

ROANOKE-BLACKSBURG REGIONAL AIRPORT - ROA

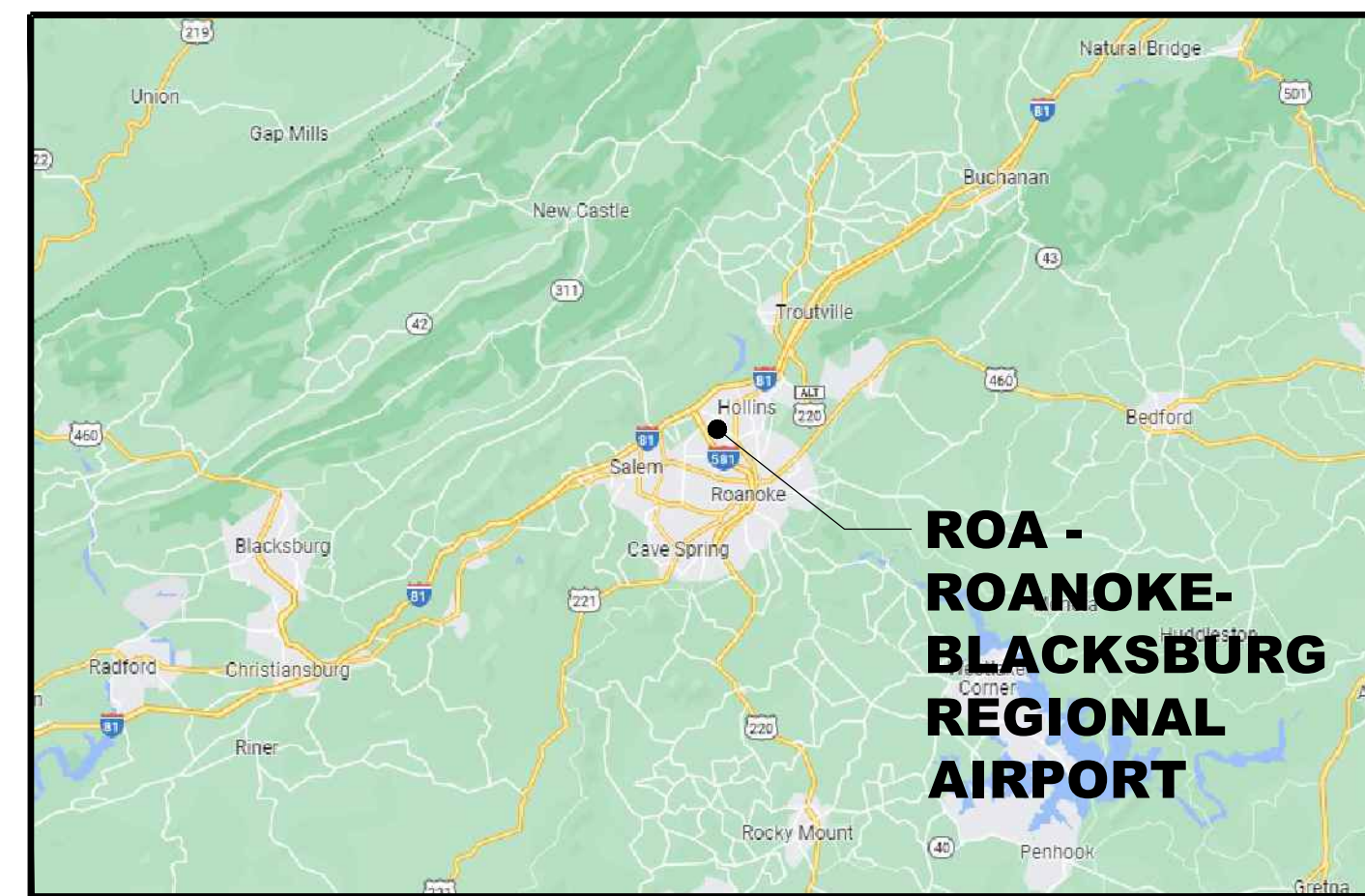
ROANOKE REGIONAL AIRPORT COMMISSION

RUNWAY 16-34 EMAS REPLACEMENT

BID SUBMITTAL CIVIL DESIGN DRAWINGS

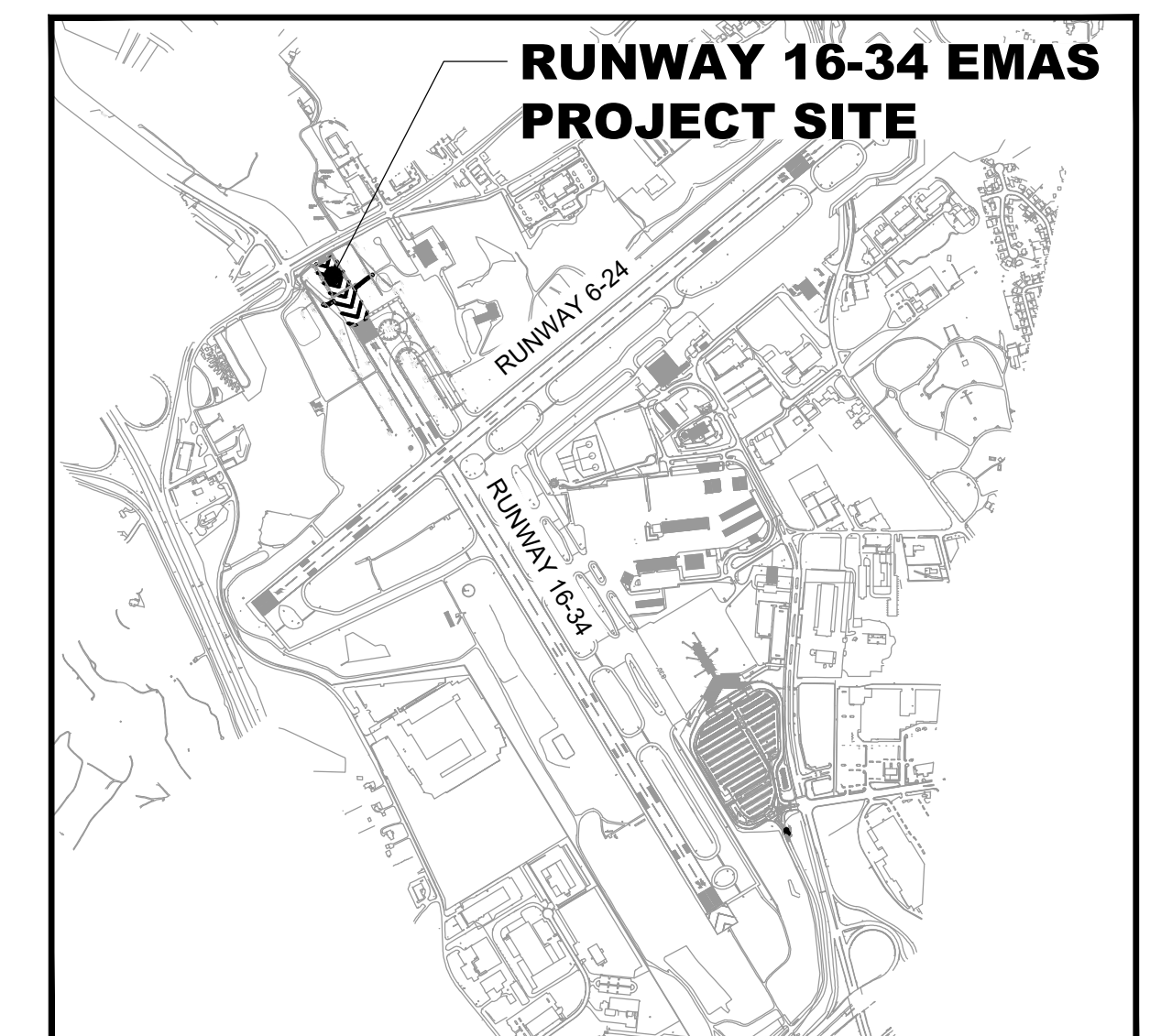
ITB NUMBER: 24-07

RS&H PROJECT NUMBER: 1022-0071-003



LOCATION MAP
N.T.S.

NAME OF DEVELOPMENT	RUNWAY 16-34 EMAS REPLACEMENT ROANOKE-BLACKSBURG REGIONAL AIRPORT (ROA)	
MAGISTERIAL DISTRICT(S)	CITY OF ROANOKE	
OWNER	ROANOKE REGIONAL AIRPORT COMMISSION 5202 AVIATION DRIVE, NW ROANOKE, VA 24012 540-362-1999	
DEVELOPER	ROANOKE REGIONAL AIRPORT COMMISSION 5202 AVIATION DRIVE, NW ROANOKE, VA 24012 (540) 362-1999	
ENGINEER, ARCHITECT OR SURVEYOR	ENGINEER: REYNOLDS, SMITH & HILLS 2600 PARK TOWER DR., SUITE 101 VIENNA, VA 22180 703-549-2472	SURVEYOR: HURT & PROFFITT 1881 PRATT DR., SUITE 1100 BLACKSBURG, VA 24060 540-552-5592
TAX MAP NO(S)	CITY OF ROANOKE TAX ID: 6590101	



VICINITY MAP
SCALE 1" = 1,500'
NORTH



NOTICE: ALL LANDOWNERS, DEVELOPERS AND CONTRACTORS

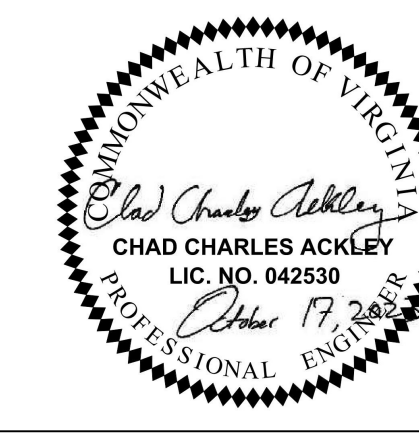
FAILURE TO COMPLY WITH THE CONSTRUCTION PROCEDURE REQUIREMENTS LISTED BELOW MAY RESULT IN THE COSTLY REMOVAL OF STRUCTURES, TIME DELAYS OR THE ISSUANCE OF STOP WORK ORDER.

CONSTRUCTION PROCEDURE REQUIREMENTS

- RIGHT-OF-WAY EXCAVATION PERMIT - PRIOR TO THE COMMENCEMENT OF ANY DIGGING, ALTERATION OR CONSTRUCTION WITHIN THE PUBLIC RIGHT -OF-WAY (STREETS, ALLEYS, PUBLIC EASEMENTS), A RIGHT-OF-WAY EXCAVATION PERMIT SHALL BE APPLIED FOR AND OBTAINED BY THE CONTRACTOR FROM THE CITY OF ROANOKE.
- LAND DISTURBANCE PERMIT - AN APPROVED EROSION AND SEDIMENT CONTROL PLAN FOR ANY BORROW/FILL SITES ASSOCIATED WITH THE PROJECT MUST BE SUBMITTED PRIOR TO THE ISSUANCE OF A LAND DISTURBANCE PERMIT.
- PLANS AND PERMITS - A COPY OF THE PLANS AS APPROVED BY THE CITY (SIGNED BY THE PROPER CITY OFFICIALS) AND ALL PERMITS ISSUED BY THE CITY SHALL BE AVAILABLE AT THE CONSTRUCTION SITE AT ALL TIMES OF ONGOING CONSTRUCTION.
- LOCATION OF UTILITIES - THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.
- CONSTRUCTION ENTRANCE - THE CONTRACTOR SHALL INSTALL AN ADEQUATE CONSTRUCTION ENTRANCE FOR ALL CONSTRUCTION RELATED EGRESS FROM THE SITE. SIZE AND COMPOSITION OF CONSTRUCTION ENTRANCE SHALL BE AS SHOWN OF THE PLANS.
- STREETS TO REMAIN CLEAN - IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSURE THAT THE PUBLIC STREET ADJACENT TO THE CONSTRUCTION ENTRANCE REMAINS FREE OF MUD, DIRT, AND/OR ANY TYPE OF CONSTRUCTION MATERIALS OF LITTER AT ALL TIMES.
- BARRICADES/DITCHES - THE CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF ALL EXCAVATED DITCHES AND SHALL SHALL FURNISH AND ENSURE THAT ALL BARRICADES PROPER AND NECESSARY FOR THE SAFETY OF THE PUBLIC ARE IN PLACE.
- SEWER AND PAVEMENT REPLACEMENT - CONSTRUCTION OF SANITARY SEWERS AND THE REPLACEMENT OF PAVEMENT SHALL BE IN ACCORDANCE WITH APPROVED STANDARDS AND SPECIFICATIONS OF THE CITY OF ROANOKE AND THE WESTERN WATER AUTHORITY.

- APPROVED PLANS/CONSTRUCTION CHANGES - ANY CHANGE OR VARIATION FROM CONSTRUCTION DESIGN AS SHOWN ON THE OFFICIALLY APPROVED PLANS SHALL BE APPROVED BY THE EROSION AND SEDIMENT CONTROL AGENT PRIOR TO SAID CHANGES OR VARIATION IN CONSTRUCTION BEING MADE.
- FINAL ACCEPTANCE/CITY - THE OWNER OR DEVELOPER SHALL FURNISH THE CITY OF ROANOKE'S PLANNING BUILDING AND DEVELOPMENT DEPARTMENT WITH A FIELD SURVEYED FINAL CORRECT SET OF AS-BUILT PLANS OF THE NEWLY CONSTRUCTED STORM DRAIN AND/OR STORMWATER MANAGEMENT FACILITIES PRIOR TO FINAL ACCEPTANCE AND ISSUANCE OF A CERTIFICATE OF OCCUPANCY BY THE CITY. AS-BUILT PLANS SHALL BE PROVIDED IN THE STATE PLANE VIRGINIA SOUTH COORDINATE SYSTEM, NAD 1983, FIPS 4502 FEET, US SURVEY FEET, DATUM NA 83, IN THE FORM OF 1 PAPER COPY AND DIGITAL AUTOCAD FILE.

**October 17, 2023
BID SUBMITTAL**



ENGINEER'S SEAL AND SIGNATURE

RS&H

Reynolds Smith and Hills, Inc.
2600 Park Tower Dr., Suite 101, VIENNA, VA 22180
www.rsandh.com

QUANTITY INDEX

ITEM NO.	SPEC REFER.	WORK ITEM DESCRIPTION	UNIT	QUANTITY
1	X-102-10.1	SAFETY AND SECURITY	LSUM	1
2	C-100-14.1	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LSUM	1
3	C-102-5.1a	SILT FENCE	LF	675
4	C-102-5.1b	ROCK CONSTRUCTION ENTRANCE	EA	2
5	C-104-5.1	PROJECT SURVEY AND STAKEOUT	LSUM	1
6	C-105-6.1	MOBILIZATION	LSUM	1
7	P-101-5.1a	ASPHALT ACCESS ROAD REMOVAL (FULL DEPTH)	SY	200
8	P-101-5.1b	AGGREGATE ACCESS ROAD REMOVAL (FULL DEPTH)	SY	70
9	P-101-5.1c	AGGREGATE ACCESS ROAD TRIMMING	SY	110
10	P-101-5.1d	AGGREGATE BASE MATERIAL REMOVAL (THREE-INCH DEPTH)	SY	3,030
11	P-101-5.2	ASPHALT CRACK REPAIR	LF	5,000
12	P-101-5.4	SPALLED AND FAILED ASPHALT PAVEMENT REPAIR (UNDISTRIBUTED)	SY	500
13	P-101-5.6a	COLD MILLING - 2"	SY	10,460
14	P-101-5.6b	COLD MILLING - 5"	SY	3,030
15	P-101-5.7	REMOVE EXISTING EMAS REFLECTORS	LSUM	1
16	P-152-4.1	UNCLASSIFIED EXCAVATION	CY	300
17	P-209-5.1	CRUSHED AGGREGATE BASE COURSE - VDOT 21A	CY	220
18	P-403-8.1	SM-12.5D VARIABLE DEPTH ASPHALT SURFACE COURSE	TON	2,890
19	P-403-8.2	IM-19.0D BITUMINOUS INTERMEDIATE COURSE	TON	750
20	P-555-1	INSTALL EMAS BED	LSUM	1
21	P-555-2	REMOVAL OF EXISTING EMAS BED	LSUM	1
22	P-555-3	INSTALL ANCHOR BEAM	LSUM	1
23	P-555-4	REMOVAL OF EXISTING ANCHOR BEAM	LSUM	1
24	P-602-5.1	EMULSIFIED ASPHALT PRIME COAT	GAL	1,200
25	P-603-5.1	EMULSIFIED ASPHALT TACK COAT	GAL	1,600
26	T-901-5.1	SEEDING	SY	300
27	T-908-5.1	MULCHING	SY	300
28	P-620-5.1	FULL APPLICATION, MARKINGS (WHITE AND YELLOW), WITH REFLECTIVE MEDIA	SF	5,520
29	P-620-5.2	FULL APPLICATION, MARKINGS (BLACK) WITHOUT REFLECTIVE MEDIA	SF	1,850
30	P-620-5.3	HALF APPLICATION, MARKINGS (WHITE AND YELLOW)	SF	5,520
31	P-621-5.1	GROOVING	SY	2,400
32	L-125-5.1	FURNISH AND INSTALL YELLOW/RED L-853 RETROREFLECTIVE MARKERS, TYPE II, 14-INCH HEIGHT	EA	172

SHEET INDEX

DRAWING NO.	SHEET NO.	SHEET TITLE
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QS501-1	28	EMASMAX PROFILE AND SECTION
QS501-2	29	EMASMAX PROFILE AND SECTION
QS502	30	ANCHOR BEAM DETAILS
QS503	31	EMASMAX DETAILS

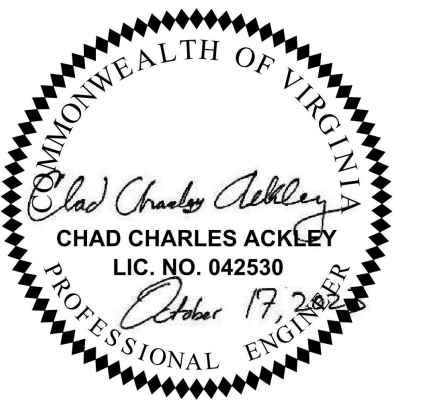


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ROANOKE-
BLACKSBURG
REGIONAL
AIRPORT
(ROA)



RUNWAY 16-34
EMAS
REPLACEMENT



REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: OCTOBER 17, 2023

REVIEWED BY: CCA

DRAWN BY: LSB/JB

DESIGNED BY: RSY

RS&H PROJECT NUMBER

1022-0071-003

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SHEET TITLE

QUANTITY
ESTIMATE,
SHEET INDEX,
AND
ABBREVIATIONS

SHEET NUMBER

G002

SHEET 2 OF 31

BID SUBMITTAL

Drawing: P:\Roanoke_Regional\10220071_ROA_RW_34_EMAS_Replacement\10220071003\03.00 Project Execution\03.05 Dwg_Models\CAD\ROA-EMAS-Only and Sheet Index.dwg - Plotted on: 9/29/23 - Plotted by: Brovo, Laura

ABBREVIATIONS

ABC - AGGREGATE BASE COURSE
AC/ACP - ASPHALTIC CONCRETE PAVEMENT
ACI - AMERICAN CONCRETE INSTITUTE
ADG - AIRPLANE DESIGN GROUP
AIP - AIRPORT IMPROVEMENT PROGRAM
AOA - AIRCRAFT OPERATIONS AREA
APPROX. - APPROXIMATE
ASIG - AIRCRAFT SERVICE INTERNATIONAL GROUP
ASR - AIRPORT SURVEILLANCE RADAR
ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS
ATCT - AIR TRAFFIC CONTROL TOWER
BLDG - BUILDING
BO - BOTTOM OF
B.O.B. - BOTTOM OF BANK
BOP - BOTTOM OF PIPE
BOD - BOTTOM OF DUCT
BODWP - BOTTOM OF DOUBLE WALL PIPE
BOTT. - BOTTOM
CL - CENTERLINE
C - CONDUIT
CBR - CALIFORNIA BEARING RATIO
CLR - CLEARANCE
COM - COMMUNICATION
CONC - CONCRETE
CONN - CONNECTION
CONT - CONTINUOUS
CS - CARBON STEEL
CSSO - CONTRACTOR SAFETY AND SECURITY OFFICER
DBL - DOUBLE
DETL - DETAIL
DIP - DUCTILE IRON PIPE
DIA - DIAMETER
DIAG. - DIAGONAL
DWG - DRAWING
E - EASTING
EA - EACH

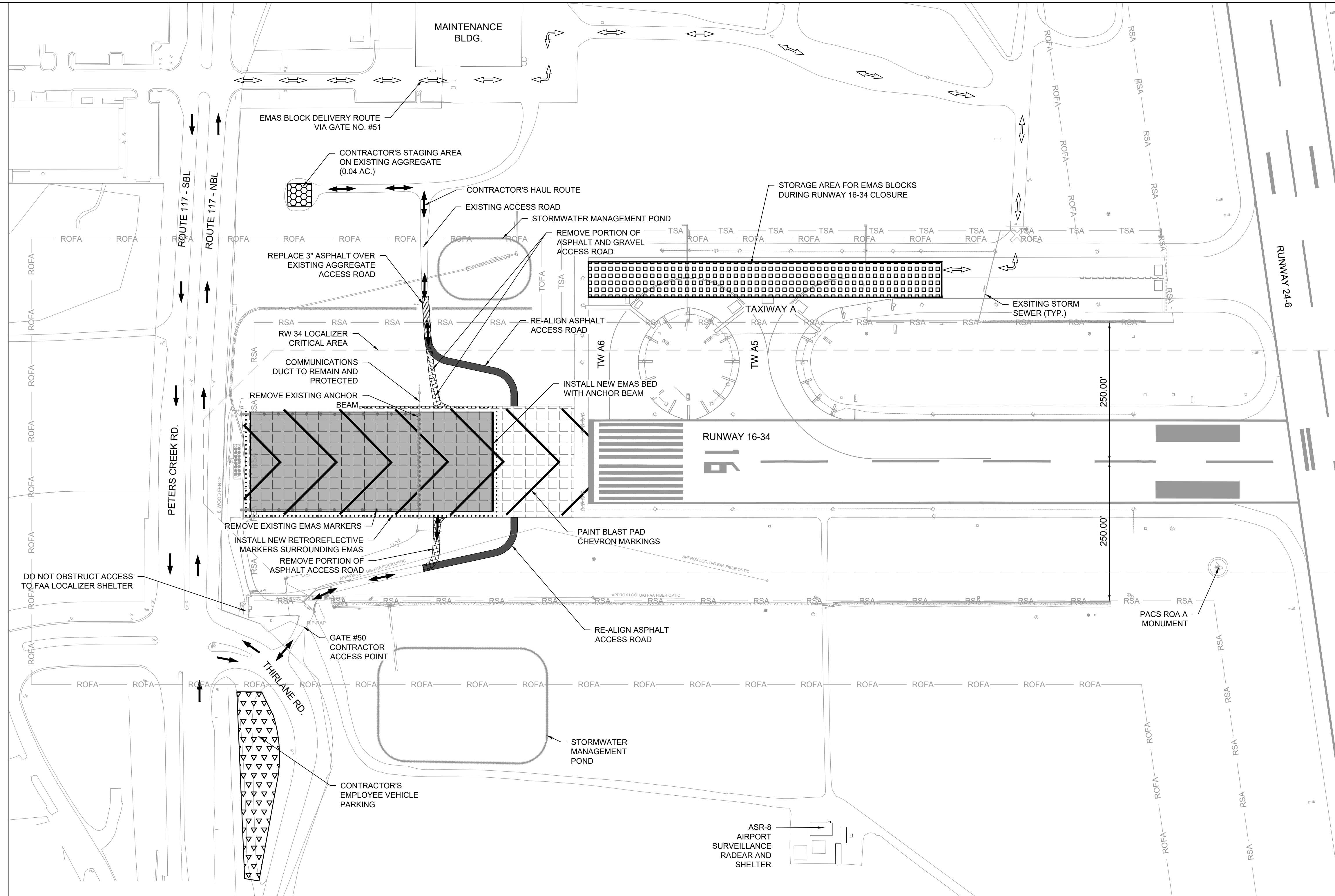
EG - EXISTING GROUND
EL/ELEV - ELEVATION
ELEC - ELECTRICAL
ELL - ELBOW
EMAS - ENGINEERED MATERIAL ARRESTING SYSTEM
EOP - EDGE OF PAVEMENT
EX/EXST/EXIST - EXISTING
FAA - FEDERAL AVIATION ADMINISTRATION
FH - FIRE HYDRANT
FO - FIBER OPTIC
FOD - FOREIGN OBJECT DEBRIS
FAR - FEDERAL AVIATION REGULATIONS
GALV - GALVANIZED
GND. - GROUND
GNE - GROUNDWATER NOT ENCOUNTERED
GRS - GALVANIZED RIGID STEEL
GSE - GROUND SERVICE EQUIPMENT
GV - GAS VALVE
GWL - GROUND WATER LEVEL
HORT - HORIZONTAL
HP - HYDRANT PIT
HPV - HIGH POINT VENT
ID - IDENTIFICATION
I.D. - INNER DIAMETER
IE/INV - INVERT ELEVATION / INVERT
I.F. - INSULATING FLANGE
ISO - ISOLATION
IVP - ISOLATION VALVE PIT
KIP - 1,000 LBS
L - LIGHTING
LB - POUND
LEO - LAW ENFORCEMENT OFFICER
LF - LINEAR FEET
LOD - LIMITS OF GRADING
LPD - LOW POINT DRAIN
LT - LEFT

MAX - MAXIMUM
MECH - MECHANICAL
MH - MANHOLE
MIN - MINIMUM
MON - MONITORING (WELL)
MSL - MEAN SEA LEVEL
N - NORTHING OR NO. OF BLOWS
NAD - NORTH AMERICAN DATUM
NAVAIDS - NAVIGATIONAL AIDS
NGVD - NATIONAL GEODETIC VERTICAL DATUM
NO - NUMBER
NOTAM - NOTICE TO AIRMEN
NPDES - NAT'L POLLUTANT DISCHARGE ELIMINATION SYSTEM
NTP - NOTICE TO PROCEED
NTS - NOT TO SCALE
OC - ON CENTER
OD - OUTER DIAMETER
OFA - OBJECT FREE AREA
O/S - OUTSIDE
OZ - OUNCE
PAPI - PRECISION APPROACH PATH INDICATOR SYSTEM
PAVT - PAVEMENT
PC - POINT OF CURVATURE
PCC - PORTLAND CEMENT CONCRETE
PCSMP - POST CONSTRUCTION STORMWATER MANAGEMENT PLAN
PERF - PERFORATED
PF - PLIDCO FLANGE
PG - PRESSURE GAUGE
PG - PROPOSED GRADE
PK - PEAK
PKG - PARKING
P.O.T. - POINT OF TANGENT
PS - PIPE SUPPORT
PSF - POUNDS PER SQUARE FOOT
PSI - POUNDS PER SQUARE INCH
PT - POINT OF TANGENCY








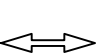




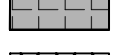



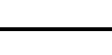

PVC - POLYVINYL CHLORIDE
PVI - POINT OF VERTICAL INTERSECTION
RCP - REINFORCED CONCRETE PIPE
RED - REDUCER
REF - REFERENCE
REIL - RUNWAY END IDENTIFIER LIGHT SYSTEM
REINF - REINFORCED
REQ/REQ'D - REQUIRED
RF - RAISED FACE
RIM - RIM ELEVATION
RLD - RESPONSIBLE LAND DISTURBER
ROFZ - RUNWAY OBJECT FREE ZONE
RPR - RESIDENT PROJECT REPRESENTATIVE
RPZ - RUNWAY PROTECTION ZONE
RSA - RUNWAY SAFETY AREA
RT - RIGHT
RW - RUNWAY
S/SAN - SANITARY
SC - SECONDARY CONTAINMENT
SCH/SCHED - SCHEDULE
SD - STORM DRAIN
SIDA - SECURITY IDENTIFICATION DISPLAY AREA
SF - SQUARE FOOT
SF/GAL - SQUARE FEET PER GALLON
SPT - STANDARD PENETRATION TEST
SS - STAINLESS STEEL
STA - STATION
STD - STANDARD
STL - STEEL
STRUCT - STRUCTURE
SW - SINGLE WALL
SWM - STORMWATER MANAGEMENT
TBR - TO BE REMOVED
TDZ - TOUCHDOWN ZONE
TEL - TELEPHONE
TEMP - TEMPORARY

THD - THREADED
THK - THICK
T/L - TAXILANE
T.O. - TOP OF
T.O.B. - TOP OF BANK
TOC - TOP OF CONCRETE
TOD - TOP OF DUCT
TOFA - TAXIWAY OBJECT FREE AREA
TSA - TAXIWAY SAFETY AREA
T/W - TAXIWAY
TYP - TYPICAL
UD - UNDERDRAIN
UG - UNDERGROUND
UMH - UNIDENTIFIED MANHOLE
U.N.O. - UNLESS NOTED OTHERWISE
VAC - VACUUM
VDOT - VIRGINIA DEPARTMENT OF TRANSPORTATION
VERT - VERTICAL
W - WATER
WTR - WATER
W/ - WITH
WM - WATER MAIN
WP - WEATHER PROOF
WV - WATER VALVE

Drawing: P:\Roanoke_Regional\10220071_003\03.00 Project Execution\03.05 Dwg_Models\CAD\CROA-EMAS-Project Layout.dwg - Plotted on: 9/29/23 - Plotted by: Brovo, Laura

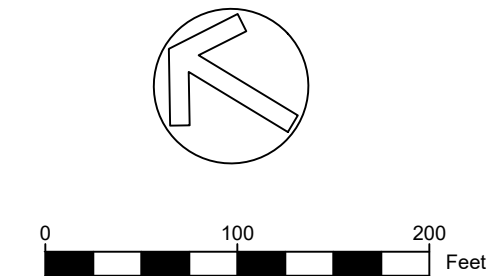


LEGEND

- | | | | |
|---|--|---|---------------------------------------|
|  | ASPHALT OVERLAY OF EXISTING GRAVEL ACCESS ROAD |  | TEMPORARY EMAS BLOCK STORAGE AREA |
|  | REALIGNED ASPHALT ACCESS ROAD |  | CONTRACTOR'S EMPLOYEE VEHICLE PARKING |
|  | PORTION OF ASPHALT ACCESS ROAD REMOVAL |  | CONTRACTOR'S HAUL ROUTE FOR EMAS SITE |
|  | PORTION OF GRAVEL ACCESS ROAD REMOVAL |  | EMAS BLOCKS DELIVERY ROUTE |
|  | ASPHALT MILL AND OVERLAY BLAST PAD AND EMAS SUPPORT PAVEMENT |  | AIRPORT BOUNDARY |
|  | EMAS INSTALLATION |  | EXISTING RUNWAY SAFETY AREA |
|  | CONTRACTOR'S STAGING AREA |  | EXISTING RUNWAY OBJECT FREE AREA |
| | |  | EXISTING TAXIWAY SAFETY AREA |
| | |  | EXISTING TAXIWAY OBJECT FREE AREA |
| | |  | EXISTING RUNWAY PROTECTION ZONE |
| | |  | EXISTING AIRPORT PERIMETER FENCE |
| | | | UNDERGROUND ELECTRICAL LINE |
| | | | UNDERGROUND TELECOMMUNICATIONS LINE |

PROJECT DESCRIPTION

- THIS PROJECT INCLUDES:
 - EMAS DEMOLITION
 - EMAS BED REPLACEMENT
 - REALIGNMENT OF ACCESS RD.
 - MILL AND OVERLAY OF BLAST PAD/EMAS SUPPORT PAVEMENT
- CONTRACTOR ACCESS TO THE SITE SHALL BE FROM THIRLANE ROAD, VIA GATE 50.
- CONTRACTOR EQUIPMENT SHALL CROSS ACTIVE AIRFIELD PAVEMENT ONLY AT THE DESIGNATED ACCESS ROUTE SHOWN ON THE PHASING SHEETS. ALTERNATE ROUTES MUST RECEIVE ENGINEER/RPR APPROVAL PRIOR TO USE.

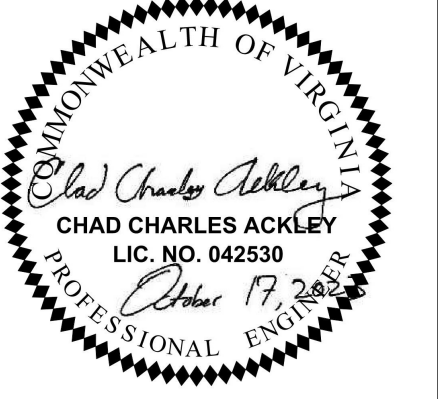


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ROANOKE-
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RUNWAY 16-34
EMAS
REPLACEMENT



REVISIONS		
NO.	DESCRIPTION	DATE

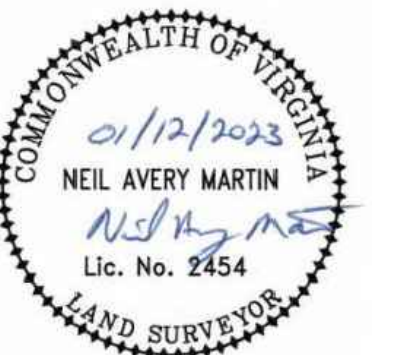
DATE ISSUED: OCTOBER 17, 2023
REVIEWED BY: CCA
DRAWN BY: LSB/BJ
DESIGNED BY: RSY
RS&H PROJECT NUMBER
1022-0071-003
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SHEET TITLE

PROJECT
LAYOUT
PLAN

SHEET NUMBER
G003
SHEET 3 OF 31

BID SUBMITTAL

Drawing: p:\vaconke_regional\10220071_roo_rw_34_emos_replacement\10220071003\03.00 project execution\03.05 dwgs_modela\CAD\C\ROA-EMAS-Survey.dwg - Plotted on: 9/28/23 - Plotted by: Bravo, Laura



REVISIONS

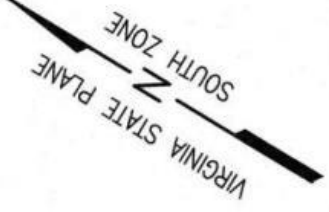
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SHEET TITLE

EXISTING
TOPOGRAPHIC
SURVEY - 1

SHEET NUMBER
G004
SHEET 4 OF 31

BID SUBMITTAL



ABBREVIATIONS:
INV. = INVERT
DI = DRAINAGE INLET
RCP = REINFORCED CONCRETE PIPE
CMP = CORRUGATED METAL PIPE
PVC = POLYVINYLCHLORIDE PIPE
BM = BENCHMARK
TRS = TRAVERSE ROD SET

LEGEND

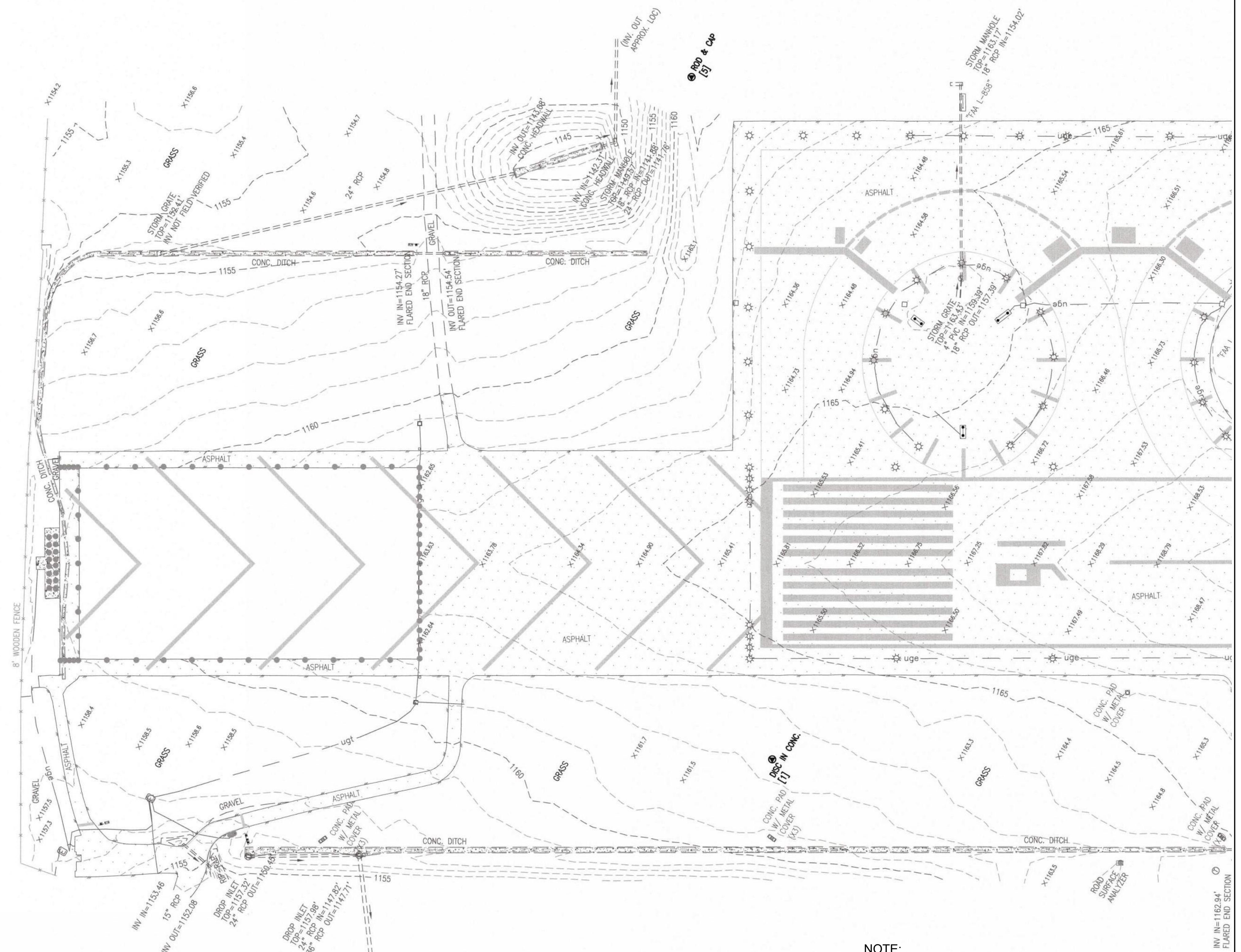
- ⊠ ELECTRIC BOX
- ⊠ ELECTRIC MANHOLE
- ⊠ ELECTRIC HAND HOLE
- ⊠ TELEPHONE PEDESTAL
- ⊠ TELEPHONE MANHOLE
- ⊠ TELEPHONE HAND HOLE
- ⊠ FIBER OPTIC HAND HOLE
- ⊠ UNKNOWN MANHOLE
- ⊠ POST/BOLLARD
- ⊠ SIGN
- ⊠ STORM MANHOLE
- ⊠ BENCHMARK/CONTROL POINT
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- EDGE OF CONCRETE
- FENCE LINE
- STORM
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- FIBER OPTIC

SURVEY CONTROL TABLE
HORIZONTAL DATUM: NAD83 (2011)
VERTICAL DATUM: NAVD88 GEOID 18
SCALE FACTOR: 1.000105

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	3646608.100	11052147.010	1162.23	NGS ROA AP STA A2
2	3645641.030	11052714.560	1169.72	NGS ROA A
5	3646982.760	11052628.852	1160.72	TRS
6	3646138.005	11053155.408	1169.54	TRS

NOTES:

- THIS TOPOGRAPHIC SURVEY WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF, NEIL A. MARTIN OF HURT & PROFFITT, INC. FROM AN ACTUAL GROUND SURVEY MADE UNDER MY SUPERVISION.
- THIS TOPOGRAPHIC SURVEY IS ON HORIZONTAL DATUM NAD 83 (2011); VERTICAL DATUM NAVD 88 GEOID 18.
- NO BOUNDARY INFORMATION SHOWN HEREON. THIS DOES NOT REPRESENT A BOUNDARY SURVEY.
- THIS TOPOGRAPHIC SURVEY WAS PREPARED FROM A FIELD SURVEY CONDUCTED BY HURT & PROFFITT, INC. JUNE 06, 2022 THRU JUNE 15, 2022 AND ONLY REFLECTS FIELD CONDITIONS AT THAT TIME.
- UNDERGROUND UTILITIES SHOWN HEREON ARE COMPILED FROM ABOVE GROUND UTILITY EVIDENCE AND SAVE UTILITY DESIGNATIONS ONLY. CONTRACTOR IS RESPONSIBLE FOR UTILITY LOCATION IN THE FIELD AND MUST CONTACT MISS UTILITY BEFORE CONSTRUCTION.
- CONTOUR INTERVAL = 1'



NOTE:

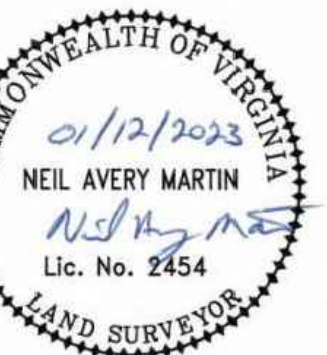
- THIS TOPOGRAPHIC SURVEY SHEET IS REPRESENTATIVE OF THE SITE SURVEY AND SCALED TO FIT THE 22"x34" PLAN SET. AT TIME OF CONSTRUCTION, THE CONTRACTOR SHALL REQUEST FROM THE ENGINEER A COPY OF THE CAD DRAWING AND/OR THE 24"x36" PRINTED TOPOGRAPHIC SURVEY.

50 25 0 50 100 150
SCALE IN FEET
(NOT TO SCALE; SEE NOTE ABOVE)

ROANOKE-
BLACKSBURG
REGIONAL
AIRPORT
(ROA)



RUNWAY 16-34
EMAS
REPLACEMENT



REVISIONS

NO.	DESCRIPTION	DATE

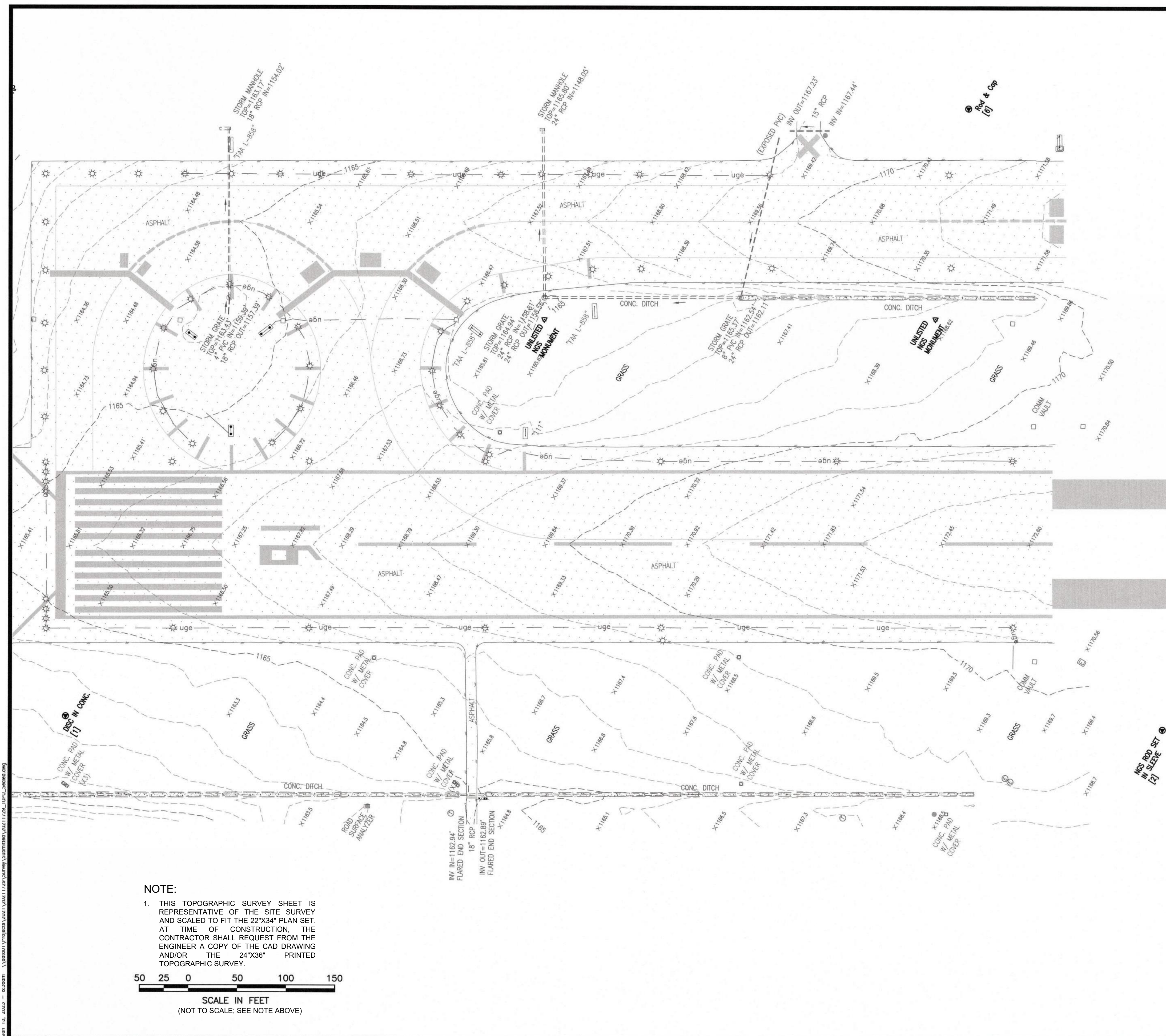
DATE ISSUED: OCTOBER 17, 2023
REVIEWED BY: CCA
DRAWN BY: LSB/UB
DESIGNED BY: RSY

RS&H PROJECT NUMBER
1022-0071-003
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SHEET TITLE

EXISTING
TOPOGRAPHIC
SURVEY - 2

SHEET NUMBER
G005
SHEET 5 OF 31

BID SUBMITTAL



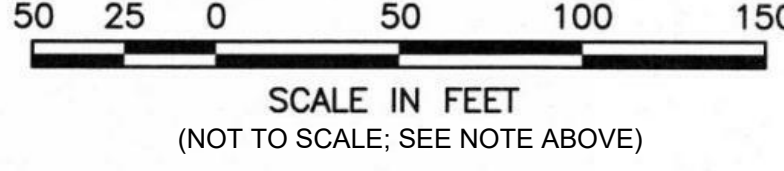
ABBREVIATIONS:
INV. = INVERT
DI = DRAINAGE INLET
RCP = REINFORCED CONCRETE PIPE
CMP = CORRUGATED METAL PIPE
PVC = POLYVINYLCHLORIDE PIPE
BM = BENCHMARK
TRS = TRAVERSE ROD SET

LEGEND

SURVEY CONTROL TABLE
HORIZONTAL DATUM: NAD83 (2011)
VERTICAL DATUM: NAVD88 GEOID 18
SCALE FACTOR: 1.000105

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	3646608.100	11052147.010	1162.23	NGS ROA AP STA A2
2	3645641.030	11052714.560	1169.72	NGS ROA A
5	3646982.760	11052628.852	1160.72	TRS
6	3646138.005	11053155.408	1169.54	TRS

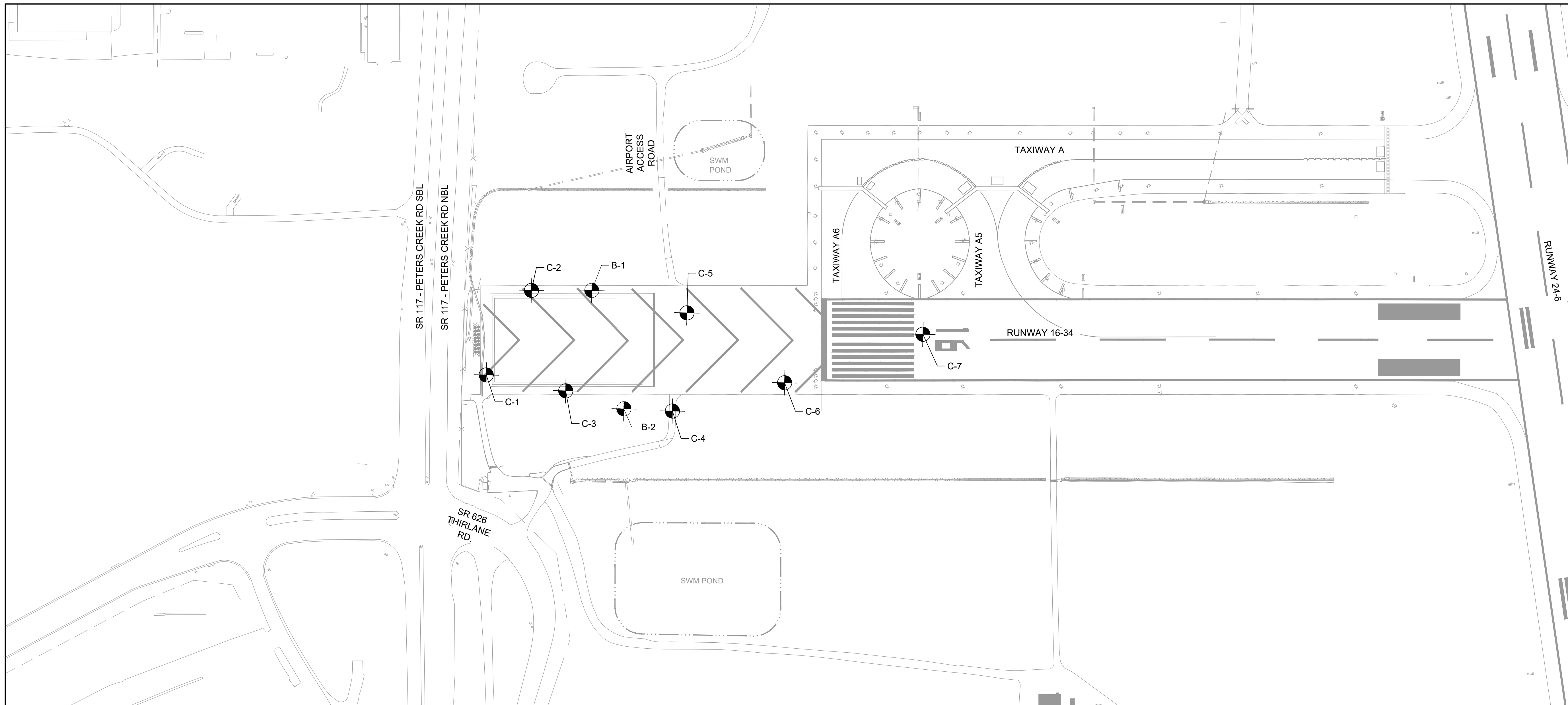
NOTE:
1. THIS TOPOGRAPHIC SURVEY SHEET IS REPRESENTATIVE OF THE SITE SURVEY AND SCALED TO FIT THE 22"x34" PLAN SET. AT TIME OF CONSTRUCTION, THE CONTRACTOR SHALL REQUEST FROM THE ENGINEER A COPY OF THE CAD DRAWING AND/OR THE 24"x36" PRINTED TOPOGRAPHIC SURVEY.



- NOTES:**
- THIS TOPOGRAPHIC SURVEY WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF, NEIL A. MARTIN OF HURT & PROFFITT, INC. FROM AN ACTUAL GROUND SURVEY MADE UNDER MY SUPERVISION.
 - THIS TOPOGRAPHIC SURVEY IS ON HORIZONTAL DATUM NAD 83 (2011); VERTICAL DATUM NAVD 88 GEOID 18.
 - NO BOUNDARY INFORMATION SHOWN HEREON. THIS DOES NOT REPRESENT A BOUNDARY SURVEY.
 - THIS TOPOGRAPHIC SURVEY WAS PREPARED FROM A FIELD SURVEY CONDUCTED BY HURT & PROFFITT, INC. JUNE 06, 2022 THRU JUNE 15, 2022 AND ONLY REFLECTS FIELD CONDITIONS AT THAT TIME.
 - UNDERGROUND UTILITIES SHOWN HEREON ARE COMPILED FROM ABOVE GROUND UTILITY EVIDENCE AND SAVE UTILITY DESIGNATIONS ONLY. CONTRACTOR IS RESPONSIBLE FOR UTILITY LOCATION IN THE FIELD AND MUST CONTACT MISS UTILITY BEFORE CONSTRUCTION.
 - CONTOUR INTERVAL = 1'

Drawing: p:\voconcke_regional\10220071_roa_rw_34_emas_replacement\10220071003\03.00 project execution\03.05 dwgs_model\CAD\CROA-EMAS-Survey.dwg - Plotted on: 9/28/23 - Plotted by: Bravo, Laura

Drawing: p:\vooncke_regional\10220071_roo_rw_34_emos_replacement\10220071003\03.00 project_execution\03.05 dwgs_modela\CAD\C\ROA-EMAS-Borings.dwg - Plotted on: 9/28/23 - Plotted by: Brown, Laura



LEGEND

- B-1 PAVEMENT BORE LOCATION
- C-1 PAVEMENT CORE LOCATION

POINT TABLE				
POINT #	NORTHING	EASTING	LATITUDE	LONGITUDE
C-1	3647198.21	11051919.06	N37° 19' 48.96"	W79° 58' 57.03"
C-2	3647207.47	11052094.21	N37° 19' 49.08"	W79° 58' 54.86"
C-3	3647058.73	11051969.52	N37° 19' 47.59"	W79° 58' 56.38"
C-4	3646872.54	11052038.99	N37° 19' 45.76"	W79° 58' 55.48"
C-5	3646942.75	11052206.41	N37° 19' 46.48"	W79° 58' 53.42"
C-6	3646723.59	11052189.50	N37° 19' 44.31"	W79° 58' 53.59"
C-7	3646552.97	11052396.45	N37° 19' 42.66"	W79° 58' 50.99"
B-1	3647113.00	11052151.28	N37° 19' 48.16"	W79° 58' 54.14"
B-2	3646950.70	11051996.45	N37° 19' 46.53"	W79° 58' 56.02"

NOTES

1. SOIL BORING AND PAVEMENT CORES WERE DRILLED ON DATES INDICATED ON THE BORING LOGS USING TRUCK-MOUNTED DRILLING EQUIPMENT.
2. REFER TO BORING LOGS AND CORE PHOTOS ON SHEETS G007-G008.
3. SOIL BORING AND PAVEMENT CORE LOCATIONS ARE APPROXIMATE AND NOT INTENDED FOR CONSTRUCTION STAKEOUT.
4. SEE GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.

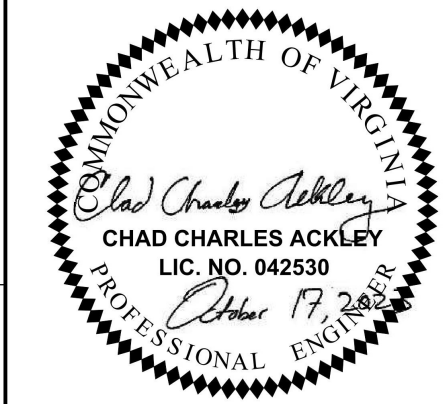
RS&H

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Vienna, Virginia 22180
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Virginia Registration Nos. 0407-003171 / 0411-000438

ROANOKE-
BLACKSBURG
REGIONAL
AIRPORT
(ROA)



RUNWAY 16-34
EMAS
REPLACEMENT



REVISIONS

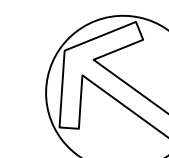
NO.	DESCRIPTION	DATE

DATE ISSUED: OCTOBER 17, 2023
REVIEWED BY: CCA
DRAWN BY: LSB/UB
DESIGNED BY: RSY
RS&H PROJECT NUMBER
1022-0071-003
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SHEET TITLE

**BORING
LOCATION
PLAN**

SHEET NUMBER
G006
SHEET 6 OF 31

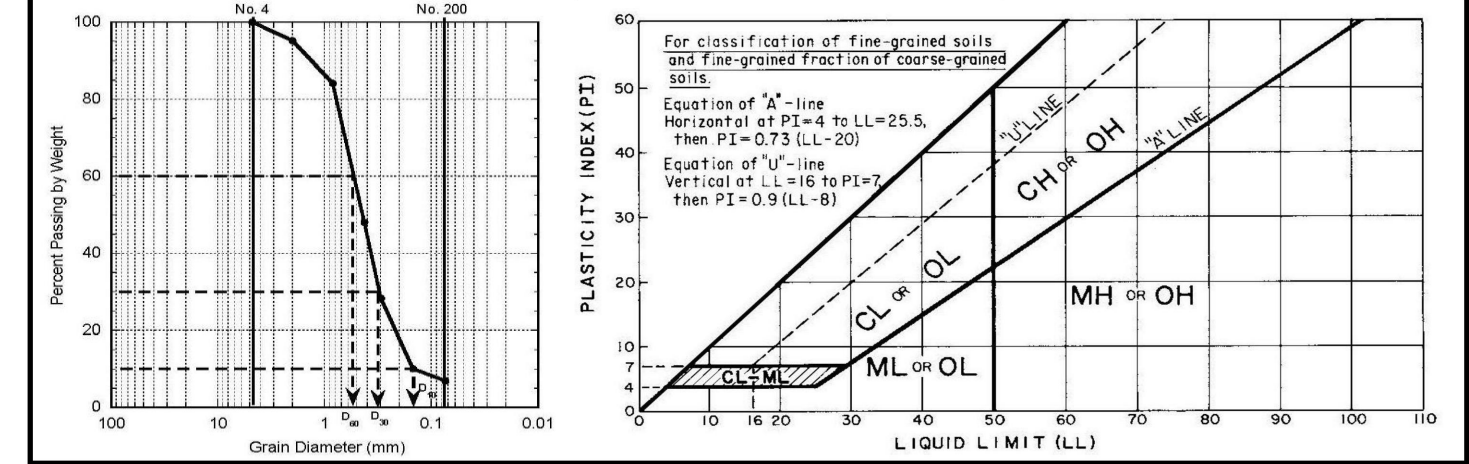
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CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES ASTM Designation: D 2487 (Based on the Unified Soil Classification System)		FROEHLING & ROBERTSON, INC. Engineering Stability Since 1881	
Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A			
			Soil Classification
			Group Symbol
			Group Name ^B
COARSE-GRAINED SOILS More than 50% retained on the No. 200 sieve	Gravels (More than 50% of coarse fraction retained on No. 4 sieve)	Clean gravels (Less than 5% fines) ^C	Cu ≥ 4 and 1 ≤ Cc ≤ 3 ^D GW Well-graded gravel ^E
	Sands (50% or more of coarse fraction passes No. 4 sieve)	Gravels with fines (More than 12% fines) ^C	Cu < 4 and/or [Cc < 1 or Cc > 3] ^D GP Poorly graded gravel ^E
		Clean Sands (Less than 5% fines) ^C	Cu ≥ 6 and 1 ≤ Cc ≤ 3 ^D SW Well-graded sand ^E
	FINE-GRAINED SOILS 50% or more passes the No. 200 sieve	Sands with fines (More than 12% fines) ^C	Cu < 6 and/or [Cc < 1 or Cc > 3] ^D SP Poorly graded sand ^E
Silts and Clays Liquid limit less than 50		Inorganic PI > 7 and plots on or above "A" line ^F CL Lean clay ^{G,H,I}	
HIGHLY ORGANIC SOILS Primarily organic matter, dark in color, and organic in odor	Sands with fines (More than 12% fines) ^C	Organic Liquid limit - oven dried Liquid limit - not dried ^J < 0.75 OL Organic silt ^{K,L,M}	
		Organic PI plots on or above "A" line CH Fat clay ^{L,M}	
	Sands with fines (More than 12% fines) ^C	Inorganic PI plots below "A" line MH Elastic silt ^{K,L,M}	
		Organic Liquid limit - oven dried Liquid limit - not dried ^J < 0.75 OH Organic clay ^{L,M,N}	

^A Based on the material passing the 3-in. (75-mm) sieve.
^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
^C Gravels with 5 to 12% fines require dual symbols:
 GW-GM well-graded gravel with silt
 GP-GM poorly graded gravel with silt
 SW-SM well-graded sand with silt
 SP-SM poorly graded sand with silt
^D If soil contains ≥ 15% sand, add "with sand" to group name.
^E If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.
^F If soil contains 15 to < 30% plus No. 200, add "with sand" or "with gravel", whichever is predominant.
^G PI > 4 and plots on or above "A" line.
^H PI < 4 and plots below "A" line.
^I PI plots on or above "A" line.
^J PI plots below "A" line.
^K If soil contains ≥ 30% plus No. 200, predominantly sand, add "sandy" to group name.
^L If soil contains ≥ 30% plus No. 200, predominantly gravel add "gravelly" to group name.
^M If soil contains ≥ 15% gravel, add "with gravel" to group name.
^N If soil contains ≥ 30% plus No. 200, predominantly gravel add "gravelly" to group name.
^O PI > 4 and plots on or above "A" line.
^P PI < 4 and plots below "A" line.
^Q PI plots on or above "A" line.
^R PI plots below "A" line.



KEY TO BORING LOG SOIL CLASSIFICATION

Particle Size and Proportion
 Visual descriptions are assigned to each soil sample or stratum based on estimates of the particle size of each component of the soil and the percentage of each component of the soil.

	Boulder	Cobble	Gravel		Sand		Silt	Clay
			Coarse	Fine	Coarse	Medium	Fine	
Pass	12 in.	12 in.	3 in.	3/4 in.	#4 M	#10 M	#40 M	#200 M
Retained	12 in.	3 in.	3/4 in.	#4 M	#10 M	#40 M	#200 M	#200 M

Notes: 1.) Particle size is designated by U.S. Standard Sieve Sizes 2.) Because of the small size of the split-spoon sampler relative to the size of gravel, the true percentage of gravel may not be accurately estimated.

< 50% Fines (-200 Mesh)			> 50% Fines (-200 Mesh)		
Descriptive Terms			Descriptive Terms		
Comp.	Term	Percentage	Comp.	Term	Percentage
Major	Uppercase Letters (GRAVEL, SAND)	% Gravel > % Sand	Major	Uppercase Letters (CLAY, SILT)	% Clay > % Silt
Secondary	With sand/gravel	≥ 15% Sand/Gravel	Secondary	Adjective (Sandy, Gravelly)	% Sand > % Gravel
Minor	With clay/silt	10% Fines	Minor	With gravel/sand	Rem. Coarse > 15%
	Do Not Note	≤ 5% Fines		Do Not Note	15% -25% Coarse

Density or Consistency
 The standard penetration resistance values (N-values) are used to describe the density of coarse-grained soils (GRAVEL, SAND) or the consistency of fine-grained soils (SILT, CLAY). Silty silts of very low plasticity may be assigned a density instead of a consistency.

DENSITY		CONSISTENCY	
Term	N-Value	Term	N-Value
Very Loose	0 - 4	Very Soft	0 - 1
Loose	5 - 10	Soft	2 - 4
Medium Dense	11 - 30	Firm	5 - 8
Dense	31 - 50	Stiff	9 - 15
Very Dense	> 50	Very Stiff	16 - 30
		Hard	>30

Notes: 1. The N-value is the number of blows of a 140 lb. Hammer freely falling 30 inches required to drive a standard split-spoon sampler (2.0 in. O.D., 1-3/8 in. I.D.) 12 inches into the soil after properly seating the sampler 6 inches.
 2. When encountered, gravel may increase the N-value of the standard penetration test and may not accurately represent the in-situ density or consistency of the soil sampled.

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SOIL CLASSIFICATION CHART

MAJOR DIVISIONS		SYMBOLS		TYPICAL DESCRIPTIONS
		GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	(LITTLE OR NO FINES)	CLEAN GRAVELS	GW WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
			GRAVELS WITH FINES	GP POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	(APPRECIABLE AMOUNT OF FINES)	GRAVELS WITH FINES	GM SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
			CLEAN SANDS	GC CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
FINE GRAINED SOILS	SAND AND SANDY SOILS	(LITTLE OR NO FINES)	CLEAN SANDS	SW WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SANDS WITH FINES	SP POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	(APPRECIABLE AMOUNT OF FINES)	SANDS WITH FINES	SM SILTY SANDS, SAND - SILT MIXTURES
			SILTS AND CLAYS	SC CLAYEY SANDS, SAND - CLAY MIXTURES
EXISTING FILL	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS



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ROANOKE-BLACKSBURG REGIONAL AIRPORT (ROA)



RUNWAY 16-34 EMAS REPLACEMENT



BORING LOG Boring: B-1 (1 of 1)

Project No: 62A-0073
 Client: RS&H
 Project: Runway 16-34 EMAS Replacement
 City/State: Roanoke, Virginia
 Elevation: 10.0'
 Total Depth: 10.0'
 Boring Location: See Boring Location Plan
 Latitude: Longitude:
 Drilling Method: 2.25" ID HSA
 Hammer Type: Automatic
 Hammer Efficiency: 1.54
 Date Drilled: 6/9/22
 Driller: C. Ingo

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
0.5	0.5	5.5" Asphalt				
1.2	1.2	9" Base Stone				
	1.2	FILL: Sampled as firm, mottled tan and gray, moist, fine to medium, sandy, LEAN CLAY (CL)	10-2-3	2.0	5	No subsurface water was encountered immediately upon completion of drilling.
	3.5	Sampled as firm, mottled gray, brown, and red-brown, moist, fine to medium, sandy, FAT CLAY (CH) with rock fragments	2-1-4	3.5	5	
	6.0	Sampled as very loose, mottled gray and orange-tan, moist, fine to medium, CLAYEY SAND (SC) with rock fragments	4-1-2	6.0	3	
	8.0	RESIDUUM: Firm, tan and gray, moist, FAT CLAY (CH)	1-3-3	8.5	6	Cave-in at 8'.
	10.0	Boring Terminated at 10'		10.0		

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.



BORING LOG Boring: B-2 (1 of 1)

Project No: 62A-0073
 Client: RS&H
 Project: Runway 16-34 EMAS Replacement
 City/State: Roanoke, Virginia
 Elevation: 10.0'
 Total Depth: 15.0'
 Boring Location: See Boring Location Plan
 Latitude: Longitude:
 Drilling Method: 2.25" ID HSA
 Hammer Type: Automatic
 Hammer Efficiency: 1.54
 Date Drilled: 6/9/22
 Driller: C. Ingo

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
0.3	0.3	3" Surficial Soil	5-7-2	0.0	9	
	1.5	FILL: Sampled as loose, dark-gray, moist, fine to coarse, POORLY-GRADED SAND (SP) with gravel, trace clay				
	2.0	Sampled as firm, tan, gray, and red-brown, moist, LEAN CLAY (CL) with fine to medium sand	2-2-3	2.0	5	
	3.5	Sampled as soft, orange-tan and burgundy, moist, LEAN CLAY (CL), trace fine to medium sand	1-1-2	3.5	3	
	6.0	Sampled as soft, brown and red-brown, moist, FAT CLAY (CH)	1-1-1	6.5	2	Subsurface water was encountered at a depth of 6' immediately upon completion of drilling.
	8.0	POSSIBLE RESIDUUM: Soft, gray, moist, FAT CLAY (CH)	1-1-2	8.5	3	
	12.0	PARTIALLY WEATHERED ROCK: Sampled as very dense, gray, moist, POORLY-GRADED GRAVEL (GP) with silt, trace clay	50/4	13.5	100+	Cave-in at 13'.
	15.0	Boring Terminated at 15'		15.0		

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.



PAVEMENT SECTION COMPOSITION AND DESCRIPTION

Project Name: Runway 16-34 EMAS Replacement
 F&R Project Number: 62A-0073
 Date of Extraction: 6/9/2022
 Project Location: Roanoke, Virginia

Boring/Core Identification: C-1
 Location Information: Station: Lane: General Location: Runway 16-34

Pavement Section Composition	Thickness	Void Underlying Pavement:	Void Depth Below Pavement:
Asphalt:	6 in.	no	(yes/no)
Aggregate Base Material:	14.0 in.	no	(yes/no)
Concrete:	N/A in.	N/A	in.

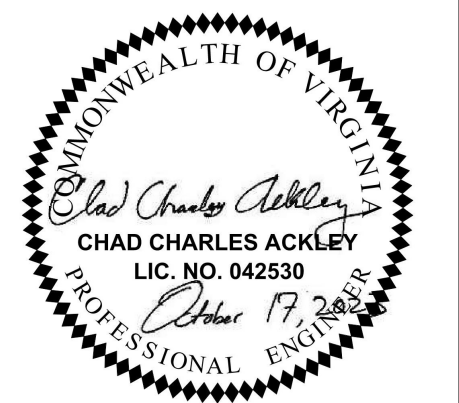
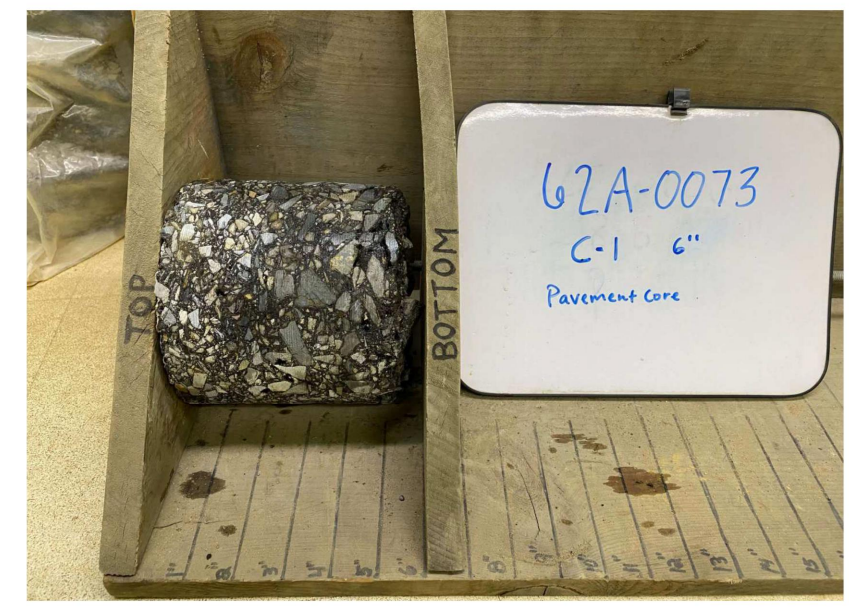
Welded Wire Fabric (W/WF) or Rebar: N/A in.

Embedment Depths from Top of Core: Rebar: N/A in. Welded Wire Fabric: N/A in.

Vapor Barrier or Geotextile Fabric: no (yes/no)

Description of Vapor Barrier or Geotextile: N/A

Notes: Concrete core diameter = 6.0"



REVISIONS		
NO.	DESCRIPTION	DATE

DATE ISSUED: OCTOBER 17, 2023
 REVIEWED BY: CCA
 DRAWN BY: LSB/UB
 DESIGNED BY: RSY
 RS&H PROJECT NUMBER: 1022-0071-003
 SHEET TITLE

BORING LOGS AND PAVEMENT CORE PHOTOS

SHEET NUMBER
G007
 SHEET 7 OF 31

BID SUBMITTAL

Drawing: p:\roanoke_regional\10220071_roo_rw_34_emas_replacement\10220071003\03.00 project_execution\03.05 dwgs_borings.dwg - Plotted on: 9/28/23 - Plotted by: Brown, Laura

Drawing: p:\roanoke_regional\10220071_roo_rw_34_emas_replacement\10220071003\03.05_digs_modela\CAD\CROA-EMAS-Borings.dwg — Plotted on: 9/28/23 — Plotted by: Brown, Laura



PAVEMENT SECTION COMPOSITION AND DESCRIPTION

Project Name: Runway 16-34 EMAS Replacement Date of Extraction: 6/9/2022
 F&R Project Number: 62A-0073 Project Location: Roanoke, Virginia

Boring/Core Identification: C-2 Location Information
 Station: _____
 Lane: _____
 General Location: Runway 16-34

Pavement Section Composition

Asphalt:	6 in.	Void Underlying Pavement:	no (yes/no)
Aggregate Base Material:	8.0 in.	Void Depth Below Pavement:	N/A in.
Concrete:	N/A in.		

Welded Wire Fabric (WWF) or Rebar
 WWF/Rebar/Both: N/A in.

Embedment Depths from Top of Core
 Rebar: N/A in.
 Welded Wire Fabric: N/A in.

Vapor Barrier or Geotextile Fabric: no (yes/no)

Description of Vapor Barrier or Geotextile: N/A

Notes: Concrete core diameter = 6.0"



PAVEMENT SECTION COMPOSITION AND DESCRIPTION

Project Name: Runway 16-34 EMAS Replacement Date of Extraction: 6/9/2022
 F&R Project Number: 62A-0073 Project Location: Roanoke, Virginia

Boring/Core Identification: C-3 Location Information
 Station: _____
 Lane: _____
 General Location: Runway 16-34

Pavement Section Composition

Asphalt:	5.5 in.	Void Underlying Pavement:	no (yes/no)
Aggregate Base Material:	2.0 in.	Void Depth Below Pavement:	N/A in.
Concrete:	N/A in.		

Welded Wire Fabric (WWF) or Rebar
 WWF/Rebar/Both: N/A in.

Embedment Depths from Top of Core
 Rebar: N/A in.
 Welded Wire Fabric: N/A in.

Vapor Barrier or Geotextile Fabric: no (yes/no)

Description of Vapor Barrier or Geotextile: N/A

Notes: Concrete core diameter = 6.0"



PAVEMENT SECTION COMPOSITION AND DESCRIPTION

Project Name: Runway 16-34 EMAS Replacement Date of Extraction: 6/9/2022
 F&R Project Number: 62A-0073 Project Location: Roanoke, Virginia

Boring/Core Identification: C-4 Location Information
 Station: _____
 Lane: _____
 General Location: Runway 16-34

Pavement Section Composition

Asphalt:	3 in.	Void Underlying Pavement:	no (yes/no)
Aggregate Base Material:	12.0 in.	Void Depth Below Pavement:	N/A in.
Concrete:	N/A in.		

Welded Wire Fabric (WWF) or Rebar
 WWF/Rebar/Both: N/A in.

Embedment Depths from Top of Core
 Rebar: N/A in.
 Welded Wire Fabric: N/A in.

Vapor Barrier or Geotextile Fabric: no (yes/no)

Description of Vapor Barrier or Geotextile: N/A

Notes: Concrete core diameter = 6.0"



PAVEMENT SECTION COMPOSITION AND DESCRIPTION

Project Name: Runway 16-34 EMAS Replacement Date of Extraction: 6/9/2022
 F&R Project Number: 62A-0073 Project Location: Roanoke, Virginia

Boring/Core Identification: C-5 Location Information
 Station: _____
 Lane: _____
 General Location: Runway 16-34

Pavement Section Composition

Asphalt:	6.5 in.	Void Underlying Pavement:	no (yes/no)
Aggregate Base Material:	8.0 in.	Void Depth Below Pavement:	N/A in.
Concrete:	N/A in.		

Welded Wire Fabric (WWF) or Rebar
 WWF/Rebar/Both: N/A in.

Embedment Depths from Top of Core
 Rebar: N/A in.
 Welded Wire Fabric: N/A in.

Vapor Barrier or Geotextile Fabric: no (yes/no)

Description of Vapor Barrier or Geotextile: N/A

Notes: Concrete core diameter = 6.0"



PAVEMENT SECTION COMPOSITION AND DESCRIPTION

Project Name: Runway 16-34 EMAS Replacement Date of Extraction: 6/9/2022
 F&R Project Number: 62A-0073 Project Location: Roanoke, Virginia

Boring/Core Identification: C-6 Location Information
 Station: _____
 Lane: _____
 General Location: Runway 16-34

Pavement Section Composition

Asphalt:	5 in.	Void Underlying Pavement:	no (yes/no)
Aggregate Base Material:	13.0 in.	Void Depth Below Pavement:	N/A in.
Concrete:	N/A in.		

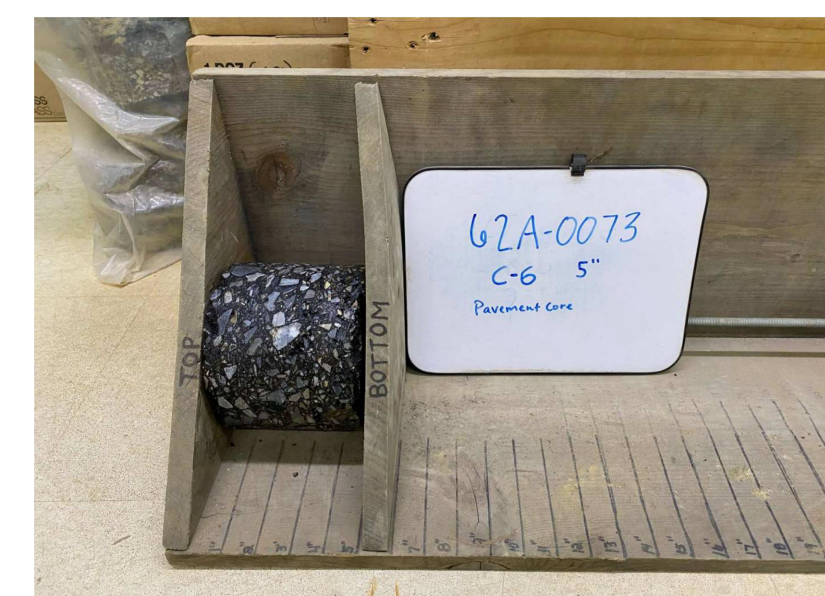
Welded Wire Fabric (WWF) or Rebar
 WWF/Rebar/Both: N/A in.

Embedment Depths from Top of Core
 Rebar: N/A in.
 Welded Wire Fabric: N/A in.

Vapor Barrier or Geotextile Fabric: no (yes/no)

Description of Vapor Barrier or Geotextile: N/A

Notes: Concrete core diameter = 6.0"



PAVEMENT SECTION COMPOSITION AND DESCRIPTION

Project Name: Runway 16-34 EMAS Replacement Date of Extraction: 6/9/2022
 F&R Project Number: 62A-0073 Project Location: Roanoke, Virginia

Boring/Core Identification: C-7 Location Information
 Station: _____
 Lane: _____
 General Location: Runway 16-34

Pavement Section Composition

Asphalt:	24 in.	Void Underlying Pavement:	no (yes/no)
Aggregate Base Material:	8.0 in.	Void Depth Below Pavement:	N/A in.
Concrete:	N/A in.		

Welded Wire Fabric (WWF) or Rebar
 WWF/Rebar/Both: N/A in.

Embedment Depths from Top of Core
 Rebar: N/A in.
 Welded Wire Fabric: N/A in.

Vapor Barrier or Geotextile Fabric: no (yes/no)

Description of Vapor Barrier or Geotextile: N/A

Notes: Concrete core diameter = 6.0"

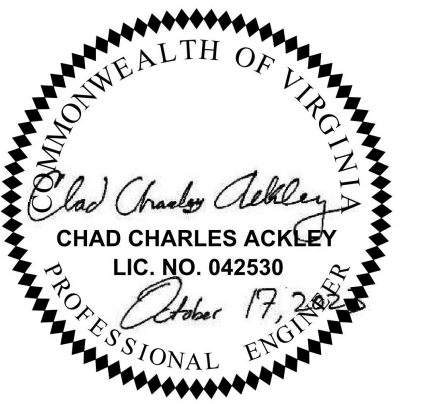


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 REGIONAL
 AIRPORT
 (ROA)



RUNWAY 16-34
 EMAS
 REPLACEMENT



REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: OCTOBER 17, 2023
 REVIEWED BY: CCA
 DRAWN BY: LSB/JB
 DESIGNED BY: RSY

RS&H PROJECT NUMBER
 1022-0071-003
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 SHEET TITLE

PAVEMENT CORE
 PHOTOS

SHEET NUMBER
G008
 SHEET 8 OF 31

BID SUBMITTAL



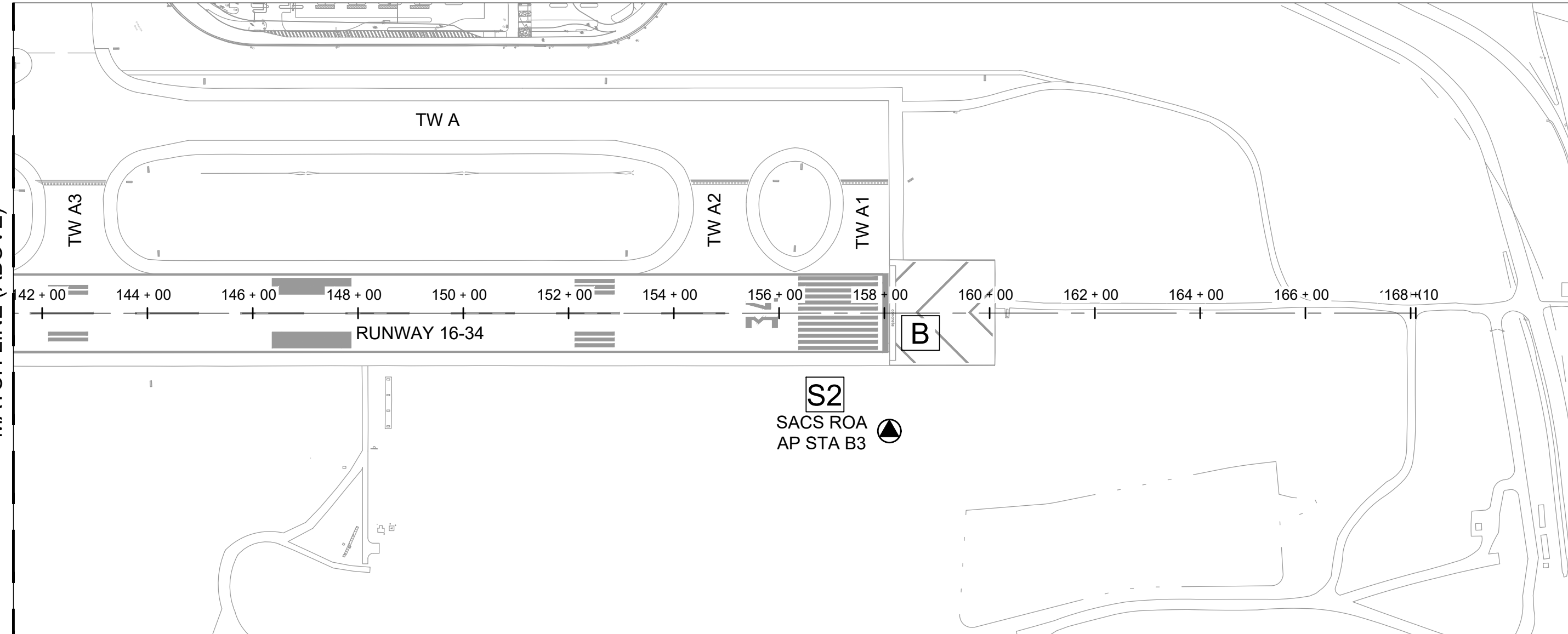
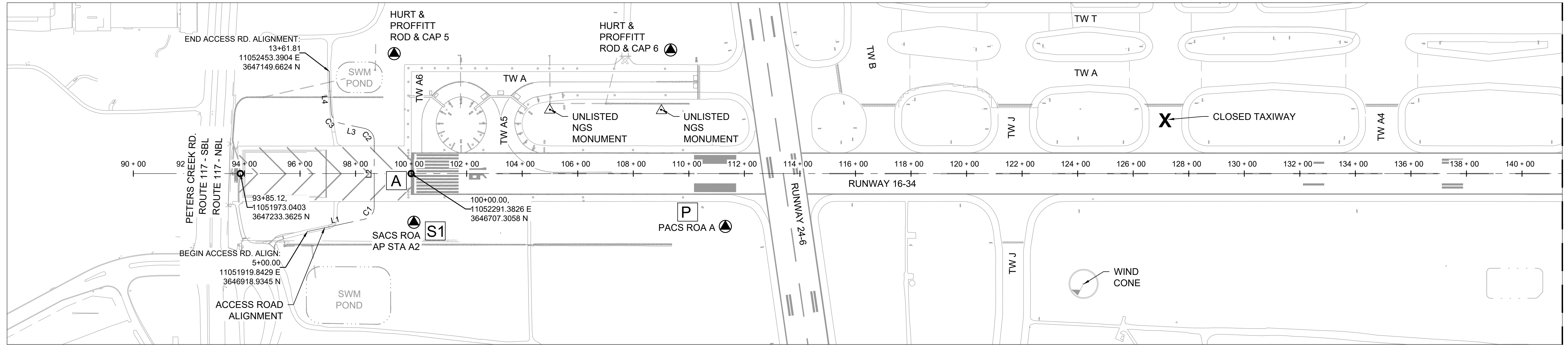
REVISIONS		
NO.	DESCRIPTION	DATE

DATE ISSUED: OCTOBER 17, 2023
REVIEWED BY: CCA
DRAWN BY: LSB/JB
DESIGNED BY: RSY
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**HORIZONTAL
CONTROL
PLAN**

SHEET NUMBER
G009
SHEET 9 OF 31

BID SUBMITTAL



LINE NO.	LENGTH	DIRECTION	EASTING/NORTHING	EASTING/NORTHING
L1	210.694	S43° 22' 11.12"E	(11051919.8429,3646918.9345)	(11052064.5273,3646765.7732)
L2	240.195	N58° 49' 11.45"E	(11052119.2927,3646758.3443)	(11052324.7900,3646882.7006)
L3	87.114	N19° 11' 07.24"W	(11052343.5661,3646934.8040)	(11052314.9383,3647017.0796)
L4	92.259	N55° 11' 50.44"E	(11052331.3815,3647067.6685)	(11052407.1375,3647120.3255)

CURVE NO.	RADIUS	LENGTH	CHORD DIRECTION	EASTING/NORTHING	EASTING/NORTHING
C1	44.000	59.754	S82° 16' 29.84"E	(11052064.5273,3646765.7732)	(11052119.2927,3646758.3443)
C2	44.000	59.904	N19° 49' 02.11"E	(11052324.7900,3646882.7006)	(11052343.5661,3646934.8040)
C3	44.000	57.122	N18° 00' 21.60"E	(11052314.9383,3647017.0796)	(11052331.3815,3647067.6685)

AIRPORT PACS AND SACS
(SEE NOTE 7)

P PACS - ROA A
ELEV=1169.6
EASTING=11052714.56
NORTHING=3645641.03

S1 SACS - ROA AP STA A2
ELEV=1162.2
EASTING=11052147.01
NORTHING=3646608.10

S2 SACS - ROA AP STA B3
ELEV=1138.9
EASTING=11055107.25
NORTHING=3641620.94

EXISTING CONTROL POINT SCHEDULE
(SEE NOTE 5)

A RUNWAY 16 THRESHOLD
EASTING=11052291.38
NORTHING=3646707.31
ELEVATION = 1165.68'

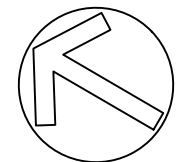
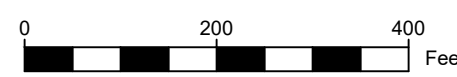
B RUNWAY 34 THRESHOLD
EASTING=11055299.39
NORTHING=3641736.61
ELEVATION = 1142.9' (AIRNAV)

LEGEND

- CONTROL POINTS (SEE NOTE 7)
- UNLISTED NGS MONUMENTS

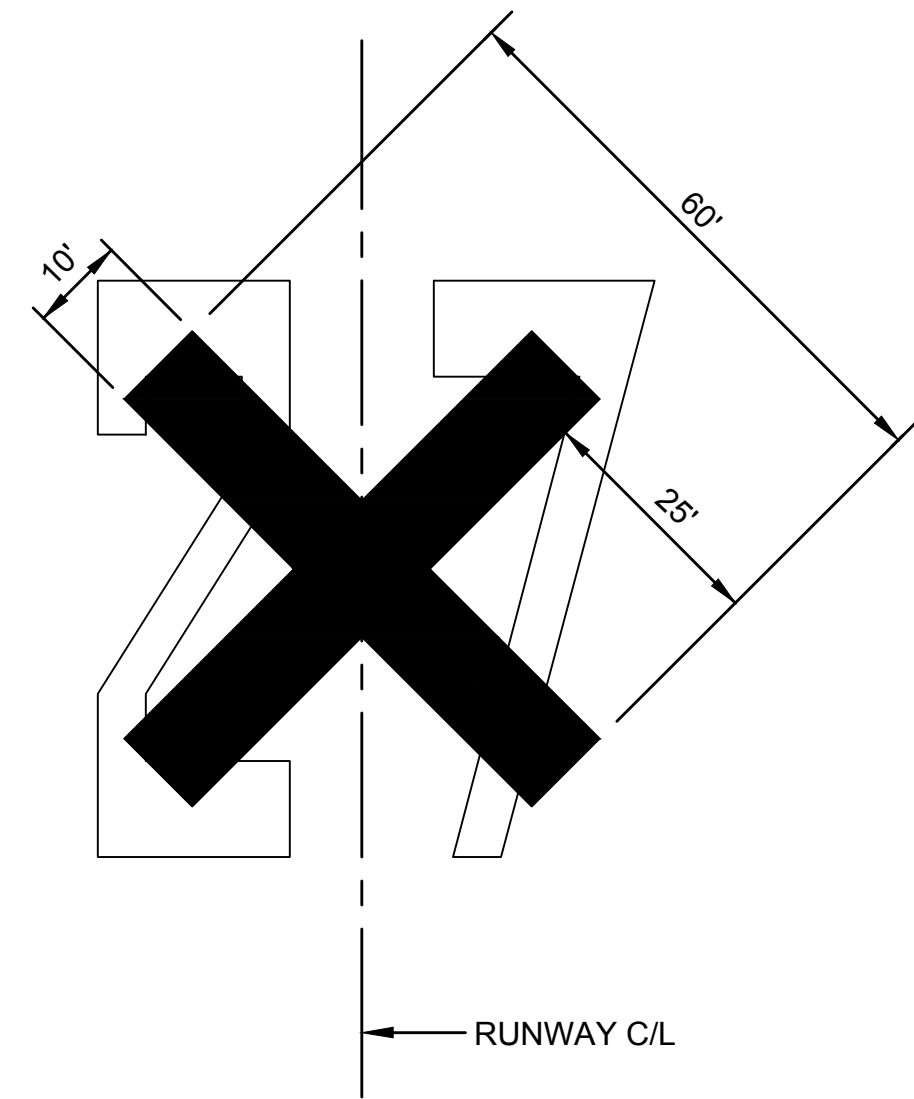
NOTES

1. THE EXISTING CONDITIONS SHOWN ON THE DRAWING ARE DERIVED FROM AERIAL, FIELD SURVEY AND ASBUILT RECORD DATA. AT LEAST SEVEN (7) DAYS PRIOR TO THE START OF CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN THE EXISTING INFORMATION REFLECTED IN THE PLANS. FAILURE TO NOTIFY THE ENGINEER OF DISCREPANCIES CONSTITUTES THE CONTRACTOR'S ACCEPTANCE OF THIS SURVEY.
2. ADDITIONAL CONTROL POINTS PROVIDED ON SURVEY BY HURT & PROFFITT COMPLETED IN JUNE 2022.
3. THE BASIS OF BEARINGS FOR THIS SURVEY IS VIRGINIA STATE PLANE, SOUTH ZONE NAD83 (2011).
4. VERTICAL DATUM IS NAVD 88 GEOID 18.
5. CONTRACTOR SHALL REESTABLISH CONTROL IF DAMAGED DURING CONSTRUCTION.
6. CONTRACTOR SHALL RESET CONTROL POINTS AFTER PAVING AND NOTE LOCATION AND ELEVATION ON AS-BUILTS. ALL WORK ASSOCIATED WITH RESETTING OF CONTROL POINTS SHALL BE INCIDENTAL TO C-104-5.1 - PROJECT SURVEY & STAKEOUT.
7. THE TOPOGRAPHIC FIELD SURVEY WAS COMPLETED IN JUNE 2022 BY HURT & PROFFITT, INC.
8. AIRPORT PACS AND SACS ARE SHOWN FOR REFERENCE ONLY AND ARE PUBLISHED ON THE NATIONAL GEODETIC SURVEY (NGS) DATABASE.
9. RUNWAY THRESHOLD COORDINATES TAKEN FROM DELTA AIRPORT CONSULTANTS, INC. RECORD DRAWINGS: SEALCOAT AND MARKING PLANS, DATED MAY 22, 2020.



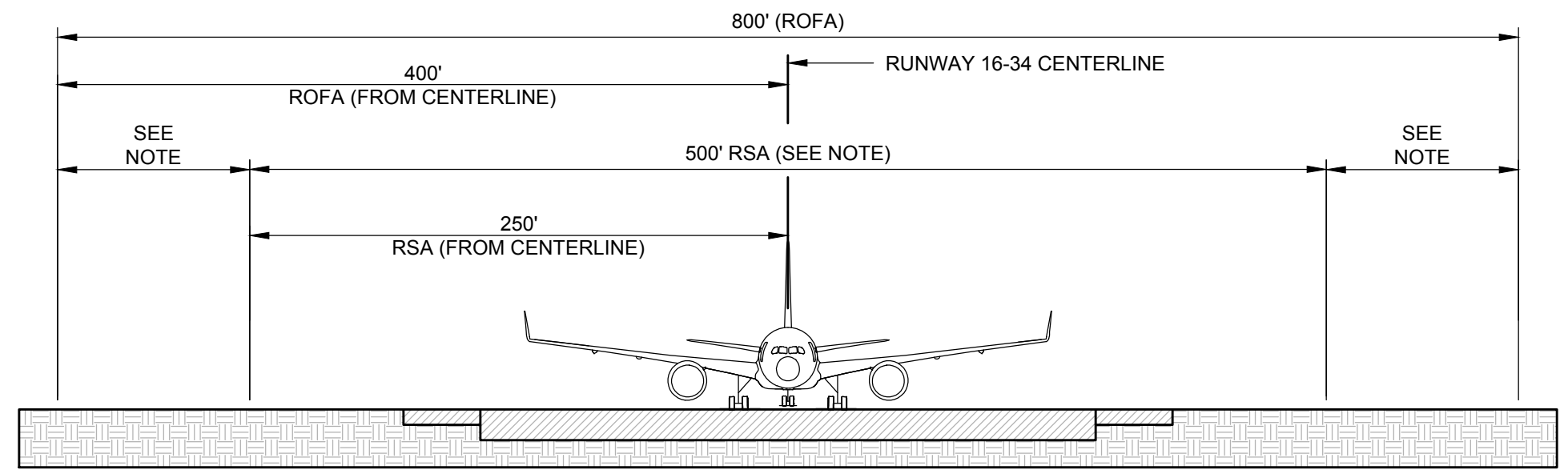
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Drawing: C:\ROA\Projects\2022-XXXX\CAD\SHEETS\G102_CONSTRUCTION SAFETY AND PHASING DETAILS.dwg - Plotted on: 9/27/2023 11:13 AM - Plotted by: Colin McEneaney



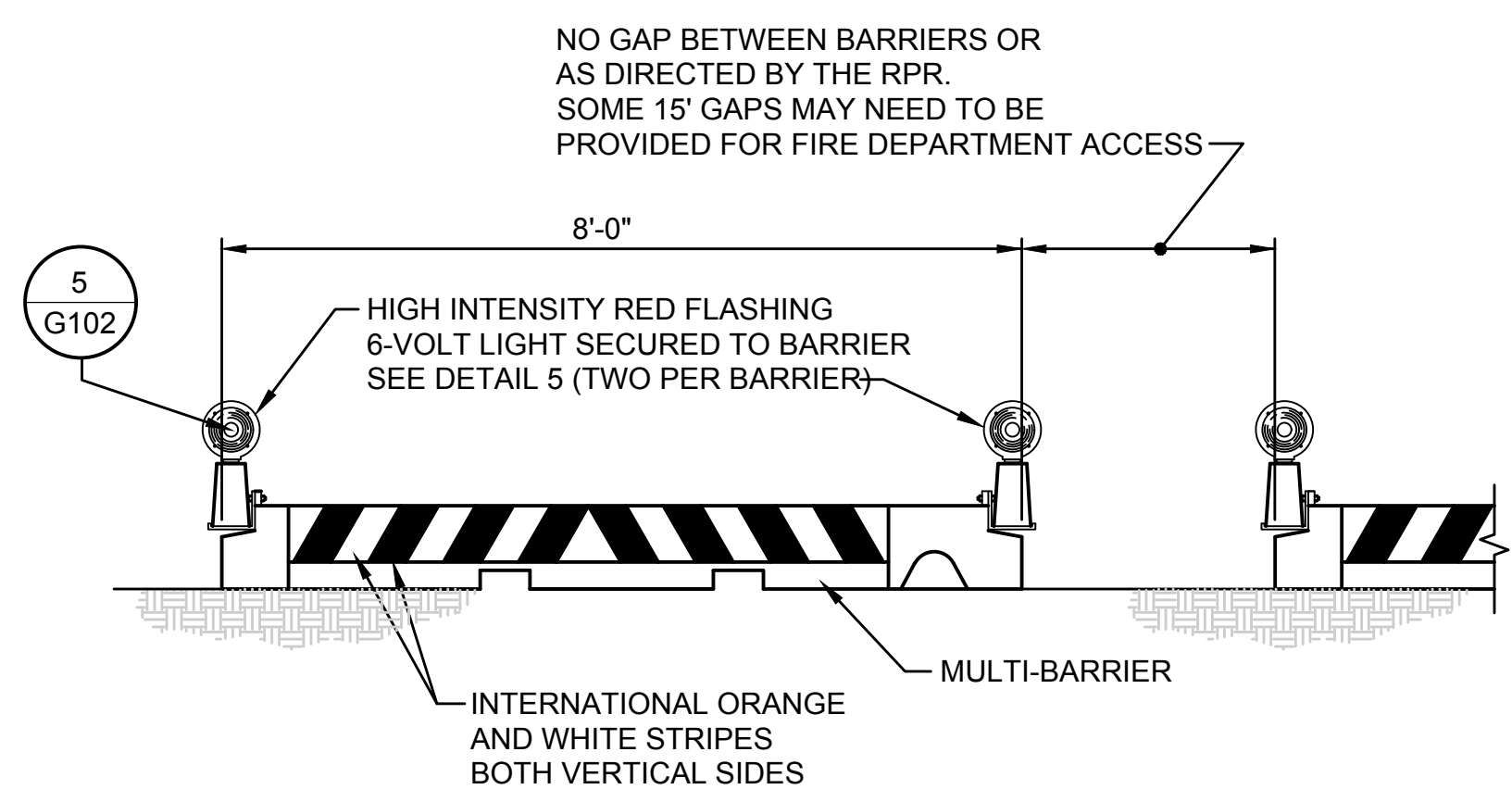
NOTES:

1. CLOSED RUNWAY CLOSURE MARKINGS SHALL BE AVIATION YELLOW.
2. FABRIC PORTABLE RUNWAY CLOSURE MARKER TRANSPORT AND STORAGE IS THE RESPONSIBILITY OF THE CONTRACTOR.
3. FABRIC X RUNWAY CLOSURE MARKERS SHALL BE PLACED ON TOP OF RUNWAY DESIGNATION NUMERALS FOR EACH RUNWAY BEING CLOSED.
4. FABRIC X RUNWAY CLOSURE SHALL BE SECURED BY A GROUND ANCHOR DEVICE. ANCHORING DEVICES SHOULD BE DESIGNED TO MINIMIZE DAMAGE TO PAVEMENT, AND ANY DAMAGE SHOULD BE REPAIRED BEFORE THE RUNWAY IS OPENED TO AIRCRAFT TRAFFIC
5. FABRIC X RUNWAY CLOSURE MARKERS SHALL MEET THE REQUIREMENTS DESCRIBED IN FAA AC 150/5340-1M SPECIFICATION, CHAPTER 5.7.1.2.
6. FABRIC CLOSURE MARKERS SHALL BE PROVIDED BY THE CONTRACTOR. CONTRACTOR TO MAINTAIN MARKERS AS REQUIRED IN ORDER TO ADHERE TO CONSTRUCTION SCHEDULE. RUNWAY CLOSURES SHALL NOT BE PERMITTED WITHOUT PROPER CLOSURE MARKERS. CLOSURE MARKERS SHALL REMAIN THE PROPERTY OF THE CONTRACTOR UPON PROJECT COMPLETION.
7. CONTRACTOR WILL BE ESCORTED TO THE RUNWAY ENDS BY THE RPR WHEN PLACEMENT/REMOVAL/ACCESS TO THE CLOSURE MARKERS IS REQUIRED.

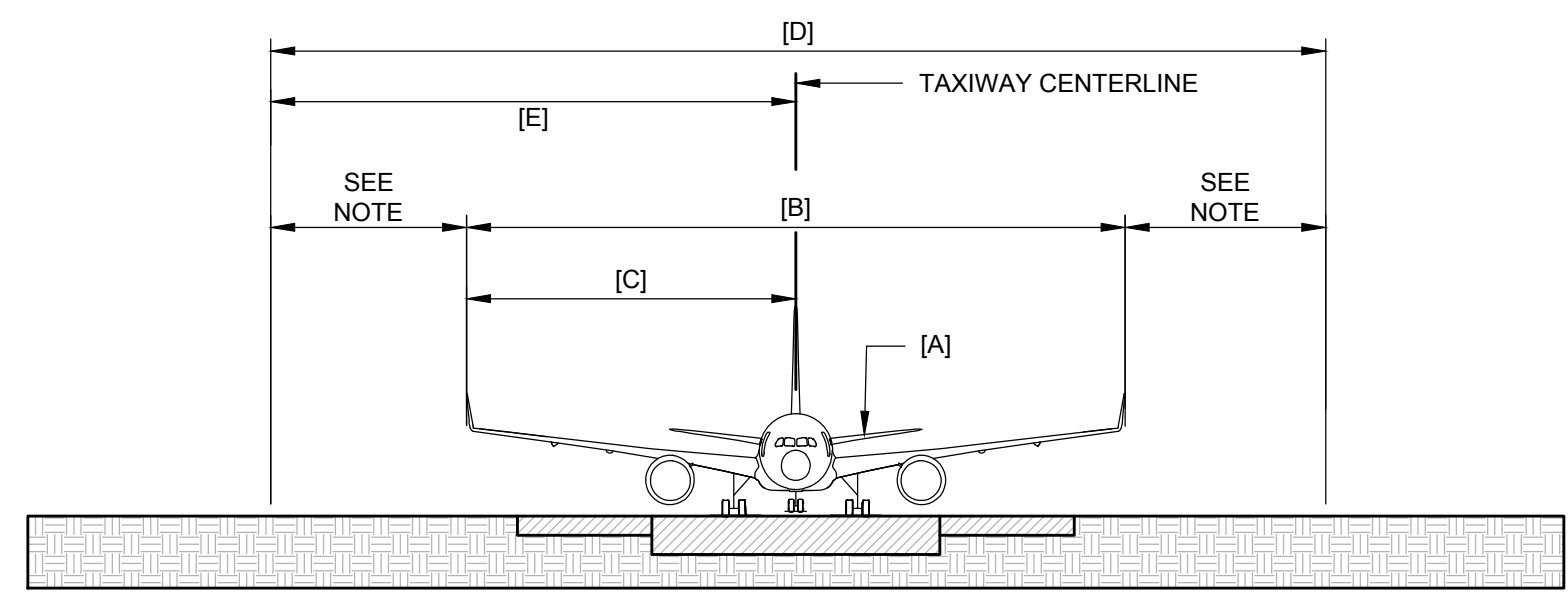


NOTE:
NO WORK SHALL BE PERMITTED IN ACTIVE RSA WITHOUT A RUNWAY CLOSURE. RESTORATION OF ROFA OUTSIDE RSA NOT REQUIRED TO OPEN RUNWAY TO TRAFFIC.

2 RUNWAY SAFETY AREA (RSA) RUNWAY OBJECT FREE AREAS (ROFA)
SCALE: N.T.S.

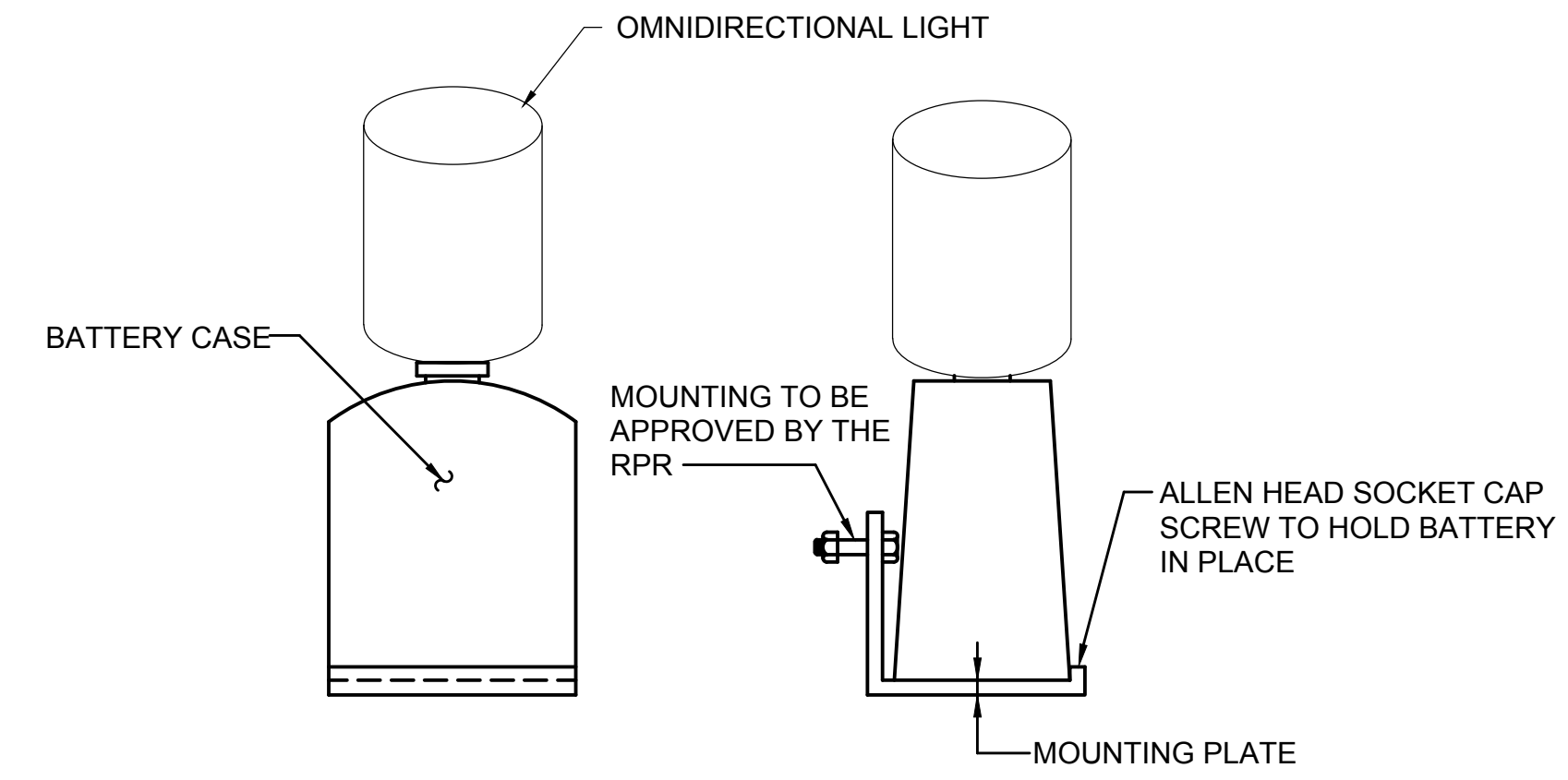


4 POLYETHYLENE CONSTRUCTION BARRIERS
SCALE: N.T.S.



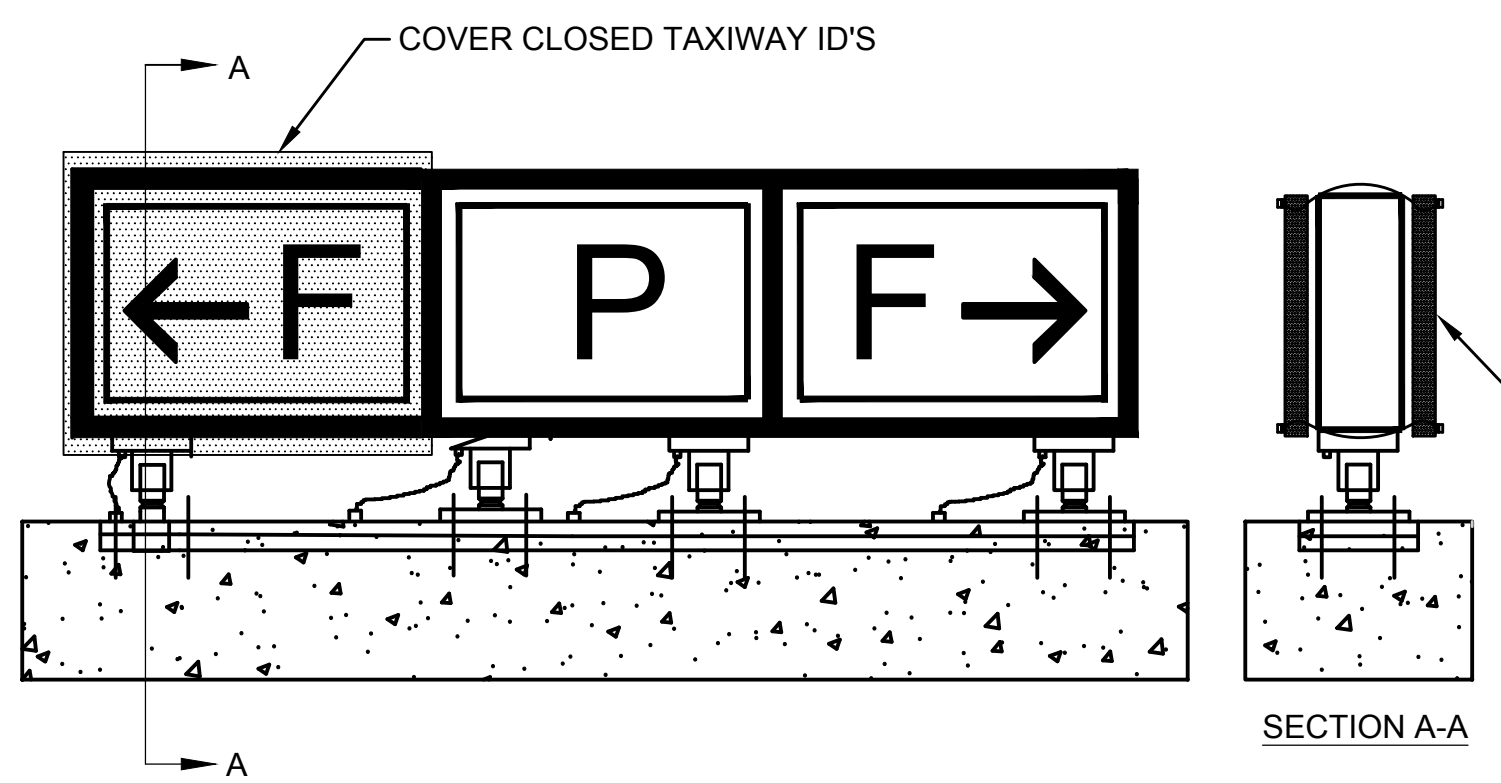
NOTE:
NO WORK SHALL BE PERMITTED IN ACTIVE TSA. WORK WITHIN ACTIVE TOFA SHALL REQUIRE "CONSTRUCTION AHEAD" SIGNS AND FLAGPERSON. EQUIPMENT/PERSONNEL SHALL BE MOVED OUTSIDE TOFA IF 36' CLEARANCE TO WINGTIP CANNOT BE MAINTAINED. RESTORATION OF TOFA OUTSIDE TSA NOT REQUIRED TO OPEN TAXIWAY TO TRAFFIC, AS SHOWN IN DETAIL 3 ON THIS SHEET. CONTRACTOR SHALL COORDINATE ANY WORK WITHIN AN ACTIVE OFA WITH ROA OPERATIONS AND INCLUDE COORDINATION IN THE APPROVED MOT PLAN IF APPLICABLE.

TAXIWAY	GROUP	AIRCRAFT [A]	TSA [B]	TSA FROM CENTERLINE [C]	TOFA [D]	TOFA FROM CENTERLINE [E]
A	IV	BOEING 767	171'	85.5'	243'	121.5'



5 POLYETHYLENE CONSTRUCTION BARRIER LIGHT DETAIL
SCALE: N.T.S.

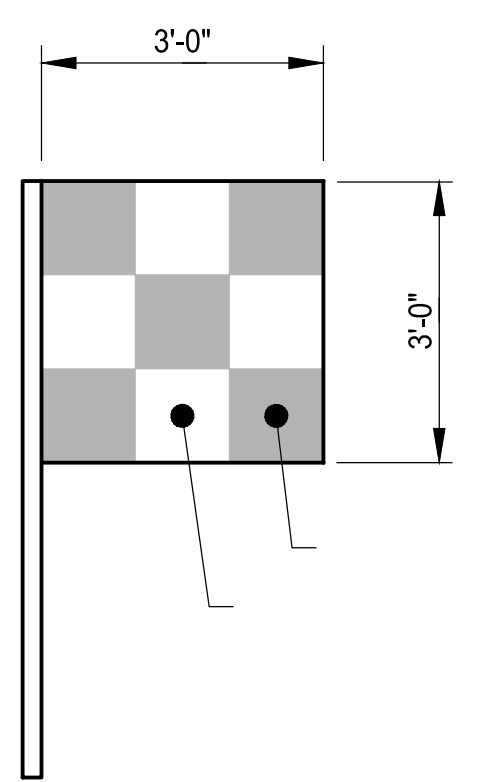
1 RUNWAY CLOSURE MARKER
SCALE: N.T.S.



NOTES:

1. COVER ONLY TAXIWAYS CLOSED TO AIRCRAFT TRAFFIC AS SHOWN ON PHASING PLANS OR DIRECTED BY THE RPR.
2. FASTEN TO WITHSTAND 80 MPH WINDS.
3. METHOD OF COVERING SHALL BE SUBMITTED FOR APPROVAL OF RPR. NO BAGS OR TAPE WILL BE PERMITTED.
FOR COSTS ASSOCIATED WITH TEMPORARY CONSTRUCTION FEATURES SEE TEMPORARY CONSTRUCTION ITEMS.
4. MAINTAIN EXISTING SIGNAGE OR PROVIDE TEMPORARY SIGNAGE DURING DURATION OF PROJECT. AS WORK PROGRESSES, COVER ANY NEW OR EXISTING MESSAGES THAT DO NOT APPLY OR LEAD INTO NEW WORK AREAS NOT READY FOR TRAFFIC. NO SIGNAGE MAY BE DISCONNECTED OR COVERED WITHOUT APPROVAL BY THE CONSTRUCTION MANAGER.

6 SIGN COVERING DETAIL
SCALE: N.T.S.



7 VEHICLE EQUIPMENT FLAG
SCALE: N.T.S.

3 GROUP IV TAXIWAY SAFETY AREA (TSA) TAXIWAY OBJECT FREE AREA (TOFA) - TANGENT SECTION
SCALE: N.T.S.

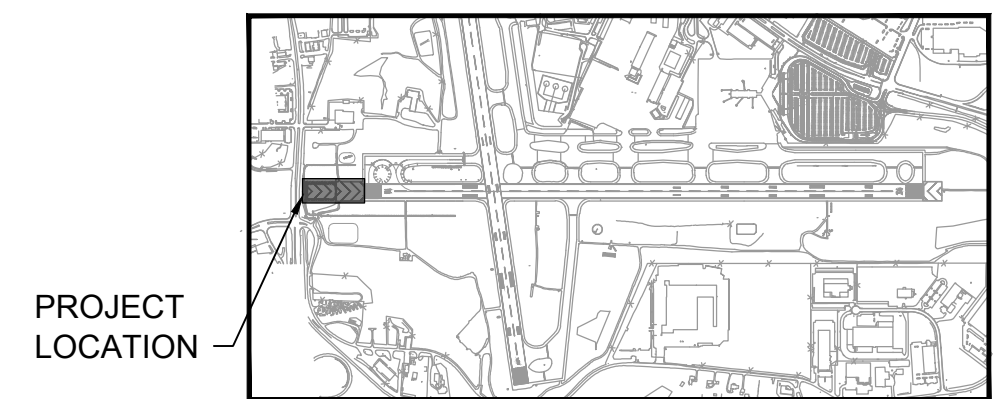
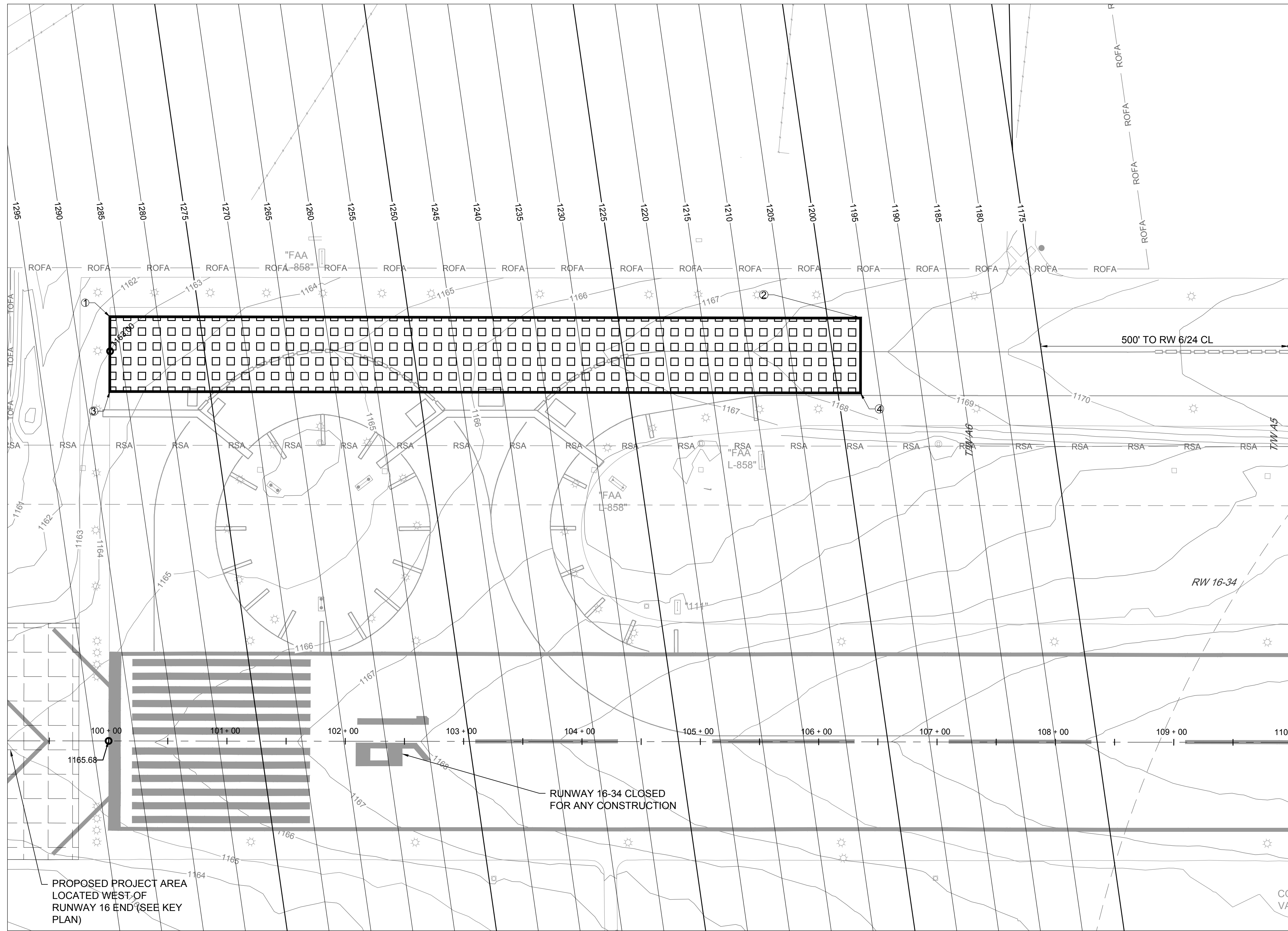
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NO.	DESCRIPTION	DATE

DATE ISSUED: OCTOBER 17, 2023
REVIEWED BY: KMF
DRAWN BY: AJB
DESIGNED BY: CFM
RS&H PROJECT NUMBER: 1022-0071-003
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CONSTRUCTION SAFETY AND PHASING DETAILS

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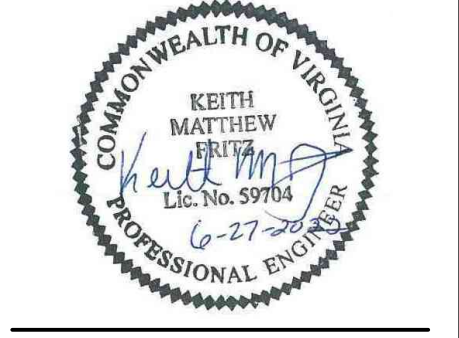
- LEGEND**
- EMAS BLOCK STAGING AREA
 - 1170 FAR PART 77 SURFACE CONTOUR
 - 1162 EXISTING GROUND CONTOUR

- NOTES**
1. ANY BOOMS AND CONSTRUCTION EQUIPMENT SHALL BE LOWERED TO THE RESPECTIVE EQUIPMENT MINIMUM HEIGHT WHEN NOT IN USE AND/OR AT THE END OF EACH WORK SHIFT. NOT IN USE IS DEFINED AS NO OPERATOR BEING AVAILABLE TO MOVE A PARTICULAR PIECE OF EQUIPMENT FOR 15 MINUTES OR MORE.
 2. THE MAXIMUM ELEVATIONS FOR CONSTRUCTION EQUIPMENT ARE INDICATED FOR THE CONTRACTOR AND REFERS TO ALL CONSTRUCTION EQUIPMENT.
 3. ACTIVE CONSTRUCTION ACTIVITIES WILL BE SUBJECT TO OFZ RESTRICTIONS ONLY. PERMANENT OBSTRUCTIONS (EQUIPMENT NOT IN USE, STOCKPILES, BOOMS, ETC.) SHALL BE SUBJECT TO FAR PART 77 RESTRICTIONS.
 4. CONTRACTOR SHALL NOTIFY THE RPR 7 DAYS PRIOR TO USING ANY EQUIPMENT OVER 20 FEET IN HEIGHT OR EQUIPMENT THAT VIOLATES MAXIMUM ALLOWABLE EQUIPMENT HEIGHT FOR COORDINATION WITH ROA OPERATIONS AND THE AIR TRAFFIC CONTROL TOWER.
 5. ONLY EXISTING AND PART 77 CONTOURS ARE SHOWN FOR CLARITY.
 6. THIS MAX EQUIPMENT HEIGHT PLAN SHOWS RUNWAY 6-24 PART 77 SURFACE ONLY, AS RUNWAY 16-34 WILL BE CLOSED DURING CONSTRUCTION.

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 Virginia Registration Nos. 0407-003171 / 0411-000438

ADCI
 AIRPORT DESIGN CONSULTANTS INC.
ROANOKE-BLACKSBURG REGIONAL AIRPORT

ROANOKE-BLACKSBURG REGIONAL AIRPORT (ROA)



RUNWAY 16-34 EMAS REPLACEMENT

REVISIONS

NO.	DESCRIPTION	DATE

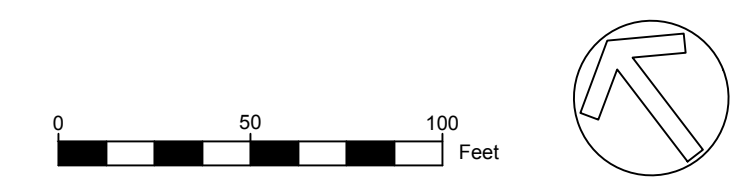
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MAXIMUM EQUIPMENT HEIGHT PLAN

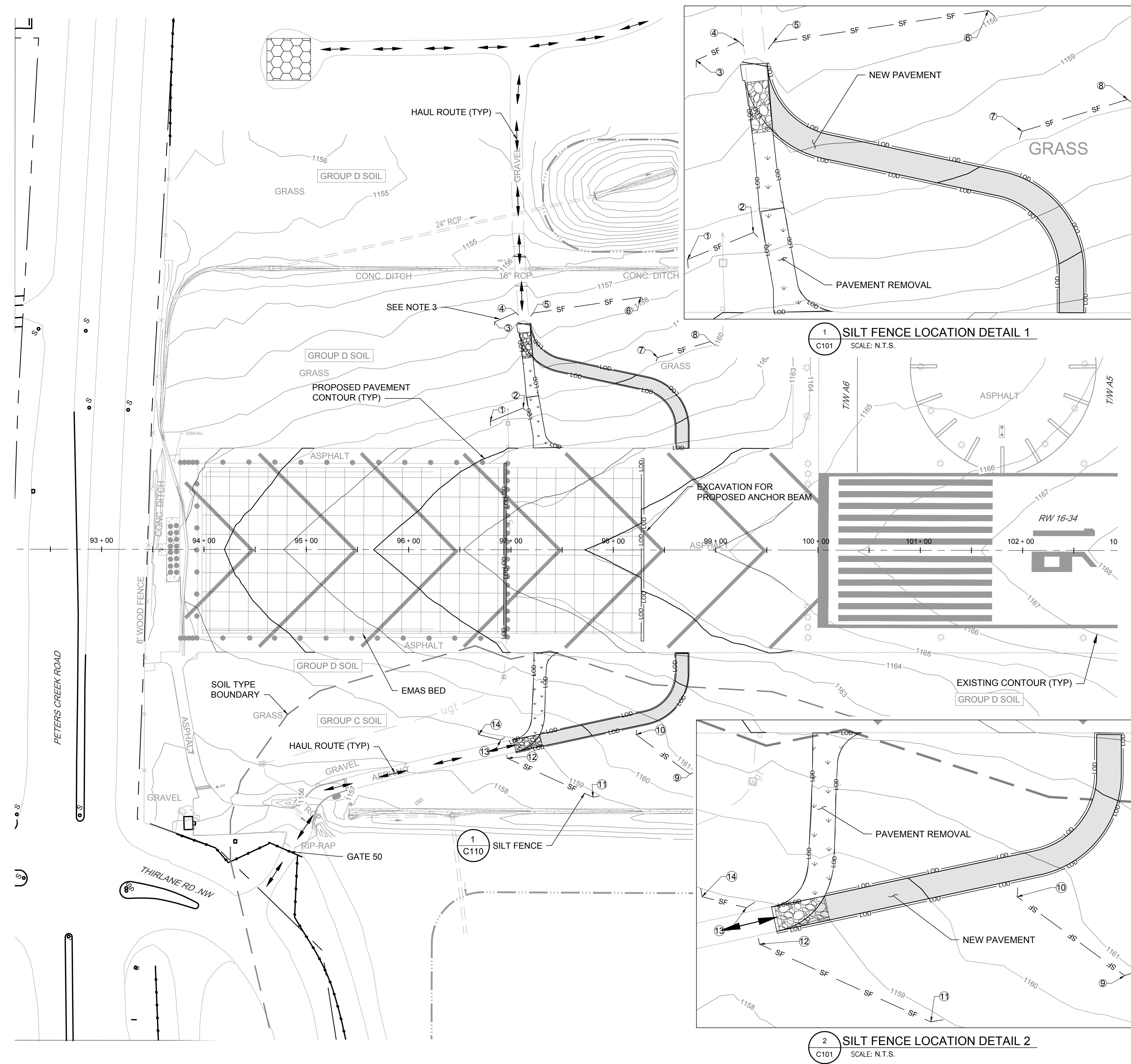
SHEET NUMBER
G104
 SHEET 13 OF 31
 BID SUBMITTAL

FAR PART 77 POINT TABLE

POINT NO.	NORTHING	EASTING	LATITUDE (N)	LONGITUDE (W)	SITE ELEV.	EQUIPMENT HEIGHT	FAR PART 77 ELEV.	EQUIPMENT CLEARANCE
1	3646892.38	11052598.58	N037° 19' 46.12"	W079° 58' 48.29"	1162.39	1182.39	1285.700	123.307
2	3646349.48	11052926.54	N037° 19' 40.80"	W079° 58' 44.12"	1168.49	1188.49	1196.030	27.541
3	3646859.63	11052544.46	N037° 19' 45.79"	W079° 58' 48.95"	1163.38	1183.38	1286.990	123.611
4	3646316.74	11052872.43	N037° 19' 40.47"	W079° 58' 44.78"	1168.38	1188.38	1197.310	28.927



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LEGEND

- LOD — LIMIT OF DISTURBANCE
- SF — SILT FENCE (SEE DETAIL 1, SHEET C110)
- ↓ ↓ AIRPORT ACCESS ROAD REMOVAL AND SEEDING
- ▒ ACCESS ROAD PAVING
- ⊞ STONE CONSTRUCTION ENTRANCE
- ⊞ STAGING AREA
- ▒ EMAS BED
- ↔ HAUL ROUTE

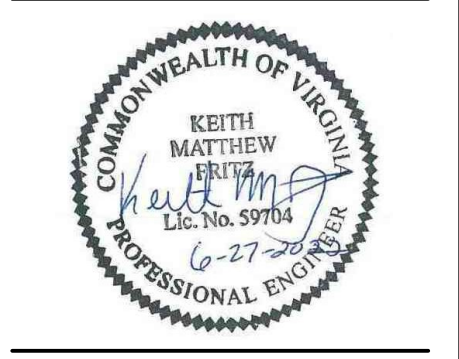
NOTES

1. SEE SHEETS C110 AND C111 FOR EROSION AND SEDIMENT CONTROL NOTES AND DETAILS.
2. CONTRACTOR TO HAUL ANY EXCESS MATERIAL TO AN APPROVED OFFSITE LOCATION.
3. CONTRACTOR TO INSTALL SILT FENCE PARALLEL TO CONTOURS.
4. LIMIT OF DISTURBANCE AROUND SILT FENCE NOT SHOWN FOR CLARITY.
5. ALL SILT FENCE SHALL BE REMOVED PRIOR TO OPENING RW 16-34 AFTER RECEIVING APPROVAL OF RPR.

1 SILT FENCE LOCATION DETAIL 1
C101 SCALE: N.T.S.

2 SILT FENCE LOCATION DETAIL 2
C101 SCALE: N.T.S.

SILT FENCE POINT TABLE		
POINT NO.	NORTHING	EASTING
1	3647046.23	11052232.66
2	3647025.58	11052260.62
3	3647093.09	11052318.10
4	3647080.20	11052336.75
5	3647065.51	11052345.00
6	3646983.78	11052412.83
7	3646938.96	11052370.98
8	3646902.92	11052411.04
9	3646700.85	11052039.47
10	3646765.70	11052045.12
11	3646770.03	11051971.00
12	3646861.30	11051960.03
13	3646876.04	11051971.92
14	3646897.33	11051965.28

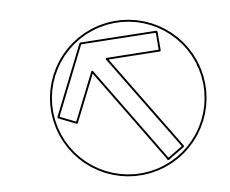
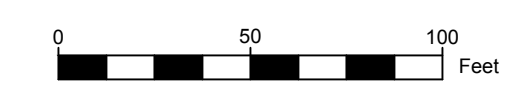


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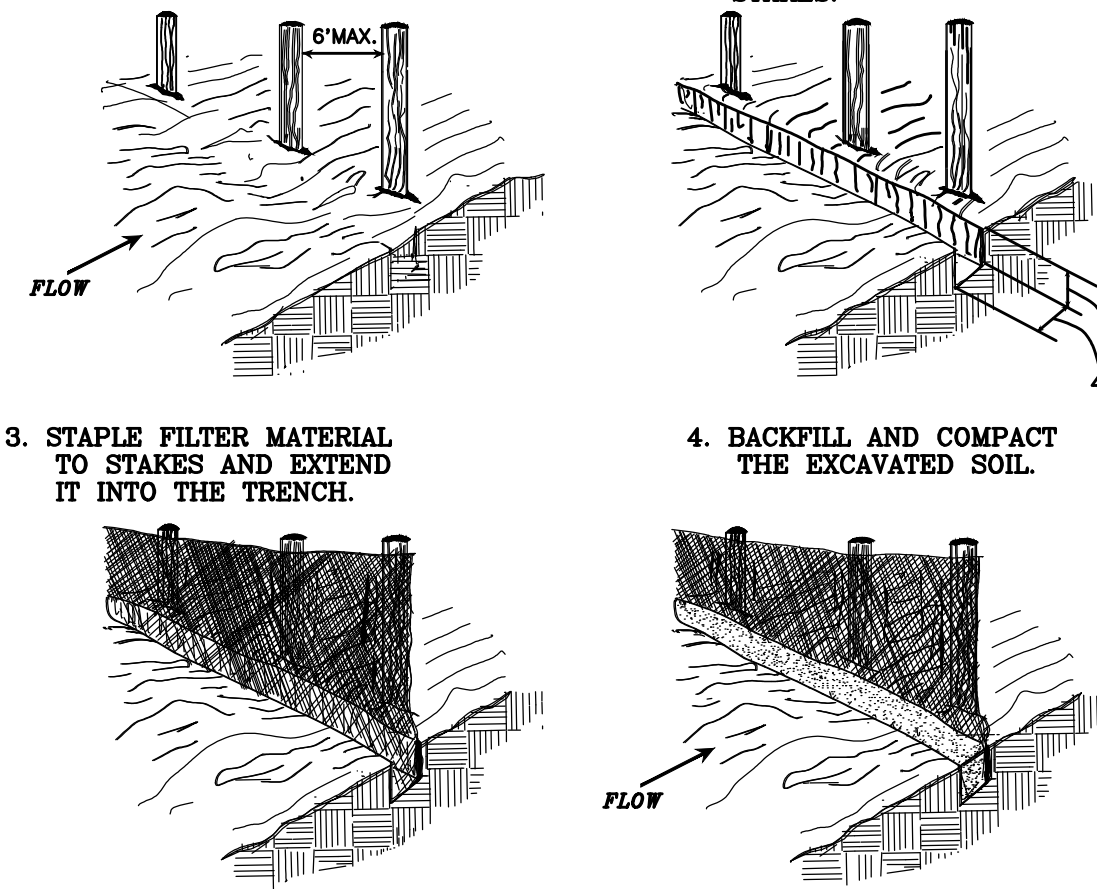
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DRAWN BY: AJB
DESIGNED BY: CFM
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EROSION AND SEDIMENT CONTROL PLAN

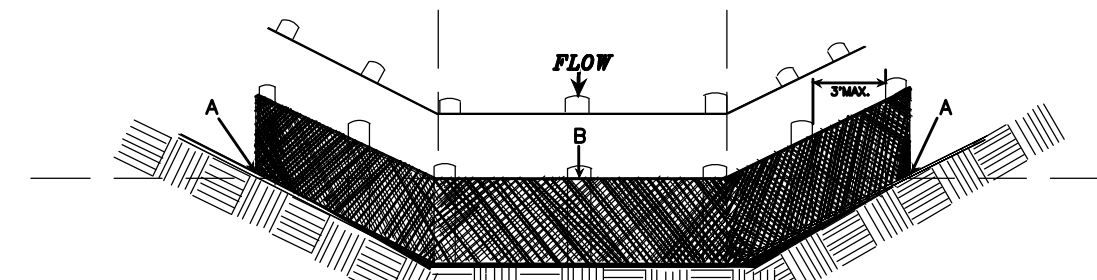


**CONSTRUCTION OF A SILT FENCE
(WITHOUT WIRE SUPPORT)**

1. SET THE STAKES.
2. EXCAVATE A 4" X 4" TRENCH UPSLOPE ALONG THE LINE OF STAKES.
3. STAPLE FILTER MATERIAL TO STAKES AND EXTEND IT INTO THE TRENCH.
4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



SHEET FLOW INSTALLATION
(PERSPECTIVE VIEW)



POINTS A SHOULD BE HIGHER THAN POINT B.
DRAINAGEWAY INSTALLATION
(FRONT ELEVATION)

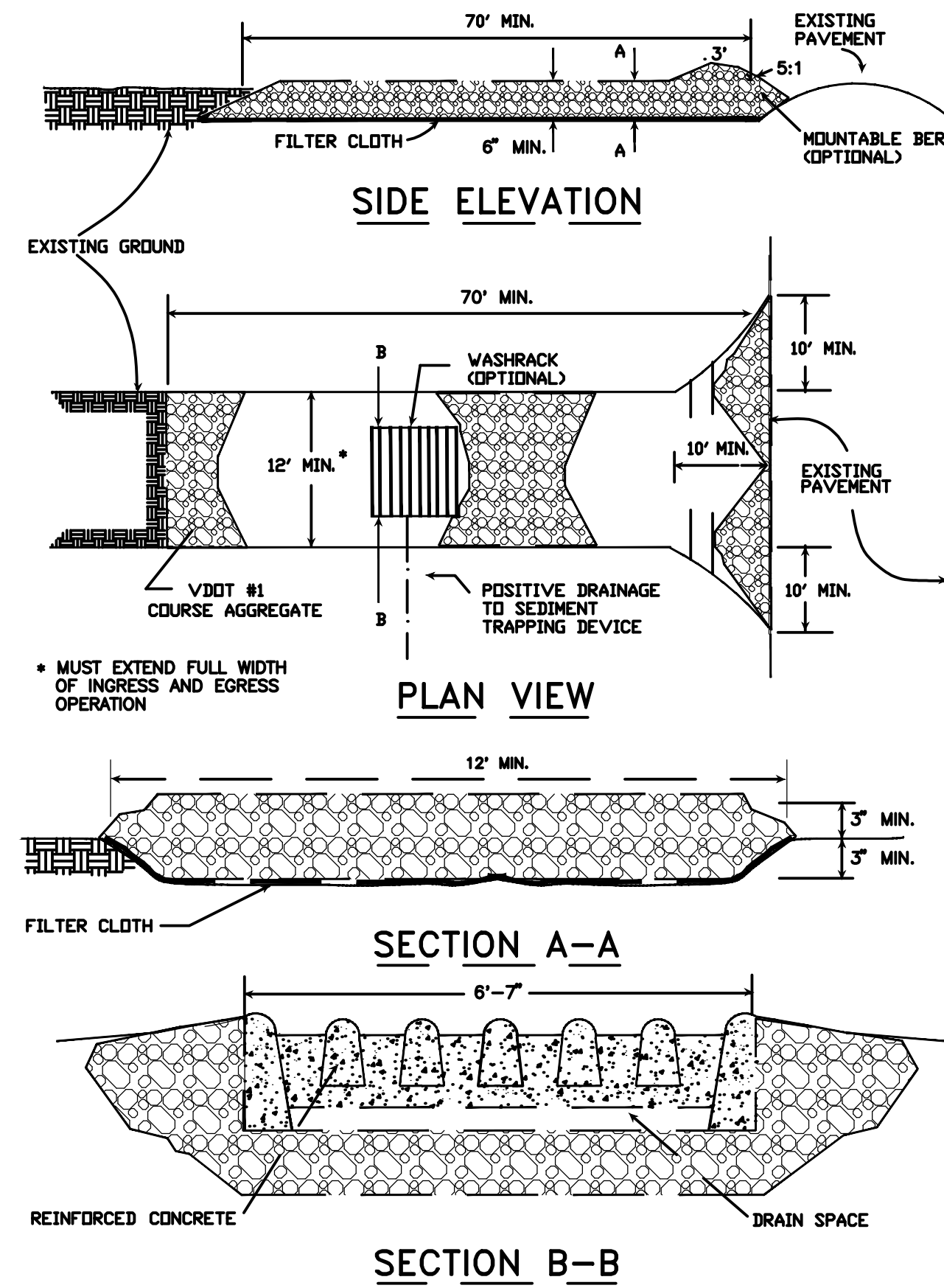
SOURCE: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, VA. DSWC Sherwood and Wyant PLATE 3.05-2

1 SILT FENCE (WITHOUT WIRE SUPPORT)
C110 SCALE: N.T.S.

NOTES:

APPROPRIATELY SIZED SILT SOCK APPROVED BY THE RPR CAN BE USED AS AN ALTERNATIVE TO SILT FENCE WHERE APPLICABLE.

STONE CONSTRUCTION ENTRANCE



SOURCE: ADAPTED FROM 1983 Maryland Standards for Soil Erosion and Sediment Control, and Va. DSWC Plate 3.02-1

2 STONE CONSTRUCTION ENTRANCE
C110 SCALE: N.T.S.

NOTES:

1. ALTERNATIVE ROCK CONSTRUCTION ENTRANCES (FODS, MATTING, ETC) APPROVED BY THE RPR CAN BE USED AS AN ALTERNATIVE WHERE APPLICABLE.

Drawing: C:\ROA\Projects\2022-XXXX\CAD\SHEETS\C111_EROSION AND SEDIMENT CONTROL DETAILS.dwg - Plotted on: 9/25/2023 2:03 PM - Plotted by: Sriya Velupula

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DRAWN BY: AJB
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**EROSION AND
SEDIMENT
CONTROL
DETAILS**

SHEET NUMBER
C110
SHEET 15 OF 31

BID SUBMITTAL

GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 4VAC50-30-40 EROSION AND SEDIMENT CONTROL REGULATIONS.
2. THE PLAN APPROVING AUTHORITY (CITY OF ROANOKE) MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
4. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
5. PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
6. THE CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY. THIS WILL BE CONSIDERED ADDITIONAL WORK IF NOT SHOWN.
8. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
9. DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
10. THE CONTRACTOR WILL BE RESPONSIBLE FOR INSPECTING ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

GENERAL EROSION AND SEDIMENT CONTROL NARRATIVE

1. PROJECT DESCRIPTION
THE PURPOSE OF THIS PROJECT IS TO REMOVE THE EXISTING EMAS STRUCTURE IN THE RUNWAY 16 SAFETY AREA, AND REPLACE IT WITH A NEW EMAS BED ON THE EXISTING PAVED AREA. THERE WILL ALSO BE RELOCATION OF THE EXISTING VEHICLE SERVICE ROAD AS A RESULT OF THE NEW EMAS BED.
2. EXISTING SITE CONDITIONS
THE SITE IS AN AREA OF LEVEL TERRAIN WITH MILD SLOPES AT THE END OF THE EXISTING RUNWAY. THE AREAS THAT WILL REMAIN UNDISTURBED IN THE AREA ARE EITHER AVERAGE TO DENSE GRASS OR PAVED COVER.
3. ADJACENT PROPERTY
THE AIRPORT IS BORDERED BY PETERS CREEK ROAD AND US ROUTE 117 TO THE NORTH, US ROUTE 118 TO THE EAST, HERSHBERGER ROAD TO THE SOUTH AND THIRLANE ROAD TO THE WEST.
4. SOILS
SEQUOIA SILT LOAM - 7 TO 15 PERCENT SLOPES
UDORTHENTS-URBAN LAND COMPLEX (SOIL TYPES SHOWN ON PLAN).
5. CRITICAL EROSION AREAS
THERE ARE NO CRITICAL EROSION AREAS ASSOCIATED WITH THIS PROJECT
6. STRUCTURAL PRACTICES
TEMPORARY CONSTRUCTION STONE ENTRANCE
A TEMPORARY CONSTRUCTION STONE ENTRANCE WILL BE USED AT THE AREAS SHOWN ON THE PROPOSED PLAN, WHERE THE TRUCKS WILL BE ENTERING THE LIMIT OF DISTURBANCE FOR DEMOLITION/PAVING OPERATIONS.
SILT FENCE OR APPROVED SILT SOCK
SILT FENCE SHALL BE INSTALLED ACCORDING TO THE POINT TABLE SHOWN ON THE PROPOSED PLANS, OR IN ANY ADDITIONAL AREAS AS ORDERED BY THE RPR.
7. MANAGEMENT STRATEGIES
 1. CONSTRUCTION SHOULD BE SEQUENCED THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
 2. TEMPORARY SEEDING OR OTHER STABILIZATION SHALL FOLLOW IMMEDIATELY AFTER GRADING.
 3. AREAS WHICH ARE NOT TO BE DISTURBED ARE TO BE CLEARLY MARKED BY FLAGS, SIGNS, ETC.
 4. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.
 8. PERMANENT STABILIZATION
ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISHED GRADING. PERMANENT STABILIZATION SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:
REGULAR SEEDING (T-901)
9. STORMWATER MANAGEMENT
PER VIRGINIA DEQ CODE, THERE IS NO STORMWATER MANAGEMENT DESIGN REQUIRED FOR PROJECTS WITH LESS THAN 10,000 SF OF TOTAL EARTH DISTURBANCE. THIS PROJECT IS JUST UNDER THE LIMIT (9,500 SF).
10. MAINTENANCE
IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL. THE FOLLOWING ITEMS SHALL BE CHECKED IN PARTICULAR.
THE SILT FENCE BARRIERS SHALL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION.
ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND OF GRASS IS MAINTAINED. AREAS SHOULD BE REPAIRED AND RESEEDED AS NECESSARY.

SUGGESTED SEQUENCE OF CONSTRUCTION

- PHASE:
- 1 NOTIFY CITY OF ROANOKE FOR START OF CONSTRUCTION.
 - 1 INSTALL PERIMETER AND E&S CONTROLS OF PROJECT
 - 1 CONSTRUCTION OF PROPOSED UTILITIES, MILLING OF EXISTING PAVEMENT AND DEMOLITION OF EXISTING ANCHOR BEAM.
 - 1 INSTALL NEW ANCHOR BEAM
 - 1 REMOVAL OF EXISTING ROAD PAVEMENT TO BE DEMOLISHED, INSTALLATION OF NEW ROAD.
 - 1 FINAL GRADING/STABILIZATION OF GRASS AREAS WITHIN LIMIT OF DISTURBANCE.
 - 1 NOTIFICATION OF APPROPRIATE AGENCIES AT THE CONCLUSION OF DISTURBANCE ACTIVITIES.
 - 1 EMAS BED INSTALLTION
 - *2 FINAL MARKING AND GROOVING
 - *2 DEMOBILIZATION UPON PROJECT COMPLETION.
- * PHASE 2 FOLLOWS THE FULL CLOSURE OF THE RUNWAY AND WILL NOT INVOLVE ANY EARTH DISTURBANCE ACTIVITIES.

1992

TABLE 6-1	
GENERAL EROSION AND SEDIMENT CONTROL NOTES	
ES-1:	Unless otherwise indicated, all vegetative and structural erosion and sediment control practices will be constructed and maintained according to minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook and Virginia Regulations 4VAC50-30 Erosion and Sediment Control Regulations.
ES-2:	The plan approving authority must be notified one week prior to the pre-construction conference, one week prior to the commencement of land disturbing activity, and one week prior to the final inspection.
ES-3:	All erosion and sediment control measures are to be placed prior to or as the first step in clearing.
ES-4:	A copy of the approved erosion and sediment control plan shall be maintained on the site at all times.
ES-5:	Prior to commencing land disturbing activities in areas other than indicated on these plans (including, but not limited to, off-site borrow or waste areas), the contractor shall submit a supplementary erosion control plan to the owner for review and approval by the plan approving authority.
ES-6:	The contractor is responsible for installation of any additional erosion control measures necessary to prevent erosion and sedimentation as determined by the plan approving authority.
ES-7:	All disturbed areas are to drain to approved sediment control measures at all times during land disturbing activities and during site development until final stabilization is achieved.
ES-8:	During dewatering operations, water will be pumped into an approved filtering device.
ES-9:	The contractor shall inspect all erosion control measures periodically and after each runoff-producing rainfall event. Any necessary repairs or cleanup to maintain the effectiveness of the erosion control devices shall be made immediately.

VI - 15

1
C111 VIRGINIA DEQ GENERAL E&S NOTES
SCALE: N.T.S.



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RUNWAY 16-34
EMAS
REPLACEMENT

REVISIONS		
NO.	DESCRIPTION	DATE

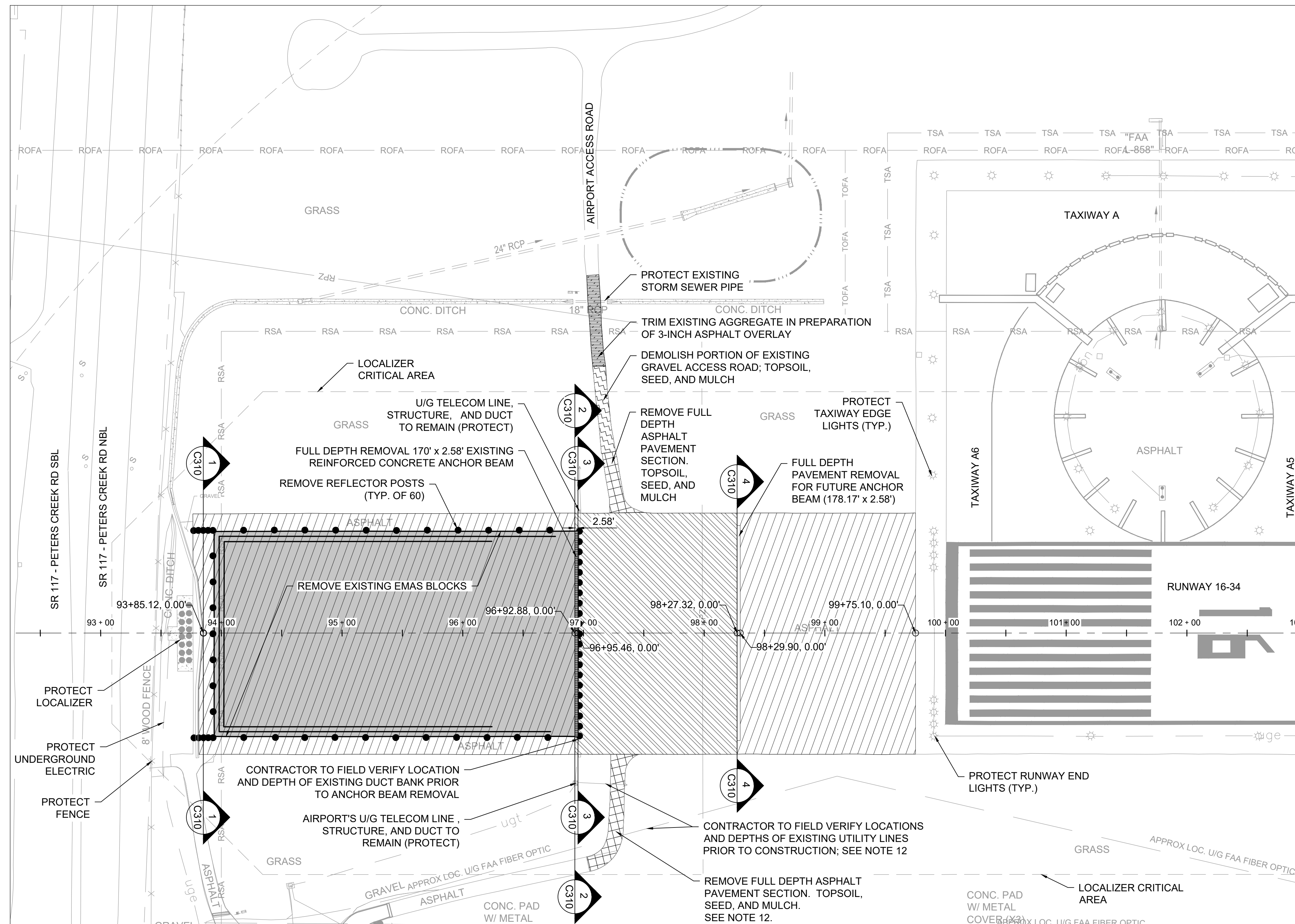
DATE ISSUED: OCTOBER 17, 2023
REVIEWED BY: KMF
DRAWN BY: AJB
DESIGNED BY: CFM
RS&H PROJECT NUMBER
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EROSION AND
SEDIMENT
CONTROL
NOTES

SHEET NUMBER
C111
SHEET 16 OF 31

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Drawing: P:\Roanoke_Regional\10220071_ROA_RW_34_EMAS_Replacement\10220071003\03.00 Project Execution\03.05 Dwg_Models\CAD\ROA-EMAS-Demolition.dwg - Plotted on: 10/6/23 - Plotted by: Brovo, Laura



LEGEND

- RSA — RUNWAY SAFETY AREA
- ROFA — RUNWAY OBJECT FREE AREA
- TOFA — TAXIWAY OBJECT FREE AREA
- TSA — TAXIWAY SAFETY AREA
- PAVEMENT MILLING 2"
- EMAS BLOCK REMOVAL AND PAVEMENT MILLING 2"
- FULL DEPTH PAVEMENT REMOVAL FOR EXISTING ANCHOR BEAM
- PAVEMENT MILLING 5"
- PORTION OF GRAVEL ACCESS ROAD REMOVAL
- PORTION OF ASPHALT ACCESS ROAD REMOVAL
- PORTION OF ASPHALT ACCESS ROAD REMOVAL
- EXISTING EMAS REFLECTOR POST REMOVAL

NOTES

1. REFER TO SHEET C310 FOR LONGITUDINAL TYPICAL SECTION.
2. ASPHALT MILLING DEPTHS VARY APPROXIMATELY 2 INCHES TO 5 INCHES. MILLING DEPTHS ARE APPROXIMATE AND ARE ESTIMATED BASED ON BORING AND CORE INFORMATION.
3. SURVEY OF MILLED SURFACE IS REQUIRED FOR RPR REVIEW PRIOR TO PAVING. ADJUSTMENTS TO FINAL SURFACE GRADES MAY BE REQUIRED PRIOR TO PAVING BY RPR.
4. DEMOLITION OF PAVEMENTS SHALL FOLLOW THE APPROPRIATE PHASE OF CONSTRUCTION AND SHALL BE COORDINATED WITH THE RPR PRIOR TO DEMOLITION.
5. SAWCUTTING SHALL BE DONE ALONG ALL THE DEMOLITION PAVEMENT LIMITS PRIOR TO PAVEMENT MILLING. MILLING ALONG THE DEMOLITION PAVEMENT LIMITS PRIOR TO THE SAW CUT IS NOT ACCEPTABLE.
6. MILLINGS SHALL BECOME PROPERTY OF THE CONTRACTOR AND RESPONSIBLY DISPOSED OFF AIRPORT PROPERTY.
7. DEMOLITION ITEMS NOT SPECIFICALLY NOTED WITH A PAY ITEM SHALL BE CONSIDERED INCIDENTAL TO THE SPECIFICATION P-101 PAY ITEMS.
8. CALL MISS UTILITY AT 1-800-552-7001 BEFORE DIGGING.
9. THE CONTRACTOR IS RESPONSIBLE FOR THE IMMEDIATE CLEANUP OF ANY DEBRIS DEPOSITED ALONG THE ACCESS ROUTE AS A RESULT OF CONSTRUCTION TRAFFIC.
10. DUST CONTROL MEASURES/EQUIPMENT MUST BE READILY AVAILABLE ON SITE FOR THE ENTIRE CONSTRUCTION DURATION.
11. APPROXIMATE LOCATION OF UNDERGROUND EXISTING TELECOMM LINE TO BE PROTECTED. LOCATE IN FIELD PRIOR TO ANY LAND DISTURBANCE ACTIVITIES.
12. PRIOR TO ACCESS ROAD REMOVAL AND CONSTRUCTION, CONTRACTOR TO VERIFY THERE ARE NO UTILITIES WITHIN THE EXISTING / PROPOSED ACCESS ROAD FOOTPRINT. UTILITY LOCATES SHALL BE INCIDENTAL TO ITEM C-104-5.1 - PROJECT SURVEY AND STAKEOUT.
13. FOLLOWING MILLING, ANY REMAINING CRACKS WITHIN ASPHALT GREATER THAN 1/4-INCH SHALL BE PREPARED PER ASTM D6690 AND AS SHOWN IN DETAIL 1 ON SHEET C210.

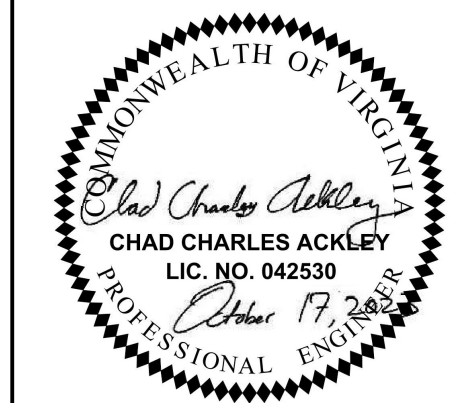


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**RUNWAY 16-34
EMAS
REPLACEMENT**



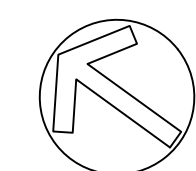
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NO.	DESCRIPTION	DATE

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DRAWN BY: LSB/UB
DESIGNED BY: RSY
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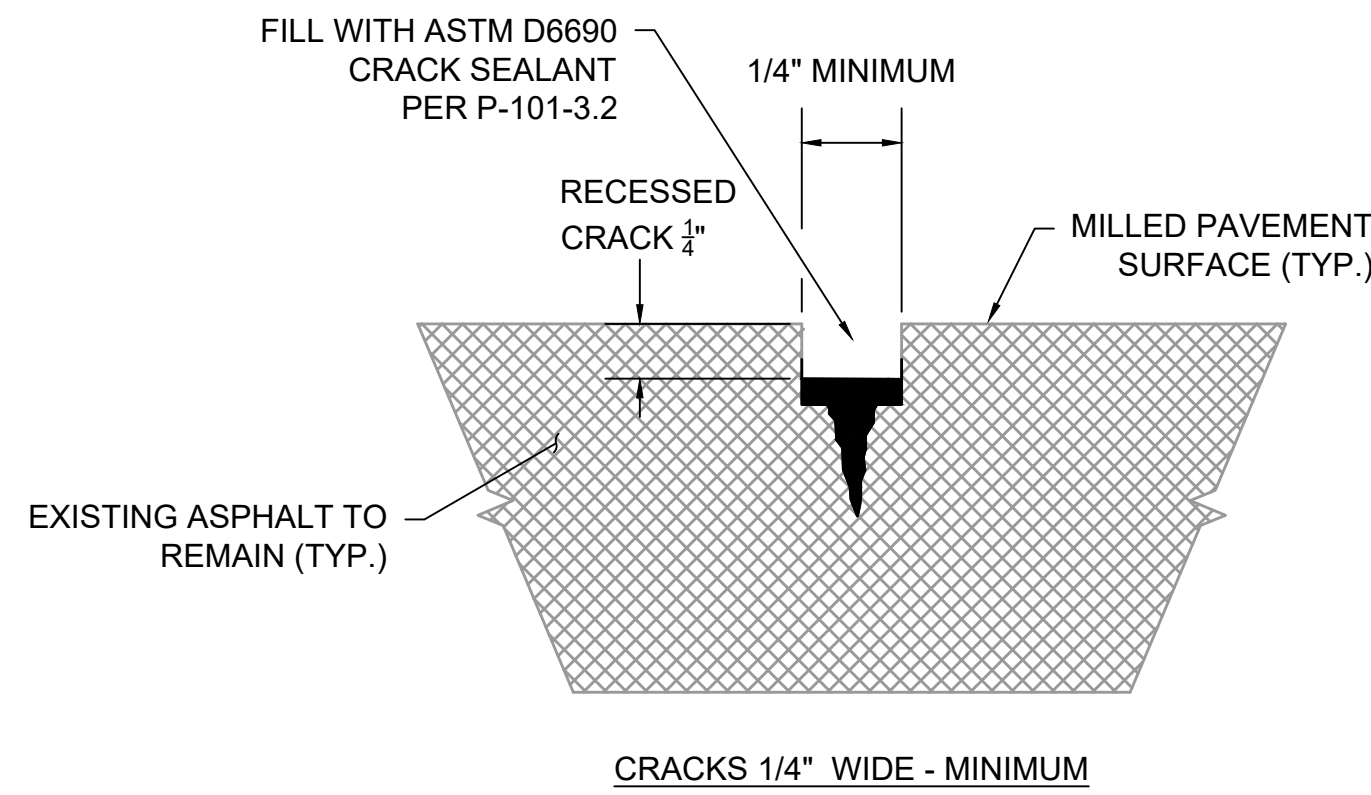
**DEMOLITION
PLAN**

SHEET NUMBER
C201
SHEET 17 OF 31

BID SUBMITTAL

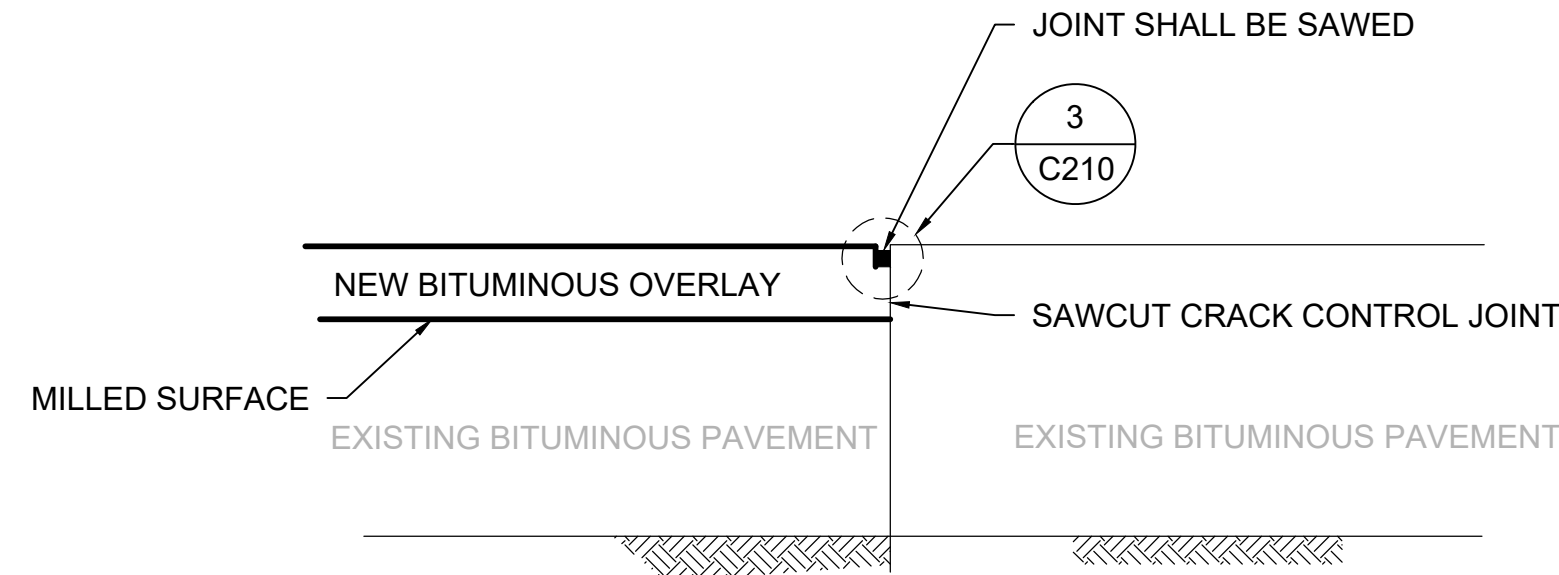


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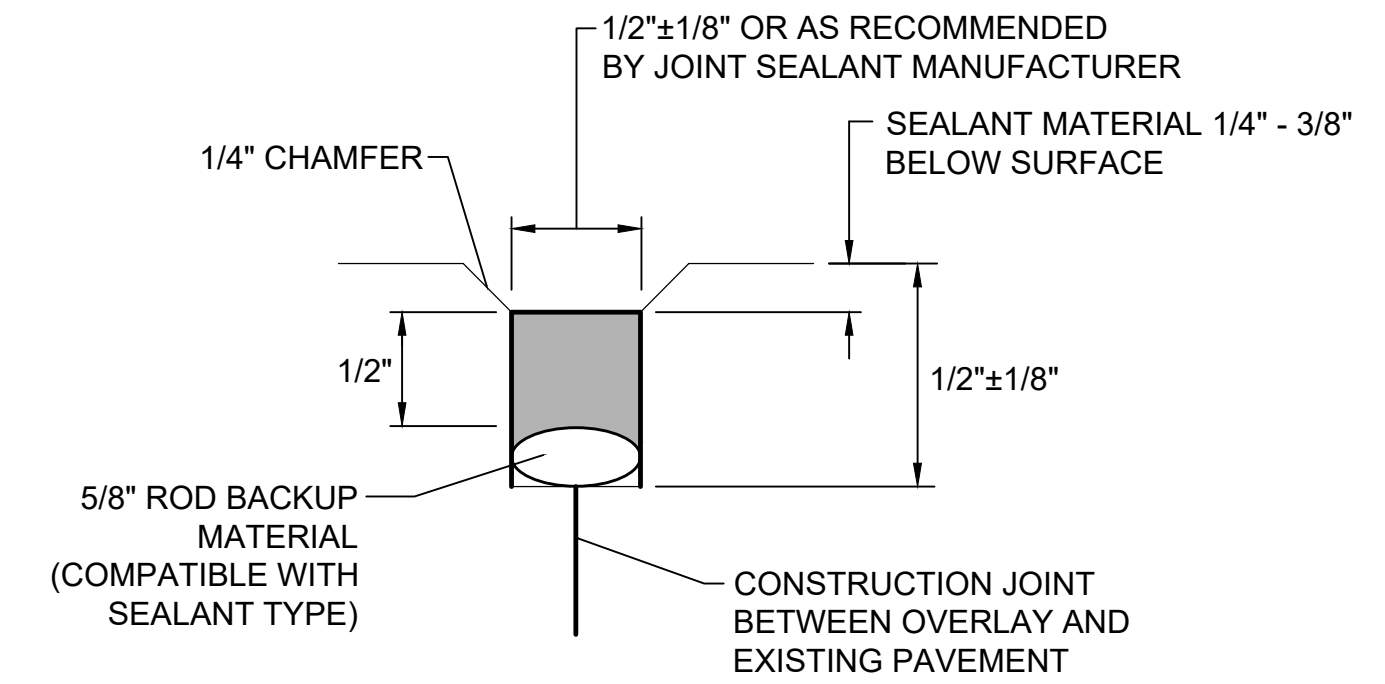
1 ASPHALT JOINT AND CRACK REPAIR
 SCALE: N.T.S.

- NOTES:** (WHITE IN COLOR)
1. CRACKS TO BE SEALED USING THIS DETAIL SHALL BE IDENTIFIED AND AGREED TO BY RPR AND CONTRACTOR. THIS APPLIES ONLY TO CRACKS IN MILLED ASPHALT.
 2. THE REPAIRS MADE USING THIS DETAIL SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT UNDER PAY ITEM P-101-5.2.
 3. CLEAN AND DRY EXISTING CRACK BY SANDBLASTING OR AIR BLASTING. CRACK SHALL BE DUST-FREE PRIOR TO INSTALLATION OF SEALANT.
 4. CRACKS ARE NOT TO BE FILLED PRIOR TO INSPECTION BY ENGINEER/RPR.
 5. RECESS SEALANT BELOW THE SURFACE BY 1/4" WITH NO OVERBANDING. CONTRACTOR TO ENSURE SEALANT DOES NOT BLEED INTO MILLED SURFACE.



2 BITUMINOUS - BITUMINOUS PAVEMENT JOINT
 SCALE: N.T.S.

- NOTES:**
1. REFER TO SPECIFICATION P-605.
 2. JOINT SHALL BE INCIDENTAL TO THE P-403 PAY ITEMS.



3 BITUMINOUS JOINT RESERVOIR
 SCALE: N.T.S.

- NOTES:**
1. JOINT SHALL BE INCIDENTAL TO THE P-403 PAY ITEMS.

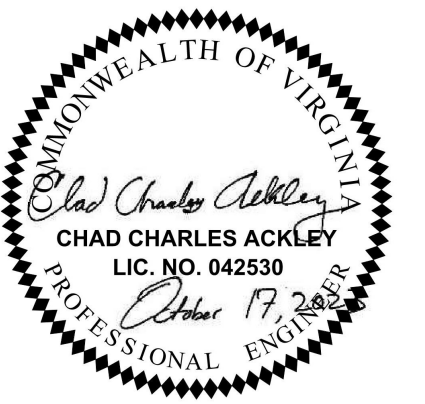


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RUNWAY 16-34
 EMAS
 REPLACEMENT



REVISIONS		
NO.	DESCRIPTION	DATE

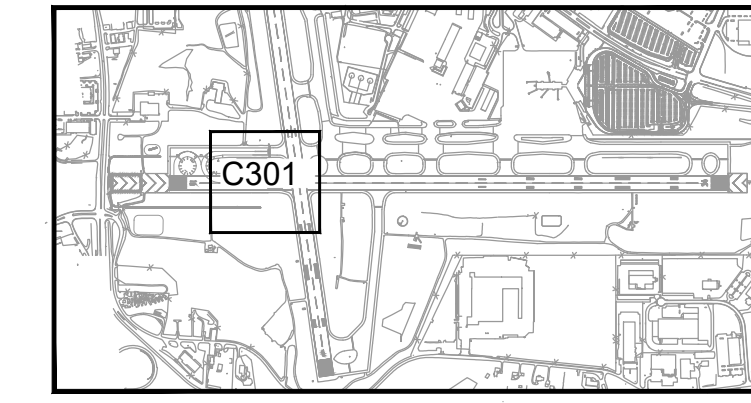
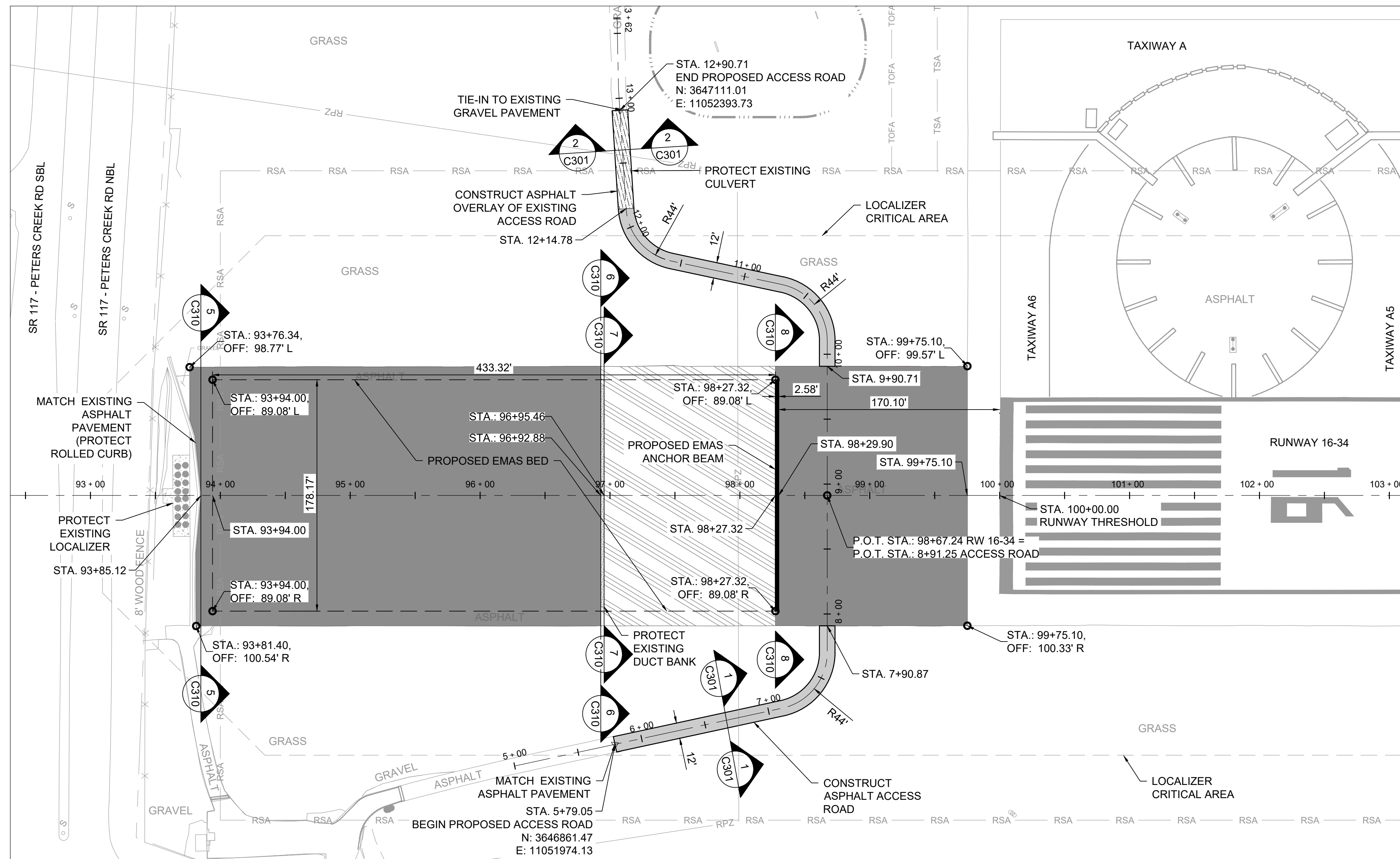
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PAVEMENT
 REPAIR
 DETAILS

SHEET NUMBER
C210
 SHEET 18 OF 31

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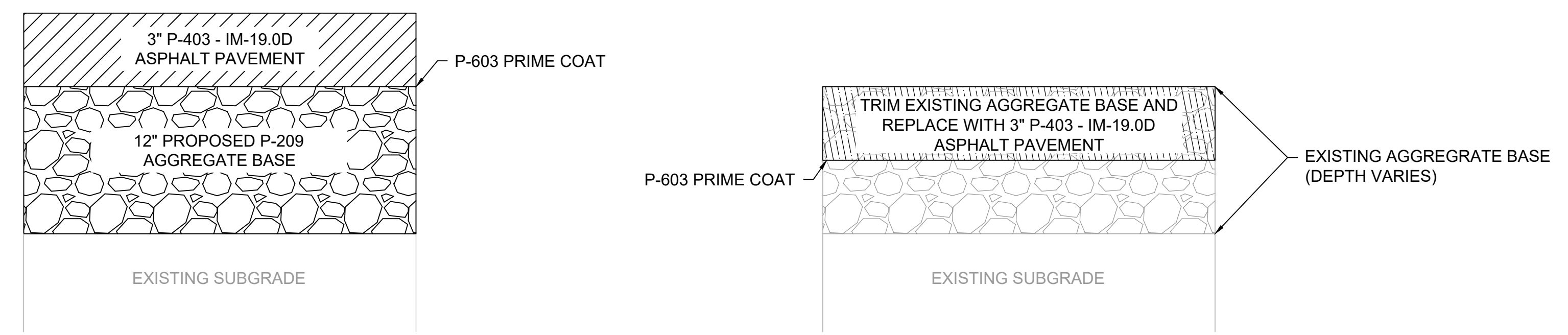


LEGEND

- RSA — RUNWAY SAFETY AREA
 - ROFA — RUNWAY OBJECT FREE AREA
 - ROFZ — RUNWAY OBJECT FREE ZONE
 - TOFA — TAXIWAY OBJECT FREE AREA
 - TSA — TAXIWAY SAFETY AREA
-
- 1
C301 [Pattern] FULL DEPTH ASPHALT ACCESS ROAD
 - 2
C301 [Pattern] FULL DEPTH PAVEMENT AT EXISTING ANCHOR BEAM
 - 3
C301 [Pattern] ASPHALT OVERLAY OVER EXISTING AGGREGATE
 - 4
C301 [Pattern] VARIABLE DEPTH P-403 ASPHALT OVERLAY - 2"-3" NOMINAL DEPTH
 - 5
C301 [Pattern] VARIABLE DEPTH P-403 ASPHALT - 5" NOMINAL DEPTH
 - 6
C301 [Pattern] PROPOSED EMAS BED

NOTES

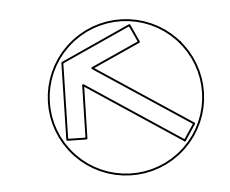
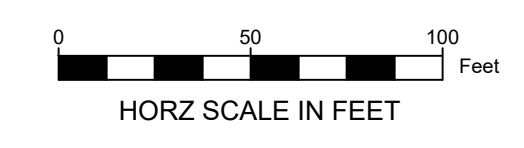
1. REFER TO SHEETS C310 FOR EXISTING AND PROPOSED LONGITUDINAL EMAS PAVEMENT SECTIONS.
2. REFER TO SHEETS C401 FOR EMAS BED PLAN AND PROFILES.
3. REFER TO SHEET QS101 EMASMAX PLAN LAYOUT FOR SETBACK AND EMASMAX SYSTEM GEOMETRIC LAYOUT
4. PROTECT LOCALIZER.
5. CONTRACTOR SHALL PROVIDE ALL MATERIALS, TOOLS, LABOR NECESSARY TO INSTALL THE EMAS ANCHOR BEAM. THE ANCHOR BEAM SHALL BE INCLUDED IN ITEM P-555-1. REFER TO EMAS DETAILS SHEET QS502 FOR FURTHER INFORMATION.
6. REFER TO SHEET G009 HORIZONTAL CONTROL PLAN FOR ACCESS ROAD ALIGNMENT.



1 PROPOSED ASPHALT ACCESS ROAD SECTION (FULL DEPTH)
C301 ACCESS ROAD STATION - 5+99.19 TO 7+90.87 AND 9+90.71 TO 11+89.86

2 PROPOSED ASPHALT ACCESS ROAD SECTION (OVERLAY)
C301 ACCESS ROAD STATION - 11+89.86 TO 12+90.71

ACCESS ROAD PAVEMENT SECTIONS

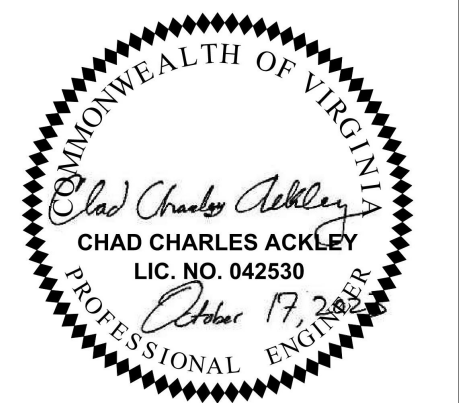


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**RUNWAY 16-34
EMAS
REPLACEMENT**



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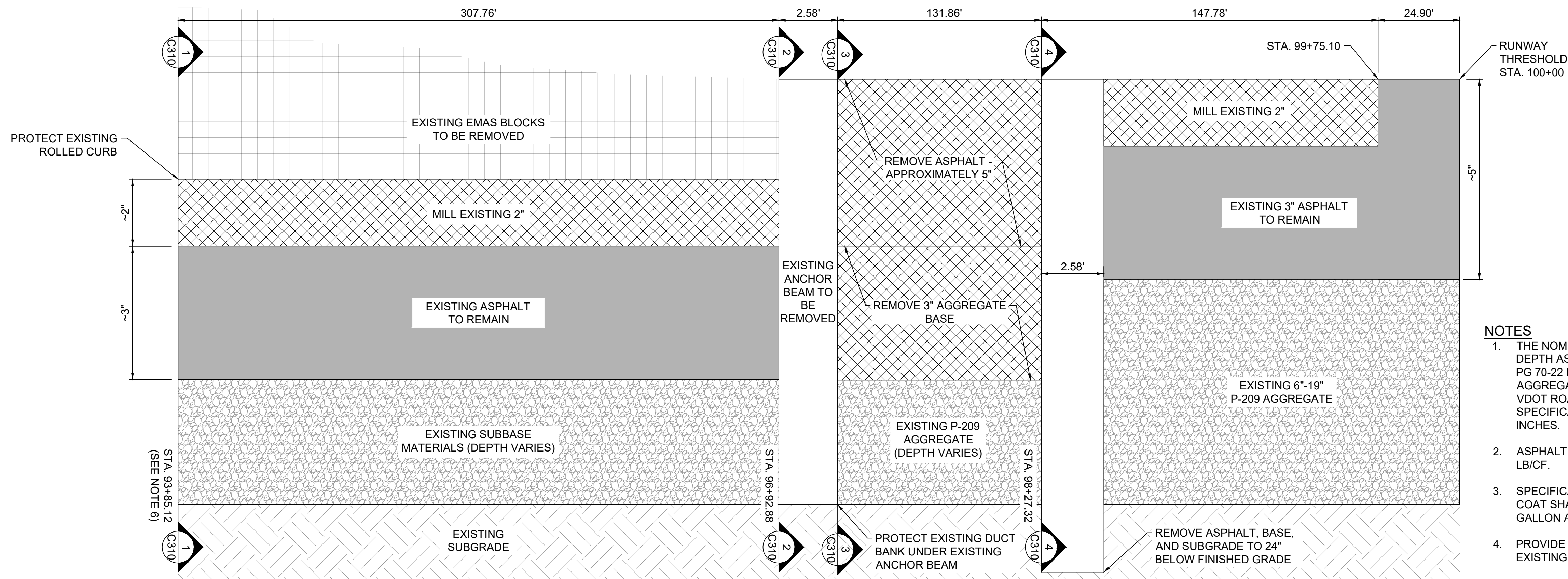
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**GEOMETRY
AND
PAVING
PLAN**

SHEET NUMBER
C301
SHEET 19 OF 31

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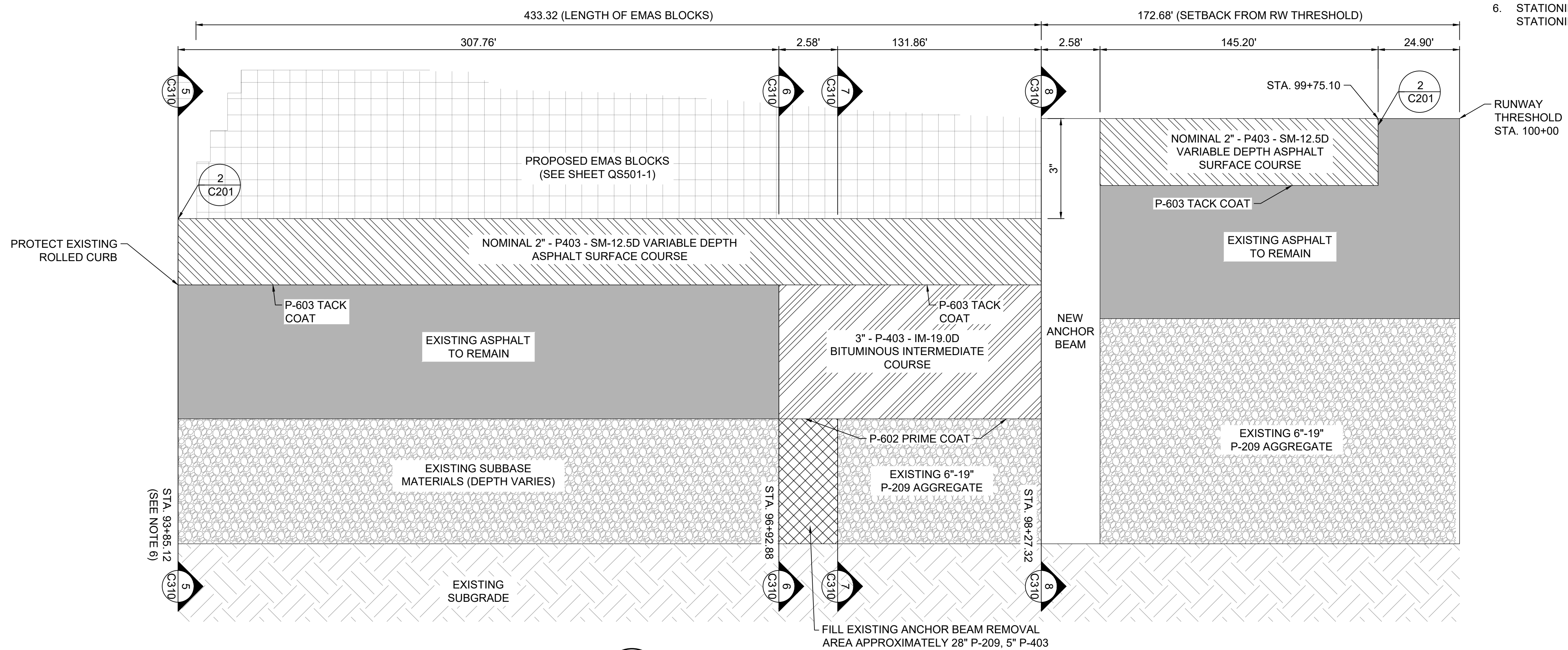
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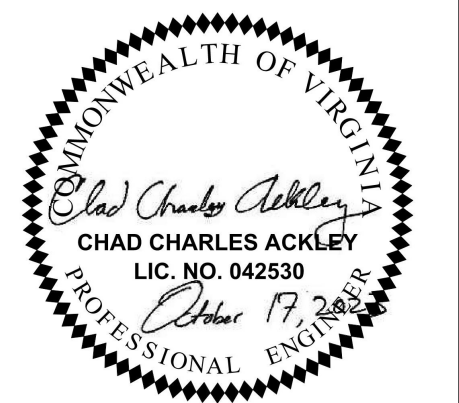
1
C310
EXISTING TYPICAL SECTIONS FOR PLANNED DEMOLITION
N.T.S.

NOTES

1. THE NOMINAL 2-INCH P-403-8.1 - SM-12.5D VARIABLE DEPTH ASPHALT SURFACE COURSE SHALL CONSIST OF PG 70-22 BINDER AND 1/2-INCH MAX PARTICLE SIZE AGGREGATE (P-403 SPECIFICATION AND SECTION 211, VDOT ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS). MINIMUM LIFT THICKNESS SHALL BE 1.5 INCHES.
2. ASPHALT QUANTITIES BASED ON A UNIT WEIGHT OF 165 LB/CF.
3. SPECIFICATION P-603-5.1 TACK COAT AND P-602-5.1 PRIME COAT SHALL BE PAID AT THE CONTRACT UNIT PRICE PER GALLON APPLIED AND ACCEPTED BY THE ENGINEER.
4. PROVIDE 1.5" DROP FROM PAVEMENT EDGE SECTION TO EXISTING GROUND.
5. THE 3-INCH P-403-IM-19.0D INTERMEDIATE COURSE SHALL CONSIST OF PG 70-22 BINDER AND 3/4-INCH MAX PARTICLE SIZE AGGREGATE (P-403 SPECIFICATION AND SECTION 211, VDOT ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS)
6. STATIONING SHOWN IS REFERENCED TO CENTERLINE STATIONING. TIE-IN LIMITS TO ROLLED CURB VARY.



2
C310
PROPOSED TYPICAL SECTION FOR CONSTRUCTION
N.T.S.



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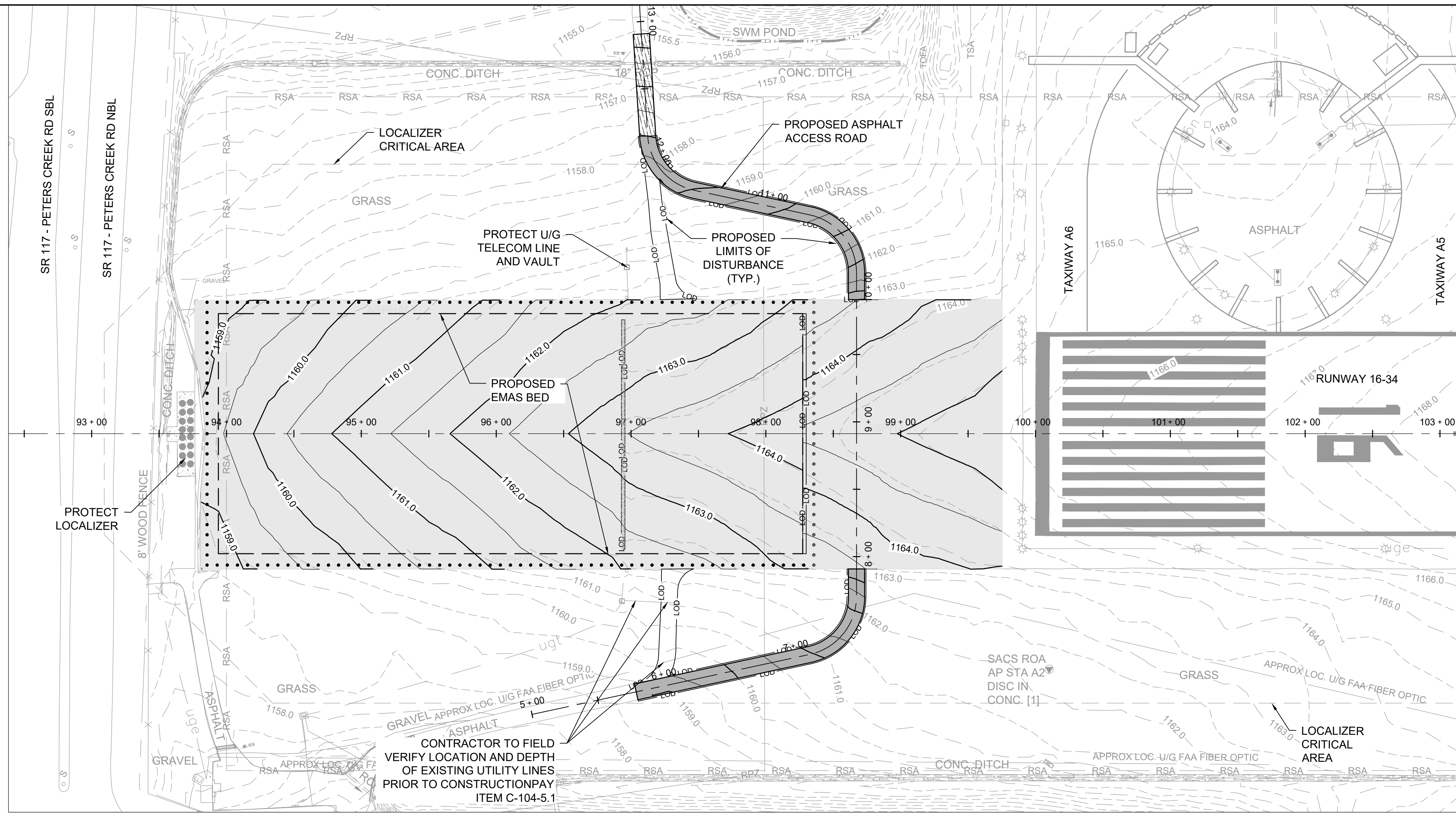
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DRAWN BY: LSB/JB
DESIGNED BY: RSY
RS&H PROJECT NUMBER
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SHEET TITLE

TYPICAL
PAVEMENT
SECTIONS
(LONGITUDINAL)

SHEET NUMBER
C310
SHEET 20 OF 31

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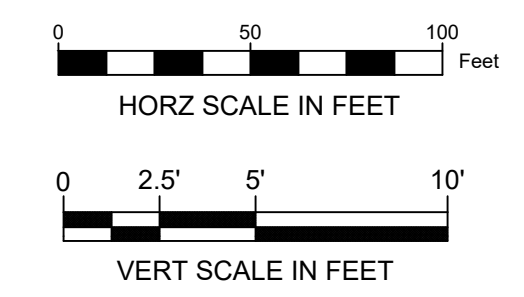
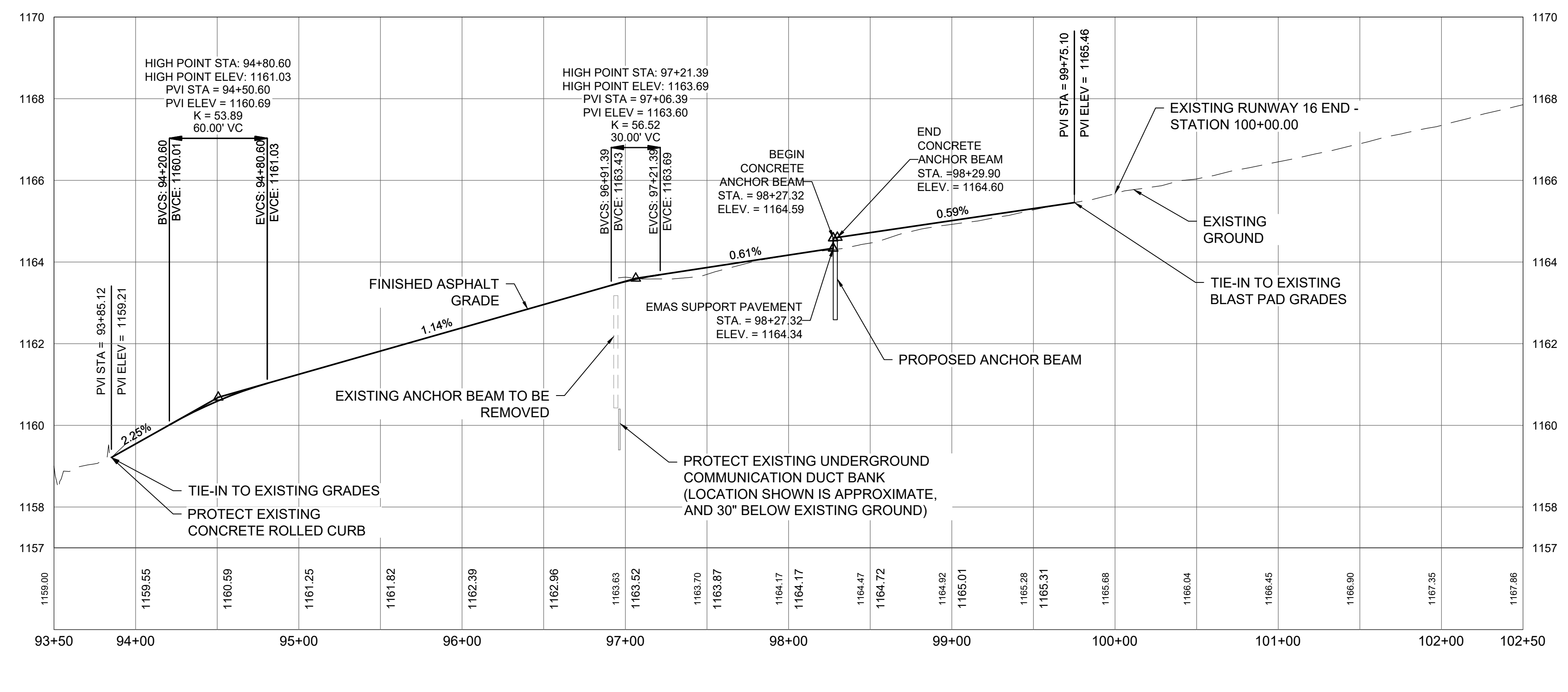


LEGEND

- RSA — RUNWAY SAFETY AREA
- - - 1158.0 — EXISTING CONTOURS
- - - 1158.0 — PROPOSED MAJOR CONTOUR
- - - — PROPOSED MINOR CONTOUR
- LOD — PROPOSED LIMITS OF DISTURBANCE
- ▨ — ASPHALT ACCESS ROAD PAVEMENT
- ▩ — ASPHALT OVERLAY OVER EXISTING AGGREGATE
- ▭ — BITUMINOUS EMAS SUPPORT PAVEMENT
- - - — PROPOSED EMAS BED
- — PROPOSED RETROREFLECTIVE MARKERS

NOTES

- TOPSOIL, SEED, AND MULCH ALL AREAS OF GROUND DISTURBANCE. ANY SOIL DISTURBANCE BEYOND THE ALLOTMENT IDENTIFIED ON THIS SHEET SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.
- PROVIDE 1.5-INCH DROP FROM ALL PAVED SURFACES INTO TURF AREAS.
- SEEDING (SPECIFICATION T-901) AND MULCHING (SPECIFICATION T-908) SHALL BE PAID USING THE RESPECTIVE UNIT PRICES. CONTRACTOR TO ENSURE SEED GROWTH BY PLACING A MAXIMUM OF 4-INCHES OF TOPSOIL IN DISTURBED AREAS. TOPSOILING IS INCIDENTAL TO P-152-5.1 - UNCLASSIFIED EXCAVATION.
- EXISTING TOPOGRAPHIC INFORMATION NOT AVAILABLE UNDER EXISTING EMAS BED BETWEEN STATION 93+94.07 AND 96+95.67. PROPOSED GRADES ARE BASED ON AS-BUILT INFORMATION FROM FEBRUARY 2004.
- CONTRACTOR SHALL COMPLETE SURVEY OF THE MILLED SURFACE AND PROVIDE TO ENGINEER 72 HOURS PRIOR TO PAVING. ENGINEER WILL PROVIDE UPDATED GRADING PLAN IF NECESSARY.

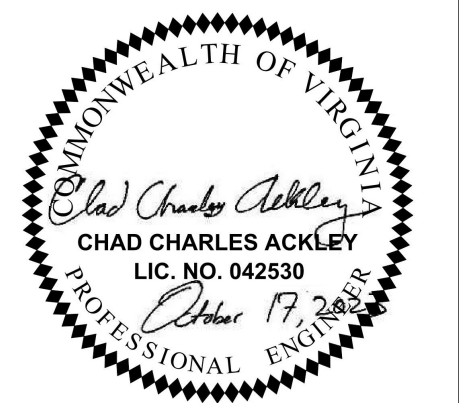


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RUNWAY 16-34
EMAS
REPLACEMENT



REVISIONS		
NO.	DESCRIPTION	DATE

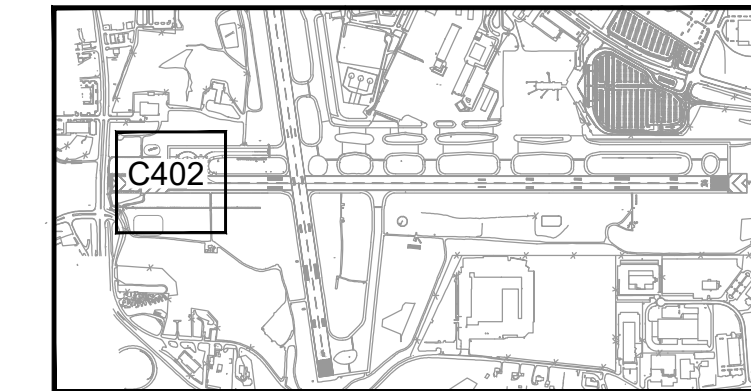
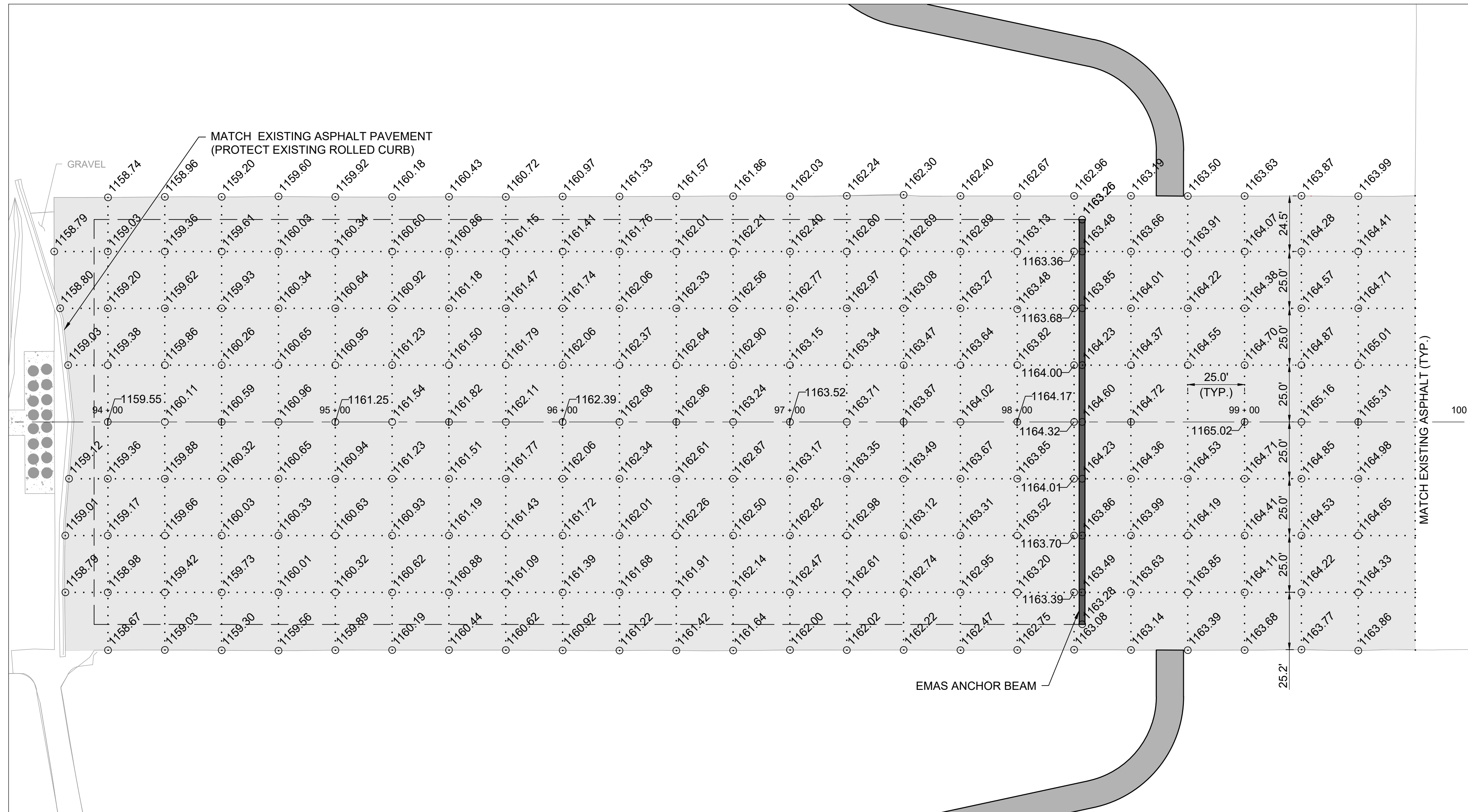
DATE ISSUED: OCTOBER 17, 2023
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DRAWN BY: LSB/BJ
DESIGNED BY: RSY
RS&H PROJECT NUMBER
1022-0071-003
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SHEET TITLE

EMAS
GRADING
PLAN AND
PROFILE

SHEET NUMBER
C401
SHEET 21 OF 31

BID SUBMITTAL

Drawing: P:\Roanoke_Regional\10220071_ROA_RW_34_EMAS_Replacement\10220071003\03.00 Project Execution\03.05 Dwggs_Models\CAD\ROA-EMAS-Final Spot Elevation Plan.dwg - Plotted on: 9/29/23 - Plotted by: Bravo, Laura



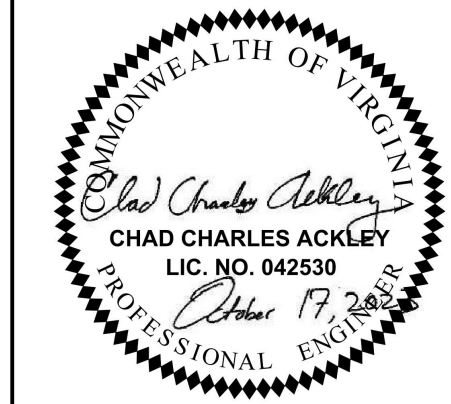
KEYMAP
(N.T.S.)

LEGEND

- ASPHALT ACCESS ROAD PAVEMENT
- BITUMINOUS EMAS SUPPORT PAVEMENT
- PROPOSED EMAS BED
- 1169.35
FINAL SURFACE SPOT ELEVATION
- PROPOSED CONCRETE ANCHOR BEAM

NOTES

1. THE PROVIDED SPOT ELEVATIONS ARE ONLY A SUPPLEMENT TO THE GRADING AND DRAINAGE PLANS. THE CONTRACTOR SHALL PAVE SUCH THAT THE PAVEMENT AREAS DRAIN AS DEPICTED IN THE GRADING PLANS.
2. ALL PROPOSED PAVEMENT SHALL TIE INTO EXISTING GRADES AT ALL LOCATIONS SHOWN ON THE PLANS.
3. FINAL GRADES ARE SUBJECT TO CHANGE DURING CONSTRUCTION UPON FINAL SURVEY OF MILLED SURFACE. EXISTING PAVEMENT SURFACE GRADES UNDER EXISTING EMAS BLOCKS ARE UNKNOWN.



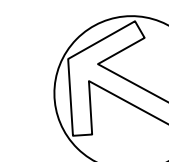
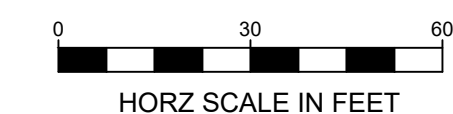
REVISIONS		
NO.	DESCRIPTION	DATE

DATE ISSUED: OCTOBER 17, 2023
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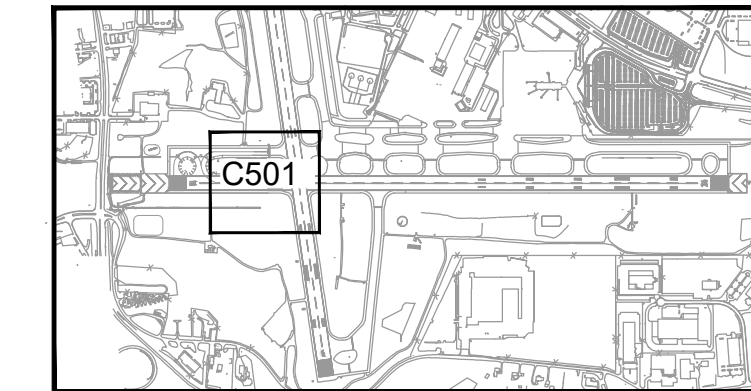
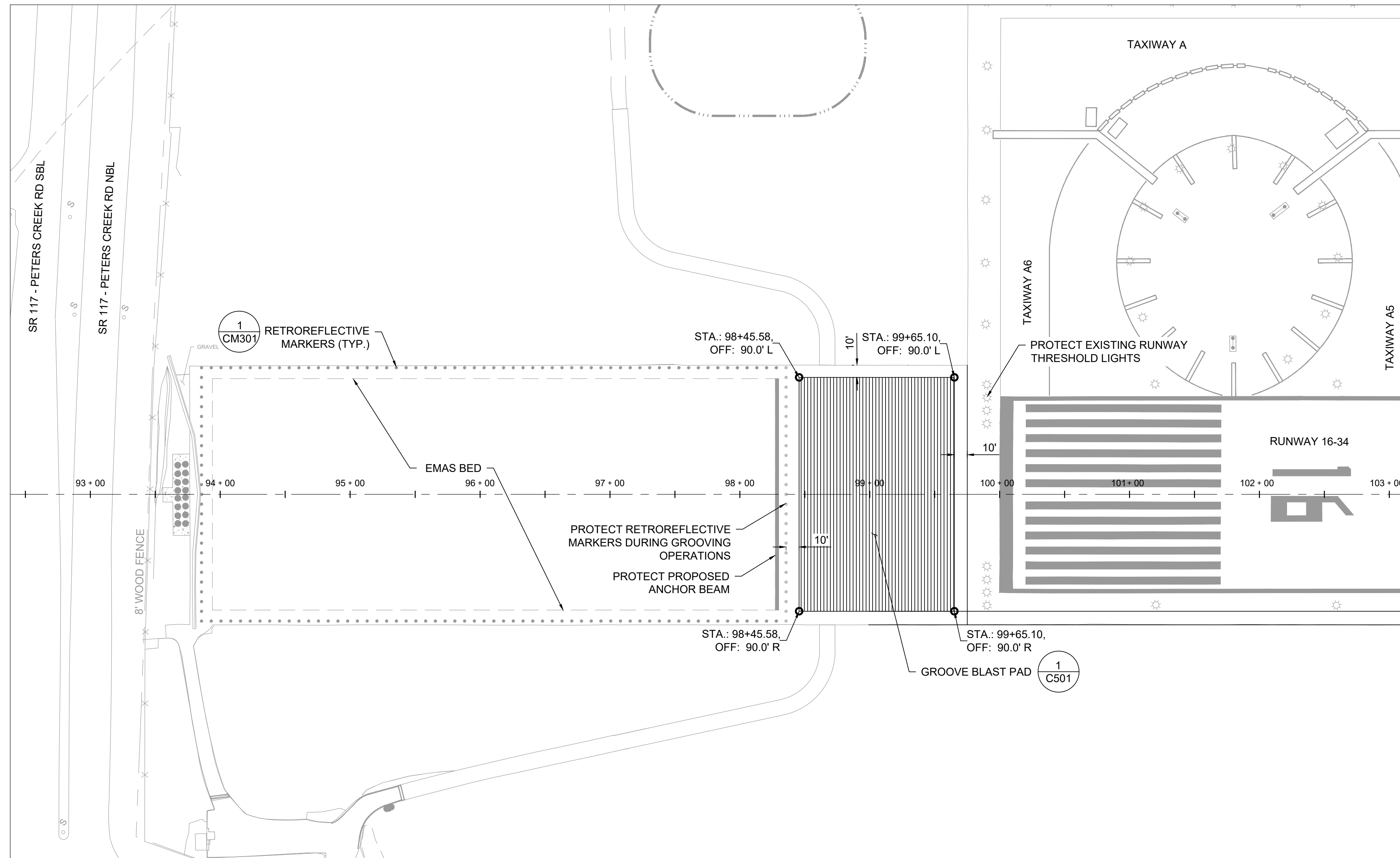
FINAL SURFACE
SPOT
ELEVATION
PLAN

SHEET NUMBER
C402
SHEET 22 OF 31

BID SUBMITTAL



Drawing: P:\Roanoke_Regional\10220071_ROA_RW_34_EMAS_Replacement\10220071003\03.00 Project Execution\03.05 Dwg_Models\CAD\C\ROA-EMAS-Grooving.dwg - Plotted on: 9/29/23 - Plotted by: Bravo, Laura



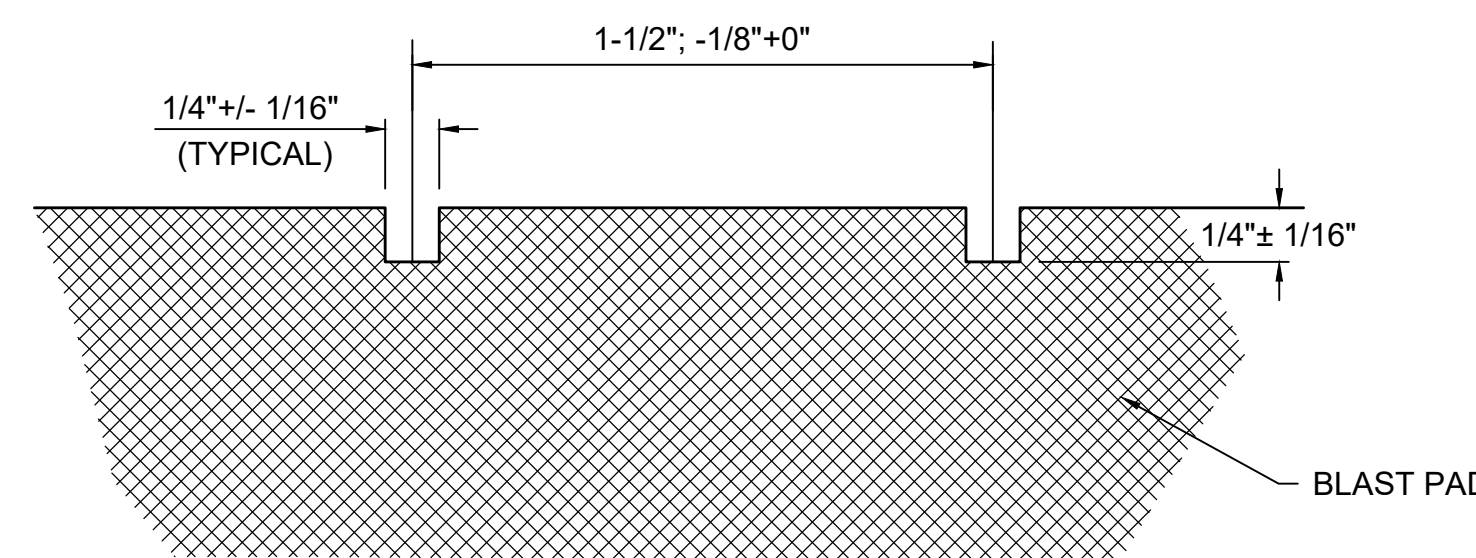
KEYMAP
(N.T.S.)

LEGEND

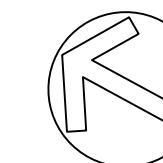
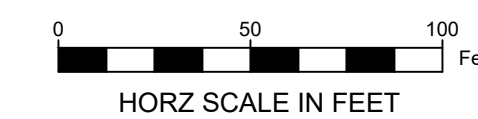
- PROPOSED EMAS BED
- PROPOSED RETROREFLECTIVE MARKERS

NOTES

1. GROOVE TO THE LIMITS AS SHOWN ON THIS SHEET. GROOVES SHALL BE PARALLEL TO THE ANCHOR BEAM AND RUNWAY THRESHOLD MARKING. TERMINATE GROOVING 10-FEET FROM THE EDGE OF THE PAVEMENT AS SHOWN ON THE PLAN.
2. GROOVES ARE TO BE SAW CUT AT 90° TO THE CENTERLINE OF THE RUNWAY AND SHALL BE AS SHOWN ON DETAILS BELOW. GROOVE LENGTH SHALL BE AS SHOWN ON THE PLANS.
3. ALL GROOVES SHALL BE SAW CUT AND NOT PLASTIC FORMED.
4. CONTRACTOR IS RESPONSIBLE FOR CONTINUOUS CLEANUP OF ALL WASTE MATERIAL GENERATED FROM GROOVING ACTIVITIES. WASTE MATERIAL SHALL BE DISPOSED OF BY EITHER SWEEPING OR VACUUMING. GROOVING WASTE SHALL NOT BE DISPOSED OF ON AIRPORT PROPERTY.
5. WASTE MATERIAL SHALL NOT BE FLUSHED INTO THE AIRPORT UNDERDRAIN OR STORM SYSTEM. WASTE MATERIAL SHALL NOT BE ALLOWED TO DRAIN ONTO THE GRASS ADJACENT TO THE RUNWAY OR LEFT ON THE RUNWAY SURFACE OR SHOULDERS.
6. ALL GROOVES SHALL BE CLEAN AND FREE OF DEBRIS, DIRT, LAITANCE, OR OTHER FOREIGN MATERIALS FOR ACCEPTANCE. CONTRACTOR SHALL INSPECT SITE WITH RPR TO ENSURE WASTE CLEANUP IS SATISFACTORY.
7. SAW CUT GROOVING SHALL BE PAID UNDER SECTION P-621. SAW CUT GROOVING SHALL BE MEASURED AROUND THE OUTER EXTENT OF ACTUAL GROOVED AREA.
8. GROOVING THROUGH LONGITUDINAL OR DIAGONAL SAW KERFS WHERE LIGHTING CABLES ARE INSTALLED WILL NOT BE ALLOWED.
9. GROOVES SHALL BE CUT BY A GANG SAW CAPABLE OF CUTTING A MINIMUM WIDTH OF 2 FEET IN ONE PASS.
10. GROOVING SHALL NOT COMMENCE UNTIL THE BITUMINOUS PAVEMENT HAS SUFFICIENTLY CURED (TO PREVENT DISPLACEMENT OF THE AGGREGATE, USUALLY 30 DAYS).
11. GROOVING OPERATIONS MUST BE COMPLETE BEFORE THE FINAL PAINTING OF CHEVRONS ON THE EMAS SUPPORT PAVEMENT MAY COMMENCE.



1 GROOVE CONFIGURATION DETAIL
C501 N.T.S.



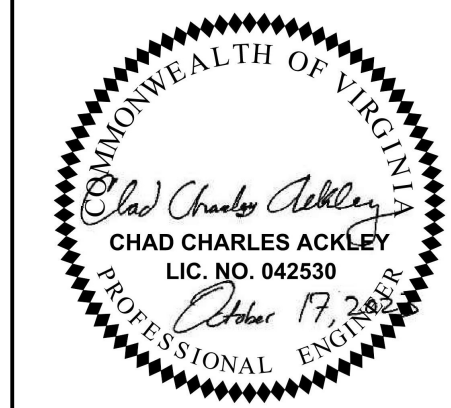
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RUNWAY 16-34
EMAS
REPLACEMENT



REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: OCTOBER 17, 2023
REVIEWED BY: CCA
DRAWN BY: LSB/BJ
DESIGNED BY: RSY

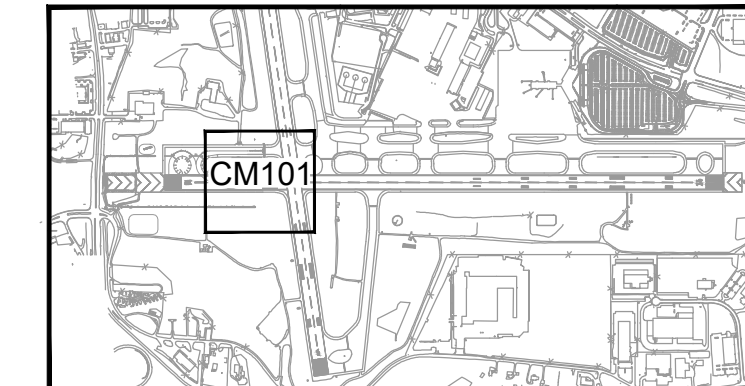
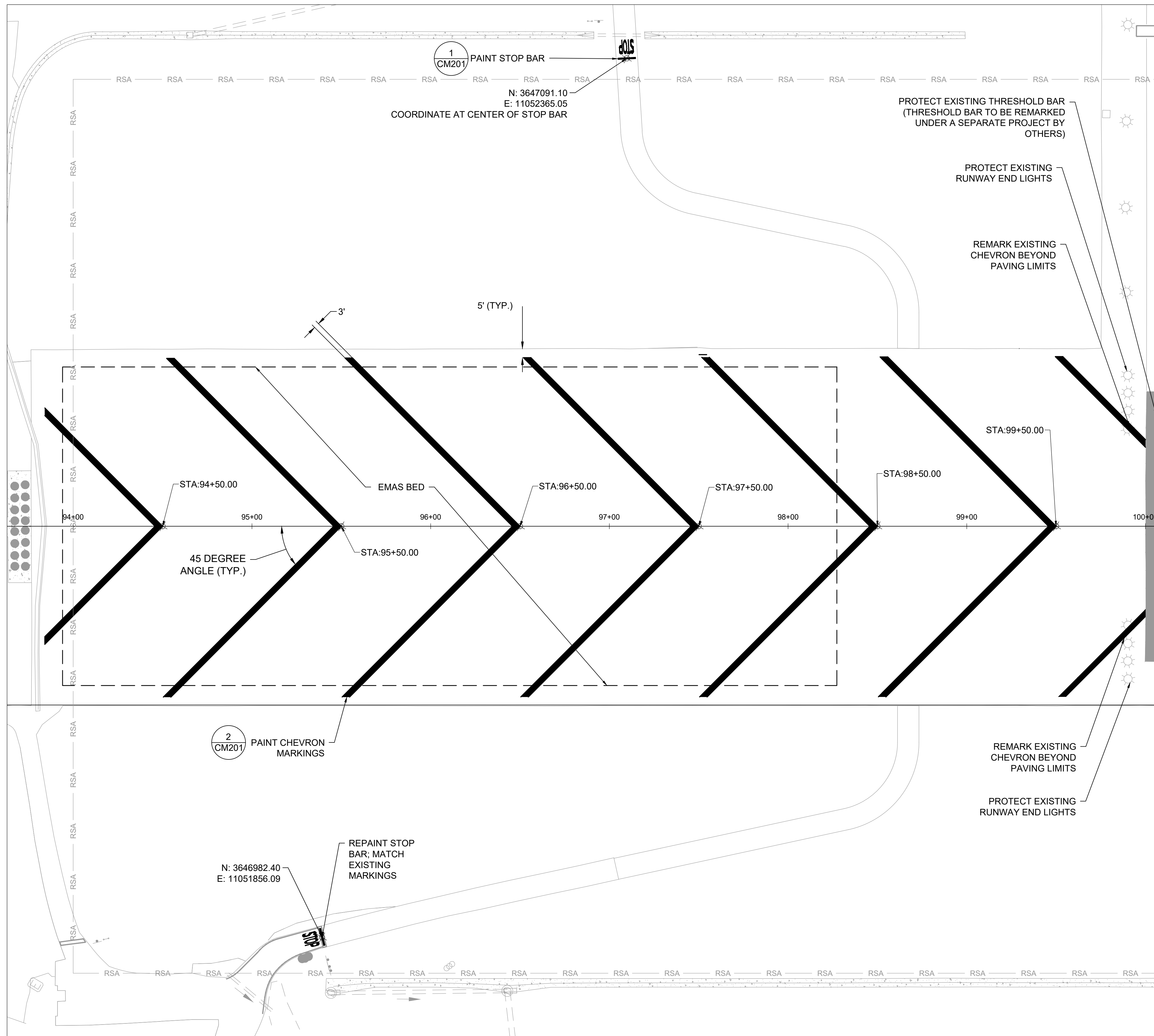
RS&H PROJECT NUMBER
1022-0071-003
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SHEET TITLE

GROOVING
PLAN
AND
DETAILS

SHEET NUMBER
C501
SHEET 23 OF 31

BID SUBMITTAL

Drawing: P:\Roanoke_Regional\10220071_ROA_RW_34_EMAS_Replacement\10220071003\03.00 Project_Execution\03.05 Dwg_Models\CAD\CROA-EMAS-Pavement_Marking_Plans.dwg - Plotted on: 9/29/23 - Plotted by: Brovo, Laura



KEYMAP
(N.T.S.)

LEGEND

- PROPOSED EMAS BED
- RSA RUNWAY SAFETY AREA

NOTES

1. CHEVRON MARKING ENDS SHALL NOT EXCEED 5' FROM THE PAVEMENT EDGE.
2. SEE SHEET CM201 FOR PAVEMENT MARKING DETAILS.
3. SURFACE CONDITION AND ALL MARKING LAYOUTS SHALL BE VERIFIED BY THE RPR PRIOR TO PAINTING. REFER TO SECTIONS 620-3.3 THROUGH 620-3.5 IN THE P-620 SPECIFICATION.
4. REFER TO SECTION 620-3.1 IN THE P-620 SPECIFICATION FOR PAINTING WEATHER LIMITATIONS.
5. ALL INITIAL MARKINGS SHALL BE APPLIED AT HALF THE APPLICATION RATE (SPECIFICATION P-620-5.2) AS DESCRIBED IN P-620 AND WITHOUT THE REFLECTIVE MEDIA (GLASS BEADS). ONLY THE FINAL MARKINGS (SPECIFICATION P-620-5.2) SHALL BE APPLIED AT THE FULL APPLICATION RATE AND WITH THE REFLECTIVE MEDIA (GLASS BEADS, P-620-5.3).
6. FINAL PAVEMENT MARKING APPLICATION SHALL BE APPLIED 30 DAYS AFTER PAVEMENT HAS CURED.
7. ALL MARKINGS DESIGNATED TO BE INSTALLED ON EMASMAX BLOCKS MAY BE APPLIED WITH A WALK BEHIND APPLICATOR OF SUCH WEIGHT THAT IT WILL NOT DAMAGE THE EMAS MATERIAL. PAYMENT FOR MARKING ON EMAS SHALL BE THE SAME AS ASPHALT MARKING.
8. ANY MARKINGS DAMAGED BY CONTRACTOR SHALL BE REMARKED AT NO EXPENSE TO THE OWNER.

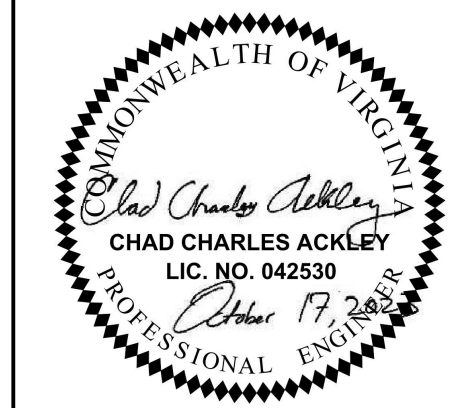


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RUNWAY 16-34
EMAS
REPLACEMENT



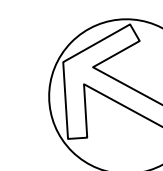
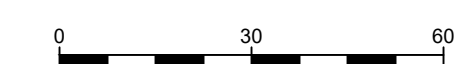
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NO.	DESCRIPTION	DATE

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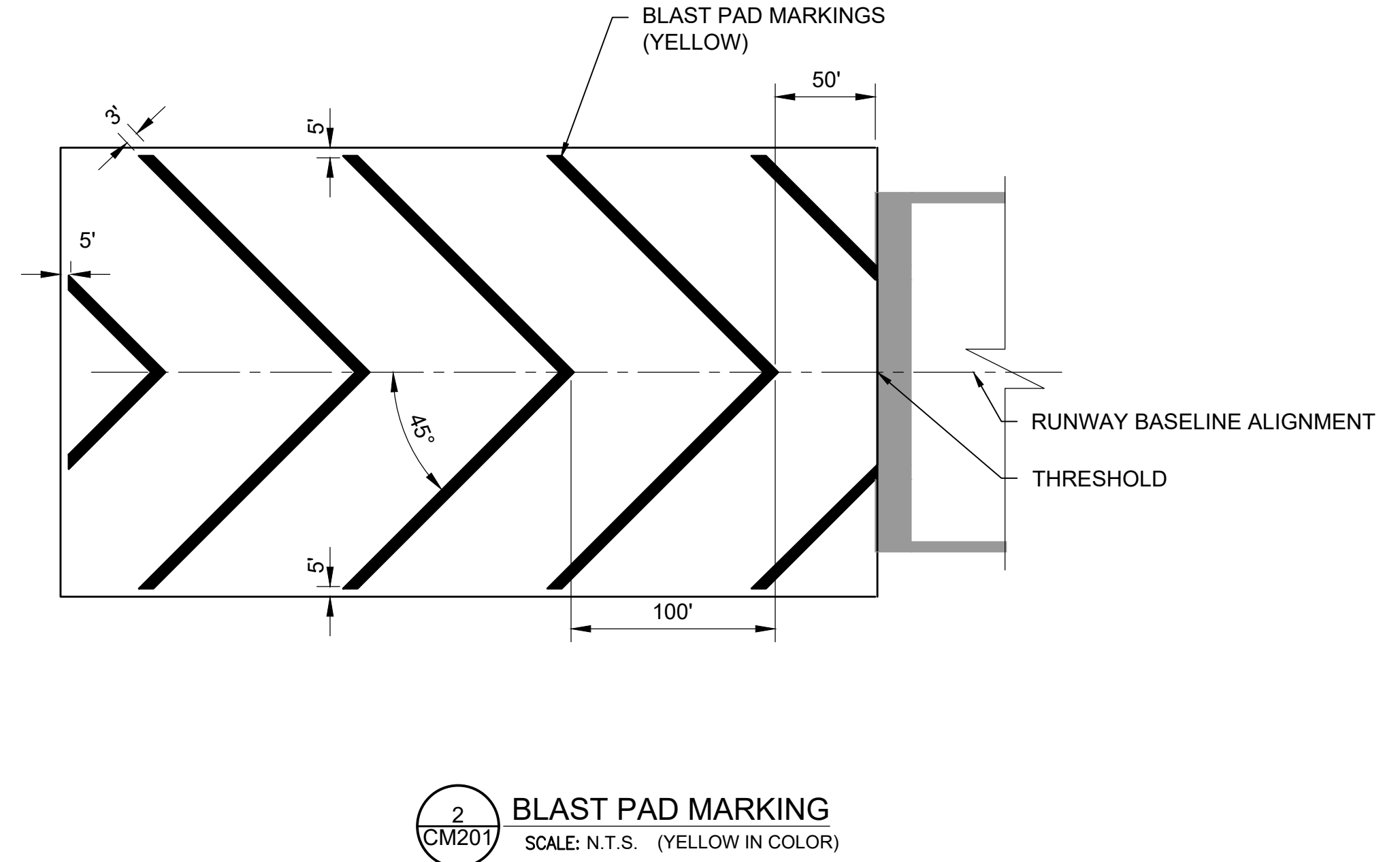
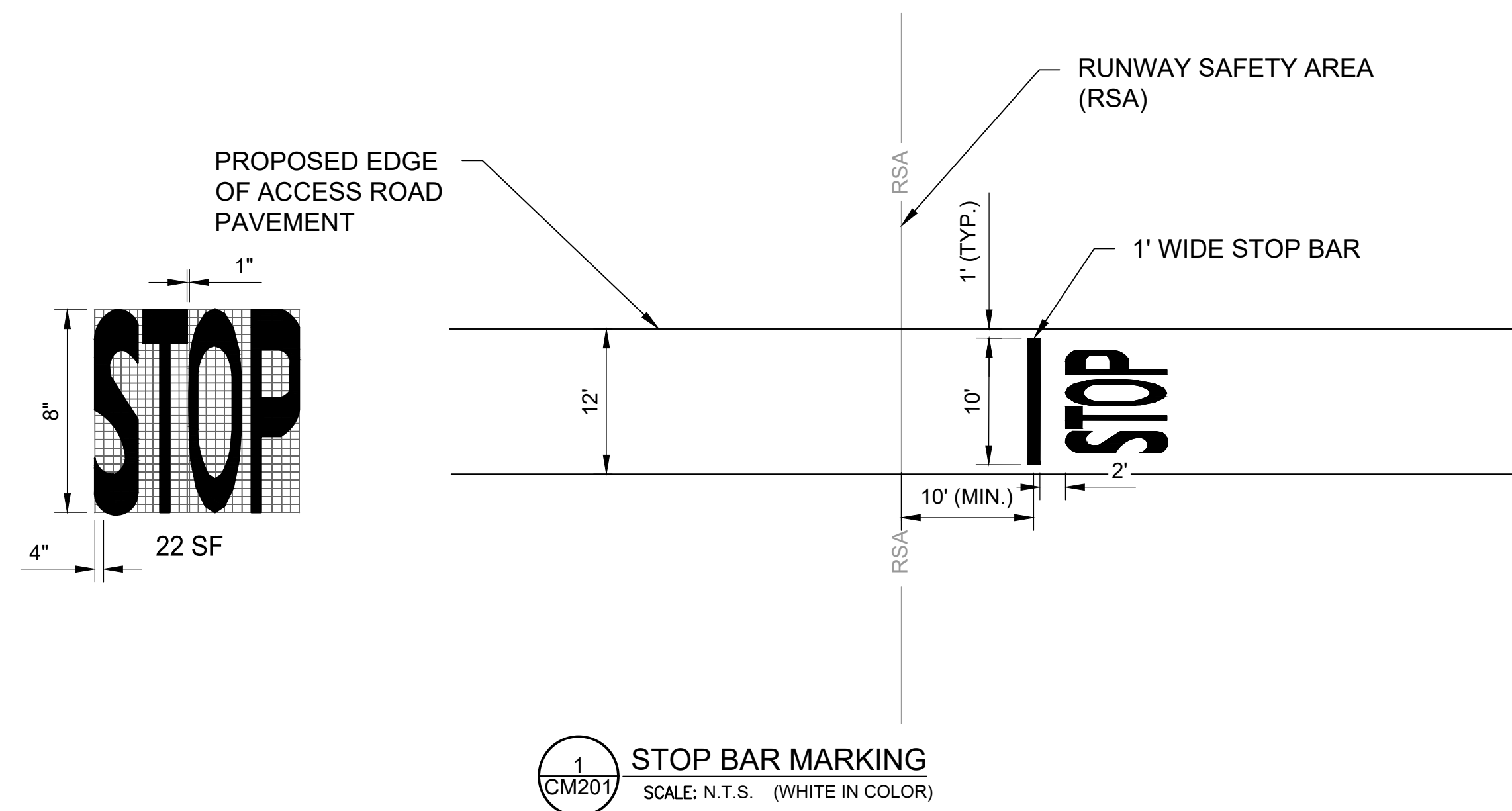
PAVEMENT
MARKING
PLAN

SHEET NUMBER
CM101
SHEET 24 OF 31

BID SUBMITTAL



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NOTES:

1. ALL RUNWAY MARKINGS SHALL COMPLY WITH THE FAA AC 150/5340-1M, OR LATEST REVISION. ALL ROADWAY MARKINGS SHALL COMPLY WITH THE U.S. DEPARTMENT OF TRANSPORTATION'S MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. REFLECTORIZED (TYPE III GLASS BEADS) PAINT SHALL BE USED FOR ALL PERMANENT PAVEMENT MARKINGS AT THE RATE DESIGNATED IN THE P-620 SPECIFICATION EXCEPT FOR BLACK OUTLINE.
3. SEE PAVEMENT MARKING PLAN, SHEET CM101 FOR HORIZONTAL CONTROL.
4. BLAST PAD CHEVRONS MARKINGS ARE YELLOW.
5. IMMEDIATELY PRIOR TO THE APPLICATION OF PAINT, ALL SURFACES SHALL BE DRY AND FREE FROM DIRT, GREASE, OIL, LAITANCE, RUBBER, OR OTHER FOREIGN MATERIAL WHICH WOULD REDUCE THE BOND BETWEEN THE PAINT AND THE PAVEMENT. THIS SHALL INCLUDE EXISTING PAINTED AREAS. REFER TO SPECIFICATION P-620.
6. ALL AIRFIELD LIGHT FIXTURES SHALL BE PROTECTED FROM OVERSPRAY.
7. EXISTING PAVEMENT MARKINGS OUTSIDE THE LIMITS OF MARKING SHOWN ON PLAN SHEETS WHICH ARE REMOVED OR WORN DUE TO CONSTRUCTION ACTIVITY SHALL BE REPAINTED, AS DIRECTED BY ENGINEER/RPR.
8. ALL FINAL RUNWAY PAINT MARKINGS SHALL BE OUTLINED WITH A 6" BLACK BORDER AND SHALL BE PAID PER SPECIFICATION P-620. FINAL ROADWAY MARKINGS DO NOT REQUIRE BLACK BORDER.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE APPLICATION ORDER FOR THE BLACK OUTLINE AROUND FINAL PAINT MARKINGS.
10. IF THE CONTRACTOR CHOOSES TO INSTALL BLACK MARKING FIRST, PRIOR TO WHITE/YELLOW MARKINGS INSTALLATION, CONTRACTOR SHALL ONLY BE PAID FOR WIDTH OF THE BLACK ENHANCEMENT.
11. IF CONTRACTOR CHOOSES TO PAINT BLACK MARKINGS AFTER WHITE/YELLOW HAS BEEN INSTALLED, CONTRACTOR SHALL NOT ALLOW BLACK PAINT OVERSPRAY ONTO THE WHITE/YELLOW MARKINGS AS THERE MUST BE CLEAN STRAIGHT LINES FOR ALL MARKINGS.
12. ALL MARKING OPERATIONS ON EMAS BLOCKS SHALL BE COMPLETED PER NOTE 7 ON SHEET CM101.

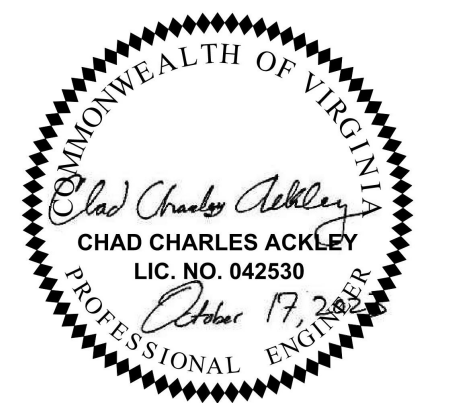


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RUNWAY 16-34
EMAS
REPLACEMENT



REVISIONS

NO.	DESCRIPTION	DATE

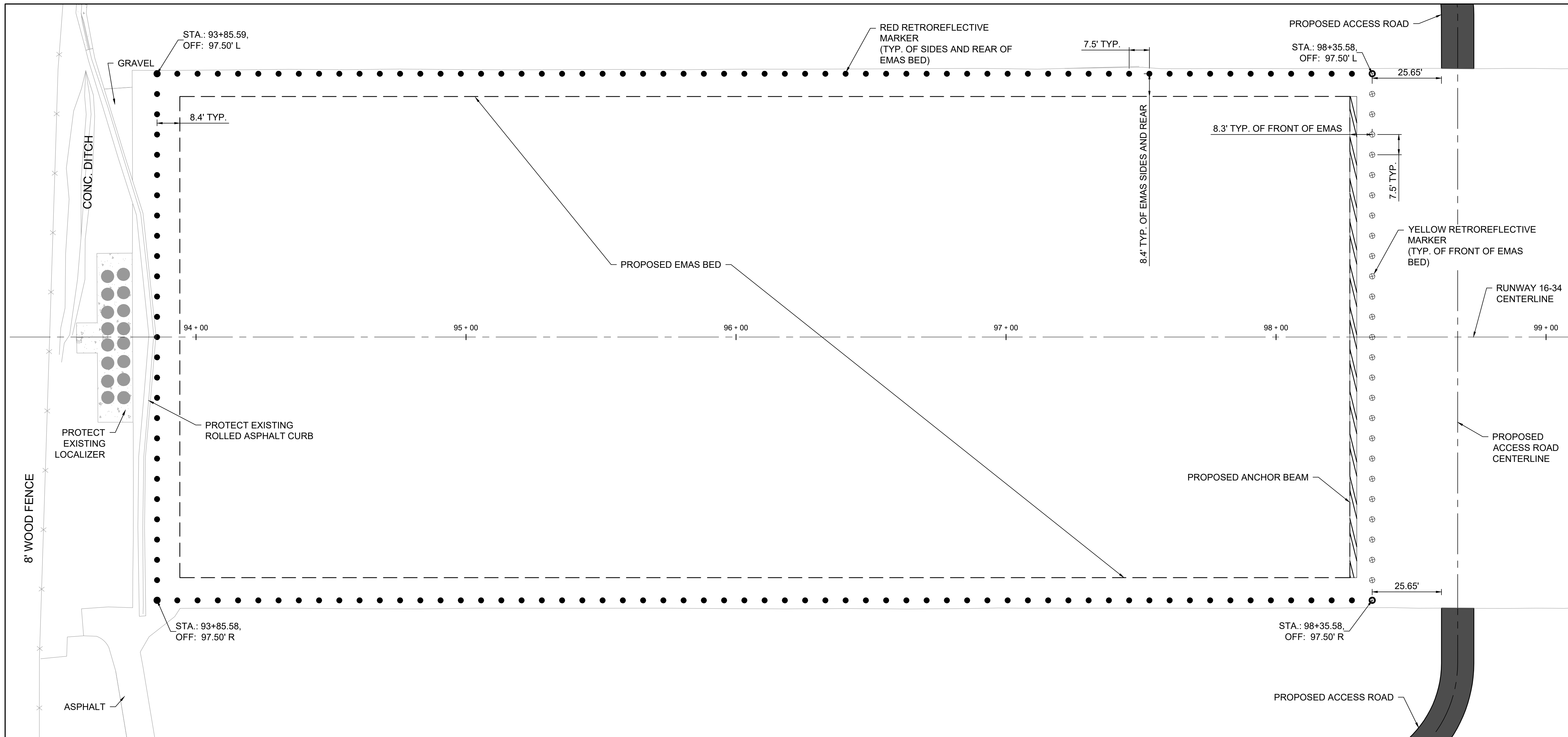
DATE ISSUED: OCTOBER 17, 2023
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PAVEMENT
MARKING
DETAILS

SHEET NUMBER
CM201
SHEET 25 OF 31

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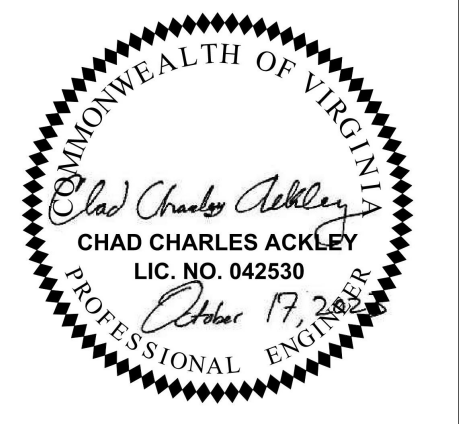


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RUNWAY 16-34
EMAS
REPLACEMENT



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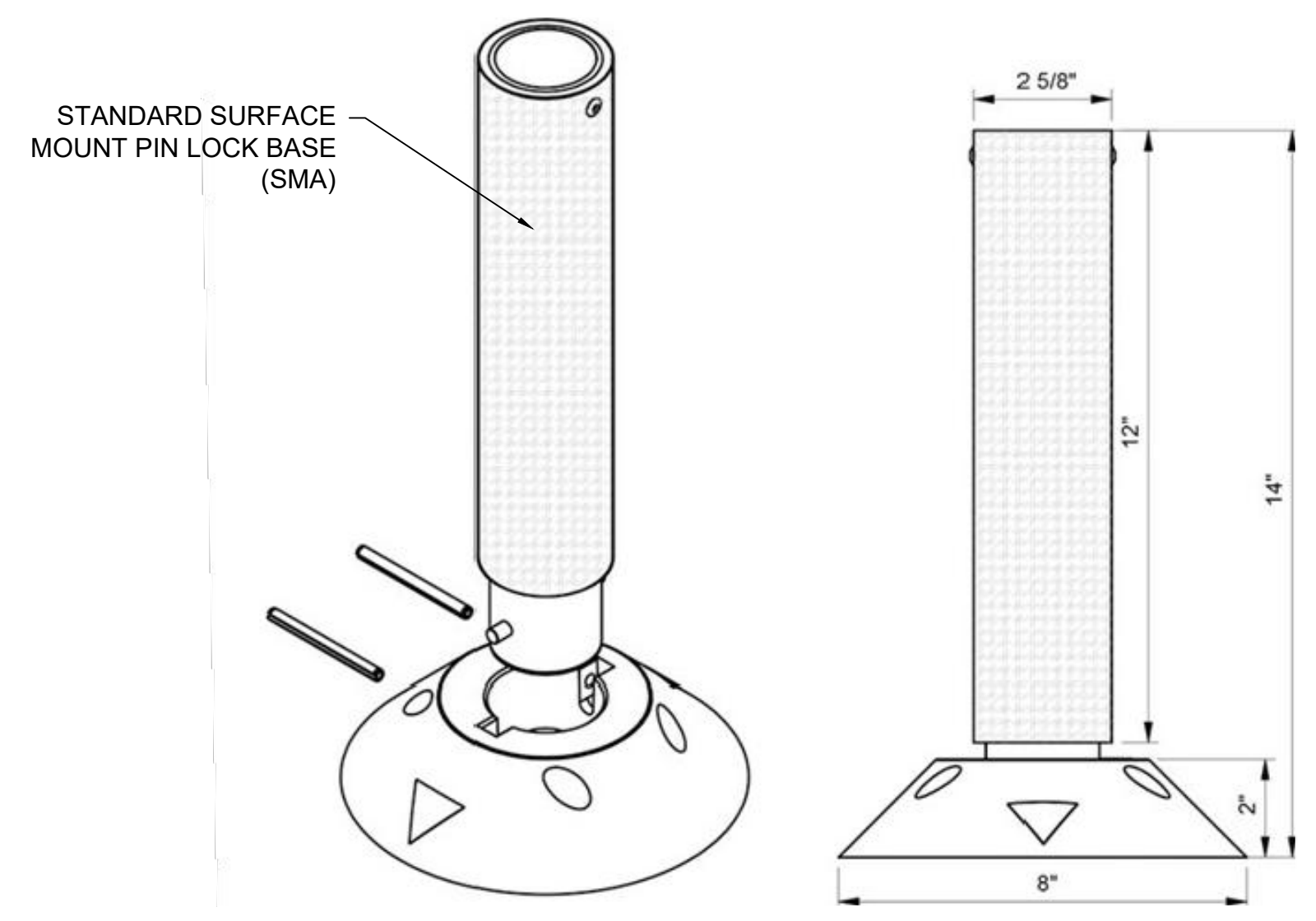
NO.	DESCRIPTION	DATE

DATE ISSUED: OCTOBER 17, 2023
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 DESIGNED BY: RSY
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 SHEET TITLE

RETRO-
REFLECTIVE
MARKER PLAN
AND DETAILS

SHEET NUMBER
CM301
 SHEET 26 OF 31

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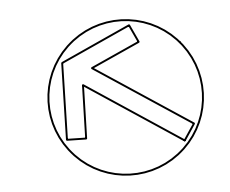
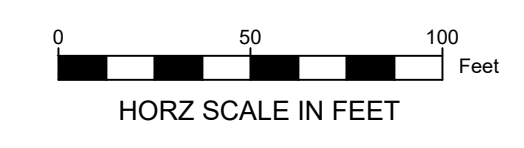


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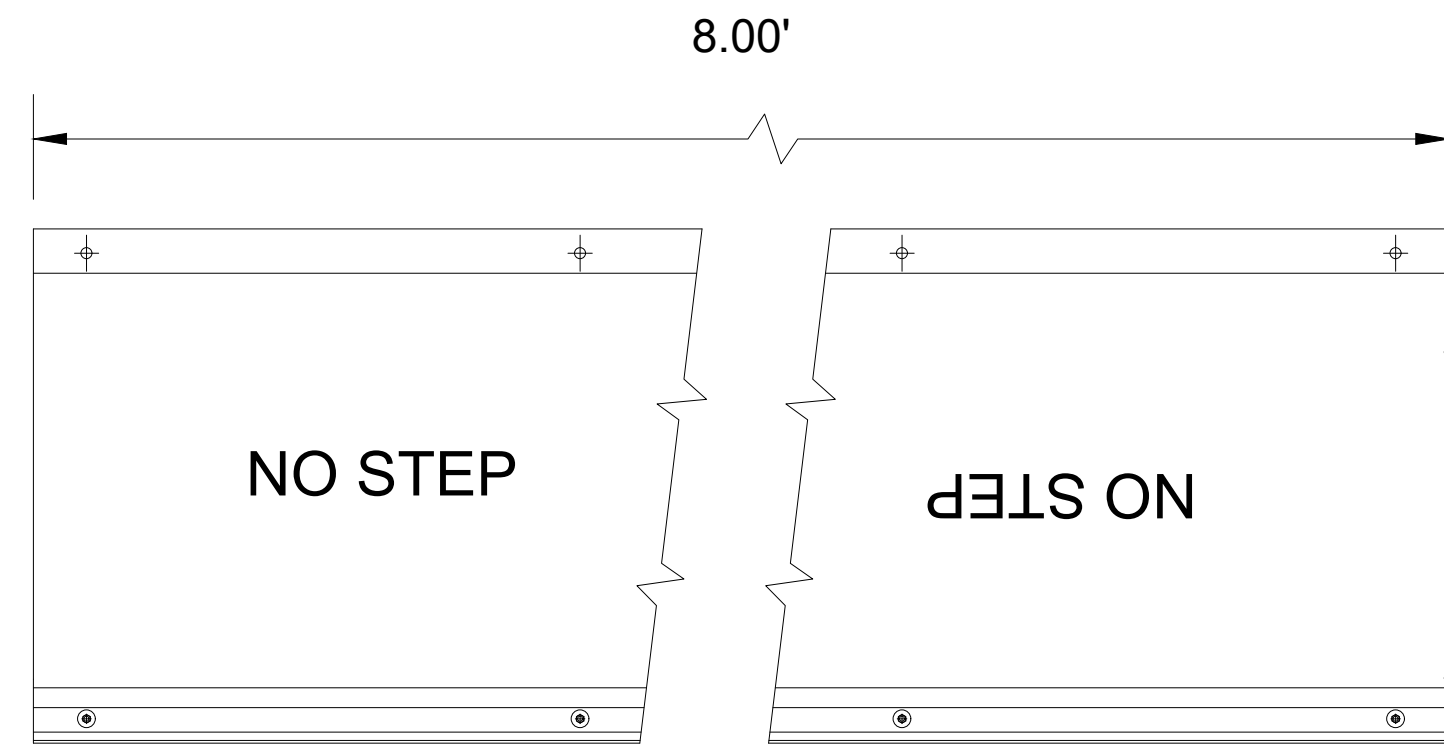
- SOLID RED TYPE II L-853 CYLINDRICAL MARKERS; 14-INCH HEIGHT
- ⊗ SOLID YELLOW TYPE II L-853 CYLINDRICAL MARKERS; 14-INCH HEIGHT
- PROPOSED EMAS BED
- █ PROPOSED ACCESS ROAD
- ▨ PROPOSED ANCHOR BEAM

NOTE:

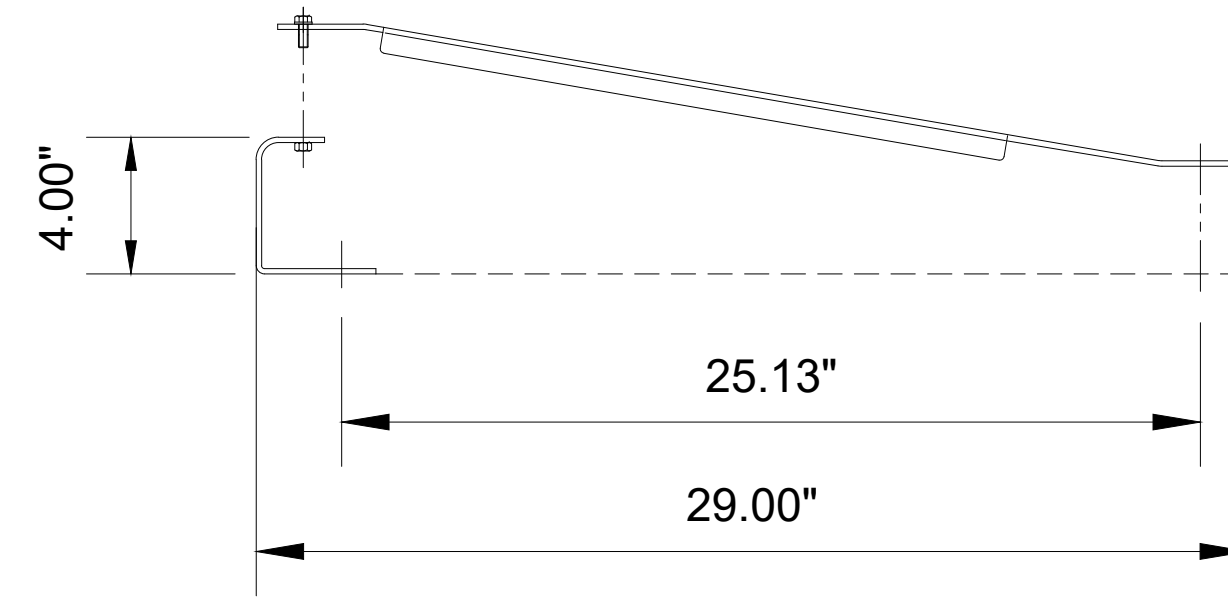
1. RETROREFLECTIVE MARKERS SHALL CONFORM TO FAA AC 150/5345-39E.
2. ALL RETROREFLECTIVE MARKERS SHALL BE PAID PER ITEM L-125-5.1
3. RETROREFLECTIVE MARKERS TO BE INSTALLED UPON COMPLETION OF EMAS BLOCK INSTALLATION, SEALING AND PAVEMENT MARKINGS.
4. RETROREFLECTIVE MARKERS TO BE INSTALLED AFTER GROOVING THE PAVEMENT IN FRONT OF THE EMAS.



1
CM301



TOP VIEW

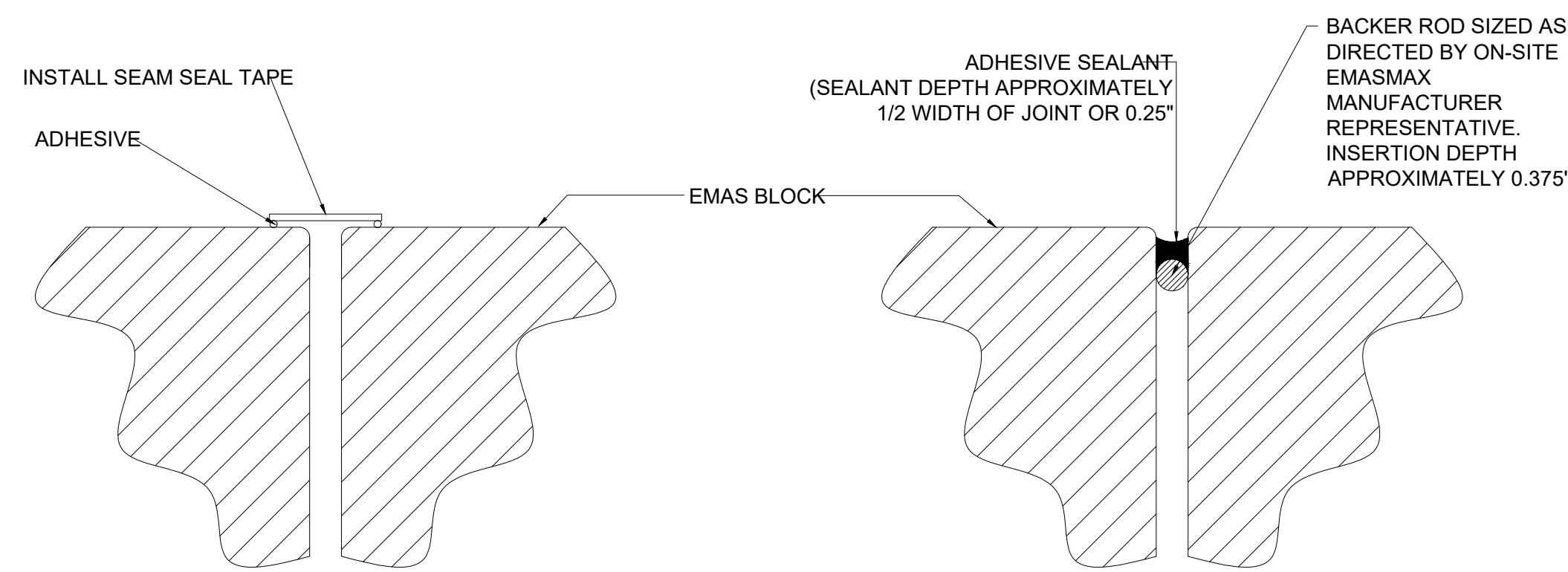


SIDE VIEW

NOTE:

1. DEBRIS DEFLECTOR ASSEMBLY, DRILL TEMPLATE, & HARDWARE PROVIDED BY EMAS MANUFACTURER.
2. FINAL LOCATION OF BACK OF DEBRIS DEFLECTOR ASSEMBLY DEPENDS ON STRAIGHTNESS OF BEAM. SEE DETAIL 3, SHEET QS503, FOR ANCHOR BEAM STRAIGHTNESS TOLERANCE.

4 TYPICAL DEBRIS DEFLECTOR ASSEMBLY
SCALE: NTS



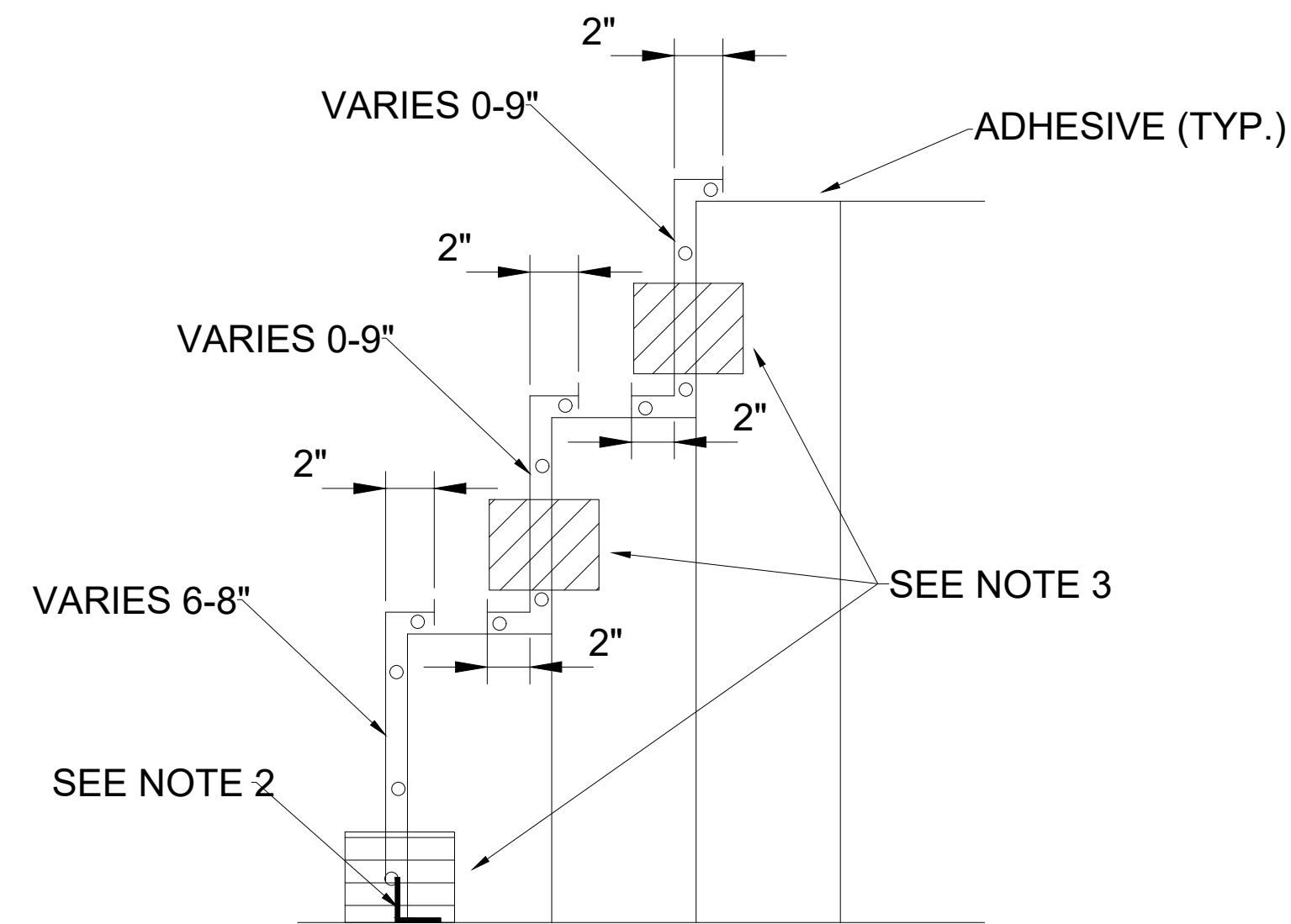
TYPICAL JOINT SEAL - TYPE 1

TYPICAL JOINT SEAL - TYPE 2

NOTES:

1. EMASMAX MANUFACTURER SHALL SELECT JOINT SEAL TYPE PRIOR TO STARTING INSTALLATION OF EMA
2. EMAS BLOCK SURFACES SHALL BE CLEAN IMMEDIATELY PRIOR TO JOINT SEALING.

5 TYPICAL JOINT SEAL
SCALE: NTS



NOTES:

1. PLASTIC RIGHT ANGLE PIECE APPLIED TO SIDES AND BACK OF EMAS AS SHOWN.
2. EMAS MANUFACTURER WILL SUPPLY SIDE COATING MATERIAL, ADHESIVES, VENTS, & PLASTIC RIGHT ANGLE PIECES.
3. VENTS TO BE INSTALLED AT BLOCKS GAPS AS DIRECTED BY ON-SITE EMAS MANUFACTURER REPRESENTATIVE.

6 STEP BLOCK COATINGS
SCALE: NTS

REVISIONS

NO.	DESCRIPTION	DATE
1	TEXT EDIT	10/04/23

DATE ISSUED: JUNE 29, 2023

REVIEWED BY: -

DRAWN BY: OAR

DESIGNED BY: RWS

RS&H PROJECT NUMBER

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SHEET TITLE

**EMASMAX
DETAILS**

SHEET NUMBER

QS504

SHEET 31 OF 31

BID DOCUMENTS