

SCOPE OF WORK

THIS PROJECT CONSISTS OF REMOVING EXISTING PAVEMENT AT T-HANGARS AND INSTALL NEW PAVEMENT AND ASSOCIATED SITE WORK. ALSO THE ENTIRE AIRCRAFT APRON WILL RECEIVE A SEAL COAT.

AIRPORT SECURITY NOTE

AIRPORT SECURITY WILL BE MAINTAINED AT ALL TIMES. THE CONTRACTOR WILL CLOSE AND LOCK THE EXISTING GATE IN THE HAUL ROUTE AT THE END OF EACH WORKING DAY.

UTILITY NOTE

THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND AGENCIES WHICH HAVE LINES OR CONDUITS IN THE PROPOSED WORK AREA. ALL LINES AND CONDUITS SHALL BE LOCATED AND IDENTIFIED FOR DEPTH BEFORE ANY EXCAVATION BEGINS. THE CONTRACTOR WILL CALL J.U.L.I.E. (1-800-892-0123) TO ACCOMPLISH THE ABOVE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY ALL UNDERGROUND NON-JULIE UTILITIES LOCATED WITHIN THE PROPOSED CONSTRUCTION LIMITS. THESE UNDERGROUND IMPROVEMENTS WILL BE LOCATED AT THE CONTRACTOR'S OWN EXPENSE PRIOR TO THE START OF CONSTRUCTION ACTIVITIES.

HEIGHT OF CONSTRUCTION EQUIPMENT

THE MAXIMUM ANTICIPATED HEIGHT OF THE CONSTRUCTION EQUIPMENT WILL BE 25 FEET. THE TALLEST EQUIPMENT IS EXPECTED TO BE A DUMP TRUCK.

HAUL ROUTE AND VEHICLE PARKING

THE CONTRACTOR WILL USE THE DESIGNATED HAUL ROUTE AND PARKING AREA AS SHOWN ON THIS SHEET. THE PROPOSED PARKING AREA WILL BE 50' X 100'. THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN THE PROPOSED HAUL ROUTE AND PARKING AREA THROUGHOUT THE COURSE OF THE PROJECT. ANY AREAS DAMAGED OUTSIDE OF THESE AREAS WILL BE REPAIRED BY THE CONTRACTOR AND AT THE CONTRACTOR'S OWN EXPENSE. AT THE CONCLUSION OF THE PROJECT THE CONTRACTOR WILL GRADE, FERTILIZE, SEED AND MULCH THE HAUL ROUTE AND PARKING AREA AS NEEDED TO RESTORE IT TO ITS ORIGINAL STATE. RESTORATION OF THE HAUL ROUTE AND PARKING AREA WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

CONTRACTOR RESPONSIBILITIES

THE CONTRACTOR'S EQUIPMENT PARKING AND STORAGE AREA WILL BE AS SHOWN ON THIS SHEET. THE CONTRACTOR'S EMPLOYEES WILL PARK THEIR VEHICLES IN THIS AREA. ONLY CONTRACTOR VEHICLES WILL BE ALLOWED OUTSIDE THIS AREA.

THE CONTRACTOR AND HIS EMPLOYEES WILL BE RESTRICTED TO THE WORK AREA AND ALL OTHER AREAS OF THE AIRPORT ARE "OFF LIMITS" TO THEM.

THE CONTRACTOR SHALL KEEP BOTH RUNWAYS AND PARALLEL TAXIWAYS OPEN AT ALL TIMES.

ALL WORK PERFORMED SHALL BE DONE IN A ORDERLY AND EFFECTIVE MANNER TO MINIMIZE LACK OF ACCESS TO THE HANGARS.

NO TRENCHES OR HOLES WILL REMAIN OPEN OVERNIGHT WITHOUT PROPER BARRICADING IN ACCORDANCE TO THE PLANS AND SPECIFICATIONS.

BARRICADES AND TRAFFIC CONES

IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PLACE AND MAINTAIN BARRICADES AND TRAFFIC CONES AS DIRECTED BY THE AIRPORT MANAGER & SHOWN ON THIS SHEET. THE BARRICADES WILL BE EQUIPPED WITH RED FLASHING OR RED STEADY-BURN LIGHTS AND 20" SQUARE ORANGE FLAGS. THE BARRICADES, THEIR MAINTENANCE, PLACEMENT AND REMOVAL WILL BE CONSIDERED AS AN INCIDENTAL ITEM TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

LEGEND

-  EXISTING IMPROVEMENTS
-  PROPOSED IMPROVEMENTS
-  EXISTING BUILDINGS
-  PROPOSED HAUL ROUTE AND EQUIPMENT PARKING AREA
-  PROPOSED BENCHMARK
-  PROPOSED BARRICADES OR TRAFFIC CONES

UTILITY NOTE

THE LOCATION, SIZE, AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS ARE NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATEVER IN RESPECT TO THE 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.** 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.

BENCHMARK DATA

NO.	DESCRIPTION	ELEV.
1	#1004 NAIL SET NORTHING; 708927.2310 EASTING; 1158904.2510	429.21
2	#1003 NAIL SET NORTHING; 708926.9070 EASTING; 1158307.5770	429.95
3	#1006 NAIL SET NORTHING; 708500.8150 EASTING; 1158467.0390	426.91

J.U.L.I.E. INFORMATION

COUNTY _____ LAWRENCE
 CITY _____ ST. FRANCISVILLE
 TOWNSHIP _____ DENISON
 SECTION NO. _____ 14 & 15
 ADDRESS _____ MT. CARMEL MUNICIPAL AIRPORT
 ROUTE #1
 ST. FRANCISVILLE, ILLINOIS 62460

CERTIFIED PAYROLLS

THE RESIDENT ENGINEER **CANNOT** FORWARD CONSTRUCTION REPORTS TO THE OWNER FOR PROCESSING UNTIL **ALL CERTIFIED PAYROLLS** FOR THE PERIOD HAVE BEEN RECEIVED.

MATERIAL CERTIFICATION

MATERIALS TO BE INCORPORATED INTO THE PROJECT CANNOT BE USED WITHOUT PRIOR APPROVAL. ALL MATERIALS TO BE USED IN THE PROJECT MUST BE SUBMITTED TO THE RESIDENT ENGINEER FOR APPROVAL. USE OF MATERIALS WITHOUT PRIOR APPROVAL AND ULTIMATELY DETERMINED TO BE UNACCEPTABLE BY THE ILLINOIS DIVISION OF AERONAUTICS ARE SUBJECT TO REMOVAL AND/OR NON-PAYMENT

PROPOSED SAFETY PLAN

GENERAL - THE MT. CARMEL MUNICIPAL AIRPORT IS COMPRISED OF TWO RUNWAYS. THE PROPOSED CONSTRUCTION WILL NOT NECESSITATE CLOSING ANY RUNWAYS.

IDENTIFICATION - WHEN THE CONTRACTORS VEHICLES AND EQUIPMENT ARE ON THE AIRPORT THEY SHALL BE PROPERLY MARKED WITH THREE (3') FOOT SQUARE CHECKERED FLAGS (INTERNATIONAL ORANGE AND WHITE). THE CONTRACTOR WILL ALSO PROVIDE WORKERS WITH SOME TYPE OF TAG OR GARMENT TO IDENTIFY THE PERSON AS BEING PART OF THE CONSTRUCTION CREW.

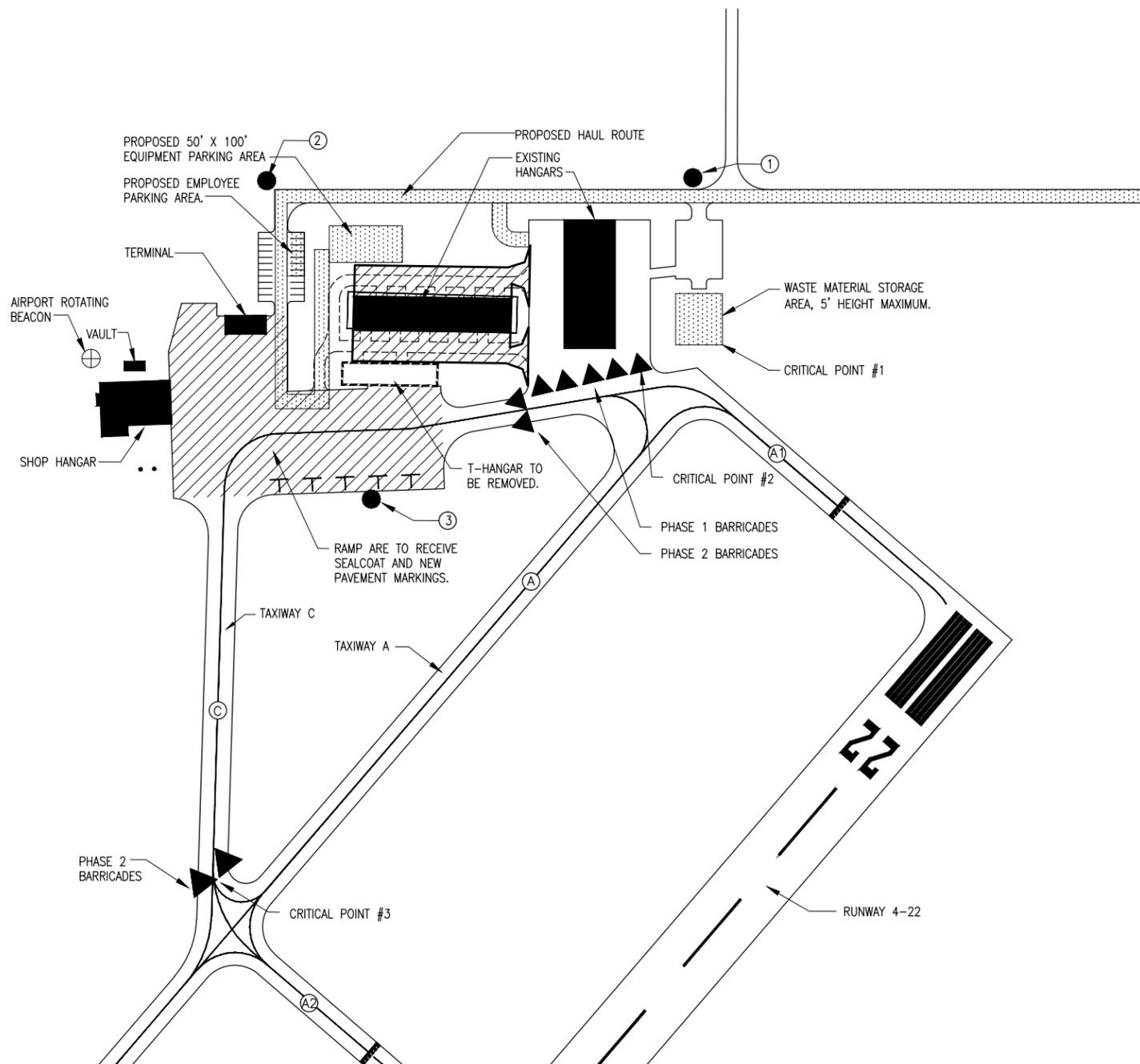
RADIO CONTROL - THE CONTRACTOR WILL BE REQUIRED TO BE IN TWO-WAY RADIO CONTACT (122.70 Mhz.) WITH THE AIRPORT UNICOM. THIS WILL KEEP THE CONTRACTOR IN CONSTANT CONTACT WITH THE MT. CARMEL MUNICIPAL AIRPORT AND ENABLE THE AIRPORT TO IMMEDIATELY CONTACT THE CONTRACTOR IN CASE OF AN AERONAUTIC EMERGENCY THAT WOULD REQUIRE ACTION BY THE CONTRACTOR AND/OR HIS PERSONNEL.

EROSION CONTROL

THIS PROJECT WILL DISTURB LESS THAN 1 ACRE OF LAND, THEREFORE A N.P.D.E.S. PERMIT WILL NOT BE REQUIRED.

CRITICAL POINT DATA

NO.	DESCRIPTION	LAT.	LONG.	ELEV.
1	MATERIAL STOCK PILE	38° 36' 40.99"	87° 43' 19.19"	426'
2	INT. TXY A, A1 & RAMP	38° 36' 40.11"	87° 43' 20.99"	426'
3	INT. TXY C & A	38° 36' 33.67"	87° 43' 27.93"	429'



MC025



Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62568
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

MT CARMEL MUNICIPAL AIRPORT



REHABILITATE
T-HANGAR TAXIWAY

IDA No: AJG-4249

Contract No. MC025

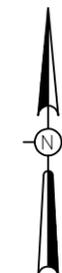
NO.	DATE	DESCRIPTION		
		DES	DWN	REV

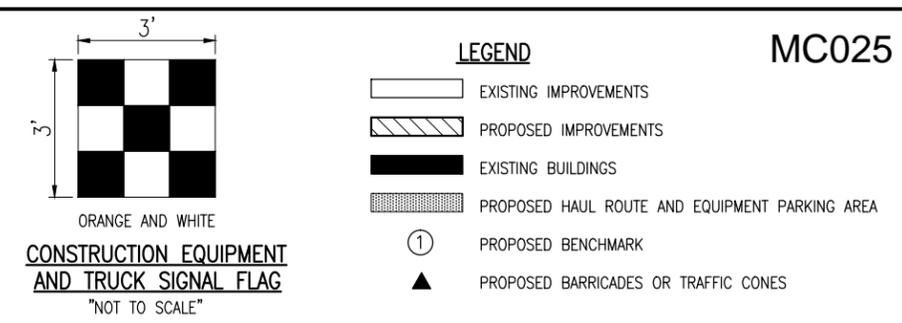
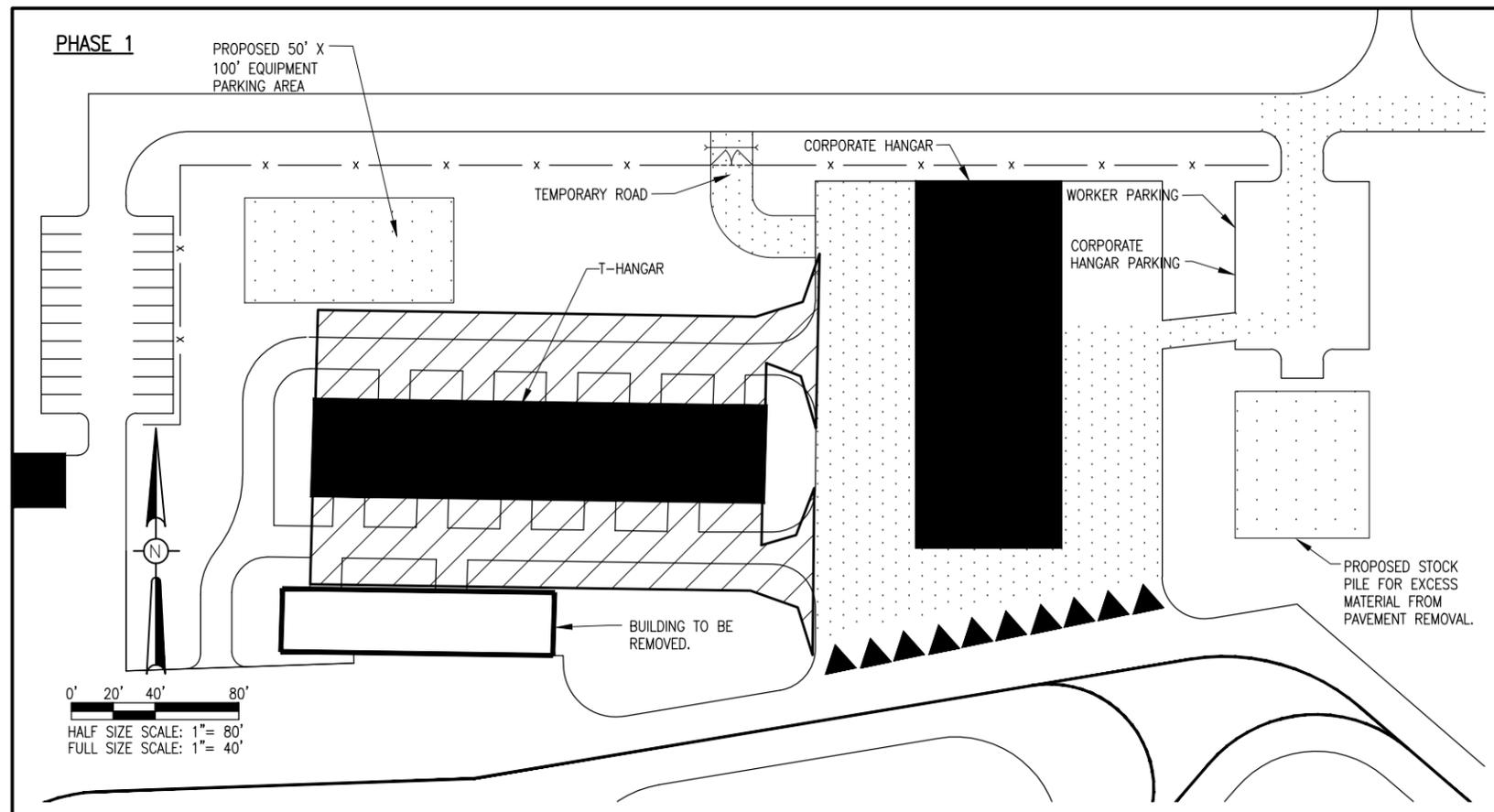
ISSUE: APRIL 17, 2015
 PROJECT NO: 11A0124D
 CAD FILE: G-003SFY.DWG
 DESIGNED BY: JSL 1/12/2015
 DRAWN BY: CWS 1/13/2015
 REVIEWED BY: JSL 2/19/2015

SHEET TITLE

PROPOSED SAFETY
PLAN

0' 150' 300' 600'
 HALF SIZE SCALE: 1"= 600'
 FULL SIZE SCALE: 1"= 300'

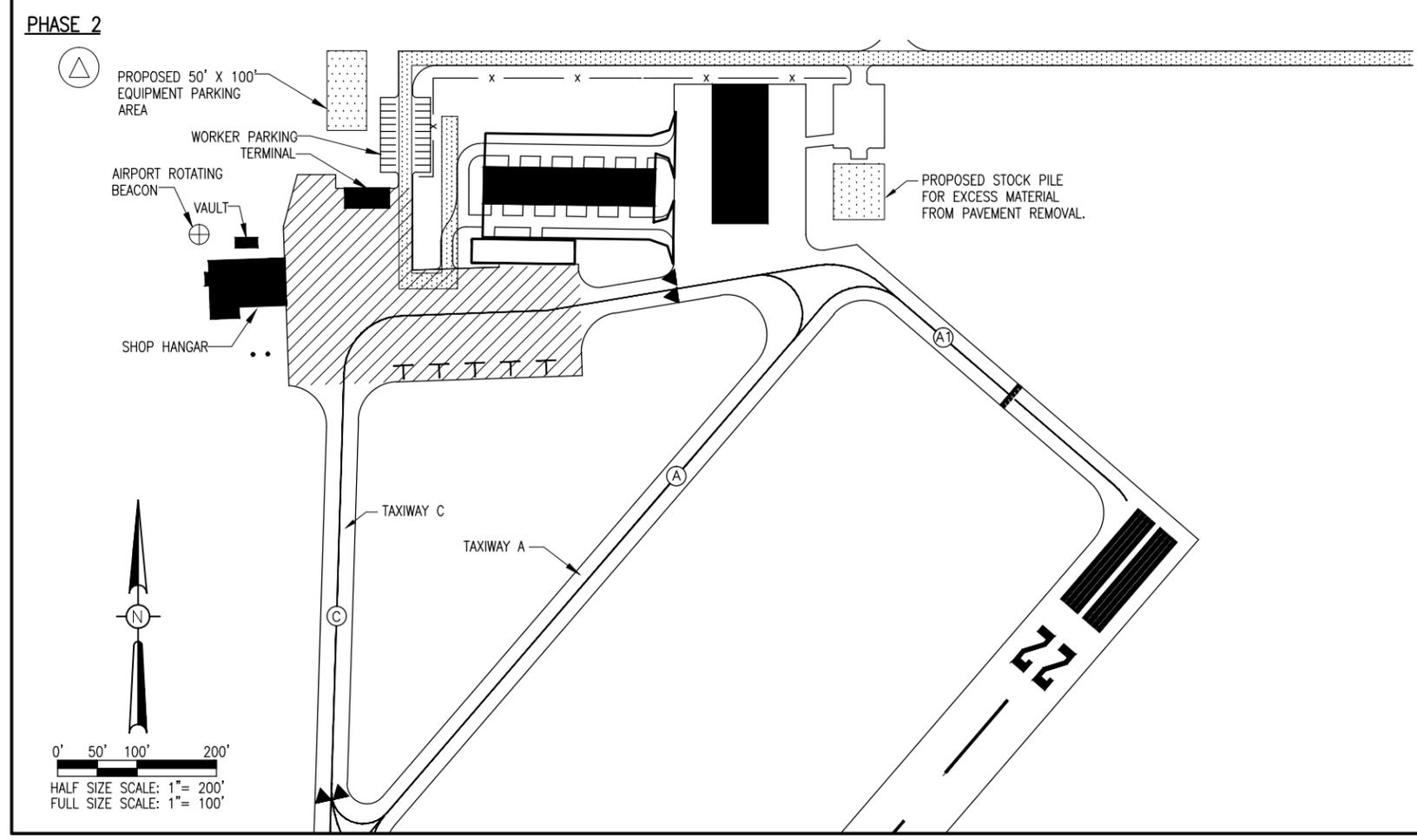




WHILE ON THE AIRPORT SITE, THE CONTRACTOR'S VEHICLES ARE TO BE PROPERLY MARKED. THE MARKINGS SHALL CONSIST OF A 3 FOOT SQUARE FLAG CONSISTING OF A CHECKERED PATTERN OF INTERNATIONAL ORANGE AND WHITE SQUARES (SEE DETAIL THIS SHEET) DISPLAYED IN FULL VIEW ABOVE THE VEHICLE.

SEQUENCE OF CONSTRUCTION

- COMPLETE ITEMS 1-5 IN 35 CALENDAR DAYS. ALLOW AIRPORT 1 DAY TO COMPLETE ITEM 6, WHICH IS INCLUDED IN CALENDAR DAY CALCULATIONS. CONSTRUCT ITEMS 7-9 IN 4 CALENDAR DAYS.
1. PROVIDE AIRPORT MANAGER PROPER NOTICE TO ALLOW AIRCRAFT AFFECTED BY CONSTRUCTION TO BE RELOCATED. AIRPORT MANAGER WILL ISSUE PROPER NOTAMS.
 2. SET UP BARRICADES TO CLOSE ACCESS TO THE PAVEMENT REMOVAL AREAS.
 3. REMOVE THE EXISTING PCC PAVEMENT, AGGREGATE AND UNCLASSIFIED EXCAVATION - DISPOSE IN DESIGNATED AREA.
 4. RELOCATE ELECTRIC SERVICE AND REMOVE T-HANGAR.
 5. CONSTRUCT NEW BITUMINOUS PAVEMENT INCLUDING GRADING, DRAINAGE AND SEEDING.
 6. ONCE NEW PAVEMENT DECLARED SAFE BY AIRPORT MANAGER, REMOVE BARRICADES TO ALLOW ACCESS TO NEW T-HANGAR PAVEMENT.
 7. ALLOW AIRPORT TO RELOCATE AIRCRAFT BACK TO T-HANGAR AND CLEAR MAIN RAMP OF AIRCRAFT, TIE DOWN STRAPS, AND OTHER ENCUMBRANCES.
 8. ERECT BARRICADES FOR RAMP CONSTRUCTION. AIRPORT MANAGER WILL ISSUE PROPER NOTAMS.
 9. CONSTRUCT CRACK CLEAN AND SEAL AND SEALCOAT ENTIRE RAMP.
 10. APPLY PAVEMENT MARKINGS TO ENTIRE RAMP AND NEW T-HANGAR PAVEMENT.



CONTRACTOR'S ACCESS SHALL BE AS FOLLOWS:

PHASE 1: REMOVAL AND REPLACEMENT OF THE T-HANGAR PAVEMENTS; REMOVAL OF T-HANGAR INSTALL TEMPORARY ENTRANCE BY INSTALLING CULVERT AND HAUL ROUTE ENTRANCE AT LOCATION SHOWN IN PLANS. CULVERT TO BE SUPPLIED BY AIRPORT. CONTRACTOR WILL NEED TO OPEN FENCE IN THIS AREA AND INSTALL GATE OR TEMPORARY FENCING AT LOCATION OF TEMPORARY ENTRANCE. CONTRACTOR MAY USE EXCAVATED MATERIAL TO BUILD ENTRANCE AND HAUL ROUTE, OR PROVIDE MATERIAL OF HIS CHOICE. TRUCKS BRINGING MATERIAL TO THE SITE SHALL ALL BE VIA THIS ROUTE. WORKERS TO PARK IN MAIN PARKING LOT.

FOR FULL DEPTH PAVEMENT REMOVALS, CONTRACTOR MAY PROCEED AROUND SOUTH SIDE OF CORPORATE HANGAR, AVOIDING TAXIWAYS A AND A1. SPOILS FROM PAVEMENT AND SUBGRADE REMOVALS SHALL BE TRANSPORTED TO DESIGNATED AREA SOUTH OF CORPORATE HANGAR PARKING LOT. CONTRACTOR SHALL TAKE CARE NOT TO MAR EXISTING PAVEMENTS AND TO CONTINUALLY SWEEP ACTIVE PAVEMENTS. AIRCRAFT FROM THE CORPORATE HANGAR AND ATTACHED T-HANGAR SHALL BE PROVIDED ACCESS AT ALL TIMES AND SHALL HAVE THE RIGHT OF WAY WHEN NEEDED.

PHASE 2: SEAL COAT AND CRACK FILL RAMP; APPLY PAVEMENT MARKINGS FOR ENTIRE PROJECT. ONCE THE PHASE 1 WORK IS COMPLETE, THE RAMP IS CLEARED AND THE CORPORATE HANGAR AND T-HANGAR PAVEMENTS HAVE BEEN THOROUGHLY CLEANED, PLACE BARRICADES ON THE SOUTH END OF TAXIWAY C AND THE SE END OF THE ACCESS TAXIWAY OFF OF TAXIWAY A. ENTER THROUGH THE ACCESS GATE ON THE EAST SIDE OF THE TERMINAL BUILDING. WORKERS MAY PARK IN TERMINAL PARKING LOT.

BARRICADES AND TRAFFIC CONES

IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PLACE AND MAINTAIN BARRICADES AND TRAFFIC CONES AS DIRECTED BY THE AIRPORT MANAGER. THE BARRICADES WILL BE EQUIPPED WITH RED FLASHING OR RED STEADY-BURN LIGHTS AND 20" SQUARE ORANGE FLAGS. THE BARRICADES, THEIR MAINTENANCE, PLACEMENT AND REMOVAL WILL BE CONSIDERED AS AN INCIDENTAL ITEM TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

NOTE:

THE ERECTION OF BARRICADES MAY BE WAIVED FOR CERTAIN PHASES AT THE DISCRETION OF THE AIRPORT MANAGER FOR OPERATIONS OF SHORT DURATION. IN NO CASE WILL OPEN HOLES BE ALLOWED TO REMAIN UNATTENDED WITHOUT ADEQUATE TRAFFIC CONTROL.

REHABILITATE T-HANGAR TAXIWAY

IDA No: AJG-4249

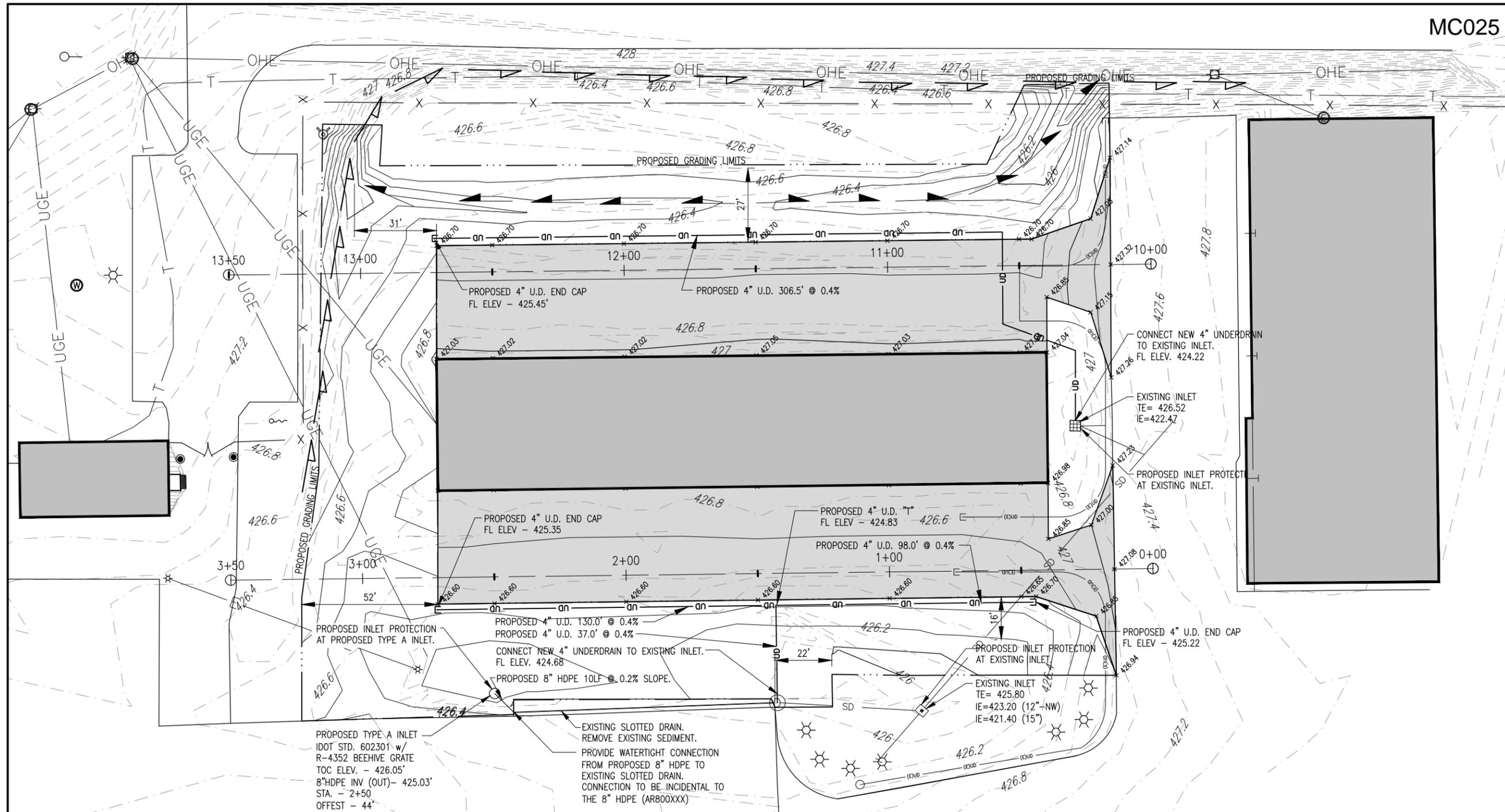
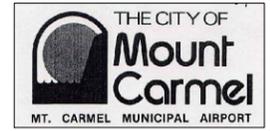
Contract No. MC025

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

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PROJECT NO: 11A0124D
CAD FILE: C-102-SEQ.DWG
DESIGNED BY: JSL 1/12/2015
DRAWN BY: CWS 1/13/2015
REVIEWED BY: JSL 2/19/2015

SHEET TITLE

CONSTRUCTION SEQUENCING PLAN



UNDERDRAIN NOTES

THE CONTRACTOR SHALL INSTALL THE PROPOSED 4" P.E. TUBING UNDERDRAINS TO THE DEPTH AND GRADES SHOWN ON THIS SHEET. THE UNDERDRAINS SHALL BE INSTALLED AFTER THE AGGREGATE BASE COURSE HAS BEEN COMPLETED.

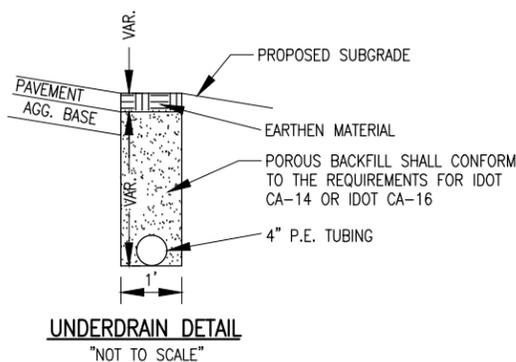
THE 4" P.E. TUBING SHALL BE CAPPED AT THE ENDS WHICH DO NOT CONNECT INTO STRUCTURES.

THE TRENCH SHALL BE BACKFILLED AND COMPACTED WITH POROUS BACKFILL CA-14 OR CA-16 MATERIAL. THE TRENCH LOCATED IN THE PROPOSED PAVEMENT AREAS WILL BE BACKFILLED AS SHOWN IN THE DETAIL ON THIS SHEET. THE TRENCH LOCATED IN TURF AREAS SHALL BE BACKFILLED UP TO WITHIN 6 IN. OF THE EXISTING GROUND ELEVATION. THE REMAINING 6 IN. ± OF TRENCH WILL BE BACKFILLED AND COMPACTED WITH EARTH MATERIAL.

THE POROUS BACKFILL SHALL CONFORM TO THE REQUIREMENTS FOR IDOT CA-14 OF IDOT CA-16 AND IS INCIDENTAL TO THE 4" PERFORATED UNDERDRAIN ITEM AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

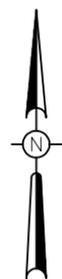
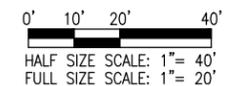
THE CONNECTION TO THE EXISTING DRAINAGE SYSTEM WILL BE CONSIDERED INCIDENTAL TO THE 4" PERFORATED UNDERDRAIN ITEM AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

THE PROPOSED UNDERDRAINS AND BACKFILL MATERIAL WILL BE PAID FOR UNDER THE FOLLOWING ITEMS:
AR705504 "4" PERFORATED UNDERDRAIN -PER L.F.



LEGEND

- EXISTING IMPROVEMENTS
- EXISTING BUILDINGS
- PROPOSED BITUMINOUS PAVEMENT
- EXISTING FLOWLINE
- PROPOSED FLOWLINE
- 500.00 PROPOSED SPOT ELEVATION
- EXISTING CONTOURS
- PROPOSED CONTOURS
- (E)UD — EXISTING UNDERDRAIN
- PROPOSED 4" UNDERDRAIN



REHABILITATE T-HANGAR TAXIWAY

IDA No: AJG-4249

Contract No. MC025

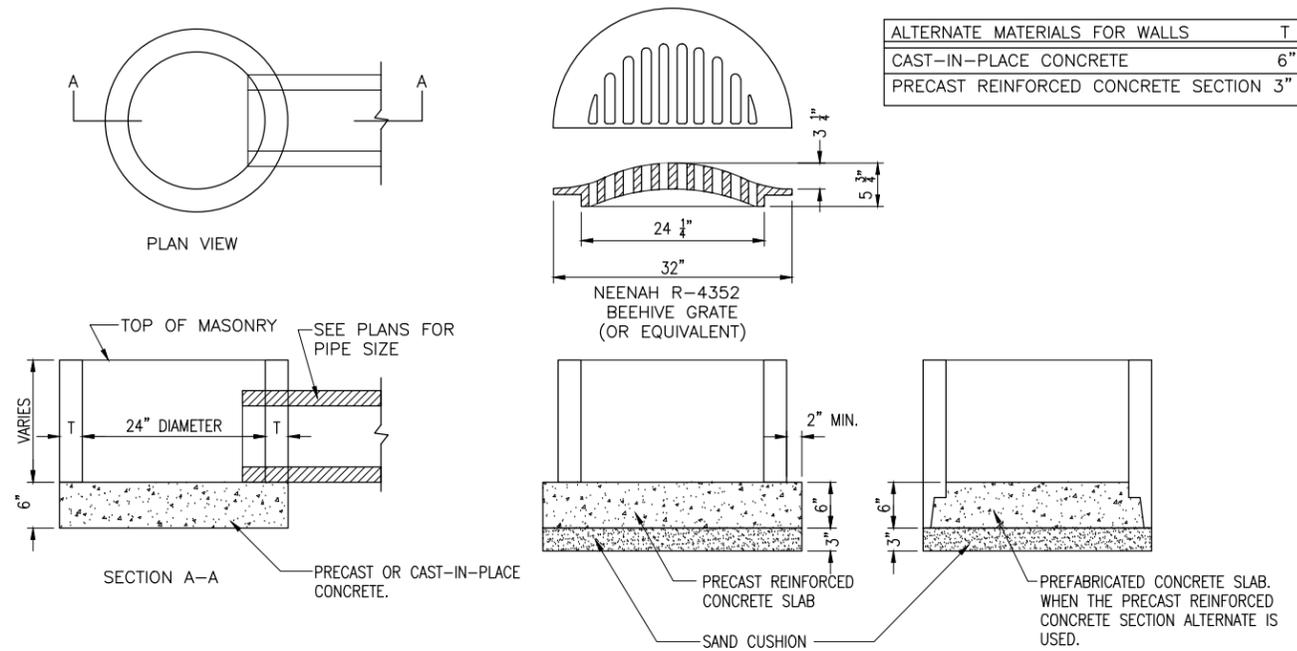
NO.	DATE	DESCRIPTION		
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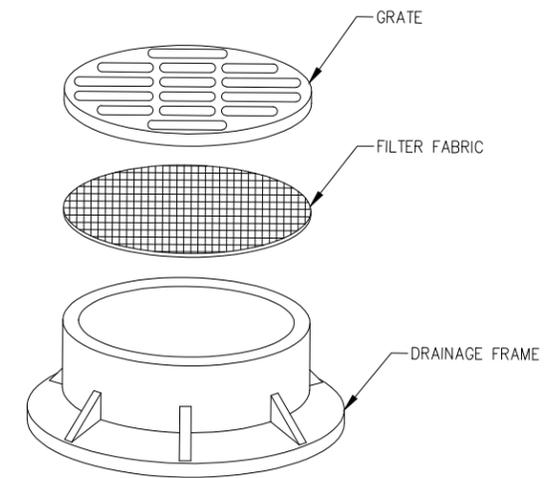
SHEET TITLE

PROPOSED GRADING & DRAINAGE PLAN

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TYPE "A" INLET
NOT TO SCALE



INLET PROTECTION – DRAINAGE STRUCTURE FILTER WRAP

NOTES:

1. FILTER WRAP TO BE PLACED IN ALL INLETS AS SHOWN.
2. FABRIC SHALL BE IN CONFORMANCE WITH MATERIALS SPECIFIED FOR SILT FENCE.
3. FABRIC SHALL OVERLAY FRAME BY 2 INCHES (MINIMUM).
4. CONTRACTOR SHALL CLEAR DEBRIS AND SILT AS REQUIRED FROM FABRIC TO MAINTAIN DRAINAGE THROUGH THE STRUCTURE.
5. FABRIC SHALL REMAIN IN PLACE UNTIL TURFED AREAS HAVE DEVELOPED A MINIMUM OF 80% OF COVERAGE.
6. COST OF FILTER WRAP SHALL BE INCIDENTAL TO INLET PROTECTION.

REHABILITATE T-HANGAR TAXIWAY

IDA No: AJG-4249

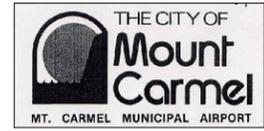
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NO.	DATE	DESCRIPTION		
		DES	DWN	REV

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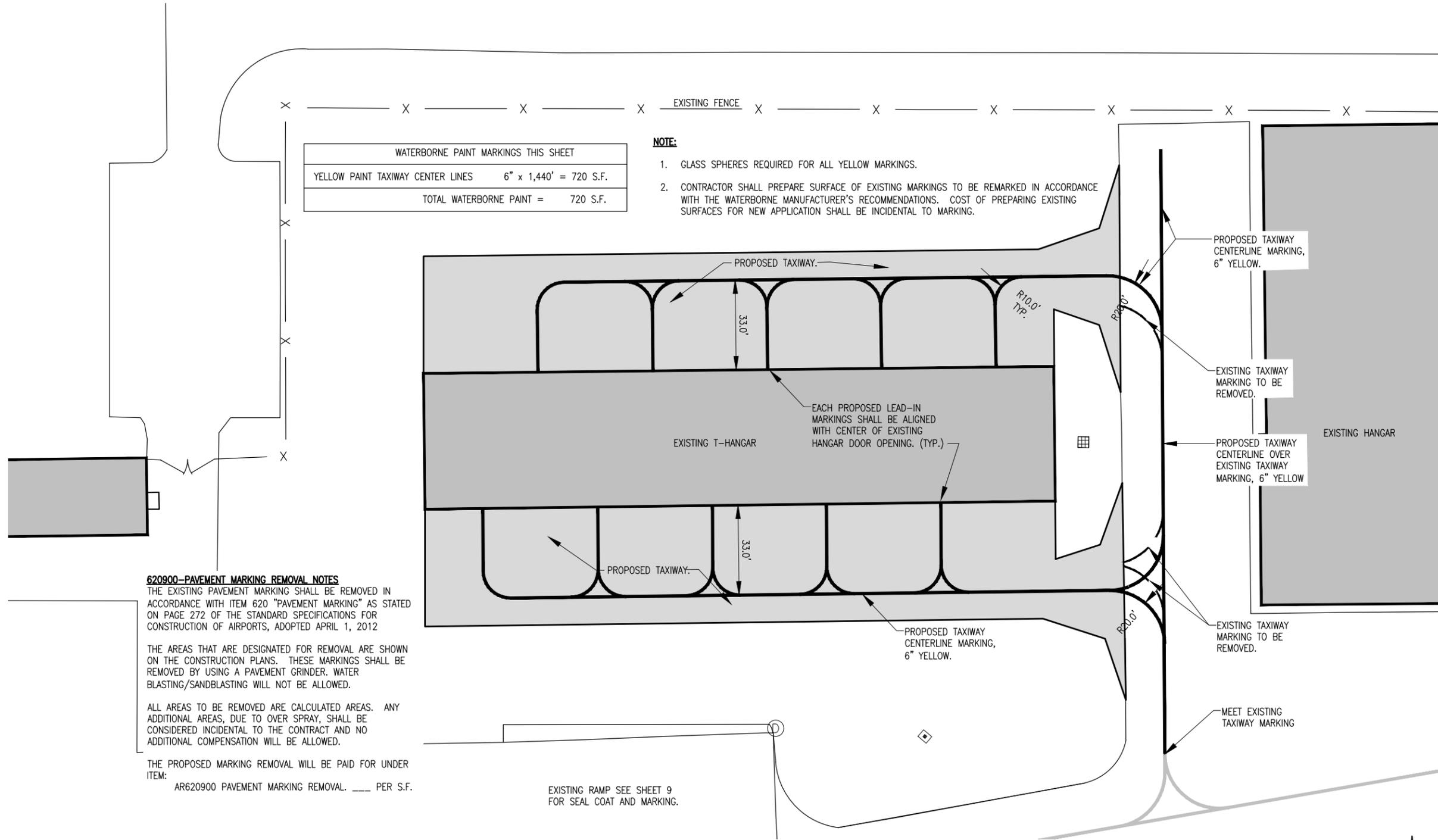
**DRAINAGE
DETAILS**



WATERBORNE PAINT MARKINGS THIS SHEET	
YELLOW PAINT TAXIWAY CENTER LINES	6" x 1,440' = 720 S.F.
TOTAL WATERBORNE PAINT =	720 S.F.

NOTE:

1. GLASS SPHERES REQUIRED FOR ALL YELLOW MARKINGS.
2. CONTRACTOR SHALL PREPARE SURFACE OF EXISTING MARKINGS TO BE REMARKED IN ACCORDANCE WITH THE WATERBORNE MANUFACTURER'S RECOMMENDATIONS. COST OF PREPARING EXISTING SURFACES FOR NEW APPLICATION SHALL BE INCIDENTAL TO MARKING.



620900-PAVEMENT MARKING REMOVAL NOTES

THE EXISTING PAVEMENT MARKING SHALL BE REMOVED IN ACCORDANCE WITH ITEM 620 "PAVEMENT MARKING" AS STATED ON PAGE 272 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF AIRPORTS, ADOPTED APRIL 1, 2012

THE AREAS THAT ARE DESIGNATED FOR REMOVAL ARE SHOWN ON THE CONSTRUCTION PLANS. THESE MARKINGS SHALL BE REMOVED BY USING A PAVEMENT GRINDER. WATER BLASTING/SANDBLASTING WILL NOT BE ALLOWED.

ALL AREAS TO BE REMOVED ARE CALCULATED AREAS. ANY ADDITIONAL AREAS, DUE TO OVER SPRAY, SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

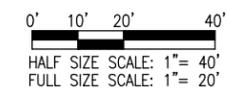
THE PROPOSED MARKING REMOVAL WILL BE PAID FOR UNDER ITEM:

AR620900 PAVEMENT MARKING REMOVAL. ____ PER S.F.

EXISTING RAMP SEE SHEET 9 FOR SEAL COAT AND MARKING.

LEGEND

- EXISTING IMPROVEMENTS
- EXISTING BUILDINGS
- EXISTING PAVEMENT MARKINGS TO BE REMOVED
- EXISTING PAVEMENT MARKINGS
- PROPOSED BITUMINOUS PAVEMENT
- PROPOSED PAVEMENT MARKINGS



REHABILITATE T-HANGAR TAXIWAY

IDA No: AJG-4249

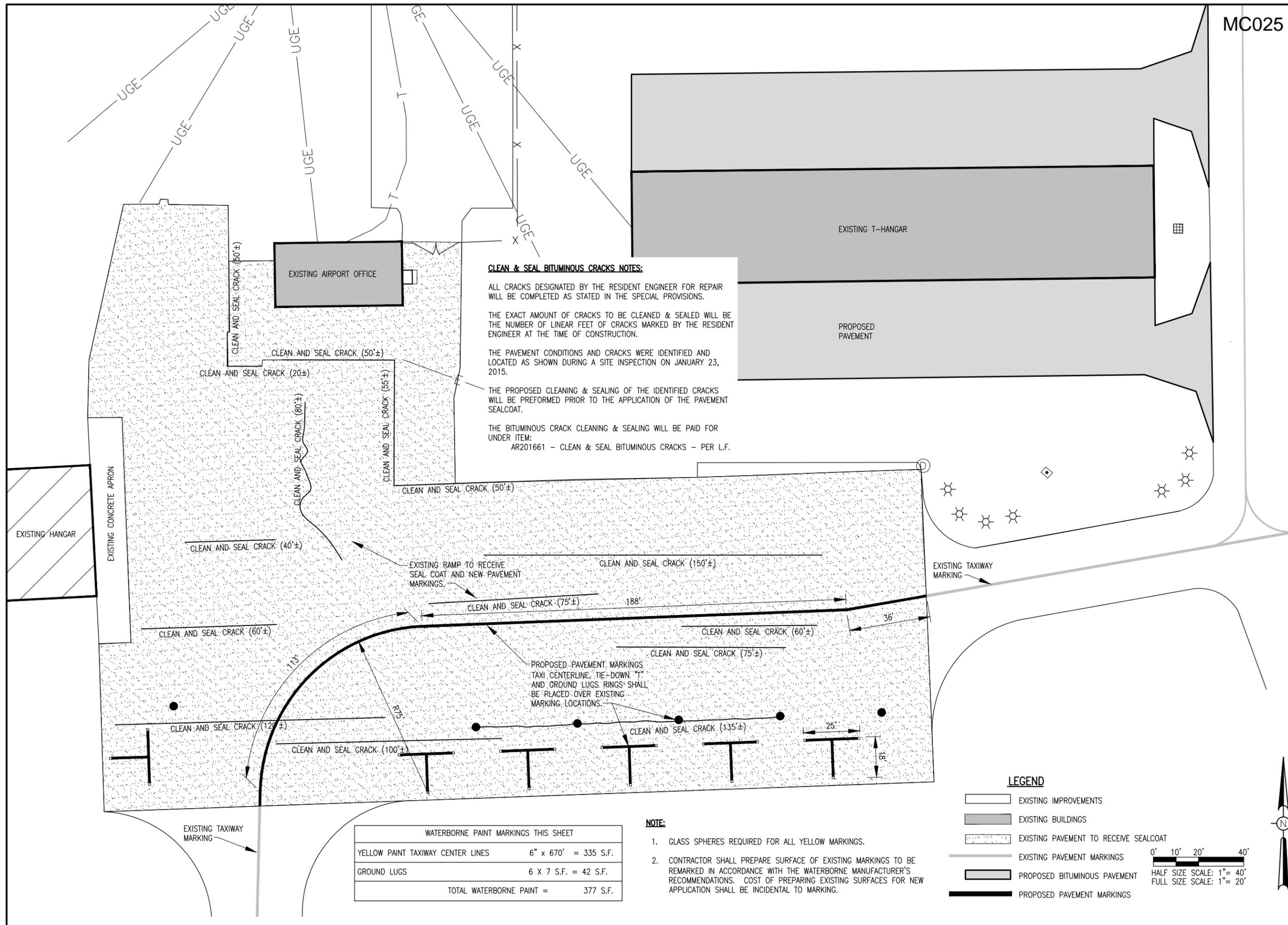
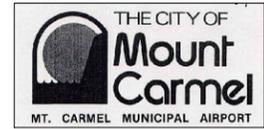
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DRAWN BY: CWS 1/16/2015
REVIEWED BY: JSL 2/19/2015

SHEET TITLE

PROPOSED MARKING PLAN



CLEAN & SEAL BITUMINOUS CRACKS NOTES:

ALL CRACKS DESIGNATED BY THE RESIDENT ENGINEER FOR REPAIR WILL BE COMPLETED AS STATED IN THE SPECIAL PROVISIONS.

THE EXACT AMOUNT OF CRACKS TO BE CLEANED & SEALED WILL BE THE NUMBER OF LINEAR FEET OF CRACKS MARKED BY THE RESIDENT ENGINEER AT THE TIME OF CONSTRUCTION.

THE PAVEMENT CONDITIONS AND CRACKS WERE IDENTIFIED AND LOCATED AS SHOWN DURING A SITE INSPECTION ON JANUARY 23, 2015.

THE PROPOSED CLEANING & SEALING OF THE IDENTIFIED CRACKS WILL BE PERFORMED PRIOR TO THE APPLICATION OF THE PAVEMENT SEALCOAT.

THE BITUMINOUS CRACK CLEANING & SEALING WILL BE PAID FOR UNDER ITEM:
AR201661 - CLEAN & SEAL BITUMINOUS CRACKS - PER L.F.

PROPOSED PAVEMENT MARKINGS TAXI CENTERLINE, TIE-DOWN "T" AND GROUND LUGS RINGS SHALL BE PLACED OVER EXISTING MARKING LOCATIONS.

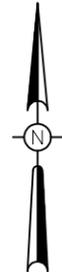
WATERBORNE PAINT MARKINGS THIS SHEET		
YELLOW PAINT TAXIWAY CENTER LINES	6" x 670' =	335 S.F.
GROUND LUGS	6 X 7 S.F. =	42 S.F.
TOTAL WATERBORNE PAINT =		377 S.F.

- NOTE:**
- GLASS SPHERES REQUIRED FOR ALL YELLOW MARKINGS.
 - CONTRACTOR SHALL PREPARE SURFACE OF EXISTING MARKINGS TO BE REMARKED IN ACCORDANCE WITH THE WATERBORNE MANUFACTURER'S RECOMMENDATIONS. COST OF PREPARING EXISTING SURFACES FOR NEW APPLICATION SHALL BE INCIDENTAL TO MARKING.

LEGEND

- EXISTING IMPROVEMENTS
- EXISTING BUILDINGS
- EXISTING PAVEMENT TO RECEIVE SEALCOAT
- EXISTING PAVEMENT MARKINGS
- PROPOSED BITUMINOUS PAVEMENT
- PROPOSED PAVEMENT MARKINGS

0' 10' 20' 40'
 HALF SIZE SCALE: 1" = 40'
 FULL SIZE SCALE: 1" = 20'



REHABILITATE T-HANGAR TAXIWAY

IDA No: AJG-4249

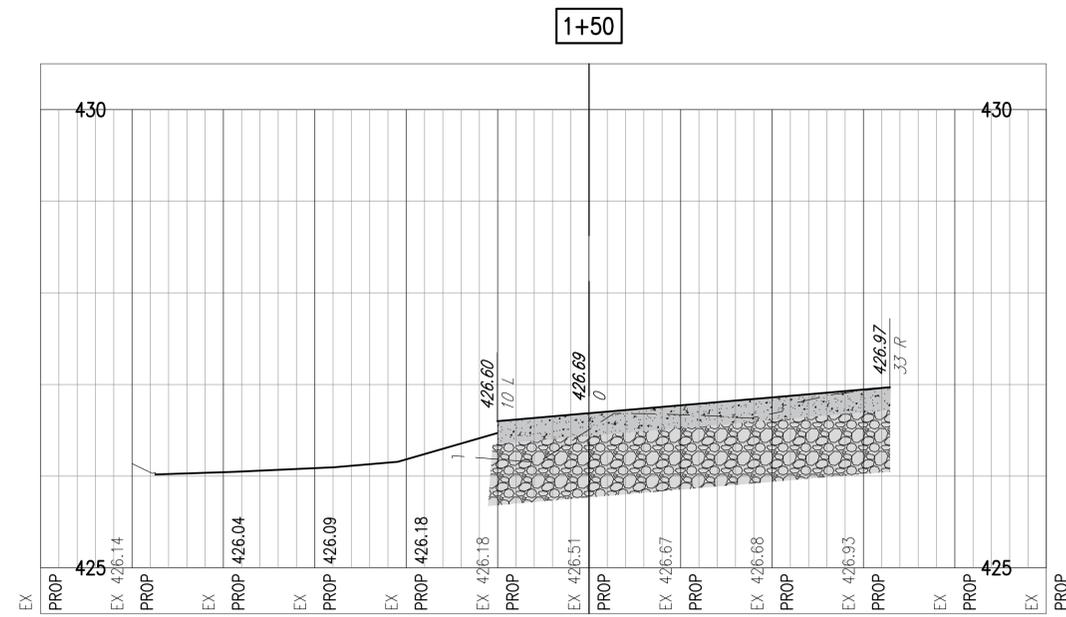
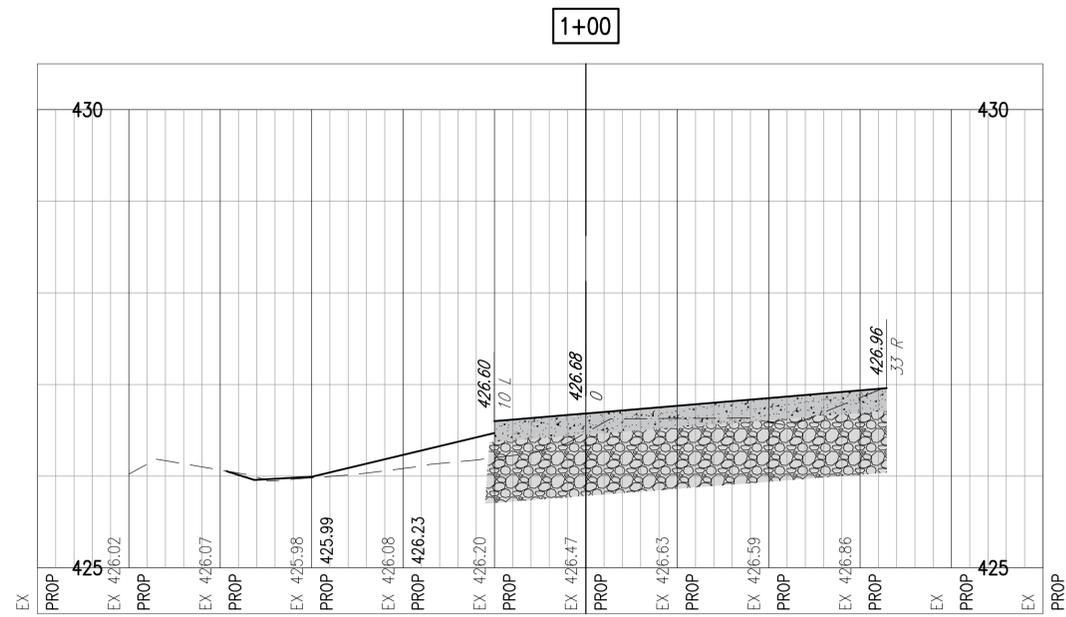
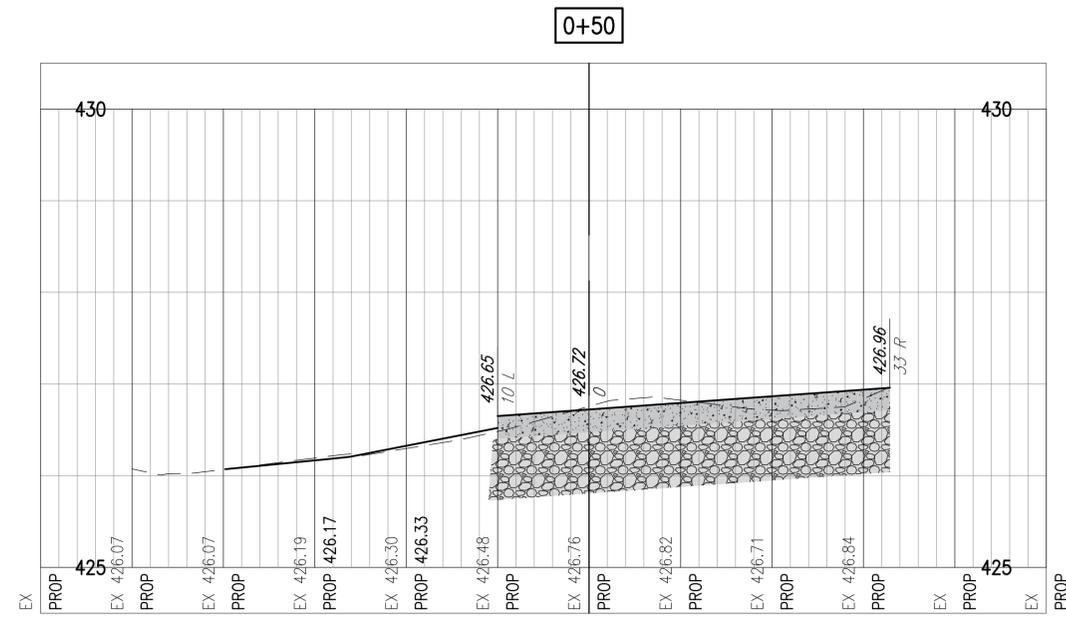
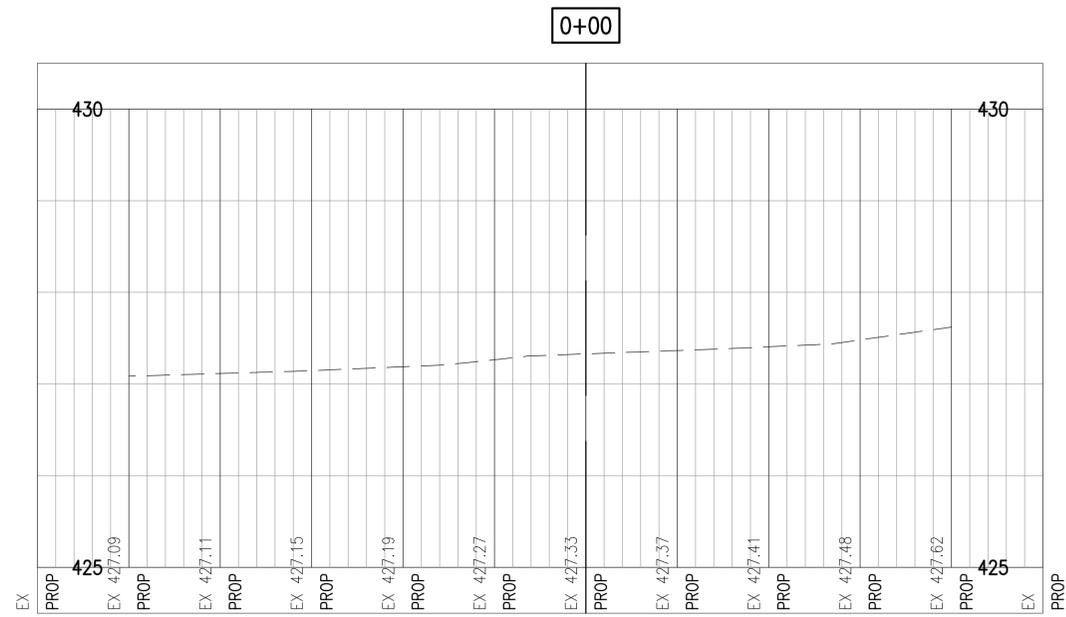
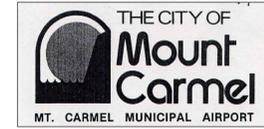
Contract No. MC025

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: APRIL 17, 2015
 PROJECT NO: 11A0124D
 CAD FILE: C-107-SLCT.DWG
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 DRAWN BY: CWS 1/16/2015
 REVIEWED BY: JSL 2/19/2015

SHEET TITLE

PROPOSED SEALCOATING EXISTING RAMP



REHABILITATE
T-HANGAR TAXIWAY

IDA No: AJG-4249

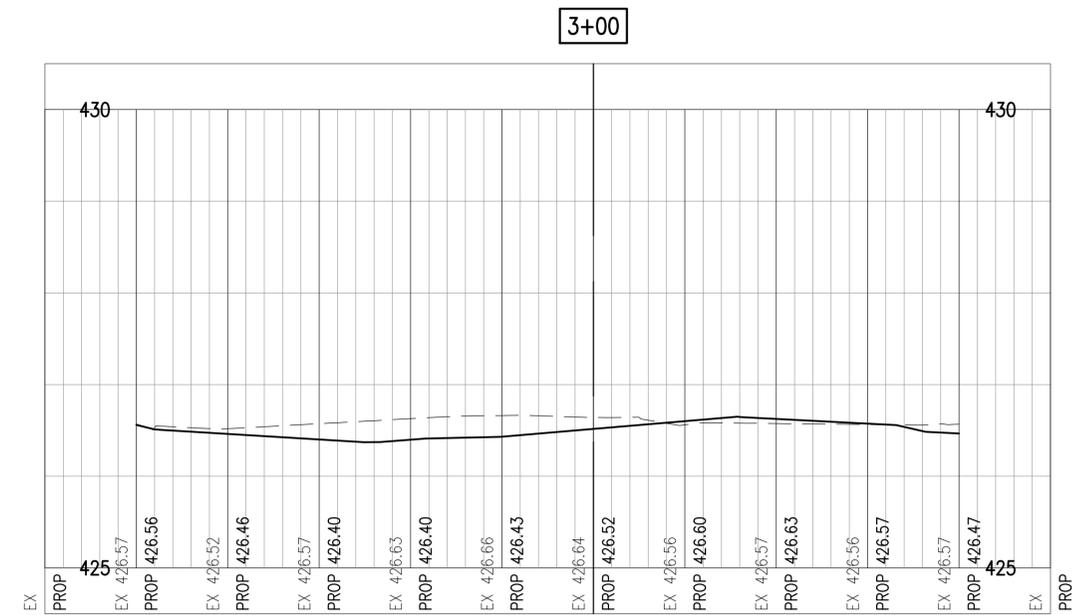
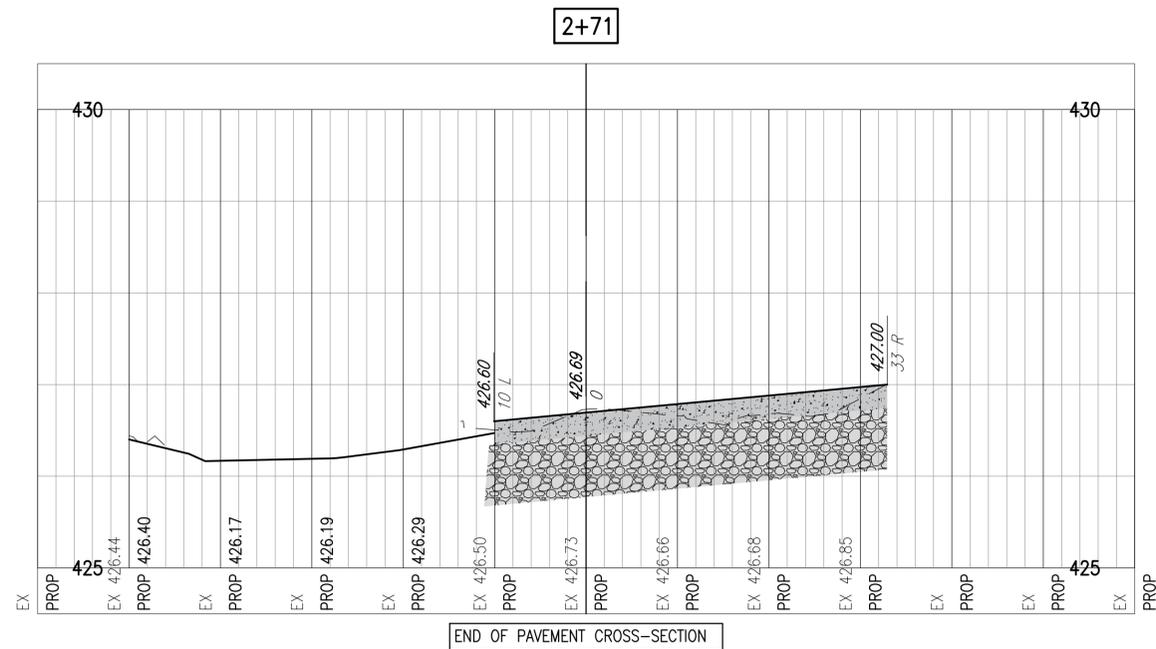
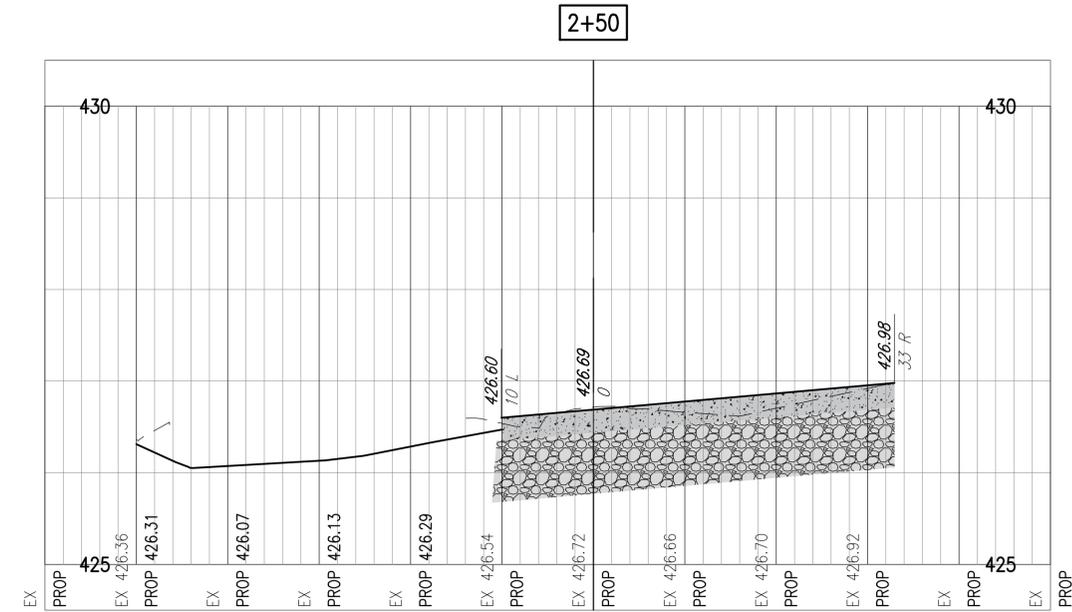
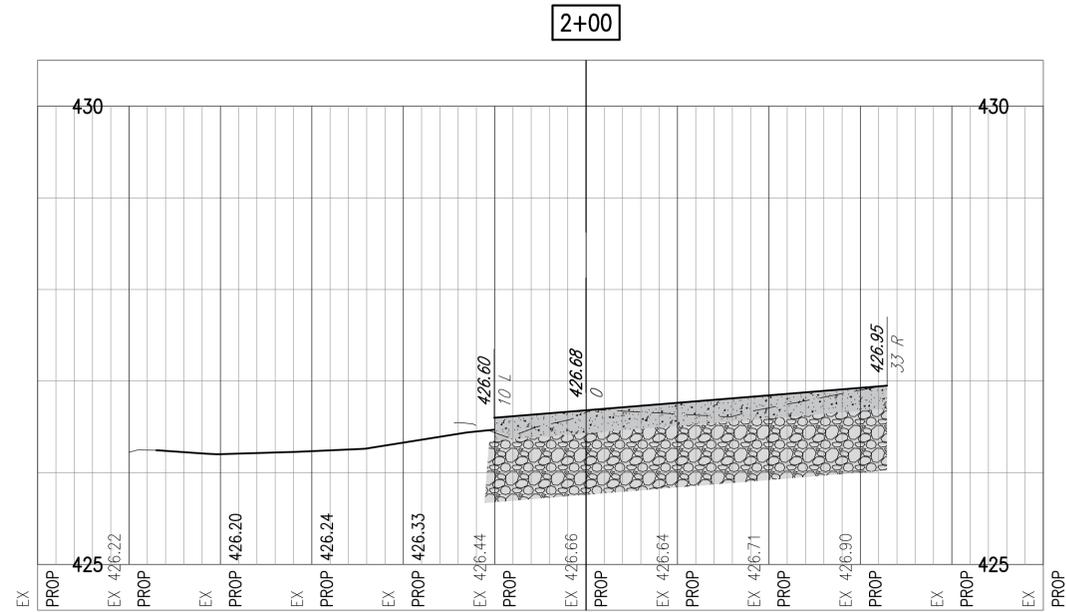
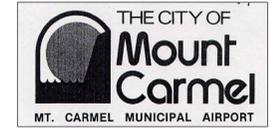
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NO.	DATE	DESCRIPTION		
		DES	DWN	REV

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PROJECT NO: 11A0124D
CAD FILE: C-301-XS.DWG
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DRAWN BY: BCT 01/20/2015
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SHEET TITLE

PROPOSED
CROSS-SECTIONS
FOR STA. 0+00-1+50



REHABILITATE
T-HANGAR TAXIWAY

IDA No: AJG-4249

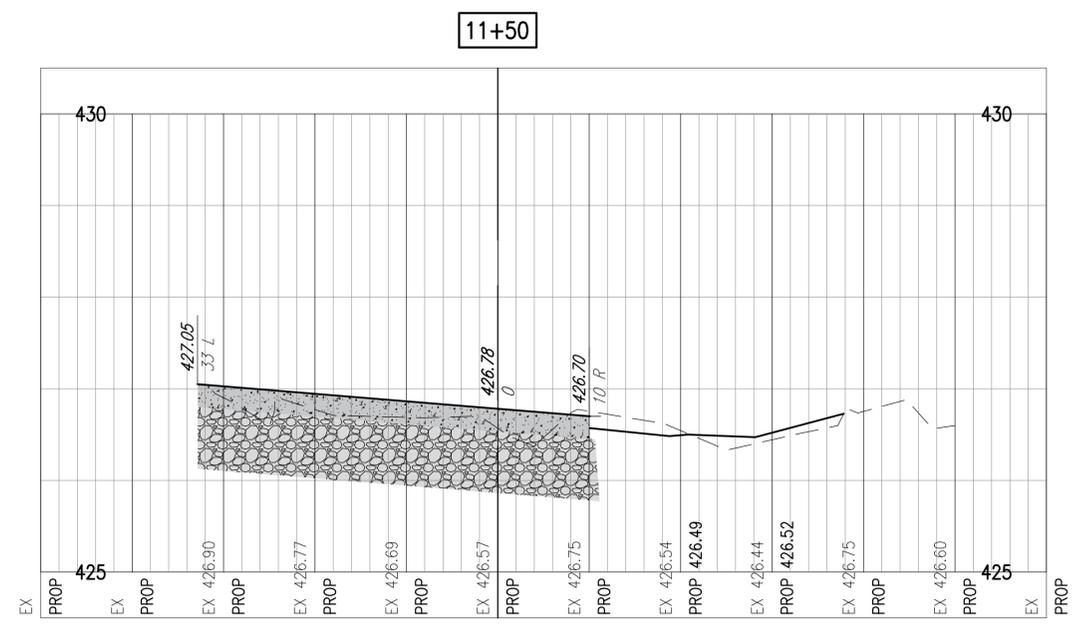
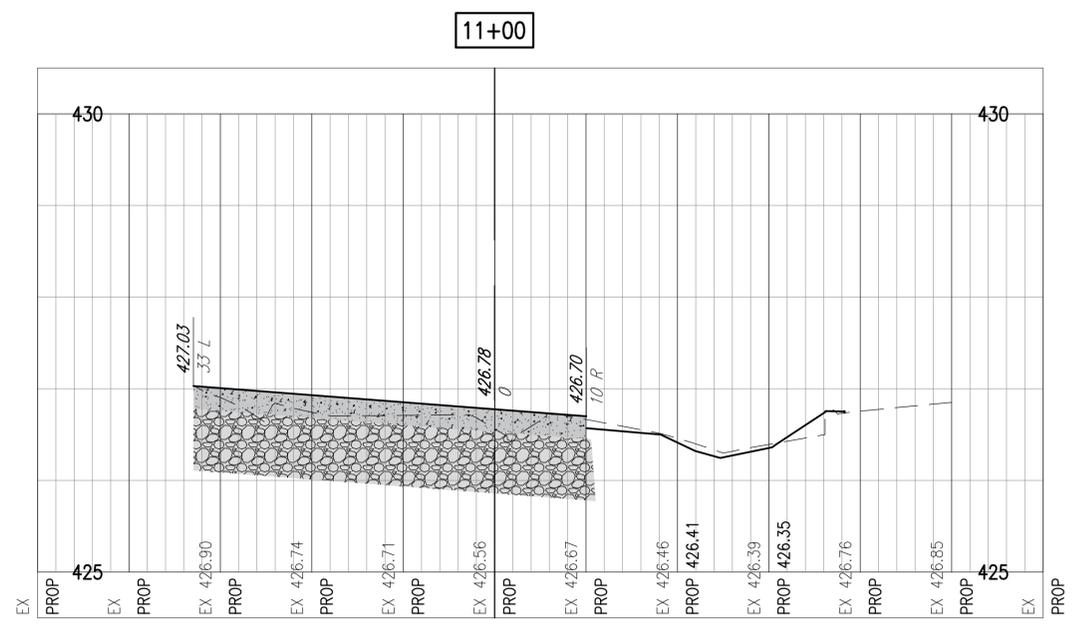
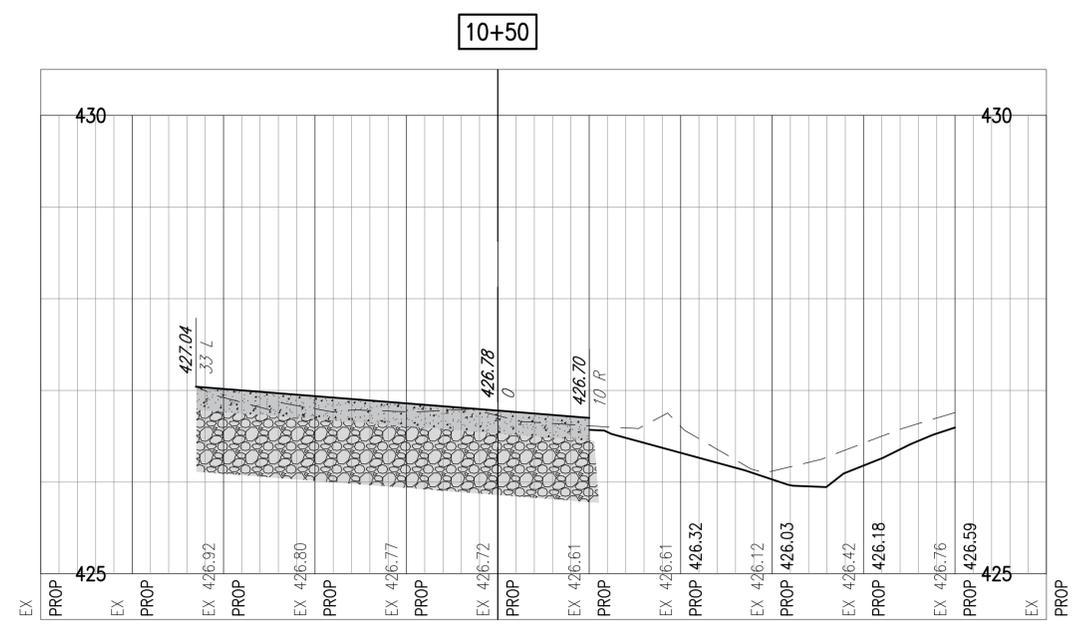
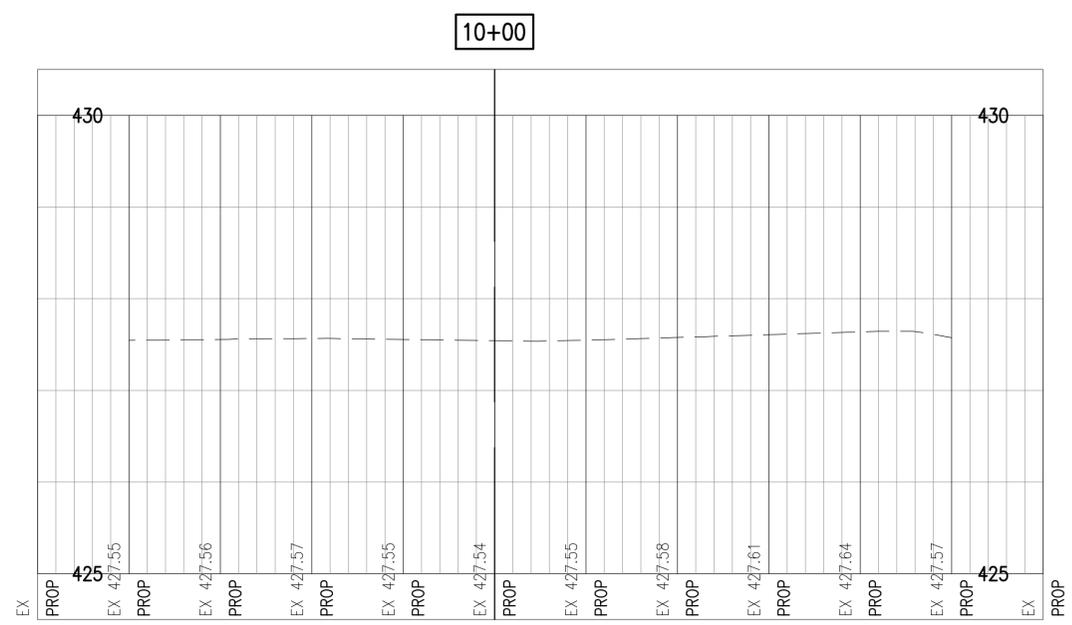
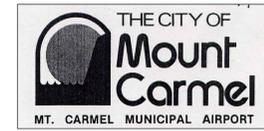
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SHEET TITLE

PROPOSED
CROSS-SECTIONS
FOR STA. 2+00-3+00



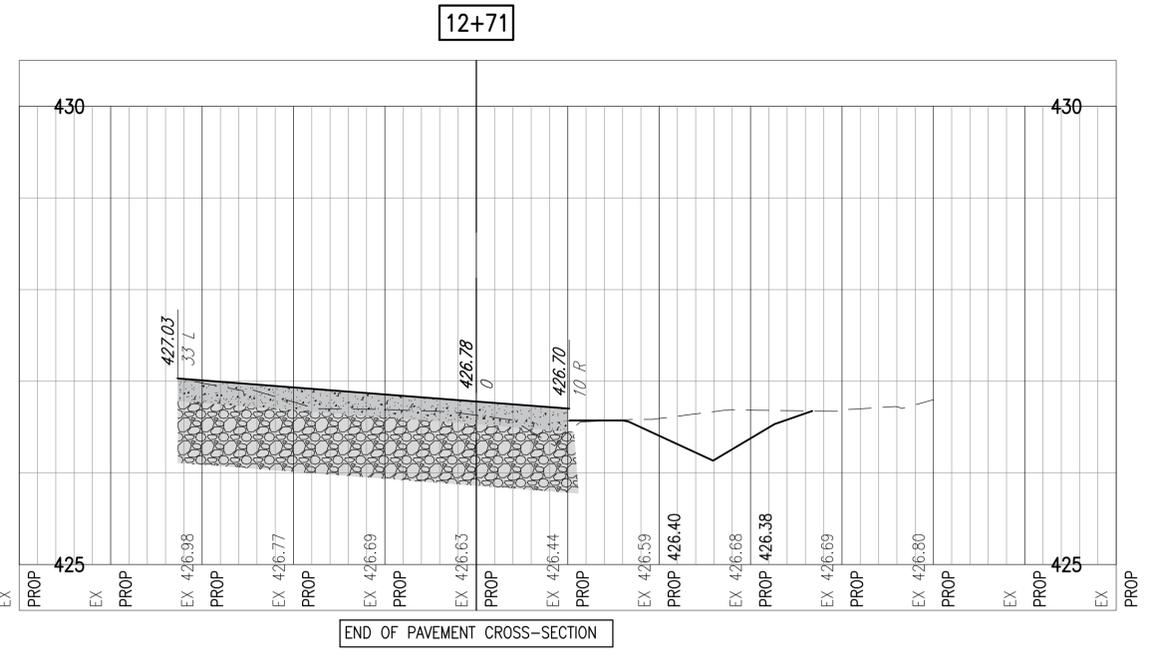
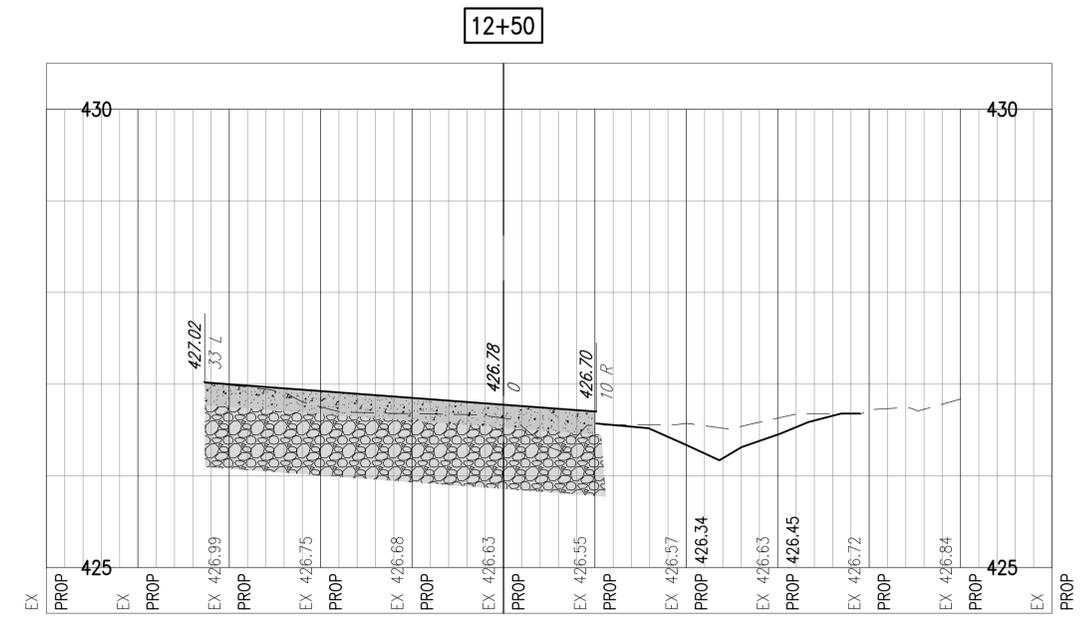
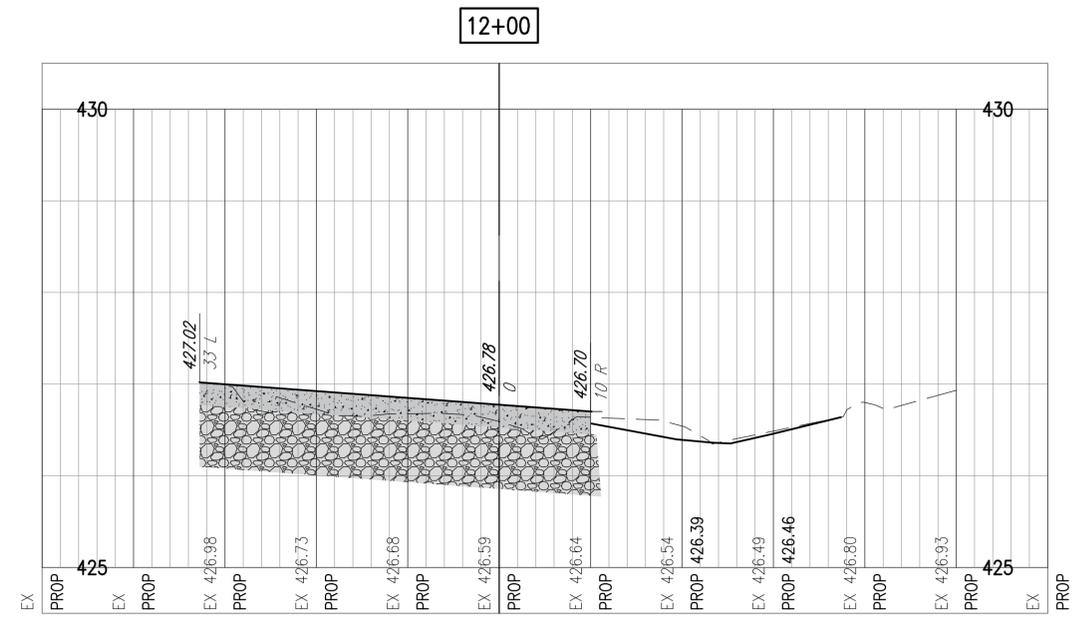
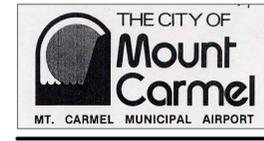
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T-HANGAR TAXIWAY

IDA No: AJG-4249
Contract No. MC025

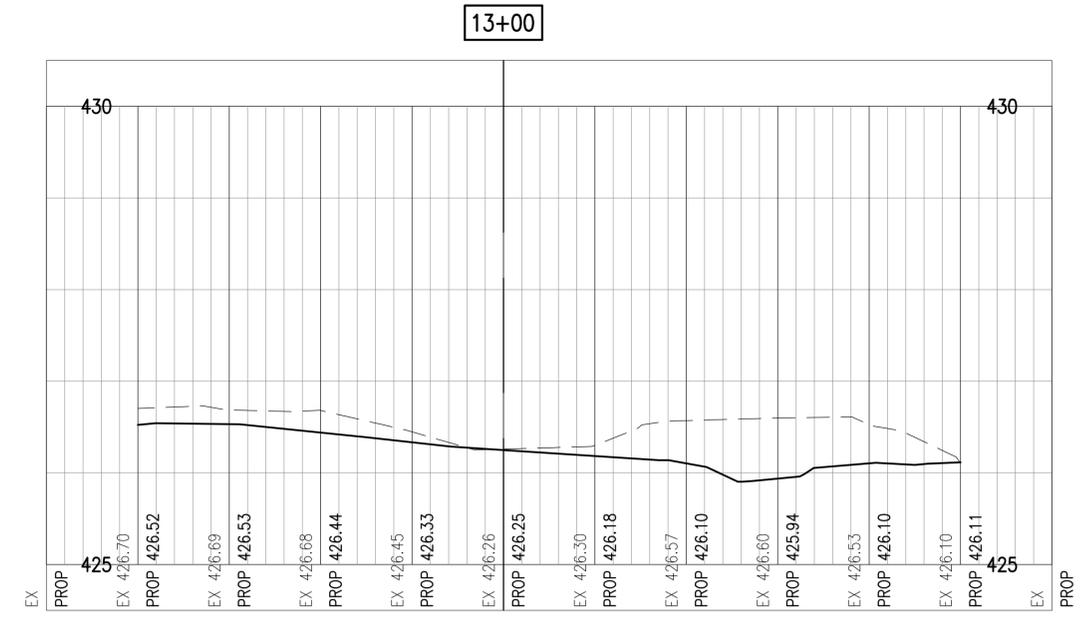
NO.	DATE	DESCRIPTION		
		DES	DWN	REV

SHEET TITLE

PROPOSED
CROSS-SECTIONS
FOR STA.
10+00-11+50



END OF PAVEMENT CROSS-SECTION



REHABILITATE
T-HANGAR TAXIWAY

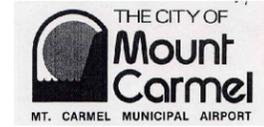
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CROSS-SECTIONS
FOR STA.
12+00-13+00



REHABILITATE
T-HANGAR TAXIWAY

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DRAWN BY: CWS 2/11/2015

REVIEWED BY: JSL 2/19/2015

SHEET TITLE

ELECTRICAL LEGEND
AND ABBREVIATIONS

ELECTRICAL LEGEND – ONE-LINE DIAGRAM	
	CABLE TERMINATOR/LUG
	TRANSFORMER
	DISCONNECT SWITCH
	FUSIBLE DISCONNECT SWITCH
	HP RATED MANUAL SWITCH
	CIRCUIT BREAKER
	THERMAL MAGNETIC CIRCUIT BREAKER
	MAGNETIC MOTOR STARTER WITH THERMAL MAGNETIC CIRCUIT BREAKER AND CONTROL TRANSFORMER *1"-NUMBER INDICATES NEMA SIZE *F"-INDICATES FULL VOLTAGE *RV"-INDICATES REDUCED VOLTAGE AUTOTRANSFORMER *VSD"-INDICATES VARIABLE SPEED DRIVE *2S"-INDICATES TWO SPEED
	FUSE
	FUSE
	TRANSIENT VOLTAGE SURGE SUPPRESSOR OR SURGE PROTECTOR DEVICE
	GROUND – GROUND ROD, GROUNDING ELECTRODE, OR AT EARTH POTENTIAL
	INDICATING LIGHT
	MOTOR
	LOAD, MOTOR, # = HORSEPOWER
	ELECTRIC UTILITY METER BASE
	JUNCTION BOX WITH SPLICE
	EQUIPMENT, XXX = DEVICE DESCRIPTION
	GROUND BUS OR TERMINAL
	NEUTRAL BUS
	PANELBOARD WITH MAIN LUGS
	PANELBOARD WITH MAIN BREAKER
	FUSE PANEL WITH MAIN FUSE PULLOUT
	DUPLEX RECEPTACLE 120V SINGLE PHASE GROUNDING TYPE
	CONTROL STATION
	TRANSFER SWITCH
	ENGINE GENERATOR SET

ELECTRICAL LEGEND – SCHEMATIC	
	NORMALLY OPEN (N.O.) CONTACT
	NORMALLY CLOSED (N.C.) CONTACT
	STARTER COIL, * = STARTER NUMBER
	OVERLOAD RELAY CONTACT
	CONTROL RELAY, * = CONTROL RELAY NUMBER
	RELAY, * = RELAY NUMBER
	TOGGLE SWITCH / 2 POSITION SWITCH
	2-POSITION SELECTOR SWITCH
	3-POSITION SELECTOR SWITCH (H-O-A SHOWN)
	2 POLE DISCONNECT SWITCH
	3 POLE DISCONNECT SWITCH
	PHOTOCELL
	TERMINAL BLOCK, * = TERMINAL NUMBER
	DEVICE TERMINAL, * = DEVICE TERMINAL NUMBER
	INTERNAL PANEL WIRING
	FIELD WIRING
	FUSE
	GROUND BUS OR TERMINAL
	NEUTRAL BUS
	GROUND, GROUND ROD, GROUND BUS
	INDUSTRIAL CONTROL RELAY OR LIGHTING CONTACTOR
	N.O. THERMAL SWITCH
	N.C. THERMAL SWITCH

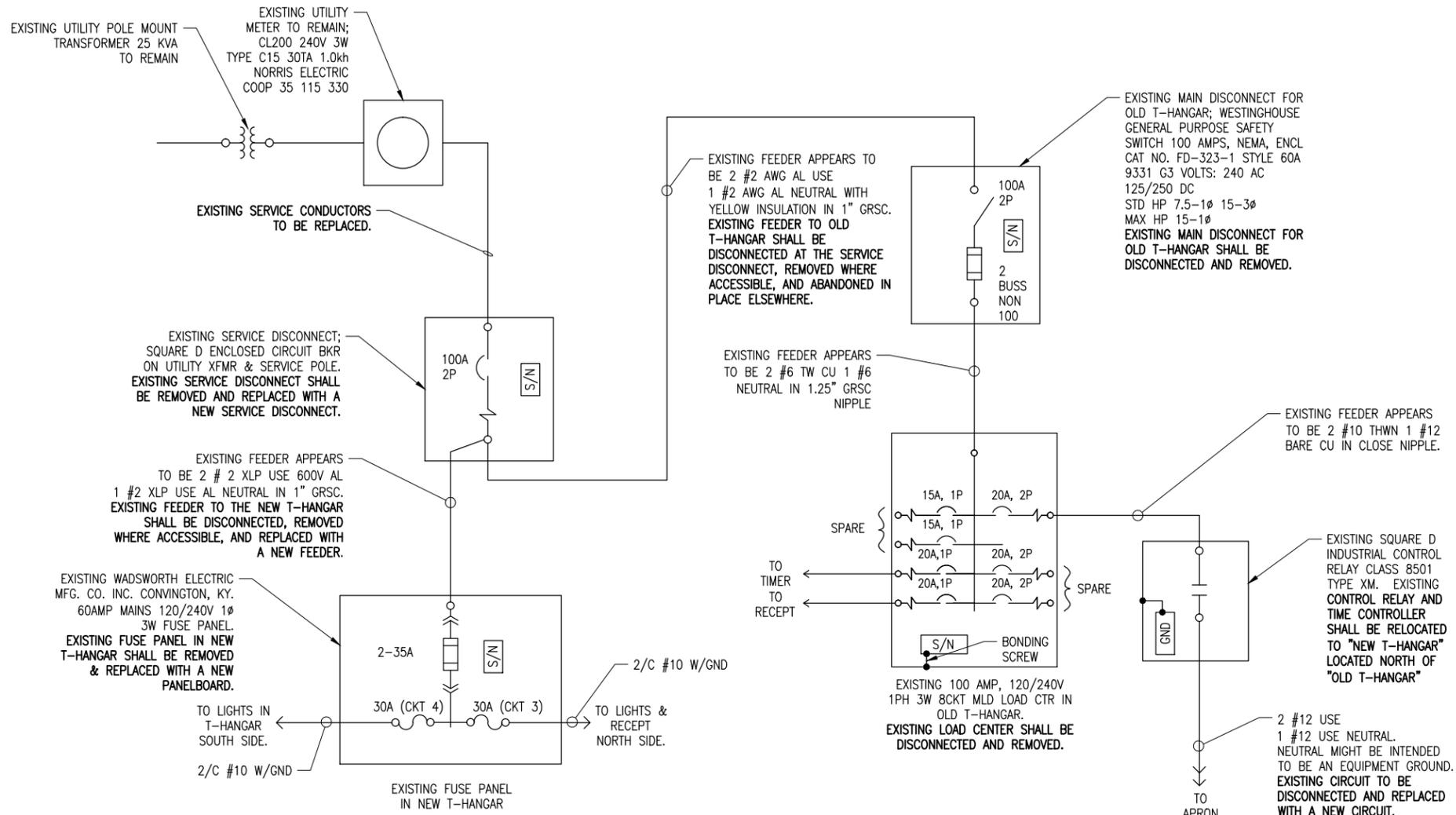
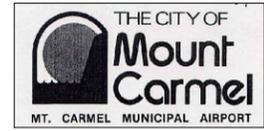
ELECTRICAL ABBREVIATIONS	
A.F.F.	ABOVE FINISHED FLOOR
A, AMP	AMPERES
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CR	CONTROL RELAY
CU	COPPER
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
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	LOAD CENTER
LTFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT (UL LISTED)
LTG	LIGHTING
LP	LIGHTING PANEL
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCM	THOUSAND CIRCUAR 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	NORMALLY OPEN
NTS	NOT TO SCALE
OHE	OVERHEAD ELECTRIC
OL	OVERLOAD

ELECTRICAL ABBREVIATIONS (CONTINUED)	
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
V	VOLTS
W/	WITH
W/O	WITHOUT
WP	WEATHER PROOF
XFER	TRANSFER
XFMR	TRANSFORMER

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, ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- CONTRACTOR SHALL COORDINATE WORK, ANY POWER OUTAGES AND/OR SHUT DOWN OF EXISTING SYSTEMS WITH THE RESPECTIVE FACILITY OWNER PERSONNEL AND THE AIRPORT 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 AND 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).
- PER NEC 513 THE ENTIRE AREA OF THE HANGAR INCLUDING ANY ADJACENT AND COMMUNICATING AREAS NOT SUITABLY CUT OFF FROM THE HANGAR, SHALL BE CLASSIFIED AS A CLASS I, DIVISION 2 HAZARDOUS LOCATION UP TO A LEVEL 18 INCHES ABOVE THE FLOOR. PER NEC 513.3(C) "VICINITY OF AIRCRAFT", THE AREA WITHIN 5 FT. HORIZONTALLY FROM AIRCRAFT POWER PLANTS OR AIRCRAFT FUEL TANKS SHALL BE CLASSIFIED AS A CLASS I, DIVISION 2 LOCATION THAT SHALL EXTEND UPWARD FROM THE FLOOR TO A LEVEL 5 FT. ABOVE THE UPPER SURFACE OF WINGS AND OF ENGINE ENCLOSURES. ALL ELECTRICAL INSTALLATIONS IN CLASSIFIED HAZARDOUS LOCATIONS SHALL BE AVOIDED UNLESS SPECIFICALLY APPROVED FOR SUCH LOCATIONS AND INSTALLED IN CONFORMANCE WITH NEC 500, 501, AND 513 AS WELL AS OTHER APPLICABLE CODES AND REQUIREMENTS.
- COORDINATE ELECTRICAL WORK WITH DEMOLITION WORK, BUILDING LAYOUT, CONCRETE WORK, PAVING WORK, SITE WORK AND ALL OTHER TRADES.
- 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



EXISTING ELECTRICAL ONE-LINE
DIAGRAM FOR T-HANGARS.

NOTES:

- EXISTING ONE-LINE DIAGRAM WIRING IS BASED ON FIELD DATA AND INFORMATION PROVIDED BY OTHERS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND WIRING AND REPORT ANY VARIATIONS TO THE RESIDENT ENGINEER/RESIDENT PROJECT REPRESENTATIVE.
- CAUTION: SOME OF THE ELECTRICAL EQUIPMENT ENCLOSURES WERE OBSERVED TO CONTAIN WASP NESTS. USE CAUTION WHEN WORKING ON ELECTRICAL EQUIPMENT.
- REFERENCES TO THE "NEW T-HANGAR" ARE FOR THE NORTH T-HANGAR THAT WAS CONSTRUCTED IN THE LATE 1970'S TO EARLY 1980'S TIME FRAME. REFERENCES TO THE "OLD T-HANGAR" ARE FOR THE SOUTH T-HANGAR THAT WAS ESTIMATED TO HAVE BEEN CONSTRUCTED IN THE 1950'S.
- NOTE THE NEW T-HANGAR AND THE OLD T-HANGAR HAVE APPARENT (NATIONAL ELECTRIC CODE) VIOLATIONS WHICH MIGHT CAUSE UNSAFE WORKING CONDITIONS. APPARENT NEC VIOLATIONS INCLUDE, BUT NOT LIMITED TO NO GROUNDING ELECTRODE CONNECTIONS TO MAIN DISCONNECTS, EXPOSED WIRING (NOT IN CONDUIT), UNDER SIZED WIRING, INADEQUATE WORKING SPACES, EXPOSED LAMPS IN LIGHT FIXTURES, MISSING EQUIPMENT GROUNDING CONDUCTORS FOR FEEDER AND BRANCH CIRCUITS & POWER SOURCES NOT IDENTIFIED. CONTRACTOR WILL NEED TO EXERCISE CAUTION WHEN WORKING AT THESE SITES.
- ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT 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).
- CONTRACTOR SHALL EXAMINE THE SITE TO DETERMINE THE EXTENT OF THE WORK. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING, DISCONNECTING, RELOCATING, OR CONNECTING THE RESPECTIVE ELECTRICAL SYSTEM EQUIPMENT, OR OTHER DEVICE.
- CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF FAA AC NO. 150/5370-2F (OR MOST CURRENT ISSUE) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".
- CONTRACTOR SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF NFPA 70E - STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE.
- THE OLD T-HANGAR IS SCHEDULED FOR DEMOLITION. THE EXISTING FEEDER TO THE OLD T-HANGAR SHALL BE DISCONNECTED AT THE ELECTRIC SERVICE DISCONNECT, PRIOR TO REMOVAL OF ELECTRICAL EQUIPMENT AND DEMOLITION WORK. THE EXISTING APRON LIGHTING CONTROL RELAY AND TIME CLOCK SHALL BE RELOCATED FROM THE OLD T-HANGAR TO THE NEW T-HANGAR.
- ALL ELECTRICAL WORK, ELECTRICAL DEMOLITION AND REMOVAL, AND RELOCATIONS OF ELECTRICAL EQUIPMENT WILL BE PAID FOR UNDER ITEM AR109924 RELOCATE ELECTRIC SERVICES PER LUMP SUM.

**REHABILITATE
T-HANGAR TAXIWAY**

IDA No: AJG-4249

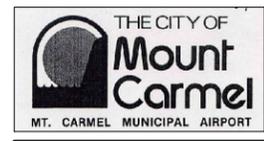
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DRAWN BY: RAD 11/25/2014
REVIEWED BY: JSL 2/19/2015

SHEET TITLE

**EXISTING
ELECTRICAL
ONE-LINE FOR
T-HANGARS**



MC025

NEW T-HANGAR PANELBOARD

CKT #	DUTY	SIZE	SIZE	DUTY	CKT #
1	AC SURGE PROTECTOR	30A 2P	100A 2P	MAIN BREAKER	2
3					4
5	T-HNGR LIGHTS & REC NORTH SIDE	30A 1P	20A 2P	APRON LIGHTS	6
7	T-HNGR LIGHTS & REC SOUTH SIDE	30A 1P			8
9	SPARE	20A 1P	15A 1P	CONTROL POWER FOR APRON LIGHTS	10
11	SPARE	20A 1P	20A 1P	GFCI RECEPT	12
13					14
15					16
17					18
19					20
21					22
23					24
25					26
27					28
29					30

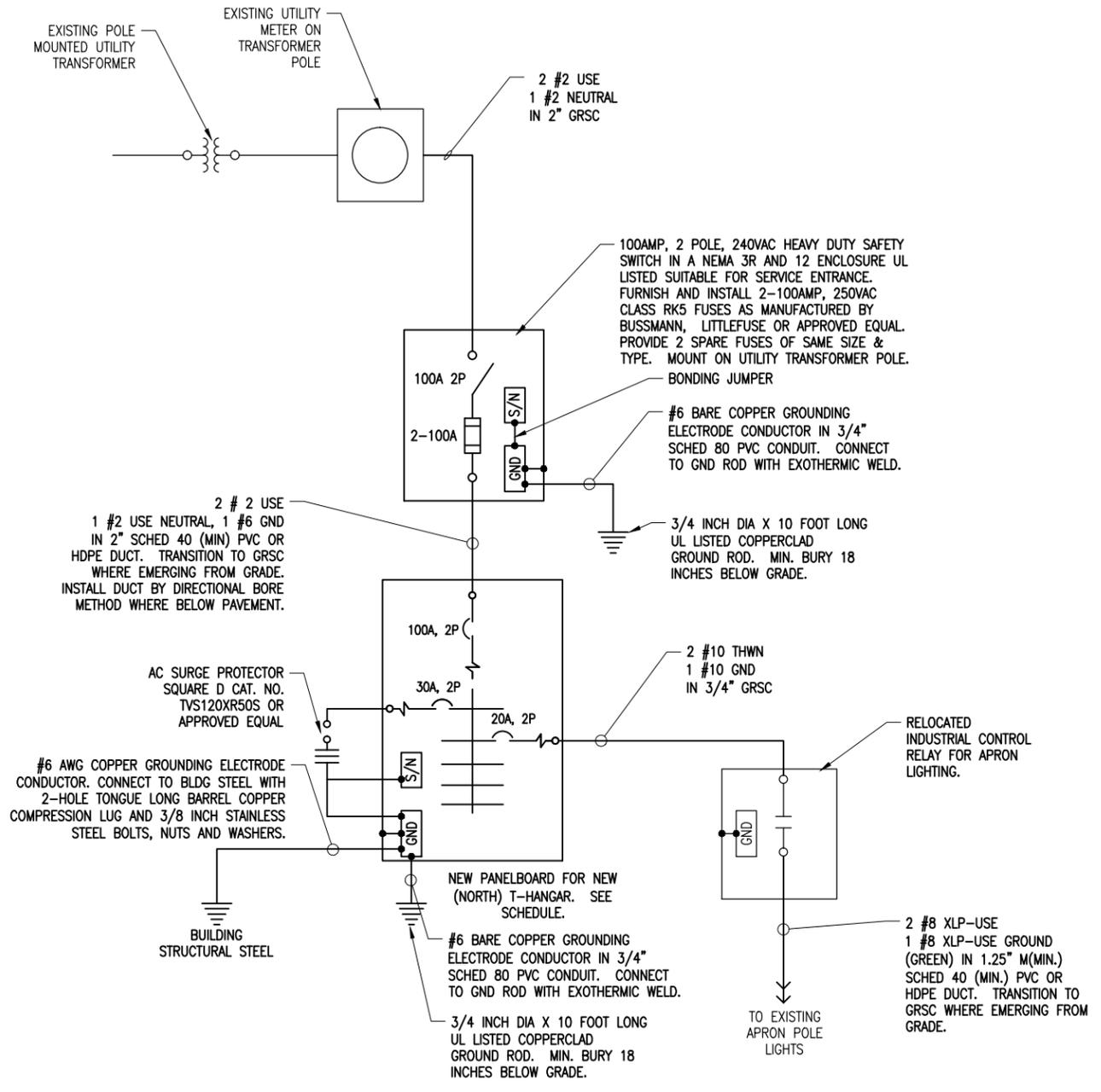
100 AMP, 120/240 VAC, 1 PHASE, 3 WIRE, 30 CIRCUIT PANELBOARD WITH A 100 AMP, 2 POLE MAIN BREAKER IN A NEMA 3R AND 12 ENCLOSURE WITH HINGED COVER; SQUARE D CATALOG NUMBER NQ30L1C WITH MH32WP TYPE 3R AND 12 ENCLOSURE OR APPROVED EQUAL. INCLUDE COPPER EQUIPT GROUND BAR. FEEDER/BRANCH BREAKERS SHALL BE BOLT-ON TYPE WITH 10,000 AIC AT 120/240 VAC. PANELBOARD BUS SHALL BE COPPER. NEUTRAL BUS SHALL BE COPPER.

NOTES

- PANELBOARD SHALL BE INSTALLED IN THE WEST END UNIT INTERIOR OF THE "NEW T-HANGAR". TOP OF PANELBOARD ENCLOSURE SHALL BE 5'-6" NOMINALLY ABOVE FINISHED GRADE.
- INCLUDE PHENOLIC ENGRAVED LEGEND PLATE LABELED "T-HANGAR DISTRIBUTION PANEL, 120/240 VAC, 1 PH, 3W".
- PANELBOARD SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENTS. PROVIDE CERTIFICATION OF MANUFACTURE IN THE UNITED STATES WITH SHOP DRAWING SUBMITTAL.
- DO NOT SUBSTITUTE A LOAD CENTER FOR A PANELBOARD.
- FURNISH AND INSTALL A 20 AMP, 125 VAC, SPEC GRADE DUPLEX GFCI RECEPTACLE WITH A CAST OUTLET BOX AND STAINLESS STEEL COVER PLATE. FURNISH AND INSTALL 1 #12 THWN, 1 #12 NEUTRAL (WHITE), 1 #12 GND (GREEN) IN 3/4" GRSC FROM PANELBOARD TO RECEPTACLE.
- RECONNECT THE EXISTING LIGHTING AND RECEPTACLE BRANCH CIRCUITS TO THE NEW/REPLACEMENT PANELBOARD.

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, ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- CONTRACTOR SHALL COORDINATE WORK, ANY POWER OUTAGES AND/OR SHUT DOWN OF EXISTING SYSTEMS WITH THE RESPECTIVE FACILITY OWNER PERSONNEL AND THE AIRPORT 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 AND 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).
- COORDINATE ELECTRIC SERVICE WORK WITH THE SERVING ELECTRIC UTILITY COMPANY AND THE AIRPORT MANAGER.
- PER NEC 513 THE ENTIRE AREA OF THE HANGAR INCLUDING ANY ADJACENT AND COMMUNICATING AREAS NOT SUITABLY CUT OFF FROM THE HANGAR, SHALL BE CLASSIFIED AS A CLASS I, DIVISION 2 HAZARDOUS LOCATION UP TO A LEVEL 18 INCHES ABOVE THE FLOOR. PER NEC 513.3(C) "VICINITY OF AIRCRAFT", THE AREA WITHIN 5 FT. HORIZONTALLY FROM AIRCRAFT POWER PLANTS OR AIRCRAFT FUEL TANKS SHALL BE CLASSIFIED AS A CLASS I, DIVISION 2 LOCATION THAT SHALL EXTEND UPWARD FROM THE FLOOR TO A LEVEL 5 FT. ABOVE THE UPPER SURFACE OF WINGS AND OF ENGINE ENCLOSURES. ALL ELECTRICAL INSTALLATIONS IN CLASSIFIED HAZARDOUS LOCATIONS SHALL BE AVOIDED UNLESS SPECIFICALLY APPROVED FOR SUCH LOCATIONS AND INSTALLED IN CONFORMANCE WITH NEC 500, 501, AND 513 AS WELL AS OTHER APPLICABLE CODES AND REQUIREMENTS.
- PROVIDE 3/4" THICK WEATHERPROOF TREATED PLYWOOD WITH 2 COATS OF ENAMEL PAINT TO MOUNT PANELBOARD, RELOCATED INDUSTRIAL CONTROL RELAY (APRON LIGHTING CONTACTOR) AND TIMER CONTROL. INCLUDE HOT DIPPED GALVANIZED STEEL STRUT SUPPORT AND STAINLESS STEEL HARDWARE. LOCATE PANELBOARD AND LIGHTING CONTROLS INSIDE WEST END UNIT OF "NEW T-HANGAR".
- ALL ELECTRICAL WORK WILL BE PAID FOR UNDER ITEM AR109924 REPLACE ELECTRIC SERVICES, PER LUMP SUM.



PROPOSED ELECTRICAL ONE-LINE
DIAGRAM FOR T-HANGAR

APR 17, 2015 1:45 PM SCHUB01446
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REHABILITATE
T-HANGAR TAXIWAY

IDA No: AJG-4249

Contract No. MC025

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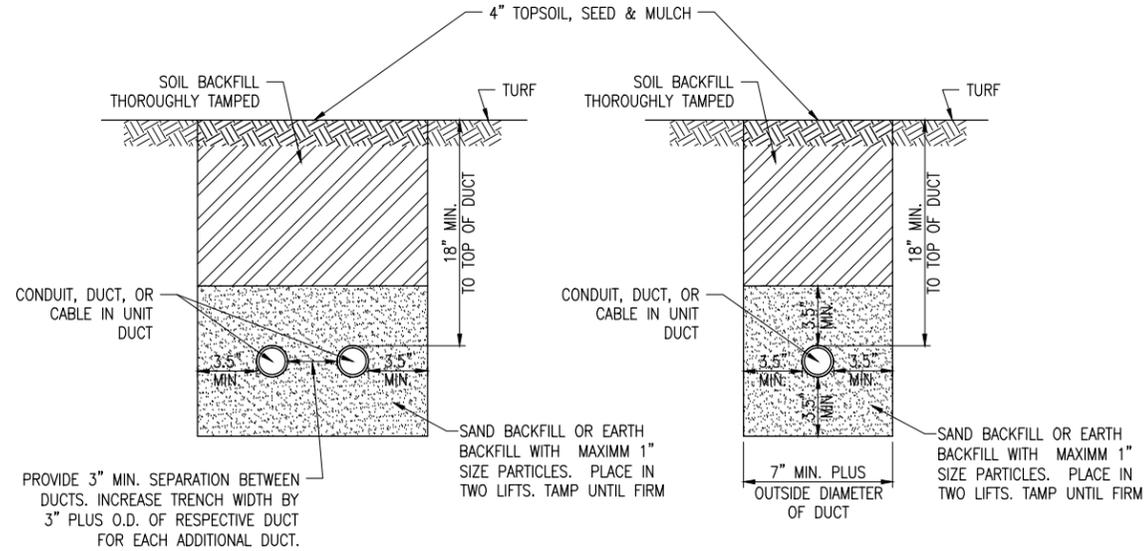
ISSUE: APRIL 17, 2015
PROJECT NO: 11A0124D
CAD FILE: E-602-LINE.DWG
DESIGNED BY: KNL 11/14/2014
DRAWN BY: RAD 11/25/2014
REVIEWED BY: JSL 2/19/2015

SHEET TITLE

PROPOSED
ELECTRICAL
ONE-LINE FOR
T-HANGAR

CABLE & DUCT MARKER NOTES:

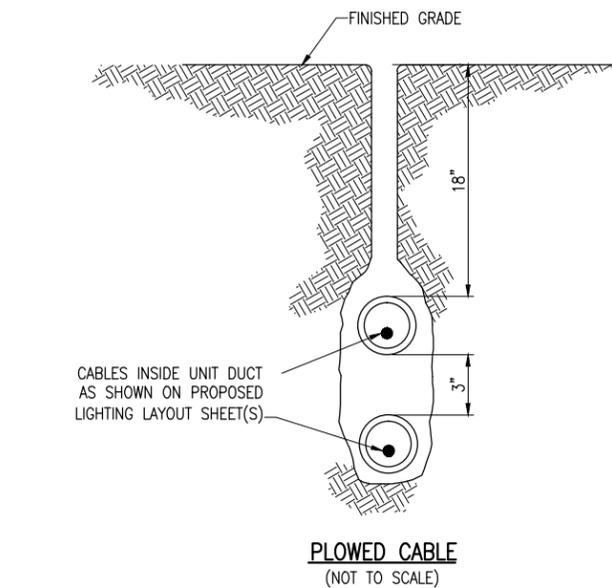
1. THE COST OF ALL TURF AND PAVEMENT DUCT MARKERS SHALL BE INCIDENTAL TO THE DUCT. THE COST OF ALL CABLE MARKERS SHALL BE INCIDENTAL TO THE CABLE.
2. BITUMINOUS PAVEMENT DUCT MARKER AND CONCRETE DUCT MARKER TO BE PROVIDED AT EACH END OF EACH DUCT AS SHOWN ON THE LOCATION PLAN. FOR CONCRETE PAVEMENT, THE LETTER "D" SHALL BE IMPRESSED IN THE PAVEMENT INSTEAD OF THE MARKER. THE LETTER SHALL BE FORMED AS DESCRIBED IN NOTE 4.
3. CABLE MARKERS SHALL BE PLACED AT CHANGES OF DIRECTION AND APPROXIMATELY EVERY 200' ALONG CABLE RUNS.
4. CONCRETE CABLE MARKERS AND DUCT MARKERS SHALL HAVE LETTERS 4" HIGH, 3" WIDE WITH WIDTH OF STROKE 1/2" AND 1/4" DEEP. ALL LETTERS, NUMBERS AND ARROWS TO BE IMPRESSED.
 - A. REDUCE LETTER SIZE TO 3" HIGH, 2" WIDE.
 - B. INCREASE THE MARKER SIZE TO 30" X 30".
 - C. PROVIDE ADDITIONAL MARKERS PLACED SIDE BY SIDE.
5. EMPLOY THE FOLLOWING METHODS WHERE ADDITIONAL SPACE TO FIT LEGEND IS REQUIRED:



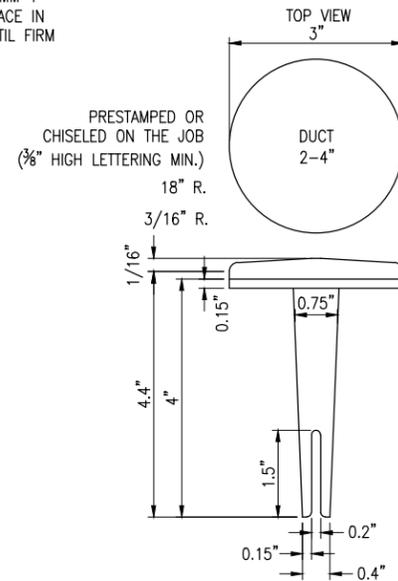
CONDUIT IN TRENCH – NON–PAVEMENT AREAS
"NOT TO SCALE"

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. 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 AND LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE.
5. DUCT INTERFACE TO HANDHOLES, MANHOLES, SPLICE CANS, OR OTHER JUNCTION STRUCTURES WILL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE CABLE IN UNIT DUCT PAY ITEM OR RESPECTIVE DUCT PAY ITEM.
6. ALL DISTURBED SURFACES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. COST IS INCIDENTAL TO TRENCH.



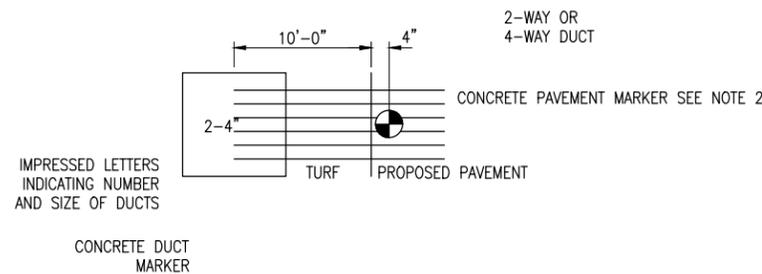
PLOWED CABLE
"NOT TO SCALE"



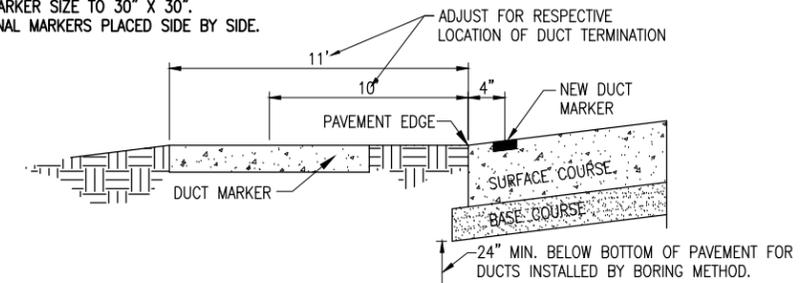
BITUMINOUS PAVEMENT DUCT MARKERS
"NOT TO SCALE"

NOTES:

1. TOP OF MARKER SHALL BE FLUSH WITH FINISHED PAVEMENT SURFACE. MARKER MAY BE INSTALLED IN A DRILLED HOLE AND SECURED WITH EPOXY GLUE.
2. BRASS DUCT MARKERS ARE AVAILABLE FROM G&S FOUNDRY & MANUFACTURING CO., INC., 210 KASKASKIA DRIVE, RED BUD, IL 62278, PHONE: (618)-282-4114



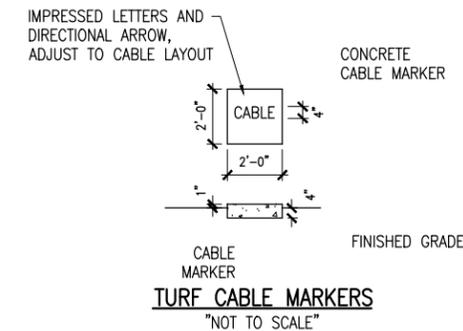
DUCT MARKER DETAIL
"NOT TO SCALE"



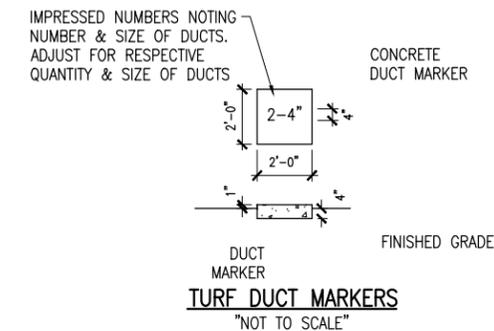
#10 PULL WIRE COIL A MINIMUM OF 3' AT DUCT ENDS. INSTALL APPROVED PLUGS IN END OF DUCTS NOT USED.

UNDERGROUND ELECTRICAL DUCT
"NOT TO SCALE"

NOTE: DUCTS INSTALLED BY BORING METHOD SHALL NOT DISTURB THE RESPECTIVE PAVEMENT SURFACE.



TURF CABLE MARKERS
"NOT TO SCALE"



TURF DUCT MARKERS
"NOT TO SCALE"

REHABILITATE T-HANGAR TAXIWAY

IDA No: AJG-4249

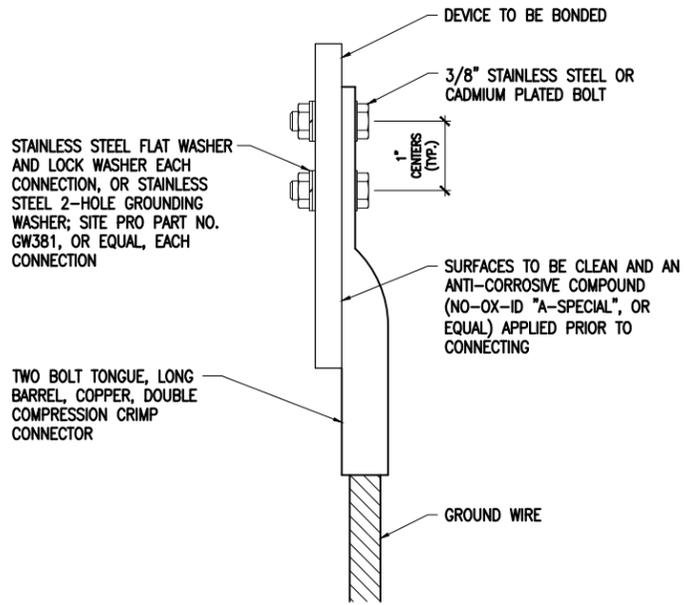
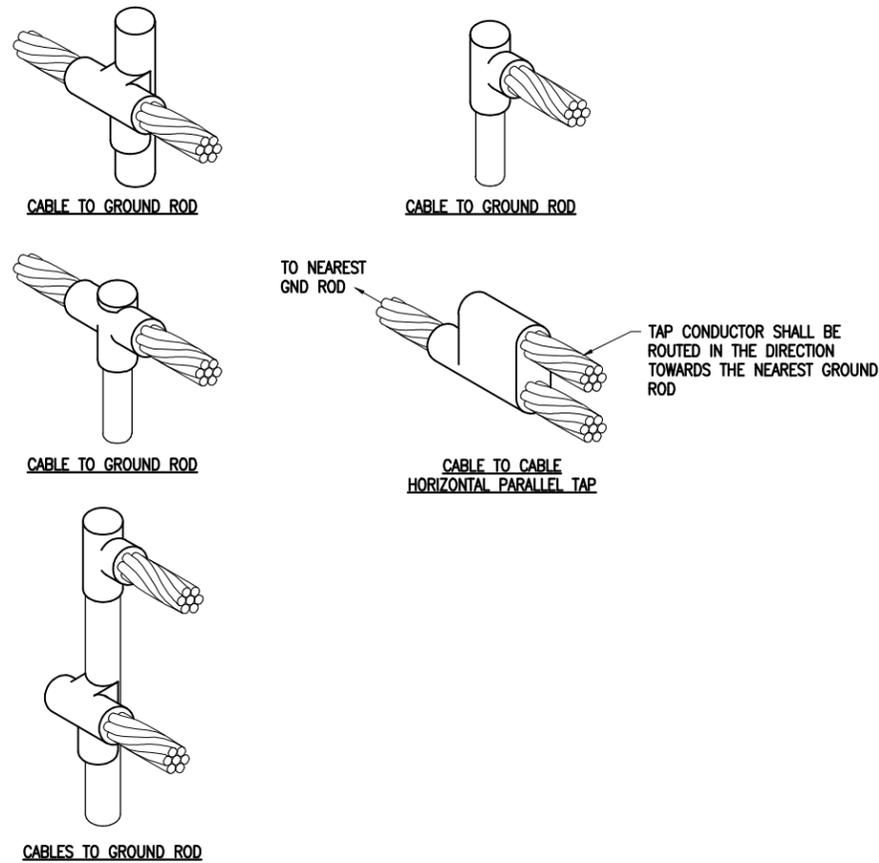
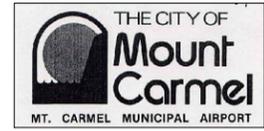
Contract No. MC025

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		DES	DWN	REV

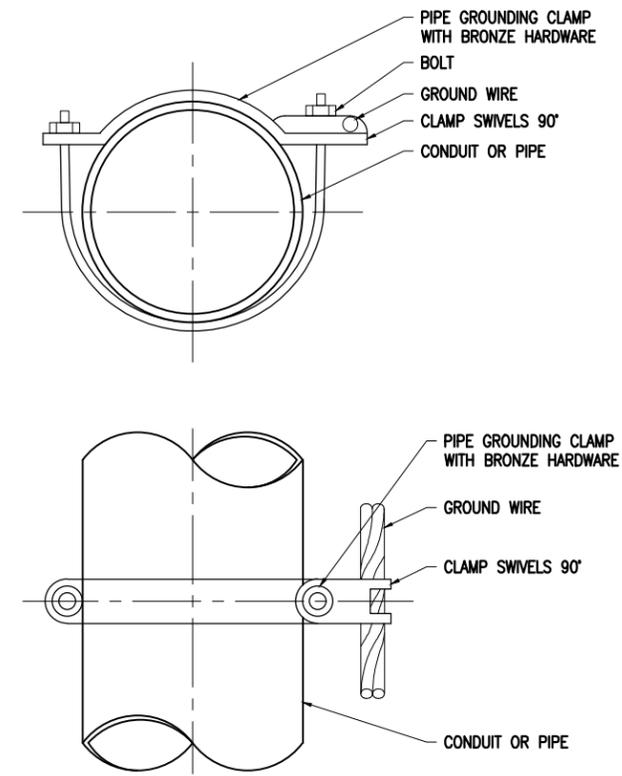
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SHEET TITLE

ELECTRICAL DETAILS



2 HOLE LONG BARREL COMPRESSION LUG TABLE			
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		
#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



PIPE GROUNDING CLAMP TABLE	
BURNDY CAT. NO.	PIPE SIZE
GAR3902-BU	1/2" - 1"
GAR3903-BU	1 1/4" - 2"
GAR3904-BU	2 1/2" - 3 1/2"
GAR3905-BU	4" - 5"
GAR3906-BU	6"

DETAIL NOTES

- ALL BELOW GRADE CONNECTIONS TO GROUND RODS & GROUND RING CONDUCTORS SHALL BE EXOTHERMIC WELD TYPE CONNECTIONS. EXOTHERMIC WELDS SHALL BE CADWELDED AS MANUFACTURED BY ERICO PRODUCTS, SOLON, OHIO, ULTRAWELD AS MANUFACTURED BY HARGER LIGHTNING PROTECTION & GROUNDING EQUIPMENT, GRAYSLAKE, IL, THERMOWELD AS MANUFACTURED BY CONTINENTAL INDUSTRIES, TULSA, OKLAHOMA, 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

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 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 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

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

REHABILITATE T-HANGAR TAXIWAY

IDA No: AJG-4249

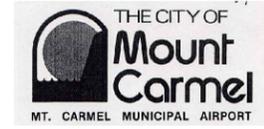
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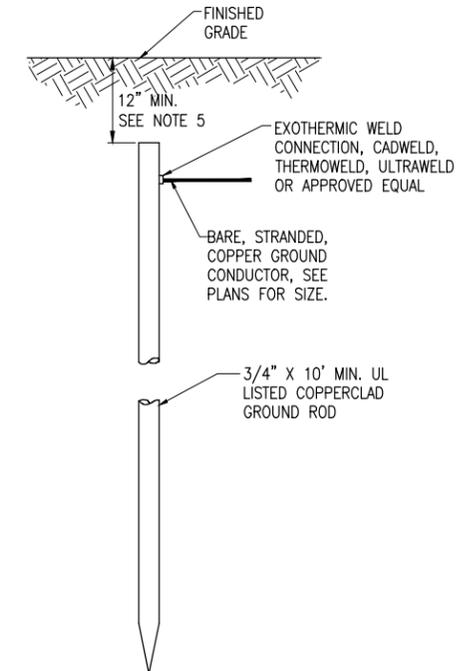
GROUNDING DETAILS



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 FAA-STD-019e (LIGHTNING AND SURGE PROTECTION, GROUNDING, BONDING, AND SHIELDING REQUIREMENTS FOR FACILITIES AND ELECTRONIC EQUIPMENT). 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 ELECTRIC SERVICE OR FEEDER TO THE HANGAR AND FOR CONNECTIONS TO BUILDING STRUCTURAL STEEL SHALL BE MINIMUM 3/4-IN. DIAMETER BY 10-FT LONG, UL-LISTED COPPER CLAD WITH 10-MIL MINIMUM COPPER COATING. GROUND RODS FOR OTHER APPLICATIONS SHALL BE MINIMUM 3/4-IN. DIAMETER BY 10-FT LONG, UL-LISTED, COPPER CLAD WITH 10-MIL 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 AND THE GROUND RING SHALL BE MADE WITH EXOTHERMIC WELD TYPE CONNECTORS, CADWELD BY ERICO PRODUCTS, INC., 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) 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. COPIES OF GROUND ROD TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT ENGINEER/RESIDENT PROJECT REPRESENTATIVE.
- 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 2014 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 2014 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 2014 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 2014 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 GROUNDING 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 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.
- 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, 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 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.
- 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 2014 NEC 250-102. NOTE THIS DOES NOT APPLY TO AC EQUIPMENT GROUNDING CONDUCTORS RUN WITH AC CIRCUITS.
- WHERE A CONFLICT IS DETERMINED WITH RESPECT TO GROUNDING REQUIREMENTS PER MANUFACTURER INSTALLATION INSTRUCTIONS, NEC, AND/OR THE CONTRACT DOCUMENTS, CONTACT THE RESIDENT ENGINEER OR PROJECT ENGINEER FOR FURTHER DIRECTIONS.
- GROUND RODS SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENTS AND THE STEEL PRODUCTS PROCUREMENT ACT. STEEL USED TO MANUFACTURE GROUND RODS SHALL BE 100 PERCENT DOMESTIC STEEL.



10 FT. GROUND ROD

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 SHALL BE 12" MINIMUM BELOW GRADE UNLESS DETAILED OTHERWISE HEREIN.

GROUND RODS

(NOT TO SCALE)

REHABILITATE
T-HANGAR TAXIWAY

IDA No: AJG-4249

Contract No. MC025

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SHEET TITLE

GROUNDING NOTES

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