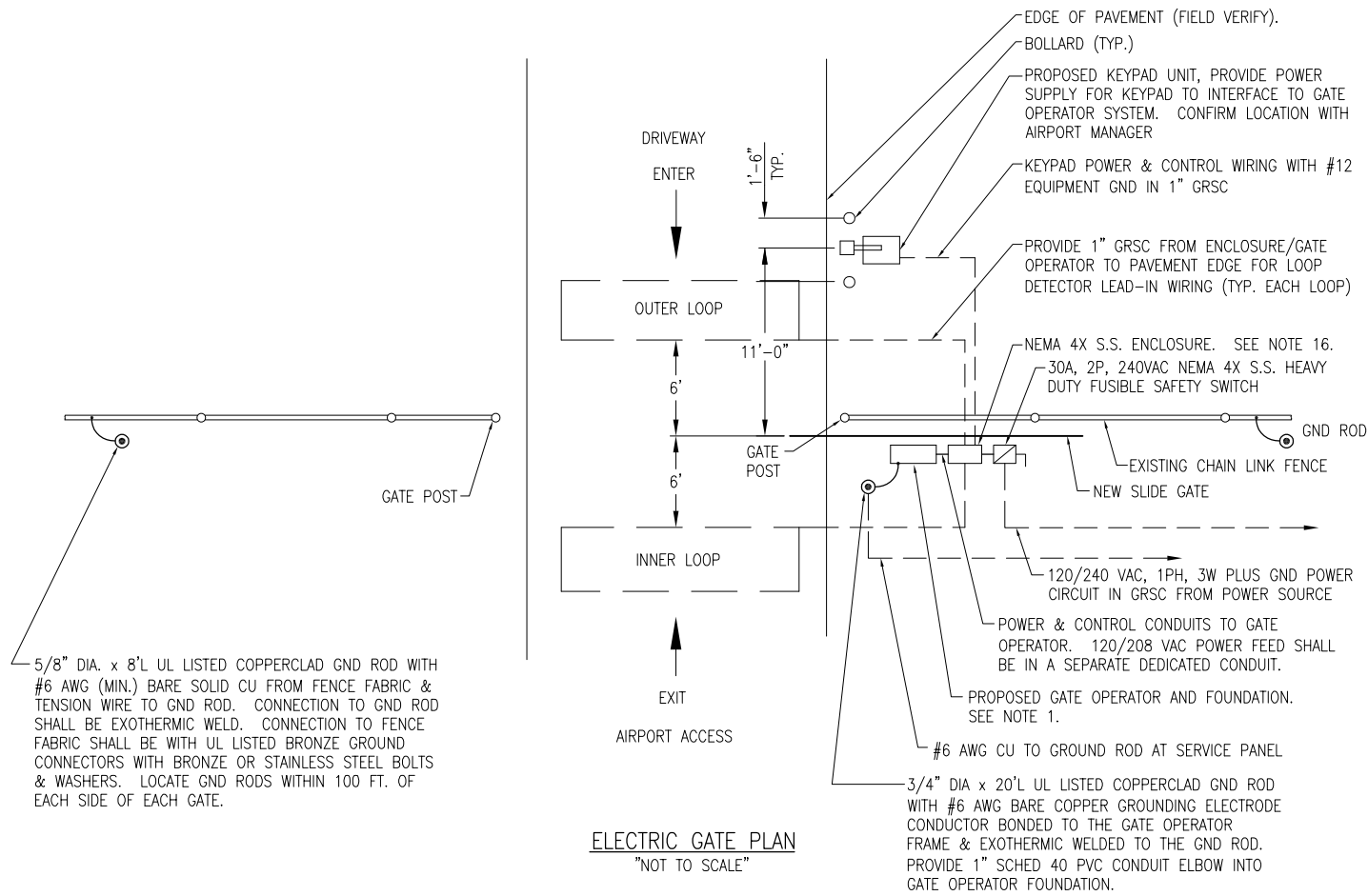
WARNING

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

- NOTES**
- 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.



NOV 15, 2018 11:38 AM HAUSM00682 1:17:08S17A008417A0084DCADWIRPORTSHEET03E-603.DWG

REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

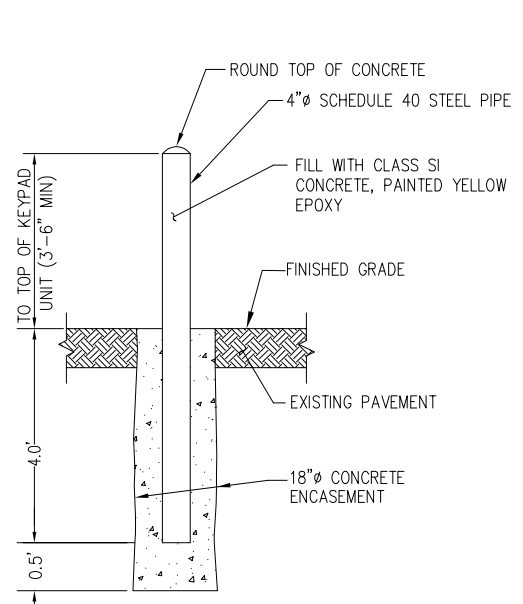
IDA No: C75-4625

Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 38-E-503.DWG
DESIGN BY: KNL 10/6/18
DRAWN BY: LDH 10/8/18
REVIEWED BY: KMS 10/18/18
SHEET TITLE

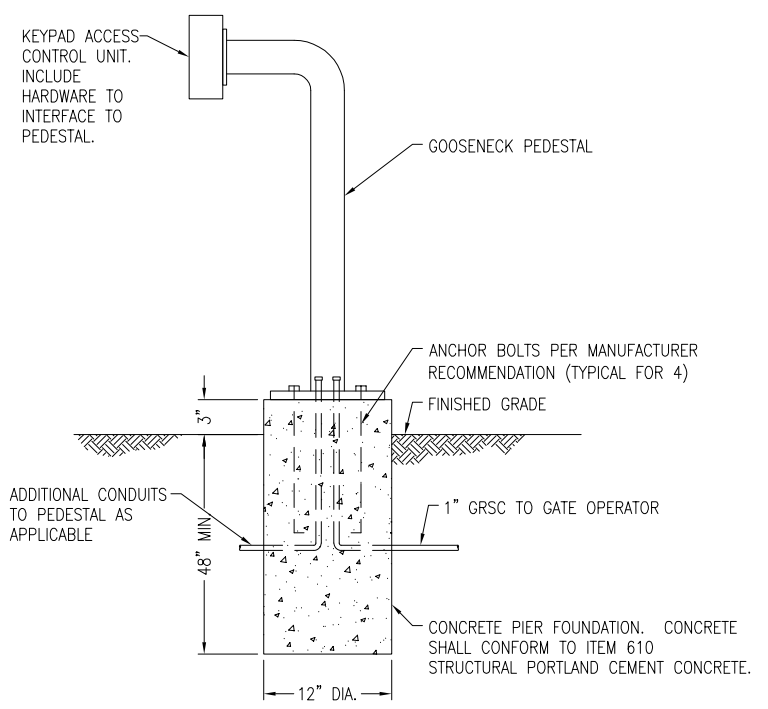
PROPOSED SLIDE GATE DETAILS



NOTES

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

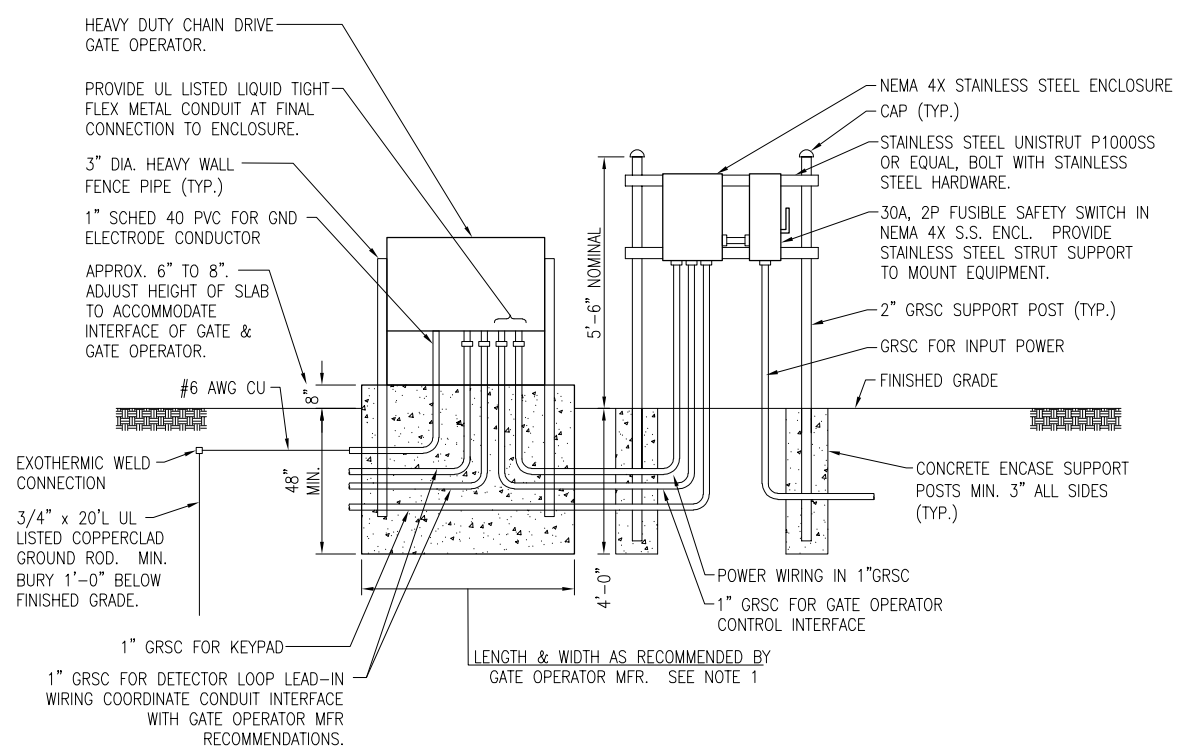
BOLLARD DETAIL
NOT TO SCALE



NOTES

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

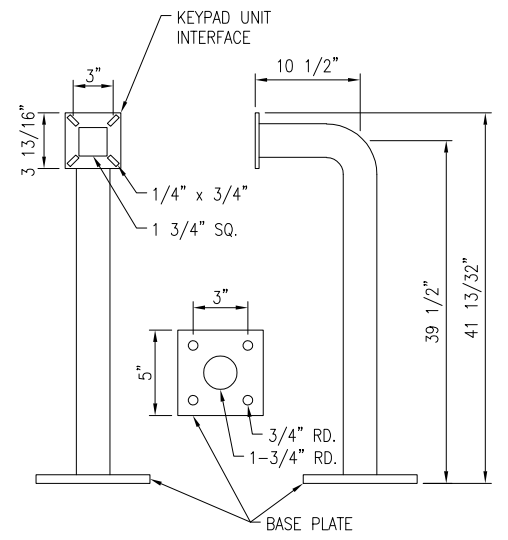
KEYPAD ACCESS CONTROL UNIT PEDESTAL ELEVATION DETAIL
NOT TO SCALE



NOTES

1. 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.
3. 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.
5. GATE WILL REQUIRE PHOTOELECTRIC EYE SECONDARY SAFETY DEVICES. PROVIDE CONDUITS BETWEEN GATE OPERATOR AND SAFETY DEVICES.

GATE OPERATOR FOUNDATION DETAIL
NOT TO SCALE



GOOSENECK PEDESTAL DETAIL
NOT TO SCALE

REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

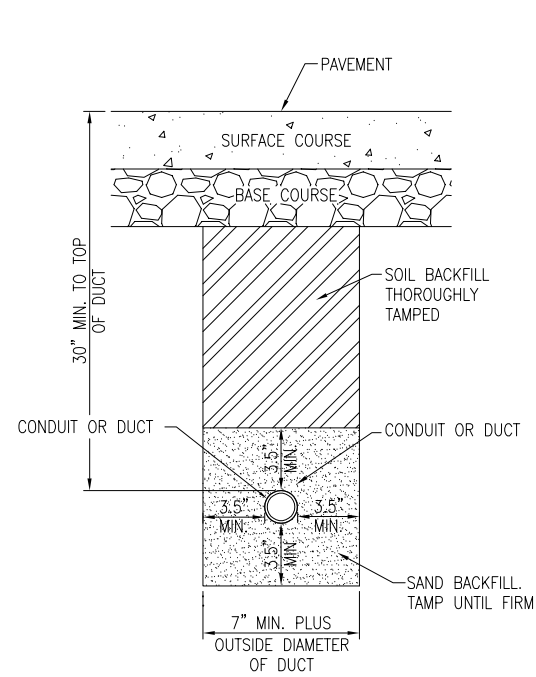
Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

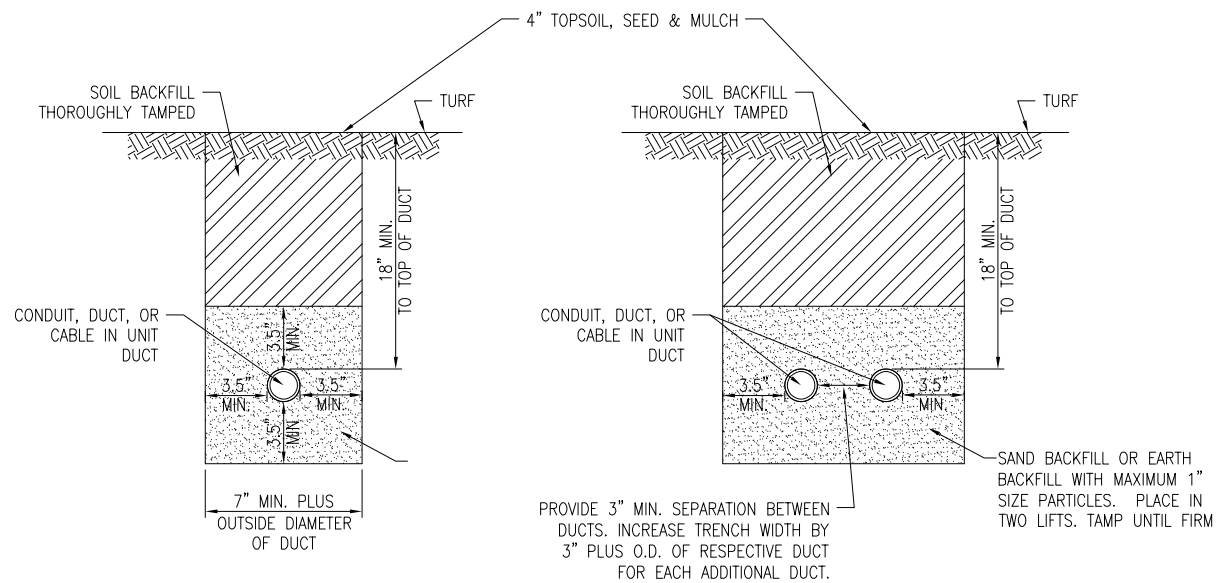
ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 39-E-504.DWG
DESIGN BY: KNL 10/6/18
DRAWN BY: LDH 10/8/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

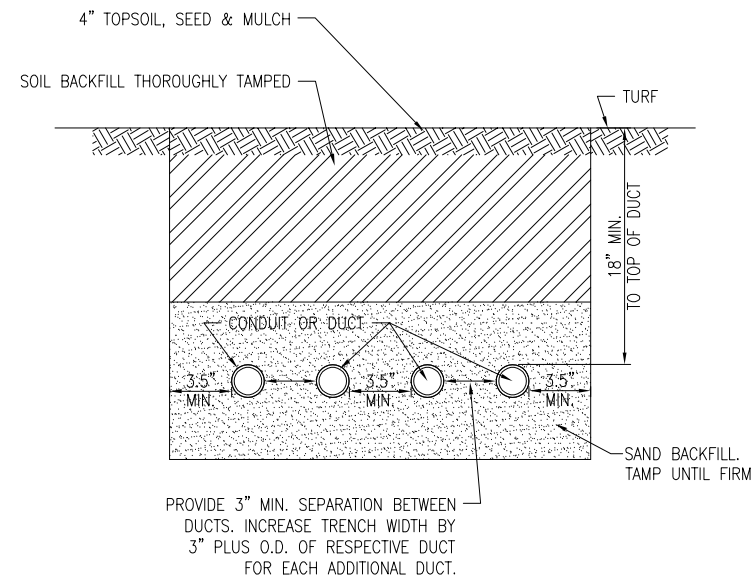
GATE OPERATOR DETAILS



CONDUIT IN TRENCH – PAVED AREAS
"NOT TO SCALE"



CONDUIT IN TRENCH – NON-PAVED AREAS
"NOT TO SCALE"



NOTES:

- DIMENSIONS FOR COVERAGE AND SEPARATION BETWEEN DUCTS ARE MINIMUM.
- 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.
- 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.
- 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.
- ALL DISTURBED SURFACES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. COST IS INCIDENTAL TO TRENCH.

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

IDA No: C75-4625

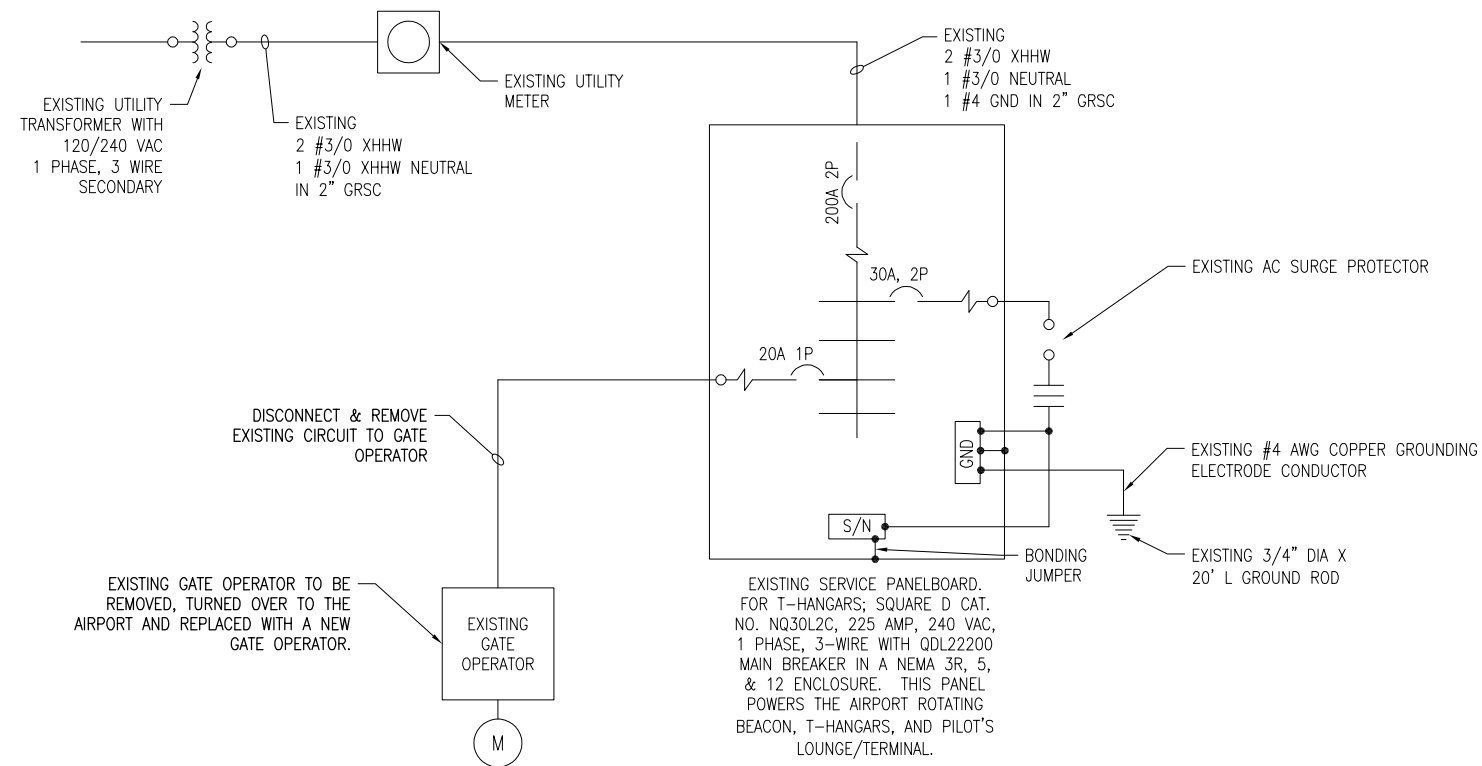
Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 40A-E-503-DETL.DWG
DESIGN BY: KNL 10/6/18
DRAWN BY: LDH 10/8/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

**CONDUIT TRENCH
DETAILS**



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

NOTES:

1. 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)
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 THE RESPECTIVE EQUIPMENT OR OTHER DEVICE.
4. REMOVAL OF EXISTING ELECTRICAL SLIDE GATE WILL BE PAID FOR UNDER ITEM AR162908 - REMOVE ELECTRIC GATE.

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: 42-E-601.DWG

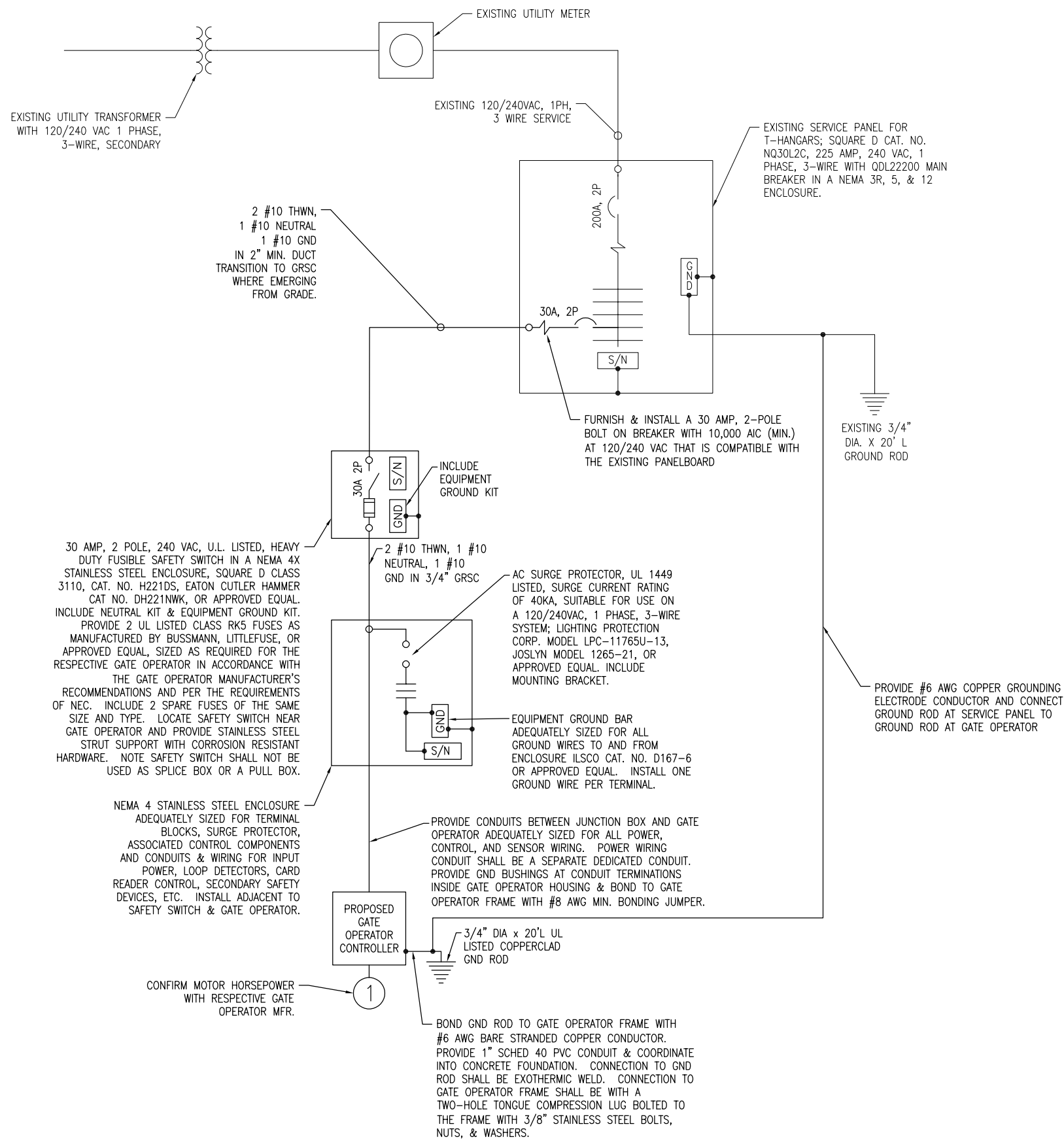
DESIGN BY: KNL 10/6/18

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



NOTES

- CONTRACTOR SHALL EXAMINE THE SITE TO DETERMINE EXISTING CONDITIONS.
- SEE "ELECTRICAL LEGEND AND ABBREVIATIONS" SHEET FOR GENERAL NOTES AND REQUIREMENTS.
- 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.
- 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 OCCURS THE GATE OPERATOR SHALL AUTOMATICALLY RESUME NORMAL OPERATION UPON RESTORATION OF POWER.

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

REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

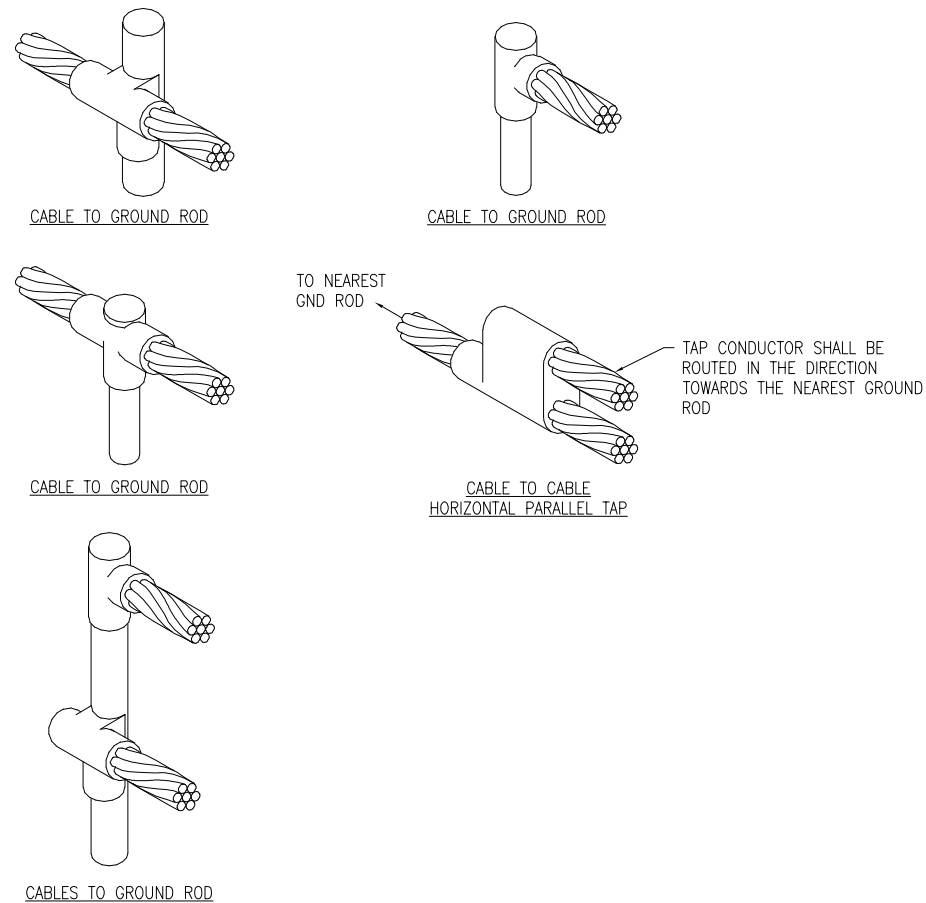
Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 43-E-602.DWG
DESIGN BY: KNL 10/6/18
DRAWN BY: LDH 10/8/18
REVIEWED BY: KMS 10/18/18

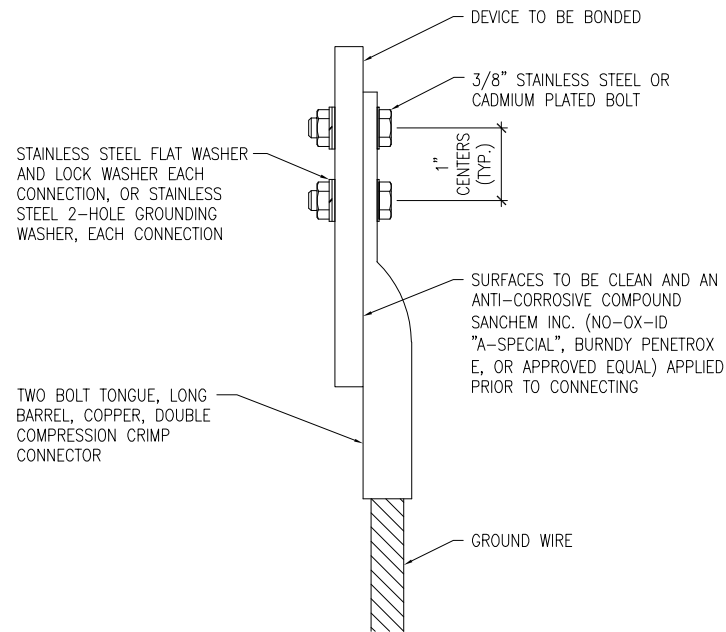
SHEET TITLE

PROPOSED ELECTRICAL ONE-LINE FOR AIRPORT GATE



TO NEAREST GND ROD

TAP CONDUCTOR SHALL BE ROUTED IN THE DIRECTION TOWARDS THE NEAREST GROUND ROD

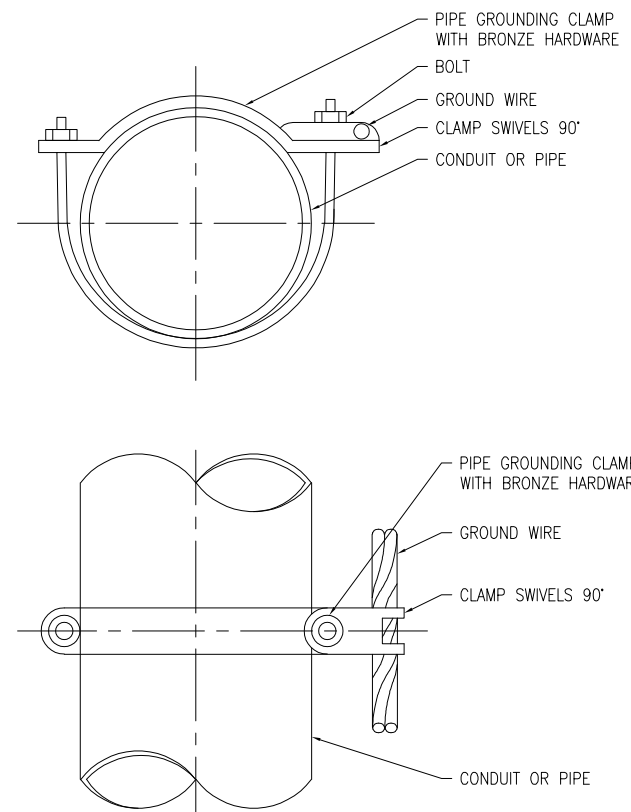


2 HOLE LONG BARREL COMPRESSION LUG TABLE (OR APPROVED EQUAL)			
WIRE SIZE	BURNDY CAT. NO.	THOMAS & BETTS CAT. NO.	PENN-UNION CAT. NO.
#8 AWG STRANDED	YA8C-2TC38	256-30695-1157	BBLU-8D-2TC38
#6 AWG SOLID	YA8C-2TC38 OR YGA6C-2TC38E2G1	(VERIFY WITH MFR)	(VERIFY WITH MFR)
#6 AWG STRANDED	YA6C-2TC38	256-30695-1158	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 APPLICABLE.
- 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 PATH 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.

GROUNDING LUG CONNECTION DETAIL
NOT TO SCALE



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

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

REALIGN AIRPORT ENTRANCE ROAD; RECONSTRUCT AIRCRAFT HANGAR PAVEMENT

IDA No: C75-4625

Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

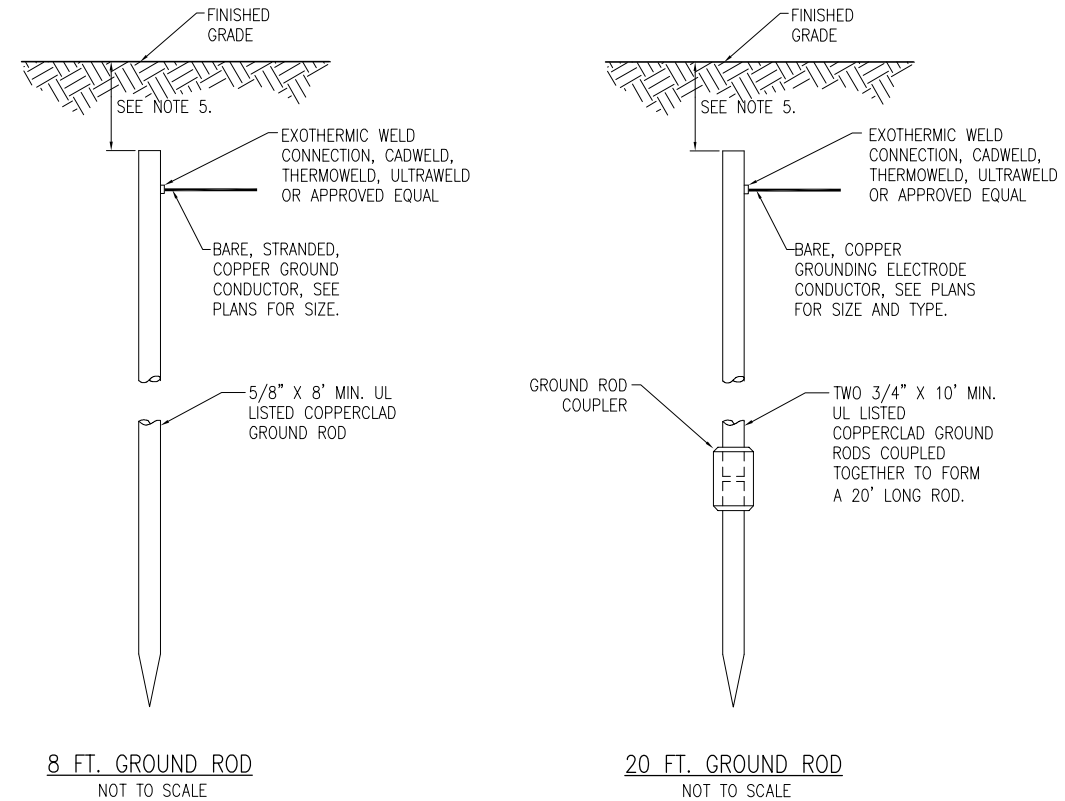
ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 44-E-506.DWG
DESIGN BY: KNL 10/6/18
DRAWN BY: LDH 10/8/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

GROUNDING DETAILS

GROUNDING NOTES

- 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:
- 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.
- 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.
- 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.
- 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 BOLTED 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.
- ALL METAL EQUIPMENT ENCLOSURES, CONDUITS, CABINETS, BOXES, RECEPTACLES, MOTORS, ETC. SHALL BE BONDED TO THE RESPECTIVE GROUNDING SYSTEM.
- 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.
- 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.
- 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.
- 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 WILL NOT BE CONSIDERED AS ADEQUATE GROUNDING.
- 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 GROUND NEUTRAL CONDUCTOR, EXCEPT AT SUPPLY SIDE OF SERVICE DISCONNECTING MEANS, WHERE GROUNDING AND NEUTRAL SYSTEMS ARE TO BE CONNECTED TO SERVICE GROUND.
- EACH AND ALL GROUNDING 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.
- 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, ILSICO CORPORATION, PENN-UNION CORPORATION, THOMAS & BETTS, OR APPROVED EQUAL.
- BOND ALL NONCURRENT-CARRYING PARTS OF METAL EQUIPMENT TO GROUND SYSTEM.
- 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 ENIRCLE 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 GIRDLING 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.
- 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 EQUIPMENT GROUNDING CONDUCTORS RUN WITH AC CIRCUITS.
- 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.
- 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.
- 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.



NOTES

- 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.
- 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

NOV 15, 2018 11:38 AM HAUSM00682 I:\17\JOBS\17A0084\17A0084\CAD\AIRPORTSHEET\MSE-E-003-GND.DWG



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

IDA No: C75-4625

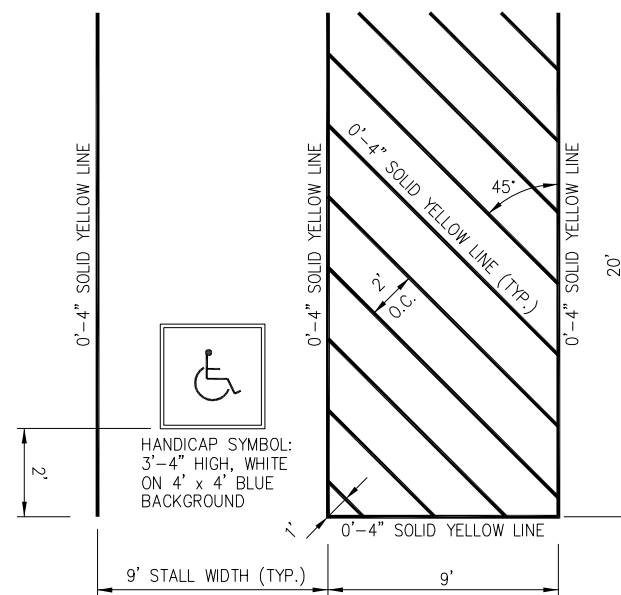
Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 45-E-003-GND.DWG
DESIGN BY: KNL 10/6/18
DRAWN BY: LDH 10/8/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

GROUNDING NOTES



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

**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: 48-MARKING DET.DWG

DESIGN BY: LDH 10/8/18

DRAWN BY: LDH 10/8/18

REVIEWED BY: KMS 10/18/18

SHEET TITLE

**MARKING AND SIGN
DETAILS**

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

IDA No: C75-4625

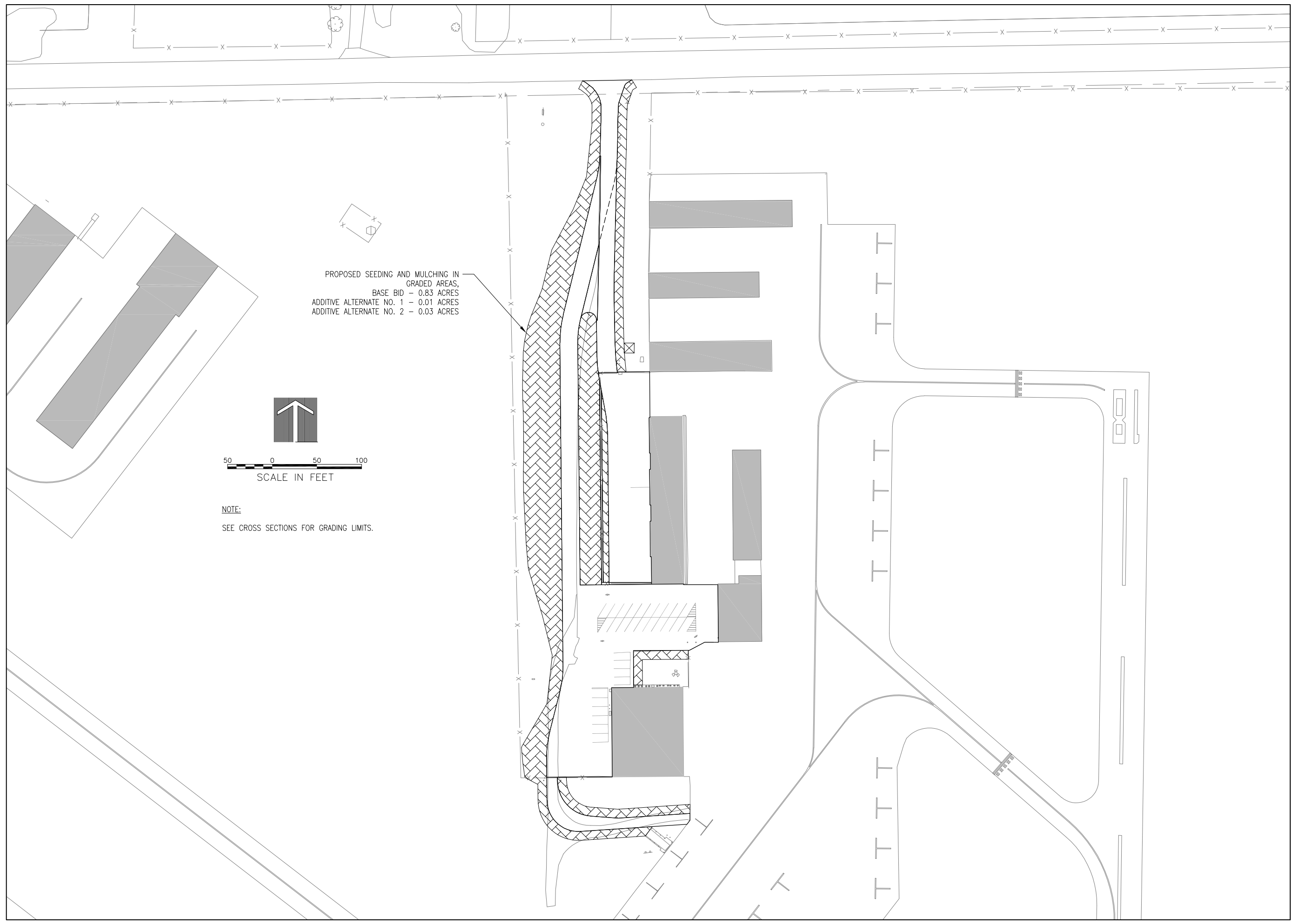
Contract No. MA029

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 16, 2018
PROJECT NO: 17A0084
CAD FILE: 49-LANDSCAPING.DWG
DESIGN BY: LDH 9/19/18
DRAWN BY: LDH 9/19/18
REVIEWED BY: KMS 10/18/18

SHEET TITLE

LANDSCAPING PLAN



NOV 15, 2018 11:39 AM HAUSM00682
I:\17-JOBS\17A0084\17A0084\CAD\AIRPORT\17A0084-LANDSCAPING.DWG