

SAFETY REQUIREMENTS

- ALL CONTRACTOR VEHICLES SHALL DISPLAY IN FULL VIEW A FLASHING AMBER (YELLOW) DOME-TYPE LIGHT ABOVE THE VEHICLE AND/OR A 3' X 3' OR LARGER, ORANGE AND WHITE CHECKERBOARD FLAG, EACH CHECKERBOARD COLOR BEING 1-FOOT SQUARE, (SEE CONSTRUCTION SAFETY FLAG DETAIL, THIS SHEET).
- DEBRIS, WASTE AND LOOSE MATERIAL CAPABLE OF CAUSING DAMAGE TO AIRCRAFT LANDING GEARS, PROPELLERS OR BEING INGESTED IN JET ENGINES SHALL NOT BE ALLOWED ON AIRSIDE PAVEMENTS. IF THESE MATERIALS ARE OBSERVED TO BE ON AIRSIDE PAVEMENTS, THEY WILL BE REMOVED IMMEDIATELY AND/OR CONTINUOUSLY BY THE CONTRACTOR DURING CONSTRUCTION AT NO COST TO THE OWNER.
- THE CONTRACTOR IS DIRECTED TO COMPLY WITH AND ACQUAINT HIS/HER EMPLOYEES WITH THE FOLLOWING SAFETY GUIDELINES, RELATED MATERIALS AND FAA ADVISORY CIRCULARS (AC'S):
 - 150/5200-18C "AIRPORT SAFETY-SELF INSPECTION"
 - 150/5210-5D "PAINTING, MARKING & LIGHTING OF VEHICLES USED ON AIRPORTS"
 - 150/5370-2F "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION"

COPIES OF THESE DOCUMENTS ARE PROVIDED IN THE CONTRACT SPECIFICATIONS.

- CONSTRUCTION DURING THE PROJECT MAY BE HALTED AT ANY TIME BY RPR, ENGINEER, AND/OR AIRPORT OPERATIONS IF IT IS DETERMINED TO BE IN THE BEST INTEREST OF AIRPORT OPERATIONS OR SAFETY. THE CONTRACTOR MAY BE DIRECTED TO REMOVE EQUIPMENT AND/OR EVACUATE THE SITE IN ORDER TO ENABLE AIRCRAFT OPERATIONS, NECESSARY EXTENSIONS IN CONTRACT TIME WILL BE GRANTED OR A STOP WORK ORDER WILL BE ISSUED DUE TO THESE DELAYS, HOWEVER, THERE WILL BE NO ADJUSTMENTS IN CONTRACT PRICE DUE TO THESE DELAYS.

IN ADDITION TO THE ABOVE, THE FOLLOWING SPECIAL REQUIREMENTS WILL APPLY FOR NIGHT CONSTRUCTION:

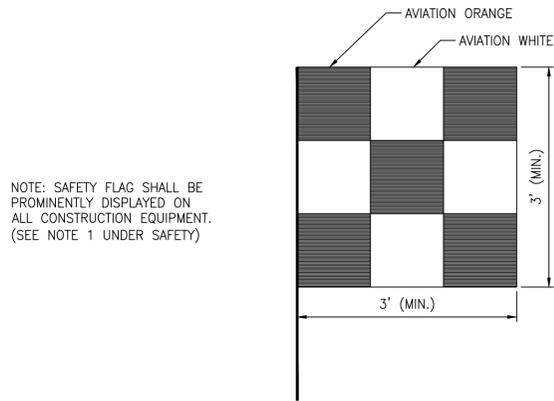
- A DAILY SAFETY AND PROGRESS MEETING SHALL BE HELD BETWEEN THE ENGINEER AND THE CONTRACTOR'S SUPERINTENDENT TO DISCUSS REQUIREMENTS FOR THE NEXT NIGHTTIME WORK PERIOD.
 - THE CONTRACTOR SHALL PREPARE A SAFETY PLAN SPECIFIC TO NIGHTTIME CONSTRUCTION OPERATIONS, AS WELL AS A CONTINGENCY PLAN TO ADDRESS CASES OF ABNORMAL FAILURES OR UNEXPECTED DISASTERS USING APPENDIX 3 OF AC 150/5370-2F AS A GUIDE.
- THE CONTRACTOR SHALL INSTALL ALL REQUIRED BARRICADES AT LOCATIONS DESIGNATED BY THE ENGINEER, HAVE ALL EQUIPMENT EITHER FITTED WITH FLASHING YELLOW DOME-TYPE LIGHTS ON TOP OF THE VEHICLES AND/OR FLAGS. ALL THESE ITEMS SHALL CONSIST OF THE SAFETY AND SECURITY SYSTEM. THE CONTRACTOR SHALL INSTALL THE COMPONENTS OF THE SYSTEM AT THE APPROPRIATE TIMES AS SPECIFIED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL INSPECT EVERY ASPECT OF THE SAFETY AND SECURITY SYSTEM ON AT LEAST A DAILY BASIS AND ENSURE ALL COMPONENTS ARE FUNCTIONING PROPERLY. THE RESIDENT PROJECT REPRESENTATIVE (RPR) SHALL ALSO DAILY INSPECT THE SYSTEM AND IF ANY DEFICIENCIES ARE NOTED, THE CONTRACTOR SHALL HAVE THAT DAY'S PRORATED SAFETY AND SECURITY COST DEDUCTED FROM THE CONTRACTOR'S EARNINGS. THE SYSTEM ELEMENTS TO BE INSPECTED AND DEFICIENCIES NOTED ARE AS FOLLOWS:

- *BARRICADES AND RUNWAY CLOSURE MARKINGS SET PROPERLY PER APPROVED CONTRACTOR SAFETY PLAN AND ALL FLASHING WARNING LIGHTS OPERATING PROPERLY.
- *ALL EQUIPMENT OUTFITTED WITH FLASHING YELLOW DOME-TYPE LIGHTS AND/OR FLAGS.

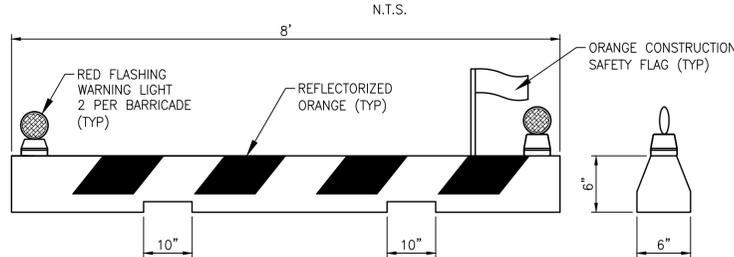
ANY OF THE ABOVE SAFETY AND SECURITY ITEMS FOUND TO BE DEFICIENT AT THE BEGINNING OF THE DAY BY THE RPR AND/OR AIRPORT OPERATIONS STAFF WILL RESULT IN THAT DAY'S PRORATED SAFETY AND SECURITY BID ITEM LOST AND BEING DEDUCTED PERMANENTLY FROM THE CONTRACTOR'S EARNINGS. THE CONTRACTOR SHALL MAKE A CONCERTED EFFORT TO ENSURE ALL SAFETY AND SECURITY ITEMS ARE IN PROPER WORKING ORDER EACH DAY DUE TO THE HEIGHTENED SECURITY STATUS OF THE AIRPORT AND THE CONSIDERABLE LIABILITY ASSOCIATED WITH THE SAFETY AND SECURITY WORK.

- THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO ENSURE THE SAFETY OF THE TRAVELING PUBLIC AS WELL AS HIS OWN EQUIPMENT AND PERSONNEL. THE CONTRACTOR SHALL OBEY ALL INSTRUCTIONS AS TO ROUTES TO BE TAKEN BY EQUIPMENT TRAVELING WITHIN THE AIRPORT AREA AND KEEP SUCH VEHICLES AND EQUIPMENT MARKED WITH THE SPECIFIED AIRPORT SAFETY FLAGS. THE CONTRACTOR SHALL MAKE HIS OWN ESTIMATE OF ALL DIFFICULTIES TO BE ENCOUNTERED. EQUIPMENT NOT ACTUALLY IN OPERATION SHALL BE KEPT CLEAR OF LANDING AREAS. PERSONNEL SHALL NOT ENTER AREAS OF THE AIRPORT WHERE AIRCRAFT ARE OPERATING WITHOUT SPECIFIC PERMISSION.
- THE CONTRACTOR SHALL TAKE ALL STEPS TO PROTECT THE EXISTING UNDERGROUND CABLES, COMMERCIAL, AND AIRPORT UTILITIES DURING CONSTRUCTION TO ASSURE CONTINUOUS OPERATION OF LIGHTS AND NAVIGATIONAL AIDS WHEN NEEDED.
- MATERIALS STORED OR STOCKPILED ON THE AIRPORT SHALL BE SO PLACED AND THE WORK SHALL, AT ALL TIMES, BE SO CONDUCTED AS TO CAUSE NO GREATER OBSTRUCTION TO THE TRAVELING PUBLIC THAN IS CONSIDERED NECESSARY BY THE ENGINEER.
- THE CONTRACTOR SHALL ERECT AND MAINTAIN ALL NECESSARY BARRICADES, SIGNS, DANGER SIGNALS AND LIGHTS FOR THE PROTECTION OF THE WORK AND THE SAFETY OF THE TRAVELING PUBLIC IN ACCORDANCE WITH THE SPECIFICATIONS (AC 150/5370-2F).
- THE CONTRACTOR SHALL HAVE PERSONNEL ON CALL 24 HOURS PER DAY FOR EMERGENCY MAINTENANCE OF HAZARD LIGHTING AND BARRICADES.
- THE AIRPORT DIRECTOR, WORKING THROUGH THE ENGINEER, SHALL, AT ALL TIMES, HAVE COMPLETE JURISDICTION OVER THE SAFETY OF ALL OPERATIONS DURING THE WORK. WHEREVER THE SAFETY OF THE TRAVELING PUBLIC IS CONCERNED, THE DECISIONS OF THE AIRPORT DIRECTOR OR HIS DESIGNATED REPRESENTATIVE, SHALL BE FINAL AS TO METHODS, PROCEDURES AND MEASURES USED.
- THE CONTRACTOR SHALL CONTACT A PRIVATE UTILITY LOCATOR TO PROVIDE FIELD LOCATIONS OF EXISTING FACILITY CABLES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HAND DIGGING TO LOCATE FACILITY CABLING, AND PROTECTION OF THOSE CABLES THROUGHOUT THE PROJECT.
- THE CONTRACTOR SHALL CONFINE HIS PERSONNEL, EQUIPMENT, OPERATIONS AND TRAVEL TO THE AREA WITHIN THE DEFINED WORK LIMITS SHOWN ON THE PLANS.
- THE CONTRACTOR SHALL INFORM ALL CONSTRUCTION PERSONNEL AS TO THE PROPER ROUTES, SPEEDS AND PROCEDURES FOR TRANSPORTING EQUIPMENT AND MATERIALS TO THE CONSTRUCTION SITE. ON A DAILY BASIS AND MORE OFTEN IF NECESSARY ALL PERSONNEL SHALL BE ADVISED OF ANY CHANGES IN AIRPORT OPERATIONS THAT MAY FURTHER RESTRICT HIS MOVEMENT.
- ACCESS OR HAUL ROUTES SHALL BE EXISTING ROADWAYS TO THE EXTENT THAT THEY ARE AVAILABLE. THE CONTRACTOR SHALL CORRECT ANY DAMAGE TO THE ROADS USED AND SHALL RESTORE THOSE ROADS TO THE SAME OR BETTER CONDITION AS THEY EXISTED PRIOR TO THE START OF WORK. THE CONTRACTOR MAY ESTABLISH ADDITIONAL HAUL OR ACCESS ROUTES AT HIS OWN EXPENSE AND RESPONSIBILITY IF APPROVED BY THE OWNER/ENGINEER. UPON COMPLETION OF THE WORK, ANY ADDITIONAL ROADS SHALL EITHER BE LEFT OR GRADED AS DIRECTED SO THAT THEY DO NOT IMPEDE THE EXISTING DRAINAGE OR ACCESS ROUTES. CONTRACTOR IS RESPONSIBLE FOR DOCUMENTING EXISTING DISTRESS WITH PHOTOS, LOCATION, AND/OR VIDEO.
- MEASURES SHALL BE ADOPTED TO PREVENT POTENTIAL POLLUTANTS FROM ENTERING ANY DRAINAGE SYSTEM OR WATERWAY. MATERIALS AND DEBRIS SHALL NOT BE STORED IN THE WORK AREA IN A MANNER THAT WOULD ALLOW THEM TO ENTER THE DRAINAGE SYSTEM AS A RESULT OF SPILLAGE, NATURAL RUNOFF OR FLOODING. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IMMEDIATELY NOTIFY THE AIRPORT SHOULD THERE BE A SPILLAGE OF MATERIAL WHICH MIGHT CONTAMINATE THE DRAINAGE SYSTEM. IT SHALL ALSO BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE AND CLEAR UP SUCH SPILLAGE IN A MANNER ACCEPTABLE TO THE AIRPORT. MATERIAL SHALL BE SECURED SO THAT IT WILL NOT BE BLOWN BY THE WIND ONTO THE AIRFIELD SURFACES.

- SPECIAL ATTENTION TO DUST CONTROL WILL BE REQUIRED WHEN EARTHWORK OR HAULING OPERATIONS ARE IN PROGRESS OR WHEN WIND AND WEATHER CONDITIONS CAUSE EXCESSIVE BLOWING OF DUST. IN THIS REGARD, THE CONTRACTOR SHALL APPLY WATER OR CALCIUM CHLORIDE SOLUTION TO THE AFFECTED SITES AS DIRECTED BY THE AIRPORT OR THE ENGINEER.
- VEHICLES WITHIN THE SECURITY FENCE SHALL BE VISIBLY IDENTIFIABLE AS CONTRACTOR VEHICLES WHICH HAVE BEEN PROPERLY CLEARED FOR ENTRY (LOGO AND FLAGS ON AUTHORIZED EQUIPMENT AND VEHICLES WOULD BE ACCEPTABLE.)
- CONSTRUCTION EQUIPMENT SHALL HAVE A MAXIMUM HEIGHT OF TWENTY-FIVE (25) FEET.
- THE CONTRACTOR SHALL SUBMIT A SAFETY AND SECURITY PLAN TO THE ENGINEER FOR REVIEW AND APPROVAL BY THE AIRPORT 15 DAYS PRIOR TO CONSTRUCTION COMMENCING.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING UTILITY LINES AND HAND DIGGING TO LOCATE CABLING AND SHALL PROVIDE ADEQUATE PROVISIONS TO PROTECT ALL CABLES EXPOSED DURING THE PROPOSED WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE AIRPORT AT THE PROJECT PRE-CONSTRUCTION MEETING SHOULD CABLE RELOCATION BE NECESSARY.
- ANY DAMAGE TO CABLES, ACCESS ROADS, OR TO FACILITIES DURING THE CONSTRUCTION WILL REQUIRE THE CONTRACTOR TO REPLACE THE DAMAGED CABLES, ACCESS ROAD, FACILITIES TO THE ENGINEER'S REQUIREMENTS, AND AT THE CONTRACTORS' EXPENSE.
- IF ANY POWER, CONTROL, OR SIGNAL CABLES ARE DAMAGED, THE SPONSOR/CONTRACTOR SHALL REPLACE THE CABLE IN ITS ENTIRETY. THE SPLICING OF CABLES IS NOT AN ACCEPTABLE REPAIR.
- ALL NON-RADIO EQUIPPED CONTRACTOR VEHICLES THAT ARE REQUIRED TO OPERATE ON OR ACROSS THE ACTIVE RUNWAYS, TAXIWAYS, APRONS, OR RUNWAY APPROACH AND PROTECTION ZONES SHALL DO SO UNDER THE DIRECT CONTROL OF A RADIO EQUIPPED ESCORT VEHICLE. ESCORT VEHICLES, OPERATORS, AND RADIO EQUIPMENT SHALL BE APPROVED BY THE DULUTH AIRPORT AUTHORITY. ESCORT VEHICLES SHALL BE MARKED AND LIGHTED AS DESCRIBED IN PARAGRAPH 1 ABOVE AND SHALL BE EQUIPPED WITH AN APPROVED AVIATION BAND. RADIO EQUIPPED VEHICLES SHALL CONTINUOUSLY MONITOR UNICOM FREQUENCY (122.7 MHZ). ALL AIRCRAFT TRAFFIC SHALL HAVE PRIORITY OVER CONTRACTOR'S TRAFFIC.



CONSTRUCTION SAFETY FLAG



LOW PROFILE BARRICADE

(MUST MEET FAA ADVISORY CIRCULAR 150/5370-2F REQUIREMENTS)

NTS

BARRICADE PLACEMENT NOTES

- BARRICADES SHALL BE INSTALLED AT THE LOCATIONS SHOWN ON THE PLAN THROUGH COORDINATION WITH AIRPORT AND ENGINEER STAFF. THE PHASE DURING WHICH EACH BARRICADE IS TO REMAIN IN PLACE IS INDICATED BY THE BARRICADE LABELS. BARRICADES SHALL BE INSTALLED AT THE BEGINNING OF EACH PHASE AND SHALL REMAIN IN PLACE THROUGHOUT THE PHASE. THE CONTRACTOR SHALL NOT MOVE ANY BARRICADE WITHOUT PRIOR COORDINATION WITH AIRPORT AND ENGINEER. AT NO TIME DURING CONSTRUCTION SHALL THE CONTRACTOR GO BEYOND THE BARRICADES OR PHASING LIMITS OF CONSTRUCTION.
- BARRICADES SHALL CONFORM TO THE LOW PROFILE CONSTRUCTION BARRICADE DETAIL HEREIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND UPKEEP OF THE BARRICADES THROUGHOUT THE PROJECT. THE AIRPORT/OWNER SHALL SUPPLY BARRICADES FOR USE ON THE PROJECT. FOLLOWING COMPLETION OF THE WORK THE BARRICADES SHALL BE REMOVED FROM THE PROJECT. THE BARRICADES SHALL BE CONTINUOUSLY LINKED WITH FLASHING RED LIGHTS AND FLAGS, AND SHALL BE WEIGHTED TO PREVENT MOVEMENT FROM HIGH WINDS AND JET OR PROP BLAST. ALL COSTS ARE INCIDENTAL TO THE PROJECT. BARRICADE RED LIGHTS SHALL MEET MNDOT LUMINANCE REQUIREMENTS.
- BARRICADES ARE TO BE ADEQUATELY SECURED AGAINST MOVEMENT DUE TO WIND AND AIRCRAFT ENGINE THRUST. BARRICADES MAY BE PINNED IF LOCATED ON PAVEMENT PLANNED FOR DEMOLITION IN LATTER PHASES.
- ALL BARRICADES SHALL BE CHECKED VISUALLY ON A DAILY BASIS AND SHALL BE MAINTAINED AS NEEDED OR AS DIRECTED BY THE ENGINEER.
- THE COST OF BARRICADES, BARRICADE PLACEMENT, MAINTENANCE AND OTHER TRAFFIC CONTROL EXPENSES SHALL BE INCIDENTAL TO THE TEMPORARY CONSTRUCTION ITEMS BID ITEM.

SECURITY REQUIREMENTS

- GENERAL INTENT:** IT IS INTENDED THAT THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE AIRPORT SECURITY PLAN AND WITH THE SECURITY REQUIREMENTS SPECIFIED HEREIN BY AIRPORT OPERATIONS. THE CONTRACTOR SHALL DESIGNATE TO THE ENGINEER AND AIRPORT OPERATIONS, IN WRITING, THE NAME OF HIS "CONTRACTOR SECURITY AND SAFETY OFFICER (CSSO)." THE CSSO SHALL REPRESENT THE CONTRACTOR ON THE SECURITY REQUIREMENTS FOR THE CONTRACT.
- CONTRACTOR PERSONNEL SECURITY ORIENTATION:** THE CSSO SHALL BE RESPONSIBLE FOR BRIEFING ALL CONTRACTOR PERSONNEL ON SECURITY REQUIREMENTS. ALL NEW CONTRACTOR EMPLOYEES SHALL BE BRIEFED ON SECURITY REQUIREMENTS PRIOR TO WORKING IN THE CONSTRUCTION AREA. THE AIRPORT SHALL BRIEF AND/OR TRAIN CONSTRUCTION RELATED VEHICLE EQUIPMENT DRIVERS ON OPERATIONS WITHIN AN AIRPORT/AIRCRAFT ENVIRONMENT. AIRPORT MANAGEMENT SHOULD PROVIDE PRINTED MATERIAL TO EACH VEHICLE OPERATOR THAT DEPICTS HAUL ROUTES, PROHIBITED MOVEMENT AREAS, AND DESCRIBES THE CONSEQUENCES FOR NON-COMPLIANCE WITH ESTABLISHED PROCEDURES. THE AIRPORT HAS IMPLEMENTED A ZERO TOLERANCE APPROACH TO DRIVING VIOLATIONS.
- ACCESS TO THE SITE:** CONTRACTOR'S ACCESS TO THE SITE SHALL BE AS SHOWN ON THE PLANS. NO OTHER ACCESS POINTS SHALL BE ALLOWED UNLESS APPROVED BY AIRPORT OPERATIONS IN ADVANCE. ALL CONTRACTOR TRAFFIC AUTHORIZED TO ENTER THE SITE SHALL BE EXPERIENCED IN THE ROUTE OR GUIDED BY CONTRACTOR PERSONNEL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL TO AND FROM THE VARIOUS CONSTRUCTION AREAS ON THE SITE. A CONTRACTOR'S FLAGMAN OR TRAFFIC CONTROL PERSON SHALL MONITOR AND COORDINATE ALL CONTRACTOR TRAFFIC WITH SECURITY. THE CONTRACTOR SHALL NOT PERMIT ANY UNAUTHORIZED CONSTRUCTION PERSONNEL OR TRAFFIC ON THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR THE IMMEDIATE CLEANUP OF ANY DEBRIS DEPOSITED ALONG THE ACCESS ROUTE AS A RESULT OF ITS CONSTRUCTION TRAFFIC.
- CONSTRUCTION AREA LIMITS:** THE LIMITS OF CONSTRUCTION, MATERIAL STORAGE AREAS, PLANT SITE, EQUIPMENT STORAGE AREA, PARKING AREA AND OTHER AREAS DEFINED AS REQUIRED FOR THE CONTRACTOR'S EXCLUSIVE USE DURING CONSTRUCTION SHALL BE MARKED BY THE CONTRACTOR. THE CONTRACTOR SHALL ERECT AND MAINTAIN AROUND THE PERIMETER OF THESE AREAS SUITABLE FENCING, MARKING AND/OR WARNING DEVICES VISIBLE FOR DAY/NIGHT USE. TEMPORARY BARRICADES, FLAGGING AND FLASHING WARNING LIGHTS WILL BE REQUIRED AT CRITICAL ACCESS POINTS. TYPE OF MARKING AND WARNING DEVICES SHALL BE APPROVED BY AIRPORT OPERATIONS.
- IDENTIFICATION--PERSONNEL:** ALL EMPLOYEES, AGENTS, VENDORS, INVITEES, ETC. OF THE CONTRACTOR OR SUBCONTRACTORS REQUIRING ACCESS TO THE AIRCRAFT OPERATIONS AREA (AOA) SHALL BE INSTRUCTED BY THE AIRPORT AS TO THE PROPER PROCEDURE TO ACCESS THE AOA. IDENTIFIABLE HARD HATS OR OTHER IDENTIFICATION SHALL ALSO BE WORN AT ALL TIMES IF REQUIRED BY AIRPORT OPERATIONS. THE CONTRACTOR AND ITS STAFF IS RESPONSIBLE FOR ATTENDING TRAINING WHICH WILL INCLUDE AIR/GROUND RADIO, TAXIWAY AND AIRPORT FAMILIARIZATION. ESTIMATED TIME FOR COMPLETION IS 1 HOUR.
- IDENTIFICATION--VEHICLES:** THE CONTRACTOR, THROUGH THE CSSO, SHALL ESTABLISH AND MAINTAIN A LIST OF CONTRACTOR AND SUBCONTRACTOR VEHICLES AUTHORIZED TO OPERATE ON THE SITE. CONTRACTOR EMPLOYEE VEHICLES SHALL BE RESTRICTED TO THE CONTRACTOR'S EMPLOYEE PARKING AREA AND ARE NOT ALLOWED ON THE AOA AT ANY TIME.
- FINES:** IN THE EVENT THE CONTRACTOR DEVIATES FROM THE IDENTIFIED CONSTRUCTION LIMITS AND/OR DESIGNATED HAUL ROUTES ONTO AN ACTIVE RUNWAY OR TAXIWAY THE CONTRACTOR WILL BE FINED \$1,000 PER OCCURRENCE WHICH WILL BE DEDUCTED FROM THE FINAL CONTRACT AMOUNT DUE THE CONTRACTOR.
- A MINIMUM OF 48 HOURS IN ADVANCE OF ANY EXCAVATION OR BORINGS, THE CONTRACTOR SHALL CONTACT THE FOLLOWING LOCAL CABLE OWNERS AS WELL AS A PRIVATE LOCATOR TO VERIFY ALL UNDERGROUND CABLE LOCATIONS IN THE VICINITY OF THE PROPOSED WORK:

CABLE OWNER	CONTACT PERSON	PHONE NUMBER
DULUTH AIRPORT AUTHORITY	BRIAN MADSEN	218-733-8073
OTHERS	GOPHER STATE ONE-CALL	800-252-1166
- RESPONSIBILITY FOR TEMPORARY LIGHTING AND MARKING**

THE CONTRACTOR WILL BE RESPONSIBLE FOR FURNISHING AND MAINTAINING THE NECESSARY BARRICADES AND HAZARD LIGHTING AS REQUIRED BY THE SPECIFICATIONS TO MARK CONSTRUCTION AREAS, HAZARDS, ETC. REFLECTORIZED LOW PROFILE BARRICADES WITH ATTACHED FLASHING RED LIGHTS FOR NIGHT USE ARE THE PREFERRED TYPE OF BARRICADE FOR USE ON THE AIRPORT.



Reynolds, Smith and Hills, Inc.

4525 Airport Approach Road, Suite A
Duluth, Minnesota 55811
218-722-1227 FAX 218-722-1052
www.rsandh.com



DULUTH AIRPORT
AUTHORITY

**SKY HARBOR AIRPORT
VERTICAL PIVOT
GATE AND FENCE**

CONSULTANTS

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: DARREN K. CHRISTOPHER

Signature: *Darren K. Christopher*

Date: 06/01/2015 Reg. No.: 45052

REVISIONS		
NO.	DESCRIPTION	DATE

DATE ISSUED: 06-01-15
REVIEWED BY: DKC
DRAWN BY: AEE
DESIGNED BY: AEE

AEP PROJECT NUMBER
214-1882-119

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SHEET TITLE
**SAFETY AND
SECURITY
NOTES AND
DETAILS**

SHEET NUMBER

C002

**BID
DOCUMENTS**

ITEM NO.	WORK ITEM DESCRIPTION	UNIT	BID QUANTITY	RECORD QUANTITY
	<u>BASE BID</u>			
P-100-3.1	MOBILIZATION AND GENERAL CONDITIONS	LSUM	1	
P-102-10.1	SAFETY AND SECURITY	LSUM	1	
P-104-5.1	SURVEY AND STAKEOUT	LSUM	1	
P-156-5.1	EROSION SEDIMENT CONTROL	LSUM	1	
P-156-5.2	SILT FENCE	LFT	100	
P-156-5.3	INLET AND OUTLET PROTECTION	EACH	1	
F-162-5.1	CHAIN-LINK FENCE 6'	LFT	110	
F-162-5.2a	VERTICAL PIVOT GATE	EACH	1	
F-162-5.2b	PEDESTRIAN GATE	EACH	1	
F-162-5.3	FENCE DEMOLITION	LFT	110	
F-162-5.4	ELECTRIC SLIDE GATE DEMOLITION	EACH	1	
F-162-5.5	PEDESTRIAN GATE DEMOLITION	EACH	1	
L-110-5.2	4-Way, 3", PVC Conduit, Schedule 40, Direct-buried	LFT	60	
L-110-5.3	1-WAY, 2", PVC CONDUIT, SCH. 40, DIRECT-BURIED	LFT	30	
L-115-5.4	ELECTRICAL HANDHOLE	EACH	1	

GENERAL NOTES

- SAFETY AND SECURITY – SAFETY AND SECURITY IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE COORDINATED WITH THE DULUTH AIRPORT AUTHORITY AND THE ENGINEER (PART 6 – SAFETY AND SECURITY OF THE SPECIFICATIONS).
- EXISTING UTILITY INFORMATION SHOWN ON THE PLANS CONCERNING THE TYPE, SIZE AND LOCATION WERE COMPILED BASED ON THE BEST AVAILABLE UTILITY RECORDS TO THE ENGINEER. THE CONTRACTOR SHALL VERIFY THE ACTUAL LOCATION PRIOR TO CONSTRUCTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOWER AND/OR PROTECT ALL EXISTING UTILITIES IN PLACE UNLESS NOTED OR SPECIFIED OTHERWISE INCIDENTAL TO THIS PROJECT. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL FIELD VERIFY AND SOFT DIG TO IDENTIFY ACTUAL LOCATION AND DEPTH PRIOR TO REMOVAL AND EXCAVATION FOR ALL UTILITIES BOTH WET AND DRY.
- CONTRACTOR UTILITIES – THE CONTRACTOR'S STAGING AREA IS SHOWN ON SHEET C004. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL UTILITIES AND HOOKUPS (SEE SPECIAL PROVISIONS). THE CONTRACTOR WILL BE REQUIRED TO COORDINATE WITH THE DULUTH AIRPORT AUTHORITY AND THE AIRPORT MANAGER ON THE PRECISE LOCATION AND LIMITS OF THE STAGING AREA, AS WELL AS ANY SPECIAL REQUIREMENTS FOR FENCING, SECURITY BADGING AND ACCESS.
- HAUL ROUTES – THE LOCATION OF HAUL ROUTES ON THE AIRPORT SHALL BE AS SHOWN ON THE PLANS AND APPROVED BY THE AIRPORT MANAGER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE OFF-SITE HAUL ROUTES WITH THE PARTY HAVING JURISDICTION OVER THE AFFECTED ROUTE. ON-SITE HAUL ROUTES WILL BE MAINTAINED BY THE CONTRACTOR AND SHALL BE RESTORED TO THEIR ORIGINAL CONDITION UPON COMPLETION OF USE AS A HAUL ROUTE. FENCING, DRAINAGE, GRADING, AND ANY OTHER WORK NECESSARY TO CONSTRUCT HAUL ROUTES ON THE AIRPORT IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE APPROVED BY THE ENGINEER PRIOR TO WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL DULUTH AIRPORT AUTHORITY PROPERTY AND SHALL PROTECT CAREFULLY FROM DAMAGE OR DISTURBANCE ALL LAND MONUMENTS AND PROPERTY MARKERS. IF DAMAGE OR INJURY TO PROPERTY DOES OCCUR DURING THE WORK, THE CONTRACTOR SHALL RESTORE AT ITS OWN EXPENSE SUCH PROPERTY TO A CONDITION EQUAL TO THAT EXISTING BEFORE SUCH DAMAGE OR INJURY WAS DONE.
- EXCESS SOIL PLACEMENT SHALL BE OFF-SITE IN AN ENGINEER AND AIRPORT APPROVED LOCATION AND SHALL ADHERE TO ALL LOCAL LAWS AND REGULATIONS. COSTS ASSOCIATED WITH THE PLACEMENT AT THIS LOCATION SHALL BE INCLUDED IN THE COST OF REMOVAL. THE CONTRACTOR SHALL PROVIDE THE RESIDENT ENGINEER AND THE DULUTH AIRPORT AUTHORITY WITH DOCUMENTATION OF THE QUANTITY OF PLACEMENT, LOCATION AND CITY/LOCAL GOVERNMENT ACCEPTANCE.
- ANY EQUIPMENT REMOVED IS TO REMAIN THE PROPERTY OF THE DULUTH AIRPORT AUTHORITY UNLESS INDICATED OTHERWISE.
- THE CONTRACTOR SHALL NOT ENTER INTO ANY PAVED OR UNPAVED AREA OUTSIDE OF THE LIMITS OF CONSTRUCTION WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.
- THE CONTRACTOR SHALL REPAIR DAMAGE TO HAUL ROUTES ON AND OFF AIRPORT PROPERTY UPON COMPLETION OF THIS PROJECT. (INCIDENTAL TO THIS PROJECT).
- CONTRACTOR SHALL SUBMIT A PLAN (10 DAYS PRIOR TO CONSTRUCTION) FOR CONSTRUCTION OF EACH PHASE. THIS PLAN WILL SHOW LOCATIONS OF WASTE MATERIAL FROM EACH PHASE. IT WILL ALSO SHOW WHERE EQUIPMENT IS TO BE STORED IN EACH PHASE.
- SHOULD ANY ITEM IN THESE PLANS CONFLICT WITH THE TECHNICAL SPECIFICATIONS, THE SPECIFICATIONS SHALL GOVERN.
- THE CONTRACTOR SHALL BE GIVEN A SPECIFIC NUMBER OF CALENDAR DAYS TO PERFORM THE WORK AND IF THE CONTRACTOR DOES NOT COMPLETE THE CONSTRUCTION WITHIN THAT TIME FRAME, LIQUIDATED DAMAGES WILL BE ASSESSED UNLESS THE CONTRACTOR CAN SHOW JUST CAUSE FOR ANY DELAYS. IF THE ENGINEER, OR AIRPORT MANAGEMENT FEELS THAT CONSTRUCTION IS PROCEEDING AT TOO SLOW A PACE, THE ENGINEER SHALL NOTIFY THE CONTRACTOR IN WRITING AND THE CONTRACTOR SHALL BE REQUIRED TO RESPOND IN WRITING JUSTIFYING THE IDENTIFIED DELAYS AND/OR LACK OF ADEQUATE EQUIPMENT. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE JUSTIFICATION FOR WAIVING OF ANY LIQUIDATED DAMAGES CHARGED TO THE CONTRACTOR.
- THE CONTRACTOR SHALL, AT ALL TIMES, COORDINATE ITS EFFORTS WITH THE ENGINEER. IF ANY PROBLEMS ARISE DURING THE CONSTRUCTION SEQUENCING, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER TO HELP RESOLVE SAID PROBLEMS PRIOR TO CONTINUING THE WORK.
- THE CONTRACTOR SHALL PERFORM ALL FINAL CLEANUP WORK PRIOR TO A FINAL INSPECTION. THE CONTRACTOR SHALL ALSO CONTINUOUSLY CLEAN UP DURING EACH PHASE OF THE PROJECT.
- THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT ITS RECOMMENDED FIELD OPERATIONS AREAS FOR STORAGE OF EQUIPMENT, SUPPLIES AND FIELD OFFICES TO THE ENGINEER AND AIRPORT MANAGER AT THE PRE-CONSTRUCTION MEETING FOR REVIEW, COMMENTS AND/OR APPROVAL. ANY AREAS RECOMMENDED FOR STORAGE OF EQUIPMENT OVERNIGHT, FOR STORAGE OF FUELING FACILITIES, MATERIALS AND OFFICES SHALL BE APPROVED BY THE AIRPORT MANAGEMENT AND ENGINEER PRIOR TO MOBILIZATION OF ANY EQUIPMENT OR FIELD OFFICES AND CERTIFIED BY THE CONTRACTOR THAT THE FACILITIES MEET ALL APPLICABLE LOCAL, STATE, AND FEDERAL REQUIREMENTS.
- ANY AREAS UTILIZED AS FIELD OPERATIONS AREAS SHALL BE MAINTAINED AT ALL TIMES IN A CLEAN AND ENVIRONMENTALLY SAFE CONDITION. IF THE CONTRACTOR MUST UTILIZE AGGREGATE BASE MATERIALS TO PROVIDE A STABLE SURFACE FOR EQUIPMENT STORAGE, THEN ANY MATERIALS UTILIZED WILL BE REMOVED AT THE END OF THE PROJECT AND DISPOSED OF AT A LOCATION ACCEPTABLE TO THE OWNER.
- APPROPRIATE EROSION CONTROL MEASURES SHALL BE ACCOMPLISHED PRIOR TO BEGINNING THE RESPECTIVE PHASE. REMOVAL OF TEMPORARY EROSION CONTROL SHALL BE ACCOMPLISHED BY THE CONTRACTOR EITHER AT THE COMPLETION OF THE ASSOCIATED PHASE OR THEREAFTER AS DIRECTED BY THE RPR.
- PERMITS: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN AND PAY FOR ALL APPLICABLE PERMITS FOR CONSTRUCTION AND EQUIPMENT.
- COORDINATION OF CONSTRUCTION ACTIVITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONSTANT COORDINATION BETWEEN THE SUBCONTRACTORS AND THE ENGINEER. ALL CONSTRUCTION ACTIVITIES PLANNED BY THE CONTRACTOR SHALL BE REVIEWED AND APPROVED BY THE ENGINEER AND AIRPORT OPERATIONS REPRESENTATIVES.
- STAGING AREAS: ALL STAGING AND VEHICLE PARKING AREAS SHALL BE FINALIZED BY AIRPORT MANAGEMENT, AT THE PRE-CONSTRUCTION MEETING.
- EXISTING CONDITIONS: THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING ROADS, SOD, ETC PER THE GENERAL PROVISIONS OF THE SPECIFICATIONS.

ABBREVIATIONS

AB	AGGREGATE BASE COURSE
AC	ADVISORY CIRCULAR OR ASPHALTIC CONCRETE
APPROX	APPROXIMATE
ARFF	AIRCRAFT RESCUE FIRE FIGHTING
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ATCT	AIR TRAFFIC CONTROL TOWER
BC	BEGIN CURVE
BRL	BUILDING RESTRICTION LINE
BVC	BEGIN VERTICAL CURVE
CFS	CUBIC FEET PER SECOND
CTB	CEMENT TREATED BASE
CY	CUBIC YARDS
DA	DULUTH AIRPORT AUTHORITY
Ø, DIA	DIAMETER
E	EASTING, ELECTRICAL OR EAST
EA	EACH
EC	END CURVE
EL	ELEVATION
EVC	END VERTICAL CURVE
EX/EXIST/EXIST	EXISTING
FAA	FEDERAL AVIATION ADMINISTRATION
FH	FIRE HYDRANT
FL	FLOWLINE
G	GAS
GA	GAUGE
GAL	GALLON
HP	HIGH POINT
HORZ	HORIZONTAL
ILS	INSTRUMENT LANDING SYSTEM
kV	KILOVOLT
L	LEFT
LF	LINEAR FEET
LS	LUMP SUM
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
N	NORTHING OR NORTH
NAVD	NORTH AMERICAN VERTICAL DATUM
NO	NUMBER
NOTAM	NOTICE TO AIRMEN
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
PAPI	PRECISION APPROACH PATH INDICATOR
P.C.	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PROP	PROPOSED
P.T.	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
RGRCP	RUBBER GASKET REINFORCED CONCRETE PIPE
R	RADIUS, RIGHT
RPR	RESIDENT PROJECT REPRESENTATIVE
ROW	RIGHT-OF-WAY
ROFA	RUNWAY OBJECT FREE AREA
RSA	RUNWAY SAFETY AREA
RWY, R/W	RUNWAY
S	SLOPE OR SOUTH
SF	SILT FENCE OR SQUARE FEET
STA	STATION
STD	STANDARD
SYD	SQUARE YARDS
TOFA	TAXIWAY OBJECT FREE AREA
TSA	TAXIWAY SAFETY AREA
TWY, T/W	TAXIWAY
TYP., (TYP)	TYPICAL
VASI	VISUAL APPROACH SLOPE INDICATOR
VERT	VERTICAL
W	WEST OR WATER

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4525 Airport Approach Road, Suite A
Duluth, Minnesota 55811
218-722-1227 FAX 218-722-1052
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DULUTH AIRPORT
AUTHORITY

SKY HARBOR AIRPORT
VERTICAL PIVOT
GATE AND FENCE

CONSULTANTS

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: DARREN K. CHRISTOPHER

Signature:

Date: 06/01/2015 Reg. No.: 45052

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 06-01-15

REVIEWED BY: DKC

DRAWN BY: AEE

DESIGNED BY: AEE

AEP PROJECT NUMBER
214-1882-119

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SHEET TITLE

GENERAL
NOTES AND
ABBREVIATIONS

SHEET NUMBER

C003

BID
DOCUMENTS

SCHEMATIC PHASING SCHEDULE

(1) WORK AND CALENDAR DAY COUNT TO BE SUSPENDED BY OWNER. ALL EQUIPMENT, MATERIALS, AND SUPPLIES TO BE MOBILIZED TO CONTRACTOR STAGING AREAS.

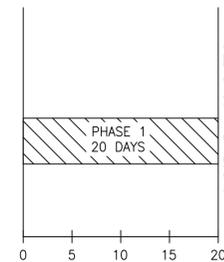
PHASE 1 (20 CALENDAR DAYS)

- THE WORK PERFORMED IN THIS PHASE SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
- FENCE AND GATE REMOVAL AND INSTALLATION
 - SEED, MULCH, FERTILIZE DISTURBED AREAS

PHASING NOTES

1. THE CONTRACTOR IS TO PROVIDE A MINIMUM OF 72 HOURS NOTICE PRIOR TO STARTING ANY CONSTRUCTION PHASE. THE 72 HOUR NOTICE WILL ALLOW THE DULUTH AIRPORT AUTHORITY TO ISSUE A NOTAM MAKING PILOTS AWARE OF CONSTRUCTION IN THE AREA.
2. DURING THE PROJECT THE CONTRACTOR IS TO PROVIDE WEEKLY SCHEDULE UPDATES TO THE ENGINEER AND THE OWNER TO ALLOW THE OWNER TO ISSUE ANY ADDITIONAL NOTAMS THAT MAY BE REQUIRED.
3. BARRICADES BELOW INDICATE CONSTRUCTION LIMITS DURING PHASE 1. AIRCRAFT OPERATIONS WILL BE SUSPENDED FOR PHASE 2, AND BARRICADES WILL NOT BE NECESSARY DURING THIS PHASE.

CONTRACT TIME = 20 CALENDAR DAYS



LEGEND

↔ HAUL ROUTE

☒ CONTRACTOR STAGING AREA, EMPLOYEE PARKING LOT AND STOCKPILE LOCATION



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Duluth, Minnesota 55811
218-722-1227 FAX 218-722-1052
www.rsandh.com



DULUTH AIRPORT AUTHORITY

**SKY HARBOR AIRPORT
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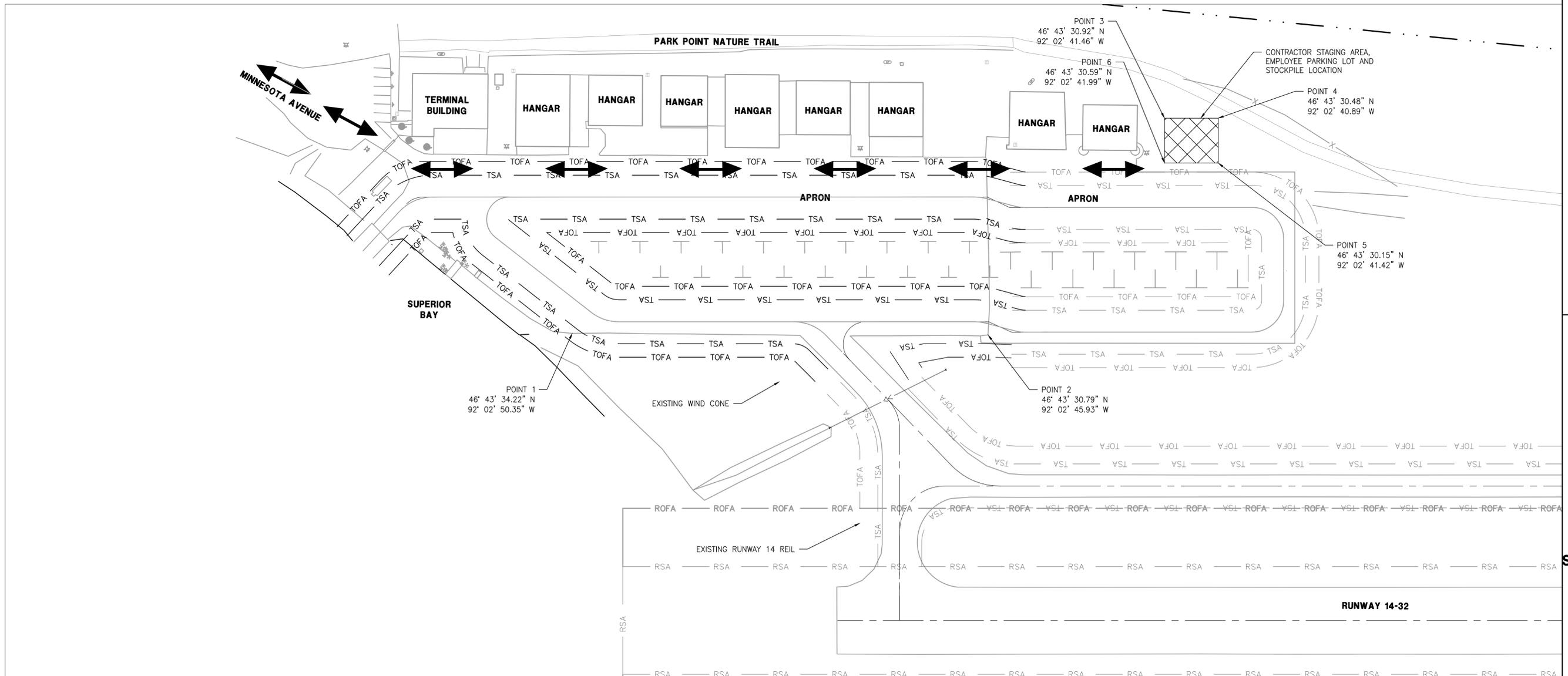
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**SHEET TITLE
CONTRACT
LAYOUT AND
SAFETY PHASING
PLAN AND
NOTES**

SHEET NUMBER

C004

**BID
DOCUMENTS**



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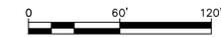
SHEET TITLE
HORIZONTAL AND VERTICAL CONTROL PLAN AND NOTES

SHEET NUMBER
C005

BID DOCUMENTS

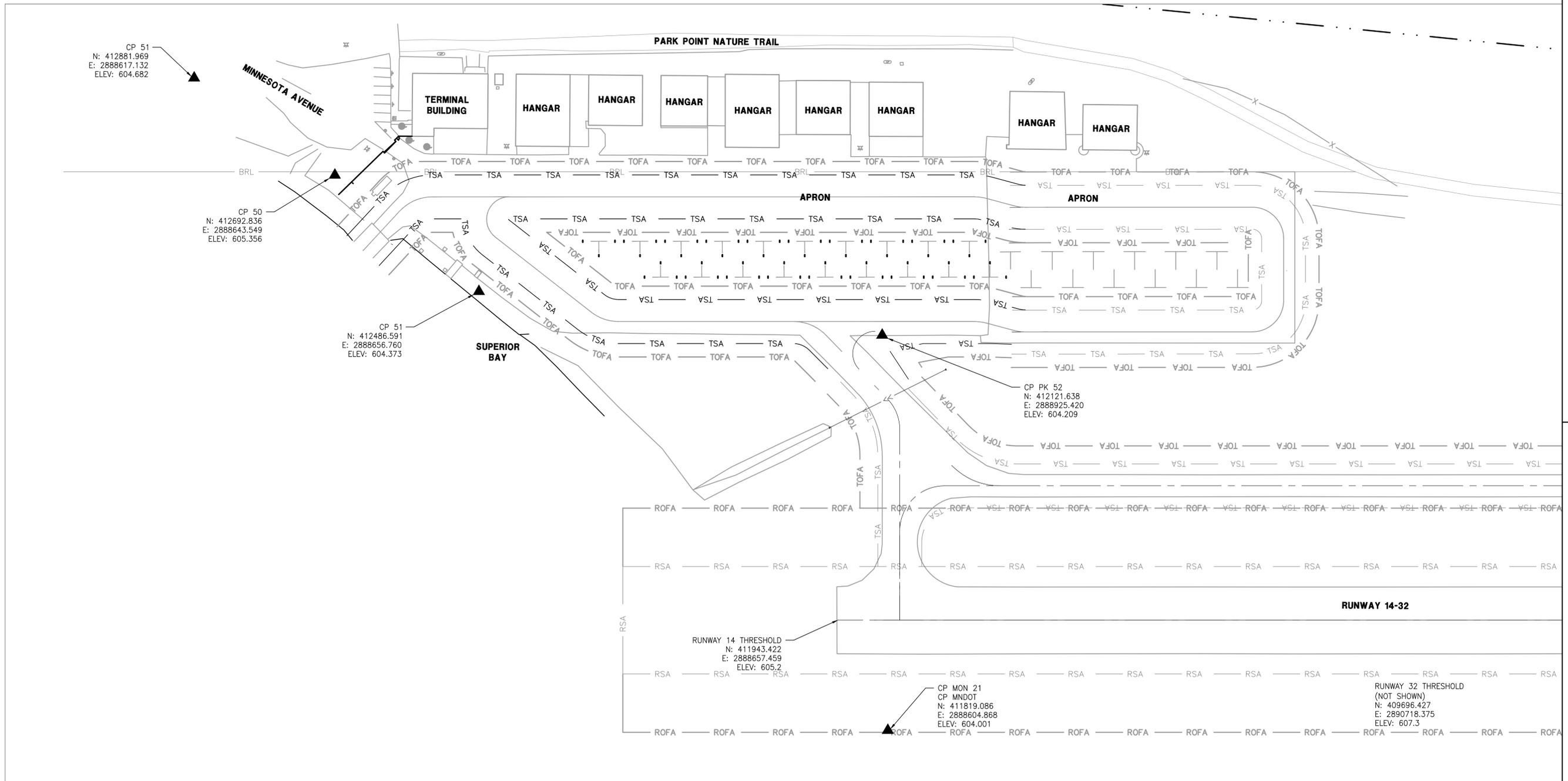
HORIZONTAL AND VERTICAL CONTROL NOTES

1. ALL NORTHING AND EASTING COORDINATES ARE IN MINNESOTA STATE PLANE NORTH ZONE.
2. THE VERTICAL DATUM IS BASED ON NAD 83 (2007).
3. THE CONTRACTOR SHALL PROTECT ALL AIRPORT CONTROL POINTS. ANY DAMAGE TO THE CONTROL POINTS SHALL BE PAID FOR AT THE CONTRACTOR'S EXPENSE.
4. CONTRACTOR SHALL LOCATE AND VERIFY THE PRIMARY AIRPORT CONTROL AND SECONDARY AIRPORT CONTROL PRIOR TO START OF CONSTRUCTION.



LEGEND

▲ CONTROL POINT



DEMOLITION NOTES

- CONTRACTOR SHALL REPAIR ANY AND ALL EXISTING PAVEMENT TO REMAIN THAT IS DAMAGED DURING CONSTRUCTION ACTIVITIES. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR REPAIRING EXISTING PAVEMENT TO REMAIN.
- TRENCHING FOR UTILITY INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE UTILITY INSTALLATION. FOLLOWING COMPLETION OF ACCEPTED UTILITY INSTALLATION, EACH PAVEMENT LAYER SHALL BE RECONSTRUCTED TO MATCH THE MATERIAL AND THICKNESS OF THE ADJACENT EXISTING PAVEMENT.

LEGEND

- REMOVE EXISTING 6-FOOT FENCE AND PEDESTRIAN GATE
- REMOVE EXISTING ELECTRIC SLIDE GATE AND OPERATORS
- REMOVE EXISTING KEY PAD



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 Duluth, Minnesota 55811
 218-722-1227 FAX 218-722-1052
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**SKY HARBOR AIRPORT
 VERTICAL PIVOT
 GATE AND FENCE**

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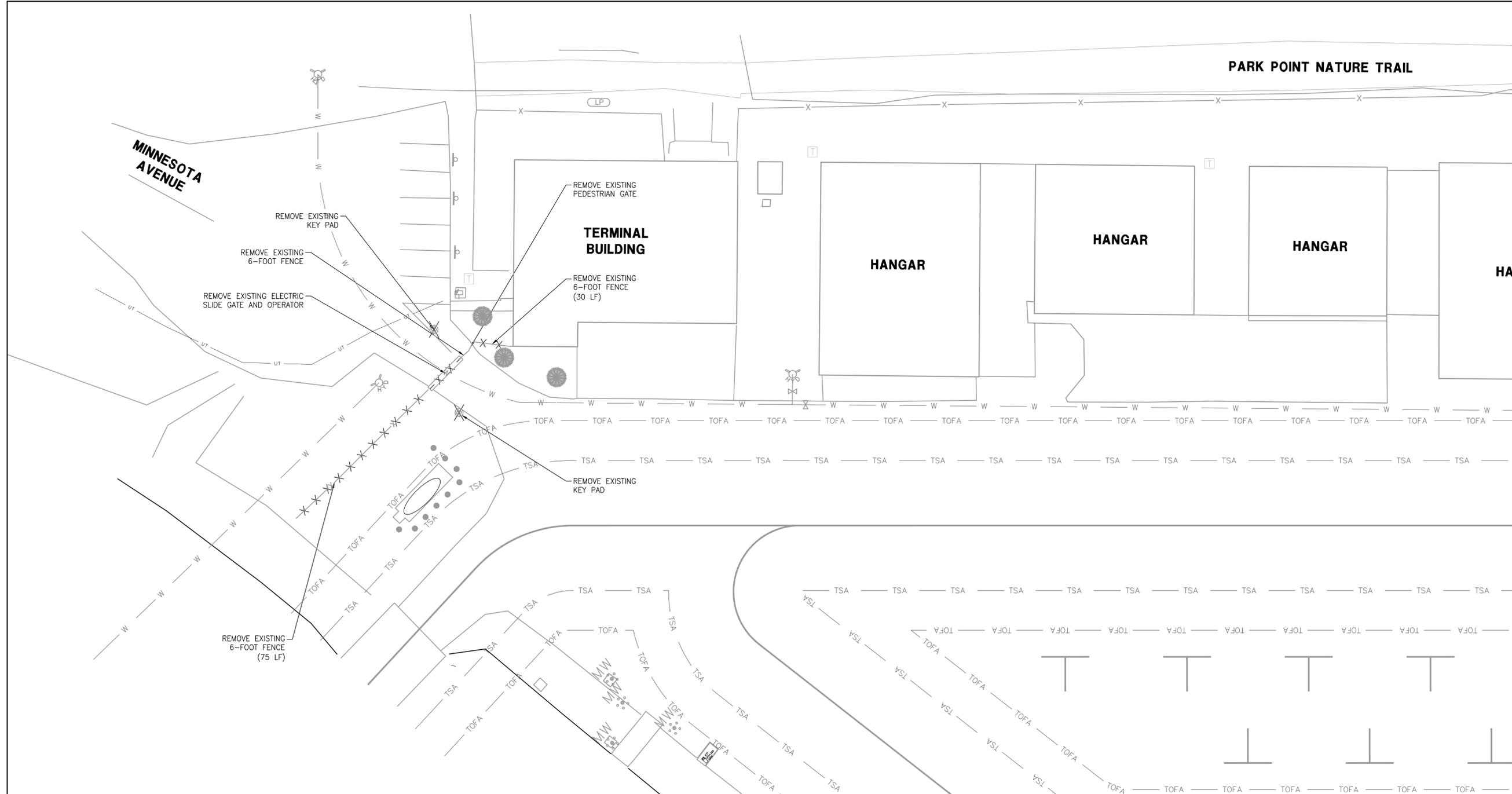
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**SHEET TITLE
 DEMOLITION
 PLAN**

**SHEET NUMBER
 C100**

**BID
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UTILITY NOTES

1. CONTRACTOR SHALL CONTINUE ELECTRICAL SERVICE TO MAIN CIRCUIT BREAKER INSIDE TERMINAL BUILDING.
2. TRENCHING AND PAVEMENT RESTORATION IS CONSIDERED INCIDENTAL TO THE COST OF THE UTILITY INSTALLATION. FOLLOWING COMPLETION OF ACCEPTED UTILITY INSTALLATION, EACH PAVEMENT LAYER SHALL BE RECONSTRUCTED TO MATCH THE MATERIAL AND THICKNESS OF THE ADJACENT EXISTING PAVEMENT.

LEGEND

- W — W — EXISTING WATER MAIN
- - - - - NEW DIRECT BURIED ELECTRICAL CABLE
- ==== PROPOSED 4-WAY, 3" DUCT
- ⊕ EXISTING FIRE HYDRANT
- ⊕ EXISTING WATER VALVE
- PROPOSED ELECTRICAL HANDHOLE
- ⊙ NEW CARD READER



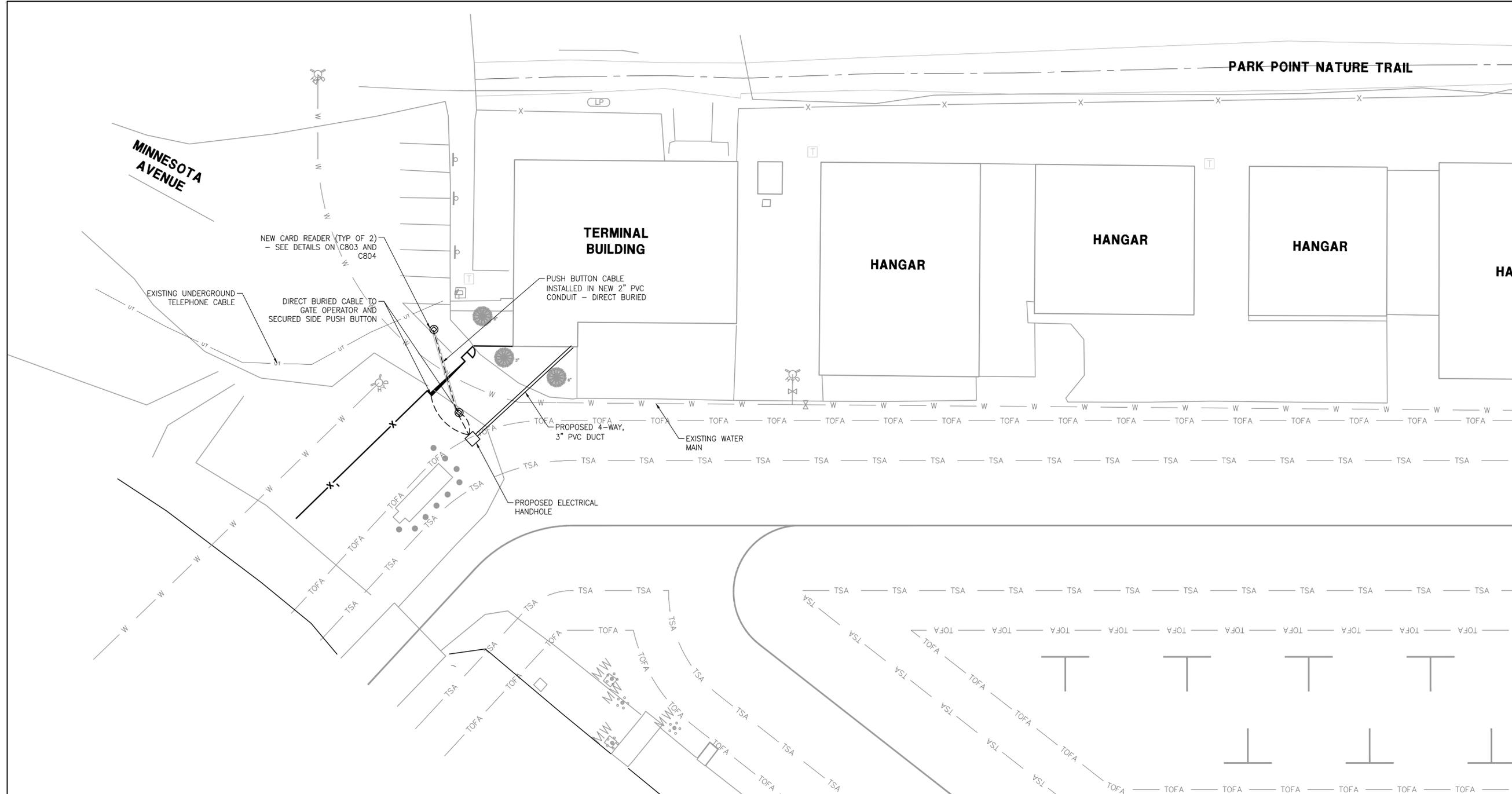
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DULUTH AIRPORT
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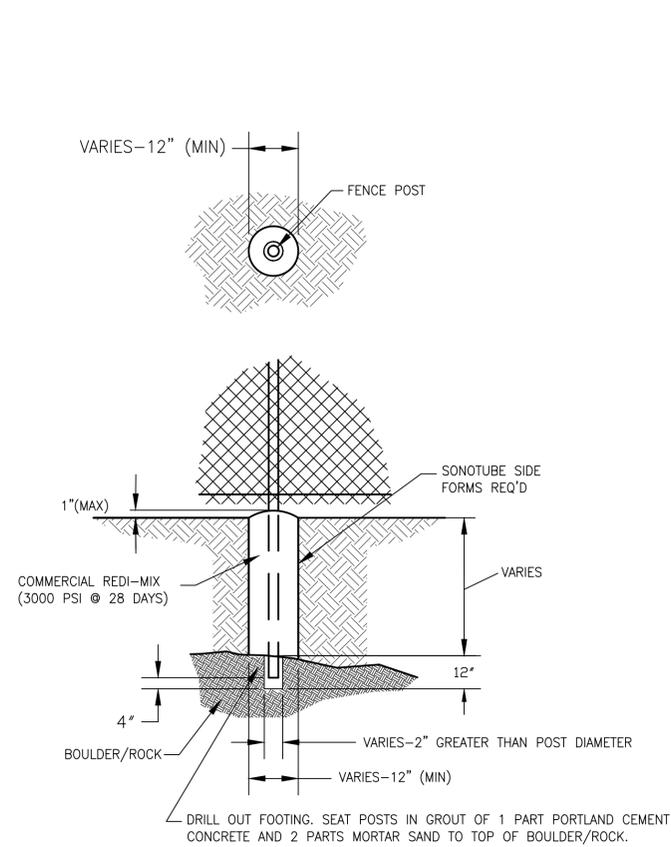
SHEET TITLE

UTILITY PLAN

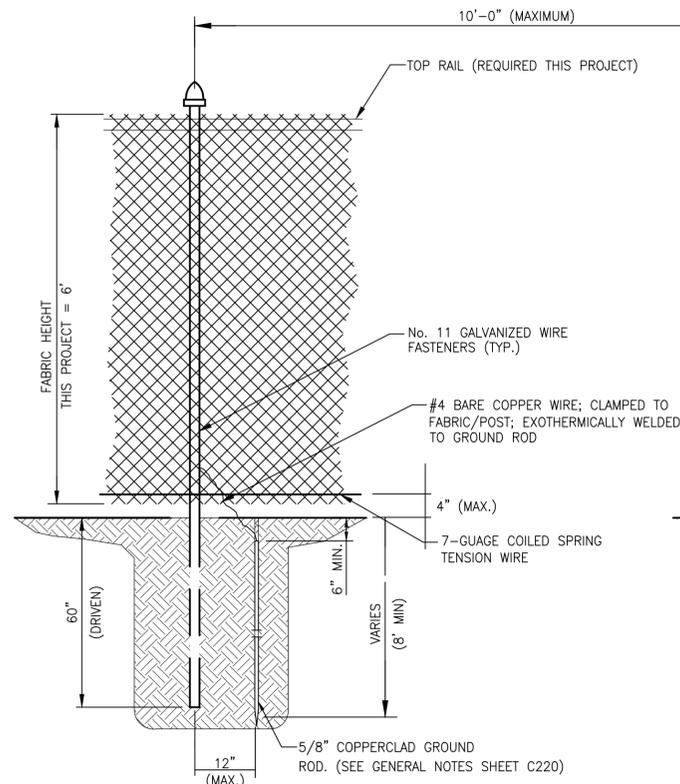
SHEET NUMBER

C800

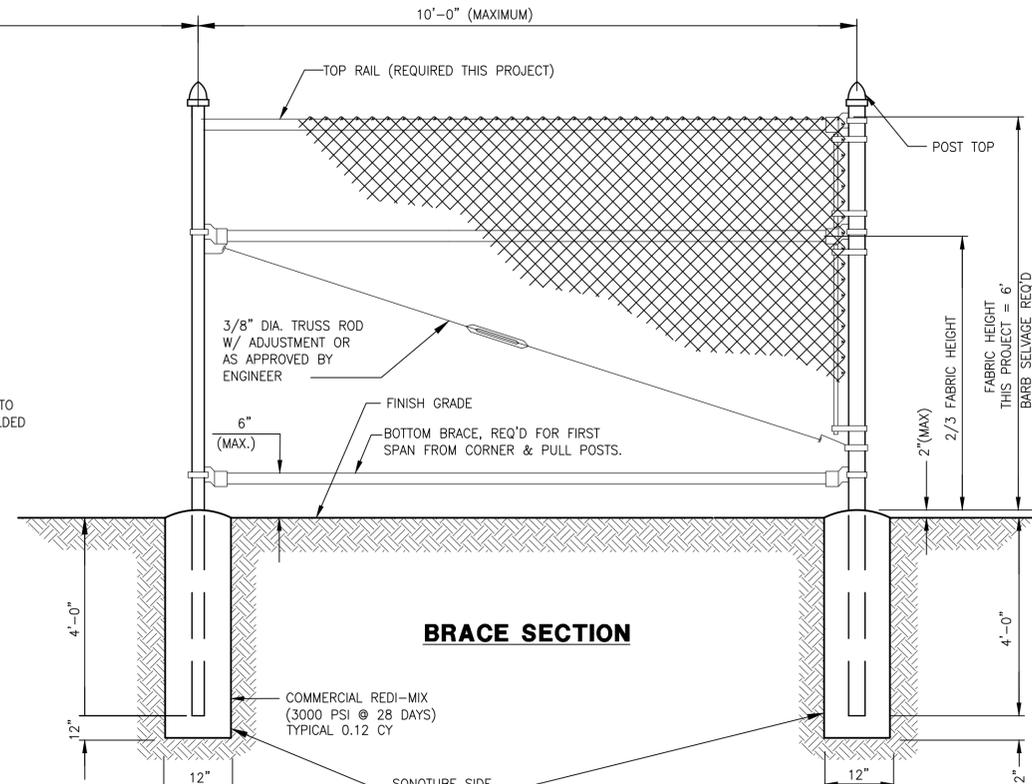
BID DOCUMENTS



1 **BOULDER/ROCK FOOTING DETAIL**
SCALE: NTS



2 **TURF LINE POST (INTERMEDIATE)**
SCALE: NTS

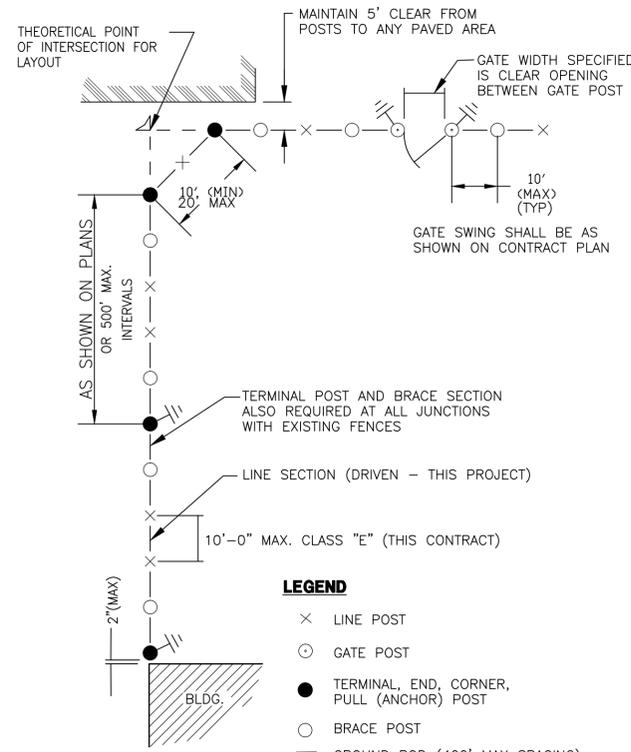


3 **CHAIN-LINK FENCE, CLASS E, FAA SPEC. F-162**
SCALE: NTS

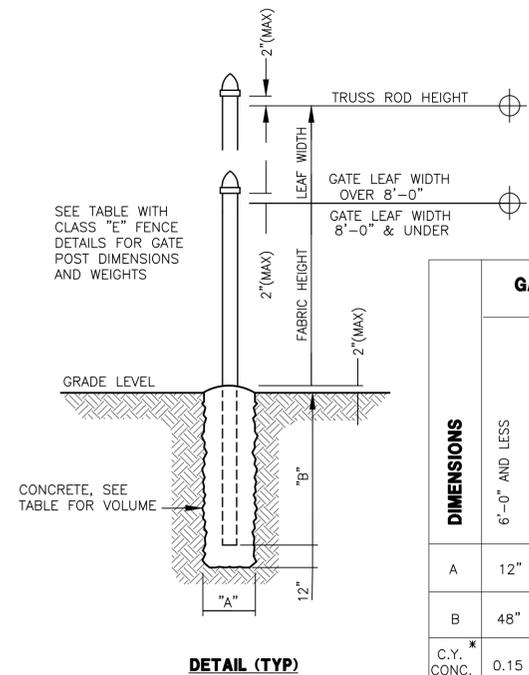
TYPICAL CHAIN LINK FENCE MEMBERS, DIMENSIONS & WEIGHTS			
DESCRIPTION	SECTION	STEEL FRAME	
		OUTSIDE DIMENSION (INCHES)	WEIGHT (LBS/FT.)
CORNER, BRACE, END AND PULL POSTS FABRIC HEIGHTS 6 ft AND LESS	○	2.375	3.65
	□	2.00	3.60
	○	2.875	5.79
FABRIC HEIGHTS OVER 6 ft	○	2.5	5.70
	□	2.5	5.70
ALL HEIGHTS	ROLL FORM	3.5x3.5	5.10
GATE POSTS	○	3 OR 4	5.79
	□	2.5	5.70
	○	2.5	5.70
GATE LEAF WIDTH 6 ft AND LESS	○	3.5x3.5	5.10
	□	3.5x3.5	5.10
	○	3.5x3.5	5.10
GATE WIDTH OVER 6 ft THRU 13 ft GATE LEAF WIDTH OVER 13 ft THRU 18 ft GATE LEAF WIDTH OVER 18 ft THRU 23 ft	○	4.0	9.11
	○	6.625	18.97
	○	8.625	24.70
LINE POSTS	○	1.90	2.72
	○	2.375	3.65
RAILS & BRACES	○	1.660	1.806
	○	1.625x1.250	1.35

NOTES:

- GALVANIZED STEEL PIPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F 1083.
- POLYMER-COATED STEEL PIPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 569. POLYMER COATING SHALL BE IN ACCORDANCE WITH ASTM F 1234, TYPE B. POLYMER COATING SHALL BE IN ACCORDANCE WITH ASTM F 1234, TYPE B.
- THE STEEL USED IN ALL STRUCTURAL SHAPES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 572, GRADE 45, AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM F 1234, TYPE A.
- ROLL-FORMED SECTIONS SHALL BE FABRICATED FROM MATERIAL MEETING THE REQUIREMENTS OF ASTM A 570, GRADE 45, AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A 123, OR COATED WITH ZINC-5% ALUMINUM MISCHMETAL ALLOY IN ACCORDANCE WITH ASTM F 1234, TYPE C.



4 **TYPICAL FENCE LAYOUT**
SCALE: NTS



5 **GATE POST & CONCRETE BASE**
SCALE: NTS

DIMENSIONS	GATE WIDTH (ONE LEAF)			
	6'-0" AND LESS	OVER 6'-0" TO 10'-0"	OVER 10'-0" TO 15'-0"	OVER 15'-0" TO 18'-0"
A	12"	16"	20"	24"
B	48"	66"	66"	66"
C.Y. CONC.	0.15	0.42	0.53	0.76

* COST OF FURNISHING & PLACING CONCRETE INCIDENTAL TO COST OF EACH GATE

SCHEDULE

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Signature: *Darren K. Christopher*
Date: 06/01/2015 Reg. No.: 45052

REVISIONS		
NO.	DESCRIPTION	DATE

DATE ISSUED: 06-01-15
REVIEWED BY: DKC
DRAWN BY: AEE
DESIGNED BY: AEE

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SHEET TITLE

**FENCE
DETAILS**

SHEET NUMBER
C801

**BID
DOCUMENTS**

GATE NOTES:

- GATES SHALL HAVE A DEVICE WITH PROVISIONS FOR LOCKING. (SEE DETAIL #6 THIS SHEET)
- WELDS ON STEEL FRAMES SHALL BE GROUND SMOOTH, THOROUGHLY CLEANED AND COVERED WITH ALUMINUM OR ZINC BASE PAINT.
- GATES AND FITTINGS SHALL BE GALVANIZED STEEL PIPE PER REQUIREMENTS FOR POSTS, RAILS & BRACES
- INSTALLATION SHALL MEET FAA SPEC. F-162, LATEST EDITION.
- AS BARBED WIRE EXTENSION ARMS ARE SPECIFIED FOR FENCE, THE GATE POSTS SHALL BE EXTENDED 12" MINIMUM ABOVE THE TOP OF THE FENCE FABRIC, FOR TERMINATING THE BARBED WIRE.
- GATE SHALL BE 20' X 6'+1" AMPLIMESH.
- GATE SHALL BE INSTALLED WITH 150 MPH BRACING.
- GATE SHALL OPERATE AT TEMPERATURES TO -40 F.
- ALTERNATE POWER SOURCE WHEN COMMERCIAL POWER IS UNAVAILABLE.
- ELECTRIC HEAT TAPE SHALL BE INSTALLED IN CONCRETE BASE (INCIDENTAL TO GATE)

F-162 FENCE NOTES:

- FABRIC: 2"x2" No. 9 GAUGE GALVANIZED STEEL WIRE MESH.
- SERVAGE RAILS & TENSION WIRES: FENCES SHALL HAVE BARBED SERVAGE AND 7 GAUGE COILED SPRING TENSION WIRES PROVIDED, BOTTOM; KNUCKLED BARBED SERVAGE AND TOP RAIL, TOP.
- POSTS: SEE SHEET C101.
- FABRIC FASTENERS: MINIMUM 3/16" x 3/4" STRETCHER BAR, Banded to terminal posts; OR INTEGRAL FABRIC FITTINGS ON terminal posts. USE NO. 6 WIRE CLIPS FOR LINE POSTS AND NO. 9 WIRE CLIPS FOR BRACES, RAILS, AND TENSION WIRES. ALL FASTENERS SPACED 14" MAX. VERTICALLY, 24" MAX. HORIZONTALLY. ALL FABRIC FASTENERS SHALL BE SAME MATERIAL AS FENCE FABRIC BASE MATERIAL.
- COATINGS: ZINC COATING ON POSTS, RAILS, GATE FRAMES AND STEEL FITTINGS SHALL AVERAGE 2.0 OZ./S.F. NO INDIVIDUAL SPECIMEN SHALL HAVE LESS THAN 1.8 OZ./S.F.
- FENCE HEIGHT: THE FABRIC HEIGHT SHALL BE TEN (10') FEET.
- BARBED WIRE: 3-STRANDS OF BARBED WIRE SHALL BE PLACED THIS CONTRACT.
- POSTS IN PAVEMENT: POSTS SET IN EXISTING PAVEMENTS SHALL HAVE PAVEMENT CORED FULL DEPTH TO A DIAMETER THAT WILL PROVIDE 2" CLEAR TO POST ON ALL SIDES.
- TIES: WIRE TIES SHALL BE OF THE SAME MATERIAL & COATING WEIGHT AS THE FABRIC TYPE WILL ALLOW ALUMINUM WIRE FASTENER TIES.

NOTE:

- FENCE INSTALLATION AND DEMOLITION, AS WELL AS SITE RESTORATION, ASSOCIATED WITH EACH GATE INSTALLATION SHALL BE INCIDENTAL TO THE GATE AND SHALL NOT BE PAID FOR SEPARATELY.
- CONTRACTOR SHALL VERIFY CABLES FOR GATE POWER, SERVICE, AND UPGRADE AS NECESSARY.
- FENCING NOT SHOWN AROUND GATE OPERATOR FOR SAKE OF CLARITY

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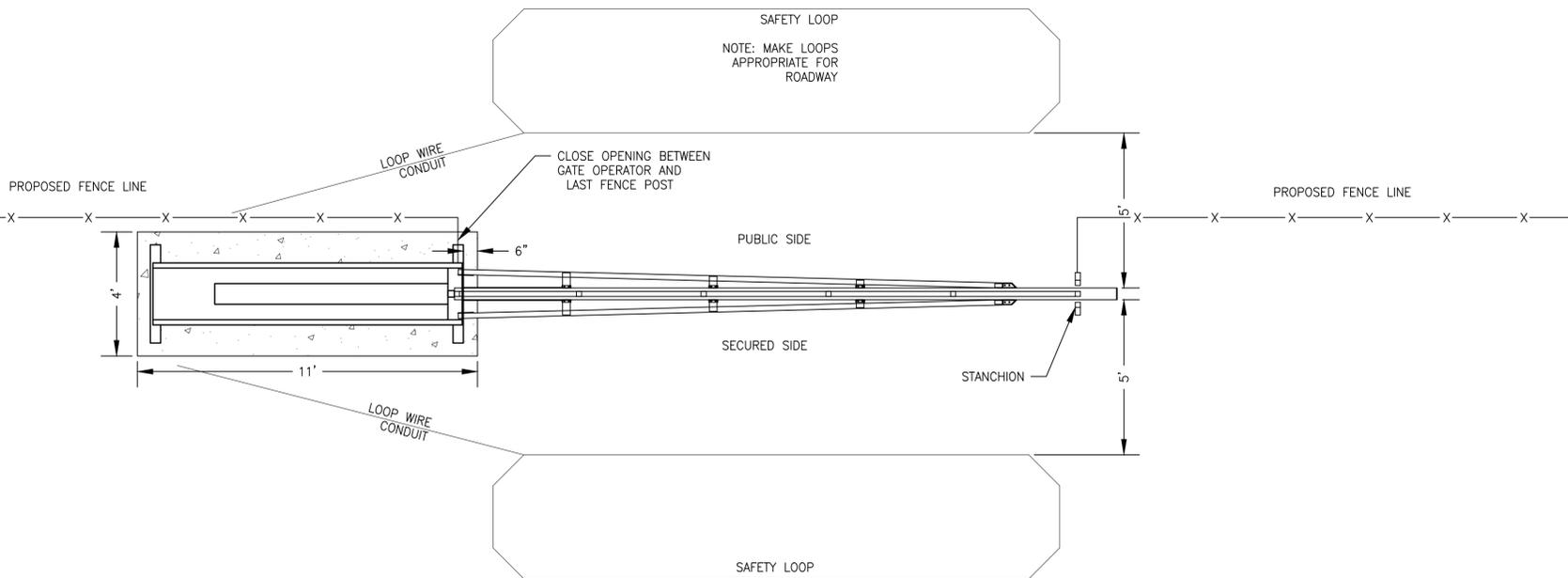
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SHEET TITLE
VERTICAL PIVOT GATE DETAILS

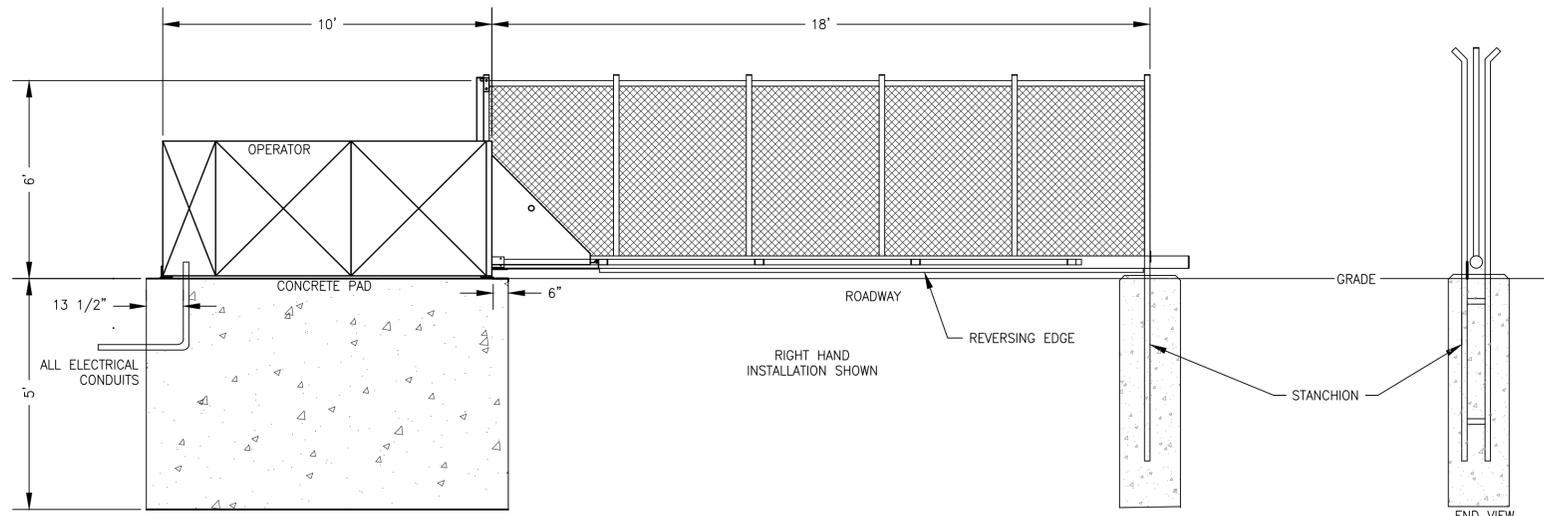
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C802

BID DOCUMENTS

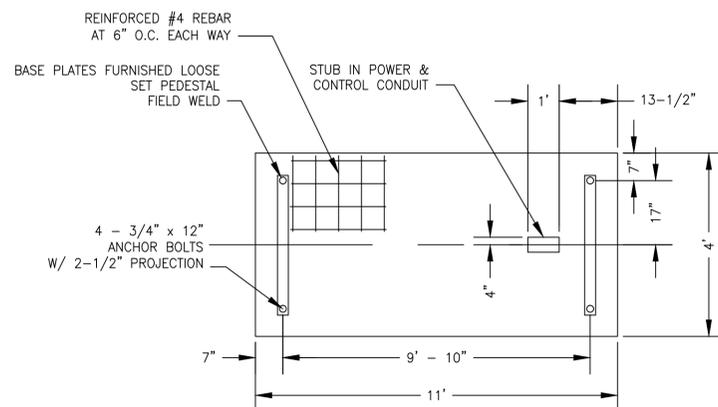


1 VERTICAL PIVOT GATE PLAN VIEW
 C801 SCALE: NTS

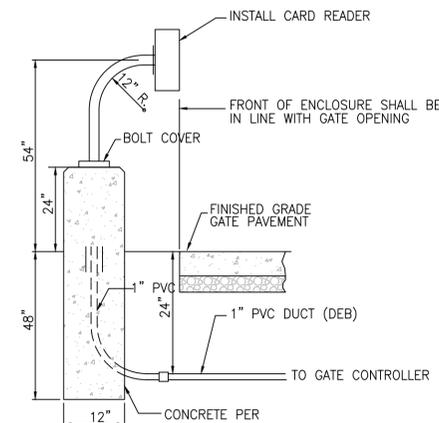
- LIST OF MATERIALS
 2 X 2 X .188 SQUARE TUBING
 4" SCHEDULE 40 PIPE
 LONG 2" SQ. TUBE SWAY BRACES
 1/4" ALUMINUM CAPS



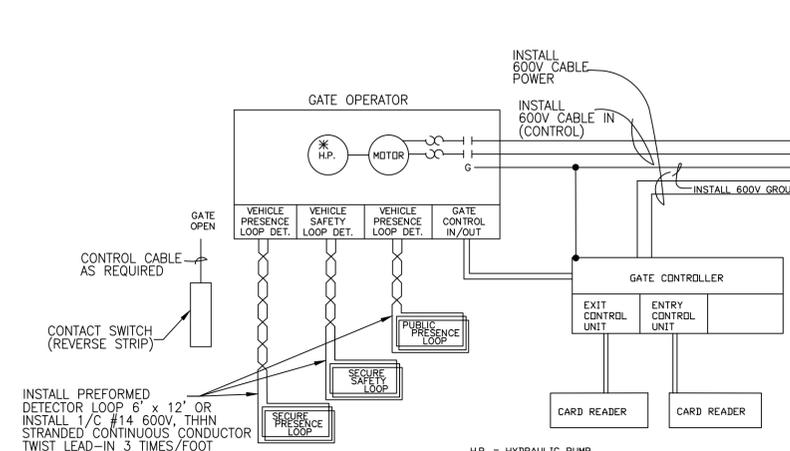
2 VERTICAL PIVOT GATE ELEVATION
 C801 SCALE: NTS



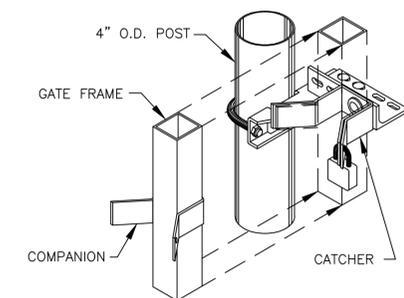
3 FOUNDATION DETAIL (PLAN VIEW)
 C801 SCALE: NTS



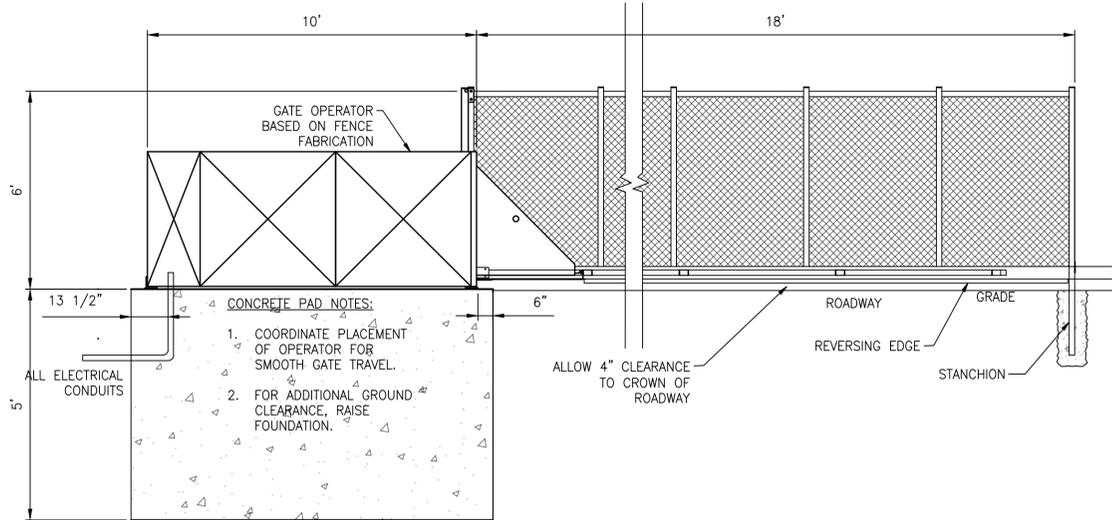
4 CARD READER PEDESTAL DETAIL
 C801 SCALE: NTS



5 ACCESS GATE WIRING DIAGRAM
 C801 SCALE: NTS



6 CATCH ASSEMBLY
 C801 SCALE: NTS



1 PIVOT GATE OPERATOR DETAIL

SCALE: NTS GATE OPERATOR MUST BE LOCATED ON AIRPORT OPERATION AREA SIDE OF FENCING

VERTICAL PIVOT GATE NOTES:

- PROPOSED HYDRAULIC GATE OPERATORS SHALL BE IDEAL HYJD-25, OR APPROVED EQUAL. VOLTAGES AND HORSEPOWERS SHALL BE AS DETAILED. OPERATORS SHALL HAVE FULL SYSTEM CAPABILITIES AND MUST BE INTEGRATED EXISTING CHECKPOINT ACCESS AND CONTROL SYSTEM. THE OPERATOR SHALL BE MOUNTED ON A FOUNDATION PER DETAIL #3 SHEET C102.
- PROXIMITY KEY PAD SHALL BE PROVIDED AS DETAILED PER SPECIFICATIONS. CONTROL SHALL BE VIA FIBER OPTIC CABLE AND SHALL BE INSTALLED IN PVC CONDUIT FROM CARD READERS TO GATE OPERATOR. PROVIDE TWO (2) CONCRETE BOLLARDS AROUND EACH CARD READER FOR PROTECTION.
- PROVIDE PHOTO EYES AT EACH GATE FOR OBSTRUCTION SENSING. THE INFERRED PHOTO EYES SHALL BE EMX INDUSTRIES, INC. MODEL IRB-325 OR APPROVED EQUAL. AN INLINE CONTROL SWITCH MUST ALSO BE PROVIDED AT EACH PHOTO EYE FOR MANUAL OPERATION CONTROL WIRING SHALL BE INSTALLED IN PVC CONDUIT FROM EACH PHOTO EYE TO GATE OPERATOR.
- THE CONTRACTOR SHALL PROVIDE A TRANSMITTER WITH AUDIBLE ALARM ON EACH GATE. THE TRANSMITTER SHALL BE MILLER EDGE MODEL MWT02 OR APPROVED EQUAL. EACH GATE SHALL BE EQUIPPED WITH A CONTACT SAFETY DEVICE ON THE BOTTOM EDGE OF THE GATE. THE CONTACT SAFETY EDGE SHALL BE MILLER EDGE ME123 SENSING EDGE OR APPROVED EQUAL.
- EXACT LAYOUT FOR EACH GATE OPERATOR SYSTEM IS DIFFERENT. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO COORDINATE EXACT LAYOUT WITH THE AIRPORT AND ENGINEER PRIOR TO AND DURING CONSTRUCTION.
- PROPOSED GATE OPERATORS SHALL BE OPERATED MANUALLY, BY PROXIMITY KEY CARD ACCESS, AND BY REMOTE TRANSMITTERS. THE CONTRACTOR SHALL PROVIDE 10 TRANSMITTERS (GATE REMOTES). ALL ENCLOSURES SHALL BE CONFIGURED IN SUCH A WAY THAT ALL ELECTRONIC COMPONENTS ARE PROTECTED FROM INCREMENT WEATHER WHEN THE ENCLOSURE IS OPEN.
- PROVIDE 1/2" PVC CONDUIT FOR LOOP WIRING FROM LOOP TO GATE OPERATOR (3 LOOPS PER GATE).
- ALL ITEMS ASSOCIATED WITH INSTALLATION OF PROPOSED HYDRAULIC GATES (CONDUITS, WIRING, DISCONNECTS, CARD READERS, BOLLARDS, SENSOR LOOPS, CONTROL STATIONS, KEY CARDS, WP/OFCI RECEPTACLES, POWER PANELS ETC.) SHALL BE CONSIDERED INCIDENTAL TO EACH GATE OPERATOR AT EACH LOCATION. EACH GATE OPERATOR SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE, WHICH PRICE SHALL INCLUDE THE ASSOCIATED ITEMS SHOWN ON THE PLANS AND AS REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.

SAFETY LOOP NOTES

THE FOLLOWING CHART MUST BE UTILIZED WHEN INSTALLING A LOOP USED FOR VEHICLE DETECTION. THIS CHART LISTS THE PREDETERMINED NUMBER OF TURNS THAT MUST BE MADE BY THE ACTUAL LOOP WIRES IN ORDER TO CREATE AN ACCEPTABLE INDUCTANCE RANGE.

LOOP DIMENSION	NUMBER OF TURNS	LOOP AREA
A) 2' X 6'	6	A) 6 - 12
B) 2'-6" X 6'	5	B) 12 - 20
C) 4' X 8'	4	C) 20 - 60
D) 6' X 9'	3	D) 60 - 240
E) 12' X 20'	2	E) 240 & UP

DUE TO THE LOSS OF INDUCTANCE CAUSED BY A DISTANCE GREATER THAN 490 FEET FROM THE LOOP TO THE GATE DEVICE, AN ADDITIONAL TURN OF LOOP WIRE IS RECOMMENDED DURING INSTALLATION.

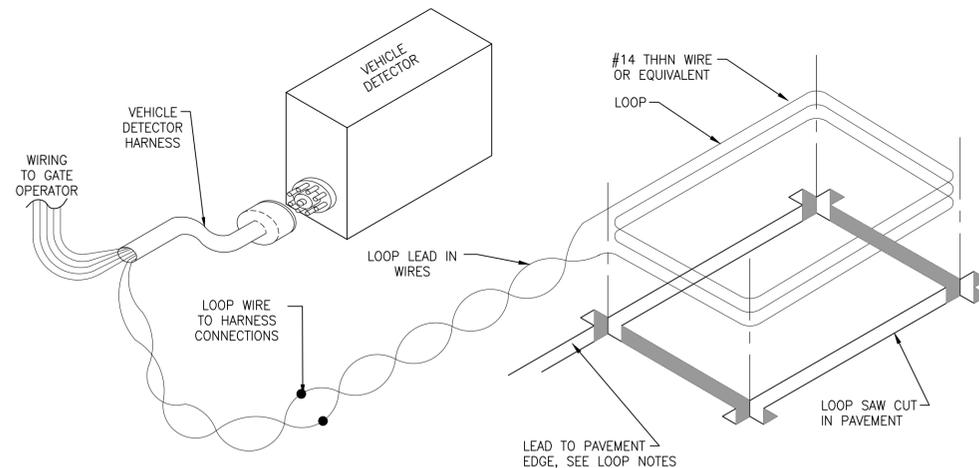
A CLEAN, SMOOTH SAW SLOT MUST BE CUT INTO THE PAVEMENT WHERE THE LOOP IS TO BE INSTALLED. THE INDUSTRY STANDARD REQUIRES THIS SLOT TO BE A MINIMUM OF 1-1/2" AND A MAXIMUM OF 3-1/2" DEEP AS A GENERAL RULE. WHEN A SOFTER PAVEMENT MATERIAL IS PRESENT, THE GREATER SAW CUT DEPTH IS PREFERRED. THIS PROTECTS THE LOOP WIRES FOR A LONGER PERIOD OF TIME.

AFTER THE LOOP SAW SLOTS HAVE BEEN CLEARED OUT, PROCEED TO TUCK THE WIRE IN THE SLOTS WITH AN OBJECT THAT WILL NOT INJURE THE WIRE INSULATION. WIND THE ACTUAL LOOP WITH #14 THHN STRANDED WIRE OR EQUIVALENT. THE WIRE MUST BE RATED FOR DIRECT BURIAL AND IMPERVIOUS TO MOISTURE. THIS WILL AVOID CHANGES IN THE DIELECTRIC CONSTANT OF THE WIRE INSULATION WHICH MAY CAUSE EXCESSIVE INDUCTANCE DRIFT. IT IS EXTREMELY IMPORTANT THAT THE LOOP BE WOUND WITH ONE CONTINUOUS LENGTH OF WIRE. THERE ARE ABSOLUTELY **NO SPLICES PERMITTED!**

THE TWO WIRES THAT LEAVE THE LOOP AT THE CURB OR PAVEMENT AFTER THE LOOP HAS BEEN PROPERLY WOUND, MUST BE TWISTED AT A MINIMUM OF 5 TURNS PER FOOT AND TAPED TOGETHER WITH (UL) APPROVED ELECTRICAL TAPE TO PREVENT THE WIRES FROM MOVING. FAILURE TO TWIST AND SECURE THESE WIRES MAY PRODUCE A FALSE SIGNAL FROM THE LOOP.

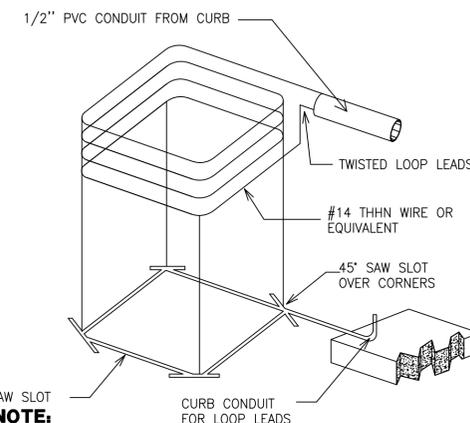
WHEN THE LOOP INSTALLATION HAS BEEN COMPLETED, CHOOSE A SEALANT THAT CLOSELY MATCHES THE TYPE OF PAVEMENT MATERIAL PRESENT. INDUSTRY RECOMMENDS (3M) LOOP DETECTOR SEALANT. HARD SETTING EPOXIES SHOULD NOT BE USED WITH ASPHALT. AVOID HIGH TEMPERATURE SEALANTS.

VEHICLE DETECTION LOOPS SHALL BE THREE PER GATE AND BE CONFIGURED FOR SAFETY ONLY. ALL LOOPS SHALL BE INSTALLED TO MANUFACTURERS SPECIFICATIONS AND FIELD LOCATED BY CONTRACTOR AND ENGINEER. LOOPS SHALL BE SAWCUT INTO SOUND PAVEMENT. WHERE PAVEMENT IS CRACKED, BROKEN OR OTHERWISE UNSOUND, LOOPS SHALL BE INSTALLED IN SCHEDULE 80 PVC AND LOCATED IN THE GRANULAR BASE PRIOR TO NEW PAVING BY OTHERS.



3 PROPOSED SAFETY LOOP DETECTOR INSTALLATION DETAIL

SCALE: NTS

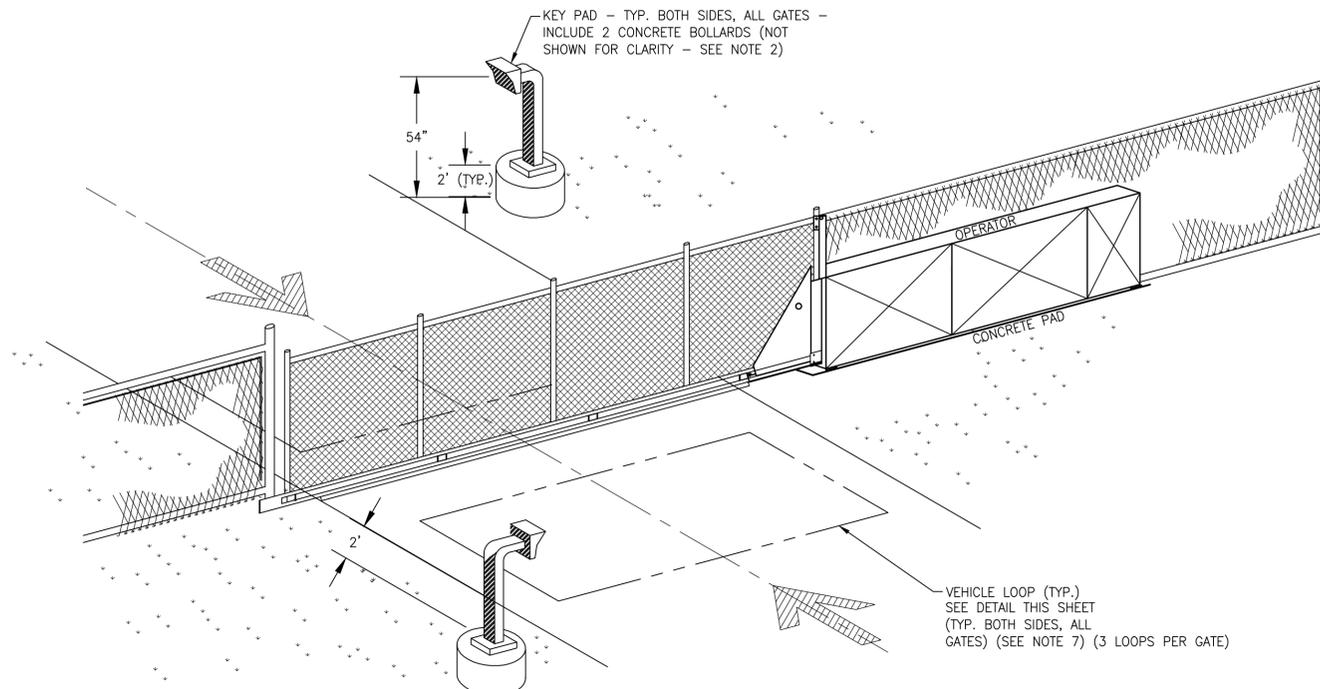


NOTE:

WARNING DO NOT INSTALL LOOP WITHIN 12 INCHES OF ANY CABLES OR CONDUITS. DO NOT INSTALL LOOP WITHIN 2 INCHES OF ANY STEEL REINFORCEMENTS NOR ANY PAVEMENT JOINTS

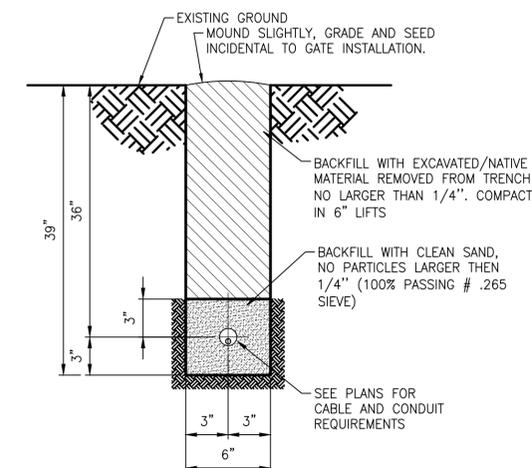
4 SAFETY LOOP INSTALLATION DETAIL

SCALE: NTS



2 TYPICAL ELECTRIC GATE LAYOUT DETAIL

SCALE: NTS



5 CONDUIT TRENCH DETAIL (IN TURF)

SCALE: NTS

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.
Print Name: DARREN K. CHRISTOPHER
Signature: *Darren K. Christopher*
Date: 06/01/2015 Reg. No.: 45052

REVISIONS

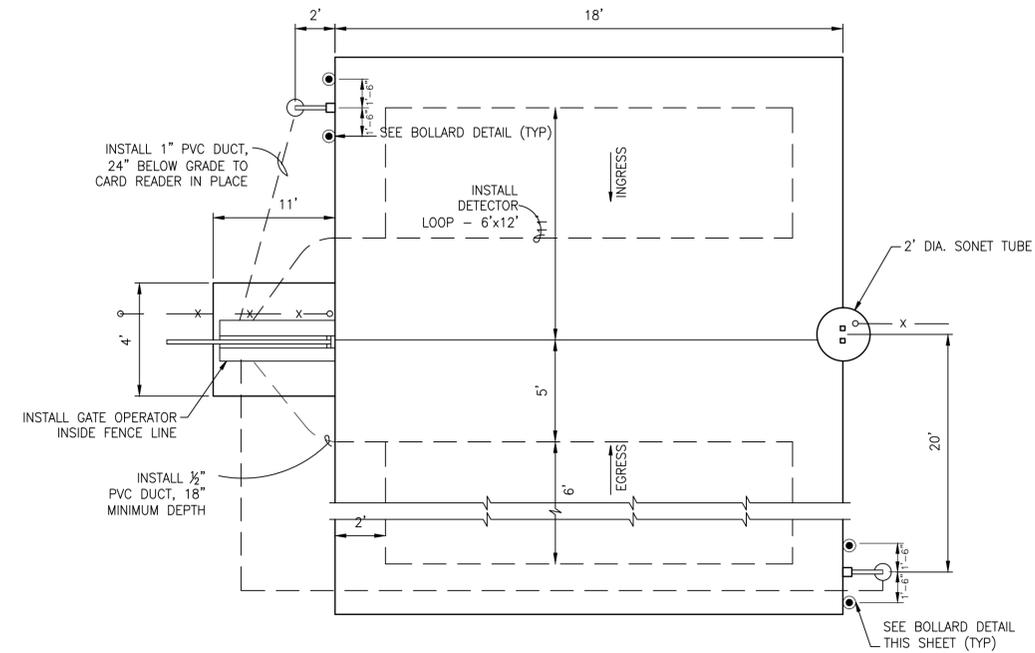
NO.	DESCRIPTION	DATE

DATE ISSUED: 06-01-15
REVIEWED BY: DKC
DRAWN BY: AEE
DESIGNED BY: AEE
AEP PROJECT NUMBER
214-1882-119

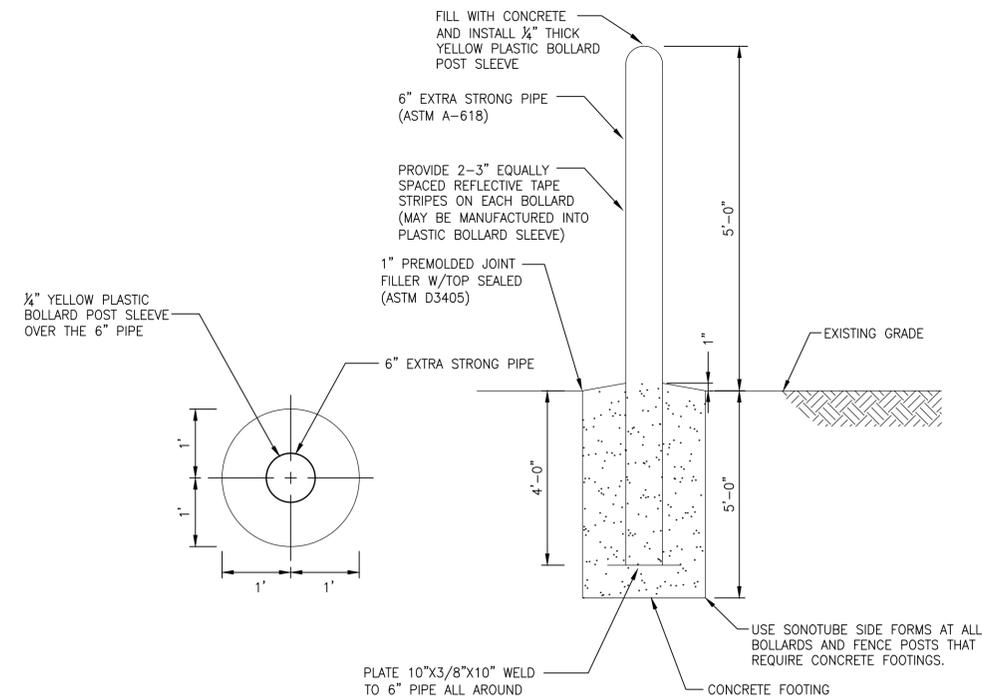
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SHEET TITLE
VERTICAL PIVOT GATE DETAILS

SHEET NUMBER
C803

BID DOCUMENTS



1
C803 **VERTICAL PIVOT GATE LAYOUT**
SCALE: NTS



1
C803 **CONCRETE BOLLARD POST DETAIL**
SCALE: NTS

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: DARREN K. CHRISTOPHER
Signature: *Darren K. Christopher*
Date: 06/01/2015 Reg. No.: 45052

REVISIONS		
NO.	DESCRIPTION	DATE

DATE ISSUED: 06-01-15
REVIEWED BY: DKC
DRAWN BY: AEE
DESIGNED BY: AEE

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SHEET TITLE

**VERTICAL
PIVOT GATE
DETAILS**

SHEET NUMBER

C804

**BID
DOCUMENTS**