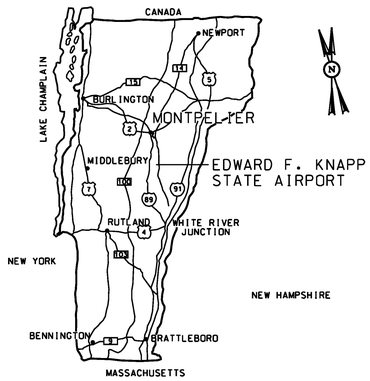
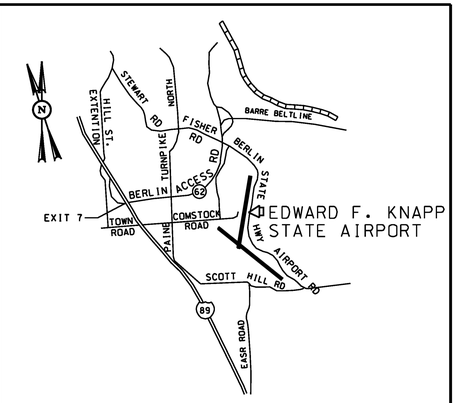


LOCATION MAP

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT
A.I.P. 3-50-0001-011-2009
TOWN OF BERLIN
COUNTY OF WASHINGTON
E.F. KNAPP STATE AIRPORT



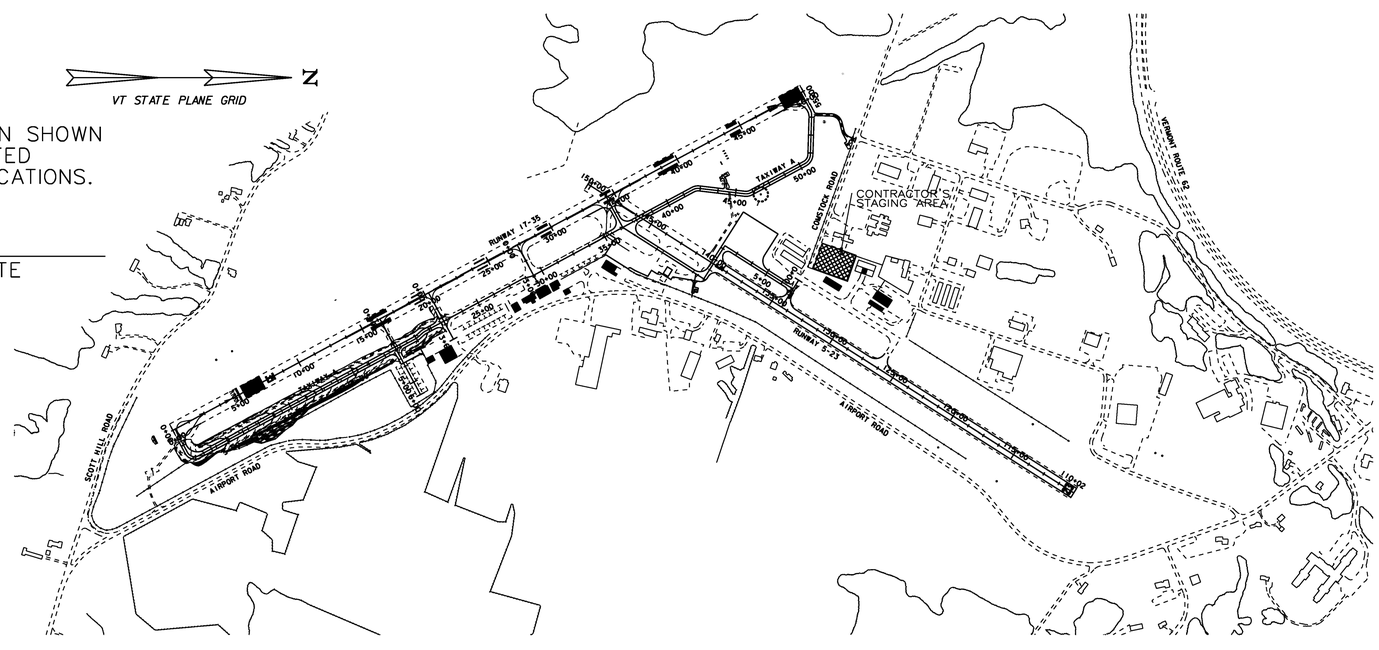
VICINITY MAP

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PROJECT LOCATION: THIS PROJECT IS LOCATED EAST OF INTERSTATE 89 EXIT 7 AT THE EDWARD F. KNAPP STATE AIRPORT IN BERLIN, VT.

PROJECT DESCRIPTION: WORK PERFORMED UNDER THIS PROJECT INCLUDES THE EXTENSION OF TAXIWAY 'A', THE RECONSTRUCTION OF RUNWAY 5-23 AND TERMINAL AREA RECONSTRUCTION AND EXPANSION. THIS INCLUDES DRAINAGE, PAVEMENT, MARKINGS, SIGNAGE, LIGHTING, LANDSCAPING AND OTHER AMENITIES.

LENGTH OF PROJECT: TAXIWAY 'A' - 5,469'; TAXIWAY 'B' - 128'; TAXIWAY 'E' - 906'; TAXIWAY 'F' - 658'; TAXIWAY 'G' - 86'; AND RUNWAY '5-23' - 3,000'.



SCALE 1" = 500'-0
500 0 500

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE DIRECTOR OF PROJECT DEVELOPMENT. CONSTRUCTION IS TO BE CARRIED OUT IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS, THE VAOT STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2006, THE FEDERAL AVIATION ADMINISTRATION PLANS AND SPECIFICATIONS FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

I HEREBY CERTIFY THAT ALL WORK ON SHOWN ON THESE PLANS HAS BEEN COMPLETED ACCORDING TO THE PLANS & SPECIFICATIONS.

MARK GOODRICH DATE

DEPATRMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
NEW ENGLAND REGION

DATE:_____

DATE:_____

APPROVAL SUBJECT TO COMMENTS AND RECOMENDATIONS IN LETTERS DATED: _____

SPONSOR'S STATEMENT REGARDING COMPLIANCE

These plans and specifications have been prepared to the best of my knowledge and belief, in accordance with the list of current FAA Advisory Circulars for AIP and PFC projects as of 3/21/2007. Known deviations from FAA standards were approved by FAA letters dated NONE and are discussed in the project engineering report and/or other official project documents.

BY:_____ DATE:_____

DIRECTOR OF OPERATIONS

APPROVED _____ DATE _____

PROJECT MANAGER : SCOTT FORTNEY

CONVENTIONAL SYMBOLS

COUNTY LINE	COUNTY LINE
TOWN LINE	TOWN LINE
LIMITS OF ACCESS	
POINT OF ACCESS	X
FENCE LINE	
STONE WALL	
TRAVELED WAY	
GUARD RAIL	
RAILROAD	
SURVEY LINE	
CULVERT	
POWER POLE	
TELEPHONE POLE	
TREES	
CONTROL OF ACCESS	
PROPERTY LINE	
R.O.W. TAKING LINE	
SLOPE RIGHTS	SR SR SR
TOP OF CUT	
TOE OF SLOPE	

SURVEY PERFORMED BY VERMONT SURVEY AND ENGINEERING, INC. ON 07-11-07

DATUM
VERTICAL $ (VER_DAT)
HORIZONTAL $ (HOR_DAT)

HTA PROJECT NO.
302803

Hoyle, Tanner & Associates, Inc.
150 Dow Street
Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com

PROJECT NAME : E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER : BERLIN AIR 04-3216
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VTrans DESIGN STANDARDS

STANDARD NO.	DESCRIPTION	DATE
B-5	SLOPE GRADING, EMBANKMENTS, MUCK	6/1/1994
D-6	REINFORCED CONCRETE DROP INLET W/GRATE (DITCHES)	6/1/1994
F-2	CHAIN LINK FENCE (TYPE 1), DRIVE GATE FOR CHAIN LINK FENCE (TYPE 1), WALK GATE FOR CHAIN LINK FENCE (TYPE 1)	6/1/1994
E-100A	SIDE ROAD CONSTRUCTION - APPROACH SIGNS	1/2/2004
E-102A	CONSTRUCTION SIGN DETAILS	5/1/2004

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Hoyle Tanner & Associates © 2008

PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_index.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
INDEX SHEET

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 2 OF 173

GENERAL NOTES

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE APPROVED SAFETY PLAN FOR FURTHER INFORMATION REGARDING SAFETY DURING CONSTRUCTION IN CASE OF DESCREPENCY, THE APPROVED SAFETY PLAN SHALL CONTROL CONSTRUCTION OPERATIONS.

1. AIRPORT OPERATIONS COORDINATOR

THE OWNER SHALL PROVIDE AN OPERATIONS SPECIALIST WHO SHALL HAVE THE AUTHORITY TO OPEN AND CLOSE FACILITIES, ISSUE AND CANCEL NOTAM'S, AND TO COORDINATE WITH AIRPORT USERS.

2. AIRPORT SECURITY

THE CONTRACTOR SHALL COMPLY WITH ALL AIRPORT SECURITY REQUIREMENTS AS DIRECTED BY THE AIRPORT OPERATIONS SPECIALIST.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING ACCESS TO THE WORK AREA AND INSURING THAT AIRPORT SECURITY IS MAINTAINED AT ALL TIMES. THE FAA CAN IMPOSE FINES OF $10,000.00 OR MORE FOR SECURITY VIOLATIONS AND INCURSIONS INTO ACTIVE AIRCRAFT OPERATION AREAS. THE CONTRACTOR SHALL PAY ALL FINES ASSESSED AGAINST THE AIRPORT DUE TO VIOLATIONS CAUSED BY THE CONTRACTOR AND HIS/HER PERSONNEL, SUBCONTRACTORS AND VENDORS.

PARKING OF PERSONAL CARS SHALL BE IN DESIGNATED LOCATION ONLY. THE CONTRACTOR, AS A SUBSIDIARY OBLIGATION SHALL PROVIDE ADEQUATE AND SAFE TRANSPORTATION FOR HIS/HER EMPLOYEES FROM THE AREA WHERE THE CARS ARE PARKED, TO AND FROM THE WORK AREA. EMPLOYEES AND DRIVERS OF WORK VEHICLES WILL BE INSTRUCTED AS TO PROPER ACCESS ROADS AND WILL BE CAUTIONED THAT UNAUTHORIZED USE OF AIRCRAFT PAVEMENTS OR OTHER AREAS OUTSIDE THE DESIGNATED WORK AREA MAY LEAD TO THEIR ARREST AND SUBSEQUENT PAYMENT OF FINES.

CONTRACTOR SHALL INSTRUCT SUPPLIERS, ON ACCESS PROCEDURES TO BE FOLLOWED.

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER WITHIN 10 DAYS AFTER SIGNING OF THE CONTRACT A WRITTEN METHOD OF OPERATIONS DETAILING THE PRECAUTIONS HE/SHE PROPOSES FOR THE CONTROL OF VEHICLE TRAFFIC INCLUDING FLAGPERSONS, SIGNS, ESCORTS AND ANY OTHER MEASURES HE/SHE PROPOSES. AFTER APPROVAL OF HIS/HER OPERATING PROCEDURES, THE CONTRACTOR SHALL FOLLOW IT EXPLICITLY. THE OWNER MAY CLOSE THE WORK AREA ANY TIME THIS SCHEDULE IS VIOLATED. CLOSURE OF THE WORK AREA BY OWNER FOR THIS REASON SHALL NOT CONSTITUTE A VALID REASON FOR EXTENDING THE CONTRACT TIME OR FOR ANY CLAIM FOR EXTRAS BY THE CONTRACTOR.

ALL SECURITY ARRANGEMENTS SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER.

THE CONTRACTOR'S PERSONNEL AND VEHICLES WILL NOT HAVE ACCESS TO THE ENTIRE AIRPORT, BUT SHALL BE LIMITED TO THE WORK AREAS AND THE STAGING AREAS AS SHOWN ON THE CONTRACT PLANS.

3. OPEN TRENCHES OR EXCAVATIONS

THE CONTRACTOR WILL NOT BE PERMITTED TO LEAVE ANY TRENCHES OR OTHER EXCAVATIONS OPEN AT NIGHT, ON WEEKENDS OR AT OTHER TIMES WHEN THE CONTRACTOR IS NOT ON THE WORK SITE. IN ADDITION, NO EXCAVATIONS EXCEEDING 3 INCHES IN DEPTH SHALL BE LEFT OPEN WITHIN AIRCRAFT OPERATION AREAS DESCRIBED IN NOTE 8 WHILE THE RUNWAYS, TAXIWAYS, AND APRONS ARE IN USE UNLESS THE EXCAVATIONS ARE COVERED WITH APPROVED STEEL PLATES. STEEL PLATES SHALL BE CAPABLE OF BEARING THE HEAVIEST AIRCRAFT/VEHICLE USING THE AIRPORT OVER THE SPAN IN WHICH THEY ARE TO BE USED. THE CONTRACTOR SHALL KEEP THE LENGTH OF OPEN TRENCHES COVERED WITH STEEL PLATES TO A MINIMUM BUT IN NO CASE SHALL THE LENGTH EXCEED THE DISTANCE BETWEEN TWO ADJACENT MANHOLES OR CATCH BASINS.

ALL EXCAVATIONS SHALL BE BACKFILLED AND THE PAVEMENT REPAIRED AND PROPERLY CURED PRIOR TO THE AREA BEING REOPENED TO TRAFFIC.

PRIOR TO THE CLOSE OF WORK EACH DAY THE CONTRACTOR SHALL INSURE THAT THE WORK AREAS ARE GRADED AWAY FROM THE PAVEMENTS AT A MAXIMUM SLOPE OF 5% AND SHALL BE LEFT IN SUCH CONDITION THAT IT WILL DRAIN READILY AND EFFECTIVELY AND WILL NOT POSE A HAZARD TO VEHICLES OR AIRCRAFT. NO PILES OF SOIL SHALL BE LEFT UNSPREAD, NO SHARP CHANGES IN GRADE WILL BE PERMITTED, AND THE SURFACE SHALL BE THOROUGHLY COMPACTED.

AT THE END OF EACH DAY A FOD (FOREIGN OBJECT DEBRIS) CHECK SHOULD TAKE PLACE AS WELL AS A LIGHT CHECK. THESE CHECKS SHOULD BE COORDINATED WITH THE OPERATIONS SPECIALIST.

4. DISPOSAL OF SURPLUS AND UNSUITABLE MATERIALS

ALL UNSUITABLE EXCAVATION MATERIAL, ALL DRAINAGE STRUCTURES AND PIPES, ALL BITUMINOUS CONCRETE PAVEMENT, AND ALL PORTLAND CEMENT CONCRETE PAVEMENT SHALL BE LEGALLY DISPOSED OF BY THE CONTRACTOR OFF AIRPORT PROPERTY UNLESS SPECIFIC INSTRUCTIONS TO THE CONTRARY ARE INCLUDED IN THE SPECIFICATIONS. THE CONTRACTOR SHALL CHOOSE THE DISPOSAL SITE BUT THE OWNER AND THE OWNER'S REPRESENTATIVE MUST APPROVE IT PRIOR TO ITS USE. ANY EXCESS TOPSOIL SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE STOCKPILED ON THE AIRPORT IN A LOCATION TO BE DETERMINED BY THE OWNER.

THE CONTRACTOR SHALL OBTAIN ALL PERMITS AND PAY ALL FEES REQUIRED FOR THE DISPOSAL OF MATERIALS OFF AIRPORT PROPERTY. AT THE OWNERS OR ENGINEERS REQUEST, WEIGHT SLIPS FOR OFF SITE DISPOSAL MAY BE REQUESTED.

NO SEPARATE MEASUREMENT AND PAYMENT WILL BE MADE FOR THE DISPOSAL, BUT RATHER THE DISPOSAL SHALL BE INCIDENTAL TO THE ITEM THAT GENERATES THE MATERIAL.

5. UNDERGROUND UTILITIES AND CABLES

THE APPROXIMATE LOCATIONS OF KNOWN UTILITIES AND UNDERGROUND CABLES ARE SHOWN ON THE CONTRACT DRAWINGS. PRIOR TO COMMENCEMENT OF ANY EXCAVATION, THE CONTRACTOR SHALL COORDINATE ALL WORK ON AND IN THE VICINITY OF THE UNDERGROUND UTILITIES AND CABLES WITH THE FOLLOWING AGENCIES AS APPROPRIATE.

THE FEDERAL AVIATION ADMINISTRATION - AIRWAY FACILITIES SECTOR FIELD OFFICE.
DIG SAFE WILL NOTIFY THE FOLLOWING UTILITY COMPANIES.

- VERMONT AGENCY OF TRANSPORTATION
- COMCAST
- AMERIGAS
- BLUE FLAME GAS
- TOWN OF BERLIN
- FAIRPOINT COMMUNICATIONS
- GREEN MOUNTAIN POWER
- LEVEL 3 COMMUNICATIONS

THE CONTRACTOR SHALL REPAIR, AT HIS/HER OWN EXPENSE, ANY UNDERGROUND OR OVERHEAD CABLES OR UTILITIES DAMAGED BY HIS/HER OPERATIONS AT NO ADDITIONAL COST TO THE OWNER INCLUDING ANY DAMAGE DONE BY DRIVING HIS/HER EQUIPMENT OVER EXISTING UNDERGROUND CABLES OR UTILITIES. THE REPAIR OF FAA CABLES SHALL BE INSPECTED AND APPROVED BY THE FAA.

6. CONTRACTOR'S STAGING AREAS

THE CONTRACTOR SHALL USE THE AREAS SHOWN ON THE PLANS FOR HIS/HER STAGING AREA. THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL IMPROVEMENT AND RESTORATION OF THE DESIGNATED AREA, SUCH AS GRUBBING, GRADING, AND CONSTRUCTION OF GRAVEL ACCESS ROADS, THAT IS NECESSARY FOR THE UTILIZATION OF THE AREA. THE CONTRACTOR IS RESPONSIBLE FOR ALL TRASH PICK-UP GENERATED BY THE PROJECT. RESTROOM FACILITIES WILL BE PROVIDED AND MAINTAINED IN THE STAGING AREA, BY THE CONTRACTOR. THE STAGING AREA WILL BE RESTORED BY THE CONTRACTOR, TO A CONDITION APPROVED BY THE OWNER. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ANY TEMPORARY ACCESS PERMITS AND ASSOCIATED FEES FOR ACCESS TO THE ADJACENT ROAD NETWORK. THERE WILL BE NO SEPARATE PAYMENT FOR THIS WORK. ALL WORK NECESSARY TO USE THE STAGING AREA SHALL BE DEEMED INCIDENTAL TO THE OVERALL PROJECT.

7. WETLANDS

DISTURBANCE OF WETLANDS IS A POTENTIAL VIOLATION OF FEDERAL, STATE AND LOCAL REGULATIONS. NO DISTURBANCE OF WETLANDS IS INTENDED AS PART OF THIS PROJECT EXCEPT WHERE INDICATED ON THE PLANS. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID ANY UNAUTHORIZED DISTURBANCE OF WETLANDS AS PART OF HIS WORK. THE CONTRACTOR SHALL PAY ALL FINES ASSESSED AGAINST THE AIRPORT AND RELATED EXPENSES DUE TO VIOLATIONS CAUSED BY THE CONTRACTOR AND HIS/HER PERSONNEL, SUBCONTRACTORS, AND VENDORS.

8. AIRPORT OPERATIONS AND SAFETY REQUIREMENTS

NORMAL AIRPORT OPERATIONS WILL BE CONDUCTED DURING CONSTRUCTION. THE CONTRACTORS WORK SHALL BE CARRIED ON IN SUCH A MANNER AS NOT TO INTERFERE WITH AIRPORT OPERATIONS. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO INSURE THE SAFETY OF OPERATING AIRCRAFT AS WELL AS HIS/HER OWN EQUIPMENT AND PERSONNEL.

NO CONSTRUCTION OPERATIONS SHALL BE CARRIED ON WITHIN 50 FEET FROM THE CENTERLINE OF ANY TAXIWAY OR WITHIN 75 FEET OF THE CENTERLINE OF ANY ACTIVE RUNWAY OR WITHIN THE LIMITS OF ACTIVE RUNWAY APPROACH ZONES UNLESS PRIOR APPROVAL HAS BEEN OBTAINED. WHEN PERMISSION HAS BEEN GRANTED TO WORK INSIDE THESE LIMITS, NO EQUIPMENT SHALL BE LEFT WITHIN THE LINES WHEN NOT ACTUALLY WORKING. DURING LUNCH BREAKS IN THE DAILY WORK SCHEDULE, NIGHTS, WEEKENDS AND THE DAYS WHEN WORK IS NOT PERMITTED OR IS NOT PROGRESSING, THE EQUIPMENT SHALL BE LOCATED OUTSIDE OF THESE RESTRICTION LINES. ALL BOOMS SHALL BE LOWERED WHEN THE EQUIPMENT IS NOT IN OPERATION. NO CONSTRUCTION OPERATIONS, INCLUDING AN OPEN FLAME SUCH AS WELDING OR BURNING, SHALL BE CARRIED ON NEAR ANY AIRCRAFT.

ALL CONTRACTOR VEHICLES THAT ARE AUTHORIZED TO OPERATE ON THIS AIRPORT SHALL DISPLAY IN FULL VIEW ABOVE THE VEHICLE A 3' X 3' OR LARGER ORANGE AND WHITE CHECKERBOARD FLAG, WITH EACH CHECKERBOARD COLOR BEING 1' SQUARE. ANY VEHICLE OPERATING IN ACTIVE AOA SHALL BE EQUIPPED WITH A FLASHING AMBER (YELLOW) DOME TYPE LIGHT, MOUNTED ON TOP OF THE VEHICLE AND OF SUCH INTENSITY TO CONFORM TO LOCAL CODES FOR MAINTENANCE AND EMERGENCY VEHICLES.

ALL CONTRACTOR'S VEHICLES THAT ARE REQUIRED TO CROSS ACTIVE RUNWAYS, TAXIWAYS AND APPROACH RUNWAY PROTECTION ZONES SHALL DO SO UNDER THE DIRECT CONTROL OF A FLAGMAN. THE FLAGMAN SHALL BE TRAINED AND INSTRUCTED BY THE AIRPORT MANAGER AND/OR ENGINEER IN THE REGULATIONS GOVERNING OPERATIONS OF THE AOA AND THE AIRPORT. THE FLAGMAN SHALL BE FURNISHED BY THE CONTRACTOR. ALL AIRCRAFT TRAFFIC ON RUNWAYS AND TAXIWAYS SHALL HAVE PRIORITY OVER CONTRACTOR'S TRAFFIC.

IN ADDITION, ALL CONTRACTOR'S VEHICLES SHALL HAVE THE COMPANY IDENTIFICATION PLAINLY VISIBLE ON BOTH SIDES OF THE VEHICLE IN ORDER TO IDENTIFY THE VEHICLE.

THE CONTRACTOR SHALL OBEY ALL INSTRUCTIONS AS TO THE OPERATION AND ROUTES TO BE TAKEN BY EQUIPMENT TRAVELING ON AIRPORT PROPERTY. ANY SIGNS, LIGHTS, SIGNALS, MARKINGS, TRAFFIC CONTROL AND OTHER DEVICES WHICH MAY BE REQUIRED SHALL BE PROVIDED AND MAINTAINED BY THE CONTRACTOR DURING THE COURSE OF THE WORK, SUBJECT TO THE APPROVAL OF THE ENGINEER. NO AIRCRAFT PAVEMENT OR NAVIGATION AID CURRENTLY IN SERVICES SHALL BE LEFT OUT OF SERVICE OVERNIGHT UNLESS CLOSED TO ALL AIRPORT OPERATIONS. THE CONTRACTOR SHALL CHECK ALL PERMANENT AND TEMPORARY LIGHTING TO ASSURE ITS OPERATING CONDITION BEFORE LEAVING THE JOB EACH DAY.

PROJECT LEGEND

- EXISTING CATCH BASIN
- EXISTING DRAINAGE MANHOLE
- EXISTING DRAINAGE PIPE
- EXISTING UNDERDRAIN & UNDERDRAIN CLEANOUT
- EXISTING HEADWALL
- EXISTING GRANITE CONTROL MONUMENT
- EXISTING TREELINE
- EXISTING EDGE OF PAVEMENT
- EXISTING FENCE
- EXISTING TAXIWAY/RUNWAY LIGHT
- EXISTING TAXIWAY SIGN
- S25 EXISTING SIGN (RESET WHERE APPLICABLE)
- EXISTING DUCT
- EXISTING WETLANDS SYMBOL
- EXISTING MINOR CONTOUR
- 1140 EXISTING MAJOR CONTOUR
- EXISTING TAXIWAY REFLECTOR
- UE EXISTING UNDERGROUND ELECTRICAL CABLE
- EHH EXISTING ELECTRICAL HANDHOLE
- PROPOSED CATCH BASIN
- PROPOSED DRAINAGE MANHOLE
- PROPSED DRAINAGE PIPE
- PROPOSED UNDERDRAIN
- PROPOSED FLARED END SECTION
- PROPOSED EDGE OF PAVEMENT
- PROPOSED FENCE
- UD PROPOSED UNDERDRAIN CLEANOUT
- S31 PROPOSED SIGN AND SIGN NUMBER
- PROPOSED ELECTRICAL HANDHOLE
- PROPOSED CONCRETE ENCASED DUCT
- 1T I T/W PROPOSED CABLE, DIRECT BURIED
- 2R 2 R/W PROPOSED CABLES, DIRECT BURIED (INSTALLED IN SAME TRENCH)
- 2T,1R 2 T/W, 1 R/W PROPOSED CABLES, DIRECT BURIED (INSTALLED IN SAME TRENCH)
- A75 PROPOSED TAXIWAY LIGHT
- R5-42 PROPOSED RUNWAY LIGHT
- FAA HH PROPOSED FAA HANDHOLE
- EHH PROPOSED ELECTRIC HANDHOLE
- EROSION LOG AROUND CATCH BASIN (653.60)
- EROSION LOG (653.60)
- EROSION CONTROL MATTING (653.05)
- BARRIER FENCE (653.50)
- CHECK DAM (653.25)

- LIGHTED BARRICADE
- DEMOLITION MARKER
- B4 SOIL BORING
- AIRPORT PROPERTY LINE
- NEW SHOULDER PAVEMENT

BLANK (BLACK)
BLACK INSCRIPTION ON YELLOW BACKGROUND
YELLOW INSCRIPTION ON BLACK BACKGROUND

YELLOW INSCRIPTION ON BLACK BACKGROUND
WHITE INSCRIPTION ON RED BACKGROUND
YELLOW INSCRIPTION ON BLACK BACKGROUND

- PROPOSED MINOR CONTOURS
- 1140 PROPOSED MAJOR CONTOUR
- LIMIT OF WETLANDS
- PROPOSED SLOPE LIMITS
- PROPOSED STONE FILL

9. HAUL ROUTES

ON AIRPORT HAUL ROUTES ARE SHOWN ON THE PLANS.

OFF AIRPORT HAUL ROUTES SHALL BE AS AGREED TO IN THE "LETTER OF UNDESTANDING BETWEEN THE VERMONT AGENCY OF TRANSPORTATION AND THE TOWN OF BERLIN, VERMONT"

10. ILS CLOSURE

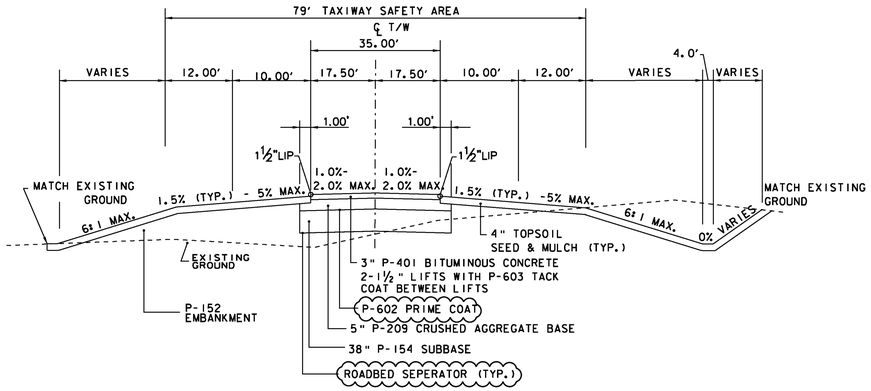
THE CONTRACTOR SHALL COORDINATE ANY CLOSURE OF THE ILS WITH THE AIRPORT. IT SHALL BE THE RESPONSIBILITY OF THE AIRPORT TO COORDINATE THE ILS CLOSURE WITH THE FAA. THE FAA SHALL DETERMINE THE ACTUAL TIMES AND DURATION THAT THE ILS MAY BE CLOSED. THE CONTRACTOR SHALL ADJUST HIS/HER WORK SCHEDULE TO COMPLY WITH THE FAA DETERMINATION.

THE CONTRACTOR SHALL STAKE AND PERMANENTLY MARK ON THE GROUND WITH A READILY RECOGNIZABLE MARKING (FOOTBALL FIELD MARKING OR SIMILAR MATERIAL) AND DEMARCATION FENCE THE RESTRICTION LINES PARALLEL TO THE TAXIWAYS AND RUNWAYS ADJACENT TO THE WORK AND THE APPROACH ZONE LIMITS SO THAT WORKERS CAN READILY RECOGNIZE THE LIMITATIONS.

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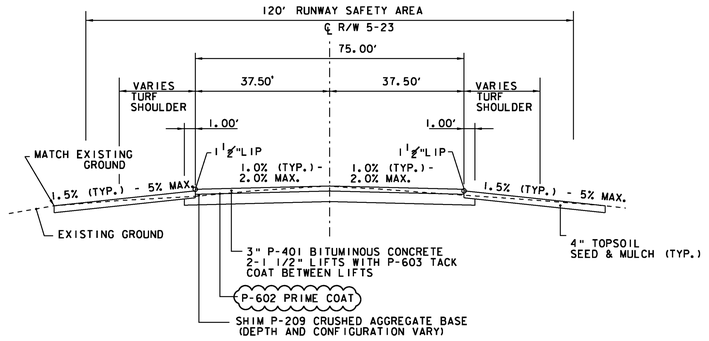
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_genl_notes.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
GENERAL NOTES AND LEGEND SHEET 3 OF 173



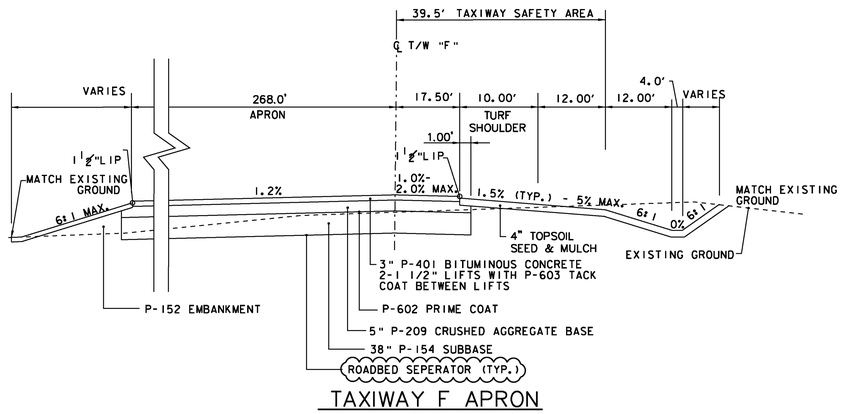
TYPICAL TAXIWAY "A" & "F" SECTION

NOT TO SCALE



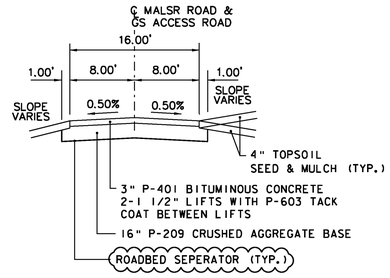
TYPICAL RUNWAY 5-23 SECTION

NOT TO SCALE



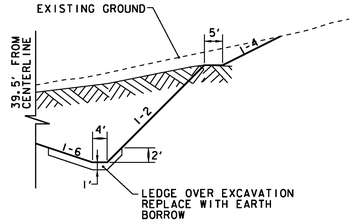
TAXIWAY F APRON

NOT TO SCALE



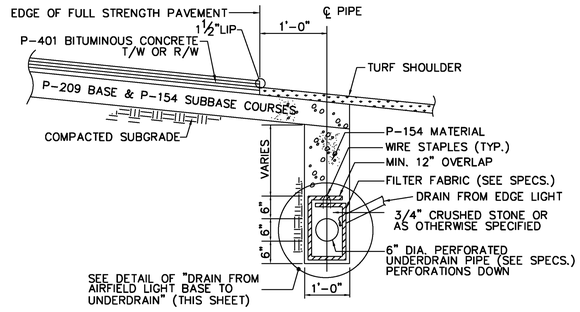
MALSR/GS ANTENNA ACCESS ROADS TYPICAL

NOT TO SCALE
NOTE: SIDE SLOPE VARIES. SEE CROSS SECTIONS



LEDGE CUT DETAIL

NOT TO SCALE

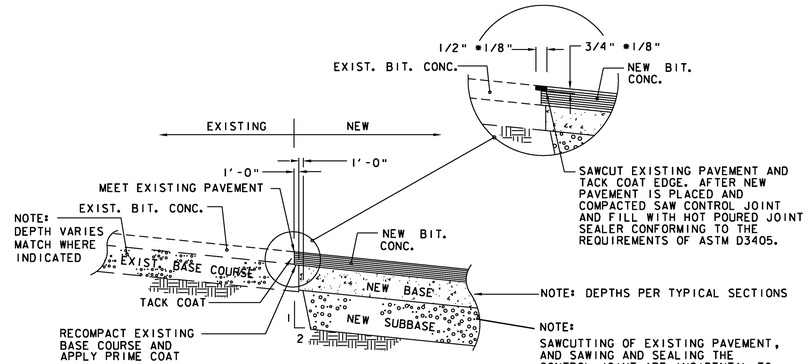


TYPICAL UNDERDRAIN DETAIL

NOT TO SCALE
(WHERE SHOWN ON PLANS)

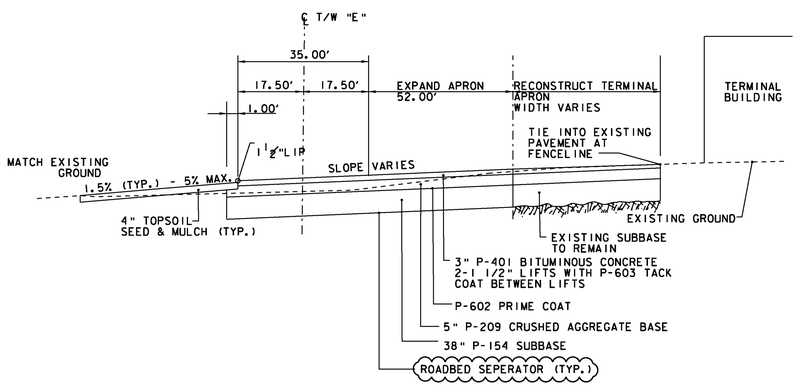
GENERAL NOTES

SLOPE ROUNDING: ALL CUT SLOPES TO BE ROUNDED IN ACCORDANCE WITH STANDARD SHEET B - 5.



PAVEMENT BUTT JOINT

NOT TO SCALE



TYPICAL TAXIWAY "E" AND RECONSTRUCTED TERMINAL APRON

NOT TO SCALE

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_typ_sec.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TYPICAL SECTIONS

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 4 OF 173

Spec No.	Title	Unit	Quantity	
G-001	SUMMARY OF WORK AND SPECIAL WORK REQUIREMENTS			
G-001-1	Engineers Field Office	Lump Sum	1	
G-001-2	Mobilization	Lump Sum	1	
P-151	CLEARING AND GRUBBING			
P-151-1	Clearing and Grubbing	Lump Sum	1	
P-152	EXCAVATION AND EMBANKMENT			
P□152□1	Unclassified Excavation	Cubic Yard	~~230000~~	125,434
P-152-2	Unsuitable Material Removal and Replacement	Cubic Yard	~~1000~~	498.1
P-152-3	Remove Bituminous Pavement	Square Yard	~~60000~~	58,166.5
P-154	SUBBASE COURSE			
P-154-1	Subbase Course	Cubic Yard	~~49000~~	48,527.1
P-156	TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION, AND SILTATION CONTROL			
P-156-1	Owner's EPSC Plan	Lump Sum	1	
P-156-2	Temporary Erosion Control Matting	Square Yard	~~26000~~	25,050
P-156-3	Temporary Stone Check Dam, Type 1	Cubic Yard	~~70~~	34.50
P-156-4	Vehicle Tracking Pad	Cubic Yard	~~200~~	1,008.40
P-156-5	Barrier Fence	Linear Foot	~~23000~~	11,840
P-156-6	Erosion Log	Linear Foot	~~1600~~	1,090
P-156-7	Silt Fence	Linear Foot	~~3000~~	4,058
P-156-8	Bonded Fiber Matrix	Square Yard	~~2500~~	0
P-209	CRUSHED AGGREGATE BASE COURSE			
P-209-1	Crushed Aggregate Base Course	Cubic Yard	~~9500~~	8,270.5
P-401	PLANT MIX BITUMINOUS PAVEMENTS			
P-401-1	Airport Bituminous Surface Course	Ton	~~13700~~	13,106.03
P-602	BITUMINOUS PRIME COAT			
P-602-1	Bituminous Prime Coat	Gallon	~~21000~~	4,560.61
P-603	BITUMINOUS TACK COAT			
P-603-1	Bituminous Tack Coat	Gallon	~~9500~~	3,047.99
P-620	RUNWAY AND TAXIWAY PAINTING			
P-620-1	Pavement Painting	Square Foot	~~13600~~	13,287
P-620-2	Remove Pavement Markings	Square Foot	~~900~~	1,677
P-620-3	Temporary Pavement Painting	Square Foot	~~1200~~	0
D-701	PIPE FOR STORM DRAINS			
D-701-1	12" Drainage Pipe	Linear Foot	~~880~~	1,215.23
D-701-2	15" Drainage Pipe	Linear Foot	~~220~~	219.76
D-701-3	18" Drainage Pipe	Linear Foot	~~460~~	443.73
D-701-4	24" Drainage Pipe	Linear Foot	~~2000~~	1,937.53
D-701-5	30" Drainage Pipe	Linear Foot	~~250~~	249.96
D-701-6	36" Drainage Pipe	Linear Foot	~~110~~	103.76
D-701-7	Remove Existing Pipe	Linear Foot	~~3550~~	1,476
D-701-8	12" Concrete End Section	Each	~~1~~	2
D-701-9	24" Concrete End Section	Each	3	
D-701-10	36" Concrete End Section	Each	1	
D-701-10	18" Concrete End Section	Each	1	
D-705	PIPE UNDERDRAINS FOR AIRPORTS			
D-705-1	6" Underdrain Pipe	Linear Foot	~~11000~~	11,621
D-705-2	Underdrain Cleanouts	Each	~~50~~	48
D-705-3	24" Underdrain Pipe	Linear Foot	~~240~~	235.07
D-751	MANHOLES, CATCH BASINS, INLETS AND OUTLET CONTROL STRUCTURES			
D-751-1	Catch Basin – 4' Dia.	Each	14	
D-751-2	Catch Basin – 6' Dia.	Each	~~4~~	3
D-751-3	Drainage Manhole – 4' Dia.	Each	2	
D-751-4	Drainage Manhole – 5' Dia.	Each	4	
D-751-5	Drain Inlet– 4' Dia.	Each	3	
D-751-6	Drain Inlet– 5' Dia.	Each	0	
D-751-7	Outlet Control Structure – 4' Dia.	Each	2	
D-751-8	Removal of Existing Drainage Structure	Each	~~11~~	36
F-162	CHAIN LINK FENCES			
F-162-1	Remove & Reset Chain Link Fence	Linear Feet	~~900~~	906
F-162-2	Chain Link Fence	Linear Feet	~~200~~	265

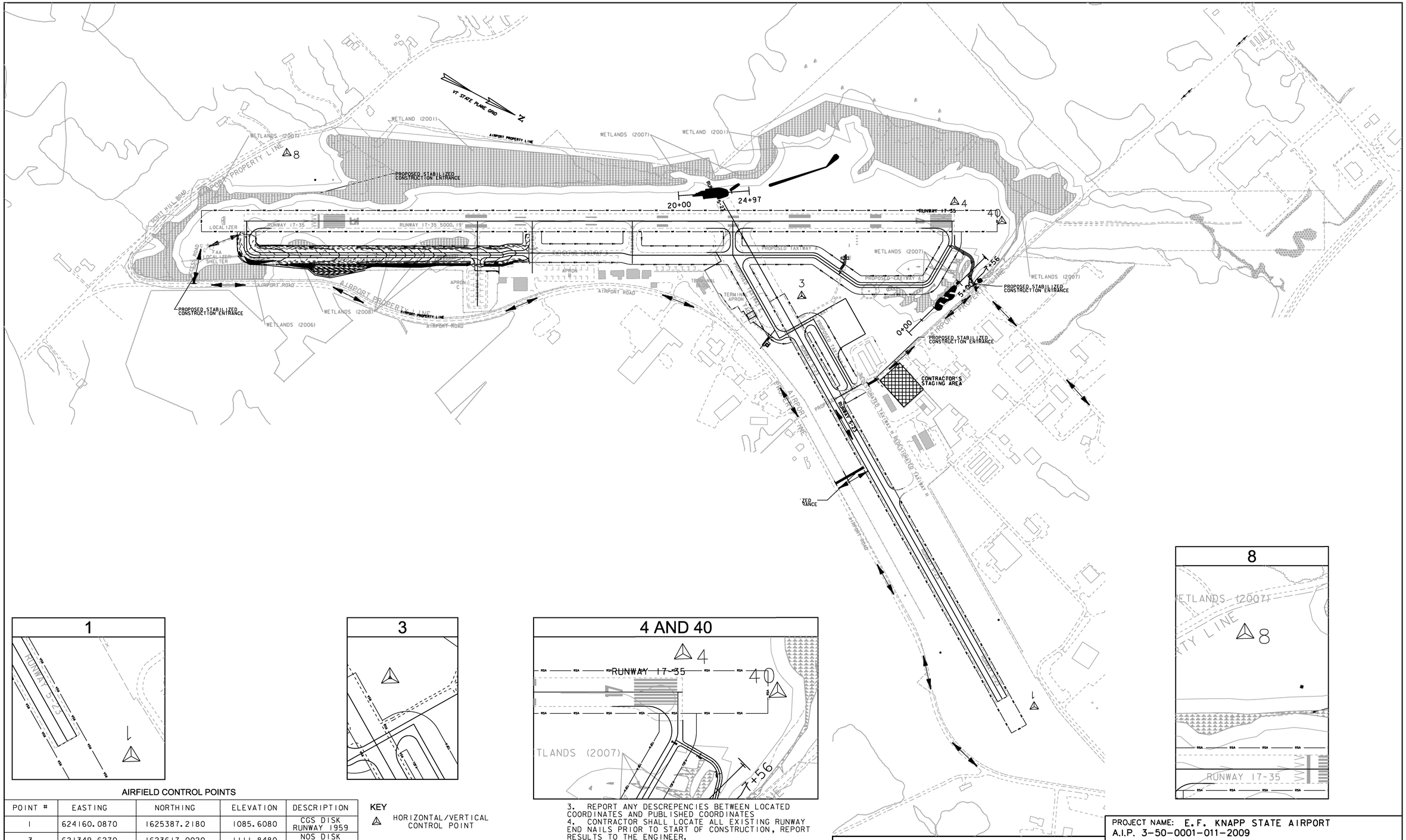
L-107	AIRPORT 8-FOOT AND 12-FOOT WIND CONES			
L-107-1	12-Foot Lighted Primary Wind Cone	Each	1	
L-107-2	8-Foot Lighted Supplemental Wind Cone	Each	2	
L-108	UNDERGROUND POWER CABLE FOR AIRPORTS			
L-108-1	1/C #8, 5Kv, L824 Type `C' Cable in trench or duct	Linear Foot	~~47000~~	39,938
L-108-2	#6 Bare Counterpoise Wire, in trench or duct	Linear Foot	~~15000~~	18,705
L-108-3	Cable Trench	Linear Foot	~~15000~~	20,522
L-108-4	Cable Markers	Each	~~6~~	0
L-109	AIRPORT TRANSFORMER VAULT			
L-109-1	Airfield Transformer Vault	Lump Sum	1	
L-110	AIRPORT UNDERGROUND ELECTRICAL DUCT BANKS AND CONDUITS			
L-110-1	4" 2-Way Concrete Encased Duct	Linear Foot	~~200~~	323
L-110-2	4" 4-Way Concrete Encased Duct	Linear Foot	~~320~~	288
L-110-3	3" 2-Way PVC Schedule 40 Concrete Encased Duct	Linear Foot	40	
L-110-4	3" 1-Way PVC Schedule 40 Unencased Duct	Linear Foot	~~1600~~	1,065
L-110-5	2" 1-Way Concrete Encased Duct	Linear Foot	54	
L-110-6	Remove Existing Duct or Duct Bank	Linear Foot	~~200~~	100
L-110-7	4" 1-Way Directional Bore	Linear Foot	25	
L-110-8	Duct Markers	Each	~~2~~	0
L-110-9	2" 1-Way Unencased Duct in Cable Trench	Linear Foot	0	
L-115	ELECTRICAL MANHOLES AND JUNCTION STRUCTURES			
L-115-1	Airport Electric Handhole	Each	22	
L-115-2	FAA Electric Handhole	Each	~~3~~	2.54
L-115-3	Remove Electric Manhole or Junction Structure	Each	~~4~~	0
L-115-4	Electric Manhole and Junction Structure Elevation Adjustment	Each	~~2~~	0
L-858	TAXIWAY & RUNWAY SIGNS			
L-858-1	Runway and Taxiway Sign, 1 Module	Each	14	
L-858-2	Runway and Taxiway Sign, 2 Module	Each	~~9~~	10
L-858-3	Runway and Taxiway Sign, 3 Module	Each	~~17~~	16
L-858-4	Remove Existing Sign	Each	~~17~~	12
L-861	MEDIUM INTENSITY RUNWAY AND TAXIWAY EDGE LIGHTING			
L-861-1	Base Mounted LED Taxiway Edge Light	Each	227	
L-861-2	Base Mounted Runway Edge Light	Each	41	
L-861-3	Remove Runway or Taxiway Edge Light	Each	~~94~~	132
L-862	HIGH INTENSITY RUNWAY EDGE LIGHTING			
L-862-1	Base Mounted Runway Edge Light	Each	2	
M-101	SEGMENTED CIRCLE			
M-101-1	Segmented Circle Airport Marker	Lump Sum	1	
M-102	TRENCH DRAIN			
M-102-1	Trench Drain	Linear Foot	100	
M-102-2	Trench Drain Catch Basin	Each	1	
M-103	PORTLAND CEMENT CONCRETE			
M-103-1	Reinforced Concrete Pad	Square Yard	~~285~~	280
M-104	SAWED CONTROL JOINTS			
M-104-1	Sawed Control Joints	Linear Foot	~~1400~~	1,286
M-105	STONE FILL			
M-105-1	Stone Fill - Type I	Cubic Yard	~~100~~	585.66
M-105-2	Stone Fill - Type II	Cubic Yard	~~2500~~	2,725.83
M-106	ELECTRICAL DISTRIBUTION SYSTEM			
M-106-1	Purchase Fiber Transformer Pad	Each	~~1~~	0
M-106-2	Install Fiber Transformer Pad	Each	2	
M-106-3	Install Transformer	Each	~~1~~	0
M-106-4	Purchase and Install Termination Cabnet	Each	~~2~~	1
M-106-5	Green Mount Power Backcharges	Allowance	~~$20,000~~	$19,289.52
M-106-6	Furnish and Install Secondary Cable	Lump Sum	~~1~~	1
T-901	SEEDING			
T-901-1	Seeding	Square Yard	~~110,000~~	128,551
T-905	TOPSOILING			
T-905	Topsoiling	Square Yard	~~110,000~~	128,911.70

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_qty.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
QUANTITY SHEET

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 5 OF 173



1

3

4 AND 40

8

AIRFIELD CONTROL POINTS

POINT #	EASTING	NORTHING	ELEVATION	DESCRIPTION
1	624160.0870	1625387.2180	1085.6080	CGS DISK RUNWAY 1959
3	621349.6270	1623617.0020	1111.8480	NOS DISK MPV D 1990
4	621983.6350	1622523.7200	1088.2520	NOS DISK A2 AP 1965
8	617681.3730	1624448.2770	1191.7560	VERMONT DISK 1203 87 04
40	622340.8051	1622484.4685	1081.1769	SPIKE

KEY

△ HORIZONTAL/VERTICAL CONTROL POINT

NOTES:

1. DO NOT DISTURB MONUMENTS, NAILS OR PK.
2. IRON ROD DATA IS FOR INFORMATIONAL USE ONLY. IF DISTURB, REMOVE AND DO NOT RESET.
3. REPORT ANY DESCREPENCIES BETWEEN LOCATED COORDINATES AND PUBLISHED COORDINATES
4. CONTRACTOR SHALL LOCATE ALL EXISTING RUNWAY END NAILS PRIOR TO START OF CONSTRUCTION, REPORT RESULTS TO THE ENGINEER.
5. CONTRACTOR SHALL LOCATE ALL EXISTING OR SET RUNWAY END NAILS AT COMPLETION OF CONSTRUCTION, REPORT RESULTS TO THE ENGINEER.
6. CONTRACTOR RESPONSIBLE FOR DETERMINING PROJECT LAYOUT.

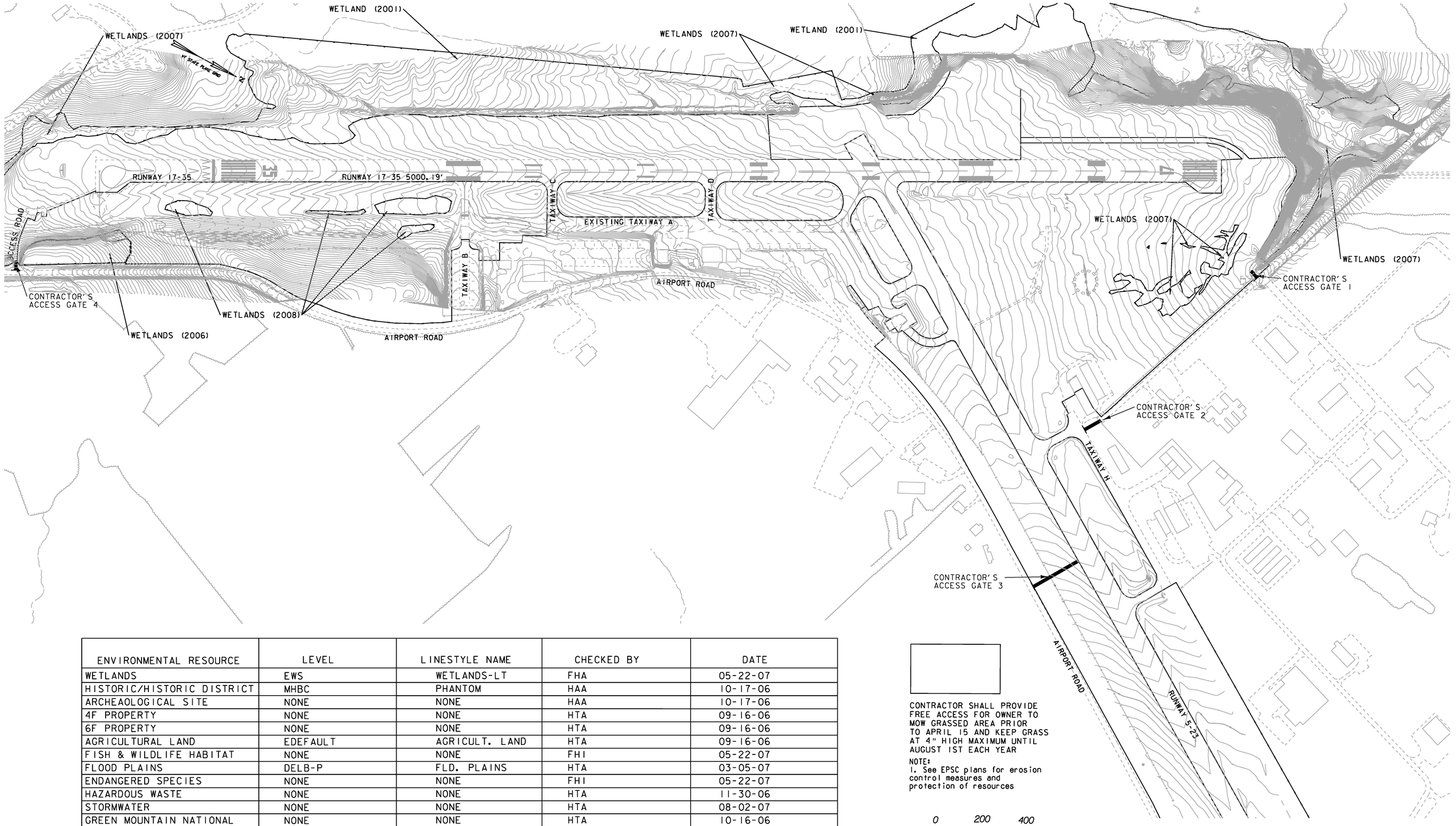
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SCALE

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_SITEPLAN.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
SITE LAYOUT PLAN

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 6 OF 173



ENVIRONMENTAL RESOURCE	LEVEL	LINESTYLE NAME	CHECKED BY	DATE
WETLANDS	EWS	WETLANDS-LT	FHA	05-22-07
HISTORIC/HISTORIC DISTRICT	MHBC	PHANTOM	HAA	10-17-06
ARCHEAOLOGICAL SITE	NONE	NONE	HAA	10-17-06
4F PROPERTY	NONE	NONE	HTA	09-16-06
6F PROPERTY	NONE	NONE	HTA	09-16-06
AGRICULTURAL LAND	EDEFAULT	AGRICULT. LAND	HTA	09-16-06
FISH & WILDLIFE HABITAT	NONE	NONE	FHI	05-22-07
FLOOD PLAINS	DELB-P	FLD. PLAINS	HTA	03-05-07
ENDANGERED SPECIES	NONE	NONE	FHI	05-22-07
HAZARDOUS WASTE	NONE	NONE	HTA	11-30-06
STORMWATER	NONE	NONE	HTA	08-02-07
GREEN MOUNTAIN NATIONAL FOREST LAND	NONE	NONE	HTA	10-16-06

CONTRACTOR SHALL PROVIDE FREE ACCESS FOR OWNER TO MOW GRASSED AREA PRIOR TO APRIL 15 AND KEEP GRASS AT 4" HIGH MAXIMUM UNTIL AUGUST 1ST EACH YEAR

NOTE:
1. See EPSC plans for erosion control measures and protection of resources

0 200 400
SCALE

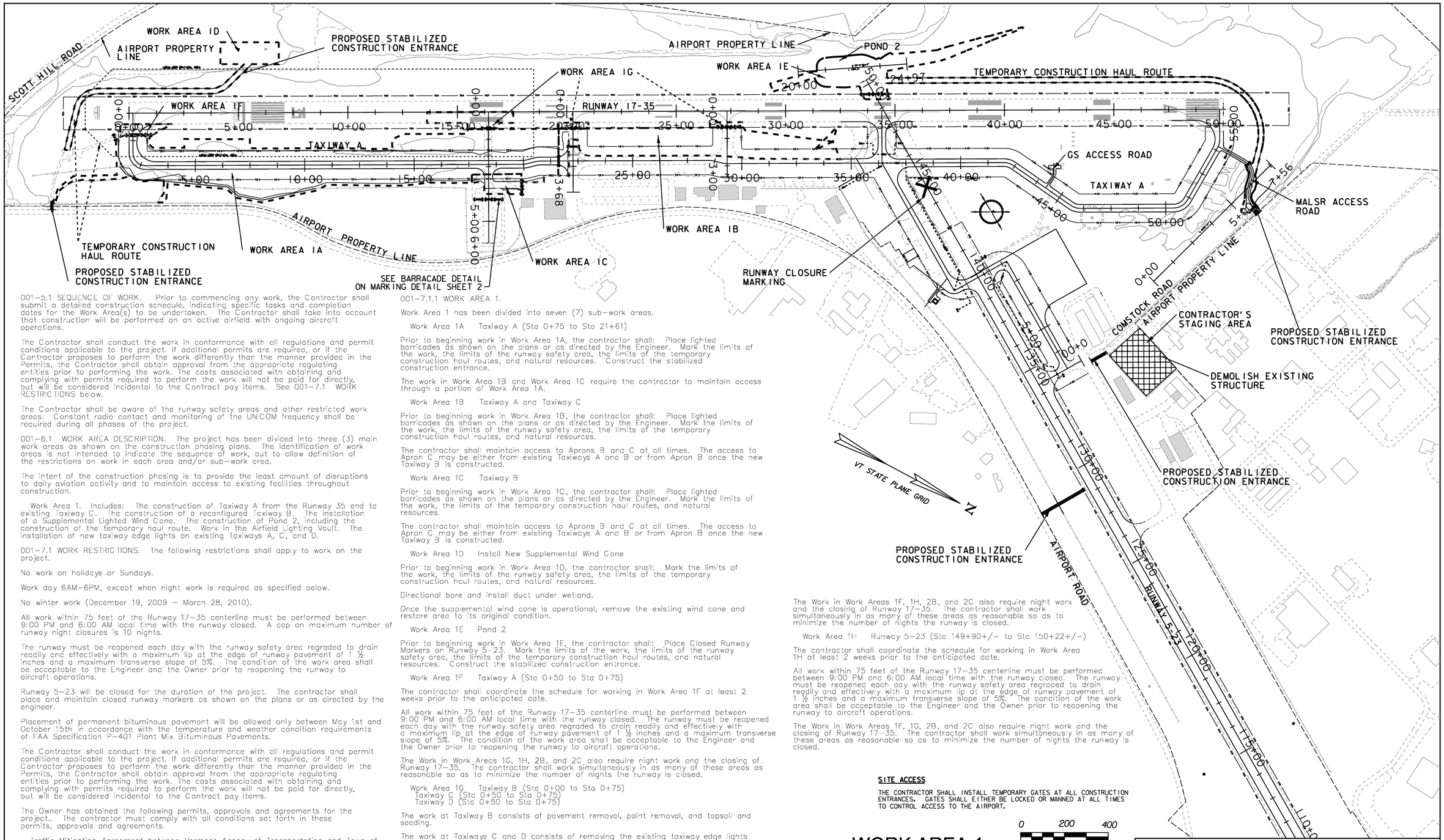
RESOURCE SHEET

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_res.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
RESOURCE SHEET

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 7 OF 173



001-5.1 SEQUENCE OF WORK. Prior to commencing any work, the Contractor shall submit a detailed construction schedule, indicating specific tasks and completion dates for the Work Area(s) to be undertaken. The Contractor shall take into account that construction will be performed on an active airfield with ongoing aircraft operations.

The Contractor shall conduct the work in conformance with all regulations and permit conditions applicable to the project. If additional permits are required, or if the Contractor proposes to perform the work differently than the manner provided in the Permits, the Contractor shall obtain approval from the appropriate regulating entities prior to performing the work. The costs associated with obtaining and complying with permits required to perform the work will not be paid for directly, but will be considered incidental to the Contract pay items. See 001-7.1 WORK RESTRICTIONS below.

The Contractor shall be aware of the runway safety areas and other restricted work areas. Constant radio contact and monitoring of the UNICOM frequency shall be required during all phases of the project.

001-6.1 WORK AREA DESCRIPTION. The project has been divided into three (3) main work areas as shown on the construction phasing plans. The identification of work areas is not intended to indicate the sequence of work, but to allow definition of the restrictions on work in each area and/or sub-work area.

The intent of the construction phasing is to provide the least amount of disruptions to daily aviation activity and to maintain access to existing facilities throughout construction.

Work Area 1. Includes: The construction of Taxiway A from the Runway 35 end to existing Taxiway C. The construction of a reconfigured Taxiway B. The installation of a Supplemental Lighted Wind Cone. The construction of Pond 2, including the construction of the temporary haul route. Work in the Airfield Lighting Vault. The installation of new taxiway edge lights on existing Taxiways A, C, and D.

001-7.1 WORK RESTRICTIONS. The following restrictions shall apply to work on the project.

No work on holidays or Sundays.

Work day 6AM-6PM, except when night work is required as specified below.

No winter work (December 19, 2009 – March 28, 2010).

All work within 75 feet of the Runway 17-35 centerline must be performed between 9:00 PM and 6:00 AM local time with the runway closed. A cap on maximum number of runway night closures is 10 nights.

The runway must be reopened each day with the runway safety area regraded to drain readily and effectively with a maximum lip at the edge of runway pavement of 1 ½ inches and a maximum transverse slope of 5%. The condition of the work area shall be acceptable to the Engineer and the Owner prior to reopening the runway to aircraft operations.

Runway 5-23 will be closed for the duration of the project. The contractor shall place and maintain closed runway markers as shown on the plans or as directed by the engineer.

Placement of permanent bituminous pavement will be allowed only between May 1st and October 15th in accordance with the temperature and weather condition requirements of FAA Specification P-401 Plant Mix Bituminous Pavements.

The Contractor shall conduct the work in conformance with all regulations and permit conditions applicable to the project. If additional permits are required, or if the Contractor proposes to perform the work differently than the manner provided in the Permits, the Contractor shall obtain approval from the appropriate regulating entities prior to performing the work. The costs associated with obtaining and complying with permits required to perform the work will not be paid for directly, but will be considered incidental to the Contract pay items.

The Owner has obtained the following permits, approvals and agreements for the project.. The contractor must comply with all conditions set forth in these permits, approvals and agreements.

Traffic Mitigation Agreement between Vermont Agency of Transportation and Town of Berlin for Transportation Project Berlin Air 04-3216.
Construction General Permit 3-9020.
Vermont Conditional Use Determination Permit 401.
Corps of Engineers Permit 404.
Vermont Stormwater Discharge Permit 3-9015.
Act 250 Permit
FAA Airport Improvement Program Safety/Phasing Plan

001-7.1.1 WORK AREA 1.

Work Area 1 has been divided into seven (7) sub-work areas.

Work Area 1A Taxiway A (Sta 0+75 to Sta 21+61)

Prior to beginning work in Work Area 1A, the contractor shall: Place lighted barricades as shown on the plans or as directed by the Engineer. Mark the limits of the work, the limits of the runway safety area, the limits of the temporary construction haul routes, and natural resources. Construct the stabilized construction entrance.

The work in Work Area 1B and Work Area 1C require the contractor to maintain access through a portion of Work Area 1A.

Work Area 1B Taxiway A and Taxiway C

Prior to beginning work in Work Area 1B, the contractor shall: Place lighted barricades as shown on the plans or as directed by the Engineer. Mark the limits of the work, the limits of the runway safety area, the limits of the temporary construction haul routes, and natural resources.

The contractor shall maintain access to Aprons B and C at all times. The access to Apron C may be either from existing Taxiways A and B or from Apron B once the new Taxiway B is constructed.

Work Area 1C Taxiway B

Prior to beginning work in Work Area 1C, the contractor shall: Place lighted barricades as shown on the plans or as directed by the Engineer. Mark the limits of the work, the limits of the temporary construction haul routes, and natural resources.

The contractor shall maintain access to Aprons B and C at all times. The access to Apron C may be either from existing Taxiways A and B or from Apron B once the new Taxiway B is constructed.

Work Area 1D Install New Supplemental Wind Cone

Prior to beginning work in Work Area 1D, the contractor shall: Mark the limits of the work, the limits of the runway safety area, the limits of the temporary construction haul routes, and natural resources.

Directional bore and install duct under wetland.

Once the supplemental wind cone is operational, remove the existing wind cone and restore area to its original condition.

Work Area 1E Pond 2

Prior to beginning work in Work Area 1E, the contractor shall: Place Closed Runway Markers on Runway 5-23. Mark the limits of the work, the limits of the runway safety area, the limits of the temporary construction haul routes, and natural resources. Construct the stabilized construction entrance.

Work Area 1F Taxiway A (Sta 0+50 to Sta 0+75)

The contractor shall coordinate the schedule for working in Work Area 1F at least 2 weeks prior to the anticipated date.

All work within 75 feet of the Runway 17-35 centerline must be performed between 9:00 PM and 6:00 AM local time with the runway closed. The runway must be reopened each day with the runway safety area regraded to drain readily and effectively with a maximum lip at the edge of runway pavement of 1 ½ inches and a maximum transverse slope of 5%. The condition of the work area shall be acceptable to the Engineer and the Owner prior to reopening the runway to aircraft operations.

The Work in Work Areas 1G, 1H, 2B, and 2C also require night work and the closing of Runway 17-35. The contractor shall work simultaneously in as many of these areas as reasonable so as to minimize the number of nights the runway is closed.

Work Area 1G Taxiway B (Sta 0+00 to Sta 0+75)
Taxiway C (Sta 0+50 to Sta 0+75)
Taxiway D (Sta 0+50 to Sta 0+75)

The work at Taxiway B consists of pavement removal, paint removal, and topsoil and seeding.

The work at Taxiways C and D consists of removing the existing taxiway edge lights and signs and installing new taxiway edge lights and signs.

The contractor shall coordinate the schedule for working in Work Area 1G at least 2 weeks prior to the anticipated date.

All work within 75 feet of the Runway 17-35 centerline must be performed between 9:00 PM and 6:00 AM local time with the runway closed. The runway must be reopened each day with the runway safety area regraded to drain readily and effectively with a maximum lip at the edge of runway pavement of 1 ½ inches and a maximum transverse slope of 5%. The condition of the work area shall be acceptable to the Engineer and the Owner prior to reopening the runway to aircraft operations.

The Work in Work Areas 1F, 1H, 2B, and 2C also require night work and the closing of Runway 17-35. The contractor shall work simultaneously in as many of these areas as reasonable so as to minimize the number of nights the runway is closed.

Work Area 1H Runway 5-23 (Sta 149+90+/- to Sta 150+22+/-)

The contractor shall coordinate the schedule for working in Work Area 1H at least 2 weeks prior to the anticipated date.

All work within 75 feet of the Runway 17-35 centerline must be performed between 9:00 PM and 6:00 AM local time with the runway closed. The runway must be reopened each day with the runway safety area regraded to drain readily and effectively with a maximum lip at the edge of runway pavement of 1 ½ inches and a maximum transverse slope of 5%. The condition of the work area shall be acceptable to the Engineer and the Owner prior to reopening the runway to aircraft operations.

The Work in Work Areas 1F, 1G, 2B, and 2C also require night work and the closing of Runway 17-35. The contractor shall work simultaneously in as many of these areas as reasonable so as to minimize the number of nights the runway is closed.

SITE ACCESS

THE CONTRACTOR SHALL INSTALL TEMPORARY GATES AT ALL CONSTRUCTION ENTRANCES. GATES SHALL EITHER BE LOCKED OR MANNED AT ALL TIMES TO CONTROL ACCESS TO THE AIRPORT.

WORK AREA 1

0 200 400
SCALE

Hoyle, Tanner & Associates, Inc.
150 Dow Street
Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com
Hoyle Tanner & Associates © 2008

PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_safety.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 1

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 8 OF 173

CONSTRUCT SUPPLEMENTAL WIND CONE STA. 5+00.0 LT. 290.0' (TO BE REMOVED AFTER NEW WIND CONE IS IN PLACE) REFER TO ELECTRICAL DETAIL SHEET 4

REMOVE EXISTING WIND CONE

VT STATE PLANE GRID

LOCALIZER CRITICAL AREA

WORK AREA ID

TEMPORARY CONSTRUCTION HAUL ROUTE

RSA

LIGHTED BARRICADES (TYP.) SEE MARKING DETAILS SHT 2

FAA LOCALIZER ANTENNA

75'-0" SAFETY AREA

RUNWAY 17-35

WORK AREA IF

existing grassed lined treatment swale

WORK AREA IA

TOFA

PROPOSED TAXIWAY A

TEMPORARY CONSTRUCTION HAUL ROUTE

FAA LOCALIZER SHELTER

ACCESS ROAD

AIRPORT ROAD

PROPOSED STABILIZED CONSTRUCTION ENTRANCE

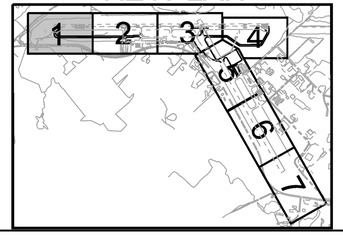
$ (PHASING I_2)

LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN CLEANOUT
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

0 50 100
SCALE

KEYPLAN



NOTE:

PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1-7.

WORK AREA 1 SAFETY PLAN SHEETS 5, 6 AND 7 NOT USED

WORK AREA 1

Hoyle, Tanner & Associates, Inc.

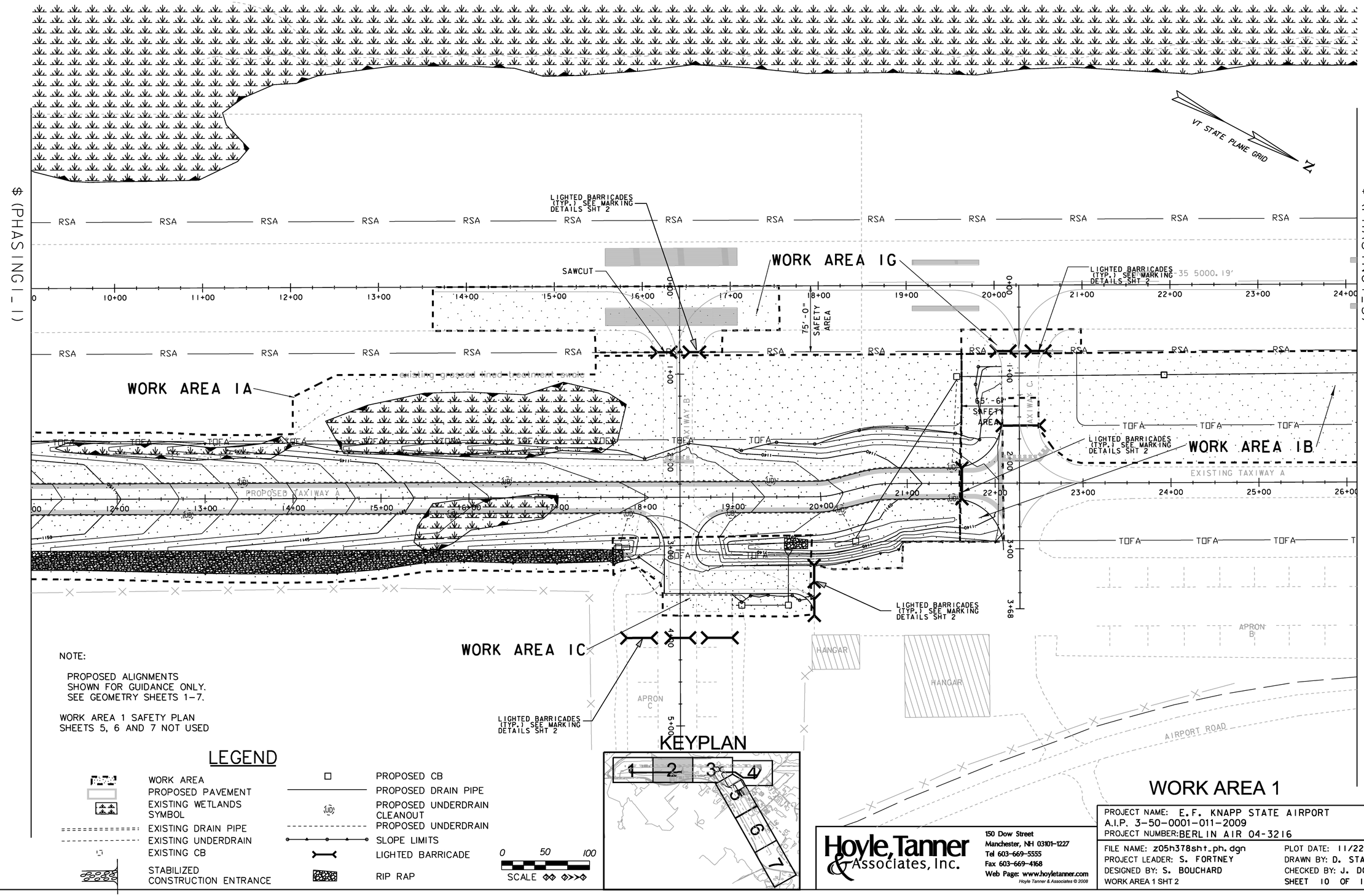
150 Dow Street
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Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_ph.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 1 SHT 1

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 9 OF 173



NOTE:

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WORK AREA 1 SAFETY PLAN SHEETS 5, 6 AND 7 NOT USED

LEGEND

- WORK AREA
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- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN CLEANOUT
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

SCALE 0 50 100

KEYPLAN

WORK AREA 1

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_ph.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 1 SHT 2

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

SEE BELOW

WORK AREA IE

VT STATE PLANE GRID

N

TEMPORARY CONSTRUCTION HAUL ROUTE

WORK AREA IH

WORK AREA IG

WORK AREA IB

RSA

TOFA

RUNWAY 17-35

TAXIWAY D

PROPOSED TAXIWAY E

PROPOSED TAXIWAY A

EXISTING TAXIWAY A

LIGHTED BARRICADES (TYP.) SEE MARKING DETAILS SHT 2

75'-0" SAFETY AREA

PAINT CLOSED RUNWAY MARKER SEE MARKING DETAILS SHT 2 FOR DETAILS

HANGAR

VEHICLE PARKING LOT

GARAGE

TERMINAL BLDG.

TERMINAL APRON

AIRPORT ROAD

$ (PHASING I - 2)

$ (PHASING I - 4)

WORK AREA 1E

SEE ABOVE

LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN CLEANOUT
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

NOTE:

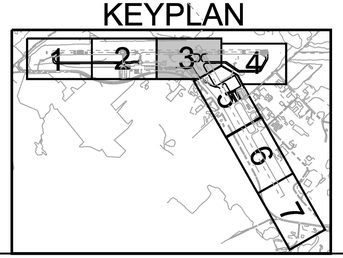
PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1-7.

WORK AREA 1 SAFETY PLAN SHEETS 5, 6 AND 7 NOT USED

0 50 100

SCALE

KEYPLAN



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FILE NAME: z05h378sht_ph.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 1 SHT 3

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 11 OF 173

WORK AREA 1E

TEMPORARY CONSTRUCTION HAUL ROUTE

VT STATE PLANE GRID

℄ (PHASING 1-3)

RSA

RUNWAY 17-35

40+00 41+00 42+00 43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00 51+00 52+00 53+00 54+00 55+00

55+65

75'-0" SAFETY AREA

TOFA

GLIDE SLOPE ANTENNA

0+00 0+22

ACCESS ROAD

PROPOSED TAXIWAY A

LIGHTED BARRICADES (TYP.) SEE MARKING DETAILS SHT 2

0+00 5+00

1+00 2+00 3+00 4+00 5+00 6+00 7+00 7+56

PROPOSED STABILIZED CONSTRUCTION ENTRANCE

REMOVE AND RESET FENCE PER VTRANS STANDARDS

FAA MALSR BLDG.

FAA ACCESS ROAD/GATE

COMSTOCK ROAD

LEGEND

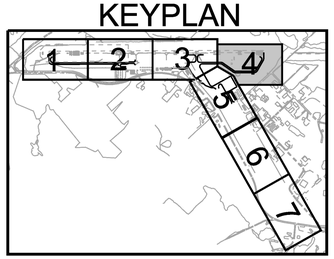
- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN CLEANOUT
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

NOTE:

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WORK AREA 1 SAFETY PLAN SHEETS 5, 6 AND 7 NOT USED

KEYPLAN



0 50 100

SCALE

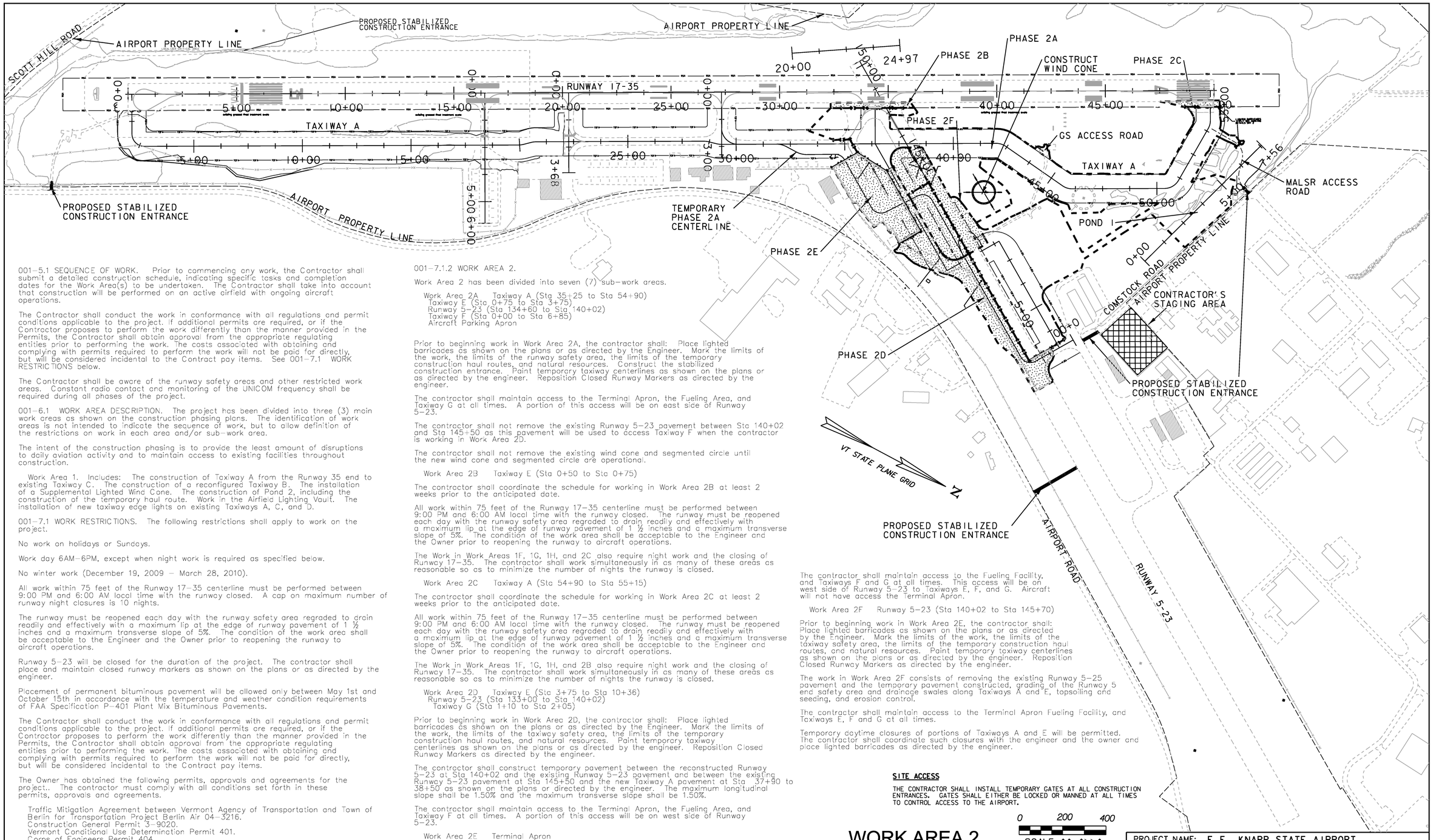
WORK AREA 1

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_ph.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 1 SHT 4

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR



001-5.1 SEQUENCE OF WORK. Prior to commencing any work, the Contractor shall submit a detailed construction schedule, indicating specific tasks and completion dates for the Work Area(s) to be undertaken. The Contractor shall take into account that construction will be performed on an active airfield with ongoing aircraft operations.

The Contractor shall conduct the work in conformance with all regulations and permit conditions applicable to the project. If additional permits are required, or if the Contractor proposes to perform the work differently than the manner provided in the Permits, the Contractor shall obtain approval from appropriate regulating entities prior to performing the work. The costs associated with obtaining and complying with permits required to perform the work will not be paid for directly, but will be considered incidental to the Contract pay items. See 001-7.1 WORK RESTRICTIONS below.

The Contractor shall be aware of the runway safety areas and other restricted work areas. Constant radio contact and monitoring of the UNICOM frequency shall be required during all phases of the project.

001-6.1 WORK AREA DESCRIPTION. The project has been divided into three (3) main work areas as shown on the construction phasing plans. The identification of work areas is not intended to indicate the sequence of work, but to allow definition of the restrictions on work in each area and/or sub-work area.

The intent of the construction phasing is to provide the least amount of disruptions to daily aviation activity and to maintain access to existing facilities throughout construction.

Work Area 1. Includes: The construction of Taxiway A from the Runway 35 end to existing Taxiway C. The construction of a reconfigured Taxiway B. The installation of a Supplemental Lighted Wind Cone. The construction of Pond 2, including the construction of the temporary haul route. Work in the Airfield Lighting Vault. The installation of new taxiway edge lights on existing Taxiways A, C, and D.

001-7.1 WORK RESTRICTIONS. The following restrictions shall apply to work on the project.

No work on holidays or Sundays.

Work day 6AM-6PM, except when night work is required as specified below.

No winter work (December 19, 2009 – March 28, 2010).

All work within 75 feet of the Runway 17-35 centerline must be performed between 9:00 PM and 6:00 AM local time with the runway closed. A cap on maximum number of runway night closures is 10 nights.

The runway must be reopened each day with the runway safety area regraded to drain readily and effectively with a maximum lip at the edge of runway pavement of 1 ½ inches and a maximum transverse slope of 5%. The condition of the work area shall be acceptable to the Engineer and the Owner prior to reopening the runway to aircraft operations.

Runway 5-23 will be closed for the duration of the project. The contractor shall place and maintain closed runway markers as shown on the plans or as directed by the engineer.

Placement of permanent bituminous pavement will be allowed only between May 1st and October 15th in accordance with the temperature and weather condition requirements of FAA Specification P-401 Plant Mix Bituminous Pavements.

The Contractor shall conduct the work in conformance with all regulations and permit conditions applicable to the project. If additional permits are required, or if the Contractor proposes to perform the work differently than the manner provided in the Permits, the Contractor shall obtain approval from the appropriate regulating entities prior to performing the work. The costs associated with obtaining and complying with permits required to perform the work will not be paid for directly, but will be considered incidental to the Contract pay items.

The Owner has obtained the following permits, approvals and agreements for the project.. The contractor must comply with all conditions set forth in these permits, approvals and agreements.

Traffic Mitigation Agreement between Vermont Agency of Transportation and Town of Berlin for Transportation Project Berlin Air 04-3216.
Construction General Permit 3-9020.
Vermont Conditional Use Determination Permit 401.
Corps of Engineers Permit 404.
Vermont Stormwater Discharge Permit 3-9015.
Act 250 Permit
FAA Airport Improvement Program Safety/Phasing Plan

001-7.1.2 WORK AREA 2.

Work Area 2 has been divided into seven (7) sub-work areas.

Work Area 2A Taxiway A (Sta 35+25 to Sta 54+90)
Taxiway E (Sta 0+75 to Sta 3+75)
Runway 5-23 (Sta 134+60 to Sta 140+02)
Taxiway F (Sta 0+00 to Sta 6+85)
Aircraft Parking Apron

Prior to beginning work in Work Area 2A, the contractor shall: Place lighted barricades as shown on the plans or as directed by the Engineer. Mark the limits of the work, the limits of the runway safety area, the limits of the temporary construction haul routes, and natural resources. Construct the stabilized construction entrance. Paint temporary taxiway centerlines as shown on the plans or as directed by the engineer. Reposition Closed Runway Markers as directed by the engineer.

The contractor shall maintain access to the Terminal Apron, the Fueling Area, and Taxiway G at all times. A portion of this access will be on east side of Runway 5-23.

The contractor shall not remove the existing Runway 5-23 pavement between Sta 140+02 and Sta 145+50 as this pavement will be used to access Taxiway F when the contractor is working in Work Area 2D.

The contractor shall not remove the existing wind cone and segmented circle until the new wind cone and segmented circle are operational.

Work Area 2B Taxiway E (Sta 0+50 to Sta 0+75)

The contractor shall coordinate the schedule for working in Work Area 2B at least 2 weeks prior to the anticipated date.

All work within 75 feet of the Runway 17-35 centerline must be performed between 9:00 PM and 6:00 AM local time with the runway closed. The runway must be reopened each day with the runway safety area regraded to drain readily and effectively with a maximum lip at the edge of runway pavement of 1 ½ inches and a maximum transverse slope of 5%. The condition of the work area shall be acceptable to the Engineer and the Owner prior to reopening the runway to aircraft operations.

The Work in Work Areas 1F, 1G, 1H, and 2C also require night work and the closing of Runway 17-35. The contractor shall work simultaneously in as many of these areas as reasonable so as to minimize the number of nights the runway is closed.

Work Area 2C Taxiway A (Sta 54+90 to Sta 55+15)

The contractor shall coordinate the schedule for working in Work Area 2C at least 2 weeks prior to the anticipated date.

All work within 75 feet of the Runway 17-35 centerline must be performed between 9:00 PM and 6:00 AM local time with the runway closed. The runway must be reopened each day with the runway safety area regraded to drain readily and effectively with a maximum lip at the edge of runway pavement of 1 ½ inches and a maximum transverse slope of 5%. The condition of the work area shall be acceptable to the Engineer and the Owner prior to reopening the runway to aircraft operations.

The Work in Work Areas 1F, 1G, 1H, and 2B also require night work and the closing of Runway 17-35. The contractor shall work simultaneously in as many of these areas as reasonable so as to minimize the number of nights the runway is closed.

Work Area 2D Taxiway E (Sta 3+75 to Sta 10+36)
Runway 5-23 (Sta 133+00 to Sta 140+02)
Taxiway G (Sta 1+10 to Sta 2+05)

Prior to beginning work in Work Area 2D, the contractor shall: Place lighted barricades as shown on the plans or as directed by the Engineer. Mark the limits of the work, the limits of the taxiway safety area, the limits of the temporary construction haul routes, and natural resources. Paint temporary taxiway centerlines as shown on the plans or as directed by the engineer. Reposition Closed Runway Markers as directed by the engineer.

The contractor shall construct temporary pavement between the reconstructed Runway 5-23 at Sta 140+02 and the existing Runway 5-23 pavement and between the existing Runway 5-23 pavement at Sta 145+50 and the new Taxiway A pavement at Sta 37+90 to 38+50 as shown on the plans or directed by the engineer. The maximum longitudinal slope shall be 1.50% and the maximum transverse slope shall be 1.50%.

The contractor shall maintain access to the Terminal Apron, the Fueling Area, and Taxiway F at all times. A portion of this access will be on west side of Runway 5-23.

Work Area 2E Terminal Apron

Prior to beginning work in Work Area 2E, the contractor shall: Place lighted barricades as shown on the plans or as directed by the Engineer. Mark the limits of the work, the limits of the taxiway safety area, the limits of the temporary construction haul routes, and natural resources. Paint temporary taxiway centerlines as shown on the plans or as directed by the engineer. Reposition Closed Runway Markers as directed by the engineer.

The contractor shall maintain access to the Fueling Facility, and Taxiways F and G at all times. This access will be on west side of Runway 5-23 to Taxiways E, F, and G. Aircraft will not have access the Terminal Apron.

Work Area 2F Runway 5-23 (Sta 140+02 to Sta 145+70)

Prior to beginning work in Work Area 2E, the contractor shall: Place lighted barricades as shown on the plans or as directed by the Engineer. Mark the limits of the work, the limits of the taxiway safety area, the limits of the temporary construction haul routes, and natural resources. Paint temporary taxiway centerlines as shown on the plans or as directed by the engineer. Reposition Closed Runway Markers as directed by the engineer.

The work in Work Area 2F consists of removing the existing Runway 5-25 pavement and the temporary pavement constructed, grading of the Runway 5 end safety area and drainage swales along Taxiways A and E, topsoiling and seeding, and erosion control.

The contractor shall maintain access to the Terminal Apron Fueling Facility, and Taxiways E, F and G at all times.

Temporary daytime closures of portions of Taxiways A and E will be permitted. The contractor shall coordinate such closures with the engineer and the owner and place lighted barricades as directed by the engineer.

SITE ACCESS

THE CONTRACTOR SHALL INSTALL TEMPORARY GATES AT ALL CONSTRUCTION ENTRANCES. GATES SHALL EITHER BE LOCKED OR MANNED AT ALL TIMES TO CONTROL ACCESS TO THE AIRPORT.

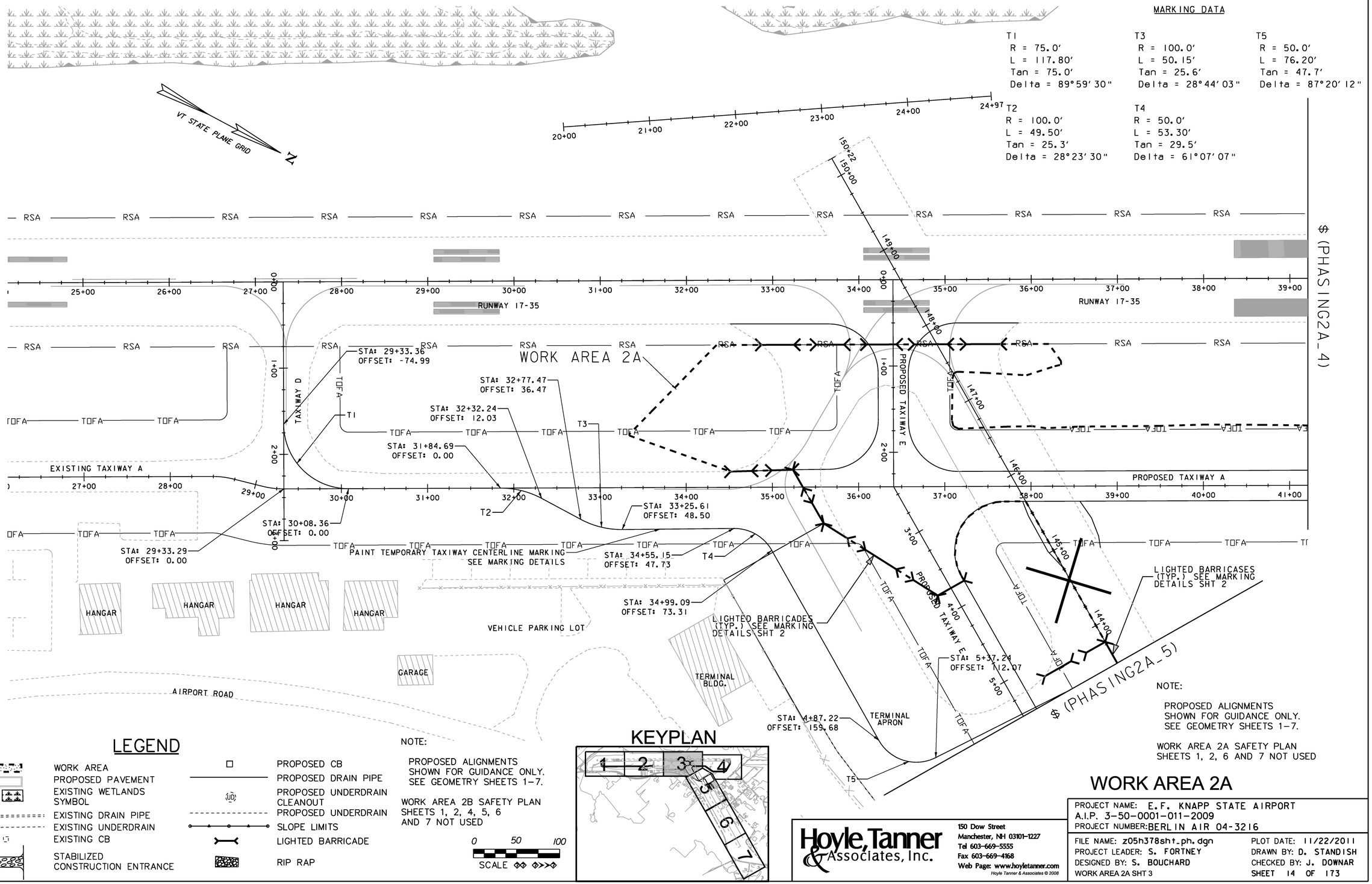
0 200 400
SCALE

WORK AREA 2

Hoyle, Tanner & Associates, Inc.
150 Dow Street
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A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_safety.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 2
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 13 OF 173


MARKING DATA
T1
R = 75.0'
L = 117.80'
Tan = 75.0'
Delta = 89°59'30"
T2
R = 100.0'
L = 49.50'
Tan = 25.3'
Delta = 28°23'30"
T3
R = 100.0'
L = 50.15'
Tan = 25.6'
Delta = 28°44'03"
T4
R = 50.0'
L = 53.30'
Tan = 29.5'
Delta = 61°07'07"
T5
R = 50.0'
L = 76.20'
Tan = 47.7'
Delta = 87°20'12"
VT STATE PLANE GRID
N
RUNWAY 17-35
WORK AREA 2A
TAXIWAY D
PROPOSED TAXIWAY E
EXISTING TAXIWAY A
PROPOSED TAXIWAY A
RSA
TOFA
STA: 29+33.36
OFFSET: -74.99
STA: 32+77.47
OFFSET: 36.47
STA: 32+32.24
OFFSET: 12.03
STA: 31+84.69
OFFSET: 0.00
STA: 30+08.36
OFFSET: 0.00
STA: 29+33.29
OFFSET: 0.00
STA: 33+25.61
OFFSET: 48.50
STA: 34+55.15
OFFSET: 47.73
STA: 34+99.09
OFFSET: 73.31
STA: 5+37.24
OFFSET: 112.07
STA: 4+87.22
OFFSET: 159.68
PAINT TEMPORARY TAXIWAY CENTERLINE MARKING
SEE MARKING DETAILS
LIGHTED BARRICADES (TYP.) SEE MARKING DETAILS SHT 2
HANGAR
VEHICLE PARKING LOT
GARAGE
TERMINAL BLDG.
TERMINAL APRON
AIRPORT ROAD
& (PHASING2A_4)
& (PHASING2A_5)
NOTE:
PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1-7.
WORK AREA 2B SAFETY PLAN SHEETS 1, 2, 4, 5, 6 AND 7 NOT USED
NOTE:
PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1-7.
WORK AREA 2A SAFETY PLAN SHEETS 1, 2, 6 AND 7 NOT USED
LEGEND
WORK AREA
PROPOSED PAVEMENT
EXISTING WETLANDS SYMBOL
EXISTING DRAIN PIPE
EXISTING UNDERDRAIN
EXISTING CB
STABILIZED CONSTRUCTION ENTRANCE
PROPOSED CB
PROPOSED DRAIN PIPE
PROPOSED UNDERDRAIN CLEANOUT
PROPOSED UNDERDRAIN
SLOPE LIMITS
LIGHTED BARRICADE
RIP RAP
0 50 100
SCALE
KEYPLAN
1 2 3 4 5 6 7
WORK AREA 2A
Hoyle, Tanner & Associates, Inc.
150 Dow Street
Manchester, NH 03101-1227
Tel 603-669-5555
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FILE NAME: z05h378sht_ph.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 2A SHT 3
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 14 OF 173

VT STATE PLANE GRID

N

RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA

℄ (PHASING2A_3)

40+00 41+00 42+00 43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00 50+65

RUNWAY 17-35

RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA

existing grassed lined treatment swale

LIGHTED BARRICADES (TYP.) SEE MARKING DETAILS SHT 2

GLIDE SLOPE ANTENNA

TOFA

WORK AREA 2A

PROPOSED TAXIWAY A

ACCESS ROAD

PROPOSED STABILIZED CONSTRUCTION ENTRANCE

FAA MALSR BLDG.

FAA ACCESS ROAD/GATE

COMSTOCK ROAD

℄ (PHASING2A_5)

LEGEND

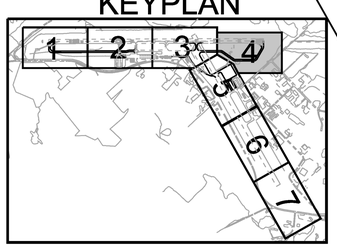
- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN CLEANOUT
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

NOTE:

PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1-7.

WORK AREA 2A SAFETY PLAN SHEETS 1, 2, 6 AND 7 NOT USED

KEYPLAN



0 50 100

SCALE

WORK AREA 2A

Hoyle, Tanner & Associates, Inc.
150 Dow Street
Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com
Hoyle Tanner & Associates © 2008

PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_ph.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 2A SHT 4

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 15 OF 173

MARKING DATA

T6
R = 50.0'
L = 76.15'
Tan = 47.7'
Delta = 87°15'25"

T7
R = 50.0'
L = 78.50'
Tan = 50.0'
Delta = 90°00'00"

℄ (PHASING2A-4)

WORK AREA 2A

ACCESS ROAD

COMSTOCK ROAD

VT STATE PLANE GRID

PROPOSED STABILIZED CONSTRUCTION ENTRANCE

REDESIGNATED TAXIWAY H

PROPOSED TAXIWAY F

PROPOSED TAXIWAY G

RUNWAY 5-23

STA: 143+00.56
OFFSET: -25.00

STA: 143+50.51
OFFSET: 79.08

STA: 134+20.52
OFFSET: 25.00

STA: 134+70.52
OFFSET: -25.00

LIGHTED BARRICADES (TYP.) SEE MARKING DETAILS SHT 2

PAINT TEMPORARY TAXIWAY CENTERLINE MARKING SEE MARKING DETAILS

PROPOSED STABILIZED CONSTRUCTION ENTRANCE

FUEL FACILITY

AIRPORT ROAD

℄ (PHASING2A-3)

LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN CLEANOUT
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

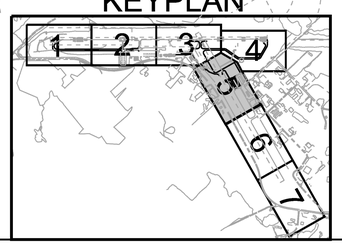
NOTE:

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WORK AREA 2A SAFETY PLAN SHEETS 1, 2, 6 AND 7 NOT USED

0 50 100
SCALE

KEYPLAN



WORK AREA 2A

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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_ph.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 2A SHT 5

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 16 OF 173

VT STATE PLANE GRID

N

20+00 21+00 22+00 23+00 24+00 24+97

RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA

25+00 26+00 27+00 0+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 0+00 35+00 36+00 37+00 38+00 39+00

RUNWAY 17-35

RUNWAY 17-35

WORK AREA 2B

LIGHTED BARRICADES (TYP.) SEE MARKING DETAILS SHT 2

TAXIWAY D

PROPOSED TAXIWAY E

TOFA

1+00

2+00

3+00

4+00

5+00

EXISTING TAXIWAY A

27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00

PROPOSED TAXIWAY A

TEMPORARY TAXIWAY CENTERLINE MARKING (CONSTRUCTED IN WORK AREA 2A)

HANGAR HANGAR HANGAR HANGAR

VEHICLE PARKING LOT

GARAGE

TERMINAL BLDG.

TERMINAL APRON

AIRPORT ROAD

150+22 150+00 149+00 148+00 147+00 146+00 145+00 144+00

LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN CLEANOUT
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

NOTE:

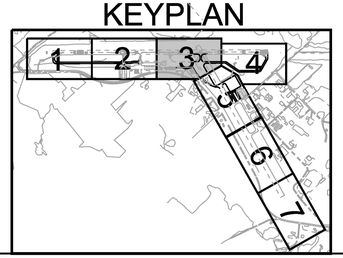
PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1–7.

WORK AREA 2B SAFETY PLAN SHEETS 1, 2, 4, 5, 6 AND 7 NOT USED

0 50 100

SCALE

KEYPLAN



WORK AREA 2B

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150 Dow Street
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A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_ph.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 2B SHT 3

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 17 OF 173

VT STATE PLANE GRID

N

RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA

40+00 41+00 42+00 43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00 50+65

RUNWAY 17-35

RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA

existing grassed lined treatment swale

WORK AREA 2C

LIGHTED BARRICADES (TYP.) - SEE MARKING DETAILS SHT 2

55+00 54+00 53+00 52+00 51+00

0+00 1+00 2+00 3+00 4+00 5+00

TOFA

GLIDE SLOPE ANTENNA

1+00 1+22

42+00 43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00

0+00

PROPOSED TAXIWAY A

ACCESS ROAD

PROPOSED STABILIZED CONSTRUCTION ENTRANCE

7+56 7+00 6+00

FAA MALSR BLDG.

FAA ACCESS ROAD/GATE

COMSTOCK ROAD

LEGEND

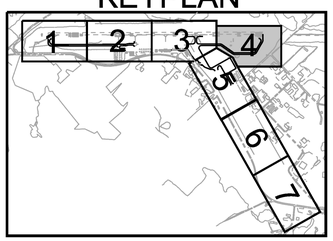
- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN CLEANOUT
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

NOTE:

PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1–7.

WORK AREA 2C SAFETY PLAN
SHEETS 1, 2, 3, 5, 6 AND 7 NOT USED

KEYPLAN



0 50 100

SCALE

WORK AREA 2C

Hoyle, Tanner & Associates, Inc.
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_ph.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 2C SHT 4

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 18 OF 173

MARKING DATA

T8
R = 100.0'
L = 105.94'
Tan = 58.5'
Delta = 60°41'47"

VT STATE PLANE GRID

N

20+00 21+00 22+00 23+00 24+00 24+97

RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA

25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00

RUNWAY 17-35

RUNWAY 17-35

0+00 1+00 2+00 3+00

TAXIWAY D

PROPOSED TAXIWAY E

150+22 150+00 149+00 148+00 147+00 146+00 145+00 144+00

TOFA

TEMPORARY TAXIWAY CENTERLINE MARKING
(CONSTRUCTED IN WORK AREA 2A)

STA: 146+00.09
OFFSET: -26.06

PAINT TEMPORARY TAXIWAY
CENTERLINE MARKING
SEE MARKING DETAILS

T8

STA: 145+12.89
OFFSET: 25.00

EXISTING TAXIWAY A

PROPOSED TAXIWAY A

27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00

HANGAR HANGAR HANGAR HANGAR

VEHICLE PARKING LOT

GARAGE

AIRPORT ROAD

LIGHTED BARRICADES
(TYP.) SEE MARKING
DETAILS SHT 2

PROPOSED TAXIWAY E

4+00 5+00

WORK AREA 2D

TERMINAL
BLDG.

TERMINAL
APRON

STA: 4+87.22
OFFSET: 159.68

REMOVE TEMPORARY TAXIWAY CENTERLINE MARKING
BETWEEN STATIONS

℄ (PHASING2D_5)

NOTE:

PROPOSED ALIGNMENTS
SHOWN FOR GUIDANCE ONLY.
SEE GEOMETRY SHEETS 1-7.

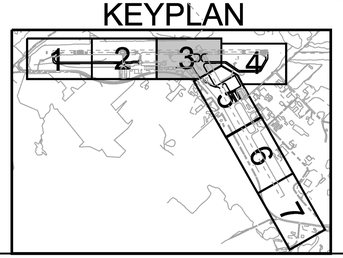
WORK AREA 2D SAFETY PLAN
SHEETS 1, 2, 4, 6 AND 7

LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN CLEANOUT
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

0 50 100
SCALE

KEYPLAN



WORK AREA 2D

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Manchester, NH 03101-1227
Tel 603-669-5555
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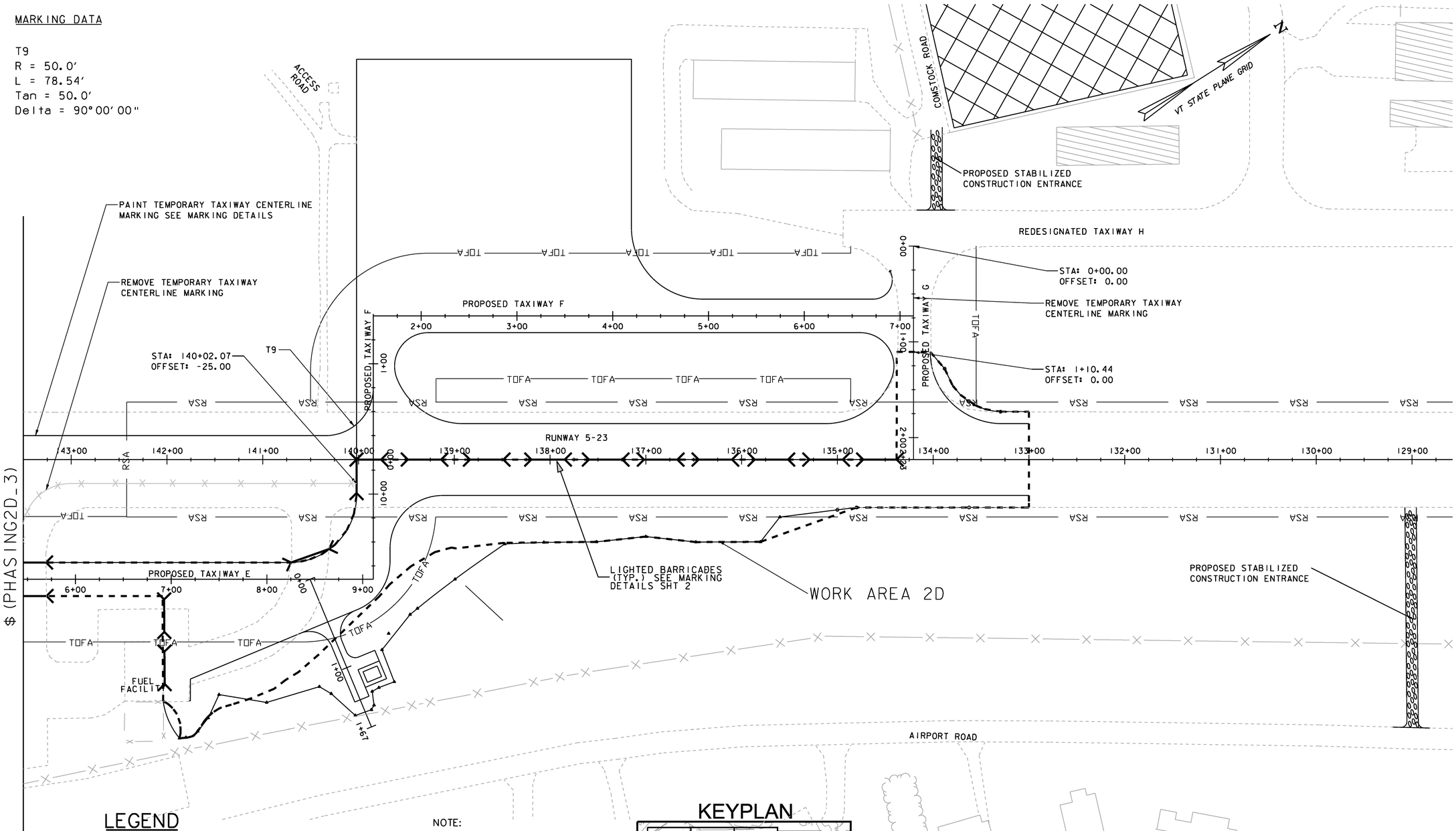
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_ph.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 2D SHT 3

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 19 OF 173

MARKING DATA

T9
R = 50.0'
L = 78.54'
Tan = 50.0'
Delta = 90°00'00"



LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN CLEANOUT
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

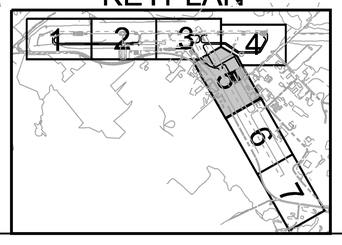
NOTE:

PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1–7.

WORK AREA 2E SAFETY PLAN SHEETS 1, 2, 4, 6 AND 7 NOT USED

0 50 100
SCALE

KEYPLAN



WORK AREA 2D

Hoyle, Tanner & Associates, Inc.
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Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_ph.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 2D SHT 5

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 20 OF 173

VT STATE PLANE GRID

N

20+00 21+00 22+00 23+00 24+00 24+97

RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA

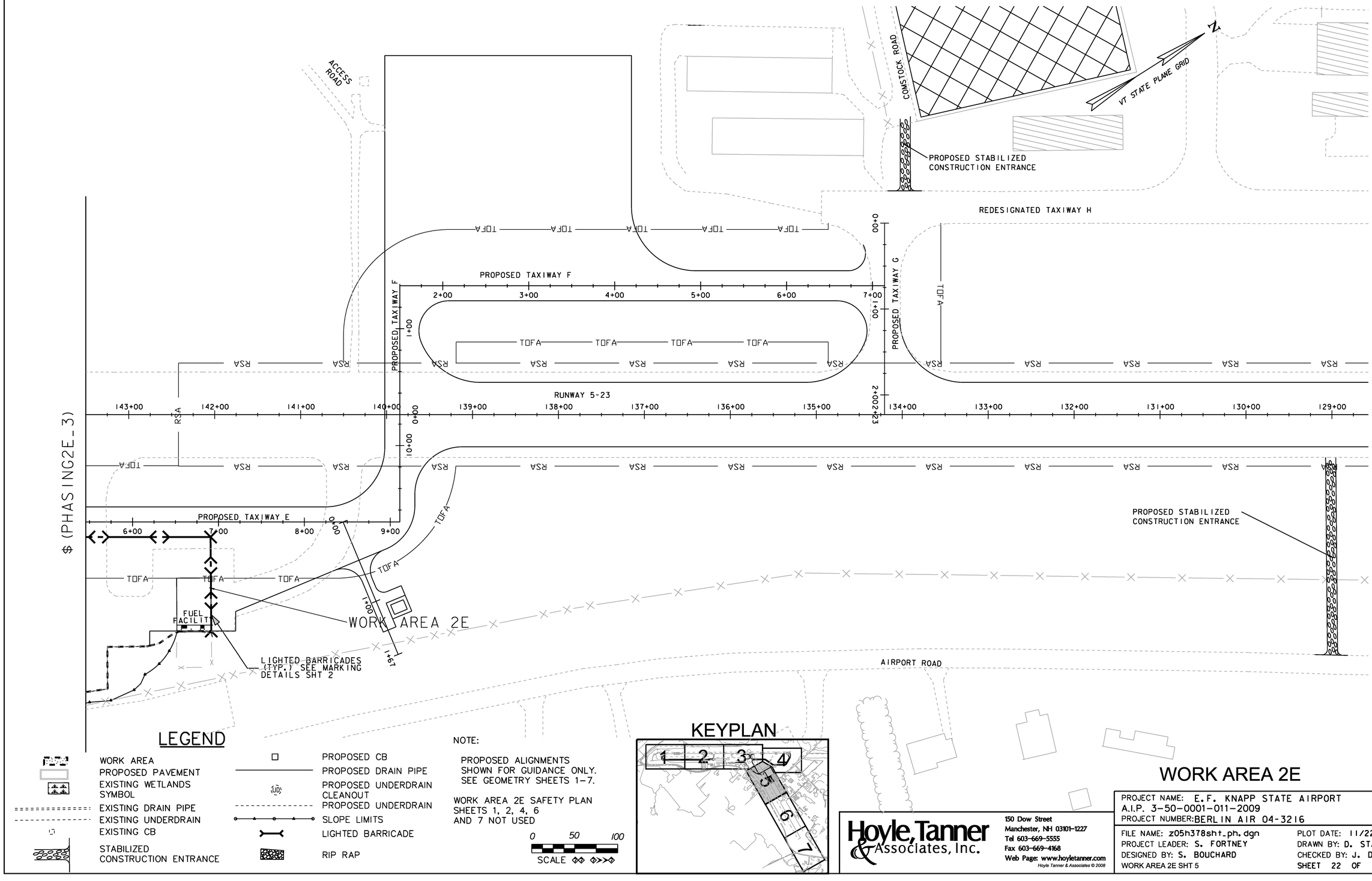
25+00 26+00 27+00 0+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 0+00 35+00 36+00 37+00 38+00 39+00

RUNWAY 17-35

RUNWAY 17-35

150+22 150+00 149+00 148+00 147+00 146+00 145+00 144+00

TOFA TOFA TOFA



$ (PHASING2E_3)

LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN CLEANOUT
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

NOTE:

PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1–7.

WORK AREA 2E SAFETY PLAN SHEETS 1, 2, 4, 6 AND 7 NOT USED

0 50 100
SCALE

KEYPLAN

WORK AREA 2E

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Manchester, NH 03101-1227
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_ph.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 2E SHT 5

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

VT STATE PLANE GRID

N

20+00 21+00 22+00 23+00 24+00 24+97

RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA RSA

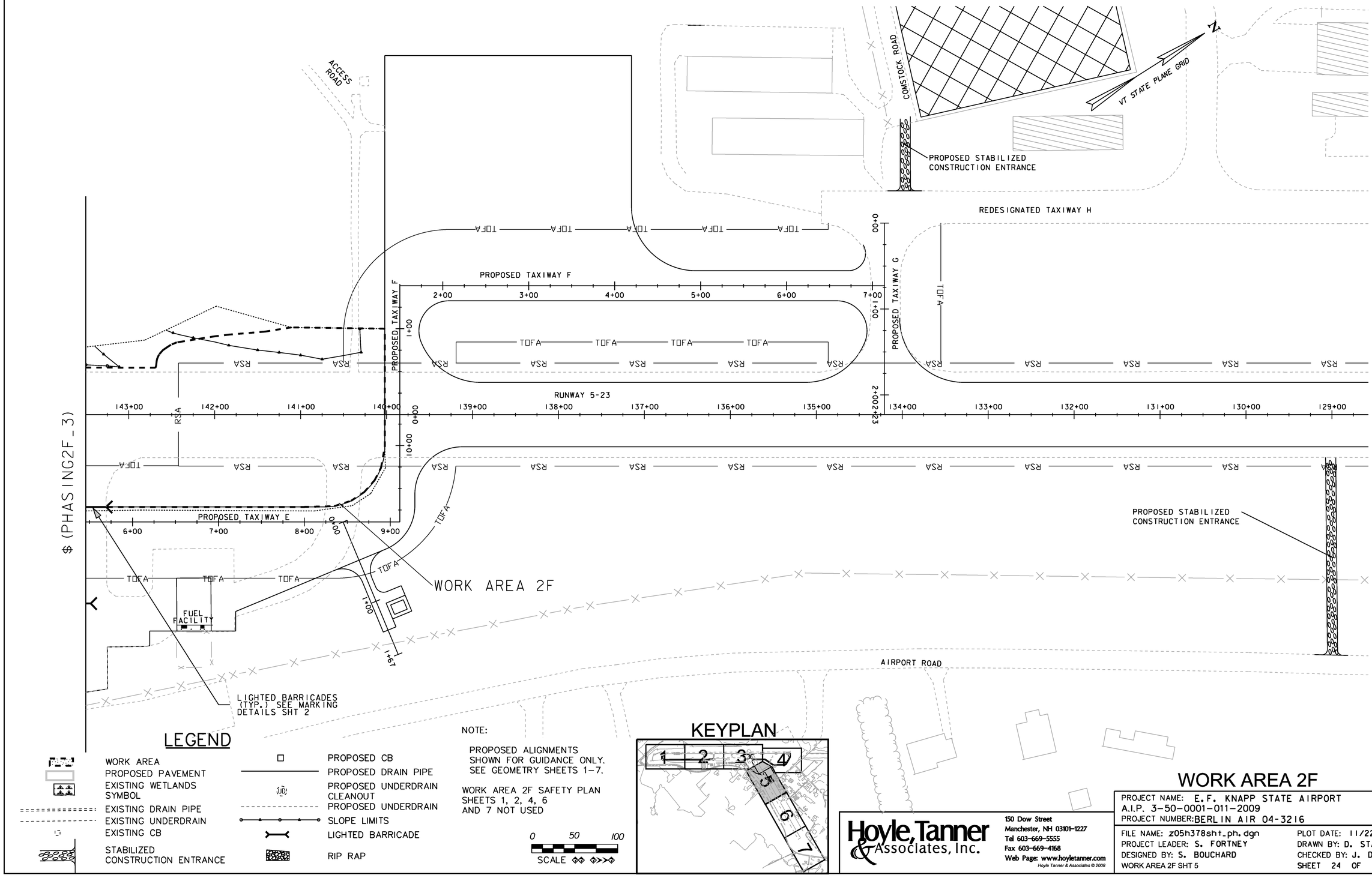
25+00 26+00 27+00 0+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 0+00 35+00 36+00 37+00 38+00 39+00

RUNWAY 17-35

RUNWAY 17-35

150+22 150+00 149+00 148+00 147+00 146+00

TOFA TOFA TOFA



LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN CLEANOUT
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

NOTE:

PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1–7.

WORK AREA 2F SAFETY PLAN SHEETS 1, 2, 4, 6 AND 7 NOT USED

0 50 100
SCALE

KEYPLAN

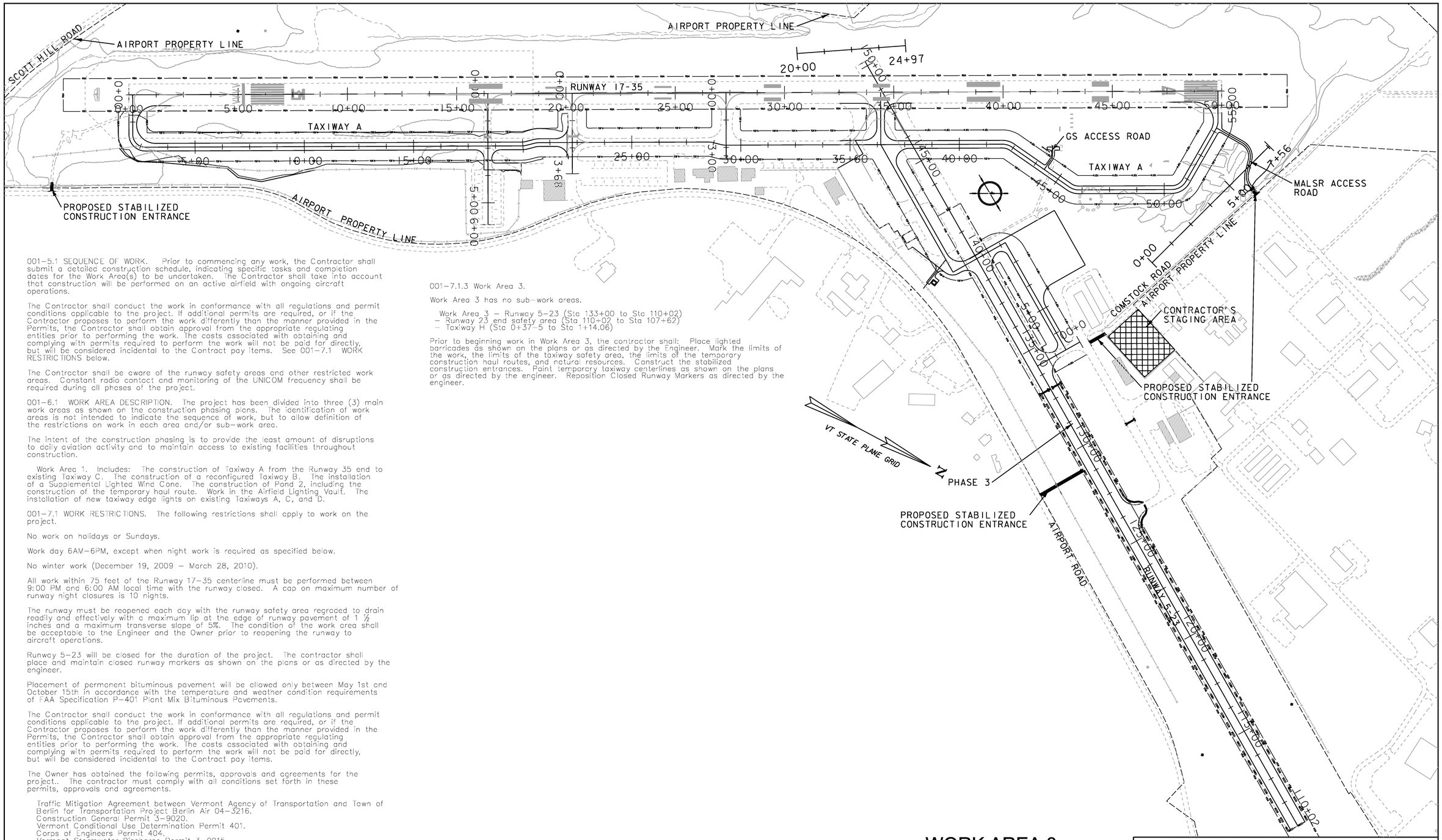
WORK AREA 2F

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Tel 603-669-5555
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PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 2F SHT 5

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR



001–5.1 SEQUENCE OF WORK. Prior to commencing any work, the Contractor shall submit a detailed construction schedule, indicating specific tasks and completion dates for the Work Area(s) to be undertaken. The Contractor shall take into account that construction will be performed on an active airfield with ongoing aircraft operations.

The Contractor shall conduct the work in conformance with all regulations and permit conditions applicable to the project. If additional permits are required, or if the Contractor proposes to perform the work differently than the manner provided in the Permits, the Contractor shall obtain approval from the appropriate regulating entities prior to performing the work. The costs associated with obtaining and complying with permits required to perform the work will not be paid for directly, but will be considered incidental to the Contract pay items. See 001–7.1 WORK RESTRICTIONS below.

The Contractor shall be aware of the runway safety areas and other restricted work areas. Constant radio contact and monitoring of the UNICOM frequency shall be required during all phases of the project.

001–6.1 WORK AREA DESCRIPTION. The project has been divided into three (3) main work areas as shown on the construction phasing plans. The identification of work areas is not intended to indicate the sequence of work, but to allow definition of the restrictions on work in each area and/or sub–work area.

The intent of the construction phasing is to provide the least amount of disruptions to daily aviation activity and to maintain access to existing facilities throughout construction.

Work Area 1. Includes: The construction of Taxiway A from the Runway 35 end to existing Taxiway C. The construction of a reconfigured Taxiway B. The installation of a Supplemental Lighted Wind Cone. The construction of Pond 2, including the construction of the temporary haul route. Work in the Airfield Lighting Vault. The installation of new taxiway edge lights on existing Taxiways A, C, and D.

001–7.1 WORK RESTRICTIONS. The following restrictions shall apply to work on the project.

No work on holidays or Sundays.

Work day 6AM–6PM, except when night work is required as specified below.

No winter work (December 19, 2009 – March 28, 2010).

All work within 75 feet of the Runway 17–35 centerline must be performed between 9:00 PM and 6:00 AM local time with the runway closed. A cap on maximum number of runway night closures is 10 nights.

The runway must be reopened each day with the runway safety area regraded to drain readily and effectively with a maximum lip at the edge of runway pavement of 1 ½ inches and a maximum transverse slope of 5%. The condition of the work area shall be acceptable to the Engineer and the Owner prior to reopening the runway to aircraft operations.

Runway 5–23 will be closed for the duration of the project. The contractor shall place and maintain closed runway markers as shown on the plans or as directed by the engineer.

Placement of permanent bituminous pavement will be allowed only between May 1st and October 15th in accordance with the temperature and weather condition requirements of FAA Specification P–401 Plant Mix Bituminous Pavements.

The Contractor shall conduct the work in conformance with all regulations and permit conditions applicable to the project. If additional permits are required, or if the Contractor proposes to perform the work differently than the manner provided in the Permits, the Contractor shall obtain approval from the appropriate regulating entities prior to performing the work. The costs associated with obtaining and complying with permits required to perform the work will not be paid for directly, but will be considered incidental to the Contract pay items.

The Owner has obtained the following permits, approvals and agreements for the project.. The contractor must comply with all conditions set forth in these permits, approvals and agreements.

Traffic Mitigation Agreement between Vermont Agency of Transportation and Town of Berlin for Transportation Project Berlin Air 04–3216.
Construction General Permit 3–9020.
Vermont Conditional Use Determination Permit 401.
Corps of Engineers Permit 404.
Vermont Stormwater Discharge Permit 3–9015.
Act 250 Permit
FAA Airport Improvement Program Safety/Phasing Plan

001–7.1.3 Work Area 3.

Work Area 3 has no sub–work areas.

Work Area 3 – Runway 5–23 (Sta 133+00 to Sta 110+02)
– Runway 23 end safety area (Sta 110+02 to Sta 107+62)
– Taxiway H (Sta 0+37–5 to Sta 1+14.06)

Prior to beginning work in Work Area 3, the contractor shall: Place lighted barricades as shown on the plans or as directed by the Engineer. Mark the limits of the work, the limits of the taxiway safety area, the limits of the temporary construction haul routes, and natural resources. Construct the stabilized construction entrances. Paint temporary taxiway centerlines as shown on the plans or as directed by the engineer. Reposition Closed Runway Markers as directed by the engineer.

0 200 400
SCALE

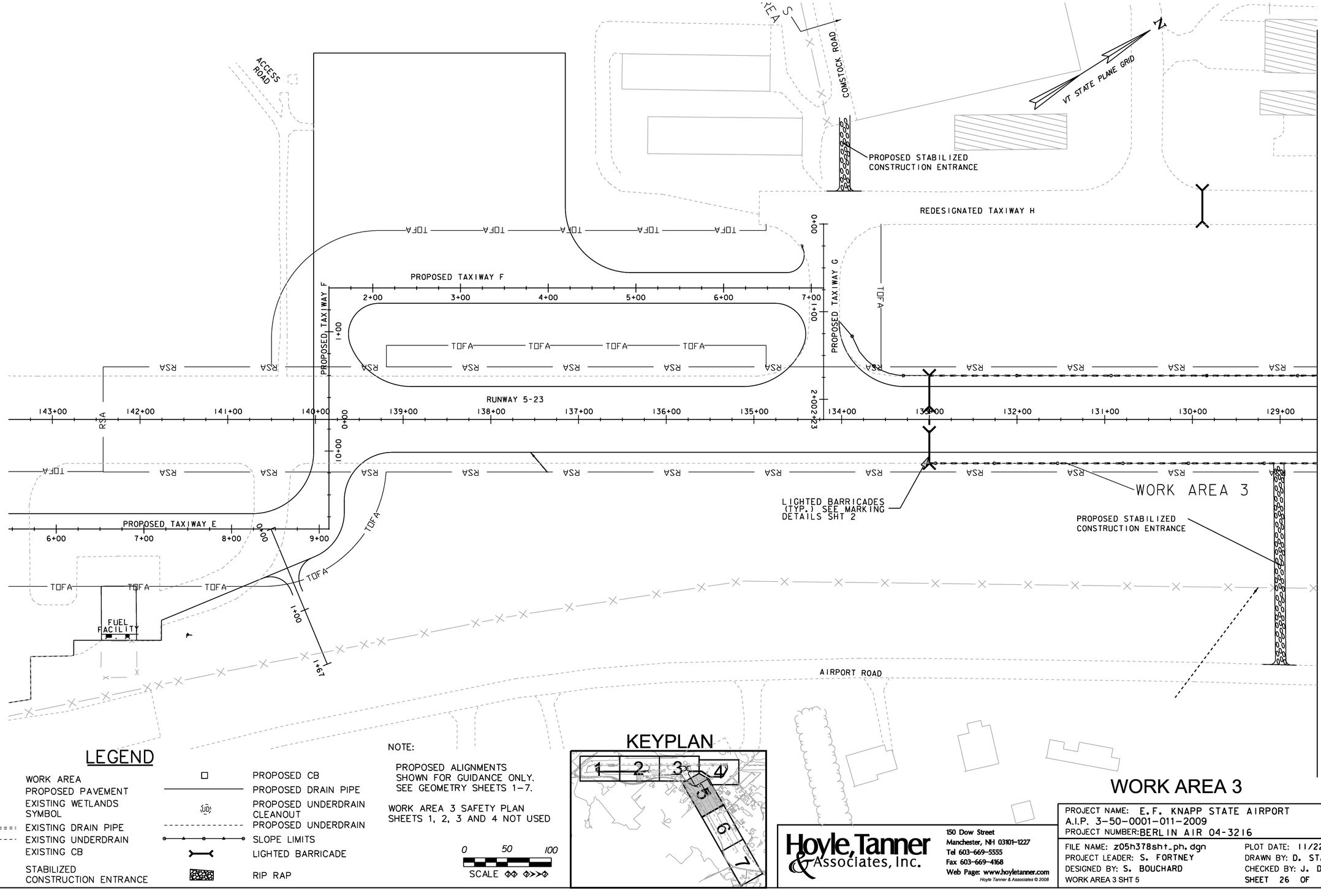
WORK AREA 3

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150 Dow Street
Manchester, NH 03101–1227
Tel 603–669–5555
Fax 603–669–4168
Web Page: www.hoyletanner.com
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FILE NAME: z05h378sht_safety.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 3

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 25 OF 173



LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN CLEANOUT
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

NOTE:

PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1–7.

WORK AREA 3 SAFETY PLAN SHEETS 1, 2, 3 AND 4 NOT USED

0 50 100
SCALE

KEYPLAN

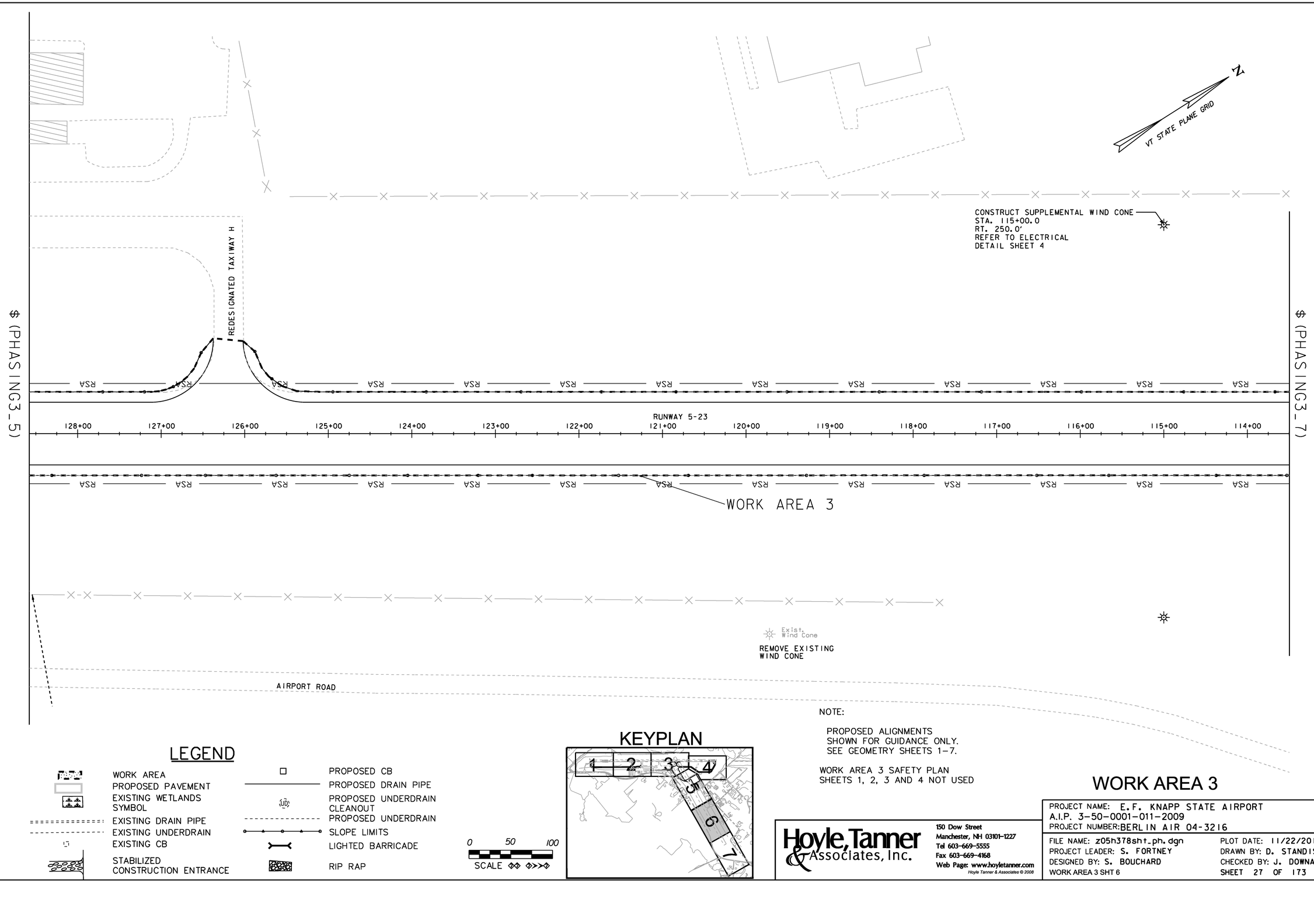
WORK AREA 3

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150 Dow Street
Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_ph.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 3 SHT 5

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 26 OF 173



LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
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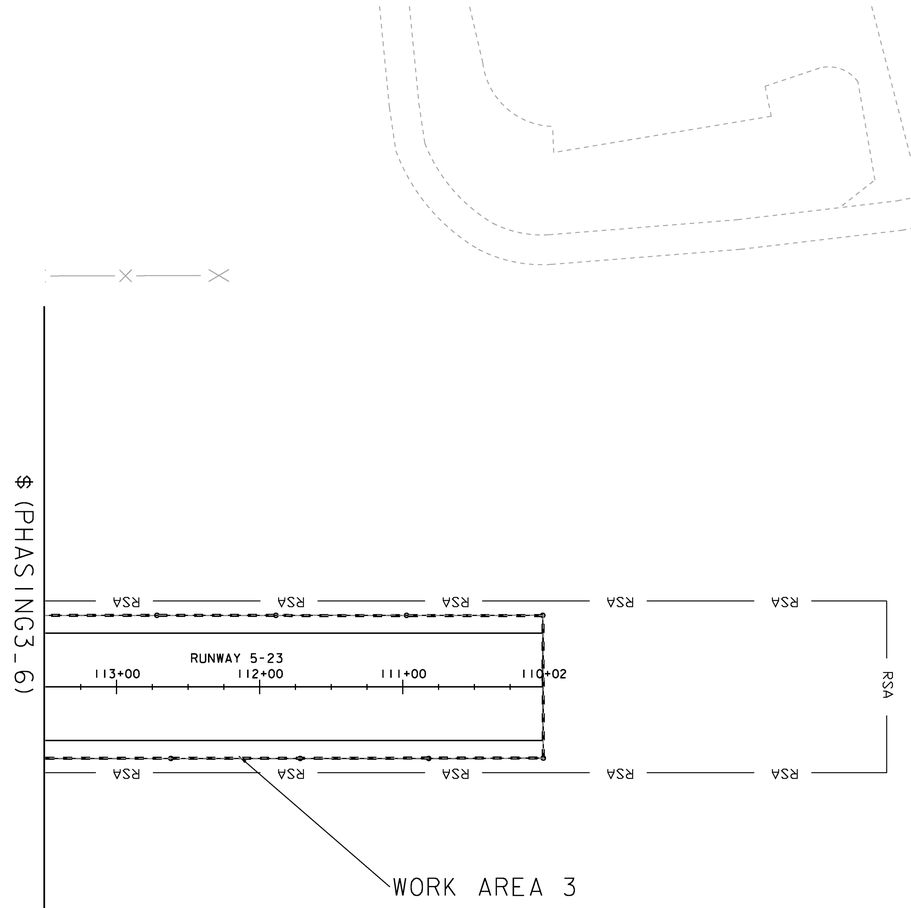
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DESIGNED BY: S. BOUCHARD
WORK AREA 3 SHT 6

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 27 OF 173



NOTE:

PROPOSED ALIGNMENTS
SHOWN FOR GUIDANCE ONLY.
SEE GEOMETRY SHEETS 1–7.

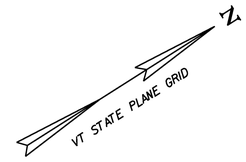
WORK AREA 3 SAFETY PLAN
SHEETS 1, 2, 3 AND 4 NOT USED

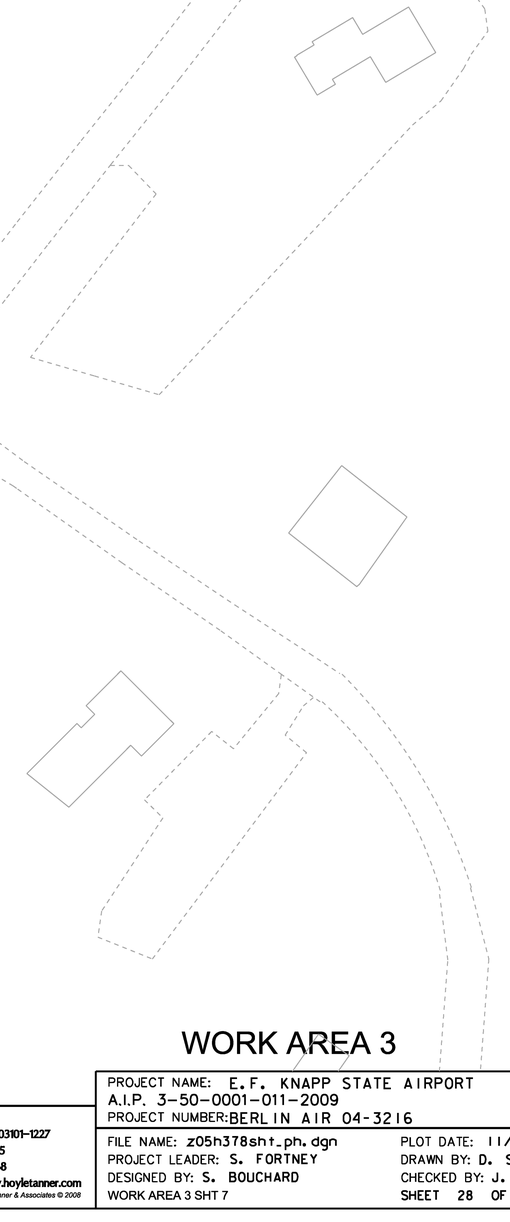
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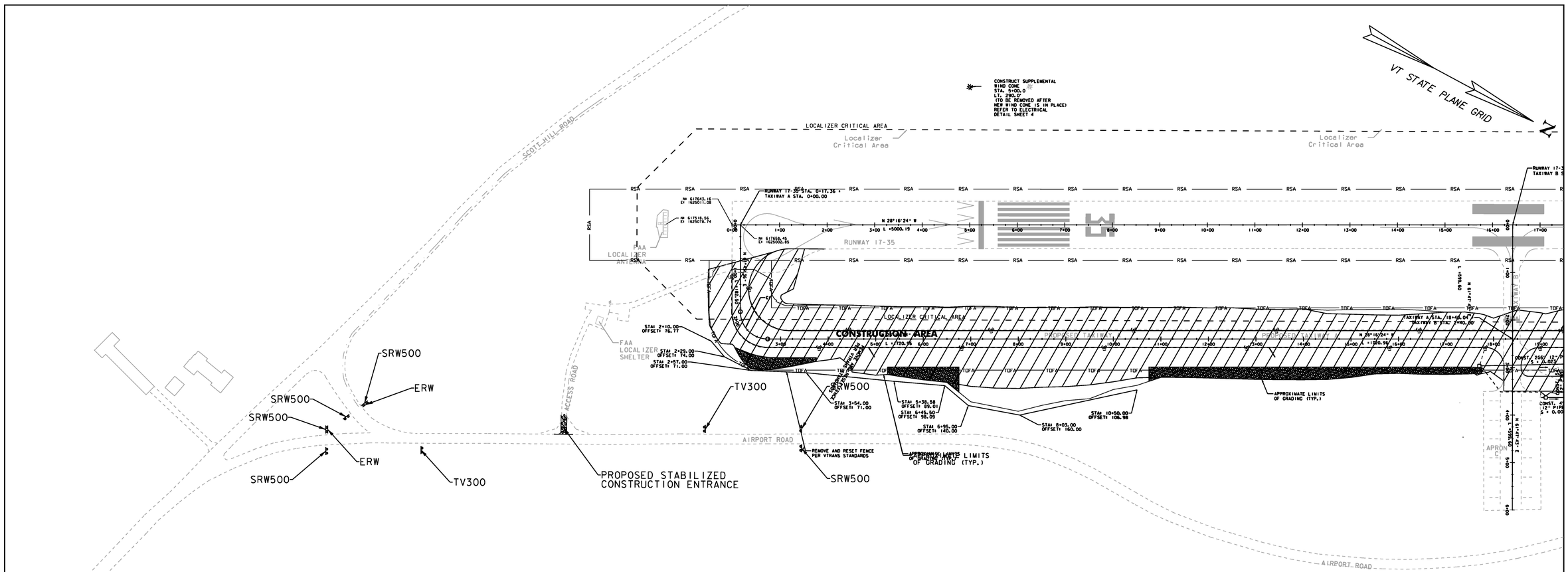
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FILE NAME: z05h378sht_ph.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
WORK AREA 3 SHT 7

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 28 OF 173



LEGEND

ERW = END ROAD WORK
SRWA = SIDE ROAD WORK AHEAD
SRW500 = SIDE ROAD WORK 500 FT
TV300 = TURNING VEHICLES 300 FEET

CONSTRUCTION SIGN SUMMARY

LOCATION	ERW	SRWA	SRW500	TV300
AIRPORT ROAD				
NORTH OF ACCESS RD	0	0	2	1
SOUTH OF ACCESS RD	2	0	4	1
SHEET TOTAL	2	0	6	2
PROJECT TOTAL	6	2	16	6

NOTES:
1. SEE VTRANS STANDARDS E-100A, E-102A FOR SIGN PLACEMENT.
2. ALL DIAMOND SHAPED SIGNS SHALL BE 48" AND INSTALLED ON TWO POSTS EACH.
3. ALL CONSTRUCTION SIGNS SHALL BE NEW OR LIKE-NEW CONDITION.
4. SEE VTRANS STANDARDS FOR SIGN SHEETING REQUIREMENTS.
5. WORK ZONE SIGNS SHALL NOT OBSCURE EXISTING TRAFFIC CONTROL DEVICES.
6. CONSTRUCTION SIGNING WILL BE INCEDENTIAL TO THE PROJECT.

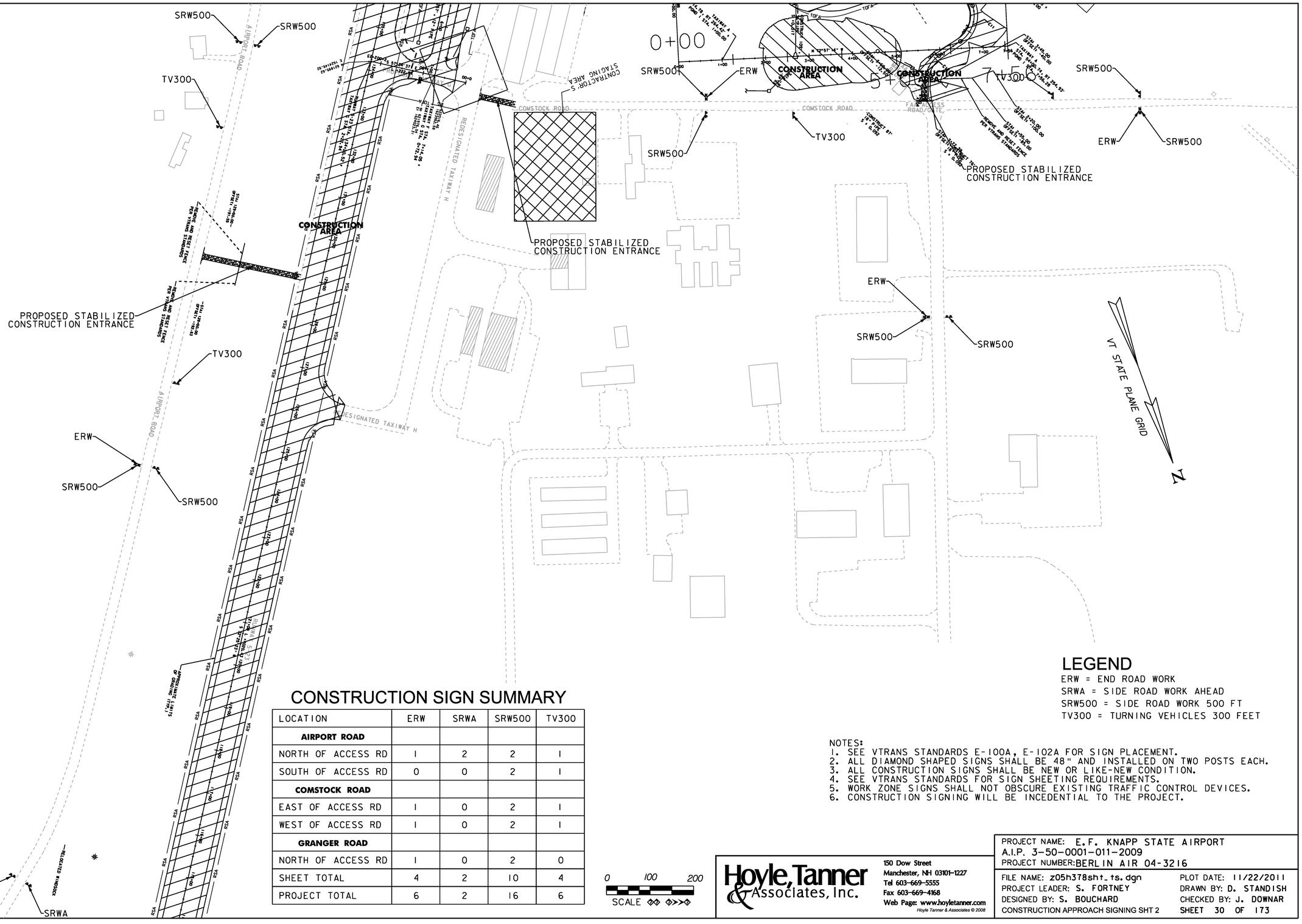
0 100 200
SCALE IN FEET

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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_ts.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
CONSTRUCTION APPROACH SIGNING SHT 1

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 29 OF 173



CONSTRUCTION SIGN SUMMARY

LOCATION	ERW	SRWA	SRW500	TV300
AIRPORT ROAD				
NORTH OF ACCESS RD	1	2	2	1
SOUTH OF ACCESS RD	0	0	2	1
COMSTOCK ROAD				
EAST OF ACCESS RD	1	0	2	1
WEST OF ACCESS RD	1	0	2	1
GRANGER ROAD				
NORTH OF ACCESS RD	1	0	2	0
SHEET TOTAL	4	2	10	4
PROJECT TOTAL	6	2	16	6

0 100 200
SCALE

LEGEND

ERW = END ROAD WORK
SRWA = SIDE ROAD WORK AHEAD
SRW500 = SIDE ROAD WORK 500 FT
TV300 = TURNING VEHICLES 300 FEET

NOTES:
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FILE NAME: z05h378sht_ts.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
CONSTRUCTION APPROACH SIGNING SHT 2

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

AND THE OUTLET OF POND 2. THE RUNOFF FROM THE END OF RUNWAY 35 CONSISTS OF OVERLAND FLOW FROM 12.2 ACRES CONVEYED INTO EXISTING WETLANDS. 0.5 ACRES OF THE 12.2 ACRES WILL BE DISTURBED BY THIS PROJECT. POND 2 OUTLETS TO A CLOSED DRAINAGE SYSTEM WHICH, COMBINED WITH ADJACENT OVERLAND FLOW, IS CONVEYED THROUGH A NEW GRASS LINED SWALE TO EVENTUALLY REACH A TRIBUTARY OF THE STEVENS BRANCH. THE CONTRIBUTING DRAINAGE AREA IS 82.4 ACRES CONTAINING 8.3 ACRES OF DISTURBED AREA WHICH HAS AN AVERAGE SLOPE OF 5 TO 15 PERCENT.

EXPAND AND RECONSTRUCT TERMINAL APRON: CONSTRUCTION INCLUDES PAVEMENT REMOVAL, UNCLASSIFIED EXCAVATION, GRADING AND DRAINAGE, STORMWATER MANAGEMENT SYSTEMS, INSTALLATION OF SELECT MATERIALS, BITUMINOUS PAVING, INSTALLATION OF NEW TAXIWAY EDGE LIGHTS, PAVEMENT MARKINGS, SIGNAGE, AND TEMPORARY AND PERMANENT EROSION CONTROL MEASURES.
THE DISCHARGE LOCATION ASSOCIATED WITH THESE EFFORTS IS THE OUTLET OF POND 1 WHICH DISCHARGES INTO AN EXISTING SWALE EVENTUALLY FLOWING TO A TRIBUTARY OF THE STEVENS BRANCH. THE CONTRIBUTING DRAINAGE AREA OF 36.6 ACRES CONTAINS 16.3 ACRES OF DISTURBED EARTH.

RECONSTRUCT RUNWAY 5-23: RECONSTRUCTION CONSISTS OF SHORTENING AND NARROWING THE RUNWAY VIA PAVEMENT REMOVAL, FINE GRADING EXISTING SELECT MATERIAL, BITUMINOUS PAVING, AND INSTALLATION OF NEW RUNWAY EDGE LIGHTS, SIGNAGE, AND PAVEMENT MARKINGS.
THERE IS NO CHANGE IN DISCHARGE ASSOCIATED WITH THIS WORK, AS THE UNDERLYING SELECT MATERIAL IS NEARLY LEVEL HARD PACKED GRAVEL WITH A LOW ERODIBILITY INDEX AND STORMWATER WILL CONTINUE TO SHEET FLOW OFF IT IN THE SAME MANNER AS IT DOES IN THE EXISTING CONDITION.

TOTAL AREA OF DISTURBANCE FOR THE PORJECT IS 25.1 ACRES.

1.2 SITE INVENTORY

1.2.1 ON AND OFF SITE DRAINAGE, WATERWAYS, BODIES OF WATER AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

THE AIRPORT'S STORMWATER DRAINAGE SYSTEM CONSISTS OF GRASS OVERLAND FLOW, DROP INLETS, CATCH BASINS, CLOSED DRAINAGE PIPES AND OPEN DITCHES AND VEGETATED SWALES.

RUNOFF FROM RUNWAY 5-23 AND ADJACENT LAND ENTERS CLOSED DRAINAGE SYSTEMS THAT PARALLEL EACH SIDE OF THE RUNWAY. WATER COLLECTED IN THESE CATCH BASINS FLOWS THOUGH PIPES TOWARDS THE NORTHEAST. THESE PIPES IN TURN DRAIN INTO A PIPE SYSTEM WHICH IS PERPENDICULAR TO THE RUNWAY NEAR THE END OF THE RUNWAY, AND WHICH SUBSEQUENTLY CONVEY FLOW EASTERLY TO A WETLAND. THE DRAINAGE IS THEN CARRIED UNDER AIRPORT ROAD VIA A CULVERT AT THE NORTH END OF THE WETLAND, AND DISCHARGED ACROSS THE ROAD INTO AN OPEN FIELD, WHERE THERE IS NO DEFINED CHANNEL. THIS PORTION OF THE AIRFIELD IS WITHIN THE WATERSHED OF THE STEVENS BRANCH.
RUNOFF FROM THE LAND AROUND THE END OF RUNWAY 35 DRAINS INTO WETLANDS BEFORE BEING CARRIED UNDER AIRPORT ROAD VIA A CULVERT AND THEN INTO AN UNNAMED INTERMITTENT STREAM, AND EVENTUALLY INTO STEVENS BRANCH.
RUNOFF FROM THE SOUTHERN PORTION OF RUNWAY 17-35 DRAINS VIA OVERLAND AND CLOSED DRAINAGE INTO WETLANDS AND THEN INTO AN UNNAMED BROOK. THE WESTERN SIDE OF THE RUNWAY AND ADJACENT LAND DRAINS OVERLAND INTO A CLOSED DRAINAGE SYSTEM THAT PARALLELS THE RUNWAY DISCHARGING INTO ADJACENT WETLANDS NEAR THE 5-23 RUNWAY INTERSECTION. THE EASTERN SIDE OF THE RUNWAY AND ADJACENT MOWED AREAS, TAXIWAYS, APRONS AND BUILDINGS (BETWEEN AIRPORT ROAD AND THE RUNWAY) DRAIN VIA DITCHES (INCLUDING PORTIONS OF WETLANDS) AND CATCH BASINS INTO PIPES THAT RUN UNDER RUNWAY 17-35 SOUTH OF THE 5-23 RUNWAY INTERSECTION COMBINING WITH THE WESTERN RUNOFF BEFORE OUTLETTING THROUGH A CULVERT INTO THE UNNAMED BROOK.
THE EASTERN SIDE OF RUNWAY 17-35 NORTH OF THE 5-23 RUNWAY INTERSECTION DRAINS VIA OVERLAND FLOW INTO WETLANDS. A PORTION OF THIS RUNOFF ENTERS THE STONE-LINED SWALE WEST OF COMSTOCK ROAD BEFORE DISCHARGING INTO THE UNNAMED BROOK. THE STONE-LINED SWALE ALSO RECEIVES RUNOFF FROM ADJACENT ROADS AND PORTIONS OF THE INDUSTRIAL PARK EAST OF COMSTOCK ROAD VIA DITCHES ALONG COMSTOCK AND GRANGER ROADS. THE UNNAMED BROOK DRAINS UNDER COMSTOCK ROAD AND ULTIMATELY INTO POND BROOK. POND BROOK DRAINS INTO STEVENS BRANCH.

BOTH POND BROOK AND THE STEVENS BRANCH ARE WITHIN THE WINOOSKI RIVER WATERSHED.

1.2.2 TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES

THE AIRPORT IS GENERALLY FLAT WITH A SLIGHT GRADIENT FROM SOUTH TO NORTH ALONG RUNWAY 17-35 AND WEST TO EAST ALONG RUNWAY 5-23. AIRFIELD PAVEMENTS MAKE UP 24 OF THE 25 ACRES OF IMPERVIOUS SURFACES. THE REMAINING ACRE OF IMPERVIOUS IS FROM HANGARS, THE TERMINAL BUILDING AND OTHER MISCELLANEOUS STRUCTURES.

1.2.3 VEGETATION

THICKNESS FROM 2 TO 10 FEET.
GLACIAL TILL: A LAYER OF TYPICALLY DENSE SOIL WITH VARYING AMOUNTS OF SAND AND GRAVEL. THE TILL IS SIMILAR TO THE SANDY SILT LAYER, EXCEPT THE GLACIAL TILL HAS SLIGHTLY MORE GRAVEL AND IS DENSER.
BEDROCK: SOME BORINGS ENCOUNTERED WEATHERED ROCK (POSSIBLY BEDROCK) AT DEPTHS OF 4 FEET.
GROUNDWATER: NOT ENCOUNTERED IN MOST BORINGS. TWO BORINGS NOTED WET SOIL SAMPLES AT 4 TO 8 FEET DEEP.
PERMEABILITY: BETWEEN 10-6 TO 10-4 CM/SEC.
ERODIBILITY (K FACTOR): UNKNOWN. (FOR ALL OTHER SOIL TYPES REFER TO THE EPSC EXISTING CONDITIONS SITE PLAN.)

1.2.5 SENSITIVE RESOURCE AREAS

WETLANDS: AN ARMY CORP OF ENGINEERS SECTION 404 PERMIT IS BEING OBTAINED FOR THE PROJECT DUE TO A NUMBER OF WETLAND IMPACTS, AS FOLLOWS;

Wetland #	Description	Direct (SF)	Temporary (SF)
4	Wet meadows, mixed grasses and sedges. There is no principle function associated with these wetlands.	9,449	1,122
5	Wet meadows, mixed grasses and sedges. There is no principle function associated with these wetlands.	4,879	
8	Temporarily flooded, Palustrine Emergent wetlands. There most important function relates to maintaining water quality by detaining and potentially purifying stormwater runoff through nutrient and toxicant removal.	3,024	0
9	Temporarily flooded, Palustrine Emergent wetlands. There most important function relates to maintaining water quality by detaining and potentially purifying stormwater runoff through nutrient and toxicant removal.	3,955	0
10	Temporarily flooded, Palustrine Emergent wetlands. There most important function relates to maintaining water quality by detaining and potentially purifying stormwater runoff through nutrient and toxicant removal.	3,672	0
11	Temporarily flooded, Palustrine Emergent wetlands. There most important function relates to maintaining water quality by detaining and potentially purifying stormwater runoff through nutrient and toxicant removal.	3,407	258
12	Temporarily flooded, Palustrine Emergent wetlands. There most important function relates to maintaining water quality by detaining and potentially purifying stormwater runoff through nutrient and toxicant removal.	5,648	0
	Total Wetland Impact (SF):	**34,033**	**1,380**

A VERMONT CONDITIONAL USE DETERMINATION (CUD) PERMIT WAS APPROVED FOR THE PROJECT ON MAY 4, 2009.

ENDANGERED SPECIES: THE UPLAND SANDPIPER, A STATE ENDANGERED SPECIES, IS THE ONLY KNOWN FEDERAL OR STATE THREATENED OR ENDANGERED SPECIES FOUND AT THE AIRPORT. THE CONTRACTOR SHALL PROVIDE ACCESS FOR THE OWNER TO MOW AND MAINTAIN ANY GRASSED AREAS WITHIN THE PROJECT AREA OF DISTURBANCE.
ARCHAEOLOGICAL AND HISTORICAL: THERE ARE NO KNOWN AREAS OF ARCHAEOLOGICAL SENSITIVITY OR HISTORIC FEATURES AT THE AIRPORT.

1.3 RISK EVALUATION

THIS PROJECT FALLS UNDER THE JURISDICTION OF CONSTRUCTION GENERAL PERMIT 3-9020 BASED ON THE AREA OF DISTURBANCE BEING 25.1 ACRES. THIS IS A MODERATE RISK PROJECT.

1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE WORK OUTLINED IN THIS NARRATIVE CONSISTS OF APPLYING MEASURES THROUGHOUT THE LIFE OF THE PROJECT MINIMIZING SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION CONTROLS.

PREVENTING INITIAL SOIL EROSION IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. MAINTAINING VEGETATED BUFFERS ALONG STREAM BANKS, WETLANDS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

1.4.1 MARK SITE BOUNDARIES

PROJECT DEMARCATION FENCING IS NOT ALLOWED ON THE AIRPORT DUE TO THE RISK OF FOREIGN OBJECT DAMAGE TO AIRCRAFT. BARRIER FENCE (CONSTRUCTION FENCE) SHALL BE USED FOR DELINEATING THE LIMITS OF WORK BASED ON THE CONTRACT DRAWINGS, MINIMIZING THE AREA THAT MUST BE DISTURBED AND EXPOSED TO EROSION.

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1.4.4 INSTALL SEDMINENT BARRIER

SILT FENCE SHALL BE INSTALLED PRIOR TO ANY UP SLOPE W
NECESSARY. SILT FENCE INSTALLED WITHIN 100 FEET OF W.
RIVERS, ETC...) SHALL BE WIRE REINFORCED. EROSION LOGS
PRIOR TO ANY UP SLOPE WORK AS SHOWN ON THE PLANS OI

1.4.5 STOCKPILING AND OFF SITE DISPOSAL

STOCKPILE LOCATIONS TO BE DETERMINED BY THE CONTRAC
RUNWAY 5-23 WHEN IT IS CLOSED. STOCKPILES ARE CONSIC
TOWARDS THE FIVE (5) ACRE MAXIMUM IF NOT STABILIZED.

THE PROJECT WILL HAVE APPROXIMATELY 125,000 CY OF W
SITE. THE CONTRACTOR SHALL OBTAIN A SEPARATE CONSTRUCTION GENRAL PERMIT FOR THE DISPOSAL SITE.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF

CHECK DAMS SHALL BE UTILIZED AS SHOWN ON THE PLANS OR AS NECESSARY.

1.4.7 CONSTRUCT PERMANENT CONTROLS

THE PROJECT INCLUDES CONSTRUCTION OF TWO DETENTION BASINS WHICH SHALL BE COMPLETED AND STABILIZED PRIOR TO CONVEYING RUNOFF TO THEM. DETENTION BASINS ARE TO BE USED AS TEMPORARY SEDIMENTATION BASINS DURING CONSTRUCTION. CONTRACTOR SHALL INSPECT SEDIMENTATION SYSTEM IN ACCORDANCE WITH EPSC NARRATIVE SECTION 1.4.12 (BELOW) AND BASINS AND SYSTEM SHALL BE CLEANED AFTER FINAL STABILIZATION OF THE ENTIRE PROJECT AND PRIOR TO FILING NOTICE OF TERMINATION.
ADDITIONAL PERMANENT CONTROLS INCLUDE, SEED AND MULCH, STONE SLOPES (1:3 OR GREATER) AND STONE OUTLET PROTECTION.

1.4.8 STABILIZE EXPOSED SOILS

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY OR FINAL STABILIZATION WITHIN 14 DAYS OF THE INITIAL DISTURBANCE. AFTER THIS TIME, ANY DISTURBANCE IN THE AREA MUST BE STABILIZED AT THE END OF EACH WORK DAY. THE FOLLOWING EXCEPTIONS APPLY:

I) STABILIZATION IS NOT REQUIRED IF WORK IS TO CONTINUE IN THE AREA WITHIN THE NEXT 24 HOURS AND THERE IS NO PRECIPITATION FORECAST FOR THE NEXT 24 HOURS.
II) STABILIZATION IS NOT REQUIRED IF THE WORK IS OCCURRING IN A SELF-CONTAINED EXCAVATION (I.E. NO OUTLET) WITH A DEPTH OF 2 FEET OR GREATER (E.G. HOUSE FOUNDATION EXCAVATION, UTILITY TRENCHES).

SEEDING, MULCHING AND BIODEGRADABLE EROSION CONTROL MATTING, OR AN EQUIVALENT PRODUCT, WILL BE UTILIZED ON ALL SLOPES STEEPER THAN 3:1 THAT ARE NOT LINED WITH STONE FILL. SEE CROSS SECTIONS FOR SIDESLOPE GRADES. THESE SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE OR DURING INCREMENTAL STAGES OF CONSTRUCTION ACTIVITY.

TRACKING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, WILL ALSO BE UTILIZED ON A REGULAR BASIS. ANY SLOPES TO BE EXPOSED FOR SEVERAL DAYS PRIOR TO FINAL GRADING SHALL BE TRACKED AND MULCHED. THE FORECAST OF RAINFALL EVENTS SHALL ALSO TRIGGER PROTECTION OF EXPOSED SOILS.

1.4.9 WINTER STABILIZATION

WINTER CONSTRUCTION IS ANTICIPATED. FOR CONSTRUCTION ACTIVITIES INVOLVING EARTH DISTURBANCE PAST OCTOBER 15 AND/OR PRIOR TO APRIL 15 SEE EPSC WINTER CONSTRUCTION NOTES ON THE EPSC NOTES AND LEGEND SHEET.

1.4.10 STABILIZE SOIL AT FINAL GRADE

SEEDING, MULCHING AND BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3 THAT ARE NOT LINED WITH STONE FILL. THESE SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

1.4.12 INSPECT YOUR SITE

SITE SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS FOR A MODERATE RISK SITE LISTED IN THE PROJECT'S PERMIT AND CONSTRUCTION GENERAL PERMIT 3-9020. INSPECTION SHALL CONTINUE UNTIL THE SITE HAS ACHIEVED FINAL STABILIZATION AND A NOTICE OF TERMINATION HAS BEEN FILED.

EPSC NARRATIVE

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DESIGNED BY: S. BOUCHARD
EPSC NARRATIVE

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 31 OF 173

EPSC EXISTING CONDITIONS SITE PLAN NOTES

1. DATUM
   VERTICAL: NGVD 88; HORIZONTAL: NAD 83
2. INSTALL SILT FENCE PRIOR TO ANY UPGRADIENT SOIL DISTURBANCE.
3. INSTALL EROSION LOGS PRIOR TO ANY UPGRADIENT SOIL DISTURBANCE.
4. INSTALL STABILIZED CONSTRUCTION ENTRANCES (4) PRIOR TO ACCESS TO AIRPORT.
5. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.
6. COMPLETE STABILIZATION OF PONDS PRIOR TO DIRECTING RUNOFF TO THEM.
7. CONTRACTOR TO MINIMIZE WETLAND AND 50' WETLAND BUFFER IMPACTS TO AREAS DEPICTED ON THE PLANS. CONTRACT SHALL AVOID IMPACTS TO ALL OTHER WETLANDS AND WETLAND BUFFERS.

SOILS INFORMATION:

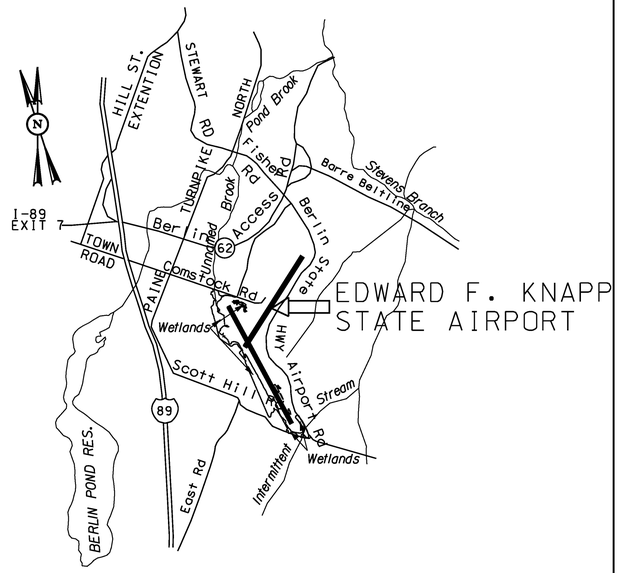
USDA–NRCS CLASSIFIES THE NATIVE SOILS IN THE PROJECT AREA AS UDORTHENTS, BUCKLAND, CABOT, AND VERSHIRE–DUMMERSTON COMPLEX. THE UDORTHENTS SOIL TYPE IS UNCLASSIFIED AND COVERS THE MAJORITY OF THE PROJECT SITE. THE BUCKLAND AND CABOT SOIL TYPES ARE SILTY LOAM AND ARE IN THE AREAS ADJACENT TO RUNWAY 5–23 AND NORTH AND WEST OF RUNWAY 17–35. THE VERSHIRE–DUMMERSTON SOIL TYPE IS ROCKY AND LOCATED EAST AND SOUTH OF RUNWAY 17–35.

EPSC WINTER CONSTRUCTION NOTES

1. CONTRACTOR SHALL ENLARGE AND STABILIZE CONSTRUCTION ENTRANCES TO PROVIDE FOR SNOW STOCKPILING.
2. CONTRACTOR SHALL REVISE LIMITS OF DISTURBANCE TO REFLECT BOUNDARY OF WINTER WORK.
3. CONTRACTOR SHALL PROVIDE A SNOW MANAGEMENT PLAN, THAT PROVIDES FOR ADEQUATE STORAGE AND CONTROL OF SNOWMELT, REQUIRES CLEARED SNOW TO BE STORED DOWN GRADIENT OF ALL AREAS OF DISTURBANCE AND PROHIBITS STORAGE OF SNOW IN STORMWATER TREATMENT STRUCTURES.
4. CONTRACTOR SHALL PROVIDE AND MAINTAIN A MINIMUM OF A 25 FOOT BUFFER FROM PERIMETER CONTROLS SUCH AS SILT FENCE TO ALLOW FOR SNOW CLEARING AND MAINTENANCE.
5. IN AREAS OF DISTURBANCE WITHIN 100 FEET OF A RECEIVING WATER, CONTRACTOR SHALL REINFORCE SILT FENCE OR ELSE REPLACE WITH PERIMETER DIKES, SWALES, OR OTHER PRACTICES RESISTANT TO THE FORCES OF SNOW LOADS.
6. CONTRACTOR SHALL KEEP DRAINAGE STRUCTURES OPEN AND FREE OF SNOW AND ICE DAMS.
7. CONTRACTOR SHALL INSTALL SILT FENCE AND OTHER STORMWATER PRACTICES REQUIRING EARTH DISTURBANCE AHEAD OF GROUND FREEZING.
8. IN AREAS STABILIZED BY MULCH, MULCH SHALL BE 2" THICK WITH MINIMUM 80–90% COVER. CONTRACTOR SHALL TRACK IN OR STABILIZE ALL MULCH WITH NETTING.
9. IN AREAS STABILIZED BY BONDED FIBER MATRIX, BONDED FIBER MATRIX SHALL BE APPLIED AT A RATE AND WITH A METHOD THAT IS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
10. TO ENSURE COVER OF DISTURBED SOIL IN ADVANCE OF A MELT EVENT, AREAS OF DISTURBED SOIL MUST BE STABILIZED AT THE END OF EACH WORK DAY, WITH THE FOLLOWING EXCEPTIONS:
    1. IF NO PRECIPITATION WITHIN 24 HOURS IS FORECAST AND WORK WILL RESUME IN THE SAME DISTURBED AREA WITHIN 24 HOURS, DAILY STABILIZATION IS NOT NECESSARY.
    2. DISTURBED AREAS THAT COLLECT AND RETAIN RUNOFF, SUCH AS HOUSE FOUNDATIONS OR OPEN UTILITY TRENCHES.
11. CONTRACTOR SHALL REMOVE SNOW OR ICE TO LESS THAN 1" THICKNESS PRIOR TO STABILIZATION.
12. CONTRACTOR SHALL PROVIDE STONE STABILIZATION, 10–20 FEET WIDE IN AREAS UNDER CONSTRUCTION, WHERE CONSTRUCTION VEHICLE TRAFFIC IS ANTICIPATED.

EPSC CONSTRUCTION SITE PLAN NOTES

1. DATUM
   VERTICAL: NGVD 88; HORIZONTAL: NAD 83
2. SILT FENCE INSTALLATION MAY REQUIRE PHASING TO MAXIMIZE EFFECTIVENESS. INSTALL AND/OR MOVE SILT FENCE AS CONSTRUCTION PROGRESSES TO OBTAIN THE GREATEST PREVENTION OF SEDIMENT TRANSPORT. ALL SILT FENCE INSTALLATION SHALL BE PROPERLY KEYED INTO THE GROUND AND SUPPORTED AS DETAILED ON THE "EPSC DETAILS" SHEETS. THE SILT FENCE SHOULD BE INSTALLED PARALLEL TO THE CONTOURS TO PREVENT CONCENTRATION OF RUNOFF. THE ENDS OF EACH RUN OF SILT FENCE SHOULD BE TURNED UPHILL TO PROVIDE A SMALL POOL FOR SEDIMENT SHOULD WATER TRY TO RUN AROUND THE END OF THE SILT FENCE.
3. SILT FENCE WITH STAKES WILL BE PAID FOR UNDER GEOTEXTILE FOR SILT FENCE.
4. TEMPORARY STONE CHECK DAMS SHALL BE KEYED INTO THE GROUND AND CONSTRUCTED AS PER THE "EPSC DETAILS" SHEETS. THE PURPOSE OF THE TEMPORARY CHECK DAMS ARE TO REDUCE RUNOFF VELOCITIES THUS PREVENTING EROSION.
5. SURFACE ROUGHENING HELPS REDUCE RUNOFF VELOCITIES AND INCREASES INFILTRATION RATES. ROUGHENING MAY BE ACCOMPLISHED BY A NUMBER OF METHODS SUCH AS TRACKING UP AND DOWN THE SLOPE WITH A BULLDOZER, TRACKING ACROSS THE SLOPE WITH A WHEELED VEHICLE OR ANY METHOD OF SCARIFYING THE SLOPE SUCH THAT THE GROOVES CREATED RUN PERPENDICULAR TO THE DIRECTION OF WATER RUNOFF.
6. FINAL STABILIZATION MEASURES WILL INCLUDE STABILIZATION OF ALL SURFACES BY ADDING TOPSOIL, SEED, FERTILIZER AND MULCH OR MATTING ALL DISTURBED AREAS THAT ARE NOT PAVED. SEE SHEET 4 FOR SEED MIX AND APPLICATION RATES.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION, MAINTENANCE AND MONITORING OF EROSION CONTROL DEVICES.
8. TEMPORARY SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND APPROVED BY THE RESIDENT ENGINEER PRIOR TO EXCAVATION OF SURFACES, BEYOND THOSE NECESSARY TO INSTALL THESE MEASURES.
9. ONE OBJECTIVE OF THE EROSION PREVENTION AND SEDIMENT CONTROL PLAN IS TO MINIMIZE THE TIME THAT EXCAVATED SOILS ARE EXPOSED TO THE ELEMENTS. EXCAVATION OF TAXIWAYS, THE UTILITY TRENCHES, STORMWATER SWALES AND RUNWAY SURFACE SHALL BE SEQUENCED TO ACHIEVE THIS OBJECTIVE. THIS SEQUENCING OF EXCAVATION WORK SHALL BE IN THE CONTRACTOR'S EROSION PREVENTION AND SEDIMENT CONTROL PLAN.
10. ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY OR FINAL STABILIZATION WITHIN 14 DAYS OF THE INITIAL DISTURBANCE. AFTER THIS TIME, ANY DISTURBANCE IN THE AREA MUST BE STABILIZED AT THE END OF EACH WORKDAY. THE FOLLOWING EXCEPTIONS APPLY: i) STABILIZATION IS NOT REQUIRED IF WORK IS TO CONTINUE IN THE AREA WITHIN THE NEXT 24 HOURS AND THERE IS NO PRECIPITATION FORECAST FOR THE NEXT 24 HOURS. ii) STABILIZATION IS NOT REQUIRED IF THE WORK IS OCCURRING IN A SELF–CONTAINED EXCAVATION (i.e. NO OUTLET) WITH A DEPTH OF 2 FEET OR GREATER.
11. IF PROJECT REQUIRES A WINTER SHUTDOWN:
    A. AREAS STABILIZED BY VEGETATION SHALL BE GRADED AND SEEDED (SEE SHEET 4 FOR SEED MIX AND APPLICATION RATES) NO LATER THEN SEPTEMBER 15TH TO ENSURE ADEQUATE GROWTH AND COVER. VEGETATIVE AREAS WHICH DON'T TAKE PROPERLY WILL BE RESEEDED.
    B. AREAS STABILIZED BY MULCH SHALL BE MULCHED NO LATER THEN OCTOBER 15TH. MULCH SHALL BE 2" THICK WITH MINIMUM 80–90% COVER. ALL MULCH SHALL BE TRACKED IN OR STABILIZED WITH NETTING.
    C. FLOW PROTECTION PRACTICES, INCLUDING SILT FENCE, STONE CHECK DAMS AND RIP RAP SHALL BE INSTALLED BY OCTOBER 15TH.



LOCATION MAP

0 3000 6000

SCALE

EPSC LEGEND

EROSION LOG FOR CATCH BASIN	FENCE LINE
EROSION LOG	PROPOSED SLOPE LIMITS
EROSION CONTROL MATTING	STABILIZED CONSTRUCTION ENTRANCE
SILT FENCE	SUBCATCHMENT LINE
CHECK DAM	SOIL TYPE DIVIDE
EDGE OF PAVEMENT	LIMIT OF WETLANDS
TREE LINE	© B# BORING
PDF —— BARRIER FENCE	

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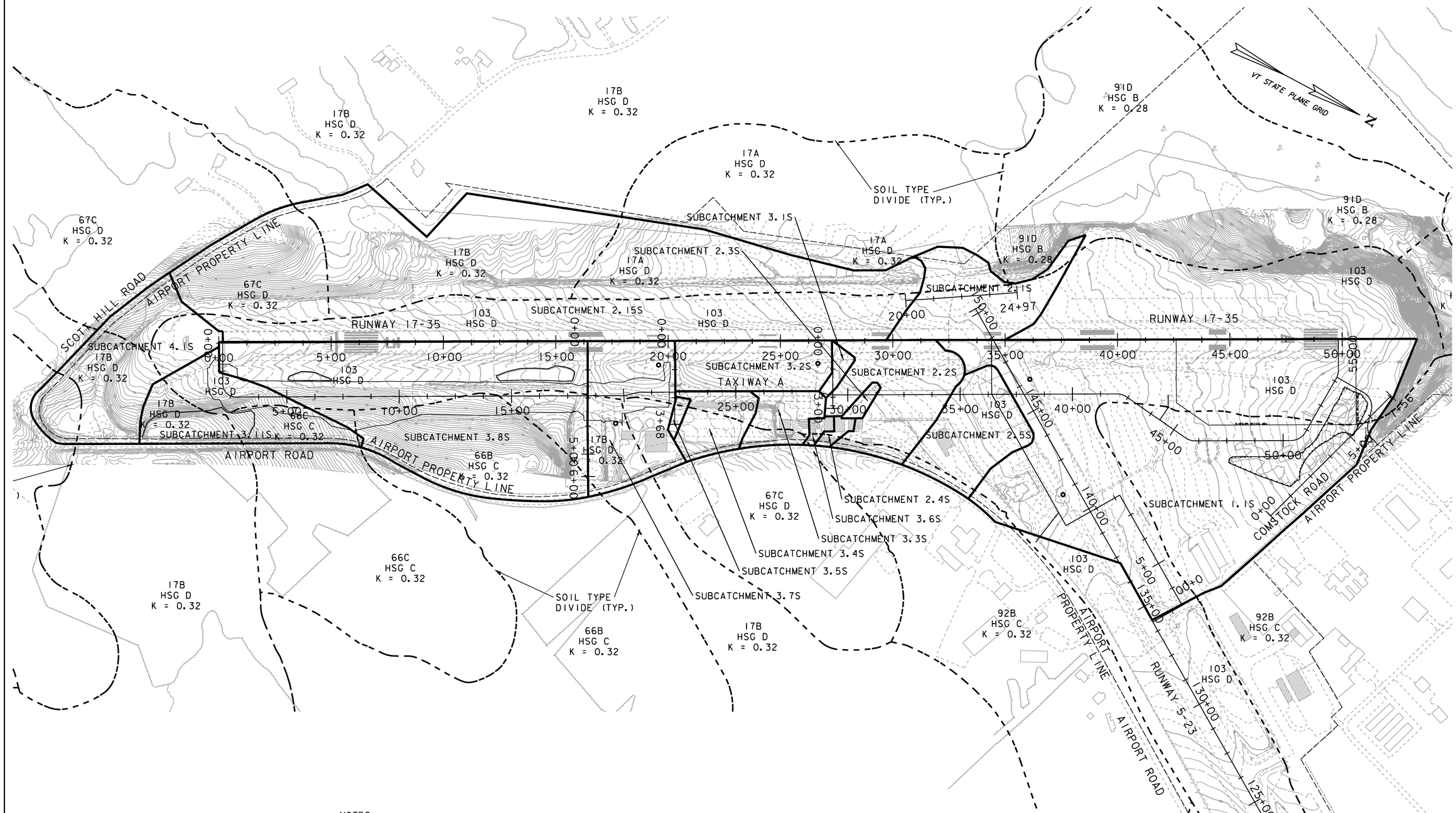
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EPSC NOTES AND LEGEND

PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3–50–0001–011–2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_EPSCex.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
EPSC NOTES AND LEGEND

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR



NOTES:
1. OVERALL PLAN OF PROJECT, TO SHOW LIMITS OF SUBCATCHMENTS NOT COVERED IN THE FOLLOWING EPSC EXISTING CONDITIONS SITE PLAN.
2. PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1-7.

0 200 400
SCALE

EPSC EXISTING CONDITIONS SITE PLAN

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FILE NAME: z05h378sht_EPSCex.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
EPSC EXISTING CONDITIONS SITE PLAN

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 33 OF 173

EPSC EXISTING CONDITIONS SITE PLAN

VT STATE PLANE GRID

LOCALIZER CRITICAL AREA

AIRPORT PROPERTY LINE

SCOTT HILL ROAD

67C
HSG D
K = 0.32

17B
HSG D
K = 0.32

103
HSG D

SOIL TYPE
DIVIDE
(TYP.)

SUBCATCHMENT 2.15S

SUBCATCHMENT 4.1S

SUBCATCHMENT 3.11S

Grass

6" UD

N: 617643.16
E: 1625011.08

N: 617518.56
E: 1625078.74

FAA
LOCALIZER
ANTENNA

FAA
LOCALIZER
SHELTER

N: 617658.45
E: 1625002.85

RUNWAY 17-35 STA. 0+17.36 =
TAXIWAY A STA. 0+00.00

N 28° 16' 24" W
L =5000.19

RUNWAY 17-35

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00

3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00

FB1 FB1A FB2 FB3 FB4 FB5 FB6 FB7 FB8

FR

B1 B2 B3 B4 B5 B6

50'-0" BUFFER

SILT FENCE
(TYP.)

CLASS 2 WETLANDS

SHEET FLOW

ACCESS ROAD

PROPOSED STABILIZED
CONSTRUCTION ENTRANCE
CONTRACTOR SECURITY GUARD

SOIL TYPE
DIVIDE
(TYP.)

66B
HSG C
K = 0.32

66C
HSG C
K = 0.32

AIRPORT ROAD

REMOVE AND RESET FENCE
PER VTRANS STANDARDS

APPROXIMATE LIMITS
OF GRADING (TYP.)

DI #5

SPRING

RCDT #
TG

CB #2

DI #1

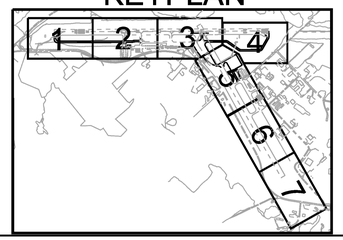
15" RCP

TG 1103.64

PROPOSED PAVEMENT

$ (EPSC_EX2)

KEYPLAN



NOTE:

PROPOSED ALIGNMENTS
SHOWN FOR GUIDANCE ONLY.
SEE GEOMETRY SHEETS 1-7.

0 50 100
SCALE

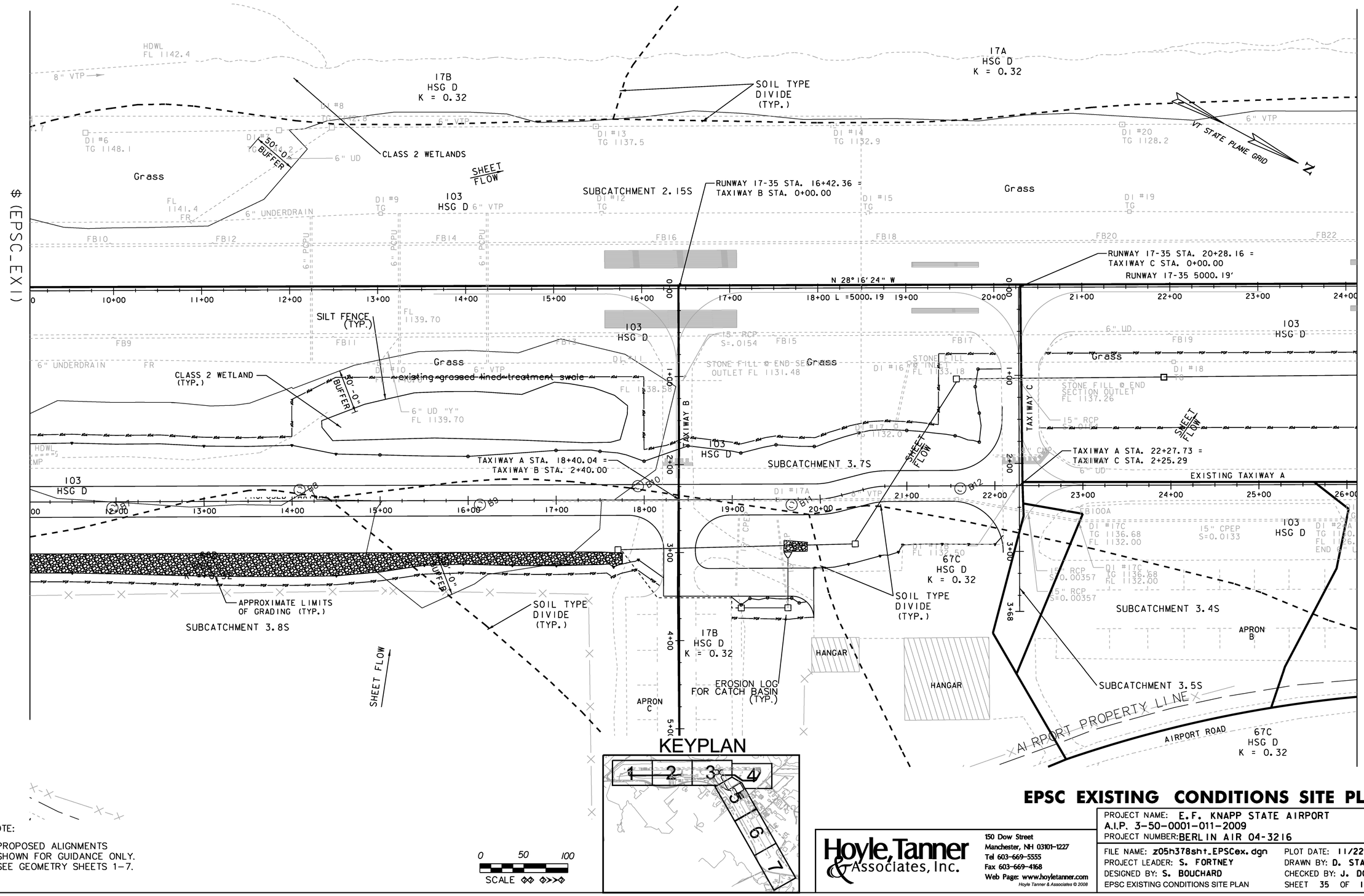
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EPSC EXISTING CONDITIONS SITE PLAN

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 34 OF 173

EPSC EXISTING CONDITIONS SITE PLAN



NOTE:

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SCALE 0 50 100

KEYPLAN

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EPSC EXISTING CONDITIONS SITE PLAN

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 35 OF 173

EPSC EXISTING CONDITIONS SITE PLAN

SOIL TYPE DIVIDE (TYP.)

VT STATE PLANE GRID

SHEET FLOW

SUBCATCHMENT 2.1S

SUBCATCHMENT 2.15S

SUBCATCHMENT 3.1S

SUBCATCHMENT 3.2S

SUBCATCHMENT 3.3S

SUBCATCHMENT 3.6S

SUBCATCHMENT 2.2S

SUBCATCHMENT 2.3S

SUBCATCHMENT 2.4S

SUBCATCHMENT 2.5S

POND 2 STA. 20+00.00 = RUNWAY 17-35 STA. 30+58.09, LT 178.50'

POND 2 STA. 24+97.31 = RUNWAY 17-35 STA. 35+54.23, LT 212.57'

RUNWAY 17-35 STA. 34+39.53 = TAXIWAY E STA. 0+00.00

RUNWAY 17-35 STA. 34+48.17 = RUNWAY 5-23 STA. 148+60.68

RUNWAY 17-35 STA. 27+32.22 = TAXIWAY D STA. 0+00.00

TAXIWAY A STA. 29+33.37 = TAXIWAY D STA. 2+40.00

TAXIWAY A STA. 36+40.71 = TAXIWAY E STA. 2+40.04

RUNWAY 5-23 STA. 145+85.46 = TAXIWAY A STA. 137+83.99

N 28° 16' 24" W L =5000.19

RUNWAY 17-35

TAXIWAY D

EXISTING TAXIWAY A

AIRPORT PROPERTY LINE

AIRPORT ROAD

HANGAR

VEHICLE PARKING LOT

TERMINAL BLDG.

TERMINAL APRON

GARAGE

APPROXIMATE LIMITS OF GRADING (TYP.)

EROSION LOG FOR CATCH BASIN (TYP.)

24" CPEPES STONE FILL @ OUTLET FL. 1108.5

24" CPEP S=0.0333

60" DIA. ACCGMP FL 1106.0 IN

50'-0" BUFFER

24" RCP S=0.0100

18" DIA. RCP

15" DIA. CMP

15" x 350 LF CPEP S=0.0308

15" RCP S=0.0239

12" RCP S=0.025

12" RCP x 80 LF S=0.025

15" CPEP S= .01569

6" UD

91D HSG B K = 0.28

103 HSG D

67C HSG D K = 0.32

92B HSG C K = 0.32

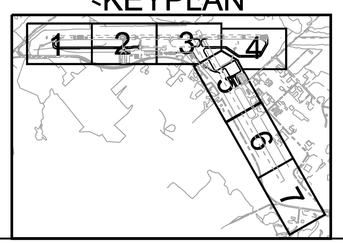
N: 620679.96 E: 1623377.75

N: 620912.27 E: 1623525.32

N: 620786.03 E: 1623593.21

S 32°25'23" W 145+00 L =4020.43 144+00

KEYPLAN



NOTE:

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0 50 100

SCALE

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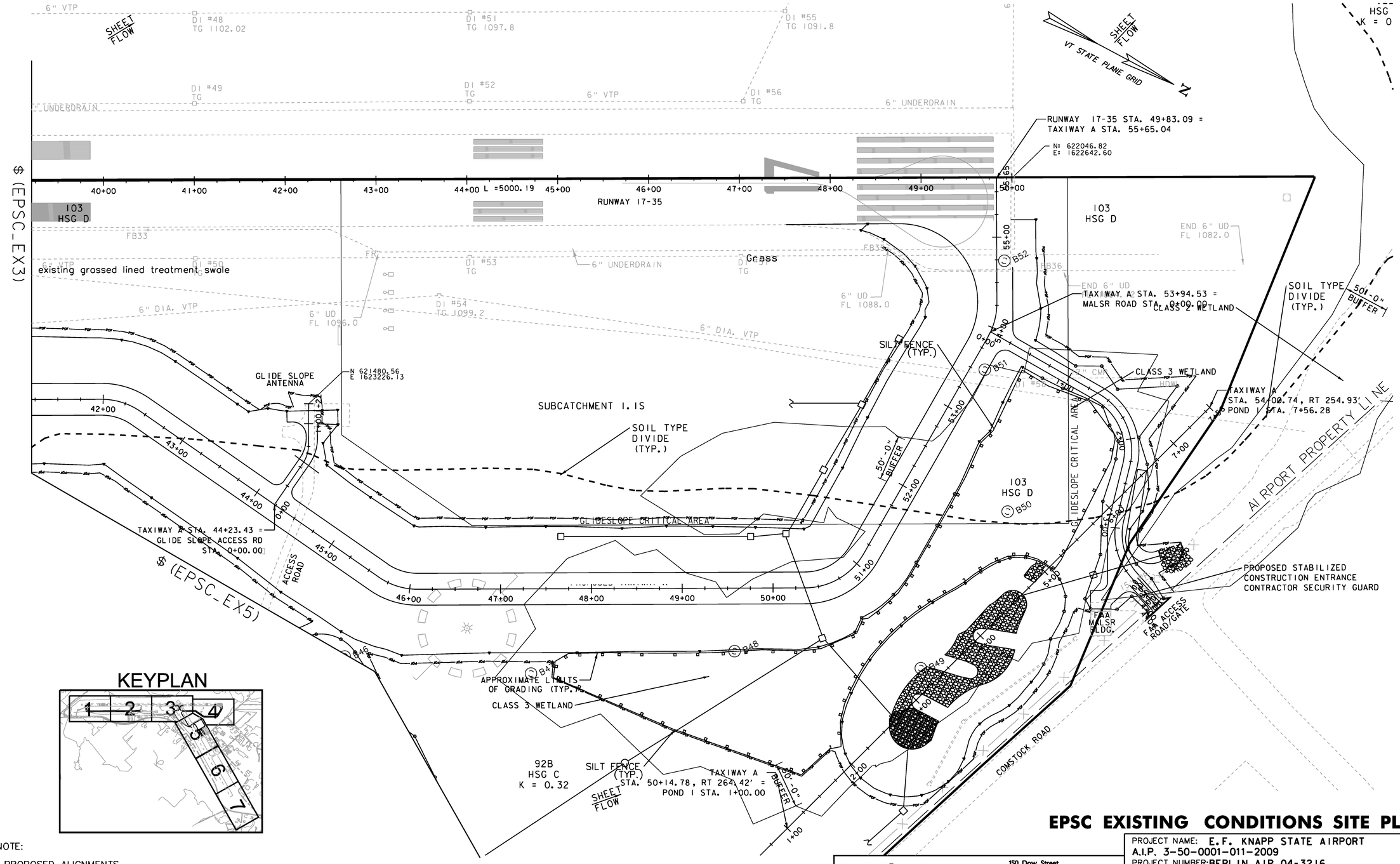
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FILE NAME: z05h378sht_EPSCex.dgn
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DESIGNED BY: S. BOUCHARD
EPSC EXISTING CONDITIONS SITE PLAN

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
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SHEET 36 OF 173

EPSC EXISTING CONDITIONS SITE PLAN



KEYPLAN

NOTE:

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0 50 100
SCALE

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SHEET 37 OF 173

℄ (EPSC_EX4)

SOIL TYPE DIVIDE (TYP.)

92B
HSG C
K = 0.32

ACCESS ROAD

SUBCATCHMENT 1.1S

N: 621499.92
E: 1623720.88

ASSUMED LOCATION

PROPOSED TAXIWAY F

TAXIWAY F STA. 1+50.00

B39 B38 B37 B36 B35 B34 B42 B41 B40

103
HSG D

PROPOSED TAXIWAY E

Grass

RUNWAY 5-23 STA. 139+84.57 =
TAXIWAY E STA. 10+36.06=
TAXIWAY F STA. 0+00.00

N: 621404.73
E: 1623838.12

RUNWAY 5-23

L =4020.43
S 32°25'23" W

EROSION LOG FOR CATCH BASIN (TYP.)

B22 B23 B24 B25 B26 B27 B20 B19

PROPOSED TAXIWAY E

FUEL FACILITY

Grass

APPROXIMATE LIMITS OF GRADING (TYP.)

COMSTOCK ROAD

92B
HSG C
K = 0.32

VT STATE PLANE GRID

PROPOSED STABILIZED CONSTRUCTION ENTRANCE
CONTRACTOR SECURITY GUARD

SOIL TYPE DIVIDE (TYP.)

N: 622016.46
E: 1623962.58

TAXIWAY F STA. 7+14.05 =
TAXIWAY G STA. 0+72.94

N: 621976.04
E: 1624023.31

Grass

SHEET FLOW

RUNWAY 5-23 STA. 134+20.52 =
TAXIWAY G STA. 2+22.94

N: 621895.62
E: 1624149.92

PROPOSED STABILIZED CONSTRUCTION ENTRANCE
CONTRACTOR SECURITY GUARD

Grass

SHEET FLOW

103
HSG D

AIRPORT PROPERTY LINE

AIRPORT ROAD

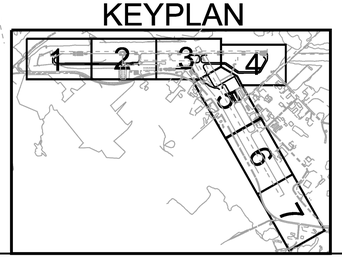
92B
HSG C
K = 0.32

SOIL TYPE DIVIDE (TYP.)

℄ (EPSC_EX3)

℄ (EPSC_EX6)

KEYPLAN



NOTE:

PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1-7.

0 50 100
SCALE

EPSC EXISTING CONDITIONS SITE PLAN

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FILE NAME: z05h378sht_EPSCex.dgn
PROJECT LEADER: S. FORTNEY
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EPSC EXISTING CONDITIONS SITE PLAN

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 38 OF 173

92B
HSG C
K = 0.32

AIRPORT PROPERTY LINE

SOIL TYPE
DIVIDE
(TYP.)

VT STATE PLANE GRID

WINDSOCK RELOCATED
TO 115+00, 220.00 LT.

103
HSG D

SHEET
FLOW

Grass

℄ (EPSC_EX5)

B28 B30 B32

RUNWAY 5-23
L =4020.43
S 32°25'23" W

128+00 127+00 126+00 125+00 124+00 123+00 122+00 121+00 120+00 119+00 118+00 117+00 116+00 115+00 114+00

B27 B29 B31

℄ (EPSC_EX7)

Grass

APPROXIMATE LIMITS
OF GRADING (TYP.)

SHEET
FLOW

103
HSG D

AIRPORT PROPERTY LINE

AIRPORT ROAD

SOIL TYPE
DIVIDE
(TYP.)

RELOCATED WINDSOCK

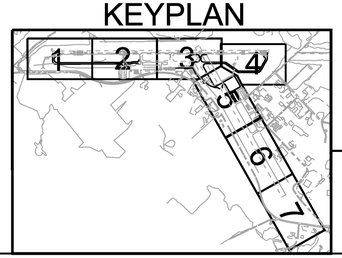
92C
HSG C
K = 0.32

SOIL TYPE
DIVIDE
(TYP.)

92B
HSG C
K = 0.32

17B
HSG D
K = 0.32

KEYPLAN



NOTE:

PROPOSED ALIGNMENTS
SHOWN FOR GUIDANCE ONLY.
SEE GEOMETRY SHEETS 1-7.

0 50 100
SCALE

EPSC EXISTING CONDITIONS SITE PLAN

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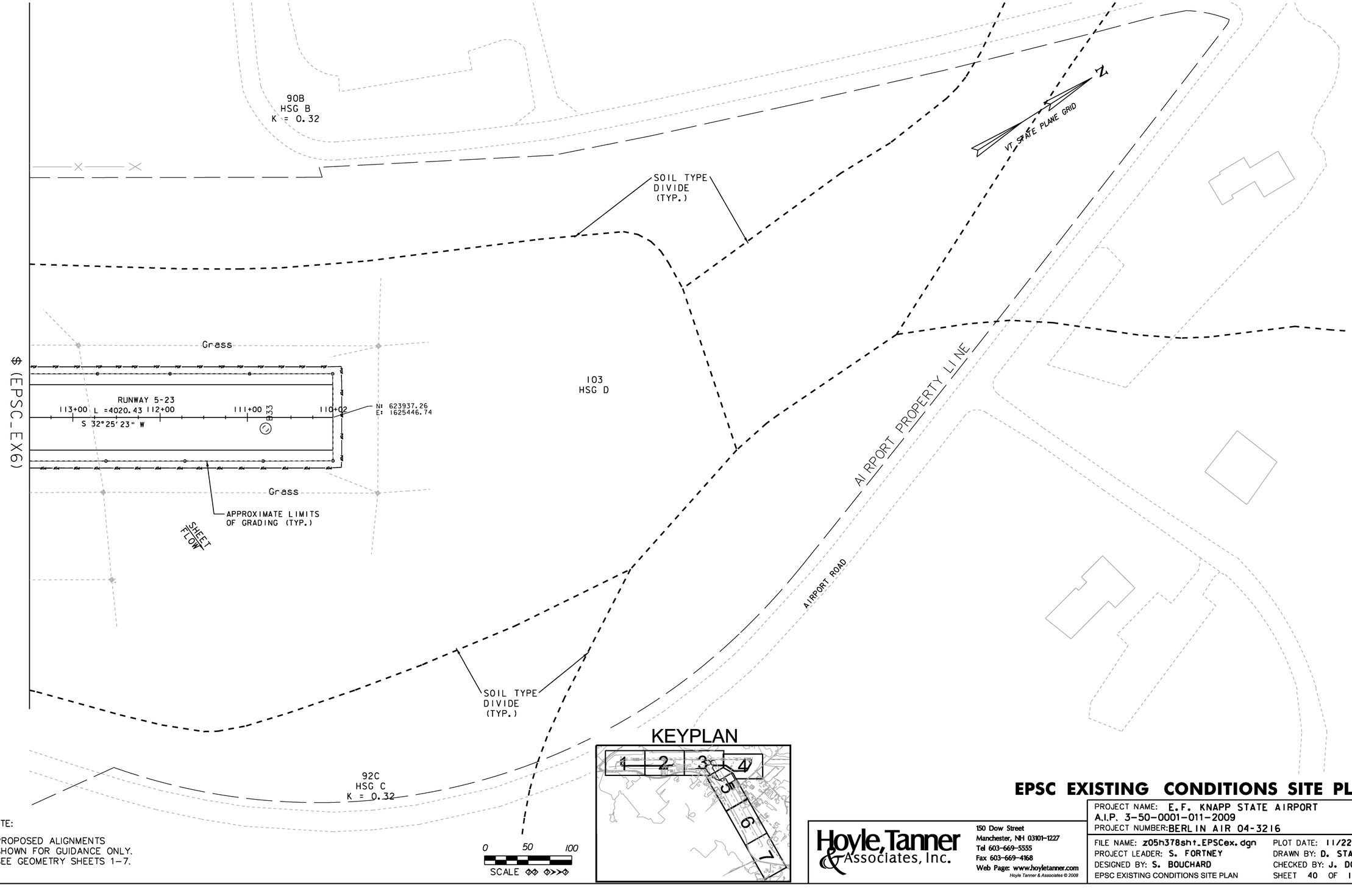
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PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 39 OF 173



NOTE:

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SEE GEOMETRY SHEETS 1–7.

KEYPLAN

EPSC EXISTING CONDITIONS SITE PLAN

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PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
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SHEET 40 OF 173

VT STATE PLANE GRID N

SCOTT HILL ROAD

AIRPORT PROPERTY LINE

67C
HSG D
K = 0.32

17B
HSG D
K = 0.32

67C
HSG D
K = 0.32

SOIL TYPE
DIVIDE
(TYP.)

SUBCATCHMENT 3.9S

Grass

SUBCATCHMENT 4.1S

103
HSG D

FAA
LOCALIZER
ANTENNA

6" UD

FR

FB2 FB4 FB6 FB8

FB1A FB3 FB5 FB7

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00

STONE CHECK DAM, TYPE I
(SEE EPSC DETAILS SHT 2)
(TYP.)

RUNWAY 17-35

SUBCATCHMENT 2.12S

existing grassed lined treatment swale

GRASS LINED TREATMENT SWALE

CLASS 2 WETLANDS

TEMPORARY EROSION MATTING
(TYP.)

50'-0"
BUFFER

SILT FENCE
(TYP.)

SUBCATCHMENT 2.13S

DI #5

SPRING

RCDI #
TG

PROPOSED TAXIWAY A

GRASS LINED TREATMENT SWALE

66B
HSG C
K = 0.32

SUBCATCHMENT 2.14S

SOIL TYPE
DIVIDE
(TYP.)

66C
HSG C
K = 0.32

AIRPORT PROPERTY LINE

AIRPORT ROAD

FAA
LOCALIZER
SHELTER

ACCESS ROAD

PROPOSED STABILIZED
CONSTRUCTION ENTRANCE
CONTRACTOR SECURITY GUARD

SUBCATCHMENT 3.1S

REMOVE AND RESET FENCE
PER VTRANS STANDARDS

APPROXIMATE LIMITS
OF GRADING (TYP.)

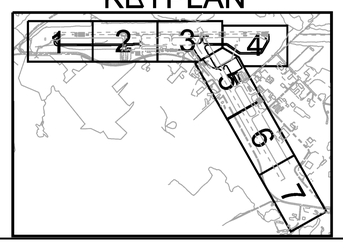
$ (EPSC_CN2)

NOTE:

PROPOSED ALIGNMENTS
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SEE GEOMETRY SHEETS 1-7.

0 50 100
SCALE

KEYPLAN



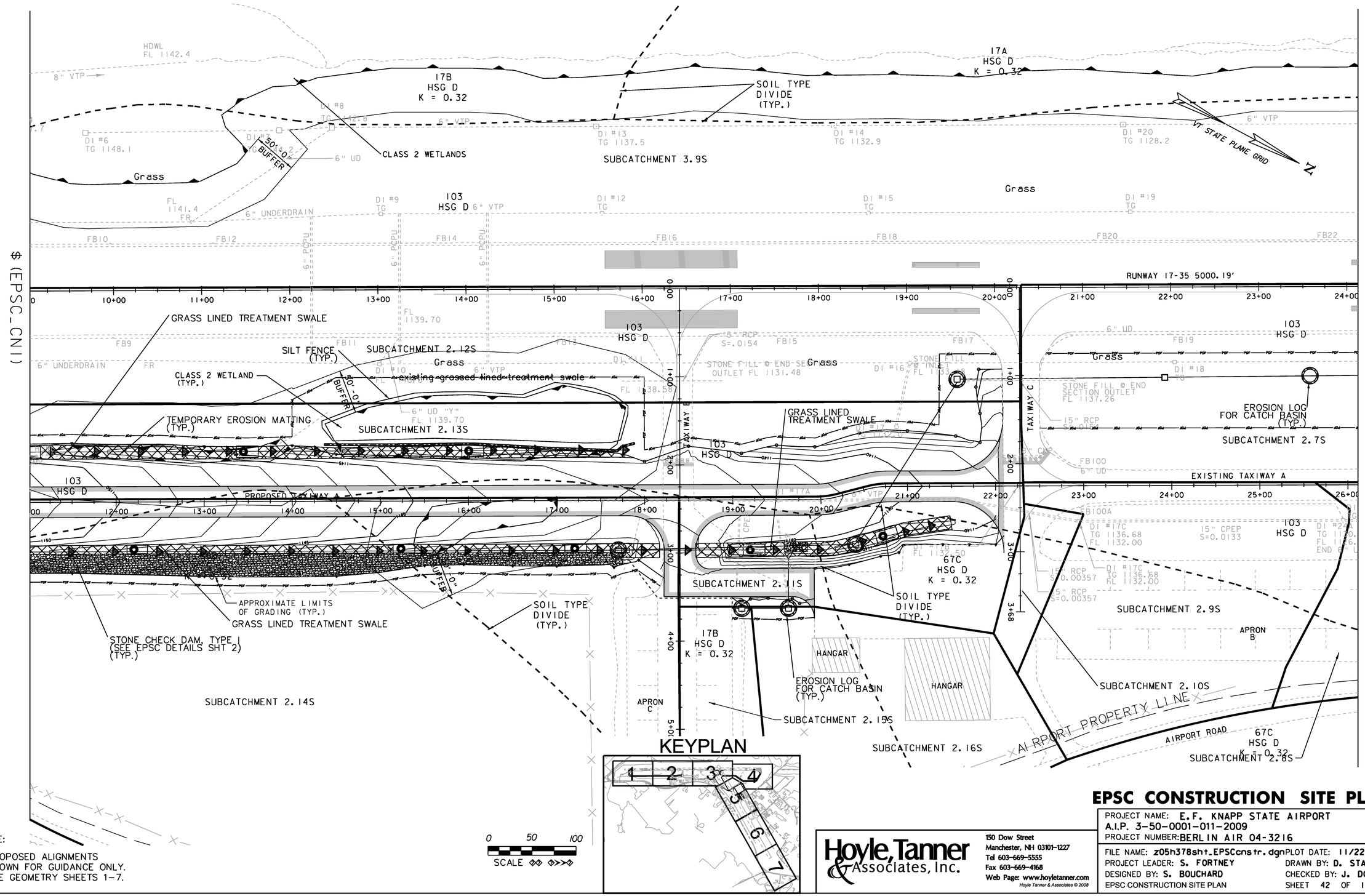
EPSC CONSTRUCTION SITE PLAN

PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_EPSCconstr.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
EPSC CONSTRUCTION SITE PLAN SHEET 41 OF 173

Hoyle, Tanner & Associates, Inc.
150 Dow Street
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EPSC CONSTRUCTION SITE PLAN



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0 50 100
SCALE

KEYPLAN

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EPSC CONSTRUCTION SITE PLAN SHEET 42 OF 173

SEE BELOW

SOIL TYPE DIVIDE (TYP.)

SUBCATCHMENT 3.9S

SUBCATCHMENT 2.6S

SUBCATCHMENT 2.7S

SUBCATCHMENT 2.8S

SUBCATCHMENT 2.5S

SUBCATCHMENT 2.4S

SUBCATCHMENT 2.3S

SUBCATCHMENT 2.2S

SUBCATCHMENT 1.6S

SUBCATCHMENT 1.7S

SUBCATCHMENT 1.4S

SUBCATCHMENT 2.1S

CLASS 2 WETLANDS (TYP.)

50'-0" BUFFER

POND 2

RUNWAY 17-35

TAXIWAY D

EXISTING TAXIWAY A

PROPOSED TAXIWAY E

PROPOSED TAXIWAY A

HANGAR

HANGAR

HANGAR

HANGAR

VEHICLE PARKING LOT

GARAGE

TERMINAL BLDG.

TERMINAL APRON

AIRPORT PROPERTY LINE

AIRPORT ROAD

EROSION LOG FOR CATCH BASIN (TYP.)

TEMPORARY EROSION MATTING (TYP.)

APPROXIMATE LIMITS OF GRADING (TYP.)

STONE CHECK DAM, TYPE I (SEE EPSC DETAILS SH. 2) (TYP.)

91D HSG B K = 0.28

67C HSG D K = 0.32

92B HSG C K = 0.32

103 HSG D

Grass

℄ (EPSC_CN2)

℄ (EPSC_CN4)

℄ (EPSC_CN5)

SEE ABOVE **EPSC CONSTRUCTION SITE PLAN**

KEYPLAN

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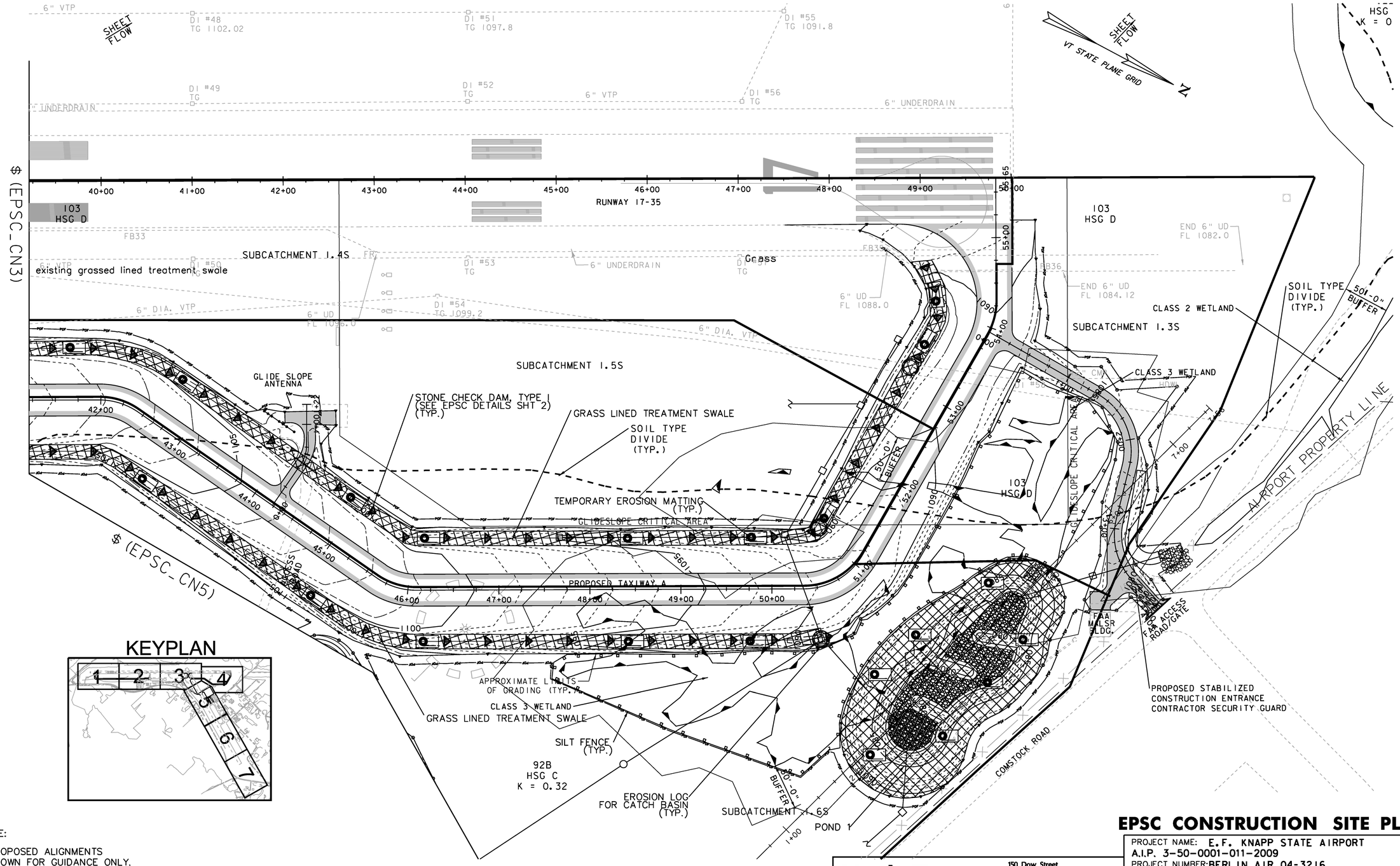
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SCALE

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EPSC CONSTRUCTION SITE PLAN SHEET 43 OF 173



NOTE:

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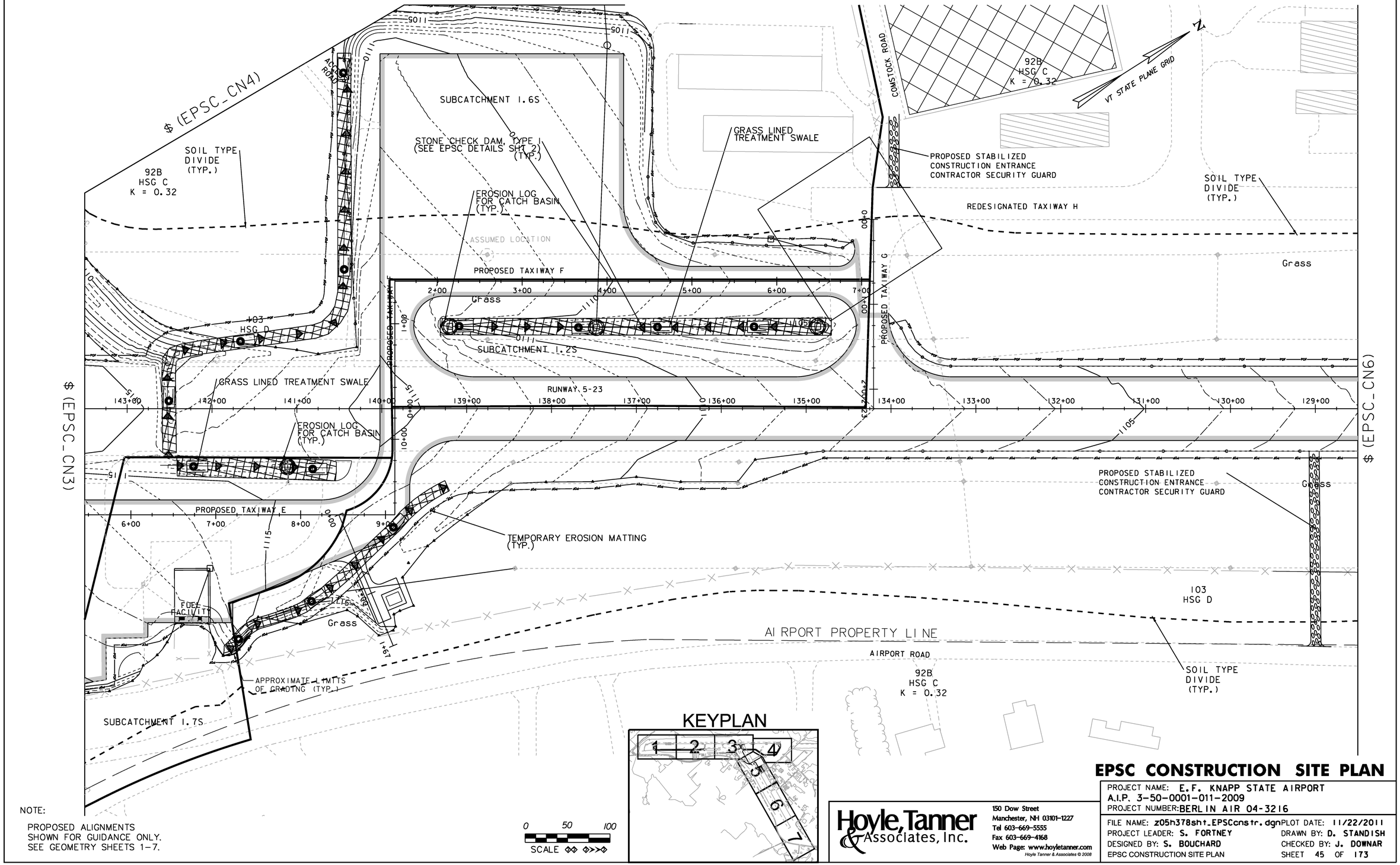
0 50 100
SCALE

EPSC CONSTRUCTION SITE PLAN

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EPSC CONSTRUCTION SITE PLAN SHEET 44 OF 173

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0 50 100
SCALE

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DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
EPSC CONSTRUCTION SITE PLAN SHEET 45 OF 173

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92B
HSG C
K = 0.32

AIRPORT PROPERTY LINE

SOIL TYPE
DIVIDE
(TYP.)

VT STATE PLANE GRID

WINDSOCK RELOCATED
TO 115+00, 220.00 LT.

103
HSG D

REDESIGNATED TAXIWAY H

Grass

RUNWAY 5-23

128+00 127+00 126+00 125+00 124+00 123+00 122+00 121+00 120+00 119+00 118+00 117+00 116+00 115+00 114+00

1100 1095 1090

℄ (EPSC_CN5)

℄ (EPSC_CN7)

Grass

APPROXIMATE LIMITS
OF GRADING (TYP.)

103
HSG D

AIRPORT PROPERTY LINE

AIRPORT ROAD

SOIL TYPE
DIVIDE
(TYP.)

RELOCATED WINDSOCK

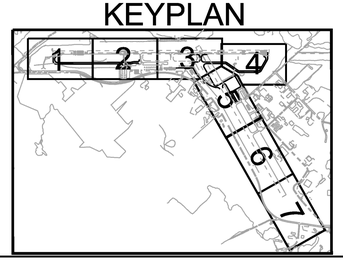
92C
HSG C
K = 0.32

SOIL TYPE
DIVIDE
(TYP.)

92B
HSG C
K = 0.32

17B
HSG D
K = 0.32

KEYPLAN



NOTE:

PROPOSED ALIGNMENTS
SHOWN FOR GUIDANCE ONLY.
SEE GEOMETRY SHEETS 1–7.

0 50 100
SCALE

EPSC CONSTRUCTION SITE PLAN

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PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
EPSC CONSTRUCTION SITE PLAN SHEET 46 OF 173

90B
HSG B
K = 0.32

SOIL TYPE
DIVIDE
(TYP.)

VT STATE PLANE GRID

N

Grass

RUNWAY 5-23

113+00 112+00 111+00 110+02

108%

103
HSG D

AIRPORT PROPERTY LINE

AIRPORT ROAD

SOIL TYPE
DIVIDE
(TYP.)

Grass

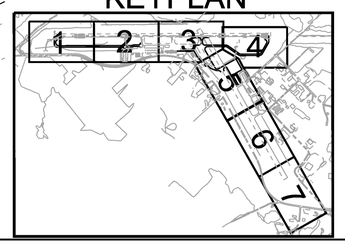
$ (EPSC_CN6)

NOTE:

PROPOSED ALIGNMENTS
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0 50 100
SCALE

KEYPLAN



EPSC CONSTRUCTION SITE PLAN

PROJECT NAME: E.F. KNAPP STATE AIRPORT
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_EPSCcnstr.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
EPSC CONSTRUCTION SITE PLAN SHEET 47 OF 173

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PROPOSED WIND CONE

VT STATE PLANE GRID

LOCALIZER CRITICAL AREA

SCOTT HILL ROAD

AIRPORT PROPERTY LINE

DI #5

SPRING

RCDT #
TG 114

6" UD

FR

FB2 FB4 FB6 FB8

FB1A FB3 FB5 FB7

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+0

RUNWAY 17-35

FAA
LOCALIZER
ANTENNA

50'-0"
BUFFER

existing grassed lined treatment swale

CLASS 2 WETLANDS

TOPSOIL AND SEED

GRASS LINED TREATMENT SWALE

PROPOSED TAXIWAY A

3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+

FAA
LOCALIZER
SHELTER

ACCESS ROAD

PROPOSED FENCE

AIRPORT PROPERTY LINE

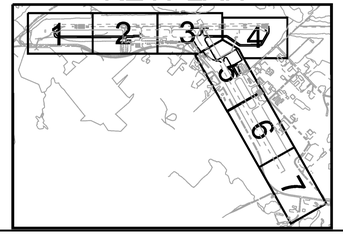
AIRPORT ROAD

REMOVE AND RESET FENCE
PER VTRANS STANDARDS

APPROXIMATE LIMITS
OF GRADING (TYP.)

$ (EPSC_FN2)

KEYPLAN



NOTE:

PROPOSED ALIGNMENTS
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0 50 100
SCALE

EPSC FINAL CONDITIONS SITE PLAN

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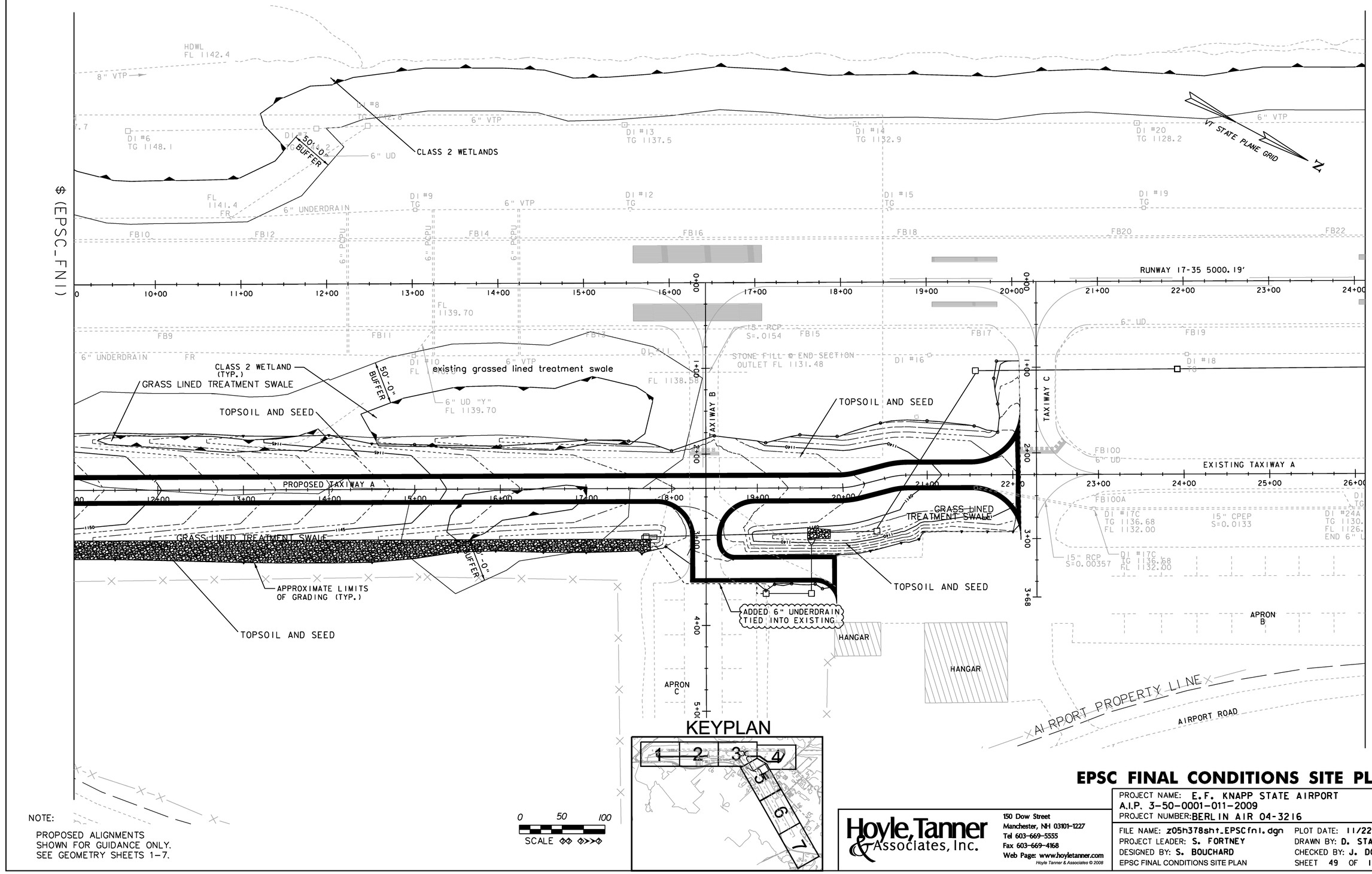
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_EPSCfn1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
EPSC FINAL CONDITIONS SITE PLAN

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 48 OF 173

EPSC FINAL CONDITIONS SITE PLAN



KEYPLAN

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0 50 100
SCALE

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EPSC FINAL CONDITIONS SITE PLAN

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 49 OF 173

SEE BELOW

$ (EPSC_FN2)

$ (EPSC_FN4)

$ (EPSC_FN5)

SEE ABOVE

24" CPEPES STONE FILL @ OUTLET FL. 1108.5

FL 1107.4

60" DIA. ACCGMP FL 1106.0 IN

24" CPEP S=0.0333

DI #38 FL IN 1110.60 FL OUT 1110.50

50'-0" BUFFER

DI #38

CLASS 2 WETLANDS (TYP.)

VT STATE PLANE GRID

DI #21 TG 1123.3

DI #29 FL IN 1112.1 FL OUT 1112.0

DI #29 TG 1117.2

TOPSOIL AND SEED

DI #37 TG 1114.53

DI #22 TG

DI #28 TG

DI #47 TG 1106.7

DI #48 TG

FB24 FB28 FB30

24" RCP S=0.0192

18" DIA. RCP (RETAIN)

20+00 21+00 22+00 23+00 24+00 24+97

1105 1110 1115 5011 0111

25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00

0+00 1+00 2+00 3+00 4+00 5+00

RUNWAY 17-35

149+00 148+00 147+00 146+00 145+00 144+00

FB21 FB23 FB25 FB27 FB31

DI #27, TG 1121.81 FL 1116.75 (IN) FL 1116.70 (OUT)

DI #30 TG 1119.70

DI #36 TG 1115.36 FL 1107.5

6" UD

24" RCP S=0.00833

DI #23 TG

TAXIWAY D

PROPOSED TAXIWAY E

APPROXIMATE LIMITS OF GRADING (TYP.)

TOPSOIL AND SEED

DI #36A, TG 1115.22 FL 1107.1 (IN) FL 1107.0 (OUT)

15" x 350 LF CPEP S=0.0308

DI # 31A TG 1122.62 FL 1117.9 (IN) FL 1117.8 (OUT)

15" RCP S=0.02439

FB101 6" UD

FB105

EXISTING TAXIWAY A

PROPOSED TAXIWAY A

DI #31

DI #26A TG 1126.08 FL 1123.00

12" RCP S=0.025

12" RCP x 80 LF S=0.025

DI #24 1126.1 FB101A

15" CPEP S= .01569

DI #26B

EX 12" CMP

DI #26C TG 1128 FL 1124

DI #26D TG 1127 FL 1123

15" DIA. CMP

DI #33

DI #34A

DI #34

DI #32

DI #35

HANGAR HANGAR HANGAR HANGAR

DI #26B TG 1129.0 FL 1125.5

VEHICLE PARKING LOT

AIRPORT PROPERTY LINE

AIRPORT ROAD

GARAGE

TERMINAL BLDG.

TERMINAL APRON

24" DIA. CMP

PROPOSED TAXIWAY E

1110 1115 0111 0211 1120 1116

144+00

KEYPLAN

1 2 3 4 5 6 7

0 50 100

SCALE

NOTE:

PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1-7.

EPSC FINAL CONDITIONS SITE PLAN

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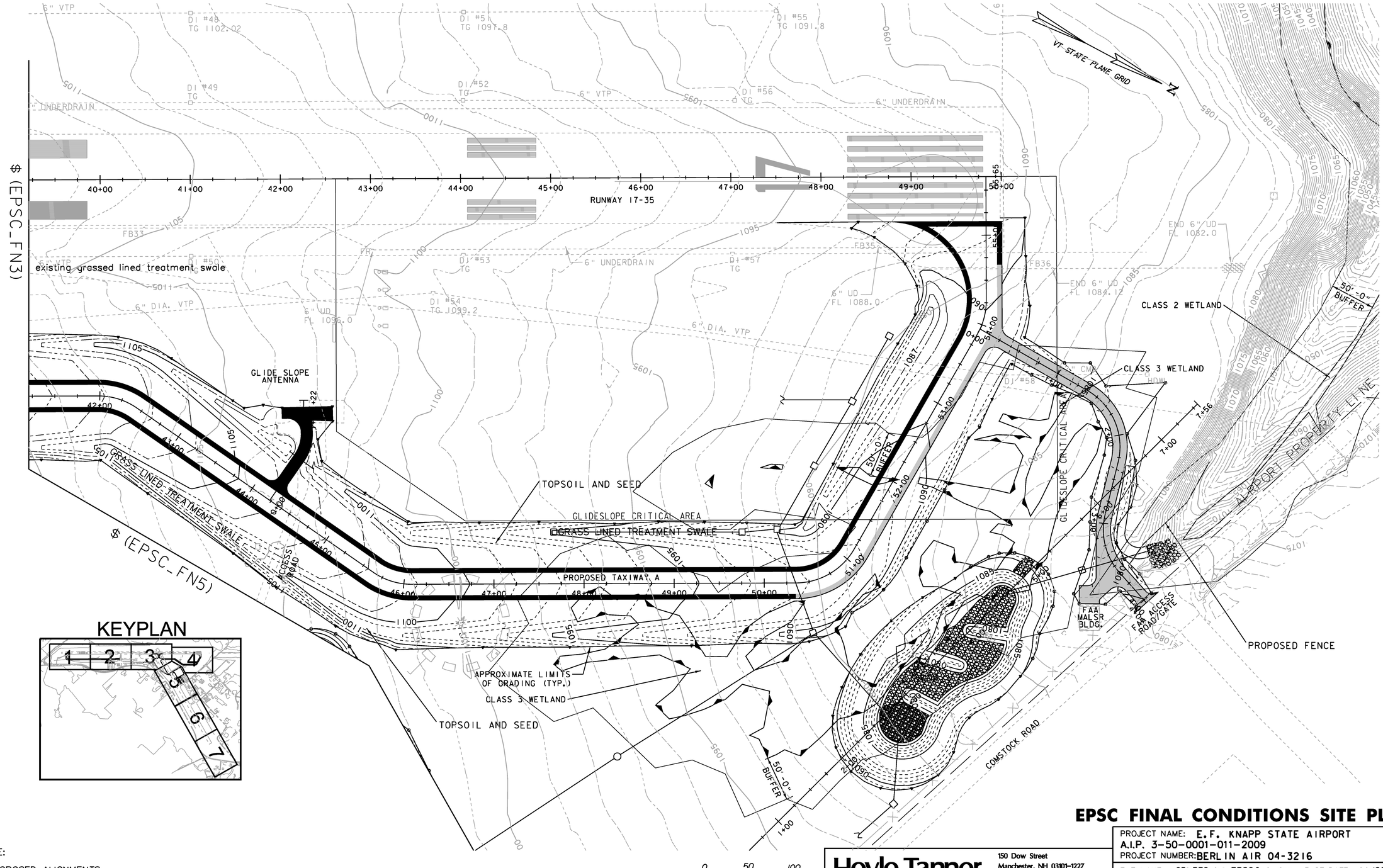
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_EPSCfnl.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
EPSC FINAL CONDITIONS SITE PLAN

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 50 OF 173



NOTE:

PROPOSED ALIGNMENTS
SHOWN FOR GUIDANCE ONLY.
SEE GEOMETRY SHEETS 1–7.

0 50 100
SCALE

EPSC FINAL CONDITIONS SITE PLAN

PROJECT NAME: E.F. KNAPP STATE AIRPORT
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_EPSCfn1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
EPSC FINAL CONDITIONS SITE PLAN

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 51 OF 173

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℄ (EPSC_FN4)

TOPSOIL AND SEED

ACCESS ROAD

TAXIWAY F STA. 1+50.00

PROPOSED WIND CONE

TOPSOIL AND SEED

CONTRACTOR'S STAGING AREA

COMSTOCK ROAD

VT STATE PLANE GRID

N

GRASS LINED TREATMENT SWALE

REDESIGNATED TAXIWAY H

ASSUMED LOCATION

PROPOSED TAXIWAY F

TAXIWAY F STA. 7+14.05 =
TAXIWAY G STA. 0+72.94

PROPOSED TAXIWAY G

TOPSOIL AND SEED

PROPOSED TAXIWAY B

RUNWAY 5-23 STA. 139+84.57 =
TAXIWAY E STA. 10+36.06=
TAXIWAY F STA. 0+00.00

RUNWAY 5-23

RUNWAY 5-23 STA. 134+20.52 =
TAXIWAY G STA. 2+22.94

℄ (EPSC_FN3)

℄ (EPSC_FN6)

PROPOSED TAXIWAY E

TOPSOIL AND SEED

TOPSOIL AND SEED

FUEL FACILITY

PROPOSED FENCE

AIRPORT PROPERTY LINE

AIRPORT ROAD

APPROXIMATE LIMITS OF GRADING (TYP.)

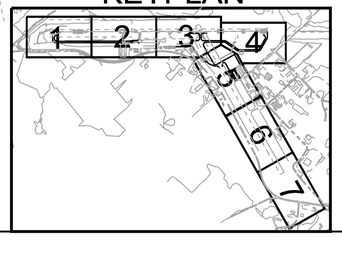
NOTE:

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0 50 100

SCALE

KEYPLAN



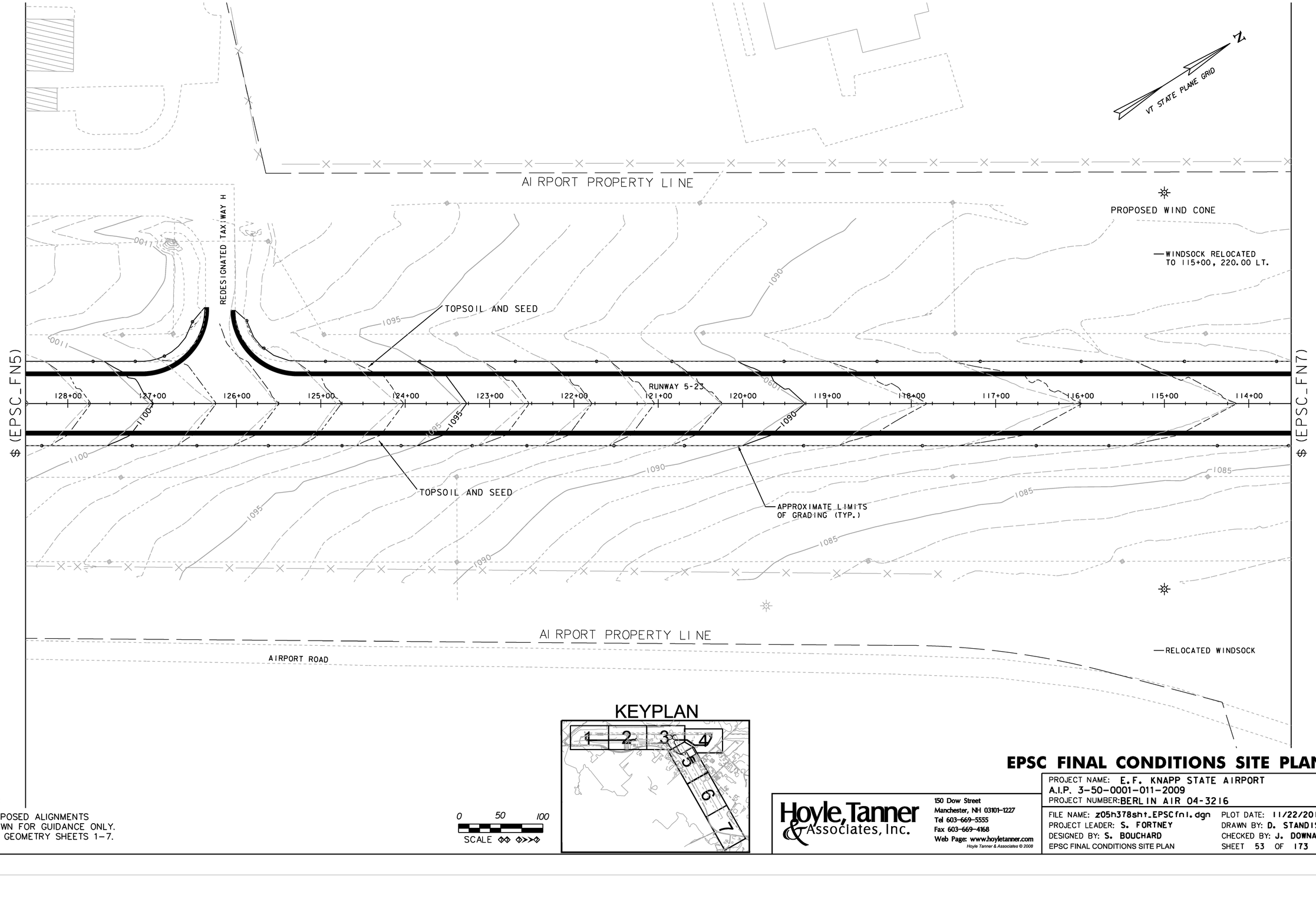
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_EPSCfn1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
EPSC FINAL CONDITIONS SITE PLAN

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 52 OF 173



NOTE:

PROPOSED ALIGNMENTS
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SEE GEOMETRY SHEETS 1-7.

0 50 100
SCALE

KEYPLAN

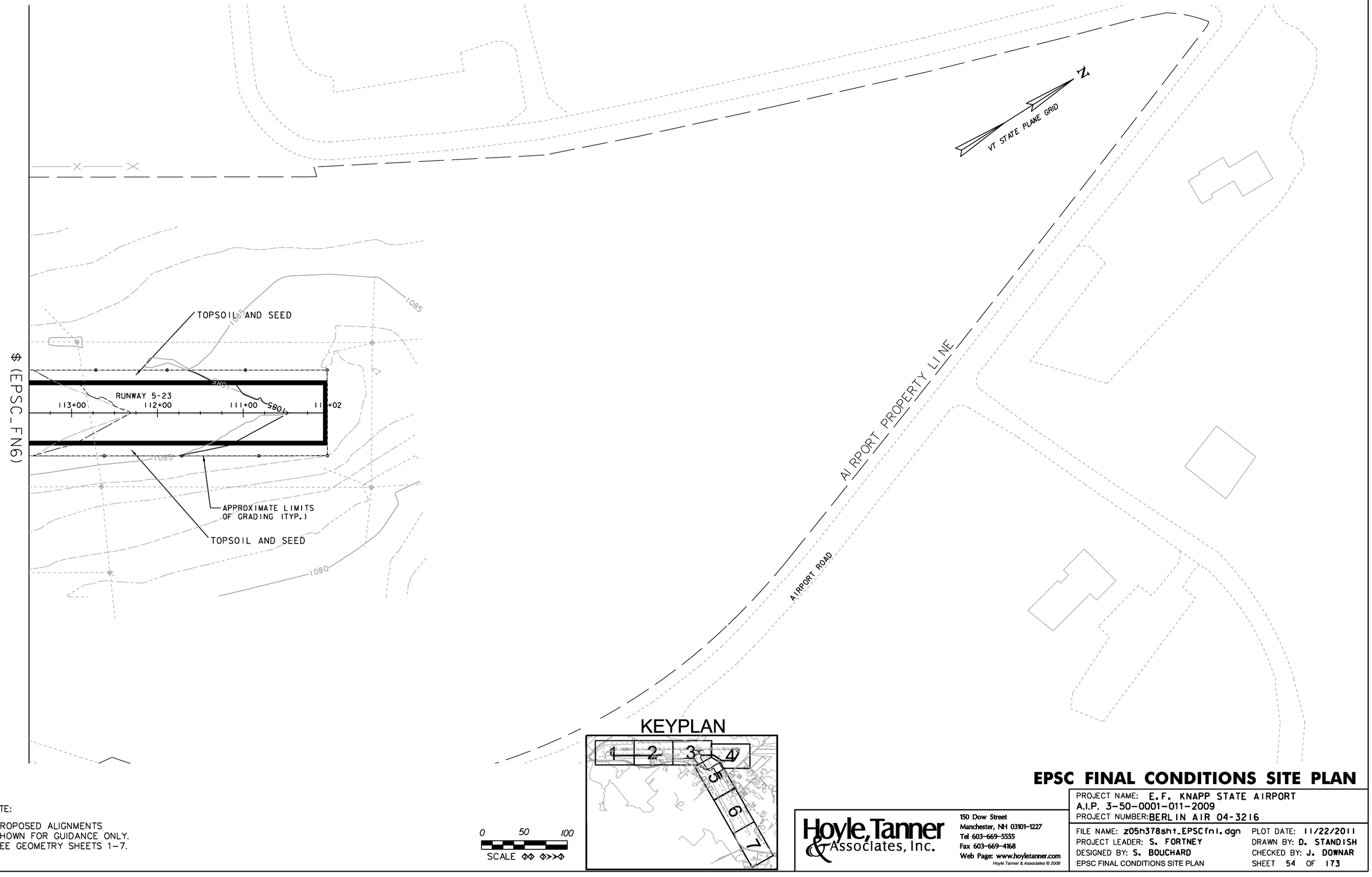
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PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 53 OF 173



NOTE:

PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1–7.

KEYPLAN

0 50 100

SCALE

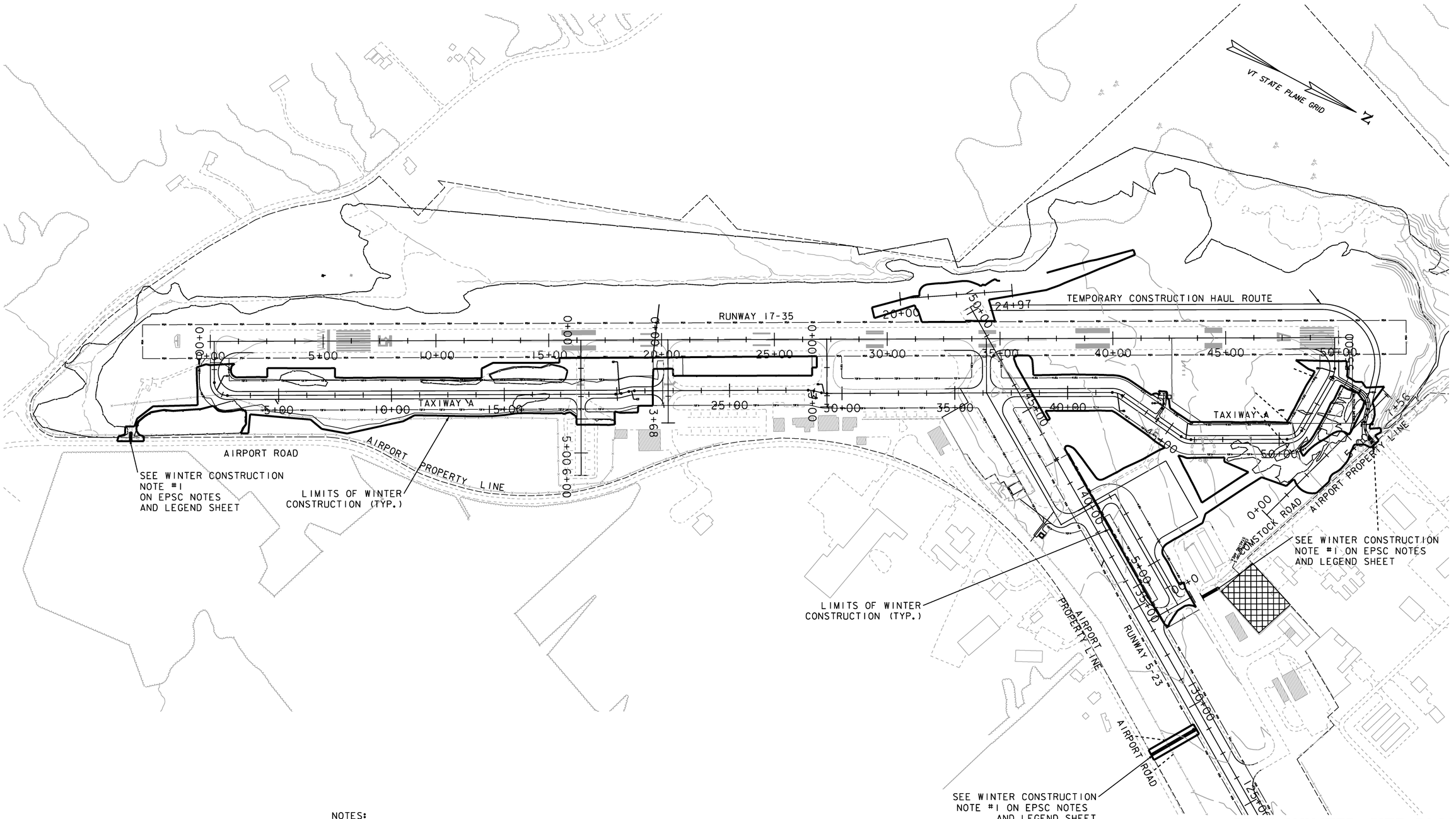
EPSC FINAL CONDITIONS SITE PLAN

Hoyle, Tanner & Associates, Inc.
150 Dow Street
Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_EPSCfnl.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
EPSC FINAL CONDITIONS SITE PLAN

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 54 OF 173



NOTES:
1. SEE EPSC WINTER CONSTRUCTION NOTES ON EPSC NOTES AND LEGEND SHEET.
2. PROPOSED ALIGNMENTS SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1-7.

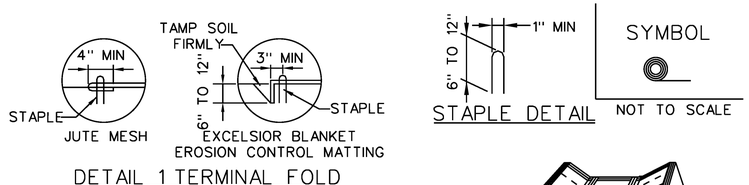
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EPSC WINTER SITE PLAN

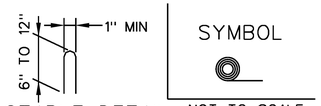
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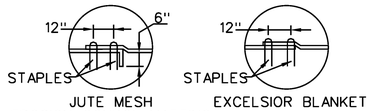
FILE NAME: z05h378sht_EPSCwinter.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
EPSC WINTER SITE PLAN SHEET 55 OF 173



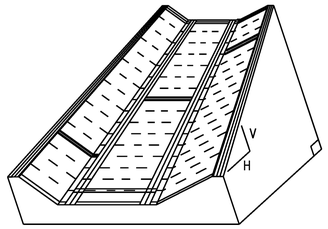
DETAIL 1 TERMINAL FOLD

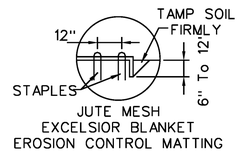


STAPLE DETAIL

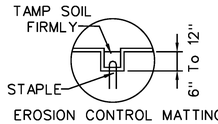


DETAIL 2 JUNCTION SLOT

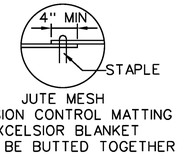




DETAIL 3 ANCHOR SLOT



DETAIL 4 CHECK SLOT

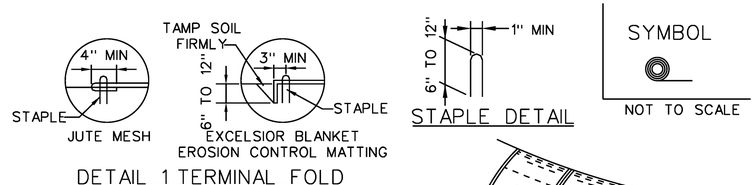


DETAIL 5 LAP JOINT

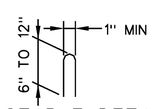
CONSTRUCTION SPECIFICATIONS

ROLLED EROSION CONTROL PRODUCT (RECP) DITCH

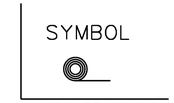
THIS ITEM SHALL BE PAID FOR UNDER ITEM P-156-4 EROSION CONTROL MATTING

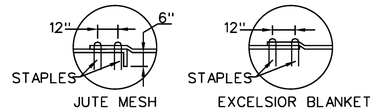


DETAIL 1 TERMINAL FOLD

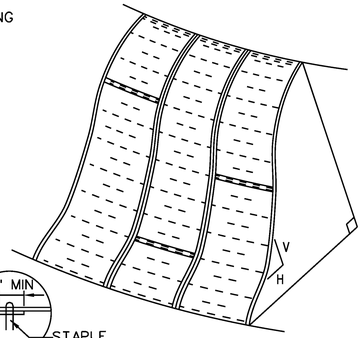


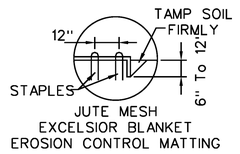
STAPLE DETAIL



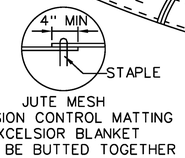


DETAIL 2 JUNCTION SLOT





DETAIL 3 ANCHOR SLOT

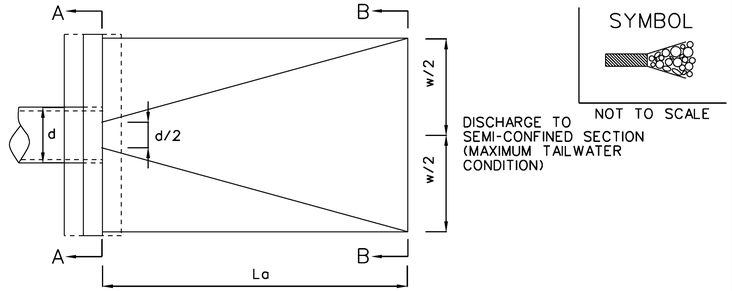


DETAIL 4 LAP JOINT

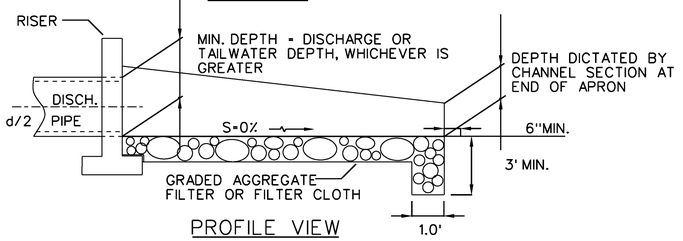
CONSTRUCTION SPECIFICATIONS

ROLLED EROSION CONTROL PRODUCT RECP) SIDE SLOPE

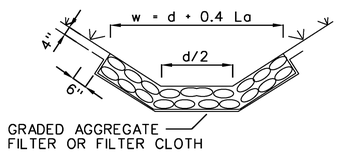
THIS ITEM SHALL BE PAID FOR UNDER ITEM P-156-4 EROSION CONTROL MATTING



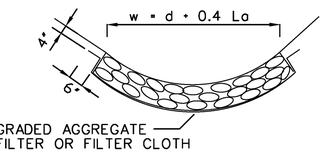
PLANVIEW



PROFILE VIEW



SECTION A-A
(AT END OF CULVERT)



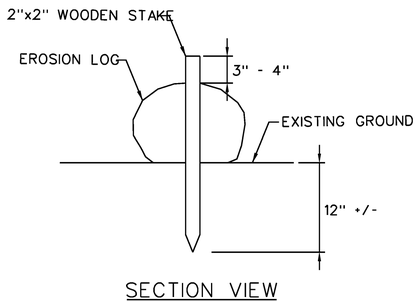
SECTION B-B
(AT END OF APRON)

RIPRAP OUTLET PROTECTION EXAMPLE

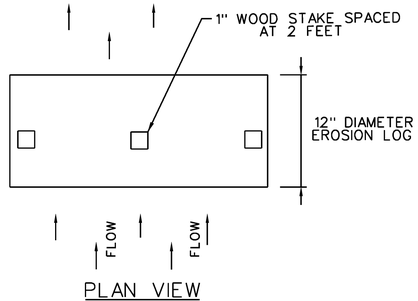
NOTE:
SEE RIPRAP STANDARDS AND SPECIFICATIONS MAXIMUM TAILWATER CONDITIONS

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM M-105-1 - STONE FILL, TYPE I



SECTION VIEW



PLAN VIEW

EROSION LOG DETAIL

NOT TO SCALE

NOTES:
1. THIS ITEM SHALL BE PAID FOR UNDER ITEM P-156-8 - EROSION LOG.
2. PLACE EROSION LOGS AT THE DIRECTION OF THE SOIL EROSION CONTROL PLAN AND THE ENGINEER.
3. EROSION LOG TO BE OPEN WEAVE FABRIC AROUND EXCELSIOR FIBERS, AND BIO-DEGRADABLE OR EQUAL.

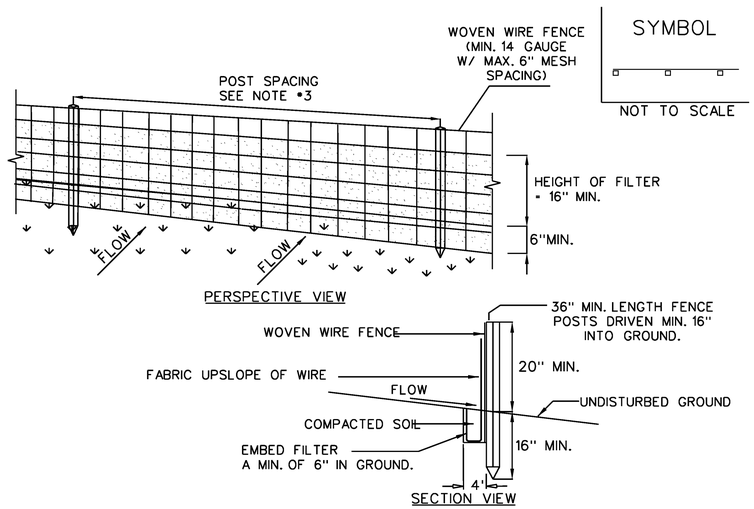
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Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com
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EPSC DETAILS SHEET 1

PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_ero_det.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
EPSC DETAILS SHEET 1

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE REINFORCEMENT IS ONLY REQUIRED WITHIN 100 FT UPSLOPE OF RECEIVING WATERS.

2. WHERE REQUIRED FENCE SHALL BE WOVEN WIRE, MIN. 14 GAUGE WITH A 6" MAXIMUM MESH OPENING. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUIVALENT.

3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4'. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.

4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.

5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED.

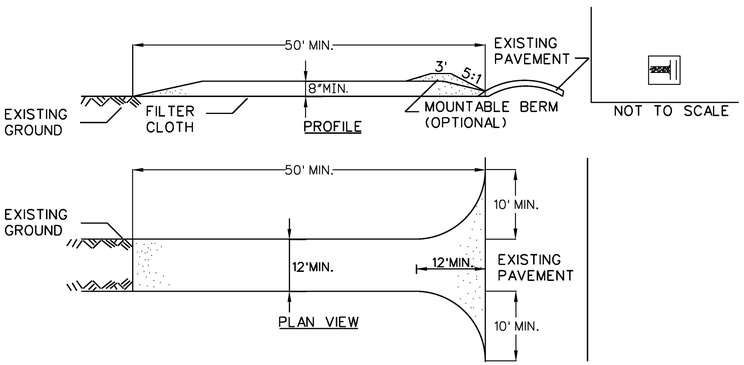
6. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.

7. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

SILT FENCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM P-156-9



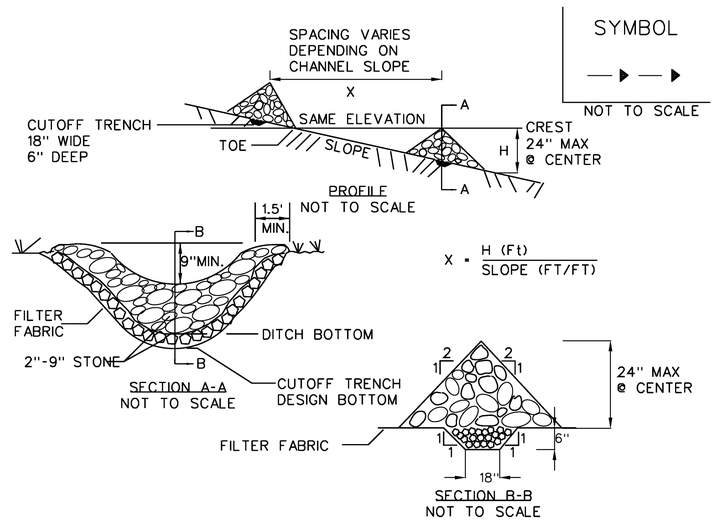
CONSTRUCTION SPECIFICATIONS

1. STONE FOR VEHICLE TRACKING PAD SHALL CONFORM TO TABLE 704-17A.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH APPLIES).
3. THICKNESS - NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

STABILIZED CONSTRUCTION ENTRANCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM
P-156-6 VEHICLE TRACKING PAD



CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION.
2. SET SPACING OF CHECK DAMS SO THAT THE ELEVATION OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION AS THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

MAXIMUM DRAINAGE AREA 2 ACRES.

CHECK DAM

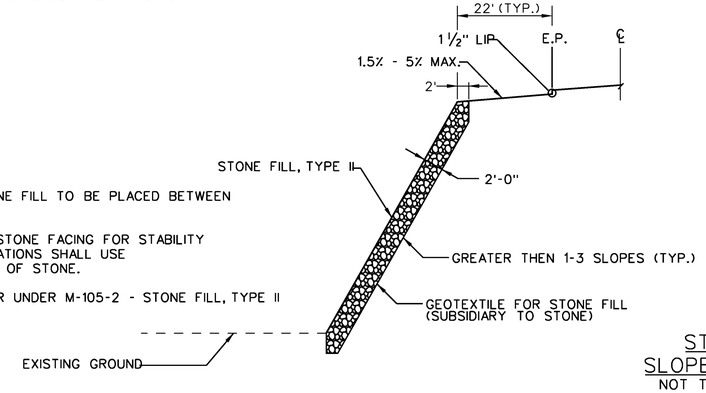
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

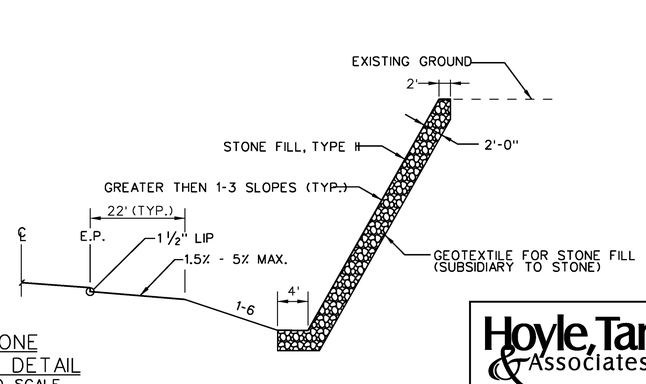
THIS ITEM SHALL BE PAID FOR UNDER ITEM
P-156-5 TEMPORARY STONE CHECK DAM, TYPE I

NOTES:
1. GEOTEXTILE FOR STONE FILL TO BE PLACED BETWEEN STONE FILL AND SOIL.

2. SLOPES UTILIZING A STONE FACING FOR STABILITY AND EROSION CONSIDERATIONS SHALL USE A MINIMUM 2' THICKNESS OF STONE.

3. ITEM TO BE PAID FOR UNDER M-105-2 - STONE FILL, TYPE II





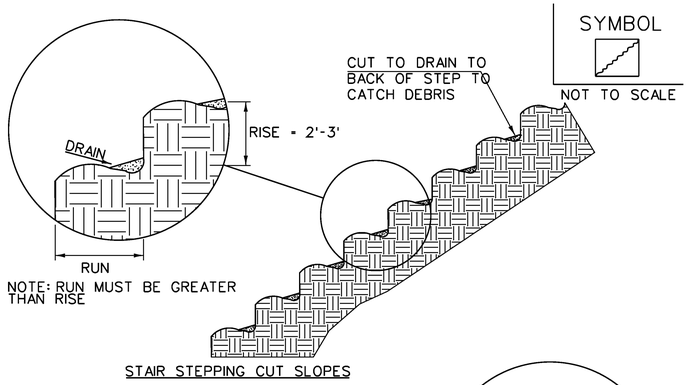
STONE SLOPE DETAIL
NOT TO SCALE

EPSC DETAILS SHEET 2

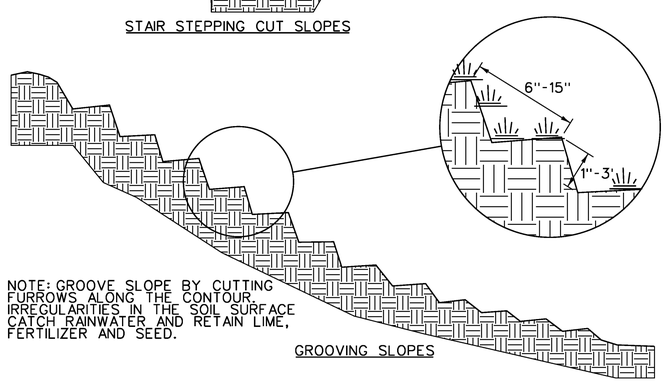
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A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_ero_det.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
EPSC DETAILS SHEET 2
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR



STAIR STEPPING CUT SLOPES



GROOVING SLOPES

SURFACE ROUGHENING

NOTES:
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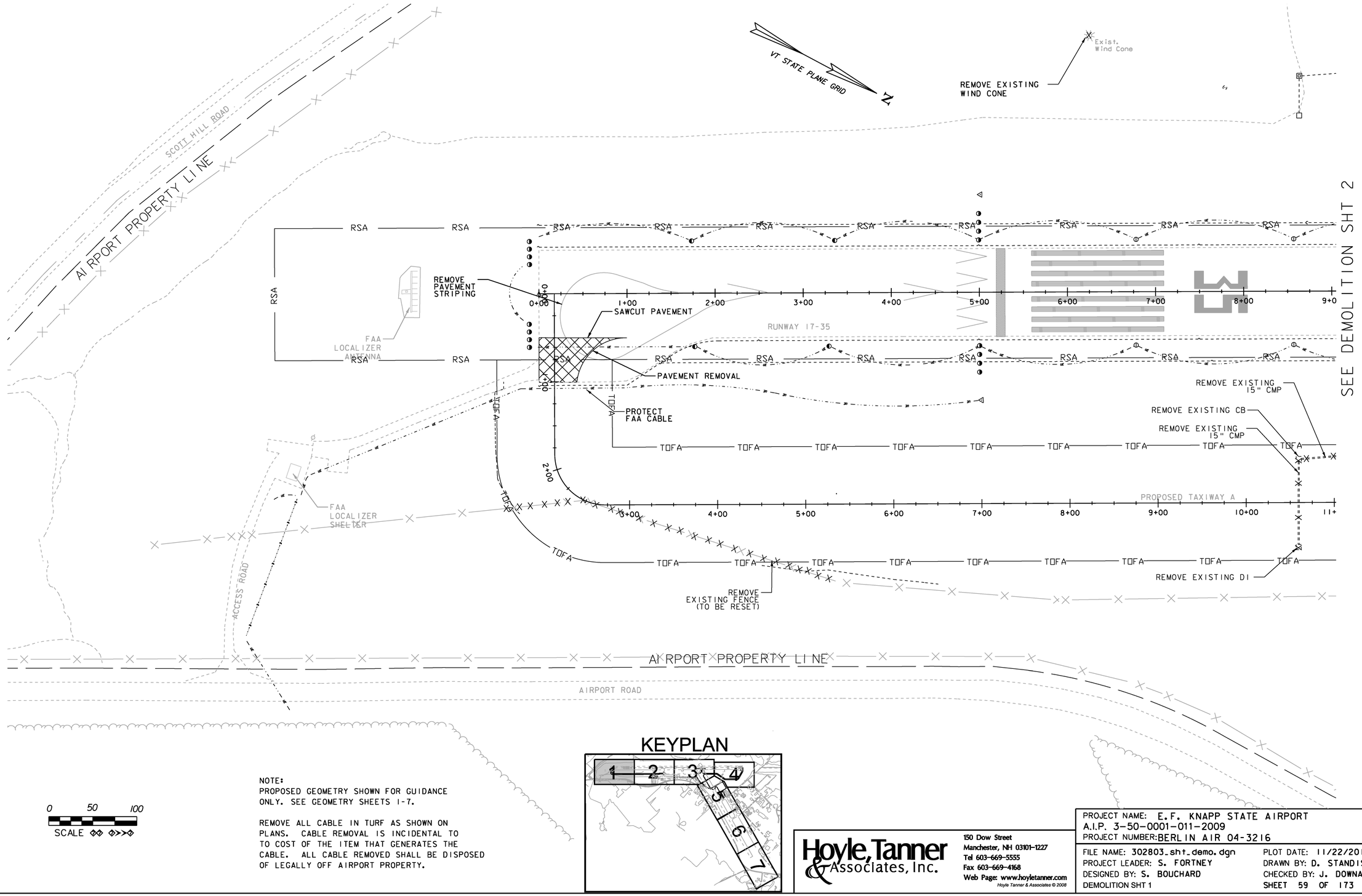
THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

Hoyle, Tanner & Associates, Inc.
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FILE NAME: 302803_sht_ero_det.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
EPSC DETAILS SHEET 3

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR



0 50 100
SCALE

NOTE:
PROPOSED GEOMETRY SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1-7.

REMOVE ALL CABLE IN TURF AS SHOWN ON PLANS. CABLE REMOVAL IS INCIDENTAL TO TO COST OF THE ITEM THAT GENERATES THE CABLE. ALL CABLE REMOVED SHALL BE DISPOSED OF LEGALLY OFF AIRPORT PROPERTY.

KEYPLAN

Hoyle, Tanner & Associates, Inc.
150 Dow Street
Manchester, NH 03101-1227
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_demo.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
DEMOLITION SHT 1

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 59 OF 173

SEE DEMOLITION SHT 1

SEE DEMOLITION SHT 3

VT STATE PLANE GRID

N

RUNWAY 17-35 5000.19'

REMOVE PAVEMENT STRIPING

REMOVE SIGN AND BASE

SAWCUT PAVEMENT

REMOVE EXISTING ELECTRICAL CABLES (TYP.)

EXISTING PIPE TO REMAIN

CAP PIPE INLET

REMOVE EXISTING PIPE

REMOVE EXISTING D. I.

REMOVE EXISTING HEADWALL

REMOVE EXISTING PIPE (TYP.)

REMOVE EXISTING REFLECTOR (TYP.)

REMOVE D. I. AND CAP PIPE INLET

PAVEMENT REMOVAL

PROPOSED TAXIWAY A

EXISTING TAXIWAY A

TAXIWAY C

APRON B

APRON C

HANGAR

AIRPORT PROPERTY LINE

AIRPORT ROAD

RSA

TOFA

KEYPLAN

SCALE 0 50 100

Hoyle, Tanner & Associates, Inc.

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FILE NAME: 302803_sht_demo.dgn
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DESIGNED BY: S. BOUCHARD
DEMOLITION SHT 2

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

SEE DEMOLITION SHT 2

SEE DEMOLITION SHT 4

SEE DEMOLITION SHT 5

VT STATE PLANE GRID

N

CAP PIPE INLET

REMOVE EXISTING 18" RCP (TYP.)

REMOVE D.I.

CAP PIPE INLET

CUT AND CAPPED AT WETLAND 50' BUFFER

CAP PIPE INLET

REMOVE EXISTING 18" ACCGMP

REMOVE CB.

PAVEMENT REMOVAL (TYP.)

REMOVE PAVEMENT STRIPING

REMOVE PAVEMENT STRIPING

SAWCUT PAVEMENT

REMOVE EXISTING 18" RCP

SAWCUT PAVEMENT

REMOVE CB.

REMOVE SIGN AND BASE

REMOVE EXISTING CABLES (TYP.)

REMOVE SIGN AND BASE

REMOVE EXISTING REFLECTOR (TYP.)

REMOVE EXISTING REFLECTOR (TYP.)

RELOCATE SIGN AND BASE

REMOVE SIGN AND BASE

REMOVE SIGN AND BASE

REMOVE SIGN AND BASE

REMOVE SIGN AND BASE

REMOVE EXISTING LIGHT (TYP.)

REMOVE PAVEMENT STRIPING

SAWCUT PAVEMENT

REMOVE EXIST. 12" PIPE

REMOVE DI

REMOVE SIGN AND BASE

REMOVE DI

REMOVE EXISTING LIGHTS (TYP.)

REMOVE PIPE

REMOVE DI

REMOVE DI

REMOVE EXIST. 18" ACCMP

REMOVE DI

REMOVE SIGN AND BASE

REMOVE EXIST. 6" PIPE

RUNWAY 17-35

RUNWAY 17-35

EXISTING TAXIWAY A

PROPOSED TAXIWAY A

TAXIWAY D

PROPOSED TAXIWAY E

HANGAR

HANGAR

HANGAR

HANGAR

VEHICLE PARKING LOT

AIRPORT PROPERTY LINE

AIRPORT ROAD

GARAGE

TERMINAL BLDG.

RSA

TOFA

KEYPLAN

1 2 3 4 5 6 7

0 50 100

SCALE

Hoyle, Tanner & Associates, Inc.

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Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_demo.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
DEMOLITION SHT 3

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

SEE DEMOLITION SHT 3

SEE DEMOLITION SHT 5

VT STATE PLANE GRID

N

RUNWAY 17-35

PROPOSED TAXIWAY A

GLIDE SLOPE ANTENNA

ACCESS ROAD

COMSTOCK ROAD

AIRPORT PROPERTY LINE

RSA

TOFA

REMOVE PAVEMENT STRIPING

SAWCUT PAVEMENT

PAVEMENT REMOVAL (TYP.)

PAVEMENT REMOVAL (TYP.)

WIND CONE TO BE REMOVED AFTER CONSTRUCTION OF NEW WIND CONE

TO BE REMOVED AFTER NEW POWER LINES ARE INSTALLED

REMOVE CB

REMOVE CB

REMOVE CB

TERMINATION CABINET

2-3" RIGID CONDUIT 4' DEEP

FAA ACCESS ROAD/GATE

FAA MALSR BLDG.

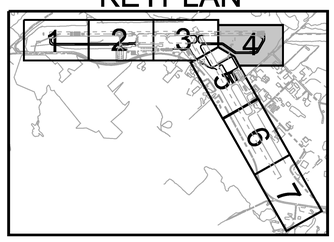
#2.15KV (GS)

2-1/C#2 15KV

40+00 41+00 42+00 43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00 51+00 52+00 53+00 54+00 55+00 0+00 1+00 2+00 3+00 4+00

1+80 1+22

KEYPLAN



0 50 100

SCALE

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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_demo.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
DEMOLITION SHT 4

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 62 OF 173

SEE DEMOLITION SHT 4

SEE DEMOLITION SHT 3

SEE DEMOLITION SHT 6

PAVEMENT REMOVAL (TYP.)

ACCESS ROAD

COMSTOCK ROAD

VT STATE PLANE GRID

N

REMOVE CATCHBASIN

ASSUMED LOCATION

REMOVE EXIST. PIPE

SAWCUT PAVEMENT

REMOVE SIGN AND BASE

REDESIGNATED TAXIWAY H

T/W LIGHT TO REMAIN

PROTECT DUCT BANK

TO VAULT

REMOVE EXISTING CABLE (TYP.)

REMOVE EXISTING LIGHTS (TYP.)

REMOVE CATCHBASIN

REMOVE CATCHBASINS

REMOVE CATCHBASINS AND BASE

PROPOSED TAXIWAY F

REMOVE EXIST. 6" PIPE

RUNWAY 5-23

CAP PIPE INLET

PROPOSED TAXIWAY E

REMOVE EXISTING PIPE

PAVEMENT REMOVAL (TYP.)

FUEL FACILITY

OIL/WATER SEPARATOR

AIRPORT PROPERTY LINE

AIRPORT ROAD

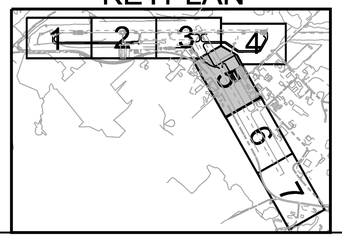
TOFA

RSA

0 50 100

SCALE

KEYPLAN



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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_demo.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
DEMOLITION SHT 5

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 63 OF 173

SEE DEMOLITION SHT 5

SEE DEMOLITION SHT 7

AIRPORT PROPERTY LINE

REMOVE SIGN & BASE

REDESIGNATED TAXIWAY H

SAWCUT PAVEMENT

PAVEMENT REMOVAL (TYP.)

REMOVE EXISTING LIGHTING (TYP.)

REMOVE EXISTING CABLES (TYP.)

RSA

128+00 127+00 126+00 125+00 124+00 123+00 122+00 121+00 120+00 119+00 118+00 117+00 116+00 115+00 114+00

RUNWAY 8-23

Exist. Wind Cone

REMOVE EXISTING WIND CONE

AIRPORT PROPERTY LINE

AIRPORT ROAD

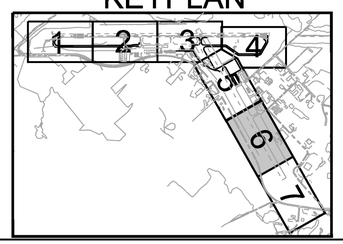
N

VT STATE PLANE GRID

0 50 100

SCALE

KEYPLAN



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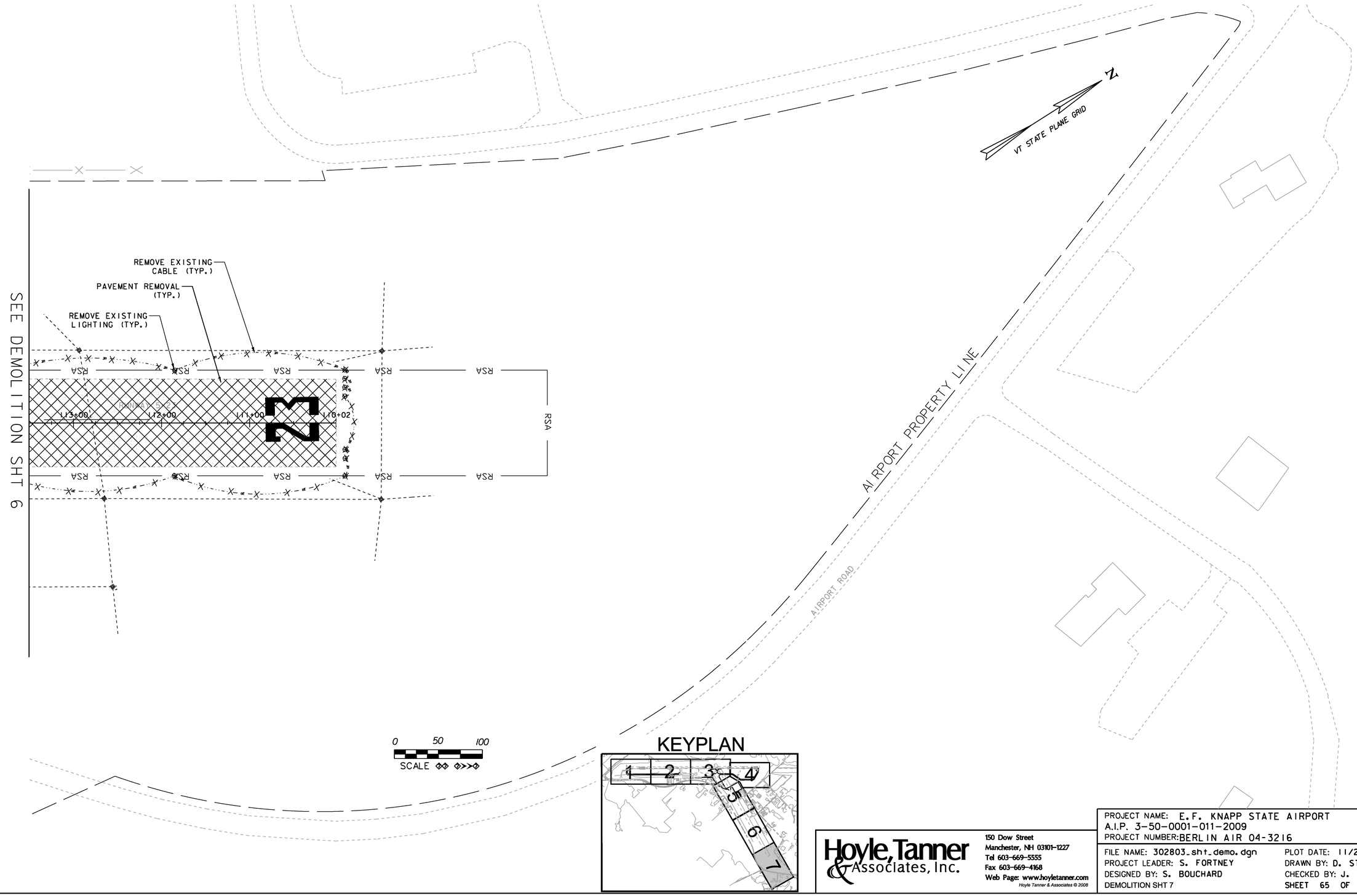
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_demo.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
DEMOLITION SHT 6

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR



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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_demo.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
DEMOLITION SHT 7

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 65 OF 173

SEE GEOMETRY SHT 2

VT STATE PLANE GRID

N

LOCALIZER CRITICAL AREA

SCOTT HILL ROAD

AIRPORT PROPERTY LINE

RUNWAY 17-35 STA. 0+17.36 =
TAXIWAY A STA. 0+00.00

N: 617643.16
E: 1625011.08

N: 617518.56
E: 1625078.74

FAA
LOCALIZER
ANTENNA

N: 617658.45
E: 1625002.85

N 28°16'24" W
L =5000.19

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+0

RUNWAY 17-35

STA: 0+50.17
OFFSET: 17.43

STA: 0+94.47
OFFSET: 17.50

STA: 1+96.79
OFFSET: 50.75

STA: 1+52.51
OFFSET: 50.37

STA: 1+18.73
OFFSET: 50.37
R= 86.00'
Delta=180°00'00"
L= 268.21'

N 6°43'36" E
L =182.50

0+00 1+00 2+00

STA: 3+18.89
OFFSET: -17.50

17.5'

N 28°16'24" W
L =1720.96

3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+

PROPOSED TAXIWAY A

17.5'

PROPOSED EDGE OF
PAVEMENT (TYP.)

STA: 1+82.50
OFFSET: 17.50
R= 75.00'
Delta=90°00'00"
L= 117.81'

STA: 2+72.82
OFFSET: 17.50

FAA
LOCALIZER
SHELTER

ACCESS ROAD

AIRPORT PROPERTY LINE

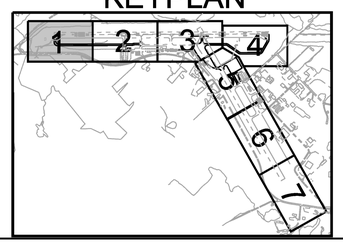
AIRPORT ROAD

CURVE C1:

PI= 2+40.00
PC= 1+82.50
PT= 2+72.82
DELTA= 90^00'00"
R= 57.50
T= 57.50
L= 90.32

0 50 100
SCALE

KEYPLAN



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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_geom.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
GEOMETRY SHT 1

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 66 OF 173

SEE GEOMETRY SHT 1

SEE GEOMETRY SHT 3

VT STATE PLANE GRID

RUNWAY 17-35 STA. 16+42.36 =
TAXIWAY B STA. 0+00.00

RUNWAY 17-35 STA. 20+28.16 =
TAXIWAY C STA. 0+00.00

RUNWAY 17-35 5000.19'

N 28°16'24" W

L =5000.19

L =1720.96

L =770.22

N 61°47'43" E
L =599.60

TAXIWAY A STA. 18+40.04 =
TAXIWAY B STA. 2+40.00

TAXIWAY A STA. 22+27.73 =
TAXIWAY C STA. 2+25.29

PROPOSED TAXIWAY A

EXISTING TAXIWAY A

TAXIWAY B

TAXIWAY C

PROPOSED EDGE OF
PAVEMENT (TYP.)

17.5'

STA: 19+93.78
OFFSET: -17.50
R= 82.50'
Delta=14°11'24"
L= 20.43'

STA: 3+06.69
OFFSET: -18.98
R= 40.00'
Delta=103°19'09"
L= 72.13'

STA: 18+97.86
OFFSET: 17.50

STA: 17+82.08
OFFSET: 17.50
R= 40.00'
Delta=90°13'29"
L= 62.99'

STA: 2+97.68
OFFSET: 17.89

STA: 3+06.69
OFFSET: -18.98

STA: 3+49.47
OFFSET: 18.35

STA: 3+18.22
OFFSET: -33.61
R= 15.00'
Delta=76°46'07"
L= 20.10'

STA: 3+17.90
OFFSET: -152.30

STA: 20+18.55
OFFSET: -17.50

N 61°43'06" E
L= 368.22

N 42°27'48" W
L =35.11

STA: 20+53.66
OFFSET: -17.50
R= 117.50'
Delta=14°11'24"
L= 29.10'

STA: 20+78.42
OFFSET: -17.50

STA: 20+78.42
OFFSET: 17.50
R= 82.50'
Delta=14°11'24"
L= 20.43'

STA: 20+53.66
OFFSET: 17.50

STA: 20+18.55
OFFSET: 17.50
R= 117.50'
Delta=14°11'24"
L= 29.10'

STA: 19+93.78
OFFSET: 17.50

STA: 3+74.76
OFFSET: -152.40

STA: 3+49.81
OFFSET: -127.35
R= 25.00'
Delta=90°00'00"
L= 39.27'

STA: 1+56.74
OFFSET: 19.41

STA: 1+51.25
OFFSET: 19.32
R= 57.50'
Delta=90°57'22"
L= 91.28'

STA: 21+50.91
OFFSET: -17.50

STA: 21+51.77
OFFSET: 17.50
R= 57.5'
Delta=89°02'38"
L= 89.36'

STA: 3+01.25
OFFSET: 18.48

HANGAR

HANGAR

APRON B

APRON C

AIRPORT PROPERTY LINE

AIRPORT ROAD

CURVE C2:

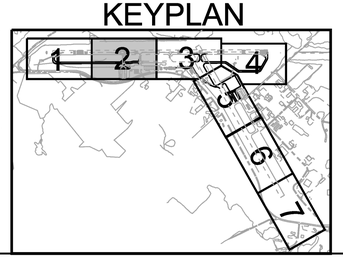
PI= 20+06.23
PC= 19+93.78
PT= 20+18.55
DELTA= 14^11'24"
R= 100.00
T= 12.45
L= 24.77

CURVE C3:

PI= 20+66.10
PC= 20+53.66
PT= 20+78.42
DELTA= 14^11'24"
R= 100.00
T= 12.45
L= 24.77

0 50 100
SCALE

KEYPLAN

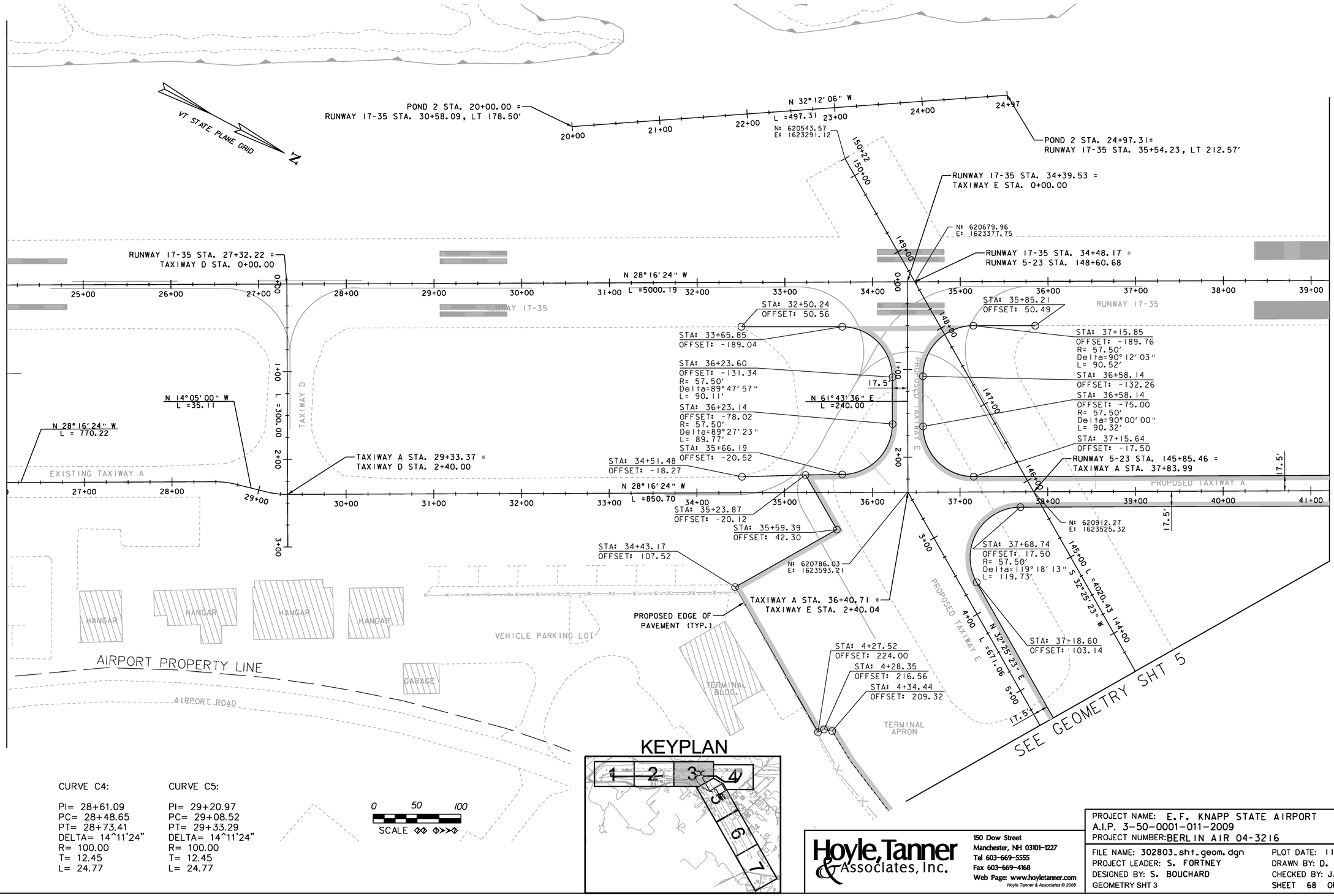


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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_geom.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
GEOMETRY SHT 2

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR



CURVE C4:

PI= 28+61.09
PC= 28+48.65
PT= 28+73.41
DELTA= 14^11'24"
R= 100.00
T= 12.45
L= 24.77

CURVE C5:

PI= 29+20.97
PC= 29+08.52
PT= 29+33.29
DELTA= 14^11'24"
R= 100.00
T= 12.45
L= 24.77

0 50 100
SCALE

KEYPLAN

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PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
GEOMETRY SHT 3

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

CURVE C6:

PI= 42+21.63
PC= 41+97.98
PT= 42+43.80
DELTA= 35^00'00"
R= 75.00
T= 23.65
L= 45.81

CURVE C7:

PI= 45+86.84
PC= 45+63.19
PT= 46+09.01
DELTA= 35^00'00"
R= 75.00
T= 23.65
L= 45.81

CURVE C8:

PI= 50+78.33
PC= 50+35.04
PT= 51+13.56
DELTA= 59^58'54"
R= 75.00
T= 43.29
L= 78.52

CURVE C9:

PI= 54+08.47
PC= 53+88.37
PT= 54+27.65
DELTA= 30^00'11"
R= 75.00
T= 20.10
L= 39.27

CURVE C10:

PI= 0+66.09
PC= 0+54.33
PT= 0+77.15
DELTA= 34^24'35"
R= 38.00
T= 11.77
L= 22.82

CURVE C11:

PI= 1+91.73
PC= 1+37.33
PT= 2+30.51
DELTA= 74^09'02"
R= 72.00
T= 54.40
L= 93.18

CURVE C12:

PI= 3+27.51
PC= 2+89.56
PT= 3+59.41
DELTA= 55^35'16"
R= 72.00
T= 37.95
L= 69.85

VT STATE PLANE GRID N

SEE GEOMETRY SHT 3

SEE GEOMETRY SHT 5

RUNWAY 17-35 STA. 49+83.09 = TAXIWAY A STA. 55+65.04

N: 622046.82
E: 1622642.60

N 28° 16' 24" W
L =5000.19

RUNWAY 17-35

STA: 55+15.19
OFFSET: 17.50

STA: 54+67.02
OFFSET: 17.50

STA: 00+20.20
OFFSET: -14.16
R= 12.00'
Delta= 60° 53' 36"
L= 12.75'

S 61° 44' 32" W
L =137.39

TAXIWAY A STA. 53+94.53 = MALSR ROAD STA. 0+00.00

STA: 0+30.69
OFFSET -8.00

STA: 47+50.96
OFFSET: 50.42

STA: 48+75.88
OFFSET: 49.85
R= 86.00'
Delta=59° 58' 54"
L= 180.31'

STA: 48.41.26
OFFSET: 49.85

STA: 53+73.52
OFFSET: -17.50

STA: 00+17.78
OFFSSET: 20.00

STA: 0+29.78
OFFSSET: 8.00
R= 12.00'
Delta= 90° 00' 00"
L= 18.85'

N 1° 44' 42" E
L =137.33

STA: 1+37.33
OFFSET: -8.00
R= 80.00'
Delta= 74° 09' 02"
L= 103.53'

STA: 2+30.51
OFFSET: -8.00

TAXIWAY A
STA. 54+00.74, RT 254.93'
POND 1 STA. 7+56.28

STA: 41+97.98
OFFSET: -17.50
R= 92.50'
Delta=35° 00' 00"
L= 56.51'

STA: 42+43.80
OFFSET: -17.50

STA: 43+81.29
OFFSET: -76.56

GLIDE SLOPE ANTENNA

STA: 43+85.81
OFFSET: -109.16
N 621480.56
E 1623226.13

STA: 43+96.11
OFFSET: -116.25

N 28° 16' 24" W
L =850.70

STA: 43+88.39
OFFSET: -66.28

STA: 41+97.98
OFFSET: 17.50
R= 57.50'
Delta=35° 00' 00"
L= 35.12'

S 62° 05' 22" W
L =44.84

STA: 45+63.19
OFFSET: -17.50
R= 57.50'
Delta=35° 00' 00"
L= 35.12'

N 6° 43' 36" E
L =319.40

N 83° 30' 04" W
L =54.33

STA: 42+43.80
OFFSET: 17.50

TAXIWAY A STA. 44+23.43 = GLIDE SLOPE ACCESS RD STA. 0+00.00

ACCESS ROAD

GLIDESLOPE CRITICAL AREA

STA: 46+09.01
OFFSET: -17.50

PROPOSED EDGE OF PAVEMENT (TYP.)

17.5'

PROPOSED TAXIWAY A

N 28° 16' 24" W
L =426.03

STA: 46+09.01
OFFSET: 17.50
R= 92.50'
Delta=35° 00' 00"
L= 56.51'

STA: 45+63.19
OFFSET: 17.50

STA: 50+35.04
OFFSET: -17.50

STA: 50+35.04
OFFSET: 17.50

STA: 51+13.56
OFFSET: -17.50
R= 57.50'
Delta=59° 58' 54"
L= 60.20'

STA: 51+13.56
OFFSET: 17.50
R= 92.50'
Delta=59° 58' 54"
L= 96.84'

N 88° 15' 18" W
L =274.82

STA: 1+37.33
OFFSSET: 8.00

STA: 2+30.51
OFFSSET: 8.00
R= 64.00'
Delta= 74° 09' 02"
L= 82.83'

STA: 2+89.56
OFFSET: 8.00

STA: 3+07.41
OFFSET: 8.00
R= 80.00'
Delta= 14° 12' 19"
L= 19.83'

STA: 3+46.61
OFFSET: 23.19

STA: 3+50.64
OFFSET: 37.32
R= 10.00'
Delta= 90° 00' 00"
L= 15.71'

GLIDESLOPE CRITICAL AREA

C12

STA: 2+89.56
OFFSET: -8.00

STA: 3+59.41
OFFSET: -8.00
R= 64.00'
Delta= 55° 35' 16"
L= 62.09'

STA: 3+93.80
OFFSET: -8.00
R= 10.00'
Delta= 91° 03' 40"
L= 15.89'

N 75° 53' 44" E
L =59.05

N 20° 18' 28" E
L =44.46

STA: 3+93.94
OFFSET: 8.00

AIRPORT PROPERTY LINE

OFF-AIRPORT MALSR BLDG.

ACCESS ROAD/GATE

STA: 3+47.58
OFFSET: 44.69 RT

STA: 3+57.08
OFFSET: 56.43

STA: 3+78.43
OFFSET: 8.00
R= 12.00'
Delta= 90° 45' 23"
L= 19.01'

STA: 3+66.44
OFFSET: 20.16

N 72° 57' 14" W

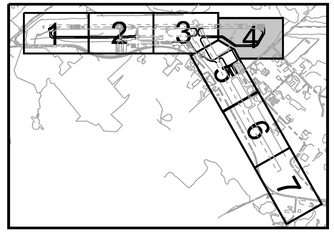
COMSTOCK ROAD

STA: 3+70.02
OFFSET: 39.76

STA: 3+66.63
OFFSET: 34.56
R= 5.00'
Delta= 72° 20' 08"
L= 6.31'

TAXIWAY A
STA. 50+14.78, RT 264.42' =
POND 1 STA. 1+00.00

KEYPLAN



0 50 100
SCALE

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A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_geom.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
GEOMETRY SHT 4

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

SEE GEOMETRY SHT 4

SEE GEOMETRY SHT 3

SEE GEOMETRY SHT 6

STA: 140+02.07
OFFSET: 418.02

STA: 4+19.50
OFFSET: -268.02

ACCESS ROAD

COMSTOCK ROAD

VT STATE PLANE GRID

N

STA: 0+55.42
OFFSET: 42.17
R= 20.00'
Delta=120°29'36"
L= 42.06'

N: 621499.92
E: 1623720.88

STA: 0+84.38
OFFSET: 24.80
R= 35.00'
Delta=112°01'22"
L= 68.43'

STA: 2+07.24
OFFSET: 17.50

STA: 4+19.50
OFFSET: -92.52
R= 75.00'
Delta=90°00'00"
L= 117.81'

STA: 4+94.50
OFFSET: -17.52

STA: 0+25.27
OFFSET: 24.94

REDESIGNATED TAXIWAY H

TAXIWAY F STA. 1+50.00

PROPOSED TAXIWAY F

N 32°25'23" E
L =564.05

17.5'

2+00 3+00 4+00 5+00 6+00 7+00

0+00

N: 622016.46
E: 1623962.58

TAXIWAY F STA. 7+14.05 =
TAXIWAY G STA. 0+72.94

N: 621976.04
E: 1624023.31

STA: 0+84.38
OFFSET: 24.80
R= 75.00'
Delta=67°58'38"
L= 88.98'

STA: 6+58.63
OFFSET: 17.50
R= 35.00'
Delta=112°01'22"
L= 68.43'

STA: 1+38.56
OFFSET: 22.97

STA: 1+10.44
OFFSET: -17.50
R= 75.00'
Delta=90°00'00"
L= 117.81'

STA: 133+28.02
OFFSET: 37.50

RUNWAY 5-23 STA. 139+84.57 =
TAXIWAY E STA. 10+36.06=
TAXIWAY F STA. 0+00.00

N: 621404.73
E: 1623838.12

N 57°34'37" W
L =150.00

S 57°34'37" E
L =222.94

0+00 1+00

RUNWAY 5-23

143+00 142+00 141+00 140+00 139+00 138+00 137+00 136+00 135+00 134+00 133+00 132+00 131+00 130+00 129+00

L =4020.43

S 32°25'23" W

37.5'

STA: 138+90.24
OFFSET: 37.50

RUNWAY 5-23 STA. 134+20.52 =
TAXIWAY G STA. 2+22.94

STA: 140+02.01
OFFSET: -37.50
R= 70.00'
Delta=90°00'00"
L= 109.96'

S 07°34'37" W
L =125.00

10+00

PROPOSED EDGE OF PAVEMENT (TYP.)

STA: 139+12.07
OFFSET: -37.50
R= 55.00'
Delta=90°00'00"
L= 86.39'

STA: 135+13.02
OFFSET: 37.50
R= 75.00'
Delta=67°58'38"
L= 90.29'

N 621895.62
E 1624149.92

PROPOSED TAXIWAY E

N 32°25'23" E
L =671.06

6+00 7+00 8+00 9+00

9+00

17.5'

STA: 8+23.56
OFFSET: -17.50

STA: 9+43.56
OFFSET: 17.50

STA: 9+30.25
OFFSET: 17.50
R= 55.00'
Delta=67°25'34"
L= 64.72'

FUEL FACILITY

1+00

1+67

STA: 7+20.00
OFFSET: 104.20

STA: 8+94.67
OFFSET: 31.59

AIRPORT PROPERTY LINE

AIRPORT ROAD

STA: 6+20.00
OFFSET: 127.00

STA: 6+20.00
OFFSET: 144.03

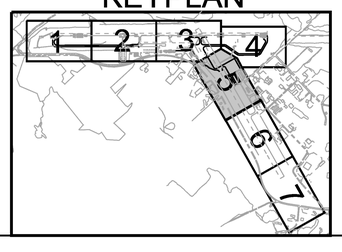
STA: 7+20.00
OFFSET: 127.00

STA: 5+70.69
OFFSET: 145.50

STA: 5+71.08
OFFSET: 194.17

0 50 100
SCALE

KEYPLAN



Hoyle, Tanner & Associates, Inc.
150 Dow Street
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Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_geom.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
GEOMETRY SHT 5

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 70 OF 173

N

VT STATE PLANE GRID

AIRPORT PROPERTY LINE

REDESIGNATED TAXIWAY H

STA: 126+37.66
OFFSET: 114.06
R= 75.00'
Delta=91°11'21"
L= 119.37'

STA: 127+12.64
OFFSET: 37.50

STA: 126+01.95
OFFSET: 110.75
R= 75.00'
Delta=88°39'52"
L= 116.06'

STA: 125+26.97
OFFSET: 37.50

37.5'

RUNWAY 5-23

128+00 127+00 126+00 125+00 124+00 123+00 122+00 121+00 120+00 119+00 118+00 117+00 116+00 115+00 114+00

L =4020.43
S 32°25'23" W

37.5'

PROPOSED EDGE OF PAVEMENT (TYP.)

SEE GEOMETRY SHT 5

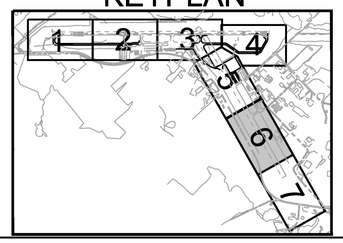
SEE GEOMETRY SHT 7

AIRPORT PROPERTY LINE

AIRPORT ROAD

0 50 100
SCALE

KEYPLAN



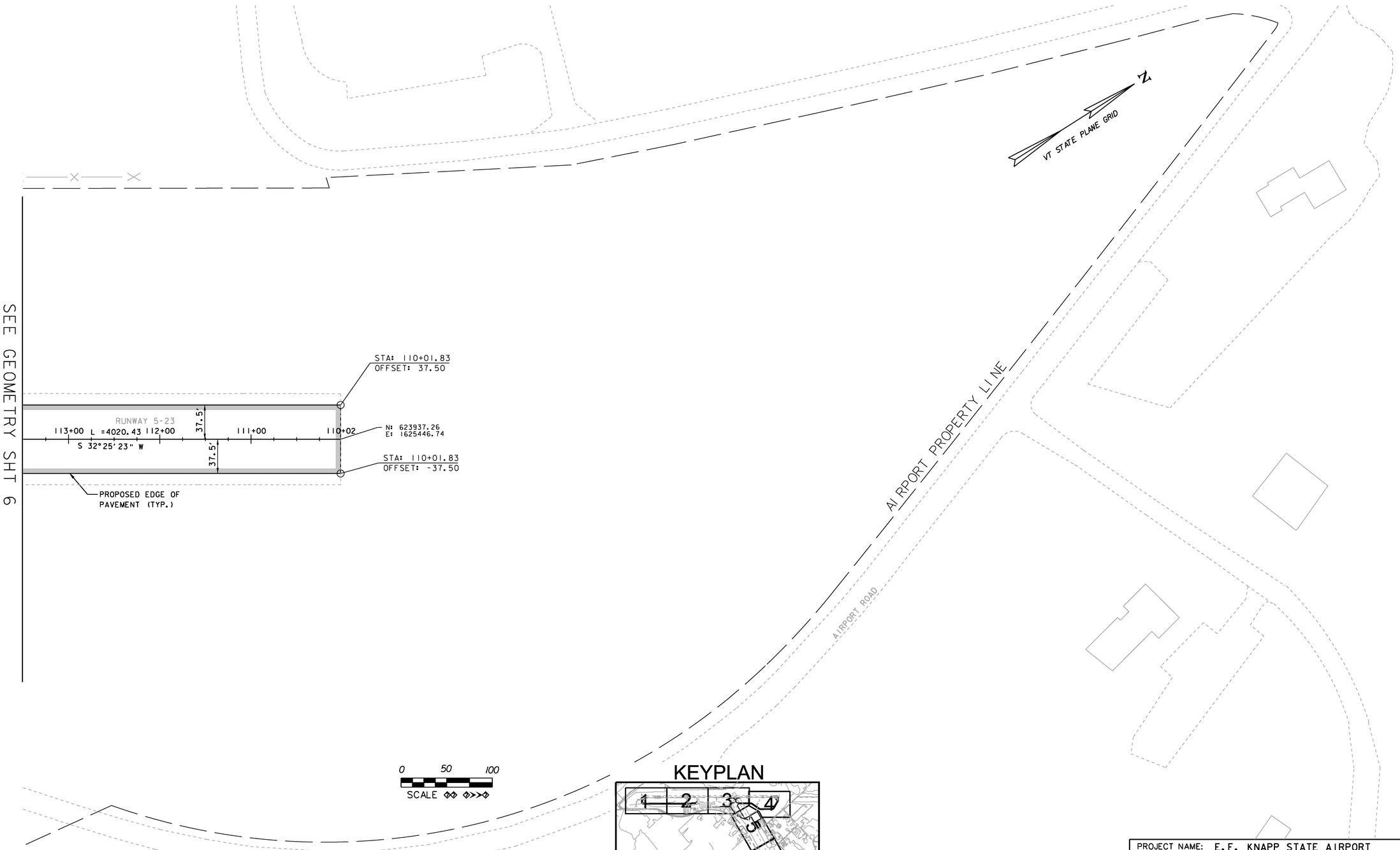
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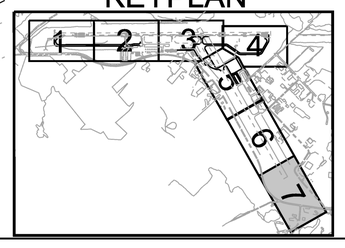
FILE NAME: 302803_sht_geom.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
GEOMETRY SHT 6

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 71 OF 173

SEE GEOMETRY SHT 6



KEYPLAN



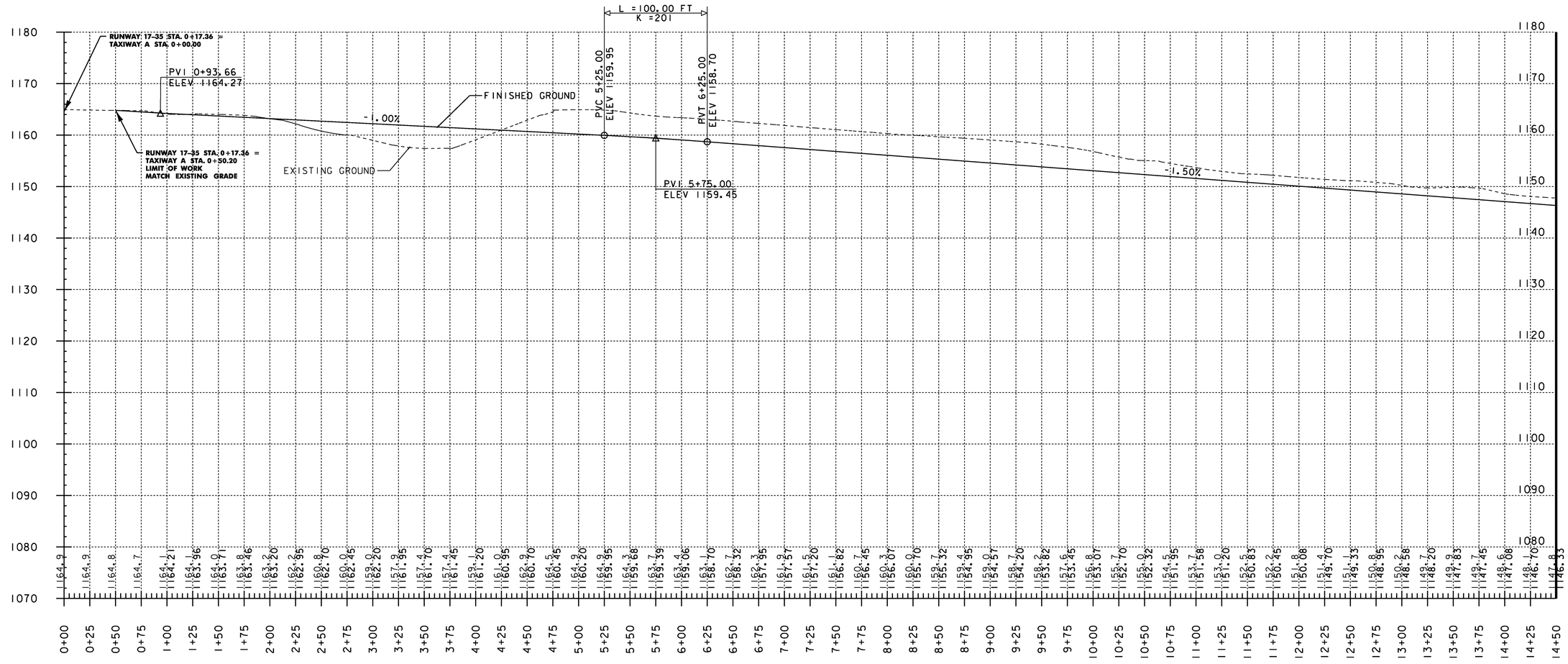
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FILE NAME: 302803_sht_geom.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
GEOMETRY SHT 7

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 72 OF 173

TAXIWAY A PROFILE



VERTICAL 0 10 20 30

HORIZONTAL 0 50 100 150

SCALE IN FEET

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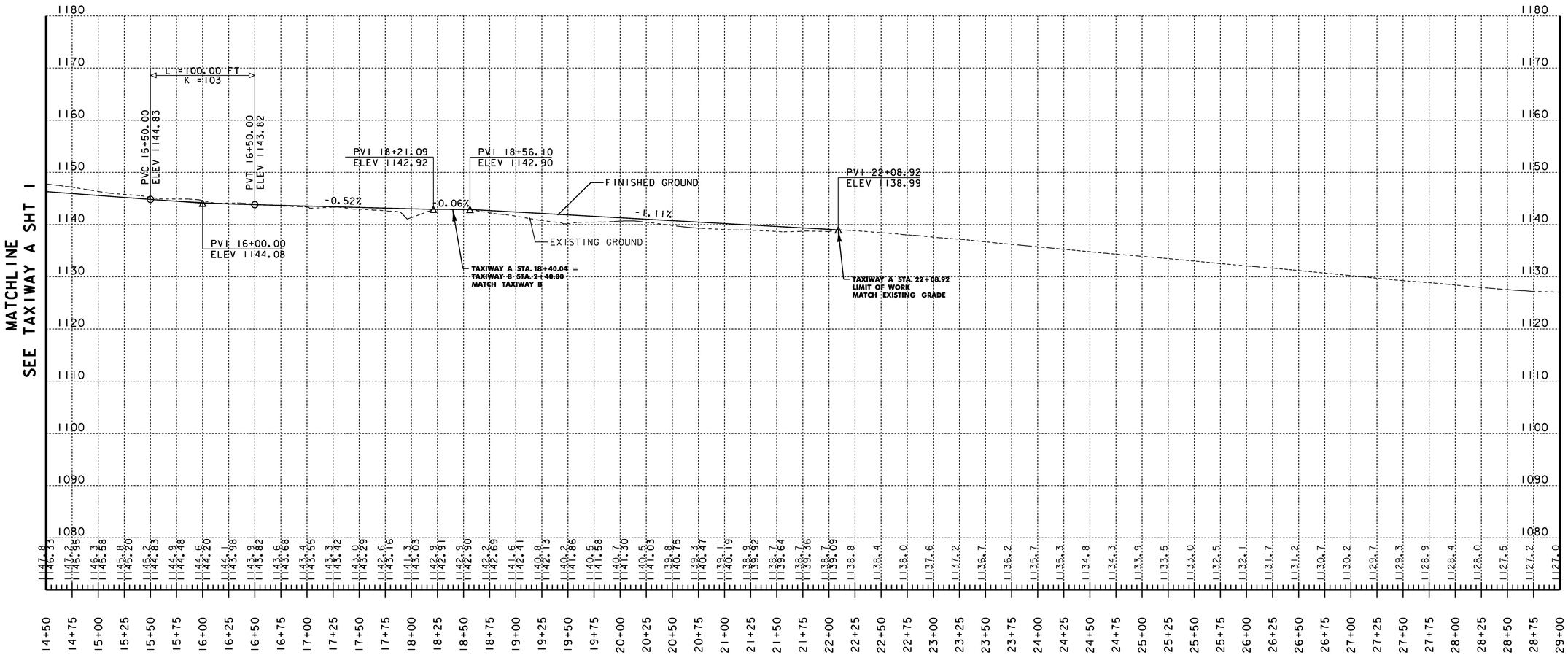
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_prof_A.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY A PROFILE SHT 1

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

TAXIWAY A PROFILE



VERTICAL 0 10 20 30

HORIZONTAL 0 50 100 150

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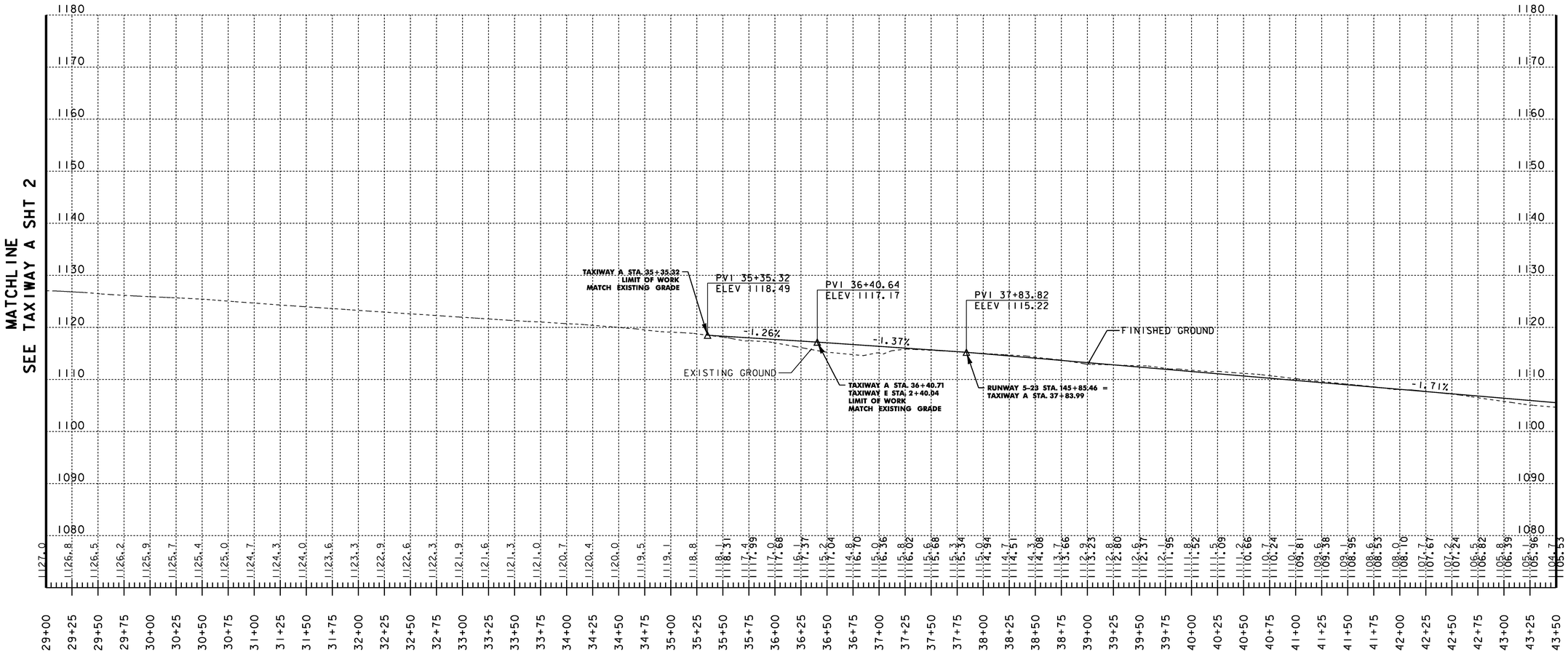
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A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_prof_A.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY A PROFILE SHT 2

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

TAXIWAY A PROFILE



VERTICAL 0 10 20 30

HORIZONTAL 0 50 100 150

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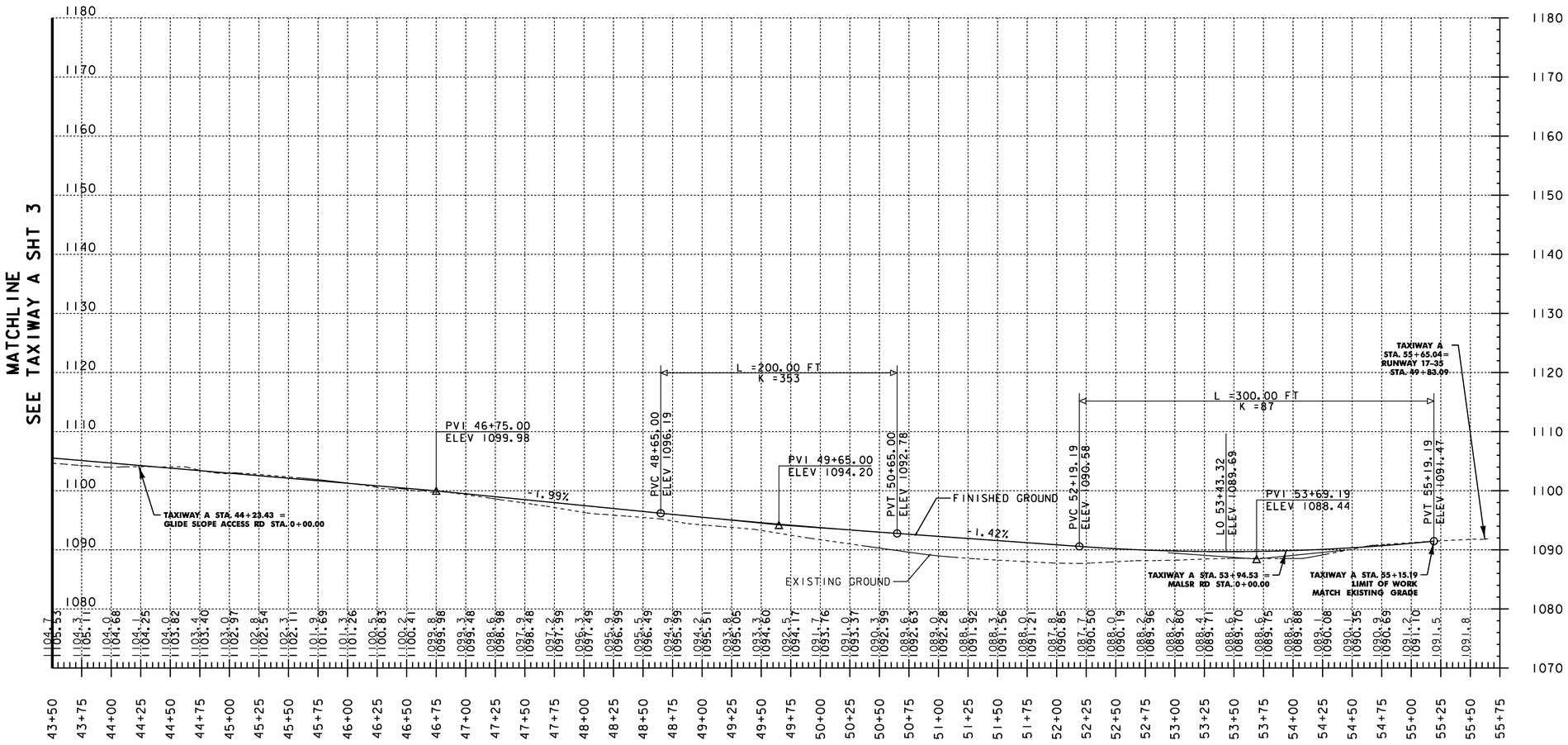
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A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_prof_A.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY A PROFILE SHT 3

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

TAXIWAY A PROFILE



VERTICAL 0 10 20 30

HORIZONTAL 0 50 100 150

SCALE IN FEET

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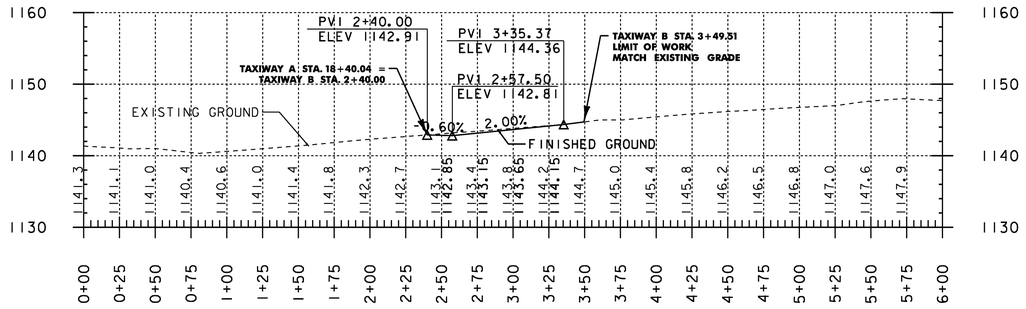
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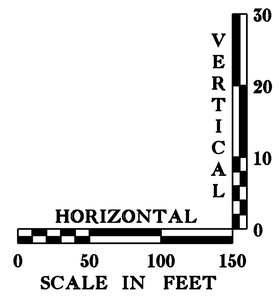
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FILE NAME: 302803_sht_prof_A.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY A PROFILE SHT 4

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

TAXIWAY B





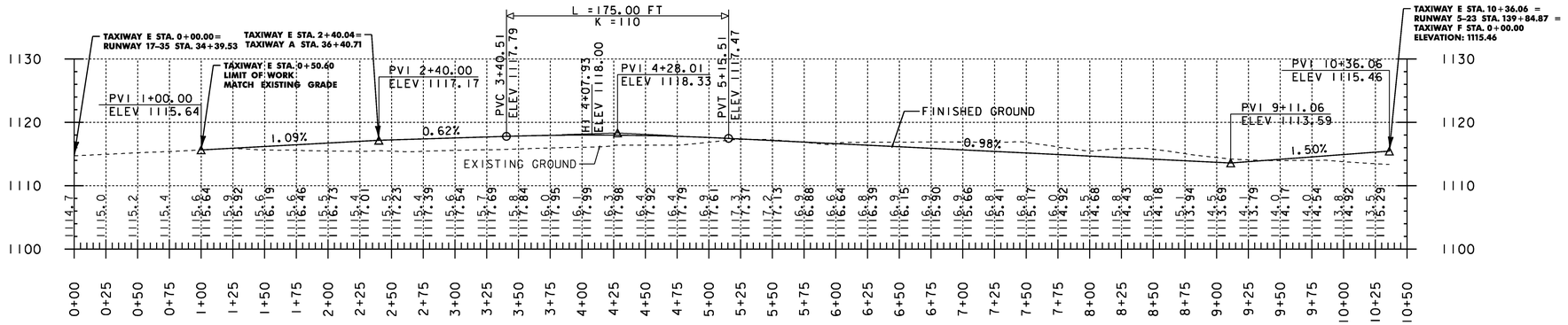
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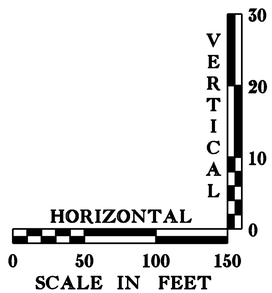
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_prof_B.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY B PROFILE

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
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SHEET 77 OF 173

TAXIWAY E PROFILE





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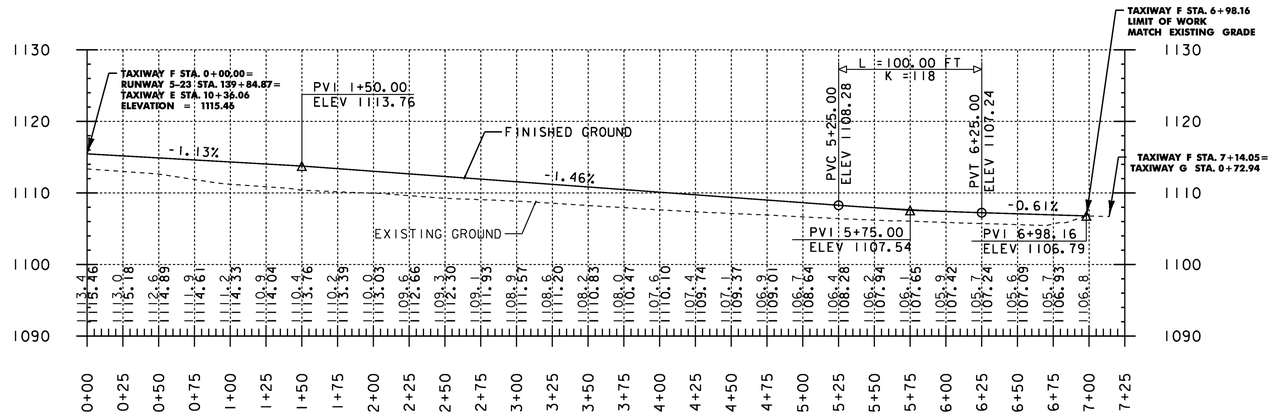
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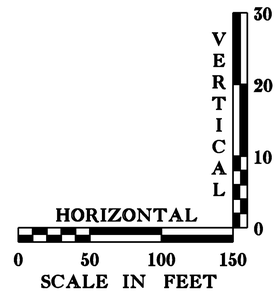
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_prof_E.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY E PROFILE

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

TAXIWAY F PROFILE





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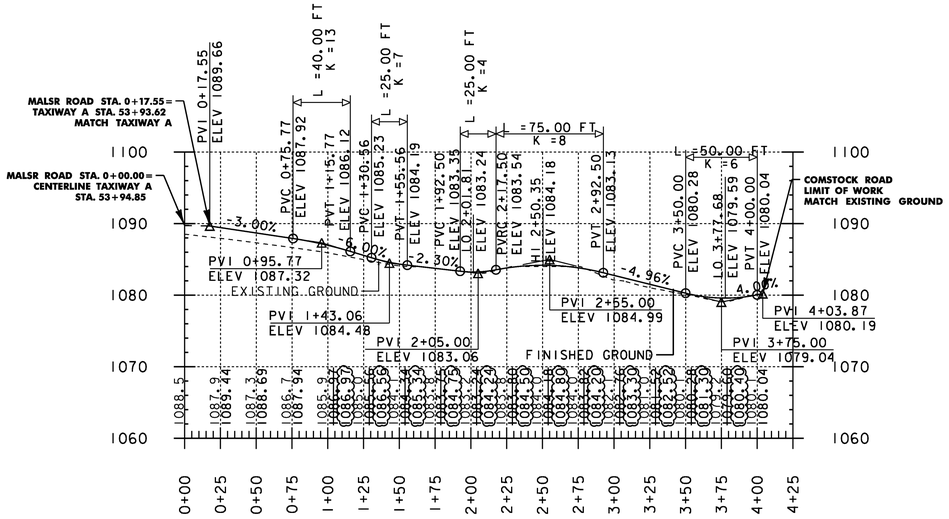
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PROJECT NUMBER: BERLIN AIR 04-3216

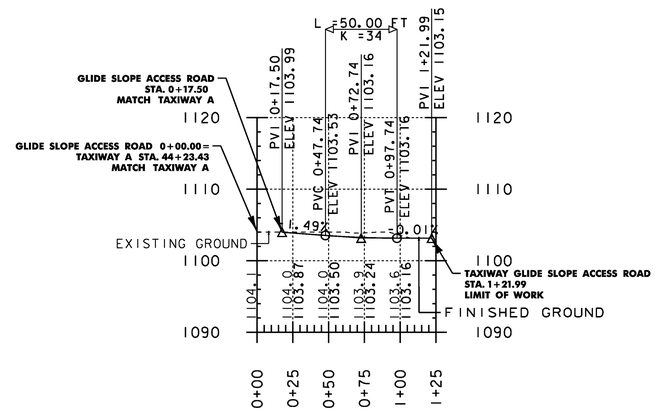
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PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY F PROFILE

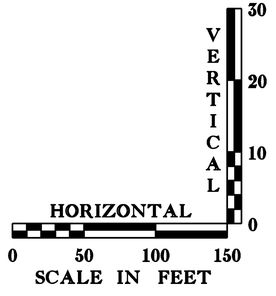
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
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SHEET 79 OF 173

MALSR Access Road



Glide Slope Access Rd



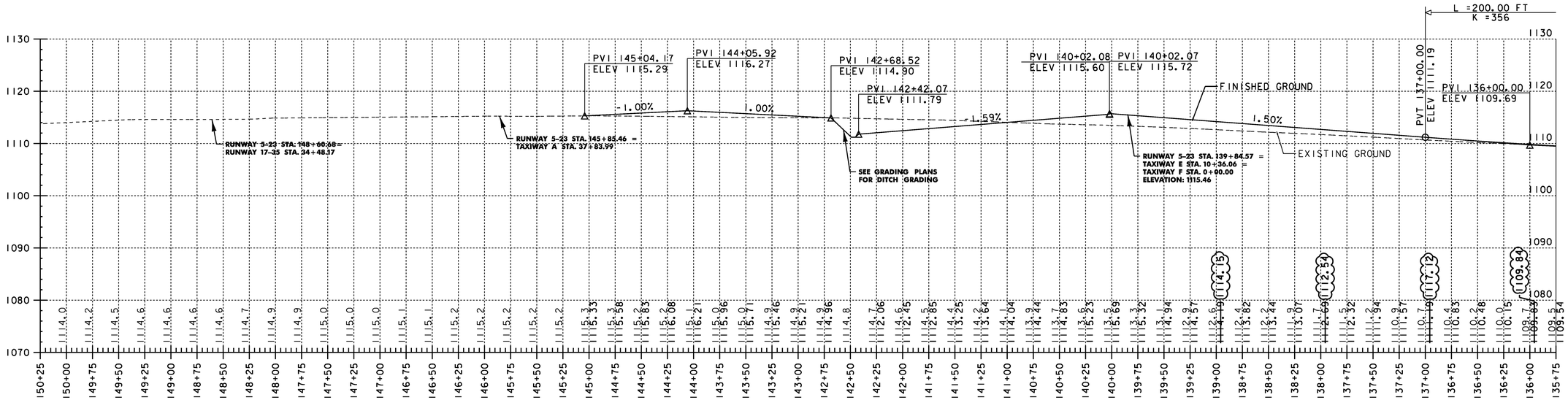


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A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_prof_MALSR.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
MALSR/GS ACCESS RD PROFILES SHEET 80 OF 173

RW 5-23



VERTICAL 0 10 20 30

HORIZONTAL 0 50 100 150

SCALE IN FEET

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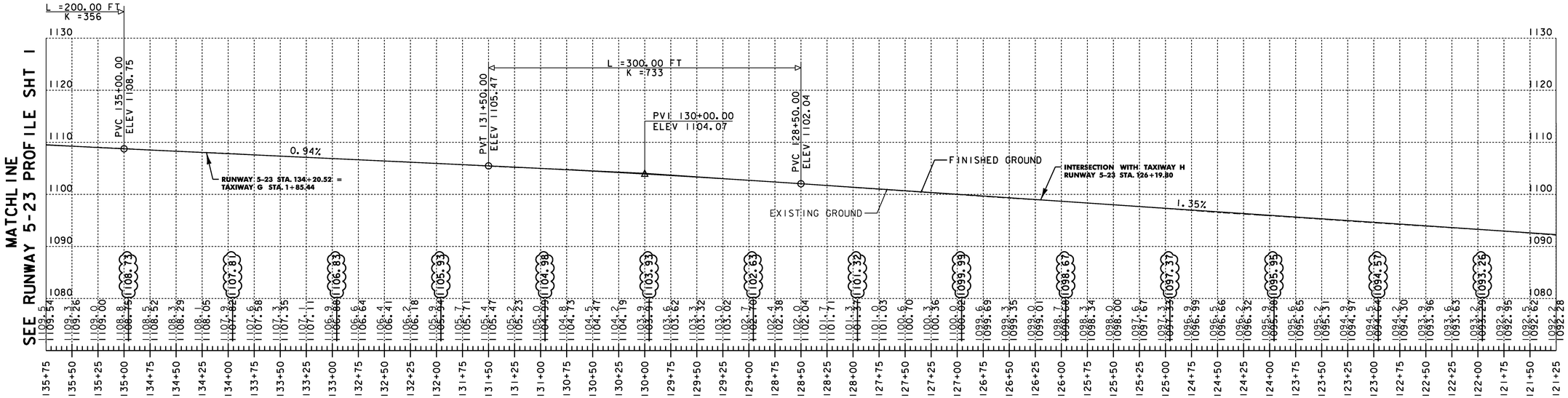
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FILE NAME: 302803_sht_prof_5-23.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
RUNWAY 5-23 PROFILE SHT 1 SHEET 81 OF 173

RW 5-23



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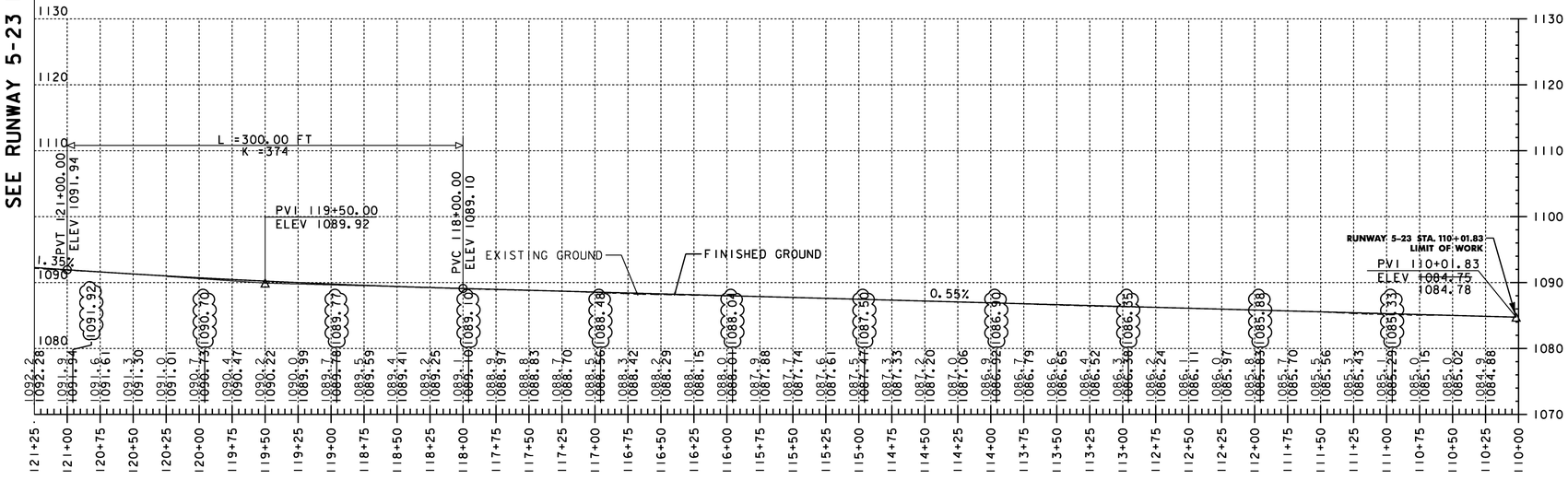
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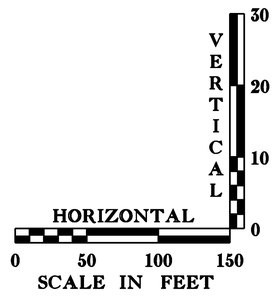
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FILE NAME: 302803_sht_prof_5-23.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
RUNWAY 5-23 PROFILE SHT 2 SHEET 82 OF 173

MATCHLINE
SEE RUNWAY 5-23 PROFILE SHT 2

RW 5-23



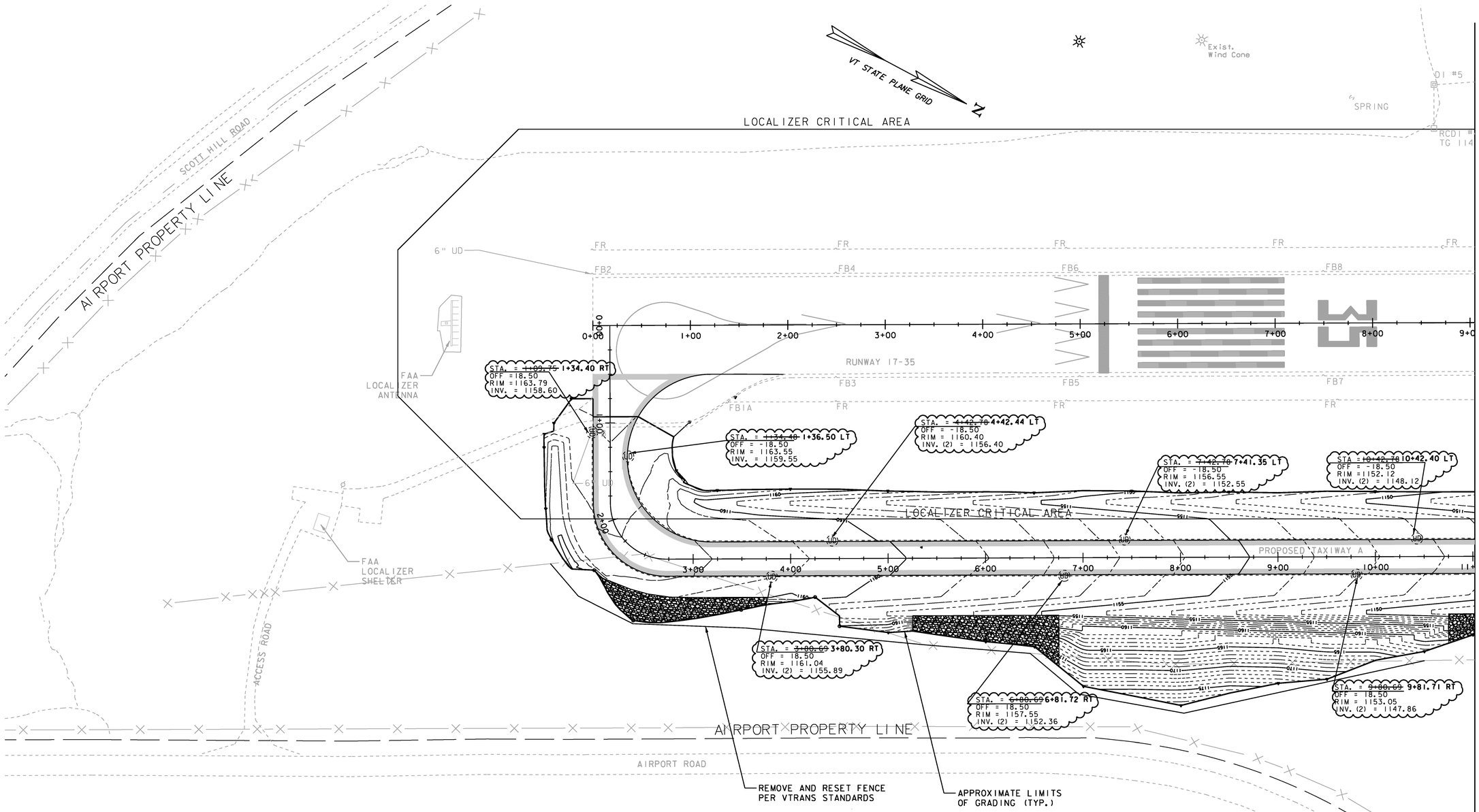


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FILE NAME: 302803_sht_prof_5-23.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
RUNWAY 5-23 PROFILE SHT 3 SHEET 83 OF 173

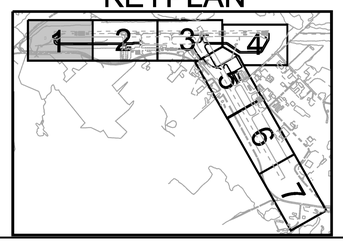


LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

0 50 100
SCALE IN FEET

KEYPLAN



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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_grdg.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
GRADING SHT 1

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 84 OF 173

SEE GRADING SHT 1

SEE GRADING SHT 3

HDWL FL 1142.4

8" VTP

DI #8 TG 1142.8

DI #6 TG 1148.1

DI #7 TG 1144.2

DI #13 TG 1137.5

DI #14 TG 1132.9

DI #20 TG 1128.2

6" VTP

6" UD

VT STATE PLANE GRID

FL 1141.4 FR

6" UNDERDRAIN

DI #9 TG

DI #12 TG

DI #15 TG

6" PCPU

FB10 FB12 FB14 FB16 FB18 FB20 FB22

RUNWAY 17-35 5000.19'

FL 1139.70

FB9 FB11 FB13 FB15 FB17 FB19

6" UNDERDRAIN FR

DI #10

DI #11

DI #16

DI #18

18" RCP S=.0154

STONE FILL @ END SECTION OUTLET FL 1131.48

CONSTRUCT NEW 4' CB 2.12
STA. = ~~19+57.21~~ 19+64.00
OFF = ~~103.81~~ 103.03
RIM = ~~1132.9~~ 1132.60
INV. IN = ~~1121.68~~ (15") 1121.29
INV. OUT = ~~1121.58~~ (24") 1121.48
INV. IN = ~~1123.00~~ (6") 1125.70

CONSTRUCT NEW 4' CB 2.7B
STA. = ~~21+39.20~~ 21+94.03
OFF = ~~102.42'~~ 103.4 RT
RIM = ~~1129.8~~ 1129.67
INV. IN = ~~1120.46~~ (24") 1120.49
INV. OUT = ~~1120.36~~ (24") 1120.39

CONSTRUCT ~~232'~~ 24" PIPE
S = 0.005
~~226.03~~ 231.51'

STA. = ~~17+42.70~~ 13+42.55 LT
OFF = 18.50
RIM = 147.62
INV. (2) = 1143.62

STA. = ~~16+42.70~~ 16+42.35 LT
OFF = 18.50
RIM = 1143.55
INV. (2) = 1139.55

STA. = ~~18+97.86~~ 19+01.0 RT
OFF = 18.50
RIM = 1142.12
INV. = 1136.93

STA. = ~~19+42.70~~ 19+43.76 RT
OFF = 18.50
RIM = 1141.62
INV. (2) = 1137.62

STA. = ~~20+18.55~~ 20+18.0 RT
OFF = 18.50
RIM = 1140.78
INV. (3) = 1135.59

TAXIWAY B

TAXIWAY C

EXISTING TAXIWAY A

PROPOSED TAXIWAY A

FB100 6" UD

FB100A

DI #17C TG 1136.68 FL 1132.00

15" CPEP S=0.0133

DI #24A TG 1130. FL 1126. END 6" U

15" RCP S=0.00357

DI #17C TG 1136.68 FL 1132.00

CONST. ~~266'~~ 264.80 12" PIPE S = 0.023

CONSTRUCT ~~232'~~ 24" PIPE S = 0.005

CONSTRUCT NEW 4' CB 2.11
STA. = ~~20+25.96~~ 20+24.37
OFF = ~~57.45~~ 55.20 RT
RIM = ~~1137.60~~ 1137.35
INV. IN = ~~1130.00~~ (6") 1134.18
INV. IN = ~~1130.00~~ (12") 1129.80
INV. OUT = ~~1128.00~~ (15") 1128.11

STA. = ~~21+50.91~~ 21+50.62 LT
OFF = 18.50
RIM = 1139.11
INV. (2) = 1135.11

STA. = ~~21+51.77~~ 21+52.30 RT
OFF = 18.50
RIM = 1139.12
INV. = 1137.00

APRON B

STA. = ~~12+00.07~~ 12+88.25 RT
OFF = 18.50
RIM = 1148.55
INV. (2) = 1143.36

APPROXIMATE LIMITS OF GRADING (TYP.)

STA. = ~~15+00.69~~ 15+85.17 RT
OFF = 18.50
RIM = 1144.13
INV. (2) = 1138.94

STA. = ~~17+02.00~~ 17+67.26 RT
OFF = 18.50
RIM = 1142.81
INV. (2) = 1137.62

NEW 6" UNDERDRAIN

CONSTRUCT NEW 4' CB 2.14
STA. = ~~17+70.06~~ 17+68.80
OFF = ~~56.46'~~ 57.16 RT
RIM = ~~1139.8~~ 1139.36
INV. IN = ~~1137.00 (6")~~ 1136.66
INV. OUT = ~~1136.0~~ (12") 1135.90

CONSTRUCT NEW 4' DI 2.12A
STA. = ~~3+63.00~~ 19+08.76
OFF = ~~70.00'~~ 123.32 RT
RIM = ~~1142.50~~ 1142.43
INV. OUT = ~~1139.15~~ (12") 1139.26

CONST. ~~49'~~ 49.71' 12" PIPE S = 0.005

EXISTING UNIDENTIFIED UNDERDRAIN

CONSTRUCT 12" OUTLET
STA. = ~~3+00.00~~ 19+57.80
OFF. = ~~123.00'~~ 62.82 RT
INVERT = ~~1138.50~~ 1138.59

CONSTRUCT NEW 4' DI 2.13
STA. = ~~3+63.00~~ 19+62.45
OFF = ~~123.00'~~ 123.39 RT
RIM = ~~1142.00~~ 1142.16
INV. IN = ~~1138.90~~ (12") 1139.16
INV. OUT = ~~1138.80~~ (12") 1139.06

HANGAR

APRON

AIRPORT PROPERTY LINE

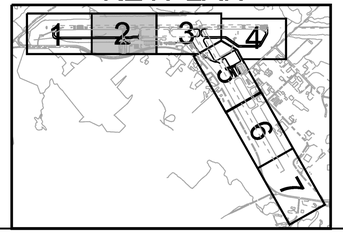
AIRPORT ROAD

LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

0 50 100
SCALE IN FEET

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_grdg.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
GRADING SHT 2

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 85 OF 173

AIRPORT PROPERTY LINE

SEE GRADING SHT 2

SEE GRADING SHT 4 BELOW

SEE GRADING SHT 5

SEE ABOVE

VT STATE PLANE GRID

CONSTRUCT NEW 5' D.M.H.
STA. = ~~29+48.9~~ 29+43.70
OFF = ~~-118.87~~ -121.72
RIM = ~~1117.5~~ 1117.43
EX. INV. IN 24" = 1112.1
INV. OUT 24" = 1112.0
INV. IN = 1111.75 (8")

6" SDR

HDPE TO CONNECT TO EXIST. RCP 6'

OUTLET
STA. = ~~31+58.27~~ 31+55.42
OFF = ~~-177.96~~ 176.93
INVERT = ~~1110.0~~ 1109.95

60.83' 8" CUR 35

20+00

210.18'
CONSTRUCT ~~215'~~ 24" PIPE
S = .009

REMOVE EX. CB
CONSTRUCT 4' DIA DMH
STA. = ~~32+47.90~~ 33+68.73
OFF = ~~-78.39'~~ -81.35
RIM = ~~1114.5~~ 1114.10
INV. IN = 1106.52 (18")
INV. OUT = 1106.52 (24")
INV. IN = 1107.12 (6") (2)

HDPE TO CONNECT TO EXIST. RCP 6'

OUTLET #2
STA. = ~~32+37.72~~ 32+41.61
OFF = ~~-156.32~~ -150.64
INVERT = ~~1105.5~~ 1105.46

PLACE 6" MINUS STONE ALONG BOTTOM OF POND. TRACK IN W/ BULLDOZER GRADE TO MATCH 3" OUTLET INV. ELEV.

30' 79'
CONSTRUCT ~~300'~~
24" PIPE, S=0.008

24+97

OUTLET #3
STA. = 37+00.00
OFF = -251.5
INVERT = ~~1102.3~~ 1102.90

CONSTRUCT 4' DIA OCS
STA. = ~~33+97.00~~ 33+97.65
OFF = ~~-187.00~~ -186.77
RIM = ~~1108.0~~ 1108.57 (TOP OF BEEHIVE)
INV. IN = 1105.0 (3")
INV. OUT = 1104.9 (24")

61.87'
CONSTRUCT ~~75'~~
24" PIPE
S = 0.014

EXIST. UD

CONSTRUCT CB 4' 36B
STA. = ~~1+00.00~~ 33+68.73
OFF = ~~72.00'~~ 97.74
RIM = 1112.8'
INV. IN 6" = 1110.5'
INV. OUT = 1109 (18")

36+21.60 LT
STA. = ~~36+22.62~~
OFF = -134.91
RIM = 1115.28
INV. (2) = 1110.75

36+59.71 LT
STA. = ~~36+59.62~~
OFF = -135.98
RIM = 1115.26
INV. = 1111.26

36+76.40 LT
STA. = ~~36+76.85~~
OFF = -36.28
RIM = 1116.08
INV. (2) = 1112.29

APPROXIMATE LIMITS OF GRADING (TYP.)

38+68.0 LT
STA. = ~~38+66.88~~
OFF = -18.50
RIM = 1113.48
INV. (2) = 1109.48

40+68.03 RT
STA. = ~~40+68.74~~
OFF = 18.50
RIM = 1110.03
INV. (2) = 1104.85

36+04.95 LT
STA. = ~~36+05.72~~
OFF = -37.92
RIM = 1116.60
INV. (2) = 1112.34

37+68.65 RT
STA. = ~~37+68.74~~
OFF = 18.50
RIM = 1115.40
INV. = 1110.02

3+66.5 LT
STA. = ~~3+68.10~~
OFF = -18.50
RIM = 1117.64
INV. = 1112.85

RIPRAP

EXTEND SWALE 12' BOTTOM WIDTH 4:1 SLOPE TO EXISTING. PLACE STONE ALONG BOTTOM OF SWALE. EROSION CONTROL MATT AND SEE ALONG UPPER HALF OF SLOPE

CONSTRUCT NEW 4' CB 2.7
STA. = ~~24+29.20~~ 24+29.53
OFF = ~~100.82'~~ 101.45
RIM = ~~1127.8~~ 1127.56
INV. IN = ~~1119.25~~ (24") 1119.70
INV. OUT = ~~1119.15~~ (24") 1119.55

229.12'
CONSTRUCT ~~232'~~ 24" PIPE
S = 0.005

CONSTRUCT 5' DIA CB 27A
STA. = ~~26+66.11~~ 26+63.15
OFF = ~~99.85'~~ 101.14
RIM = ~~1123.3~~ 1123.0
INV. IN = ~~1118.03~~ (24") 1118.06
INV. IN = ~~1118.00~~ (15") 1117.90
INV. OUT = ~~1118.00~~ (24") 1117.60

CONNECT NEW HDPE TO EXIST. RCP 20' FROM CB

116.68'
CONSTRUCT ~~115'~~ 18" PIPE
S = .026

CONNECT TO EXISTING CB
~~CONSTRUCT 6' CB 36~~
STA. = 0+84.27
OFF = 191.39
INV. IN 18" = (FIELD VERIFY) (1108.78)

STA. = ~~34+41.27~~ 34+42.19 LT
OFF = -21.95
RIM = 1119.89
INV. = 1114.89

EXISTING TAXIWAY A

PROPOSED TAXIWAY A

PROPOSED TAXIWAY E

TAXIWAY D

HANGAR

HANGAR

HANGAR

VEHICLE PARKING LOT

GARAGE

TERMINAL BLDG.

TERMINAL APRON

AIRPORT ROAD

24" RCP S=0.00833

15" RCP S=0.02439

15" x 350 LF CPEP S=0.0308

12" RCP x 80 LF S=0.025

15" CPEP S= .01569

24" CPEP STONE FILL @ OUTLET FL 1108.5

24" CPEP S=0.033

24" RCP S=0.0192

15" DIA. CMP

18" DIA. CMP

24" DIA. CMP

24" DIA. ACCGMP

6" UD

DI #38 FL IN 1110.60 FL OUT 1110.50

DI #21 TG 1123.3

DI #22 TG

DI #47 TG 1106.7

DI #48 TG

DI #42 TG

DI #27, TG 1121.8 FL 1116.75 (IN) FL 1116.70 (OUT)

DI #36 TG 1115.8 FL 1107.

DI #36A, TG 1115.22 FL 1107.1 (IN) FL 1107.0 (OUT)

DI #30 TG 1119.0

DI # 31A TG 1122.62 FL 1117.9 (IN) FL 1117.8 (OUT)

DI #31

DI #29 TG 1126.08 FL 1123.00

DI #26B TG 1129.0 FL 1125.5

DI #26C TG 1128 FL 1124

DI #26D TG 1127 FL 1123

DI #34A

DI #33

DI #34

DI #32

DI #35

DI #37 TG 1111.5

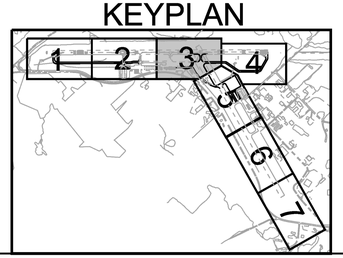
FB24 FB26 FB25 FB23 FB105 FB101A FB31

LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

0 50 100
SCALE IN FEET

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_grdg.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
GRADING SHT 3

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

SEE GRADING SHT 3

SEE GRADING SHT 5

VT STATE PLANE GRID N

RUNWAY 17-35

PROPOSED TAXIWAY A

AIRPORT PROPERTY LINE

GLIDESLOPE CRITICAL AREA

6" VTP

6" UNDERDRAIN

existing grassed lined treatment swale

DI #48 TG 1102.02

DI #49 TG

DI #50 TG

DI #51 TG 1097.8

DI #52 TG

DI #53 TG

DI #54 TG 1099.2

DI #55 TG 1091.8

DI #56 TG

DI #58

FB33

FB35

FB36

R/W 17 PAPI

GLIDE SLOPE ANTENNA

RELOCATE DRIVEWAY

CONSTRUCT 4' CB 1.4
STA. = 53+38.00
OFF = -83.77'
RIM = 1088.46
INV. IN = 1083.25 (6")
INV. OUT = 1083.07 (24")

CONSTRUCT 4' CB 1.41
STA. = 52+54.80
OFF = -83.40'
RIM = 1088.47
INV. IN = 1082.64 (24")
INV. OUT = 1082.54 (24")
INV. IN = 1085.10 EXIST. 10" CLAY

CONSTRUCT 6' CB 1.5
STA. = 50+14.42
OFF = -59.72'
RIM = 1090.93
INV. IN = 1081.67 (24")
INV. IN = 1081.67 (24")
INV. OUT = 1081.57 (24")

CONSTRUCT 4' CB 1.53
STA. = 51+71.64
OFF = -84.14'
RIM = 1089.76
INV. IN = 1082.15 (24")
INV. IN = 1082.05 (24")

CONSTRUCT 6' DIA CB 1.26
STA. = ~~50+45.89~~ 50+44.3
OFF = ~~56.84~~ 55.0
RIM = ~~1089.40~~ 1089.16
INV. IN = ~~1081.10~~ (24") 1081.26
INV. IN = ~~1081.50~~ (30") 1082.0
INV. OUT = ~~1081.00~~ (36") 1081.20

CONSTRUCT 4' CB 1.51
STA. = 49+75.55
OFF = -56.70'
RIM = 1090.64
INV. IN = 1082.18 (12")
INV. IN = 1082.08 (12")

CONSTRUCT 4' CB 1.52
STA. = 47+66.57
OFF = -57.48'
RIM = 1094.32
INV. IN = 1083.88 (12")

41+68.36 LT
STA. = ~~41+66.74~~
OFF = -18.50
RIM = 1108.36
INV. (2) = 1104.36

43+78.20 RT
STA. = ~~43+00.05~~
OFF = 18.50
RIM = 1104.71
INV. (2) = 1099.52

44+67.30 LT
STA. = ~~44+66.74~~
OFF = -18.50
RIM = 1097.86
INV. = 1093.86

STA. = 44+11.11
OFF = -57.22
INV. IN = 1102.00 (12")

CONSTRUCT ~~33'~~ 59' 12" PIPE
S = 0.030

STA. = 44+43.76
OFF = -56.29
INV. IN = 1101.00 (12")

44+54.62 RT
STA. = ~~44+55.44~~
OFF = -18.50
RIM = 1103.42
INV. (2) = 1099.42

46+68.91 RT
STA. = ~~46+68.74~~
OFF = 18.50
RIM = 1099.77
INV. (2) = 1094.58

APPROXIMATE LIMITS OF GRADING (TYP.)

49+69.21 RT
STA. = ~~49+68.74~~
OFF = 18.50
RIM = 1093.97
INV. (2) = 1088.63

CONSTRUCT 5' DMH 1.25
STA. = ~~48+36.23~~ 48+37.25
OFF = ~~191.76~~ 193.60
RIM = ~~1097.2~~ 1097.7
INV. IN = ~~1086.18~~ (24") 1086.24
INV. OUT = ~~1086.08~~ (30") 1086.06

249.96'
CONSTRUCT ~~242'~~ , 30" PIPE
S = 0.019

OUTLET 50+66.44
OFF = 202.27
INV. OUT = 1079.38
18" RCP END SECTION

CONSTRUCT 4' DIA. CB
STA. = 50+59.31
OFF = 263.11
INV. OUT = 1079.66 (18")
EXIST. IN 1084.22 (18")
RIM = 1090.62

OUTLET #4
STA. = 50+66.10
OFF = ~~159.48~~ 156.0
INV. = ~~1079.20~~ 1079.19

CONSTRUCT 4' DIA OCS
STA. = ~~51+52.04~~ 51+56.11
OFF = ~~170.45~~ 169.93
RIM = ~~1084.0~~ 1084.32 (TOP BEEHIVE)
INV. IN = 1079.0 (4")
INV. OUT = ~~1077.5~~ (18") 1077.45

CONSTRUCT 4' DI
STA. = ~~33+38.62~~ 52+20.73
OFF = ~~33.60~~ 232.02
RIM = ~~1081.14~~ 1080.83
INV. IN = 1076.7 (18")
INV. OUT = 1076.7 (18")

85.62'
CONSTRUCT ~~87'~~
18" PIPE
S = 0.092

74.86'
CONSTRUCT ~~76'~~
18" PIPE
S = 0.092

OUTLET #5
STA. = ~~52+89.62~~ 52+78.67
OFF = ~~304.35~~ 288.43
INVERT = ~~1076.0~~ (18") 1076.56

50+78.53 LT
STA. = ~~50+77.12~~
OFF = 18.50
RIM = 1092.27
INV. (2) = 1087.00

54+55.75 RT
STA. = ~~54+67.02~~
OFF = 18.50
RIM = 1090.26
INV. = 1085.15

53+70.3 LT
STA. = ~~53+71.78~~
OFF = -18.50
RIM = 1089.42
INV. (2) = 1085.74

52+48.64 RT
STA. = ~~52+45.36~~
OFF = 18.50
RIM = 1089.89
INV. (3) = 1084.62

STA. = 52+81.23
OFF = 145.41
INV. 1084.00

49+83.09
0.00

55+65.04
0.00

3-1/C#4 IN 2" PVC CONDUIT

3-1/C#4 IN 4" PVC CONDUIT

3-1/C#4 IN 2" PVC CONDUIT #6 BARE THRESHOLD BAR

1-1/C #8 SPLICE

5 PR/ SPLICE

END 6" UD FL 1082.0

END 6" UD FL 1084.12

6" UD FL 1088.0

REMOVE AND RESET FENCE PER VTRANS STANDARDS

ACCESS ROAD/GATE

FAA MAL SR BLDG

15KVA XFMR

CONSTRUCT 4' CB

CONSTRUCT 4' DIA MH

CONSTRUCT 4' TYPE

CONSTRUCT 4' DIA MH

CONSTRUCT 4' DIA MH

CONSTRUCT 4' DIA MH

SEE GRADING SHT 4

SEE GRADING SHT 3

SEE GRADING SHT 6

CONSTRUCT 233.25 ,24" PIPE
S =0.018

CONSTRUCT 5' DMH 1.24
STA. = ~~46+37.17~~ 4+00.03
OFF = ~~322.41~~ 277.71
RIM = ~~1106.80~~ 1106.15
INV. IN = ~~1097.00~~ (2) (6")1096.64
INV. IN = ~~1090.88~~ (24")1090.62
INV. OUT = ~~1090.78~~ (24")1090.73

4+19.12
STA. = ~~4+19.50~~
OFF = -269.02
RIM = 1106.97
INV. (2) = 1097.20

4+20.44
STA. = ~~4+20.50~~
OFF = -98.90
RIM = 1108.66
INV. (2) = 1099.00

6+65.0
STA. = ~~6+71.80~~
OFF = -18.52
RIM = 1106.60
INV. = 1101.86

CONSTRUCT 4' DIA DMH 1.23
RIM = ~~1107.6~~ 1107.45
STA. = ~~1+37+47.01~~ 3+87.58
OFF = ~~95.67~~ 57.13
INV. IN = ~~1102.40~~ (6")1102.38
INV. IN = ~~1096.44~~ (18")1096.42
INV. IN = ~~1096.44~~ (12")1096.42
INV. OUT = ~~1096.34~~ (24")1096.33

0+86.6
STA. = ~~0+84.75~~
OFF = 25.72
RIM = 1114.17
INV. (2) = 1105.00

140+00.45
STA. = ~~140+02.58~~
OFF = 418.95
RIM = 1110.73
INV. (2) = 1102.88

140+04.15
STA. = ~~140+06.19~~
OFF = 184.66
RIM = 1113.20
INV. (2) = 1105.20

CONSTRUCT 4' CB 1.21
RIM = 1111.1
STA. = ~~1+39+19.70~~ 2+17.05
OFF = ~~96.96~~ 53.64
INV. OUT = 1099.76(18")

CONSTRUCT 330.58' ~~329~~ ,24" PIPE
S =0.016

CONSTRUCT 4' 12" PIPE
S =0.037
INV. OUT = 1109.0

ADJUST EXISTING
DMH RIM TO GRADE

ASSUMED LOCATION

CONSTRUCT CB1.1
STA. = ~~1+1+10.7~~ 7+84.45
OFF = ~~-68.50~~ -54.94
RIM = ~~1111.7~~ 1112.10
INV. OUT = ~~1108.1~~ (12")1108.30
~~INV. IN = 1108.6 (12")~~
NO INLET - REMOVED STRUCTURE

CONSTRUCT 2x2 DI
RIM = 1105.00
STA. = 5+93.00
OFF = 49.75'
INV. OUT = 1102.5
TIES INTO EXISTING
PIPE @ 1101.66

PROPOSED TAXIWAY F

PROPOSED TAXIWAY G

REDESIGNATED TAXIWAY H

CONSTRUCT 166.57
S= 0.019
~~1734~~ 18" PIPE

CONSTRUCT 255.62
S= 0.014
~~257~~, 12" PIPE

STA. = 4+41.89
OFF = 18.50
RIM = 1109.18
INV. (3) = 1103.00

RUNWAY 5-23

STA. = 142+42.07
OFF. = 60.00
EL. = 1109.39

STA. = 141+25.00
OFF. = 60.00
EL. = 1112.61

STA. = 142+42.07
OFF. = 60.00
EL. = 1114.18

STA. = 141+25.00
OFF. = 60.00
EL. = 1113.64

137+03.78
STA. = ~~137+06.63~~
OFF = -38.50
RIM = 1110.69
INV. (2) = 1106.50

ADJUST EXISTING
CB RIM TO GRADE

PROPOSED TAXIWAY E

STA. = 6+68.10
OFF = -18.50
RIM = 1107.78
INV. (2) = 1109.85

CONSTRUCT
13.71~~15~~ 12" PIPE
S = 0.032
INV. IN = 1107.1

8+70.25
STA. = ~~9+49.93~~
OFF = -38.63
RIM = 1113.60
INV. (2) = 1109.09

CONSTRUCT 4' CB 1.22
RIM = ~~1104.4~~ 1105.10
STA. = ~~1+34+86.29~~ 6+47.18
OFF = ~~96.79~~ 53.93
INV. OUT = ~~1100.09~~ (12")1099.59

STA. = ~~6+89.20~~ 6+88.52
OFF = 37.50
RIM = 1106.29
INV. (2) = 1105.00

ELEV. = 1113.20
ELEV. = 1115.10

ELEV. = 1115.20

ELEV. = 1113.60

NEW ELECTRICLA VAULT

ELEV. = 1115.73

INV. IN 12" 1108.10
RIM EXIST. CB 1112.10
STA. 1+37.94
OFF = 167.55

FUEL FACILITY

AIRPORT PROPERTY LINE

AIRPORT ROAD

12" RCP END SECTION @ VAULT DRIVE
INV. IN = 1111.14
STA. 0+86.41
OFF = 27.15

SEE FUEL FACILITY DETAILS
FOR ADDITIONAL INFORMAITON

—REMOVE AND RESET FENCE
PER VTRANS STANDARDS

ACCESS ROAD

COMSTOCK ROAD

VT STATE PLANE GRID

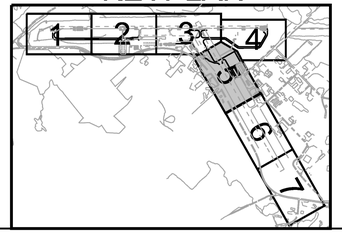
OML

LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

0 50 100
SCALE IN FEET

KEYPLAN



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Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_grdg.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
GRADING SHT 5

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

SEE GRADING SHT 5

SEE GRADING SHT 7

AIRPORT PROPERTY LINE

REDESIGNATED TAXIWAY H

RUNWAY 5-23

128+00 127+00 126+00 125+00 124+00 123+00 122+00 121+00 120+00 119+00 118+00 117+00 116+00 115+00 114+00

1100 1095 1090

APPROXIMATE LIMITS OF GRADING (TYP.)

VT STATE PLANE GRID

WINDSOCK RELOCATED TO 115+00, 220.00 LT.

Exist. Wind Cone

AIRPORT PROPERTY LINE

RELOCATED WINDSOCK

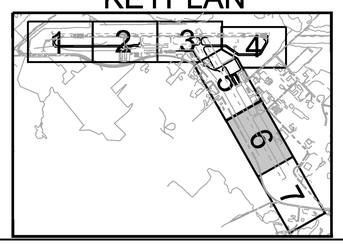
AIRPORT ROAD

LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

0 50 100
SCALE IN FEET

KEYPLAN

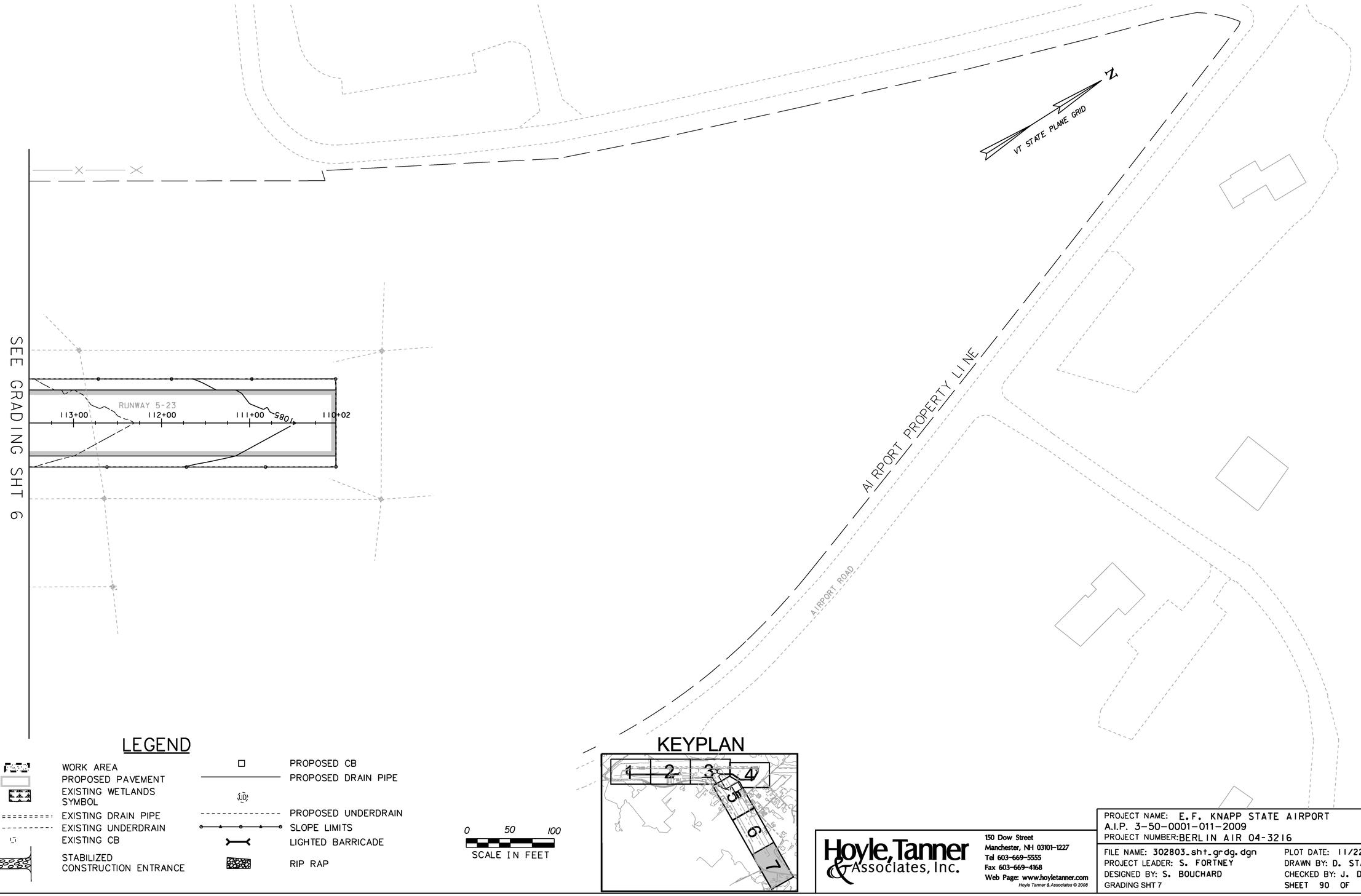


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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_grdg.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
GRADING SHT 6

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 89 OF 173



LEGEND

- WORK AREA
- PROPOSED PAVEMENT
- EXISTING WETLANDS SYMBOL
- EXISTING DRAIN PIPE
- EXISTING UNDERDRAIN
- EXISTING CB
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CB
- PROPOSED DRAIN PIPE
- PROPOSED UNDERDRAIN
- SLOPE LIMITS
- LIGHTED BARRICADE
- RIP RAP

0 50 100
SCALE IN FEET

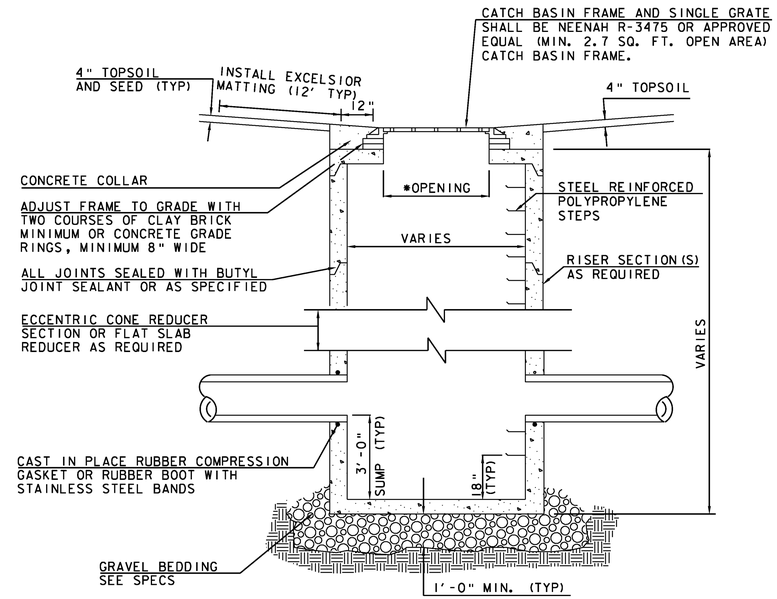
KEYPLAN

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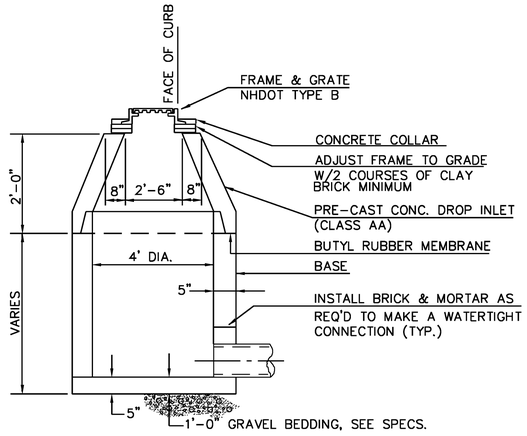
FILE NAME: 302803_sht_grdg.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
GRADING SHT 7

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 90 OF 173



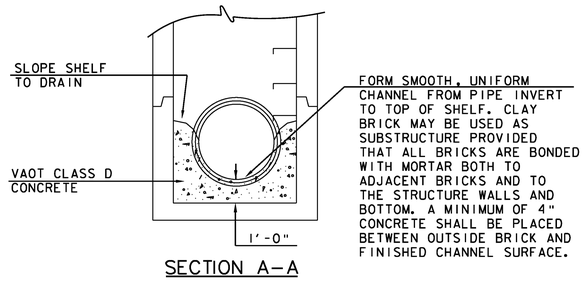
TYPICAL CATCH BASIN DETAIL

NOT TO SCALE

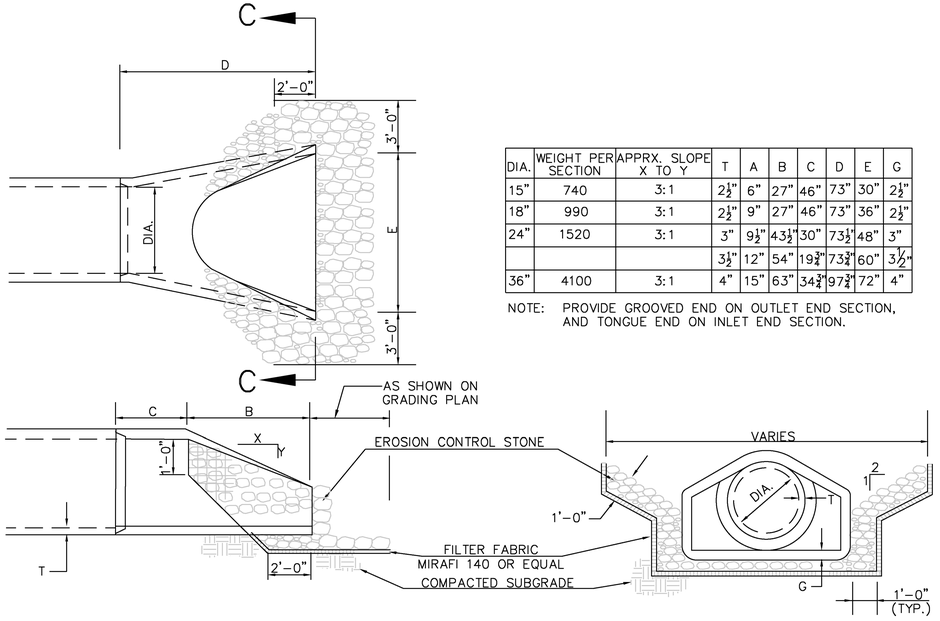


THE CONTRACTOR SHALL SUBMIT MANUFACTURER'S SHOP DRAWINGS INCLUDING REINFORCING DETAILS & CERTIFICATION OF HS-20 LOADING CAPACITY TO ENGINEER FOR APPROVAL.

NOT TO SCALE



SECTION A-A



DIA.	WEIGHT PER SECTION	APPRX. SLOPE X TO Y	T	A	B	C	D	E	G
15"	740	3:1	2½"	6"	27"	46"	73"	30"	2½"
18"	990	3:1	2½"	9"	27"	46"	73"	36"	2½"
24"	1520	3:1	3"	9½"	43½"	30"	73½"	48"	3"
			3½"	12"	54"	19¾"	73¾"	60"	3½"
36"	4100	3:1	4"	15"	63"	34¾"	97¾"	72"	4"

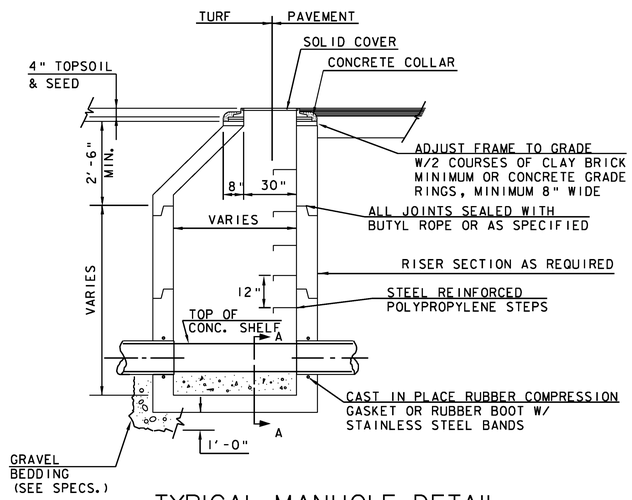
NOTE: PROVIDE GROOVED END ON OUTLET END SECTION, AND TONGUE END ON INLET END SECTION.

LONGITUDINAL SECTION

SECTION C-C

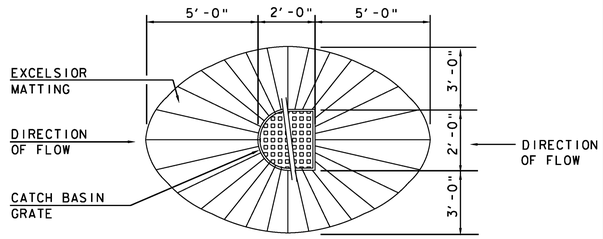
CONCRETE FLARED END SECTION DETAIL

NOT TO SCALE



TYPICAL MANHOLE DETAIL

NOT TO SCALE



PLAN VIEW

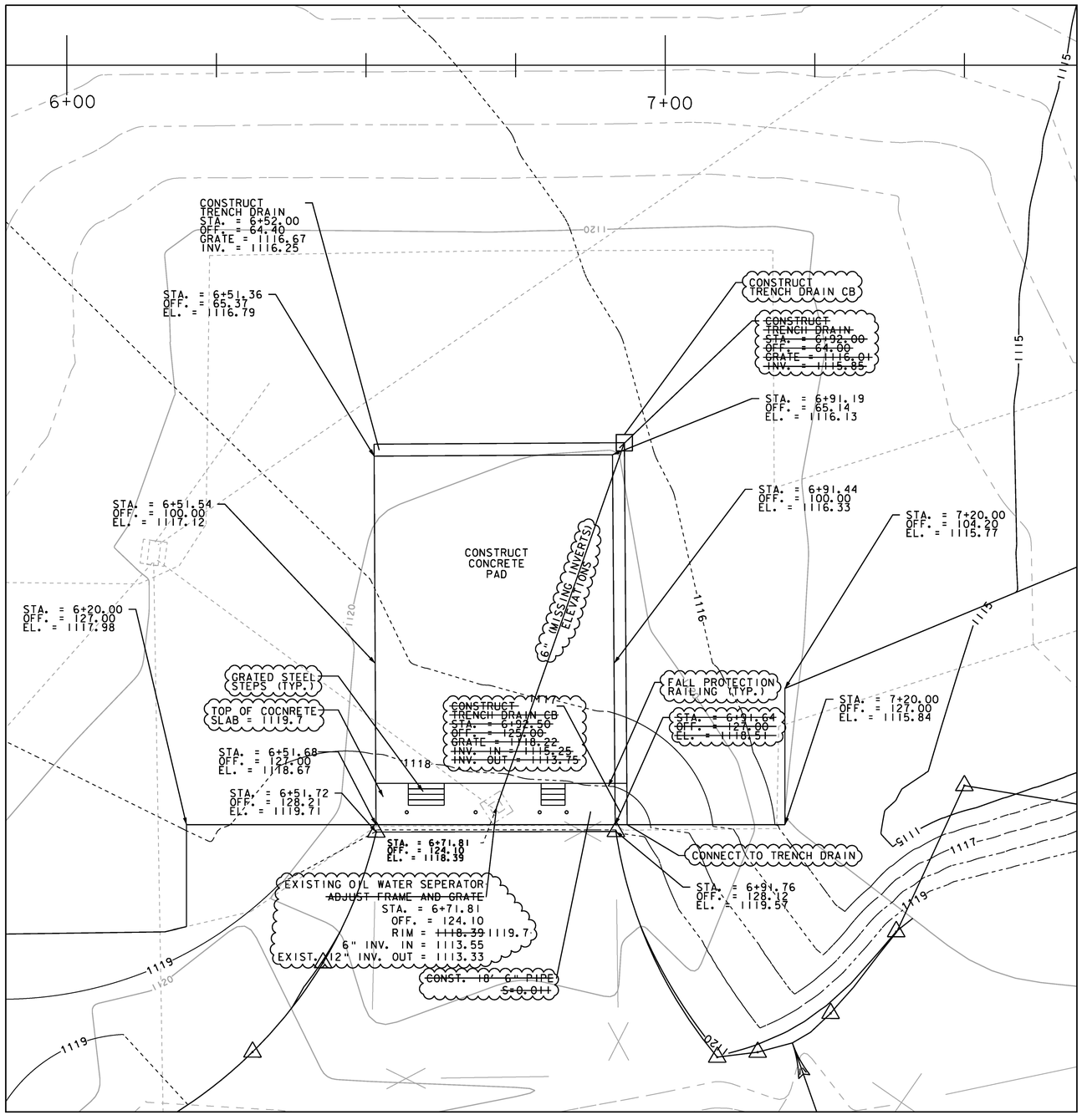
CATCH BASIN GRADING DETAIL

NOT TO SCALE

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

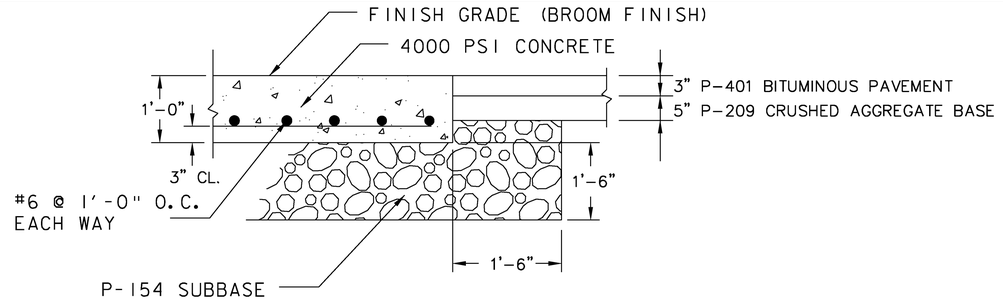
FILE NAME: 302803_sht_grdg_det.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
GRADING DETAILS SHEET 91 OF 173



FUEL FACILITY GRADING AND DRAINAGE PLAN

0 10 20

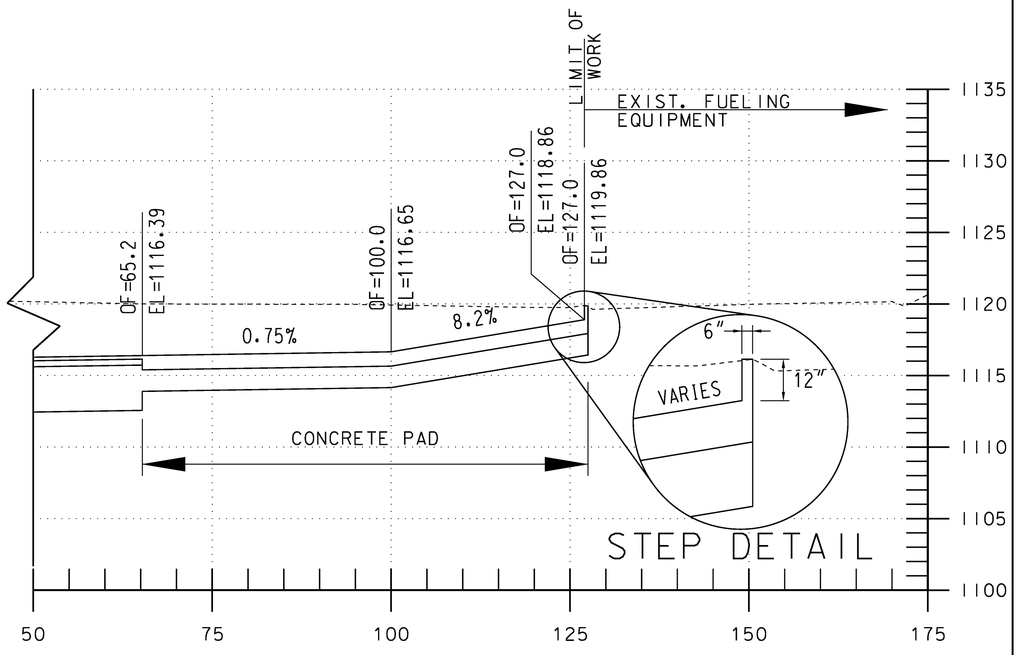
SCALE



NOTE: HORIZONTAL LAP SPLICE LENGTH TO BE 2'-10" (MINIMUM), ALL SPLICES TO BE STAGGERED.

CONCRETE PAD DETAIL

NOT TO SCALE



SECTION AT 6+75

NOTES:

1. ALL CROSS SLOPES VARY, SEE GRADING PLANS AND TAXIWAY E CROSS SECTIONS FOR ADDTIONAL INFORMATION.
2. CONCRETE STEP TO BE 12" HIGH AND MATCH EXISTING GROUND.

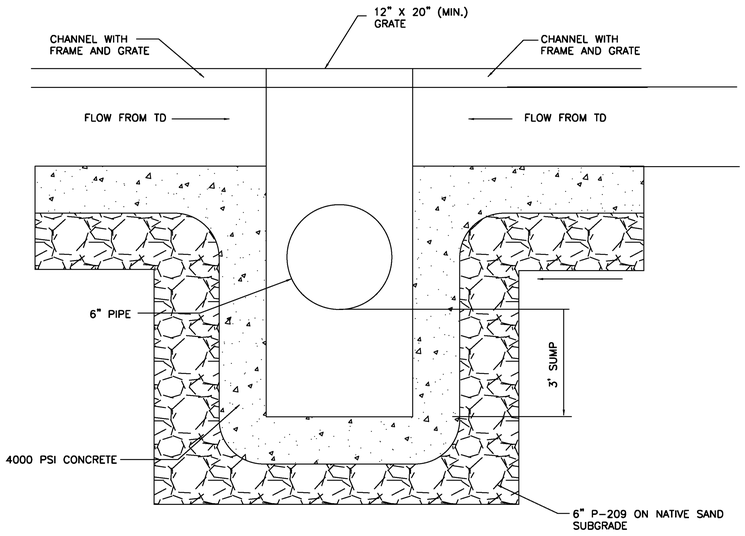
TYPICAL CONCRETE PAD CROSS SECTION

NOT TO SCALE

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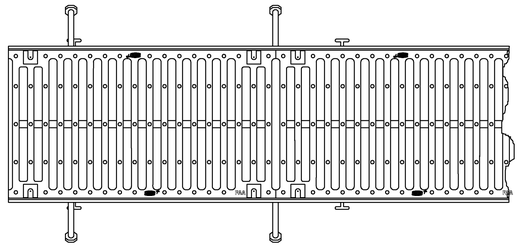
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_grdg_det.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
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FUEL FACILITY DETAILS



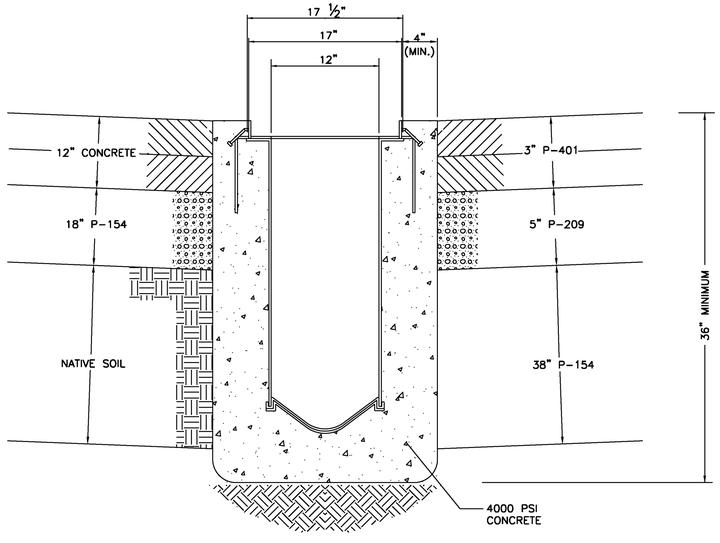
TRENCH DRAIN
CATCH BASIN DETAIL

NOT TO SCALE



TRENCH DRAIN
GRATE DETAIL

NOT TO SCALE



TRENCH DRAIN
DETAIL

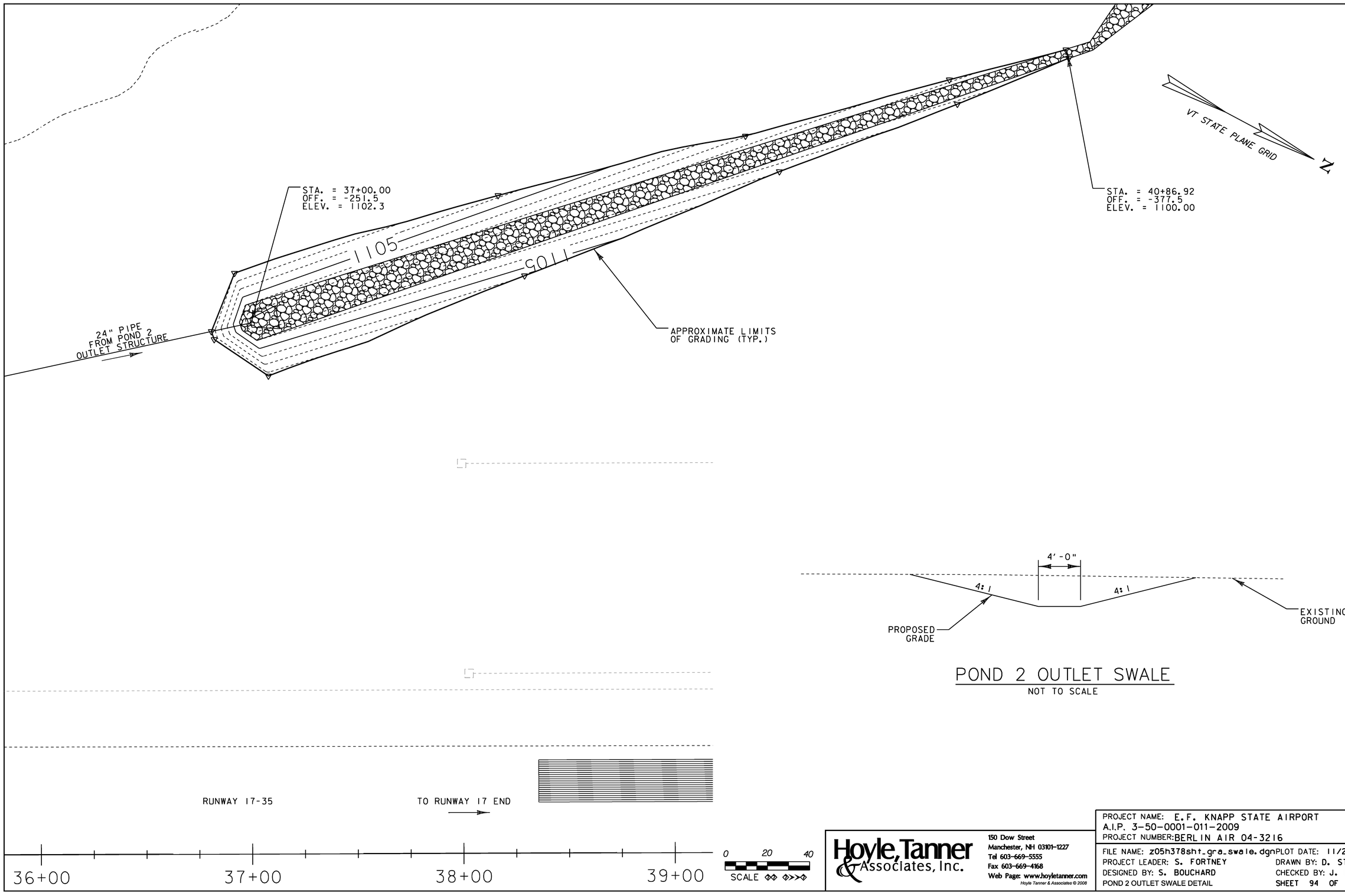
NOT TO SCALE

NOTES:

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND MANUFACTURER'S CERTIFICATIONS FOR REVIEW PRIOR TO INSTALLATION.
2. TRENCH DRAIN GRATE ELEVATION, SEE GRADING PLAN.
3. TRENCH DRAIN INVERT ELEVATION, SEE GRADING PLAN.

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PROJECT NUMBER: BERLIN AIR 04-3216
FILE NAME: 302803_sht_drain_det.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
TRENCH DRAIN DETAILS SHEET 93 OF 173



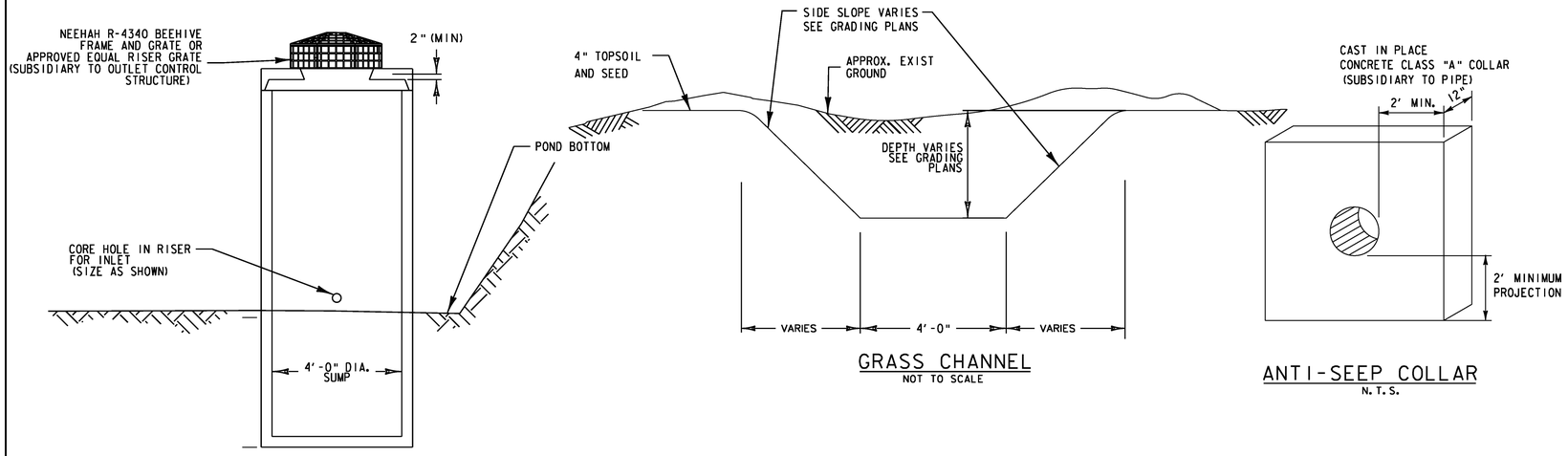
POND 2 OUTLET SWALE

NOT TO SCALE

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_gra_swale.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
POND 2 OUTLET SWALE DETAIL SHEET 94 OF 173



DETENTION POND
OUTLET CONTROL STRUCTURE (OCS)
(FRONT VIEW)
N.T.S.

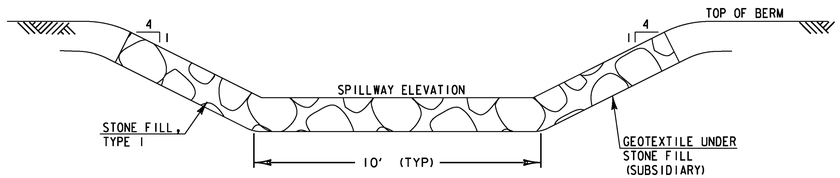
GRASS CHANNEL
NOT TO SCALE

ANTI-SEEP COLLAR
N.T.S.

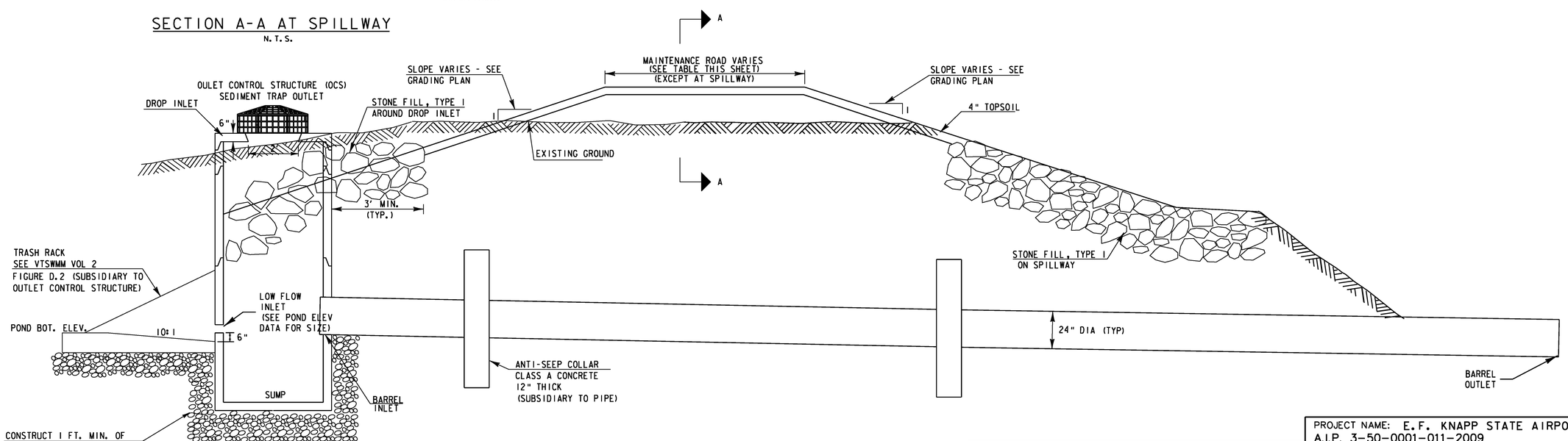
GENERAL NOTES:

1. THE DETENTION POND AREA SHALL BE CLEARED OF ALL TREES, ROOTS, STUMPS, BOULDERS AND SOD TO A DEPTH OF 2' BELOW FINAL GRADE.
2. CONSTRUCT BERM USING EMBANKMENT MATERIAL FREE OF SOD, ROOTS, FROZEN MATERIAL, LARGE ROCKS, OR OTHER OBJECTIONABLE MATERIAL.
3. CONSTRUCT CUT OFF TRENCH AT CENTERLINE OF BERM OR SLIGHTLY UPSTREAM. FILL WITH IMPERVIOUS BORROW TO REDUCE SEEPAGE AND STABILIZE THE BERM. COMPACT MATERIAL TO AT LEAST 95% OF MAXIMUM DENSITY.
4. OUTLET CONTROL STRUCTURE SEDIMENT TRAP OUTLET TO BE PRECAST WITH HOLE SIZES AND SPACING AS SHOWN WITH ANY FIELD ADJUSTMENTS APPROVED BY THE CONTRACT ADMINISTRATOR. INLET HOLES MAY BE CORE DRILLED OR CAST WITH THE SECTION AT REQUIRED LOCATIONS. OTHER HOLES SHALL BE CAST WITH THE SECTION TO AVOID POSSIBLE RUST STAINS FROM EXPOSED REINFORCEMENT.
5. TOPSOIL AND SEED ALL EARTH SLOPES AS SOON AS POSSIBLE. STABILIZE THE INLET AREA WITH REQUIRED EROSION CONTROL.
6. REMOVE ACCUMULATED SEDIMENT FROM DETENTION POND AT COMPLETION OF PROJECT.
7. ANTI-SEEP COLLARS SHALL BE INSTALLED AS SHOWN TO RESIST FLOW ALONG THE OUTSIDE OF THE PIPE. COLLARS SHOULD PROTECT A MINIMUM OF 2 FEET FROM THE PIPE. MAXIMUM SPACING OF COLLARS IS 20 FEET.

POND ELEVATION DATA		
DESCRIPTION	POND 1	POND 2
POND BOTTOM ELEV	1079.0	1105.0
POND LOW FLOW SIZE/ELEV	4" / 1079.0	3" / 1105.0
RISER GRATE ELEV	1084.0	1108.0
BARREL INLET ELEV	1078.0	1104.9
SPILLWAY ELEV.	1085.0	1111.0
TOP OF BERM	1085.5	1111.5
BARREL OUTLET ELEV	1076.5	1102.3
MAINTENANCE ROAD WIDTH	10'	15'



SECTION A-A AT SPILLWAY
N.T.S.

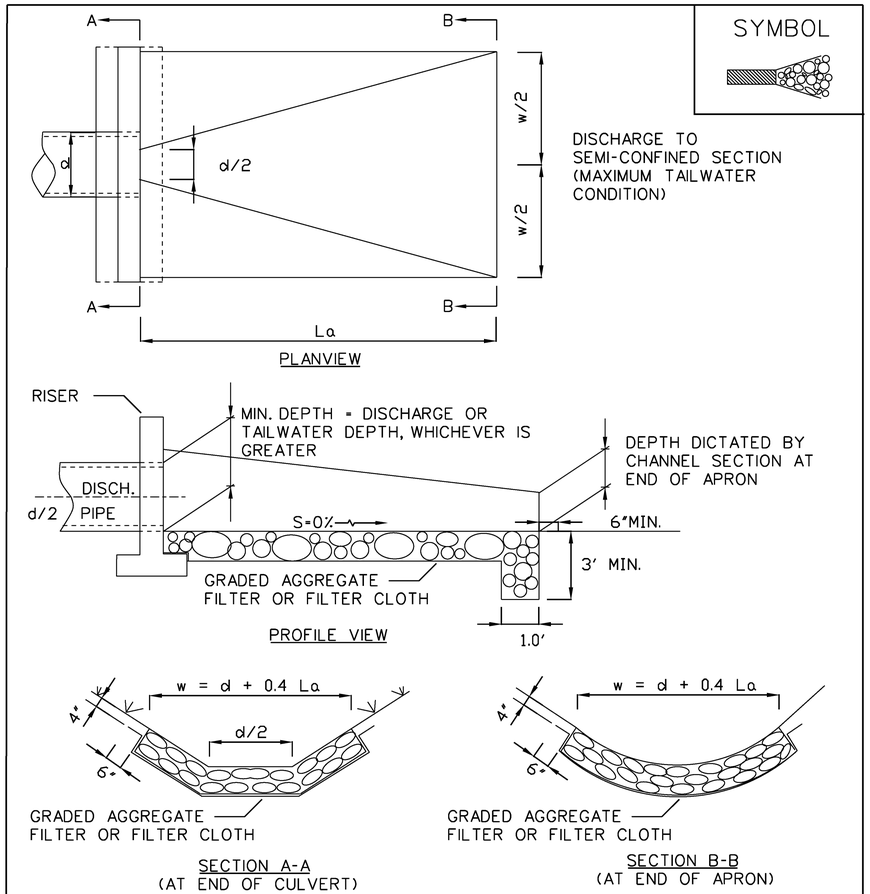


DETENTION POND SECTION
N.T.S.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_pnd_swl_det.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
POND SWALE DETAILS SHT 1 SHEET 95 OF 173



NOTE:
SEE RIPRAP STANDARDS AND SPECIFICATIONS
MAXIMUM TAILWATER CONDITIONS

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

RIPRAP OUTLET PROTECTION EXAMPLE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM M-105-1 - STONE FILL, TYPE I OR M-105-2 - STONE FILL, TYPE II

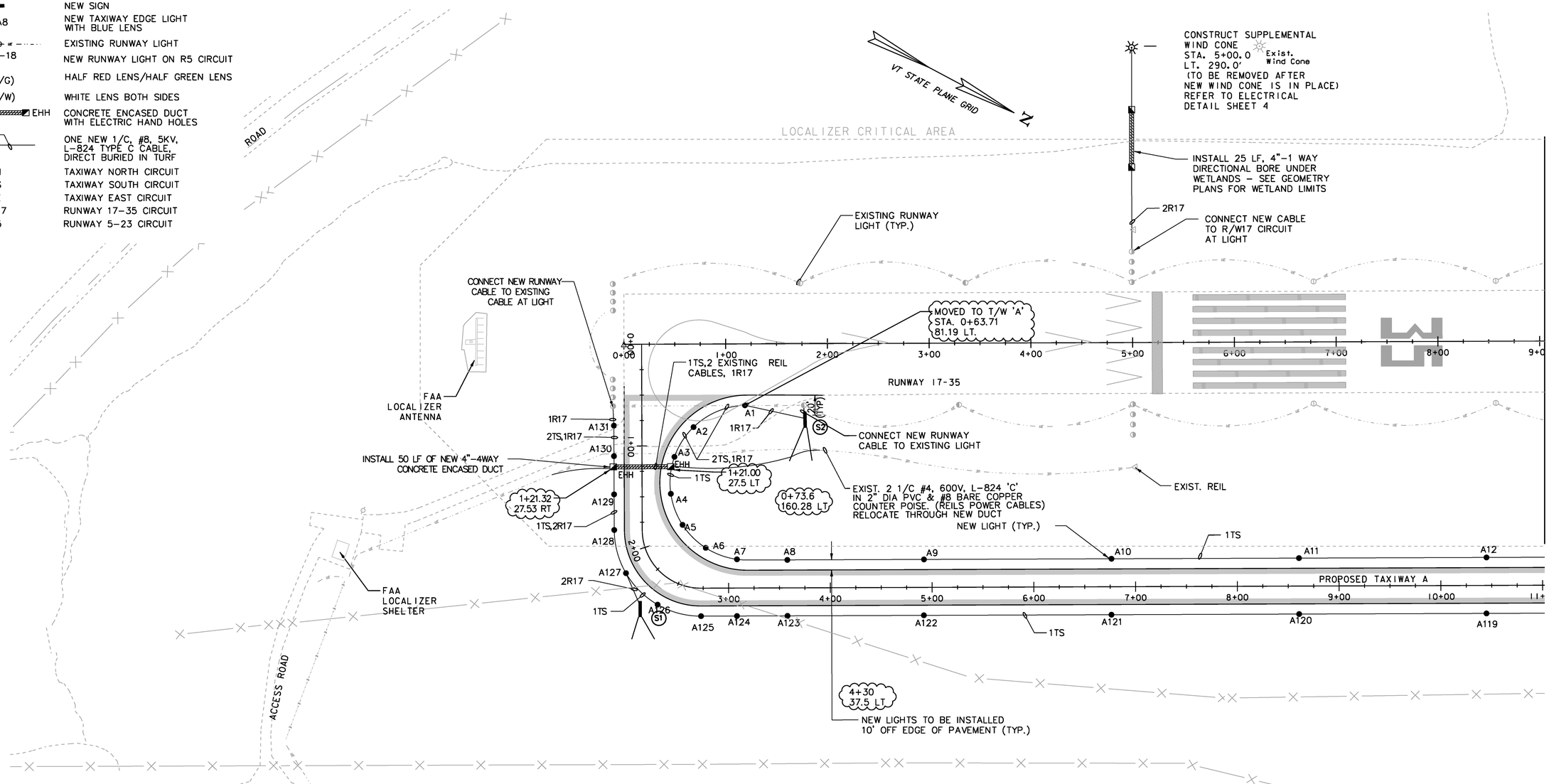
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DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD
CHECKED BY: J. DOWNAR
POND SWALE DETAILS SHT 2
SHEET 96 OF 173

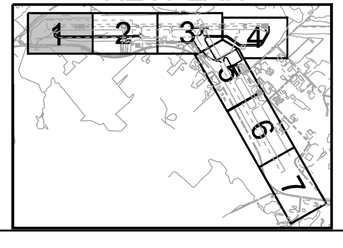
LEGEND:

▬	NEW SIGN
● A8	NEW TAXIWAY EDGE LIGHT WITH BLUE LENS
– ∗ – ⊖ ∗ –	EXISTING RUNWAY LIGHT
● R5–18	NEW RUNWAY LIGHT ON R5 CIRCUIT
(R/G)	HALF RED LENS/HALF GREEN LENS
(W/W)	WHITE LENS BOTH SIDES
EHH ▨ EHH	CONCRETE ENCASED DUCT WITH ELECTRIC HAND HOLES
1TS —	ONE NEW 1/C, #8, 5KV, L–824 TYPE C CABLE, DIRECT BURIED IN TURF
TN	TAXIWAY NORTH CIRCUIT
TS	TAXIWAY SOUTH CIRCUIT
TE	TAXIWAY EAST CIRCUIT
R17	RUNWAY 17–35 CIRCUIT
R5	RUNWAY 5–23 CIRCUIT



LIGHT NO.	STATION	OFFSET	CIRCUIT	LIGHT NO.	STATION	OFFSET	CIRCUIT
A1	STA: 0+60.81	OFFSET: –101.72	TS	A120	STA: 8+61.20	OFFSET: 27.50	TS
A2	STA: 0+80.81	OFFSET: –50.79	TS	A121	STA: 8+78.22	OFFSET: 27.50	TS
A3	STA: 1+10.34	OFFSET: –32.13	TS	A122	STA: 9+91.37	OFFSET: 27.50	TS
A4	STA: 1+47.18	OFFSET: –28.25	TS	A123	STA: 10+57.16	OFFSET: 27.50	TS
A5	STA: 1+69.76	OFFSET: –39.64	TS	A124	STA: 10+97.15	OFFSET: 27.50	TS
A6	STA: 2+89.22	OFFSET: –39.65	TS	A125	STA: 12+69.83	OFFSET: 27.50	TS
A7	STA: 3+09.53	OFFSET: –28.24	TS	A126	STA: 12+91.37	OFFSET: 27.50	TS
A8	STA: 3+58.40	OFFSET: –27.50	TS	A127	STA: 13+11.39	OFFSET: 27.50	TS
A9	STA: 4+91.90	OFFSET: –27.50	TS	A128	STA: 14+84.50	OFFSET: 27.50	TS
A10	STA: 6+78.39	OFFSET: –27.50	TS	A129	STA: 15+48.22	OFFSET: 27.50	TS
A11	STA: 8+58.89	OFFSET: –27.50	TS	A130	STA: 15+70.32	OFFSET: 27.50	TS
A12	STA: 10+85.24	OFFSET: –27.50	TS	A131	STA: 0+80.20	OFFSET: 27.50	TS
A119	STA: 10+44.47	OFFSET: 27.50	TS				

KEYPLAN



NOTE:

1. PROPOSED GEOMETRY SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1–7.
2. ALL CABLES ARE DIRECT BURIED UNLESS OTHERWISE NOTED.

0 50 100
SCALE IN FEET

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150 Dow Street
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Web Page: www.hoyletanner.com

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3–50–0001–011–2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_el.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
ELECTRICAL SHT 1

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

LEGEND:

▬	NEW SIGN
● A8	NEW TAXIWAY EDGE LIGHT WITH BLUE LENS
– – – –	EXISTING RUNWAY LIGHT
● R5–18	NEW RUNWAY LIGHT ON R5 CIRCUIT
(R/G)	HALF RED LENS/HALF GREEN LENS
(W/W)	WHITE LENS BOTH SIDES
EHH ▨ EHH	CONCRETE ENCASED DUCT WITH ELECTRIC HAND HOLES
1TS	ONE NEW 1/C, #8, 5KV, L-824 TYPE C CABLE, DIRECT BURIED IN TURF
TN	TAXIWAY NORTH CIRCUIT
TS	TAXIWAY SOUTH CIRCUIT
TE	TAXIWAY EAST CIRCUIT
R17	RUNWAY 17–35 CIRCUIT
R5	RUNWAY 5–23 CIRCUIT

SEE ELECTRICAL SHT 1

SEE ELECTRICAL SHT 3

VT STATE PLANE GRID

CONNECT NEW R/W CABLE TO EXIST. CABLE AT LIGHT

EXIST. 4"–2WAY CONCRETE ENCASED DUCT

CONNECT NEW R/W CABLE TO EXIST. CABLE AT LIGHT RUNWAY 17-35 5000.19'

CONNECT NEW R/W CABLE TO EXISTING CABLE AT LIGHT

NEW LIGHT (TYP.)

PROPOSED TAXIWAY A

EXISTING TAXIWAY A

TAXIWAY B

TAXIWAY C

NEW LIGHTS TO BE INSTALLED 10' OFF EDGE OF PAVEMENT (TYP.)

INSTALL 50 LF OF NEW 4"–2WAY CONCRETE ENCASED DUCT

INSTALL 50 LF OF NEW 4"–2WAY CONCRETE ENCASED DUCT

REPLACED 'A' WITH BLANK

REPLACED 'A' WITH BLANK

EXIST. 4"–2WAY CONCRETE ENCASED DUCT

17+82.82 37.5 LT

21+75.86 38.68 LT

18+97.43 70.10 RT

21+24.29 37.08 LT

21+00.00 27.70 LT

21+00.50 27.2 RT

21+49.24 70.99 RT

22+99.5 30.8 LT

23+26.50 38.9 RT

2+81.75 49.6 LT

18+97.0 37.5 RT

2+86.82 26.34 RT

2+87.60 27.26 RT

20' TYP

HANGAR

HANGAR

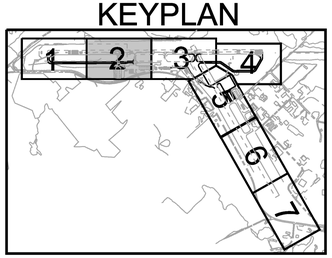
APRON B

APRON C

AIRPORT ROAD

LIGHT NO.	STATION	OFFSET	CIRCUIT	LIGHT NO.	STATION	OFFSET	CIRCUIT
A13	STA: 12+29.06	OFFSET: −27.50	TS	A29	STA: 24+36.30	10' OFF EXIST. PVM'T	TS
A14	STA: 14+14.07	OFFSET: −27.50	TS	A103	STA: 24+87.69	10' OFF EXIST. PVM'T	TS
A15	STA: 15+36.95	OFFSET: −27.50	TS	A104	STA: 23+58.10	10' OFF EXIST. PVM'T	TS
A16	STA: 17+31.99	OFFSET: −27.50	TS	A105	STA: 23+08.20	10' OFF EXIST. PVM'T	TS
A17	STA: 17+81.48	OFFSET: −27.50	TS	C11	STA: 2+64.65	10' OFF EXIST. PVM'T	TS
A18	STA: 18+40.40	OFFSET: −27.50	TS	C12	STA: 2+78.74	10' OFF EXIST. PVM'T	TS
A19	STA: 18+98.40	OFFSET: −27.50	TS	C13	STA: 2+79.65	OFFSET: 28.19	TS
A20	STA: 19+46.53	OFFSET: −27.50	TS	C14	STA: 2+59.60	OFFSET: 35.36	TS
A21	STA: 19+91.29	OFFSET: −27.50	TS	A106	STA: 21+50.80	OFFSET: 27.50	TS
A22	STA: 20+20.37	OFFSET: −27.50	TS	A107	STA: 21+24.30	OFFSET: 27.50	TS
A23	STA: 20+55.79	OFFSET: −27.50	TS	A108	STA: 20+80.80	OFFSET: 27.50	TS
A24	STA: 20+76.85	OFFSET: −27.50	TS	A109	STA: 20+51.40	OFFSET: 27.50	TS
A25	STA: 21+21.79	OFFSET: −27.50	TS	A110	STA: 20+17.45	OFFSET: 27.50	TS
A26	STA: 21+50.28	OFFSET: −27.50	TS	A111	STA: 19+95.50	OFFSET: 27.50	TS
C1	STA: 1+83.60	OFFSET: 43.51	TS	A112	STA: 19+46.80	OFFSET: 27.50	TS
C2	STA: 1+51.20	OFFSET: 29.32	TS	A113	STA: 18+98.70	OFFSET: 27.50	TS
C3	STA: 1+23.50	10' OFF EXIST. PVM'T	TS	B3	STA: 2+77.64	OFFSET: −34.34	TS
C4	STA: 0+96.52	10' OFF EXIST. PVM'T	TS	B4	STA: 2+98.17	OFFSET: −27.89	TS
C5	STA: 0+69.02	10' OFF EXIST. PVM'T	TS	B2	STA: 2+97.00	OFFSET: 27.50	TS
C6	STA: 0+70.80	10' OFF EXIST. PVM'T	TS	B1	STA: 2+76.37	OFFSET: 36.66	TS
C7	STA: 0+94.99	10' OFF EXIST. PVM'T	TS	A114	STA: 17+82.82	OFFSET: 27.50	TS
C8	STA: 1+23.20	10' OFF EXIST. PVM'T	TS	A115	STA: 17+32.00	OFFSET: 27.50	TS
C9	STA: 1+50.82	10' OFF EXIST. PVM'T	TS	A116	STA: 15+98.38	OFFSET: 27.50	TS
C10	STA: 1+84.55	10' OFF EXIST. PVM'T	TS	A117	STA: 14+13.35	OFFSET: 27.50	TS
A27	STA: 23+08.62	10' OFF EXIST. PVM'T	TS	A118	STA: 12+29.18	OFFSET: 27.50	TS
A28	STA: 23+58.0	10' OFF EXIST. PVM'T	TS				

KEYPLAN



0 50 100

SCALE IN FEET

NOTE:

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2. ALL CABLES ARE DIRECT BURIED UNLESS OTHERWISE NOTED.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_el.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
ELECTRICAL SHT 2

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

LIGHT NO.	STATION	OFFSET	CIRCUIT	LIGHT NO.	STATION	OFFSET	CIRCUIT	LIGHT NO.	STATION	OFFSET	CIRCUIT
A30	STA: 26+65.19	10' OFF EXIST. PVM'T	TS	A37	STA: 32+81.16	10' OFF EXIST. PVM'T	TS	A43	STA: 37+68.40	OFFSET: −27.50	TN
A31	STA: 28+24.15	10' OFF EXIST. PVM'T	TS	A38	STA: 33+70.20	10' OFF EXIST. PVM'T	TS	A44	STA: 38+19.10	OFFSET −27.50	TN
A32	STA: 29+44.30	10' OFF EXIST. PVM'T	TS	A39	STA: 34+59.08	OFFSET: 28.46	TS	A45	STA: 39+10.57	OFFSET: −27.50	TN
D1	STA: 1+89.33	10' OFF EXIST. PVM'T	TS	A40	STA: 34+98.50	OFFSET: 29.46	TS	A46	STA: 40+54.80	OFFSET: −27.50	TN
D2	STA: 1+21.12	10' OFF EXIST. PVM'T	TS	A41	STA: 35+64.80	OFFSET: 30.52	TS	A96	STA: 40+54.40	OFFSET: 27.50	TN
D3	STA: 1+44.45	10' OFF EXIST. PVM'T	TS	E1	STA: 1+95.00	OFFSET: 41.25	TN	A97	STA: 39+11.17	OFFSET: 27.50	TN
D4	STA: 0+94.63	10' OFF EXIST. PVM'T	TS	E2	STA: 1+62.08	OFFSET: 27.50	TN	A98	STA: 38+19.23	OFFSET: 27.50	TN
D5	STA: 0+66.98	10' OFF EXIST. PVM'T	TS	E3	STA: 1+36.30	OFFSET: 27.50	TN	A99	STA: 37+68.58	OFFSET: 27.50	TN
D6	STA: 0+72.64	10' OFF EXIST. PVM'T	TS	E4	STA: 1+08.64	OFFSET: 27.50	TN	E13	STA: 3+22.14	OFFSET: −66.33	TN
D7	STA: 1+00.90	10' OFF EXIST. PVM'T	TS	E5	STA: 0+84.84	OFFSET: 33.67	TN	E14	STA: 3+37.70	OFFSET: −38.49	TN
D8	STA: 1+47.70	10' OFF EXIST. PVM'T	TS	E6	STA: 0+66.28	OFFSET: 51.16	TN	E15	STA: 3+68.20	OFFSET: −27.50	TN
D9	STA: 1+70.56	10' OFF EXIST. PVM'T	TS	E7	STA: 0+68.20	OFFSET: −49.43	TN	E16	STA: 4+18.30	OFFSET: −27.50	TN
D10	STA: 1+86.43	10' OFF EXIST. PVM'T	TS	E8	STA: 0+85.20	OFFSET: −33.25	TN	E17	STA: 4+61.65	OFFSET: −27.50	TN
D11	STA: 2+02.44	10' OFF EXIST. PVM'T	TS	E9	STA: 1+09.14	OFFSET: 27.50	TN	A100	STA: 28+23.50	10' OFF EXIST. PVM'T	TS
A33	STA: 30+12.90	10' OFF EXIST. PVM'T	TS	E10	STA: 1+36.90	OFFSET: 27.50	TN	A101	STA: 28+23.50	5' OFF LITE # 100	TS
A34	STA: 30+62.00	10' OFF EXIST. PVM'T	TS	E11	STA: 1+61.00	OFFSET: 27.50	TN	A102	STA: 26+65.60	10' OFF EXIST. PVM'T	TS
A35	STA: 31+01.20	10' OFF EXIST. PVM'T	TS	E12	STA: 1+98.14	OFFSET: −41.41	TN	R17−1	MATCH EXISTING		R17
A36	STA: 31+90.00	10' OFF EXIST. PVM'T	TS	A42	STA: 37+16.42	OFFSET: −27.50	TN	R17−2	MATCH EXISTING		R17

LEGEND:

- NEW SIGN
- ● A8 — NEW TAXIWAY EDGE LIGHT WITH BLUE LENS
- EXISTING RUNWAY LIGHT
- ● R5−18 — NEW RUNWAY LIGHT ON R5 CIRCUIT
- (R/G) — HALF RED LENS/HALF GREEN LENS
- (W/W) — WHITE LENS BOTH SIDES
- EHH ▨ EHH — CONCRETE ENCASED DUCT WITH ELECTRIC HAND HOLES
- 1TS — ONE NEW 1/C, #8, 5KV, L−824 TYPE C CABLE, DIRECT BURIED IN TURF
- TN — TAXIWAY NORTH CIRCUIT
- TS — TAXIWAY SOUTH CIRCUIT
- TE — TAXIWAY EAST CIRCUIT
- R17 — RUNWAY 17−35 CIRCUIT
- R5 — RUNWAY 5−23 CIRCUIT

SEE ELECTRICAL SHT 2

SEE ELECTRICAL SHT 4

SEE ELECTRICAL SHT 5

CONNECT NEW R/W CABLE TO EXIST. CABLE AT LIGHT

EXIST. 4"−2WAY CONCRETE ENCASED DUCT TO REMAIN

CONNECT NEW R/W CABLE TO EXISTING AT LIGHT

REPLACE EXISTING FLUSH MOUNTED LIGHT WITH NEW ELEVATED RUNWAY LIGHT

CONNECT NEW R/W CABLE TO EXISTING CABLE AT LIGHT

RUNWAY 17−35

TAXIWAY D

PROPOSED TAXIWAY E

PROPOSED TAXIWAY A

EXISTING TAXIWAY A

REPLACED ARROW WITH BLANK

REPLACED 'A' WITH BLANK

NEW LIGHT (TYP.)

27+70.50 37.5 LT

0+70.85 110.42 RT

1+77.00 57.0 RT

1+90.27 61.55 LT

0+70.4 107.83 LT

31+92.43 35.57 LT

30+43.89 48.5 LT

0+69.09 95.34 RT

1+87.73 47.1 RT

35+33.55 40.7 LT

1+87 45.2 LT

36+88.33 51.98 LT

37+90.14 27.16 LT

37+88.26 27.4 RT

1+73.67 28.16 RT

1+70.07 28.00 LT

37+72.5 37.1 RT

HOLD SIGN STA. 39+90.70, 37.50 RT.

INSTALL 50 LF OF NEW 4"−4WAY CONCRETE ENCASED DUCT

INSTALL 50 LF OF NEW 4"−4WAY CONCRETE ENCASED DUCT

NEW LIGHTS TO BE INSTALLED 10' OFF EDGE OF PAVEMENT (TYP.)

HANGAR

HANGAR

HANGAR

HANGAR

VEHICLE PARKING LOT

GARAGE

TERMINAL BLDG.

TERMINAL APRON

AIRPORT ROAD

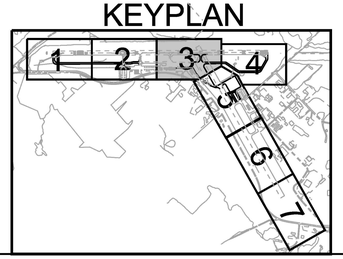
5-APCH

35-17

NOTE:

1. PROPOSED GEOMETRY SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1−7.
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KEYPLAN



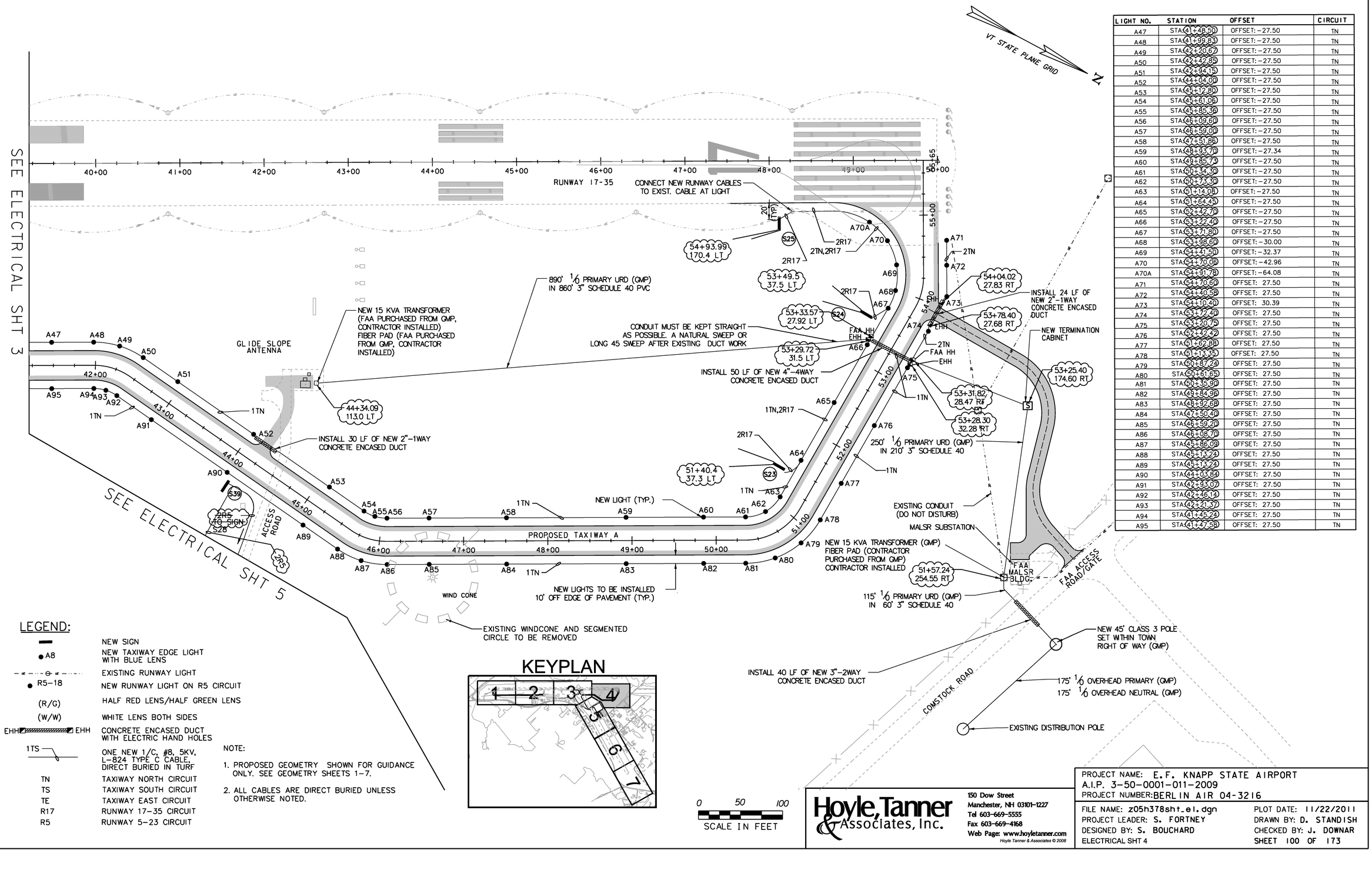
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3−50−0001−011−2009
PROJECT NUMBER: BERLIN AIR 04−3216

FILE NAME: z05h378sht_el.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
ELECTRICAL SHT 3

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 99 OF 173



LIGHT NO.	STATION	OFFSET	CIRCUIT
A47	STA 41+48.50	OFFSET: -27.50	TN
A48	STA 41+99.83	OFFSET: -27.50	TN
A49	STA 42+20.67	OFFSET: -27.50	TN
A50	STA 42+42.85	OFFSET: -27.50	TN
A51	STA 42+94.15	OFFSET: -27.50	TN
A52	STA 44+04.00	OFFSET: -27.50	TN
A53	STA 45+12.80	OFFSET: -27.50	TN
A54	STA 45+61.06	OFFSET: -27.50	TN
A55	STA 45+85.36	OFFSET: -27.50	TN
A56	STA 46+09.60	OFFSET: -27.50	TN
A57	STA 46+59.00	OFFSET: -27.50	TN
A58	STA 47+51.86	OFFSET: -27.50	TN
A59	STA 48+93.70	OFFSET: -27.34	TN
A60	STA 49+85.73	OFFSET: -27.50	TN
A61	STA 50+34.30	OFFSET: -27.50	TN
A62	STA 50+73.30	OFFSET: -27.50	TN
A63	STA 51+14.05	OFFSET: -27.50	TN
A64	STA 51+64.45	OFFSET: -27.50	TN
A65	STA 52+42.70	OFFSET: -27.50	TN
A66	STA 53+22.40	OFFSET: -27.50	TN
A67	STA 53+71.80	OFFSET: -27.50	TN
A68	STA 53+98.60	OFFSET: -30.00	TN
A69	STA 54+41.50	OFFSET: -32.37	TN
A70	STA 54+70.06	OFFSET: -42.96	TN
A70A	STA 54+91.78	OFFSET: -64.08	TN
A71	STA 54+70.60	OFFSET: 27.50	TN
A72	STA 54+40.58	OFFSET: 27.50	TN
A73	STA 54+10.40	OFFSET: 30.39	TN
A74	STA 53+72.40	OFFSET: 27.50	TN
A75	STA 53+20.75	OFFSET: 27.50	TN
A76	STA 52+42.42	OFFSET: 27.50	TN
A77	STA 51+62.88	OFFSET: 27.50	TN
A78	STA 51+13.35	OFFSET: 27.50	TN
A79	STA 50+87.24	OFFSET: 27.50	TN
A80	STA 50+61.65	OFFSET: 27.50	TN
A81	STA 50+35.90	OFFSET: 27.50	TN
A82	STA 49+84.96	OFFSET: 27.50	TN
A83	STA 48+92.68	OFFSET: 27.50	TN
A84	STA 47+50.40	OFFSET: 27.50	TN
A85	STA 46+59.20	OFFSET: 27.50	TN
A86	STA 46+08.70	OFFSET: 27.50	TN
A87	STA 45+86.09	OFFSET: 27.50	TN
A88	STA 45+13.24	OFFSET: 27.50	TN
A89	STA 45+13.24	OFFSET: 27.50	TN
A90	STA 44+03.84	OFFSET: 27.50	TN
A91	STA 42+93.07	OFFSET: 27.50	TN
A92	STA 42+46.14	OFFSET: 27.50	TN
A93	STA 42+21.37	OFFSET: 27.50	TN
A94	STA 41+45.24	OFFSET: 27.50	TN
A95	STA 41+47.58	OFFSET: 27.50	TN

LEGEND:

▬	NEW SIGN
● A8	NEW TAXIWAY EDGE LIGHT WITH BLUE LENS
- - -⊖- - -	EXISTING RUNWAY LIGHT
● R5-18	NEW RUNWAY LIGHT ON R5 CIRCUIT
(R/G)	HALF RED LENS/HALF GREEN LENS
(W/W)	WHITE LENS BOTH SIDES
EHH ▨ EHH	CONCRETE ENCASED DUCT WITH ELECTRIC HAND HOLES
1TS	ONE NEW 1/C, #8, 5KV, L-824 TYPE C CABLE, DIRECT BURIED IN TURF
TN	TAXIWAY NORTH CIRCUIT
TS	TAXIWAY SOUTH CIRCUIT
TE	TAXIWAY EAST CIRCUIT
R17	RUNWAY 17-35 CIRCUIT
R5	RUNWAY 5-23 CIRCUIT

NOTE:

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KEYPLAN

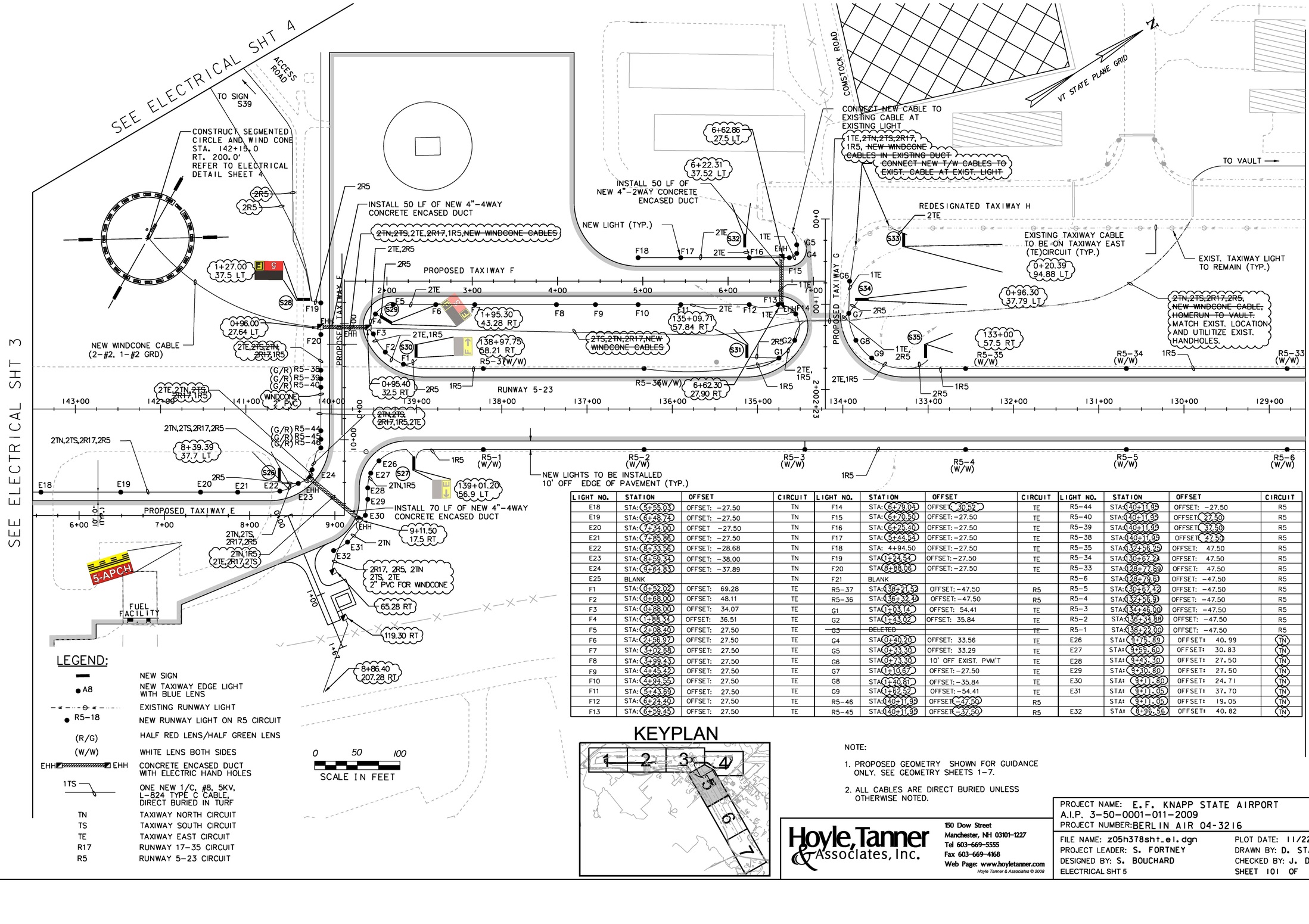
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_el.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
ELECTRICAL SHT 4

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 100 OF 173



LIGHT NO.	STATION	OFFSET	CIRCUIT	LIGHT NO.	STATION	OFFSET	CIRCUIT	LIGHT NO.	STATION	OFFSET	CIRCUIT
E18	STA: 6+55.05	OFFSET: -27.50	TN	F14	STA: 6+79.04	OFFSET: -30.52	TE	R5-44	STA: 140+11.95	OFFSET: -27.50	R5
E19	STA: 6+48.74	OFFSET: -27.50	TN	F15	STA: 6+70.50	OFFSET: -27.50	TE	R5-40	STA: 140+11.95	OFFSET: 27.50	R5
E20	STA: 7+34.00	OFFSET -27.50	TN	F16	STA: 6+25.40	OFFSET: -27.50	TE	R5-39	STA: 140+11.95	OFFSET: 37.50	R5
E21	STA: 7+85.86	OFFSET: -27.50	TN	F17	STA: 5+44.34	OFFSET: -27.50	TE	R5-38	STA: 140+11.95	OFFSET: 42.50	R5
E22	STA: 8+33.56	OFFSET: -28.68	TN	F18	STA: 4+94.50	OFFSET: -27.50	TE	R5-35	STA: 132+86.25	OFFSET: 47.50	R5
E23	STA: 8+69.34	OFFSET: -38.00	TN	F19	STA: 1+24.54	OFFSET: -27.50	TE	R5-34	STA: 130+67.24	OFFSET: 47.50	R5
E24	STA: 9+64.85	OFFSET: -37.89	TN	F20	STA: 8+85.06	OFFSET: -27.50	TE	R5-33	STA: 128+77.89	OFFSET: 47.50	R5
E25	BLANK		TN	F21	BLANK			R5-6	STA: 128+79.51	OFFSET: -47.50	R5
F1	STA: 0+52.02	OFFSET: 69.28	TE	R5-37	STA: 138+21.52	OFFSET: -47.50	R5	R5-5	STA: 130+67.42	OFFSET: -47.50	R5
F2	STA: 0+88.00	OFFSET: 48.11	TE	R5-36	STA: 136+32.40	OFFSET: -47.50	R5	R5-4	STA: 132+86.91	OFFSET: -47.50	R5
F3	STA: 0+88.00	OFFSET: 34.07	TE	G1	STA: 1+03.14	OFFSET: 54.41	TE	R5-3	STA: 134+46.00	OFFSET: -47.50	R5
F4	STA: 1+88.34	OFFSET: 36.51	TE	G2	STA: 1+43.02	OFFSET: 35.84	TE	R5-2	STA: 136+34.88	OFFSET: -47.50	R5
F5	STA: 2+08.40	OFFSET: 27.50	TE	G3	DELETED		TE	R5-1	STA: 138+22.00	OFFSET: -47.50	R5
F6	STA: 2+56.97	OFFSET: 27.50	TE	G4	STA: 0+40.20	OFFSET: 33.56	TE	E26	STA: 9+75.89	OFFSET: 40.99	TN
F7	STA: 3+02.65	OFFSET: 27.50	TE	G5	STA: 0+33.30	OFFSET: 33.29	TE	E27	STA: 9+59.60	OFFSET: 30.83	TN
F8	STA: 3+99.43	OFFSET: 27.50	TE	G6	STA: 0+73.30	10' OFF EXIST. PVM'T	TE	E28	STA: 9+43.30	OFFSET: 27.50	TN
F9	STA: 4+45.42	OFFSET: 27.50	TE	G7	STA: 1+10.67	OFFSET: -27.50	TE	E29	STA: 9+30.80	OFFSET: 27.50	TN
F10	STA: 4+94.55	OFFSET: 27.50	TE	G8	STA: 1+40.81	OFFSET: -35.84	TE	E30	STA: 9+11.80	OFFSET: 24.71	TN
F11	STA: 5+43.69	OFFSET: 27.50	TE	G9	STA: 1+82.52	OFFSET: -54.41	TE	E31	STA: 9+11.05	OFFSET: 37.70	TN
F12	STA: 6+24.40	OFFSET: 27.50	TE	R5-46	STA: 140+11.95	OFFSET: -47.50	R5		STA: 9+11.05	OFFSET: 19.05	TN
F13	STA: 6+59.45	OFFSET: 27.50	TE	R5-45	STA: 140+11.95	OFFSET: -37.50	R5	E32	STA: 8+96.56	OFFSET: 40.82	TN

LEGEND:

	NEW SIGN
● A8	NEW TAXIWAY EDGE LIGHT WITH BLUE LENS
	EXISTING RUNWAY LIGHT
● R5-18	NEW RUNWAY LIGHT ON R5 CIRCUIT
(R/G)	HALF RED LENS/HALF GREEN LENS
(W/W)	WHITE LENS BOTH SIDES
EHH EHH	CONCRETE ENCASED DUCT WITH ELECTRIC HAND HOLES
1TS	ONE NEW 1/C, #8, 5KV, L-824 TYPE C CABLE, DIRECT BURIED IN TURF
TN	TAXIWAY NORTH CIRCUIT
TS	TAXIWAY SOUTH CIRCUIT
TE	TAXIWAY EAST CIRCUIT
R17	RUNWAY 17-35 CIRCUIT
R5	RUNWAY 5-23 CIRCUIT

0 50 100
SCALE IN FEET

KEYPLAN

NOTE:

1. PROPOSED GEOMETRY SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1-7.
2. ALL CABLES ARE DIRECT BURIED UNLESS OTHERWISE NOTED.

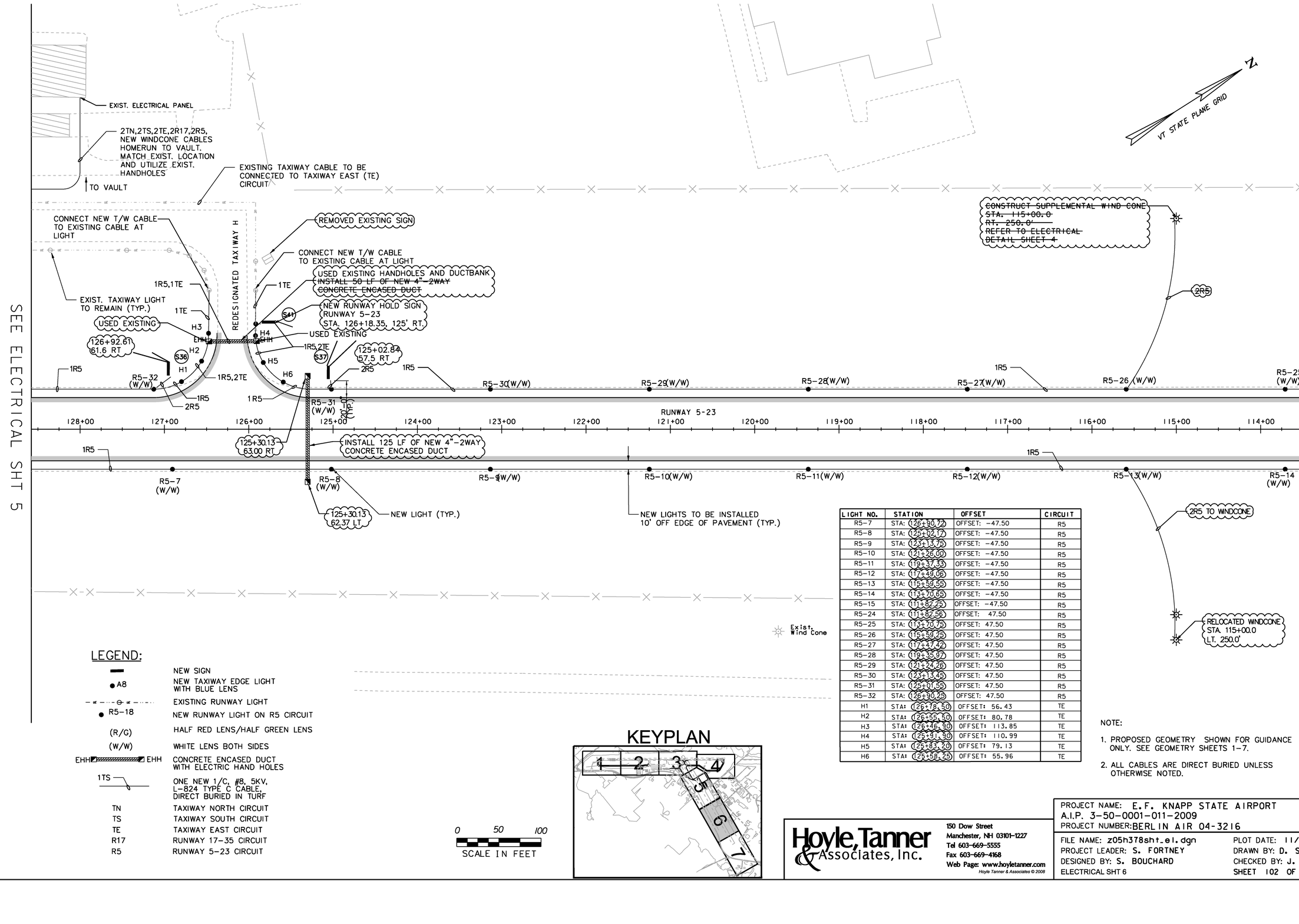
Hoyle, Tanner & Associates, Inc.
150 Dow Street
Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_el.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
ELECTRICAL SHT 5

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 101 OF 173



LIGHT NO.	STATION	OFFSET	CIRCUIT
R5-7	STA: 126+90.72	OFFSET: -47.50	R5
R5-8	STA: 125+02.17	OFFSET: -47.50	R5
R5-9	STA: 123+13.75	OFFSET: -47.50	R5
R5-10	STA: 121+26.00	OFFSET: -47.50	R5
R5-11	STA: 119+37.33	OFFSET: -47.50	R5
R5-12	STA: 117+49.06	OFFSET: -47.50	R5
R5-13	STA: 115+59.55	OFFSET: -47.50	R5
R5-14	STA: 113+70.85	OFFSET: -47.50	R5
R5-15	STA: 111+82.25	OFFSET: -47.50	R5
R5-24	STA: 111+82.56	OFFSET: 47.50	R5
R5-25	STA: 113+70.75	OFFSET: 47.50	R5
R5-26	STA: 115+59.25	OFFSET: 47.50	R5
R5-27	STA: 117+47.42	OFFSET: 47.50	R5
R5-28	STA: 119+35.97	OFFSET: 47.50	R5
R5-29	STA: 121+24.26	OFFSET: 47.50	R5
R5-30	STA: 123+13.45	OFFSET: 47.50	R5
R5-31	STA: 125+01.55	OFFSET: 47.50	R5
R5-32	STA: 126+90.25	OFFSET: 47.50	R5
H1	STA: 126+78.50	OFFSET: 56.43	TE
H2	STA: 126+55.50	OFFSET: 80.78	TE
H3	STA: 126+46.90	OFFSET: 113.85	TE
H4	STA: 125+91.30	OFFSET: 110.99	TE
H5	STA: 125+83.20	OFFSET: 79.13	TE
H6	STA: 125+58.25	OFFSET: 55.96	TE

LEGEND:

▬	NEW SIGN
● A8	NEW TAXIWAY EDGE LIGHT WITH BLUE LENS
●	EXISTING RUNWAY LIGHT
● R5-18	NEW RUNWAY LIGHT ON R5 CIRCUIT
(R/G)	HALF RED LENS/HALF GREEN LENS
(W/W)	WHITE LENS BOTH SIDES
EHH ▨ EHH	CONCRETE ENCASED DUCT WITH ELECTRIC HAND HOLES
1TS	ONE NEW 1/C, #8, 5KV, L-824 TYPE C CABLE, DIRECT BURIED IN TURF
TN	TAXIWAY NORTH CIRCUIT
TS	TAXIWAY SOUTH CIRCUIT
TE	TAXIWAY EAST CIRCUIT
R17	RUNWAY 17-35 CIRCUIT
R5	RUNWAY 5-23 CIRCUIT

0 50 100
SCALE IN FEET

KEYPLAN

NOTE:

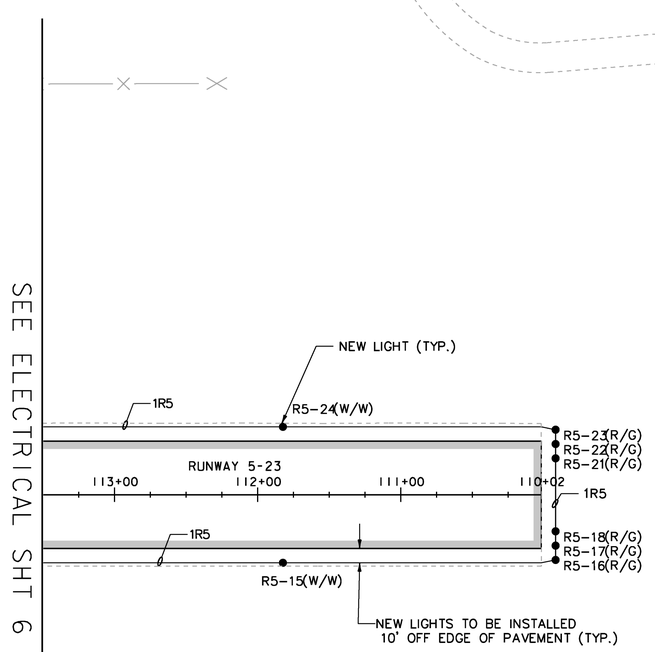
1. PROPOSED GEOMETRY SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1-7.
2. ALL CABLES ARE DIRECT BURIED UNLESS OTHERWISE NOTED.

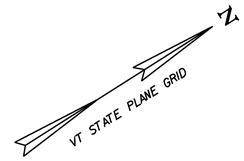
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Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_el.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
ELECTRICAL SHT 6

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 102 OF 173





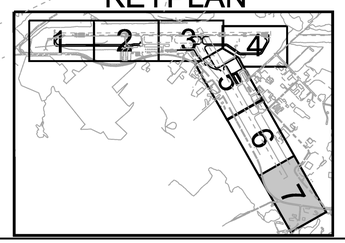
LEGEND:

▬	NEW SIGN
● A8	NEW TAXIWAY EDGE LIGHT WITH BLUE LENS
– ‹ – ⊖ – › –	EXISTING RUNWAY LIGHT
● R5-18	NEW RUNWAY LIGHT ON R5 CIRCUIT
(R/G)	HALF RED LENS/HALF GREEN LENS
(W/W)	WHITE LENS BOTH SIDES
EHH ▨ EHH	CONCRETE ENCASED DUCT WITH ELECTRIC HAND HOLES
1TS	ONE NEW 1/C, #8, 5KV, L-824 TYPE C CABLE, DIRECT BURIED IN TURF
TN	TAXIWAY NORTH CIRCUIT
TS	TAXIWAY SOUTH CIRCUIT
TE	TAXIWAY EAST CIRCUIT
R17	RUNWAY 17-35 CIRCUIT
R5	RUNWAY 5-23 CIRCUIT

LIGHT NO.	STATION	OFFSET	CIRCUIT
R5-15	STA: 111+82.25	OFFSET: -47.50	R5
R5-16	STA: 109+92.04	OFFSET: -47.50	R5
R5-17	STA: 109+92.04	OFFSET: -37.50	R5
R5-18	STA: 109+92.04	OFFSET: -27.50	R5
R5-21	STA: 109+92.04	OFFSET: 27.50	R5
R5-22	STA: 109+92.04	OFFSET: 37.50	R5
R5-23	STA: 109+92.04	OFFSET: 47.50	R5
R5-24	STA: 111+82.56	OFFSET: 47.50	R5

0 50 100
SCALE IN FEET

KEYPLAN



NOTE:

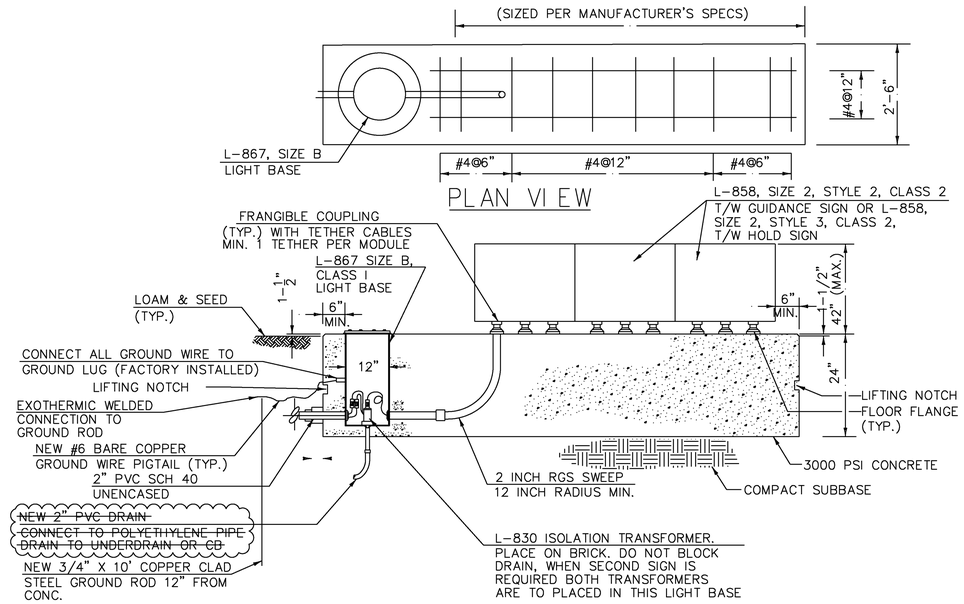
1. PROPOSED GEOMETRY SHOWN FOR GUIDANCE ONLY. SEE GEOMETRY SHEETS 1-7.
2. ALL CABLES ARE DIRECT BURIED UNLESS OTHERWISE NOTED.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

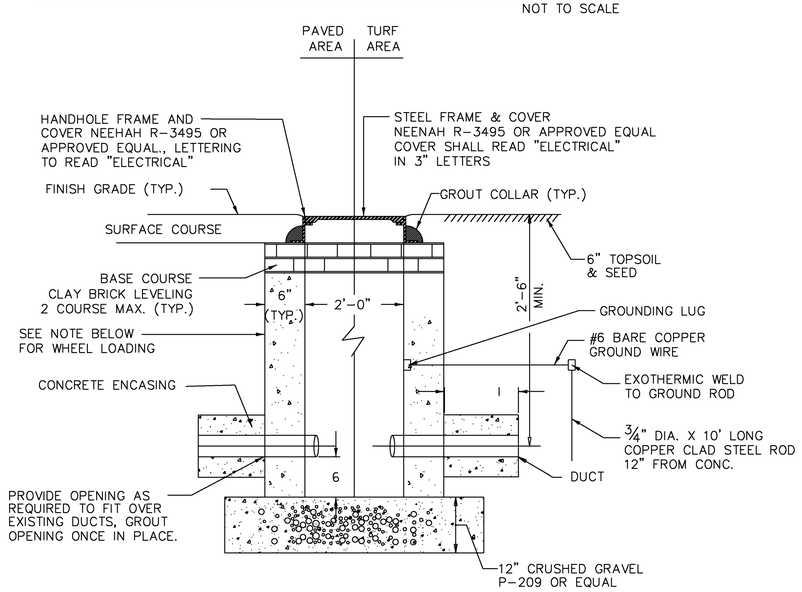
FILE NAME: z05h378sht_el.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
ELECTRICAL SHT 7

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 103 OF 173



AIRFIELD SIGN INSTALLATION DETAIL

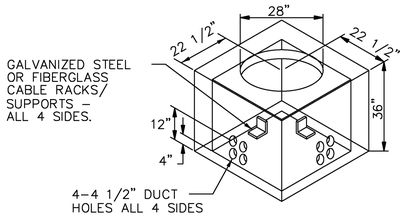
NOT TO SCALE



ELECTRIC HANDHOLE DETAIL

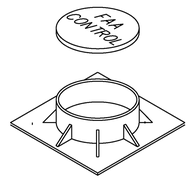
NOT TO SCALE

NOTE:
ALL PREFABRICATED REINFORCED CONCRETE MANHOLES, FRAMES AND COVERS SHALL BE DESIGNED AND CONSTRUCTED TO SUPPORT HS20 LOADING. THE CONTRACTOR IS REQUIRED TO SUPPLY SHOP DRAWINGS AND MANUFACTURER'S CERTIFICATIONS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.



STANDARD HANDHOLE DETAIL

NOT TO SCALE



28" ø HANDHOLE COVER

NOT TO SCALE

1. CONCRETE SHALL BE 5000 PSI.
2. CAST IRON MANHOLE COVER SHALL READ "FAA CONTROL" OR "FAA POWER" AS APPROPRIATE.
3. CONCRETE SHALL BE COMPACTED WITH VIBRATOR.
4. GALVANIZED STEEL OR FIBERGLASS CABLE RACKS/ SUPPORTS – ALL 4 SIDES.
5. HANDHOLE SHALL BE CONSTRUCTED FOR H20 WHEEL-LOADING.
6. HANDHOLE COVERS AND FRAMES SHALL BE FLUSH WITH GRADE. USE BRICKS TO ELEVATE COVER AS NECESSARY.
7. STANDARD HANDHOLE IS CAST WITH NO BOTTOM; 'OPEN TOP' HANDHOLE (FOR TRANSFORMER) IS CAST WITH NO BOTTOM OR TOP.

FAA CONTROL CABLE HANDHOLE DETAIL

NOT TO SCALE

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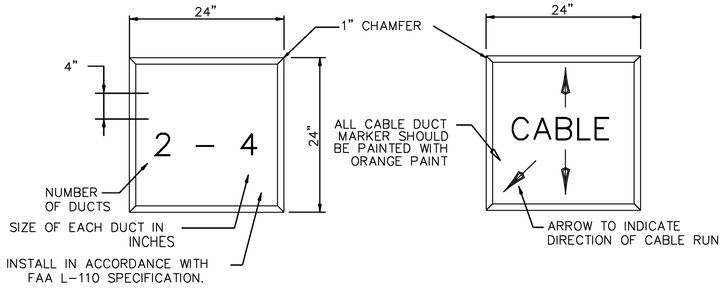
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_elec_det.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
ELECTRICAL DETAIL SHEET 1

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 104 OF 173

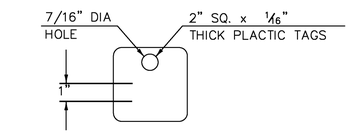
NOTES:

1. LETTER APPROX. 3" WIDE. WIDTH OF STROKE 1/2" X 1/4" DEEP
2. CONTRACTOR SHALL UTILIZE FORMED LETTERS. (STYROFOAM) OR EQUAL TO MAKE IMPRINTS IN CONCRETE MARKERS



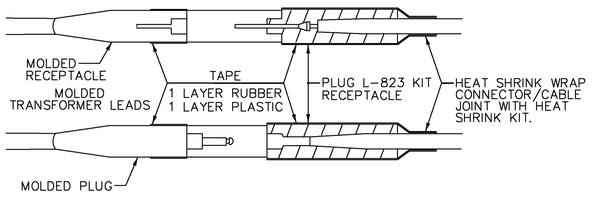
DUCT MARKERS SHALL BE INSTALLED MID–WAY BETWEEN MANHOLES, 125' OFF CENTERLINE ALONG DUCTS UNDER RUNWAY AND AT OTHER LOCATIONS AS DIRECTED BY THE ENGINEER.

NOT TO SCALE

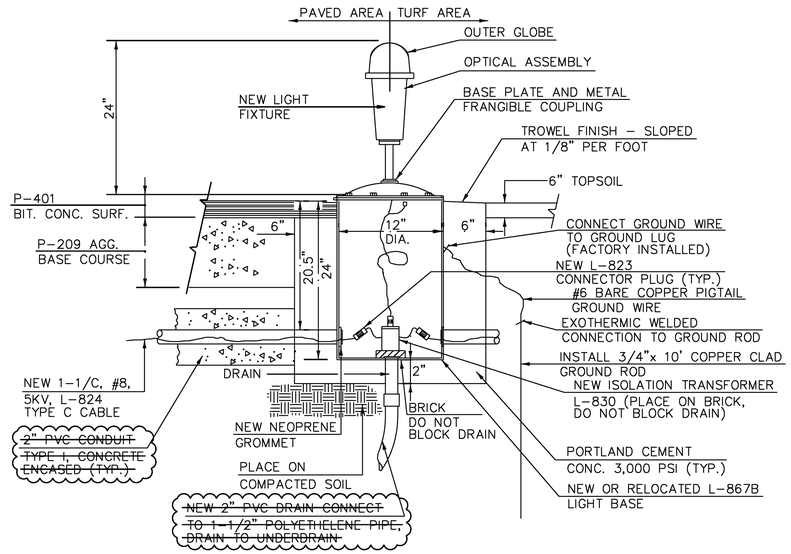


LIGHT FIXTURE NUMBERS SHALL BE COORDINATED WITH THE OWNER.

NOT TO SCALE



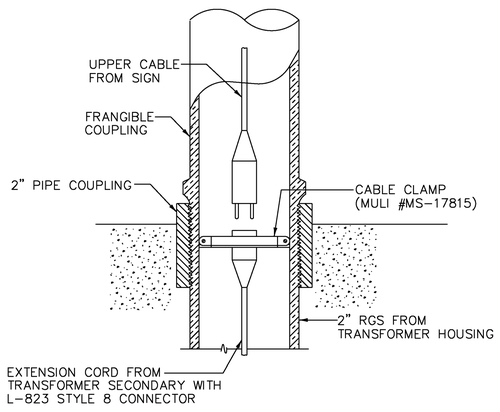
NOT TO SCALE



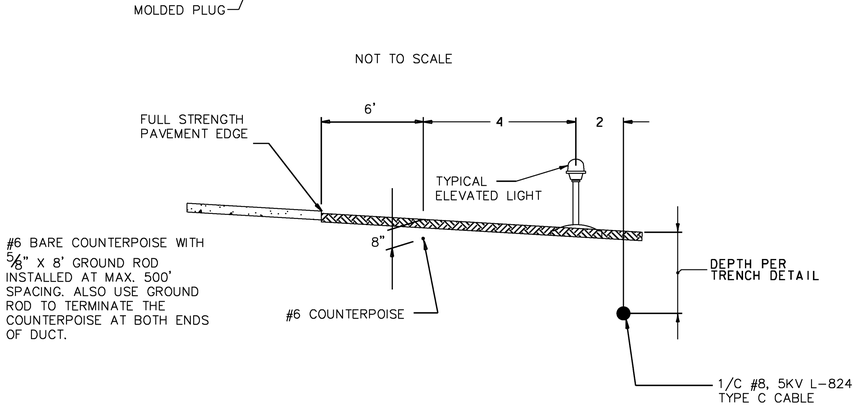
NOTES:

1. SUFFICIENT CABLE SLACK SHALL BE LEFT IN EACH BASE TO ALLOW TRANSFORMER(S) TO BE TAKEN OUT OF BASE.
2. FOR IDENTIFICATION OF CABLES AT EACH LIGHT BASE, PLASTIC IDENTIFICATION TAGS OR BANDS SHALL BE ATTACHED TO EACH LEAD, SHOWING THE LIGHT NUMBER TO WHICH IT EXTENDS.
3. CONTRACTOR SHALL FURNISH 1/8" THICK METAL COVER PLATE FOR EACH MINIMUM OF 25 LIGHTS FOR PAVING OPERATIONS. CONTRACTOR MAY USE PLYWOOD COVERS IF MORE THAN 25 ARE NEEDED FOR PAVING. INSTALL ON LIGHT BASE DURING PAVING OPERATIONS. METAL COVERS TO BE TURNED OVER TO THE OWNER AT COMPLETION OF PAVING OPERATIONS. METAL COVER PLATES ARE INCIDENTAL TO COST OF LIGHT BASES.
4. TAXIWAY EDGE LIGHTS SHALL INCLUDE ARCTIC HEATERS.
5. RUNWAY EDGE LIGHTS EXCUDE HEATERS.

NOT TO SCALE



NOT TO SCALE



COUNTERPOISE LOCATION DETAIL FOR CABLE OR CONDUIT RUNS ADJACENT TO PAVEMENTS

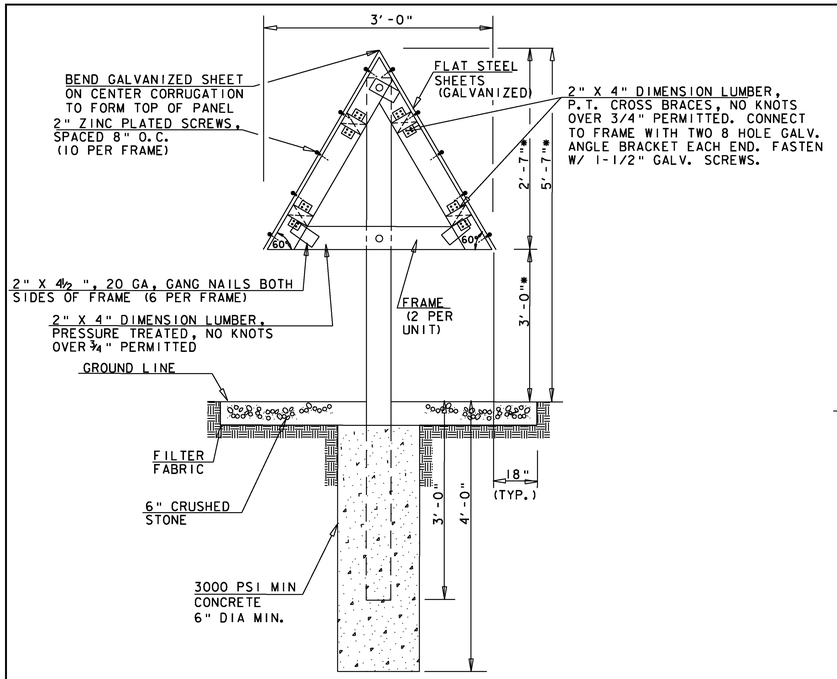
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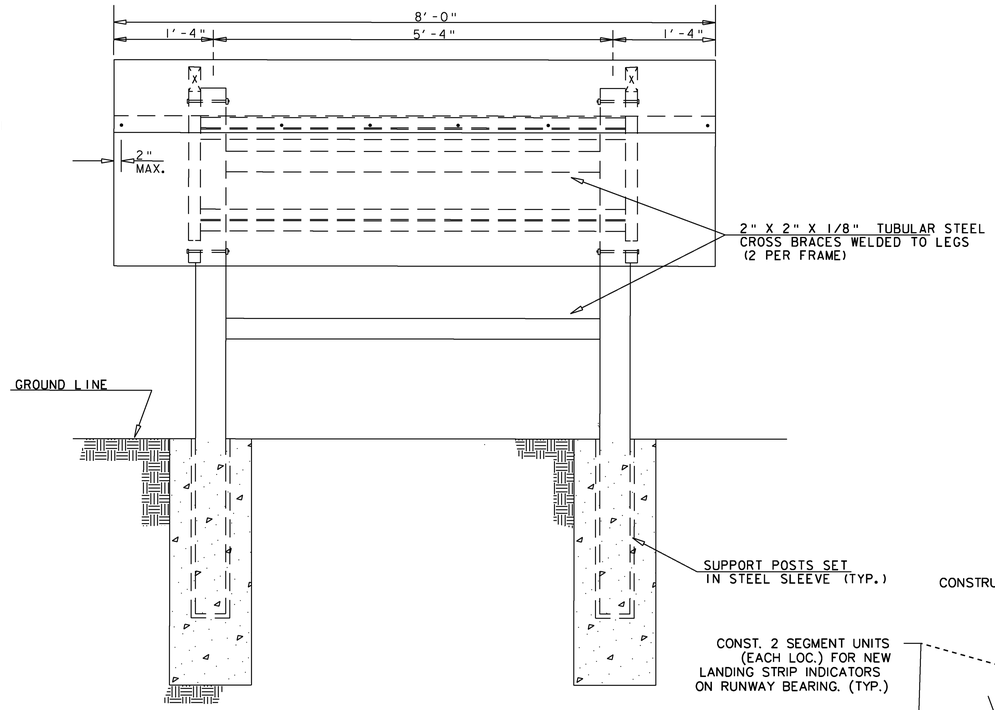
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3–50–0001–011–2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_elec_det.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
ELECTRICAL DETAIL SHEET 2 SHEET 105 OF 173



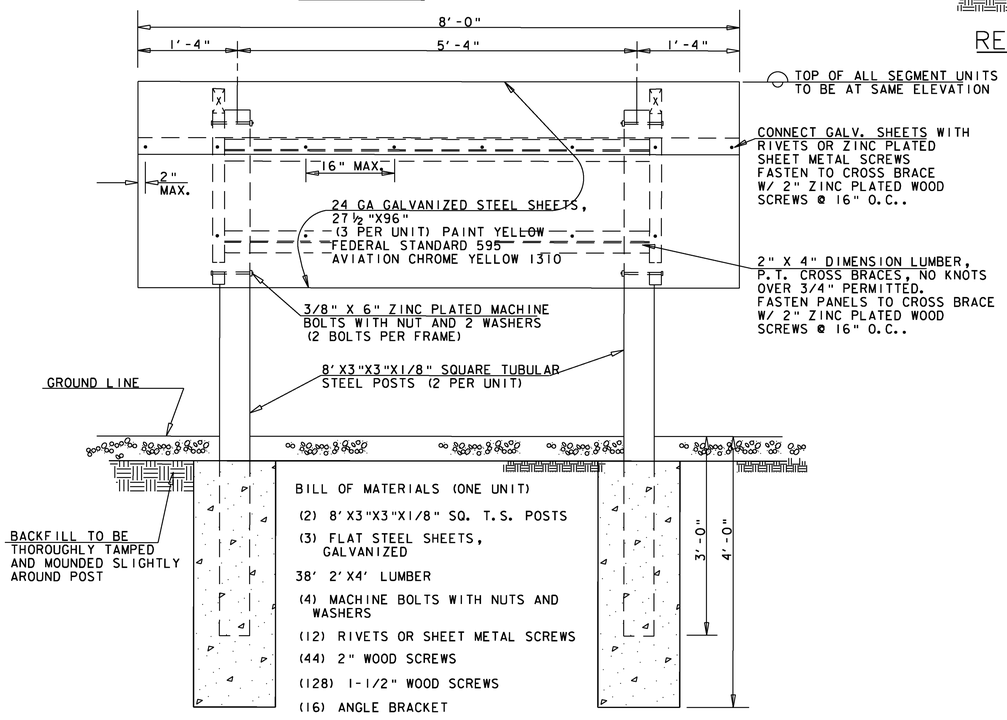
SIDE VIEW



REMOVABLE SEGMENT UNIT DETAIL

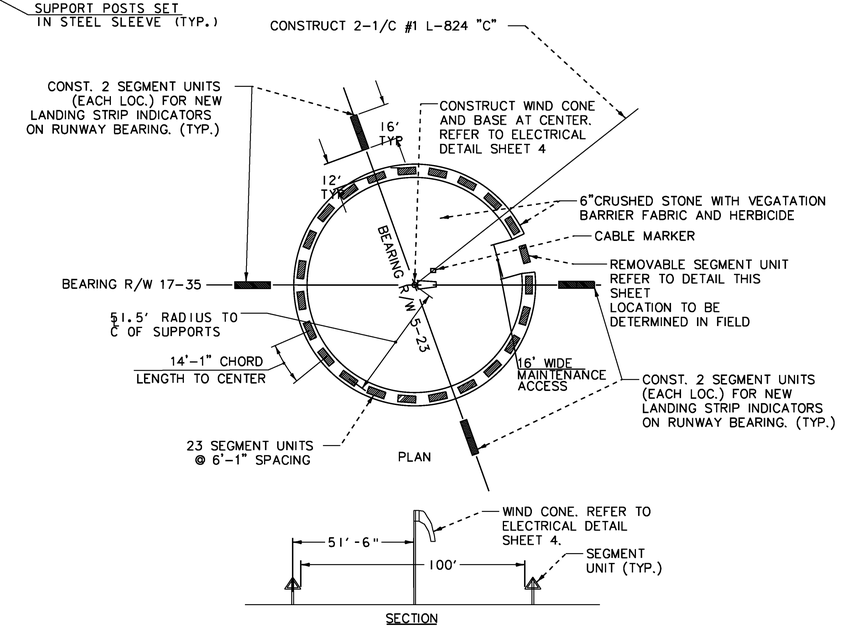
NOT TO SCALE

NOTE: ALL PARTS AND DIMENSIONS ARE SAME AS SEGMENT UNIT, EXCEPT AS NOTED.



SEGMENT UNIT DETAIL

NOT TO SCALE



SEGMENTED CIRCLE LAYOUT

NOTES:

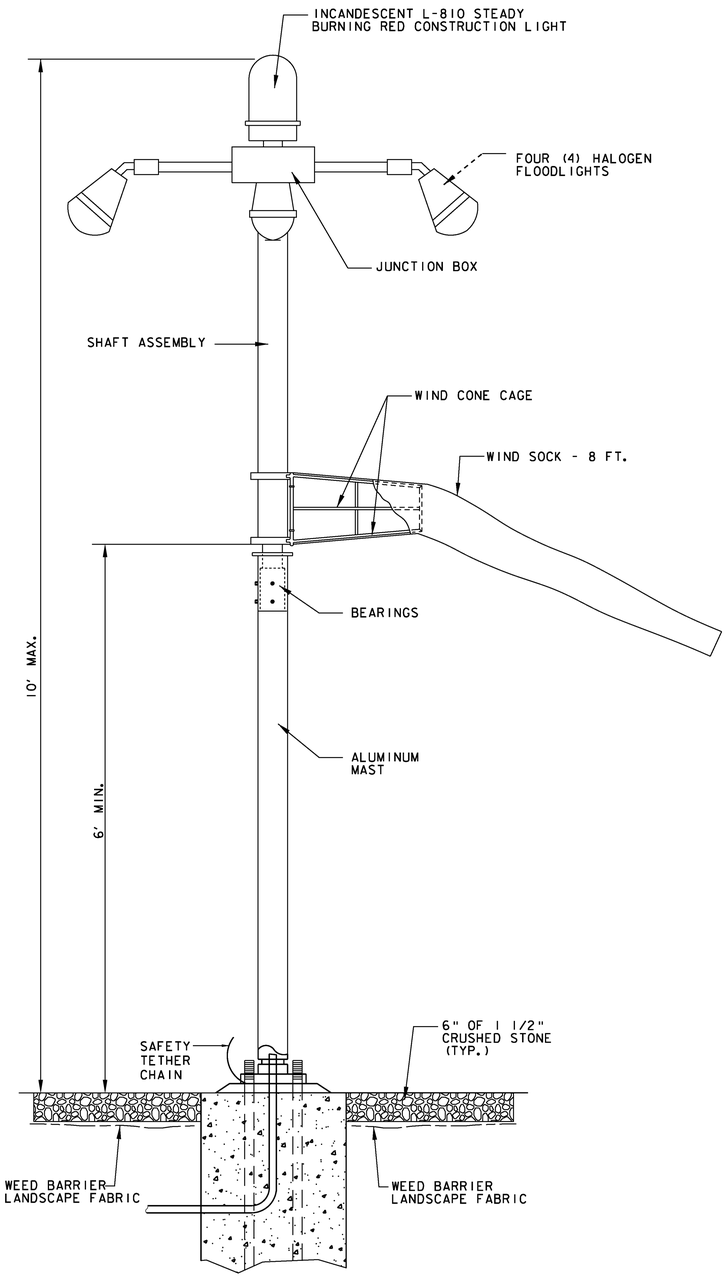
NOT TO SCALE

1. REFER TO ELECTRICAL SHEETS FOR PLAN LOCATION OF NEW SEGMENTED CIRCLE, WIND CONE AND POWER ROUTING REQUIREMENTS.
2. REFER TO SEGMENT UNIT DETAIL (THIS SHEET) FOR ADDITIONAL INFORMATION.

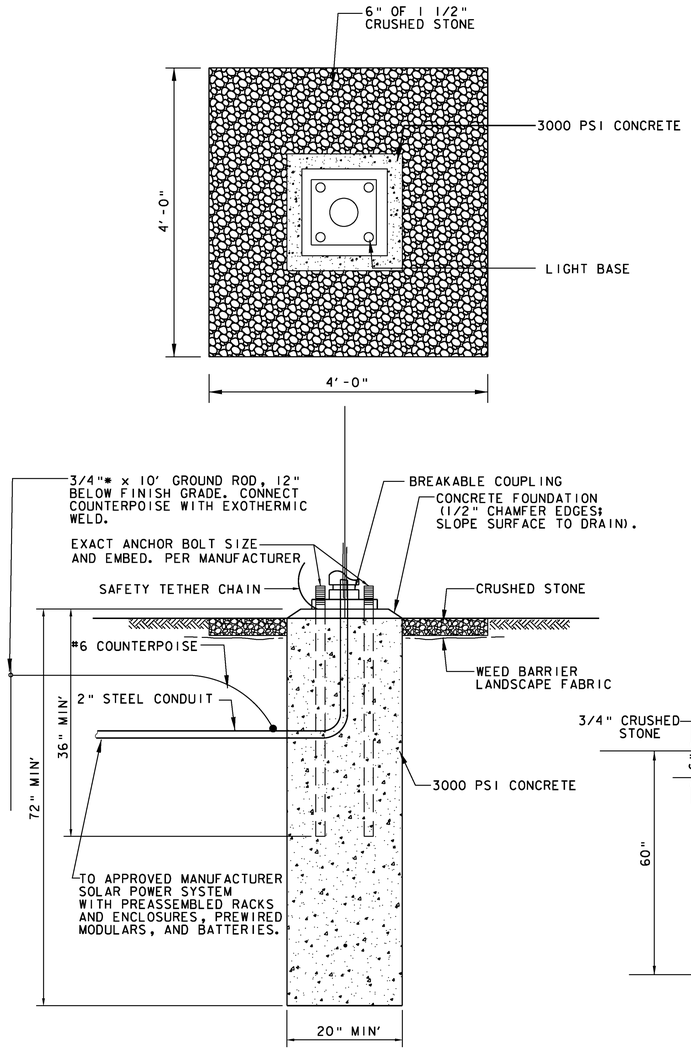
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Tel 603-669-5555
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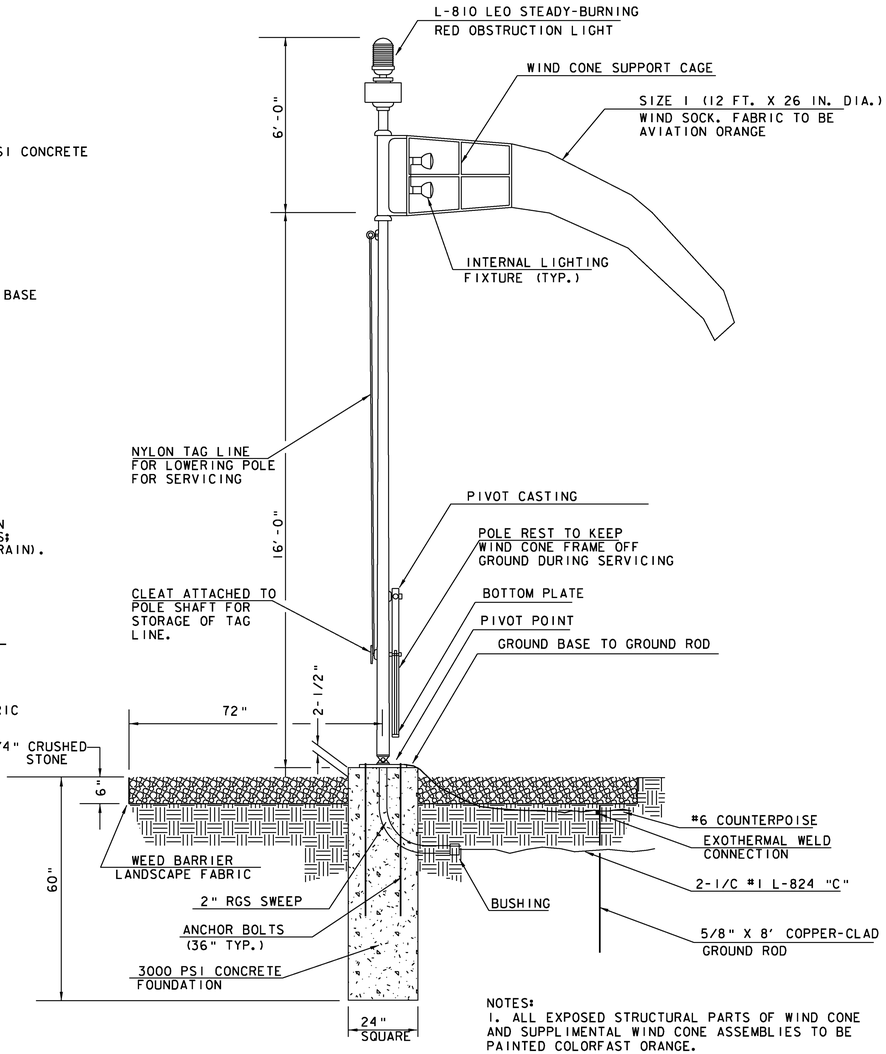
FILE NAME: 302803_sht_elec_det.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
ELECTRICAL DETAIL SHEET 3 SHEET 106 OF 173



SUPPLEMENTAL WIND CONE
(L-806)
NOT TO SCALE



SUPPLIMENTAL WIND CONE FOUNDATION
(L-806)
NOT TO SCALE



WIND CONE
(L-807)
NOT TO SCALE

NOTES:
1. ALL EXPOSED STRUCTURAL PARTS OF WIND CONE AND SUPPLIMENTAL WIND CONE ASSEMBLIES TO BE PAINTED COLORFAST ORANGE.

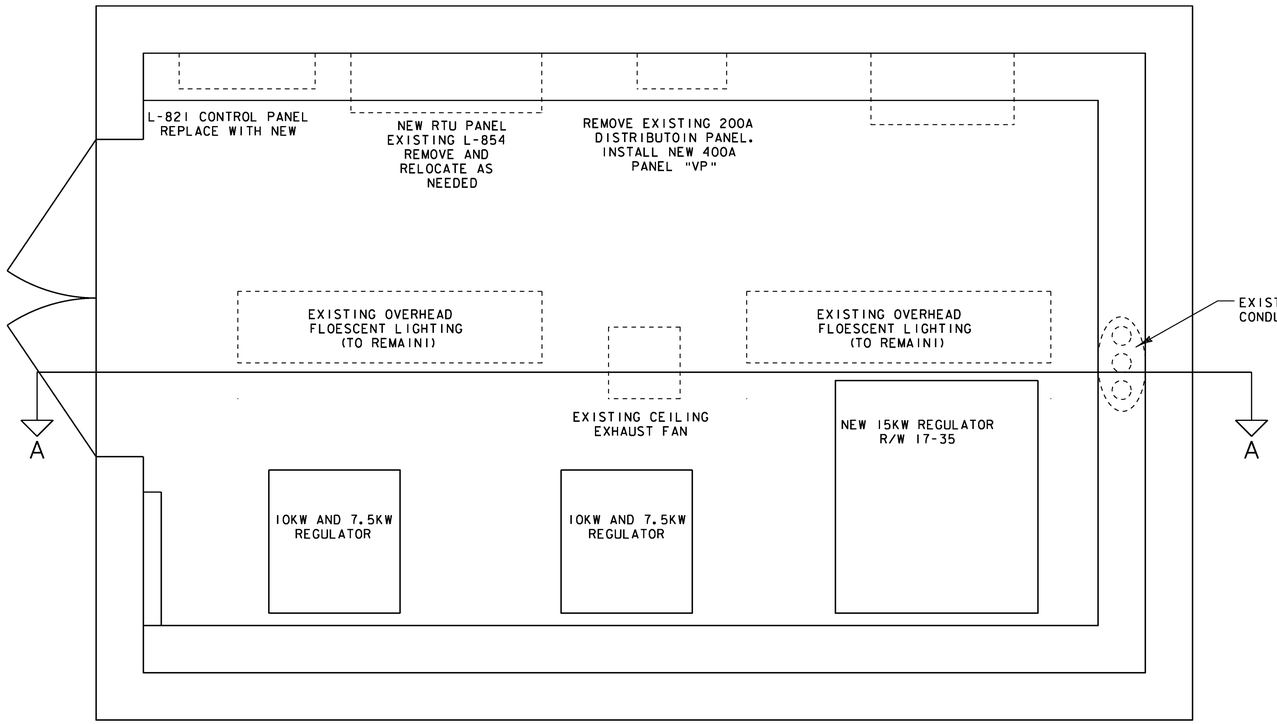
2. REFER TO ELECTRICAL SHEETS FOR PLAN LOCATION OF WINDCONE, SUPPLEMENTAL WIND CONES, AND POWER ROUTING REQUIREMENTS.

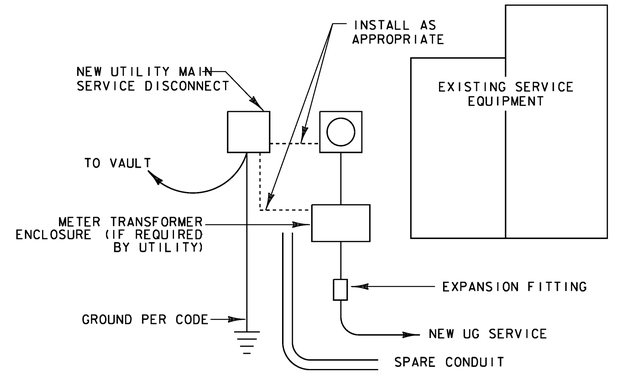
3. LIGHTING FOR L-806 AND L-807 WINDCONES MAY BE EITHER INTERNAL OR EXTERNAL.

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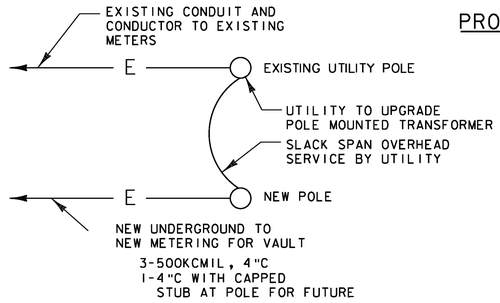
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_elec_det.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
ELECTRICAL DETAIL SHEET 4 SHEET 107 OF 173



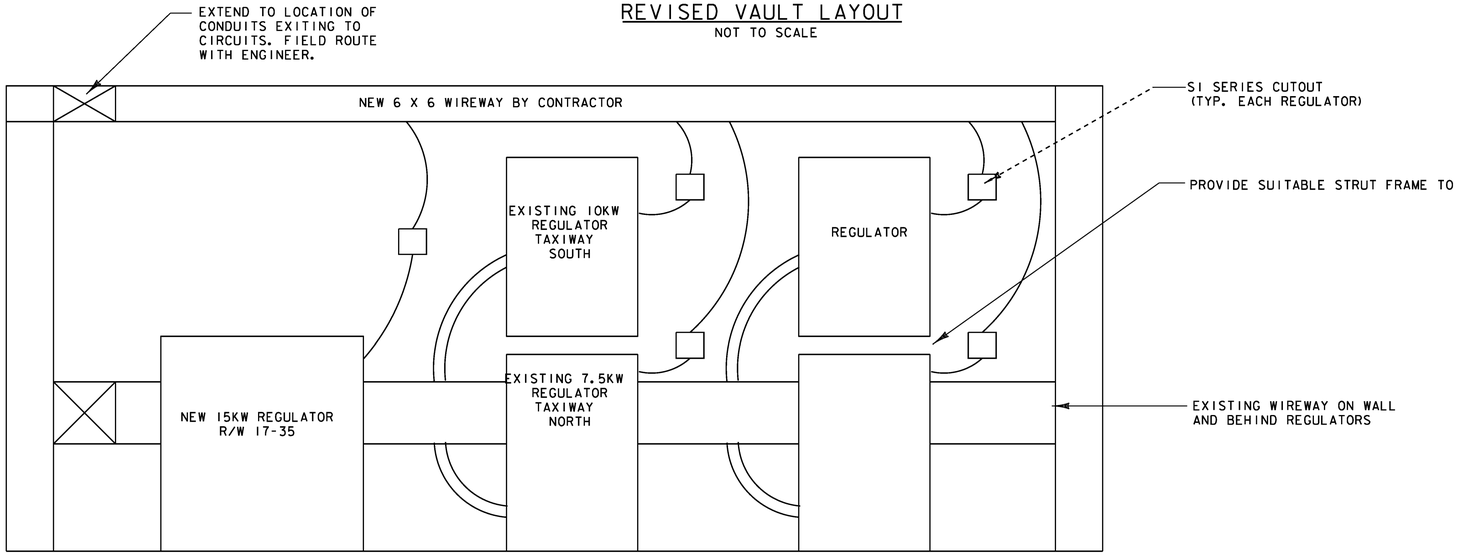


PROPOSED NEW SERVICE LOCATION
NOT TO SCALE



PROPOSED UTILITY MODIFICATI
NOT TO SCALE

REVISED VAULT LAYOUT
NOT TO SCALE



TYPICAL ELEVATION OF REGULATORS IN VAULT
SECTION A-A
NOT TO SCALE

PANEL VP DIAGRAM

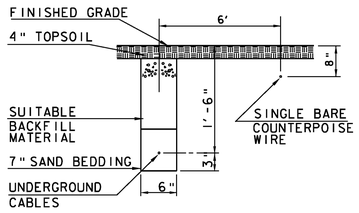
400AMP, M LO, 240/120 VOLT, 1 PHASE, 3 WIRE, 60 HERTZ

CIRCUIT NO.	NO. POLES	RATING	RATING	LOAD
1,3	2	125	15KW REGULATOR R/W 17-35	15
2,4	2	70	10KW REGULATOR R/W 5-23	10
5,7	2	70	10KW REGULATOR T/W SOUTH	10
6,8	2	60	7-1/2KW REGULATOR T/W NORTH	7.5
9,11	2	60	7-1/2KW REGULATOR T/W EAST	7.5
10,12	2	20	(EXISTING LOAD IN EXISTING PANEL)	est. 3.5
13	1*	20	CONTROLS (L821, RTU, RADIO)	est. 0.8
14	1	20	EXHAUST FAN-VAULT	est. 0.8
15-30	1	20	SPARE	
31-42	1	-	SPACE FOR FUTURE	

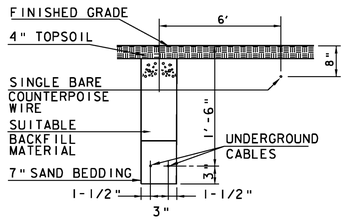
* PROVIDE WITH FULL CAPACITY SUB-FEED LUGS

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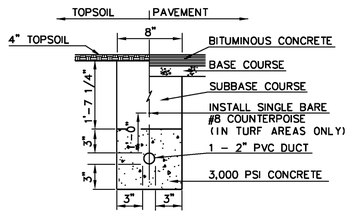
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216
FILE NAME: 302803_sht_elec_det.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
ELECTRICAL DETAIL SHEET 5 SHEET 108 OF 173



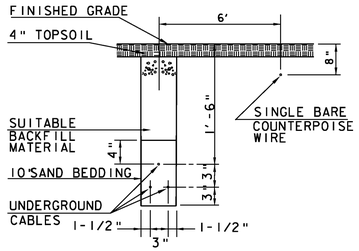
1–WAY



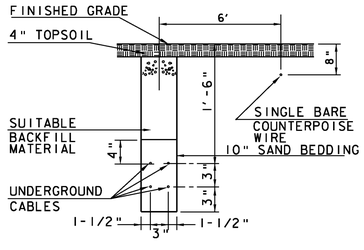
2–WAY



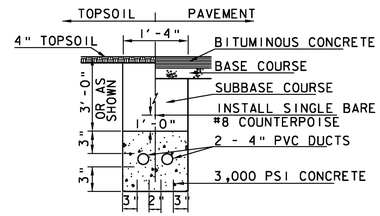
2"–1WAY
CONC. ENC. DUCT
NOT TO SCALE



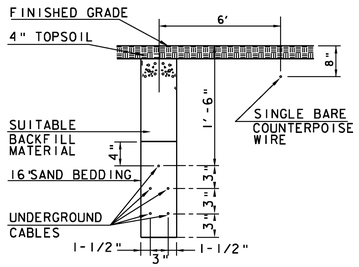
3–WAY



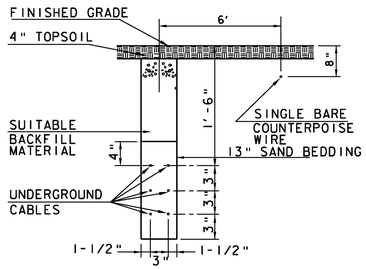
4–WAY



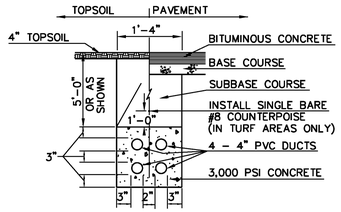
4"–2WAY
CONC. ENCASED DUCT
NOT TO SCALE



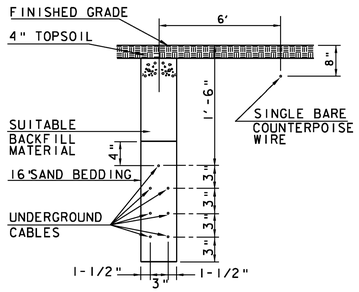
5–WAY



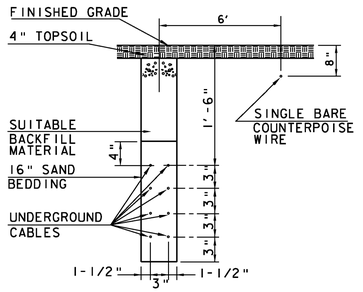
6–WAY



4"–4WAY
CONC. ENCASED DUCT
NOT TO SCALE

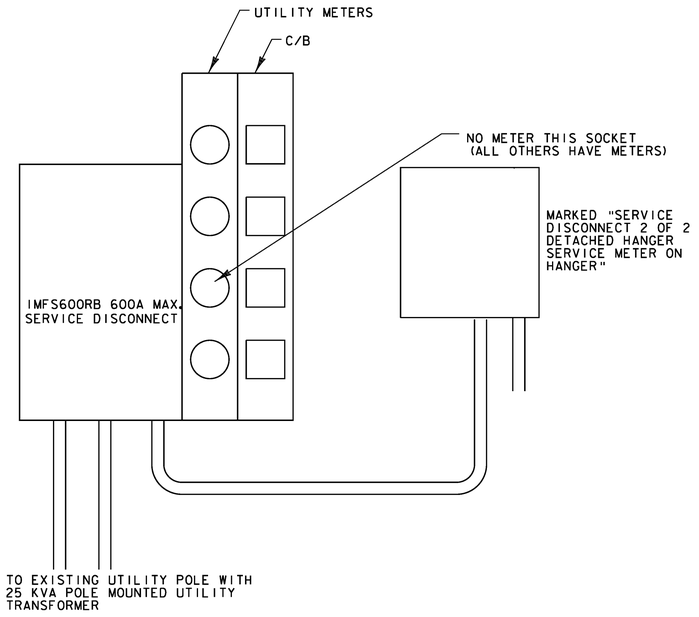


7–WAY

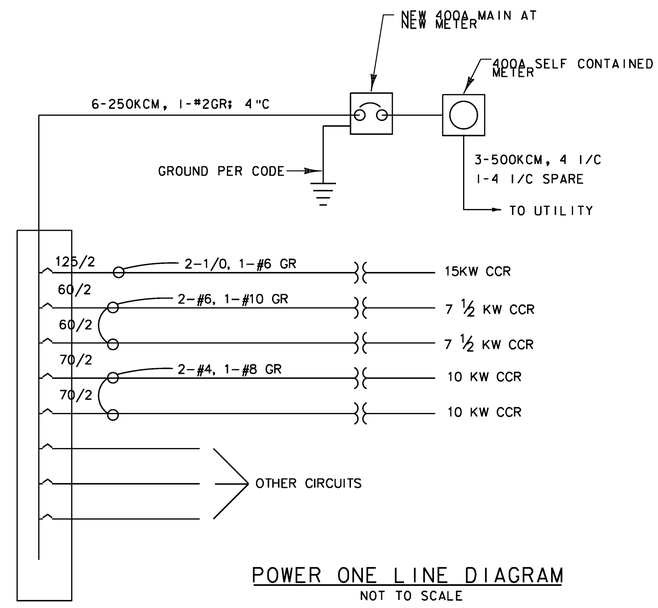


8–WAY

CABLE TRENCH DETAILS
NOT TO SCALE



EXISTING SERVICE METERING EQUIPMENT
NOT TO SCALE



POWER ONE LINE DIAGRAM
NOT TO SCALE

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_elec_det.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
ELECTRICAL DETAIL SHEET 6
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 109 OF 173

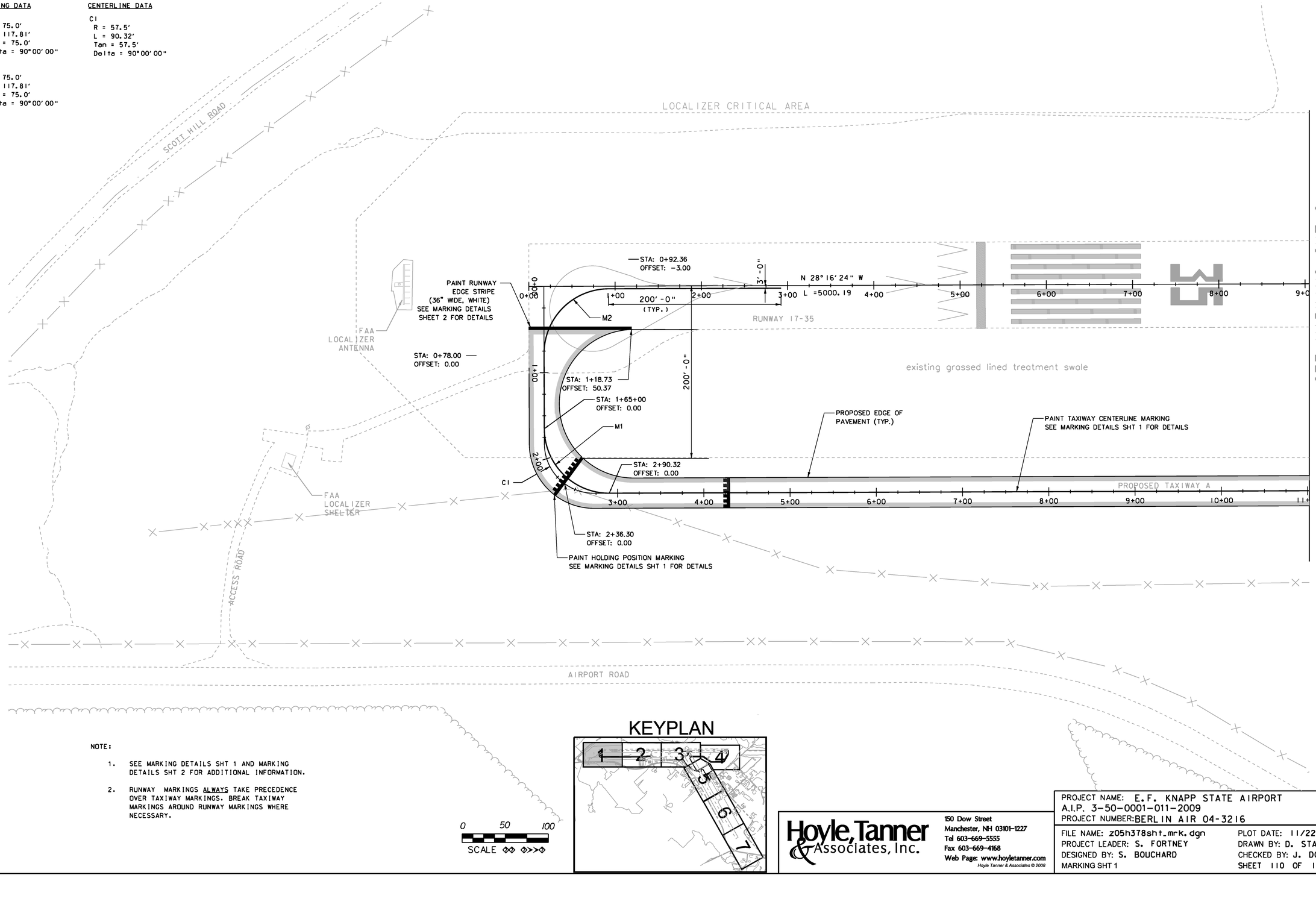
MARKING DATA

M1
R = 75.0'
L = 117.81'
Tan = 75.0'
Delta = 90°00'00"

M2
R = 75.0'
L = 117.81'
Tan = 75.0'
Delta = 90°00'00"

CENTERLINE DATA

C1
R = 57.5'
L = 90.32'
Tan = 57.5'
Delta = 90°00'00"



NOTE:

1. SEE MARKING DETAILS SHT 1 AND MARKING DETAILS SHT 2 FOR ADDITIONAL INFORMATION.
2. RUNWAY MARKINGS ALWAYS TAKE PRECEDENCE OVER TAXIWAY MARKINGS. BREAK TAXIWAY MARKINGS AROUND RUNWAY MARKINGS WHERE NECESSARY.

0 50 100
SCALE

KEYPLAN

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_mrk.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
MARKING SHT 1

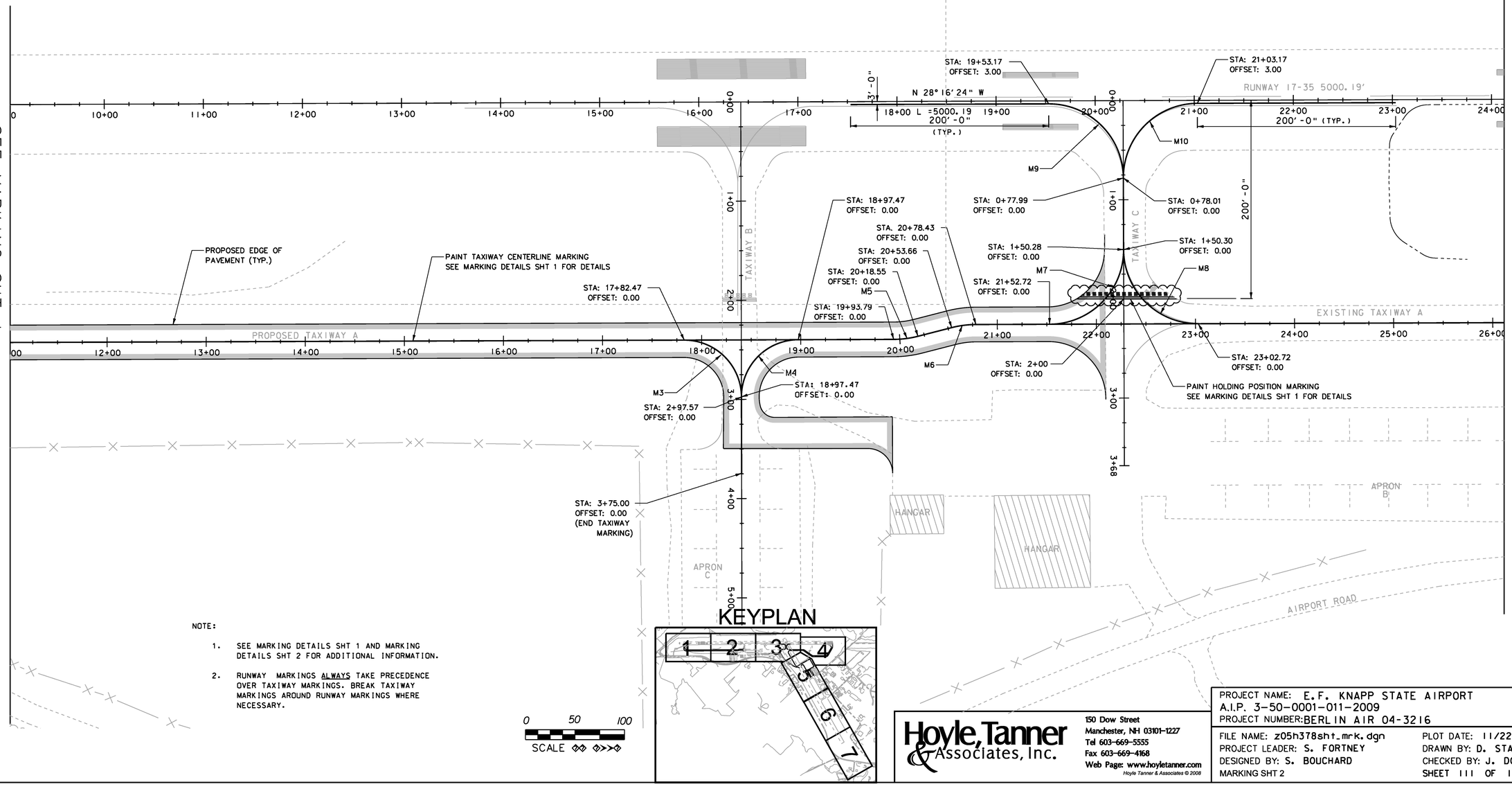
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 110 OF 173

MARKING DATA

M3	M6	M9
R = 57.5'	R = 100.0'	R = 75.0'
L = 90.38'	L = 24.77'	L = 117.80'
Tan = 57.6'	Tan = 12.4'	Tan = 75.0'
Delta = 90°04'07"	Delta = 14°11'24"	Delta = 89°59'30"

M4	M7	M10
R = 57.5'	R = 75.0'	R = 75.0'
L = 90.25'	L = 117.82'	L = 117.82'
Tan = 57.4'	Tan = 75.0'	Tan = 75.0'
Delta = 89°55'53"	Delta = 90°00'30"	Delta = 90°00'30"

M5	M8
R = 100.0'	R = 75.0'
L = 24.77'	L = 117.79'
Tan = 12.4'	Tan = 75.0'
Delta = 14°11'24"	Delta = 89°59'29"



NOTE:

1. SEE MARKING DETAILS SHT 1 AND MARKING DETAILS SHT 2 FOR ADDITIONAL INFORMATION.
2. RUNWAY MARKINGS ALWAYS TAKE PRECEDENCE OVER TAXIWAY MARKINGS. BREAK TAXIWAY MARKINGS AROUND RUNWAY MARKINGS WHERE NECESSARY.

0 50 100
SCALE

KEYPLAN

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_mrk.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
MARKING SHT 2

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 111 OF 173

SEE MARKING SHT 2

SEE MARKING SHT 4

MARKING DATA

M11
R = 100.0'
L = 24.77'
Tan = 12.4'
Delta = 14°11'24"

M12
R = 100.0'
L = 24.77'
Tan = 12.4'
Delta = 14°11'24"

M13
R = 75.0'
L = 117.82'
Tan = 75.0'
Delta = 90°00'30"

M14
R = 75.0'
L = 117.79'
Tan = 75.0'
Delta = 89°59'30"

M15
R = 75.0'
L = 117.80'
Tan = 75.0'
Delta = 89°59'30"

M16
R = 75.0'
L = 117.82'
Tan = 75.0'
Delta = 90°00'30"

M17
R = 75.0'
L = 117.80'
Tan = 75.0'
Delta = 90°00'00"

M18
R = 75.0'
L = 117.80'
Tan = 75.0'
Delta = 90°00'00"

M19
R = 57.5'
L = 90.32'
Tan = 57.5'
Delta = 90°00'00"

M20
R = 57.5'
L = 90.32'
Tan = 57.5'
Delta = 90°00'00"

M38
R = 75.0'
L = 79.45'
Tan = 43.91'
Delta = 60°41'47"

M39
R = 75.0'
L = 156.17'
Tan = 128.1'
Delta = 119°18'13"

RUNWAY 17-35

RUNWAY 17-35

EXISTING TAXIWAY A

PROPOSED TAXIWAY A

TAXIWAY D

PROPOSED TAXIWAY E

PROPOSED TAXIWAY E

STA: 1+50.28
OFFSET: 0.00

STA: 1+65.01
OFFSET: 0.00

STA: 28+56.76
OFFSET: -0.33

STA: 28+48.65
OFFSET: 0.00

STA: 28+73.41
OFFSET: 0.00

STA: 29+08.52
OFFSET: 0.00

STA: 29+33.29
OFFSET: 0.00

STA: 30+08.36
OFFSET: 0.00

STA: 2+00.00
OFFSET: 0.00

PAINT HOLDING POSITION MARKING
SEE MARKING DETAILS SHT 1 FOR DETAILS

PAINT TAXIWAY CENTERLINE MARKING
SEE MARKING DETAILS SHT 1 FOR DETAILS

PAINT TAXIWAY EDGE MARKING
SEE MARKING DETAILS SHT 1 FOR DETAILS

PROPOSED EDGE OF PAVEMENT
(TYP.)

STA: 1+65.00
OFFSET: 0.00

STA: 35+65.64
OFFSET: 0.00

STA: 35+96.73
OFFSET: 0.00

STA: 2+83.91
OFFSET: 0.00

PAINT HOLDING POSITION
MARKING.SEE MARKING DETAILS
SHEET 1FOR DETAILS

STA: 37+68.74
OFFSET: 0.00

STA: 37+15.64
OFFSET: 0.00

STA: 2+00
OFFSET: 0.00

STA: 3+68.10
OFFSET: 0.00

S 32°25'23" W

L =4020.43

HANGAR

HANGAR

HANGAR

HANGAR

VEHICLE PARKING LOT

GARAGE

TERMINAL BLDG.

TERMINAL APRON

AIRPORT ROAD

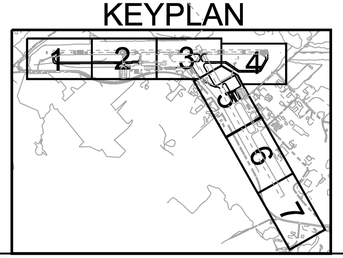
SEE MARKING SHT 5

NOTE:

1. SEE MARKING DETAILS SHT 1 AND MARKING DETAILS SHT 2 FOR ADDITIONAL INFORMATION.

2. RUNWAY MARKINGS ALWAYS TAKE PRECEDENCE OVER TAXIWAY MARKINGS. BREAK TAXIWAY MARKINGS AROUND RUNWAY MARKINGS WHERE NECESSARY.

KEYPLAN



0 50 100
SCALE

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_mrk.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
MARKING SHT 3

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 112 OF 173

MARKING DATA

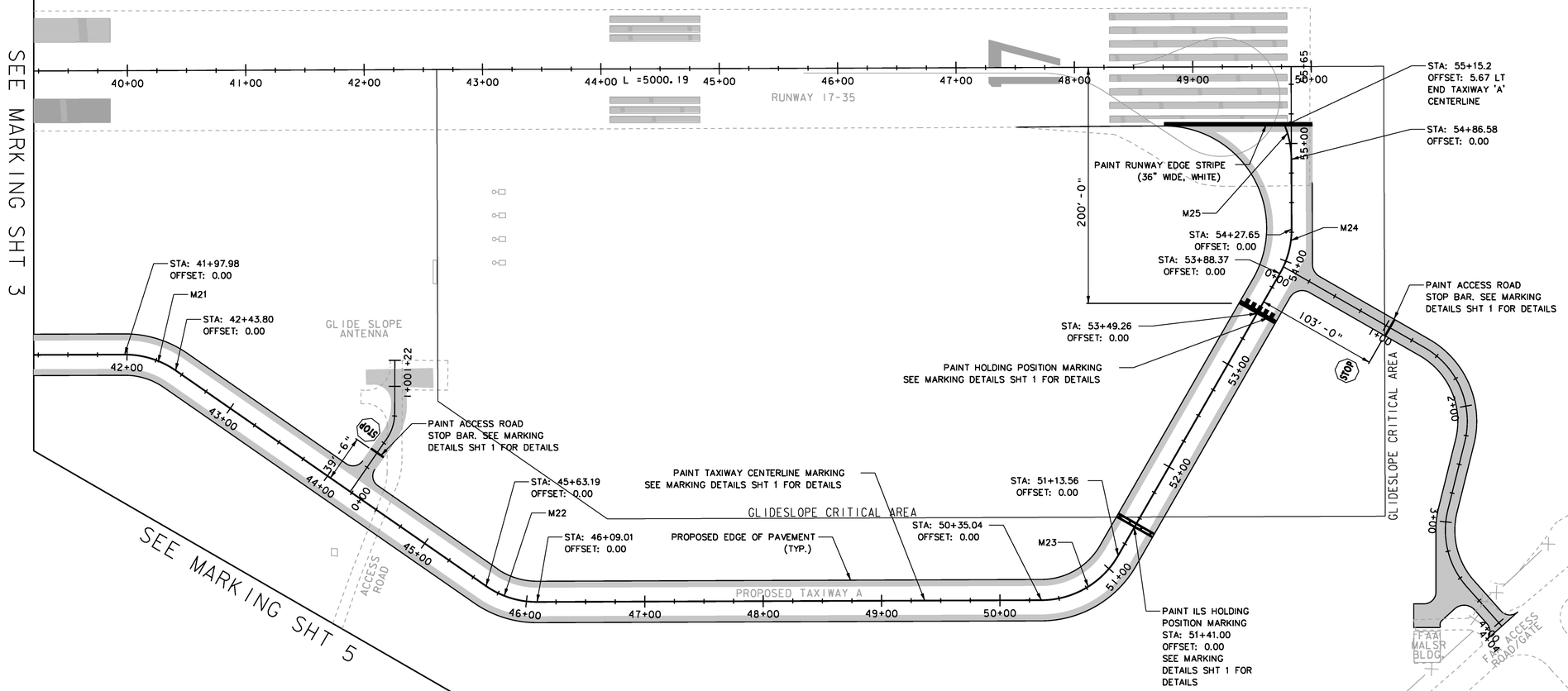
M21
R = 75.0'
L = 45.81'
Tan = 23.6'
Delta = 35°00'00"

M22
R = 75.0'
L = 45.81'
Tan = 23.6'
Delta = 35°00'00"

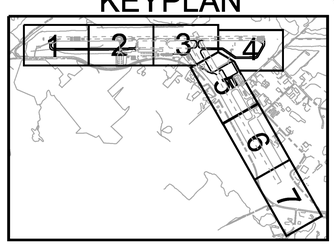
M23
R = 75.0'
L = 78.51'
Tan = 43.3'
Delta = 59°58'54"

M24
R = 75.0'
L = 39.27'
Tan = 20.1'
Delta = 30°00'10"

M25
R = 75.0'
L = 31.75'
Tan = 75.0'
Delta = 24°15'28"



KEYPLAN



NOTE:

1. SEE MARKING DETAILS SHT 1 AND MARKING DETAILS SHT 2 FOR ADDITIONAL INFORMATION.
2. RUNWAY MARKINGS ALWAYS TAKE PRECEDENCE OVER TAXIWAY MARKINGS. BREAK TAXIWAY MARKINGS AROUND RUNWAY MARKINGS WHERE NECESSARY.

0 50 100
SCALE

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_mrk.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
MARKING SHT 4

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 113 OF 173

M28
MARKING DATA
L = 117.80'
Tan = 75.0'
Delta = 90°00'00"

M29
R = 57.5'
L = 90.32'
Tan = 57.5'
Delta = 90°00'00"

M30
R = 75.0'
L = 117.80'
Tan = 75.0'
Delta = 90°00'00"

M31
R = 75.0'
L = 117.80'
Tan = 75.0'
Delta = 90°00'00"

M32
R = 57.5'
L = 90.32'
Tan = 57.5'
Delta = 90°00'00"

M33
R = 57.5'
L = 79.78'
Tan = 55.6'
Delta = 79°29'49"

M34
R = 57.5'
L = 90.44'
Tan = 57.6'
Delta = 90°07'25"

SEE MARKING SHT 4

SEE MARKING SHT 3

SEE MARKING SHT 6

ACCESS ROAD

COMSTOCK ROAD

PAINT TAXIWAY EDGE MARKING
SEE MARKING DETAILS SHT 1 FOR DETAILS

PAINT TAXIWAY CENTERLINE MARKING
SEE MARKING DETAILS SHT 1 FOR DETAILS

REDESIGNATED TAXIWAY H

PROPOSED TAXIWAY F

PROPOSED TAXIWAY G

STA: 0+25.92
OFFSET: -0.96

M33

M34

STA: 0+36.40
OFFSET: 0.00

STA: 1+32.50
OFFSET: 0.00

PAINT HOLDING POSITION MARKING
SEE MARKING DETAILS SHT 1 FOR DETAILS

STA: 2+07.50
OFFSET: 0.00

M29

STA: 0+92.50
OFFSET: 0.00

PAINT TAXIWAY CENTERLINE MARKING
SEE MARKING DETAILS SHT 1 FOR DETAILS

STA: 6+56.55
OFFSET: 0.00

M32

STA: 1+30.44
OFFSET: 0.00

STA: 1+62.44
OFFSET: 0.00

M30

M31

PAINT TAXIWAY CENTERLINE MARKING
SEE MARKING DETAILS SHT 1 FOR DETAILS

RUNWAY 5-23

200'-0" (TYP.)

L = 4020.43

S 32°25'23" W

STA: 134+95.52
OFFSET: 3.00

STA: 133+45.52
OFFSET: 3.00

PAINT RUNWAY CENTERLINE MARKING
SEE MARKING DETAILS SHT 2 FOR DETAILS

STRIATED RUNWAY DESIGNATION MARKINGS.
SEE MARKING DETAILS SHEET 1 FOR DETAILS

20'-0"
60'-0"
40'-0"
120'-0" (TYP.)
80'-0" (TYP.)

STA: 9+86.03
OFFSET: 0.00

M28

PROPOSED TAXIWAY E

STA: 8+36.06
OFFSET: 0.00

PAINT HOLDING POSITION MARKING
SEE MARKING DETAILS SHT 1 FOR DETAILS

PAINT TAXIWAY EDGE MARKING
SEE MARKING DETAILS SHT 1 FOR DETAILS

FUEL FACILITY

PAINT FUEL FACILITY NON USABLE AREA
SEE MARKING DETAILS SHT 2 FOR DETAILS

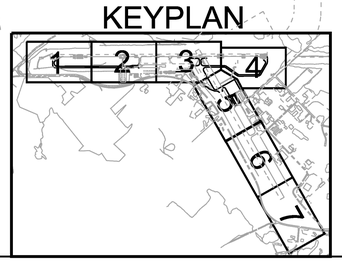
AIRPORT ROAD

NOTE:

1. SEE MARKING DETAILS SHT 1 AND MARKING DETAILS SHT 2 FOR ADDITIONAL INFORMATION.
2. RUNWAY MARKINGS ALWAYS TAKE PRECEDENCE OVER TAXIWAY MARKINGS. BREAK TAXIWAY MARKINGS AROUND RUNWAY MARKINGS WHERE NECESSARY.

0 50 100
SCALE

KEYPLAN



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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_mrk.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
MARKING SHT 5

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 114 OF 173

MARKING DATA

M35
R = 57.5'
L = 89.00'
Tan = 56.2'
Delta = 88°48'39"

M36
R = 75.0'
L = 119.36'
Tan = 76.6'
Delta = 91°11'24"

M37
R = 75.0'
L = 116.25'
Tan = 73.5'
Delta = 88°41'14"

PAINT TAXIWAY CENTERLINE MARKING
SEE MARKING DETAILS SHT 1 FOR DETAILS

RE-DESIGNATED TAXIWAY H

M35

STA: 126+20.38
OFFSET: 125.00

STA: 126+19.44
OFFSET: 79.56

STA: 126+94.43
OFFSET: 3.00

M36

M37

STA: 125+44.39
OFFSET: 3.00

200'-0" (TYP.)

200'-0" (TYP.)

3'-0"

128+00 127+00 126+00 125+00 124+00 123+00 122+00 121+00 120+00 119+00 118+00 117+00 116+00 115+00 114+00

RUNWAY 5-23
L =4020.43
S 32°25'23" W

80'-0" (TYP.)

120'-0" (TYP.)

102'-5"+/-

120'-0" (TYP.)

80'-0" (TYP.)

PAINT RUNWAY CENTERLINE MARKING
SEE MARKING DETAILS SHT 1 FOR DETAILS

SEE MARKING SHT 5

SEE MARKING SHT 7

AIRPORT ROAD

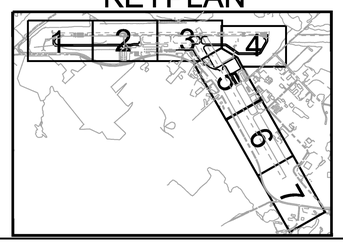
NOTE:

1. SEE MARKING DETAILS SHT 1 AND MARKING DETAILS SHT 2 FOR ADDITIONAL INFORMATION.

2. RUNWAY MARKINGS ALWAYS TAKE PRECEDENCE OVER TAXIWAY MARKINGS. BREAK TAXIWAY MARKINGS AROUND RUNWAY MARKINGS WHERE NECESSARY.

0 50 100
SCALE

KEYPLAN



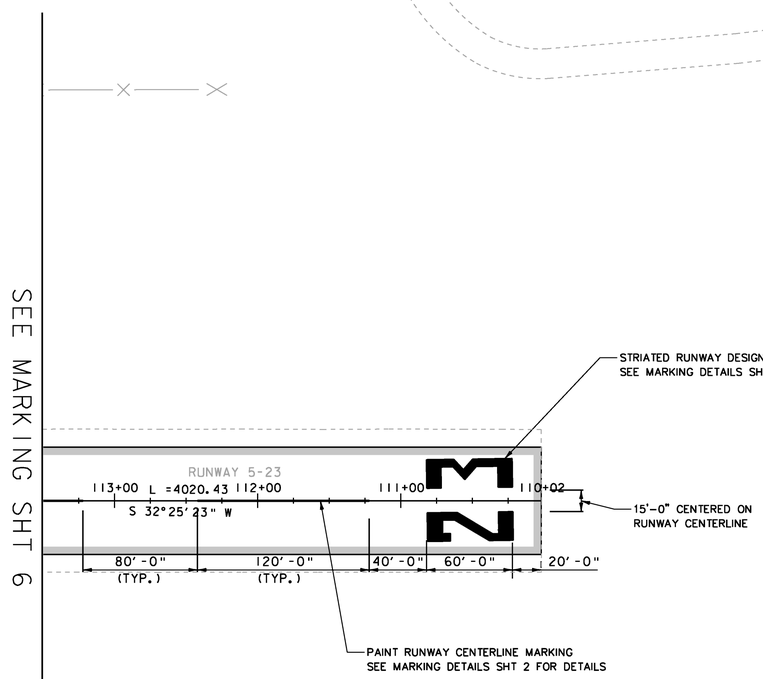
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Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_mrk.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
MARKING SHT 6

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 115 OF 173

SEE MARKING SHT 6

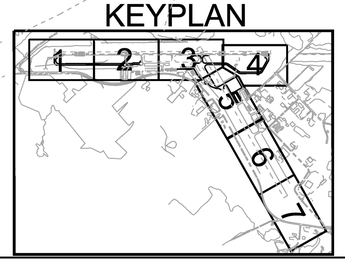


NOTE:

1. SEE MARKING DETAILS SHT 1 AND MARKING DETAILS SHT 2 FOR ADDITIONAL INFORMATION.
2. RUNWAY MARKINGS ALWAYS TAKE PRECEDENCE OVER TAXIWAY MARKINGS. BREAK TAXIWAY MARKINGS AROUND RUNWAY MARKINGS WHERE NECESSARY.

AIRPORT ROAD

KEYPLAN



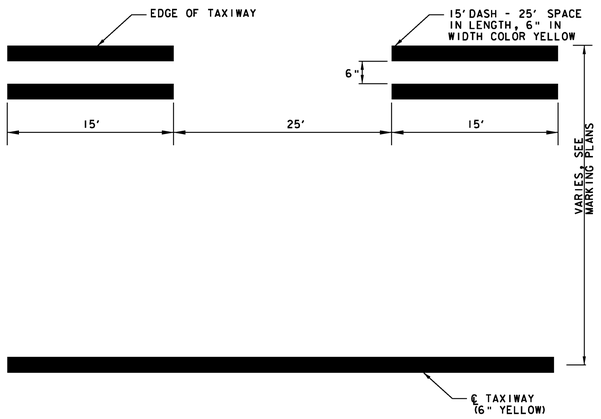
0 50 100
SCALE

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
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PROJECT NUMBER: BERLIN AIR 04-3216

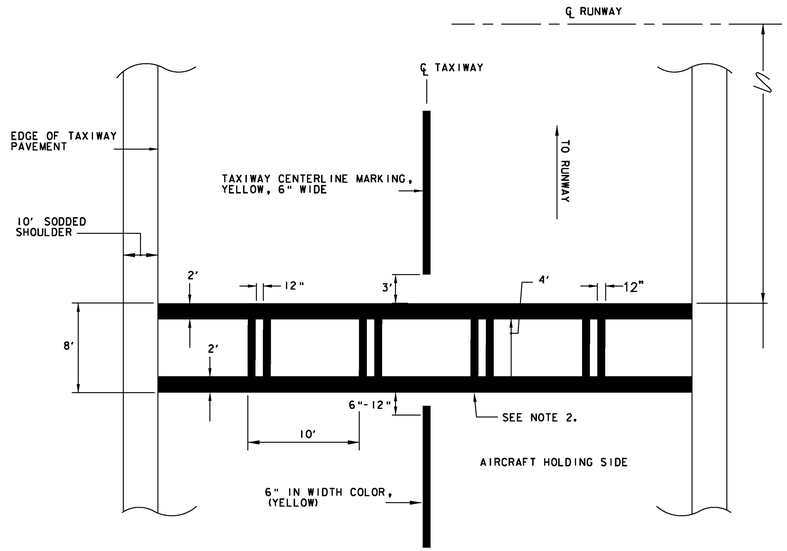
FILE NAME: z05h378sht_mrk.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
MARKING SHT 7

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 116 OF 173



CENTERLINE AND TAXIWAY EDGE MARKING DETAIL

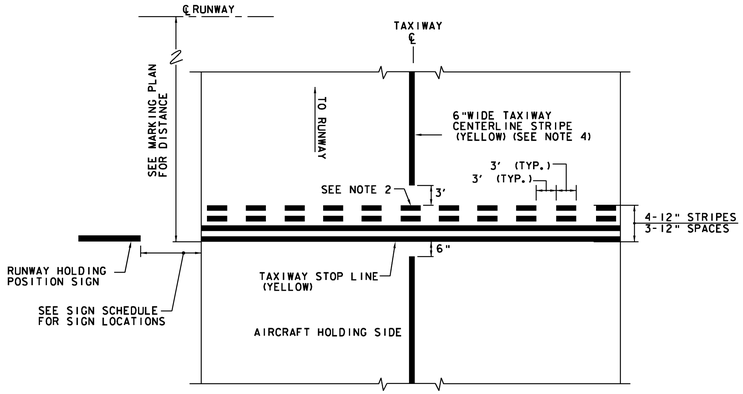
NOT TO SCALE
15' DASH & 25' SPACES IN LENGTH, 6" IN WIDTH COLOR, (YELLOW)



NOTE:
1. HOLDLINE AND T/W CENTERLINE ARE TO BE PAINTED PER P-620-1.
2. ALL MARKINGS ARE YELLOW

ILS / MLS HOLDING POSTION MARKING (PAINTED ON TAXIWAYS)

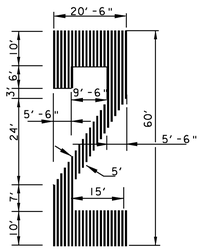
NOT TO SCALE



NOTE:
1. HOLDLINE AND T/W CENTERLINE ARE TO BE PAINTED PER P-620-1.
2. MIDPOINT OF DASHED MARK ALIGNED WITH CENTERLINE OF TAXIWAY.
3. ALL MARKINGS IN THIS DETAIL ARE YELLOW.
4. T/W CENTERLINE WIDTH TO BE 6".

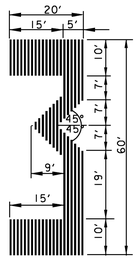
RUNWAY HOLDING POSITION MARKING DETAIL

NOT TO SCALE



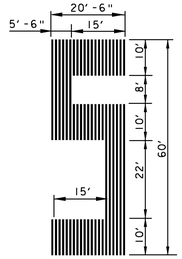
NUMERAL TWO DETAIL

NOT TO SCALE
COLOR IS WHITE



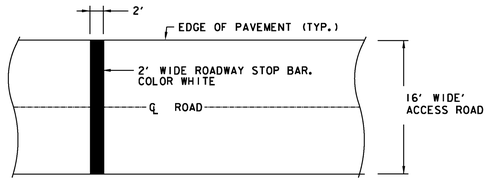
NUMERAL THREE DETAIL

NOT TO SCALE
COLOR IS WHITE



NUMERAL FIVE DETAIL

NOT TO SACALE
COLOR IS WHITE



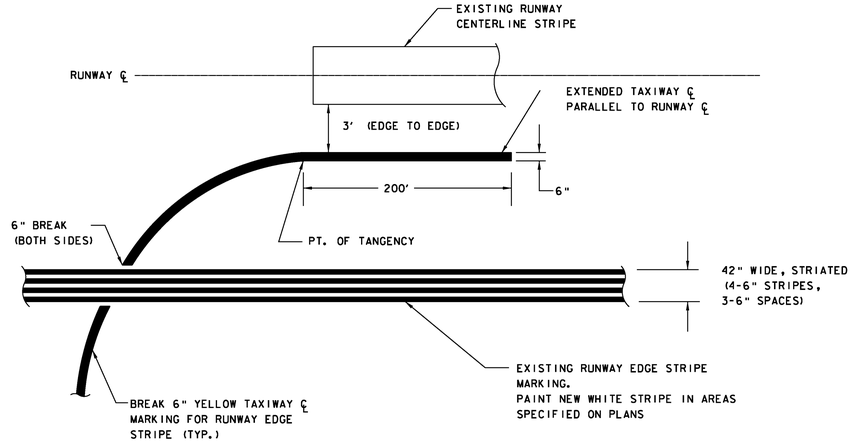
ACCESS ROAD STOP BAR STRIPING DETAIL

NOT TO SCALE

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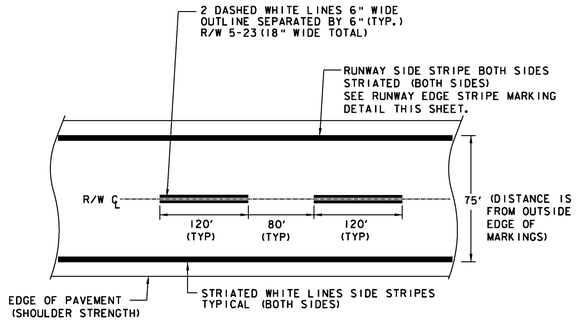
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_marking_det.dgn
PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY
DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD
CHECKED BY: J. DOWNAR
MARKING DETAILS SHT 1
SHEET 117 OF 173



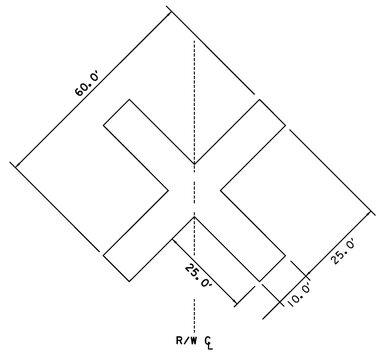
TAXIWAY LEAD-IN LINE & RUNWAY EDGE STRIPE MARKING DETAIL

NOT TO SCALE



RUNWAY CENTERLINE MARKINGS

NOT TO SCALE

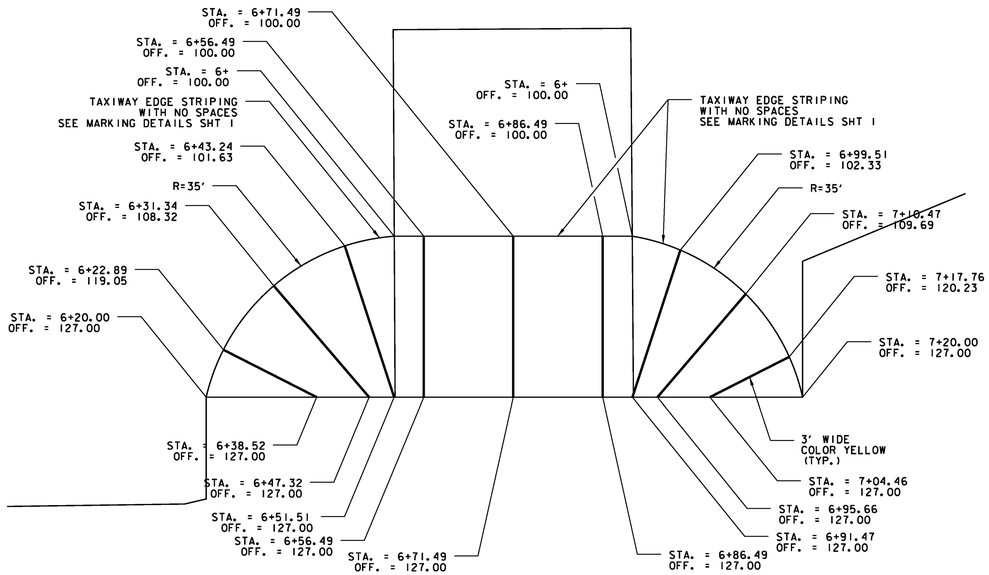


MARKER NOTES:

1. 10' x 60' YELLOW THOROWEAVE 700 AIRPORT RUNWAY "X" SAFETY MARKER VINAL COATED POLYESTER STRING WITH HEMMED PERIMETER AND BRASS GROMMETS AT 3' CENTERS. (2 REQUIRED PER SET, 4 REQUIRED PER RUNWAY) OR APPROVED EQUAL.
2. CLOSED RUNWAY MARKER COST IS INCIDENTAL TO THE PROJECT.

CLOSED RUNWAY MARKER

NOT TO SCALE



NOTE: STATION AND OFFSET IS FROM TAXIWAY 'E' ALIGNMENT.

FUEL FACILITY NON USABLE AREA

NOT TO SCALE

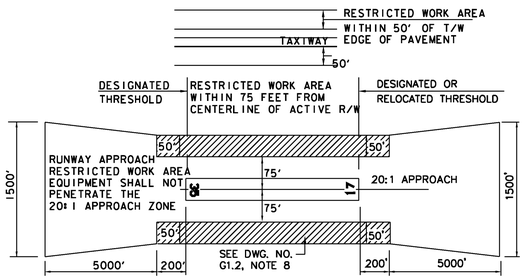


BARRICADE NOTES:

1. EACH BARRICADE IS MARKED WITH DIAGONAL, ALTERNATING ORANGE AND WHITE REFLECTIVE GRADE TAPE 6" WIDE. ALSO EACH WILL HAVE TWO 3-WAY APPROVED RED STATE HIGHWAY DEPARTMENT LIGHT.
2. BARRICADES CAN BE FILLED WITH WATER OR SAND.
3. DESIGNED TO FAA AC 150/5340-1H & 150/5370-2E SPECIFICATIONS AND PERFORMANCE STANDARDS.
4. MADE OF DURABLE POLYETHYLENE PLASTIC.
5. DIMENSIONS: 6" (H) x 6" (W) x 6' (L).
6. BARRICADE COST IS INCIDENTAL TO THE PROJECT. CONTRACTOR SHALL PROVIDE UNITS TO THE OWNER AT END OF PROJECT.

LOW-PROFILE BARRICADE

NOT TO SCALE



RUNWAY 17-35

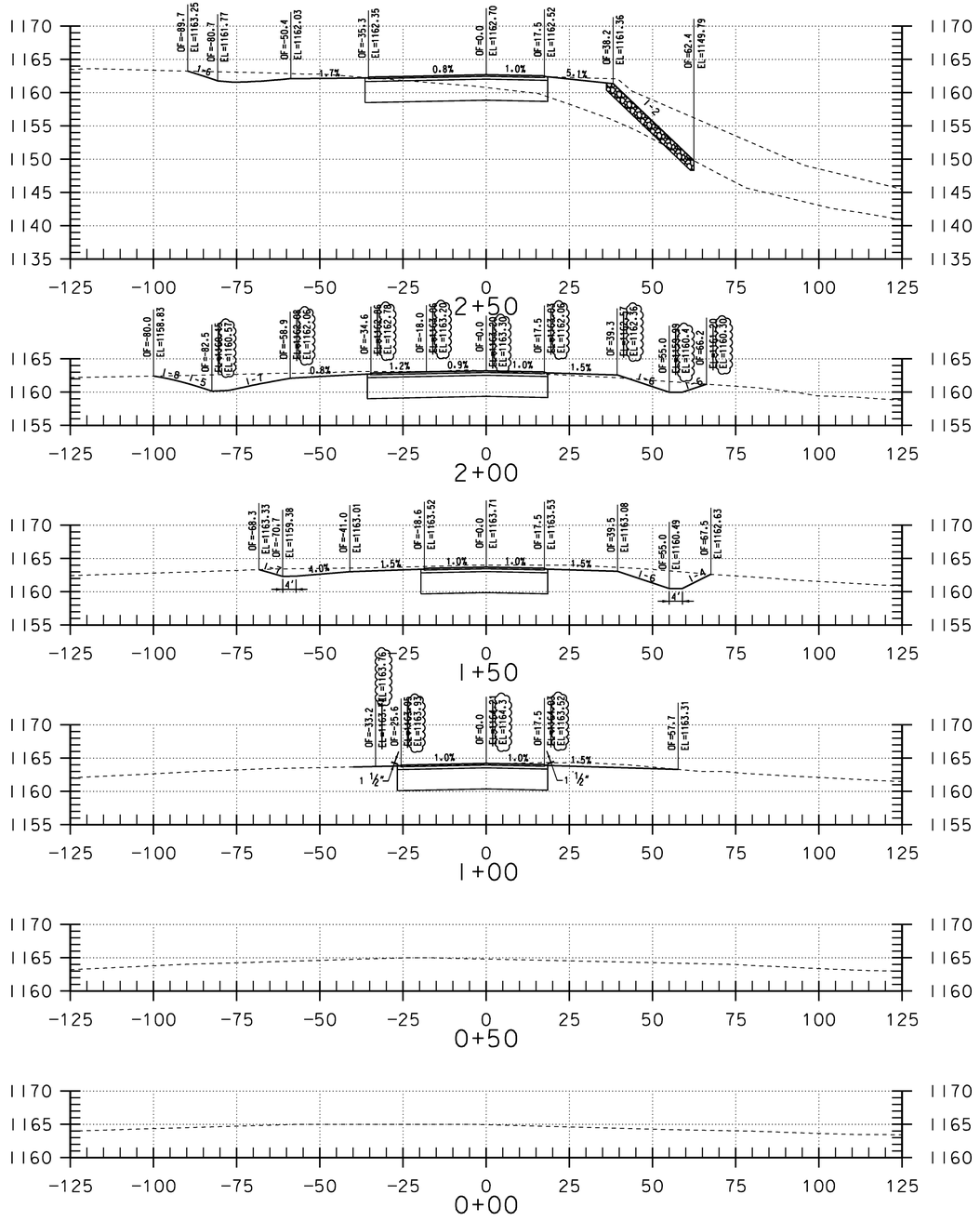
RESTRICTED CONSTRUCTION AREAS

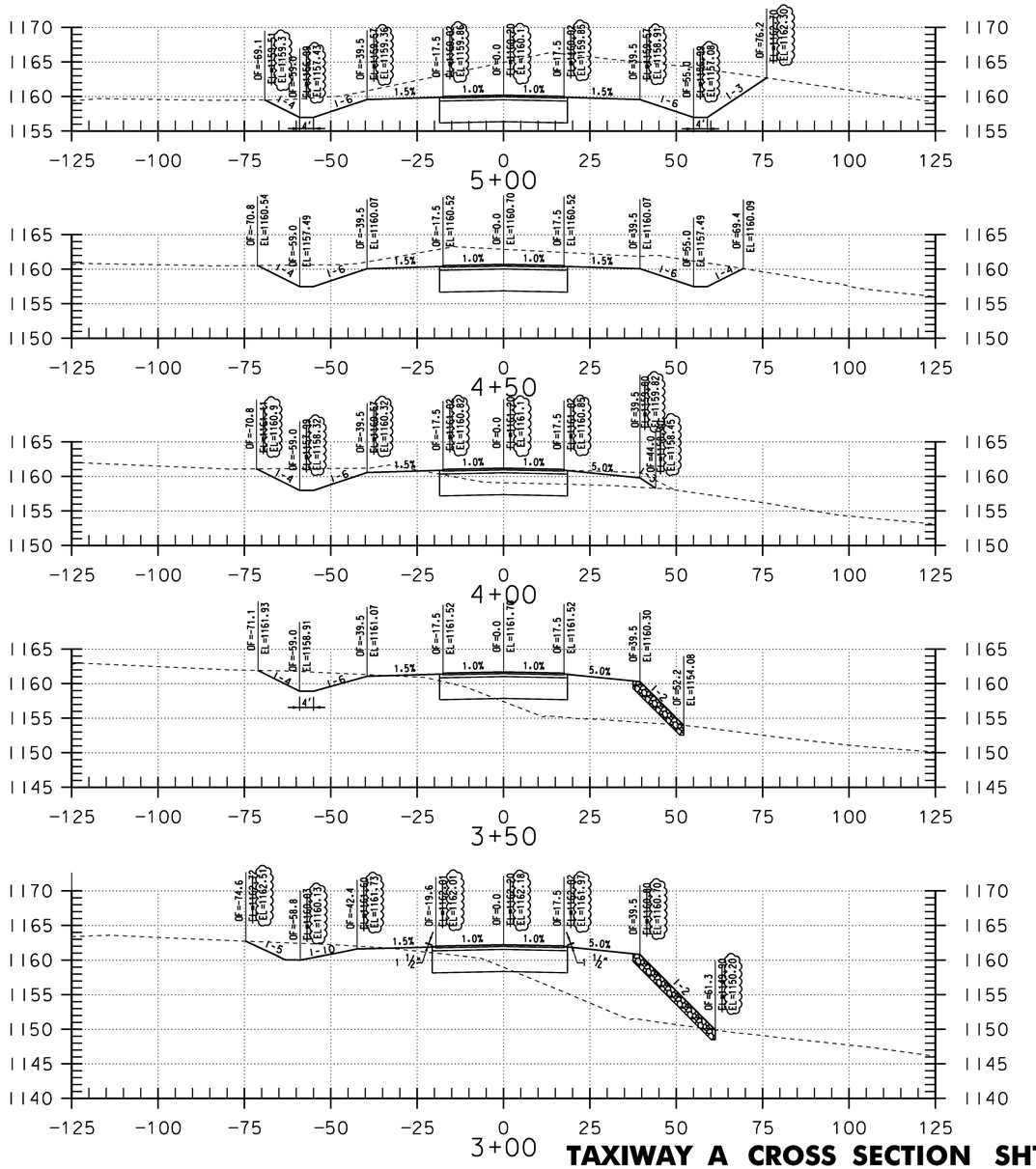
NOT TO SCALE

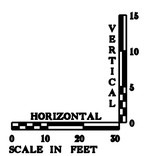
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Fax 603-669-4168
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_marking_det.dgn
PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY
DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD
CHECKED BY: J. DOWNAR
MARKING DETAILS SHT 2
SHEET 118 OF 173







STA.0+00 TO STA.5+00

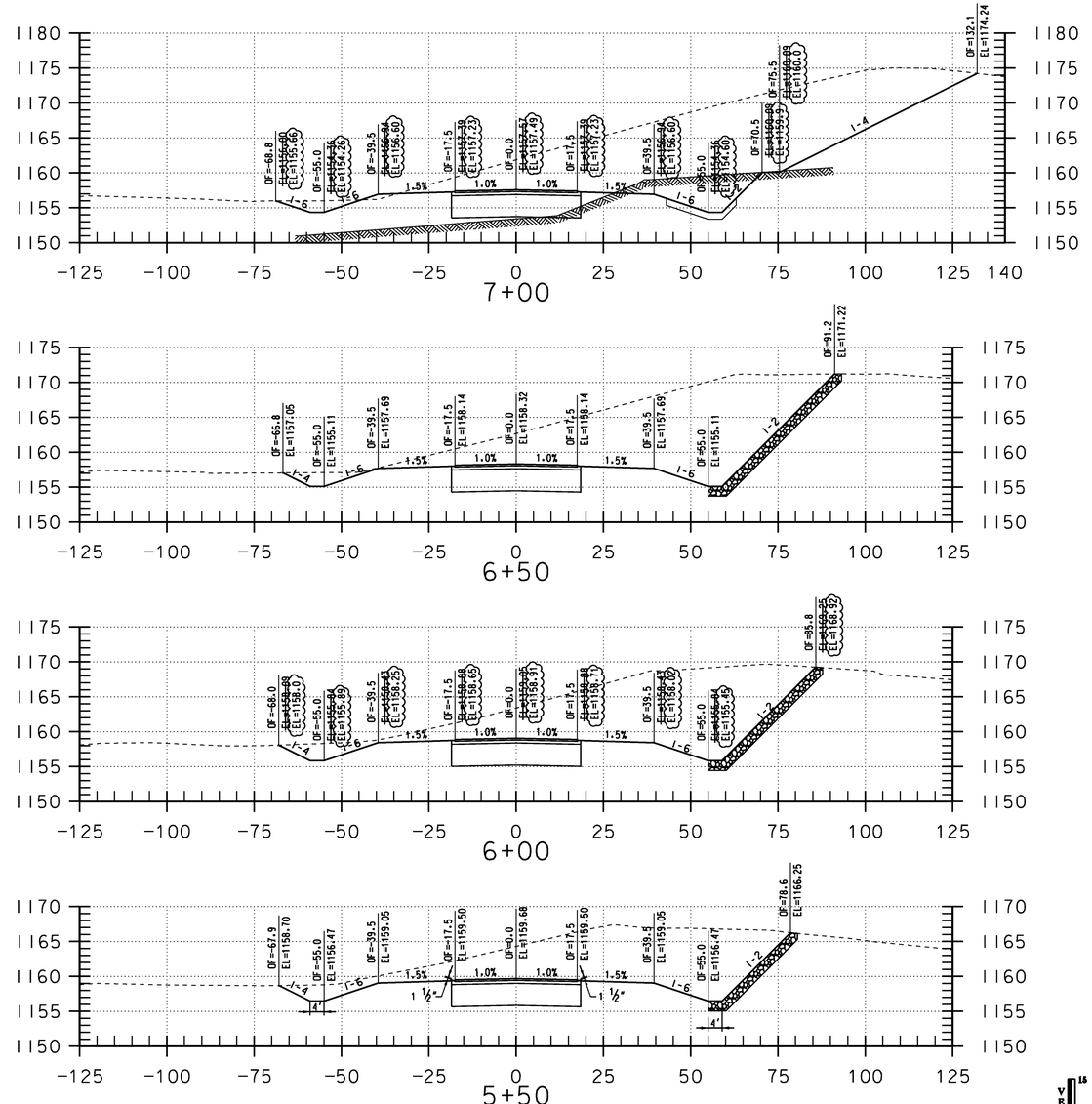
TAXIWAY A CROSS SECTION SHT1

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_A.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY A CROSS SECTION SHT1

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 119 OF 173



TAXIWAY A CROSS SECTION SHT2

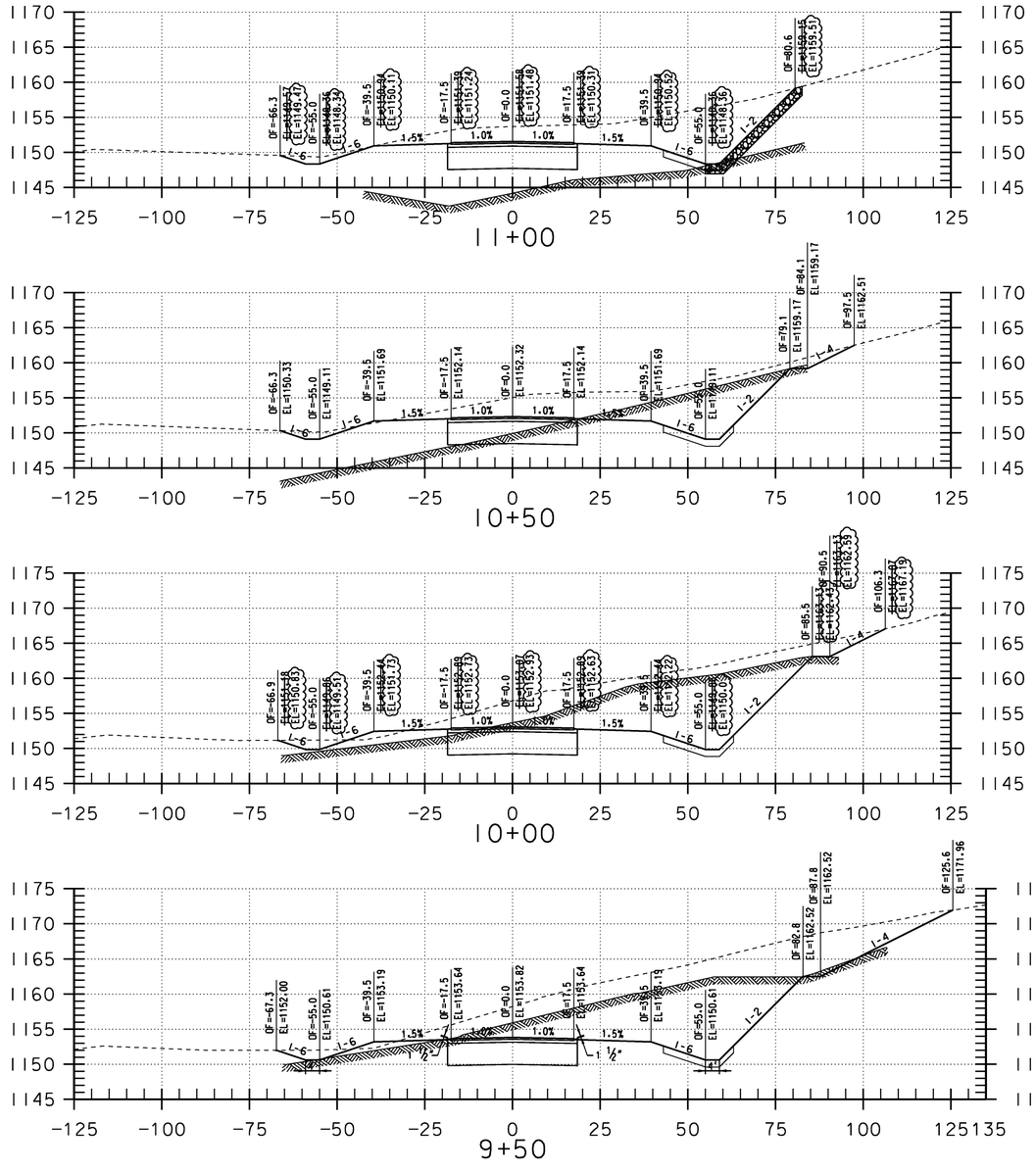
STA.5+50 TO STA.9+00

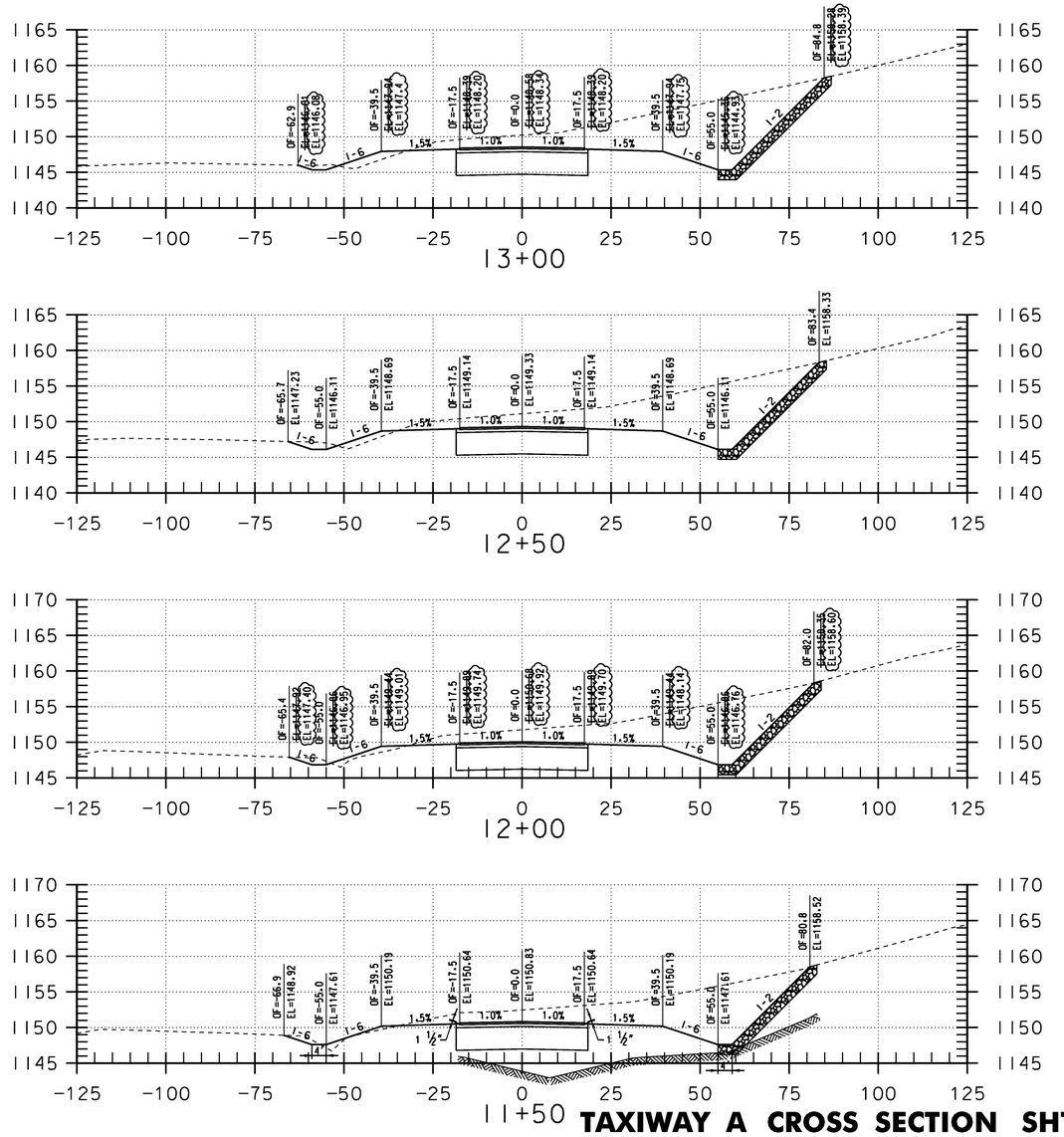
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_A.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY A CROSS SECTION SHT2

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 120 OF 173





STA. 9+50 TO STA. 13+00

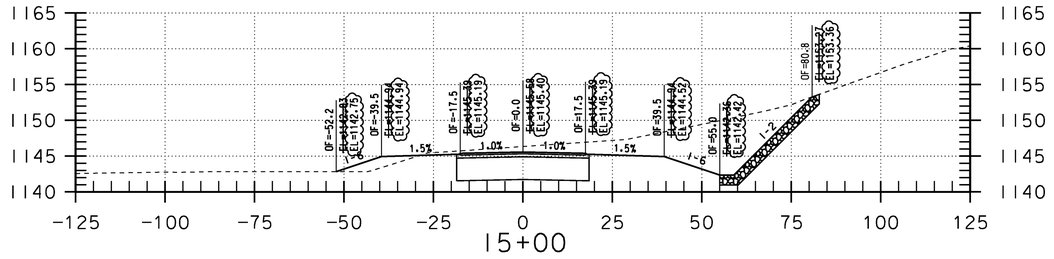
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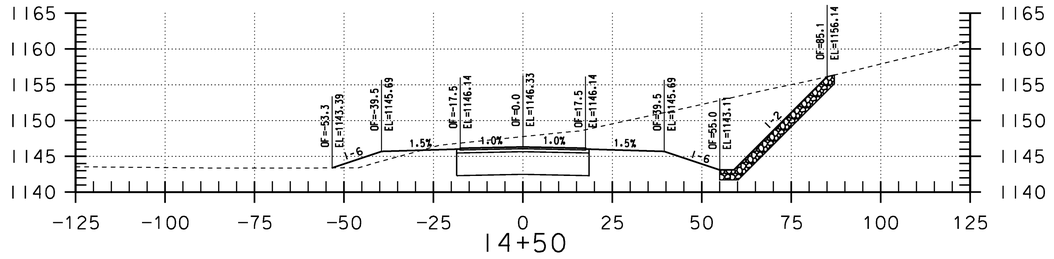
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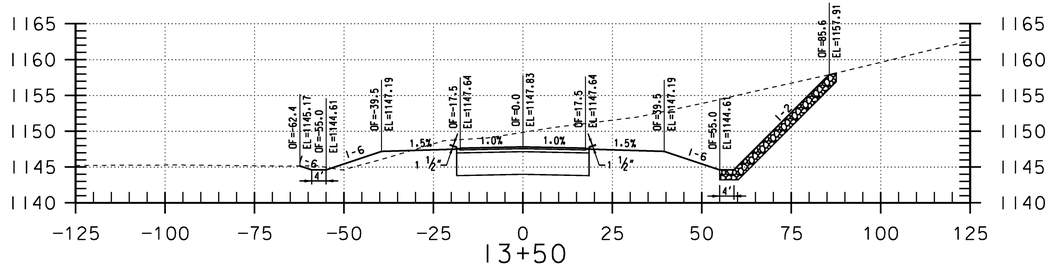
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A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

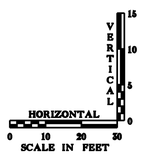
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PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY A CROSS SECTION SHT3

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 121 OF 173

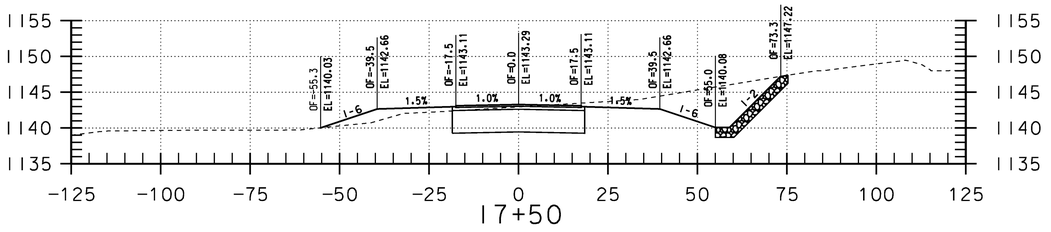


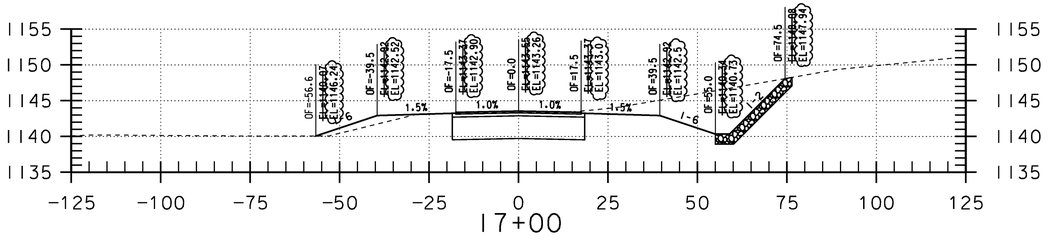


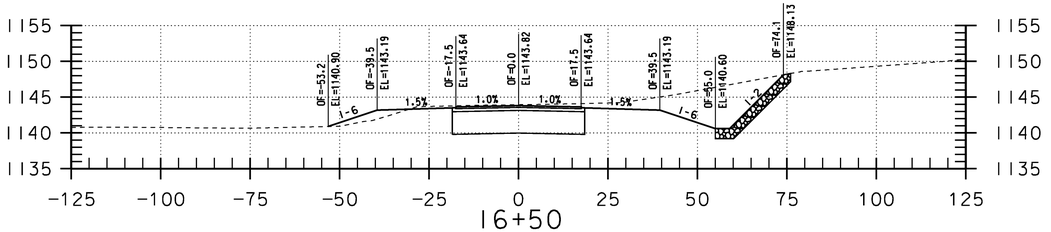


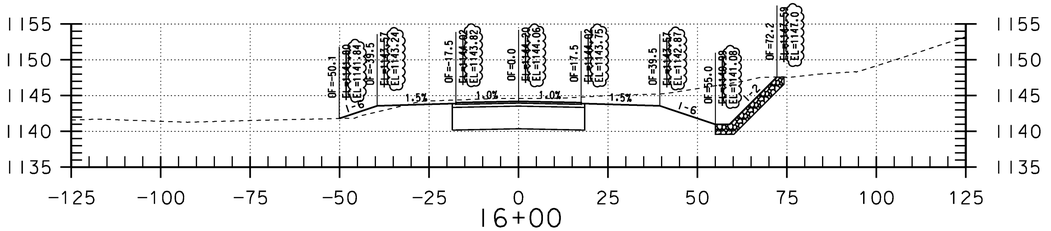


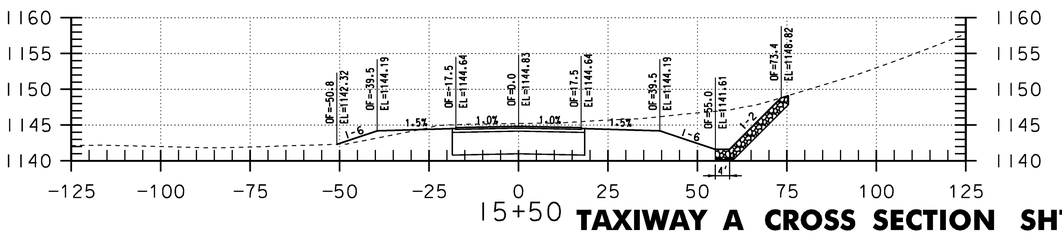
STA. 13+50 TO STA. 17+50











TAXIWAY A CROSS SECTION SHT4

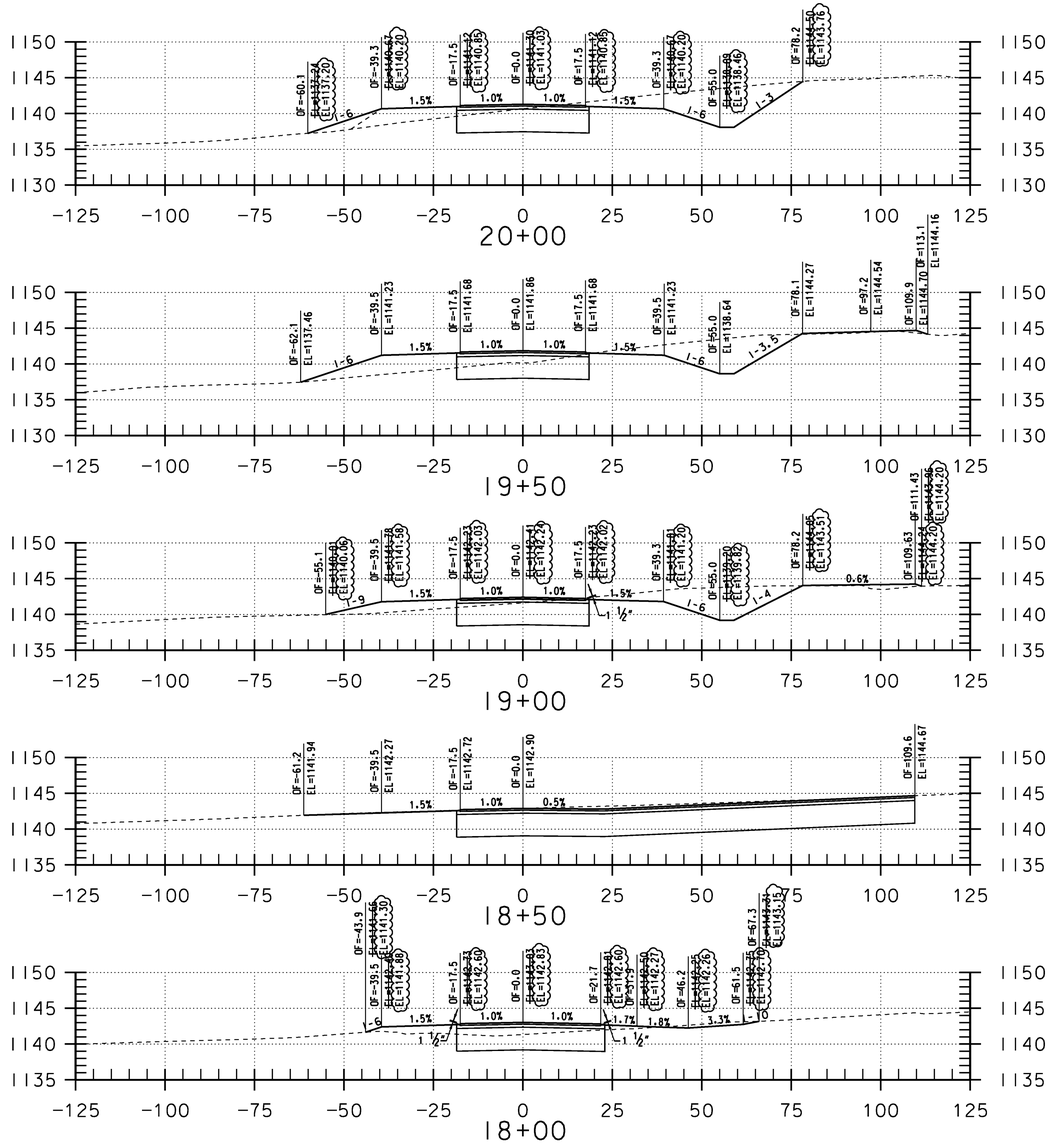
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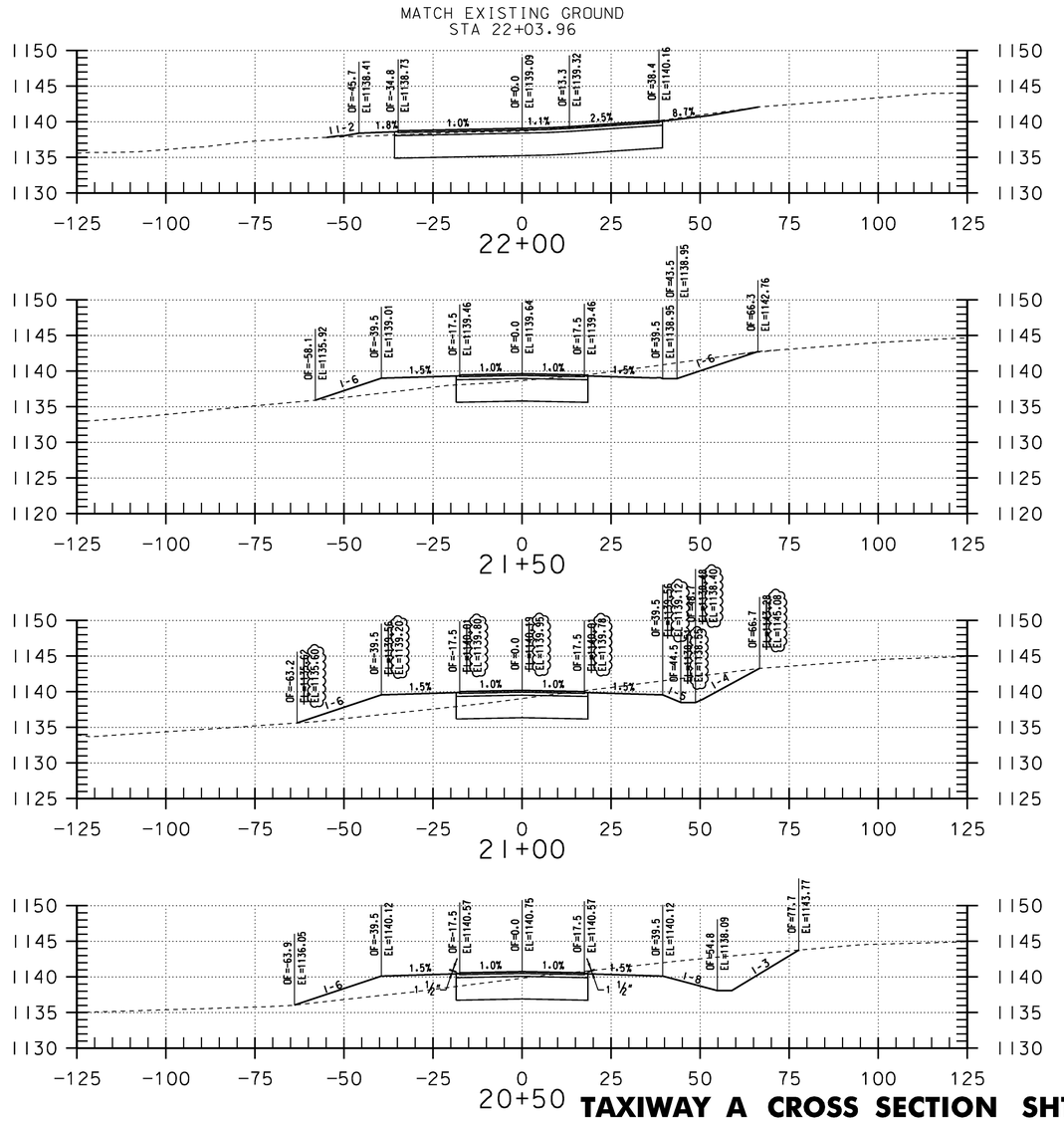
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_A.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY A CROSS SECTION SHT4

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 122 OF 173





HORIZONTAL
SCALE IN FEET
0 10 20 30
VERTICAL
0 5 10 15

STA. 18+00 TO STA. 22+00

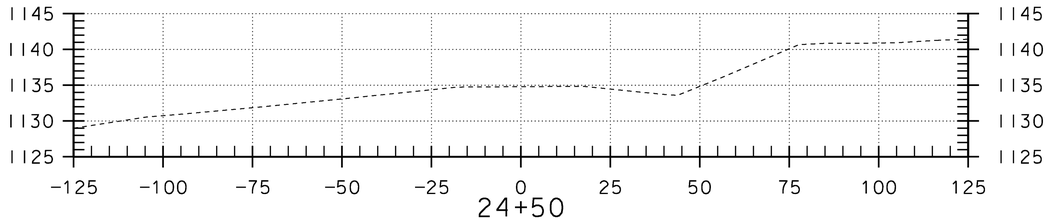
TAXIWAY A CROSS SECTION SHT5

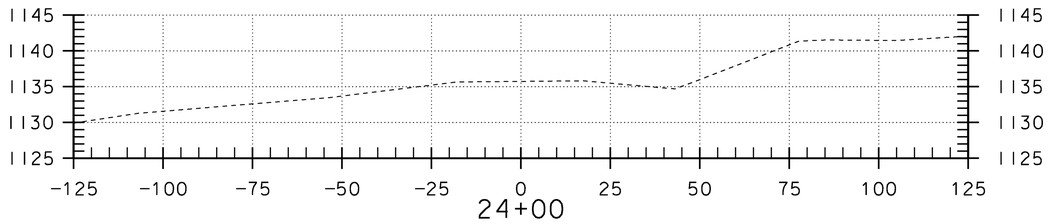
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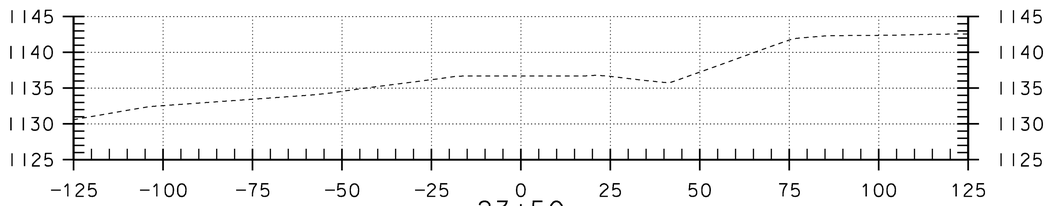
PROJECT NAME: E.F. KNAPP STATE AIRPORT
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PROJECT NUMBER: BERLIN AIR 04-3216

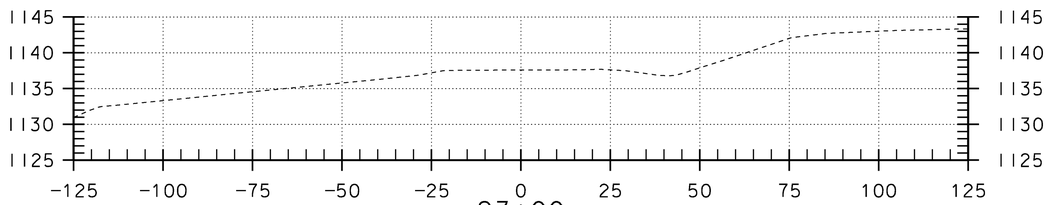
FILE NAME: 302803_sht_cxsec_A.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY A CROSS SECTION SHT5

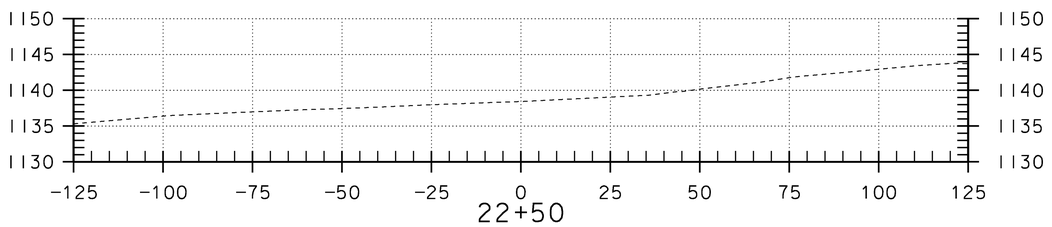
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 123 OF 173

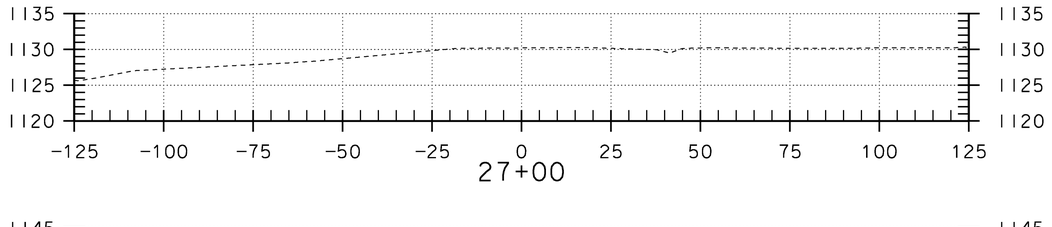


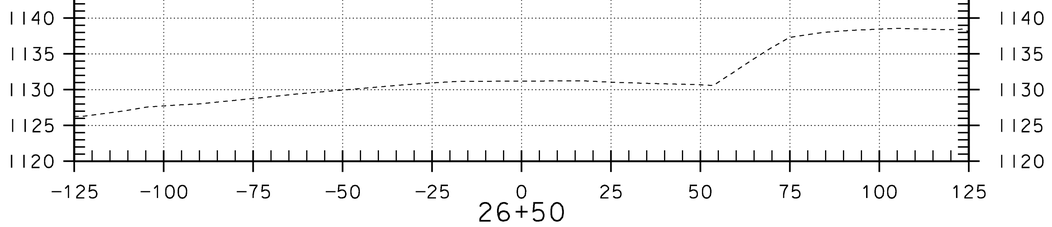


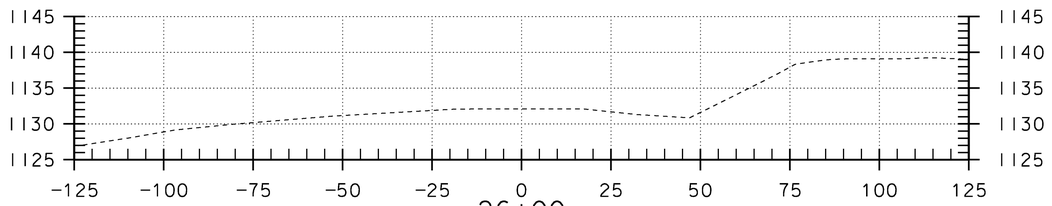


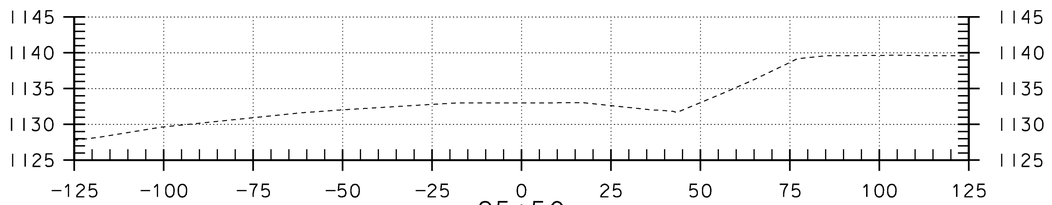


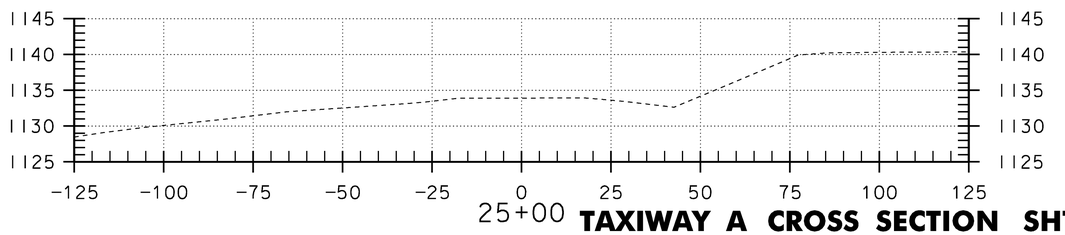


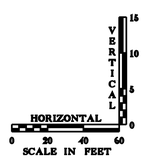












STA.22+50 TO STA.27+00

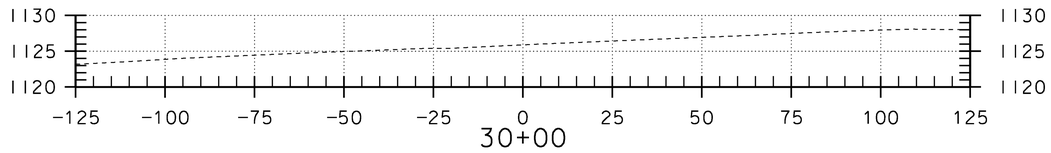
TAXIWAY A CROSS SECTION SHT6

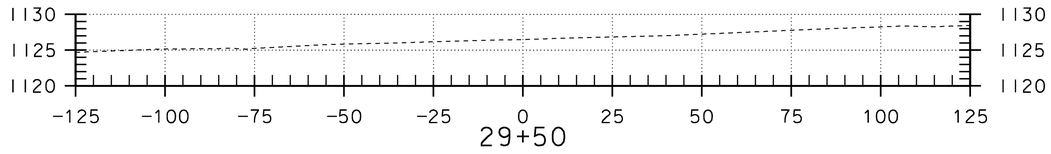
Hoyle, Tanner & Associates, Inc.
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Manchester, NH 03101-1227
Tel 603-669-5555
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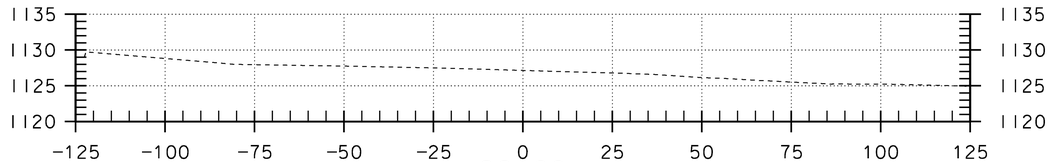
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

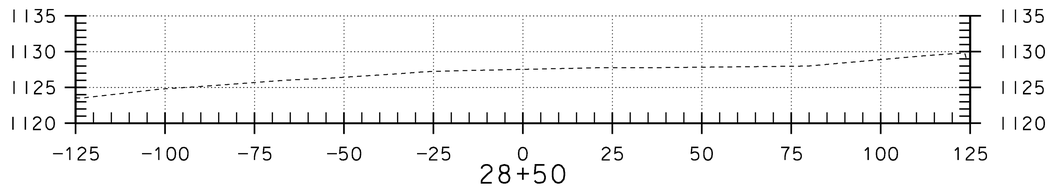
FILE NAME: 302803_sht_cxsec_A.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY A CROSS SECTION SHT6

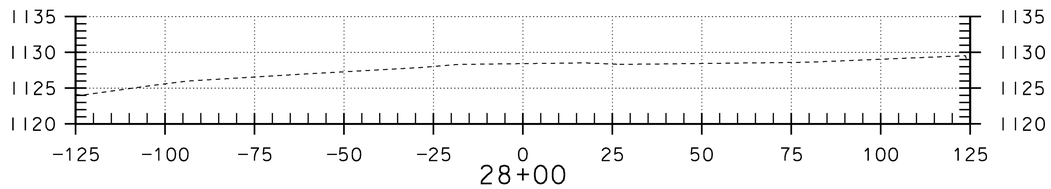
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 124 OF 173

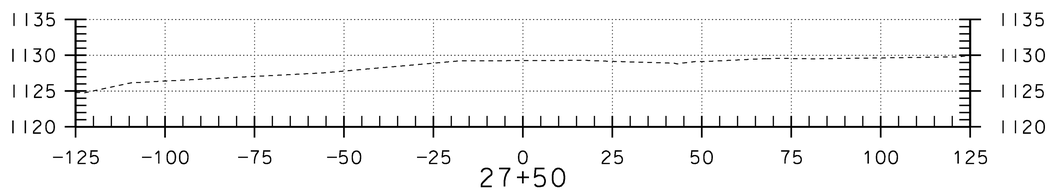


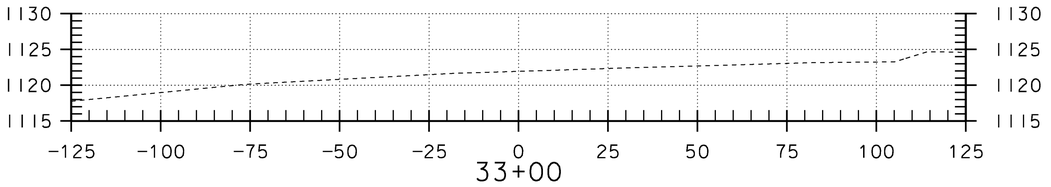


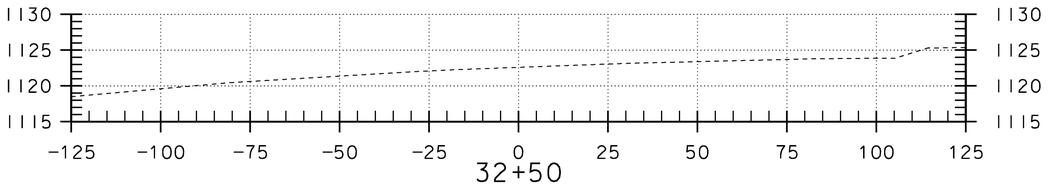


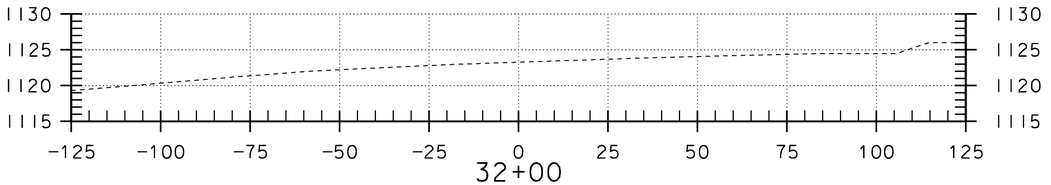


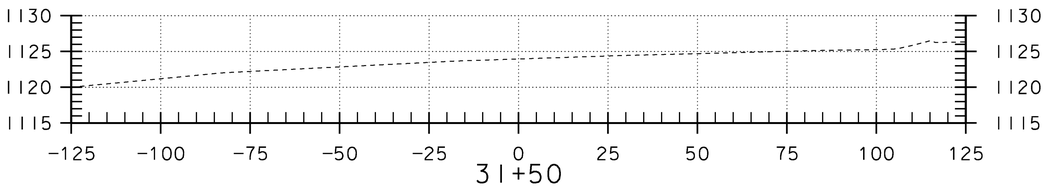


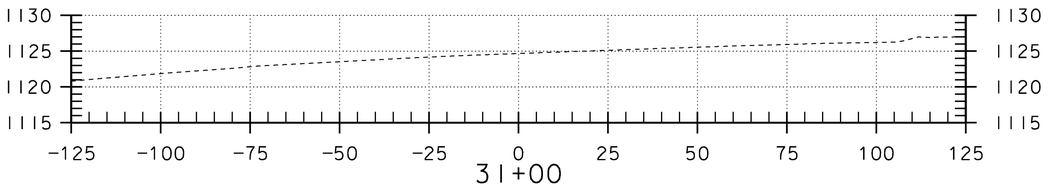


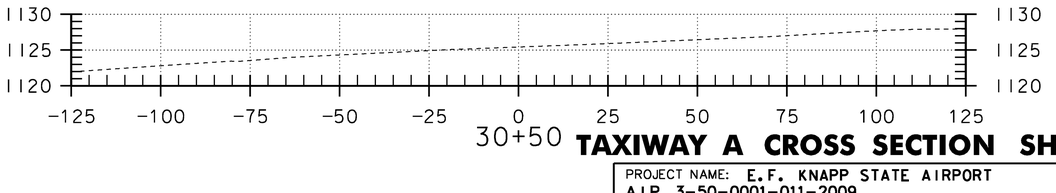




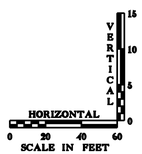








TAXIWAY A CROSS SECTION SHT7



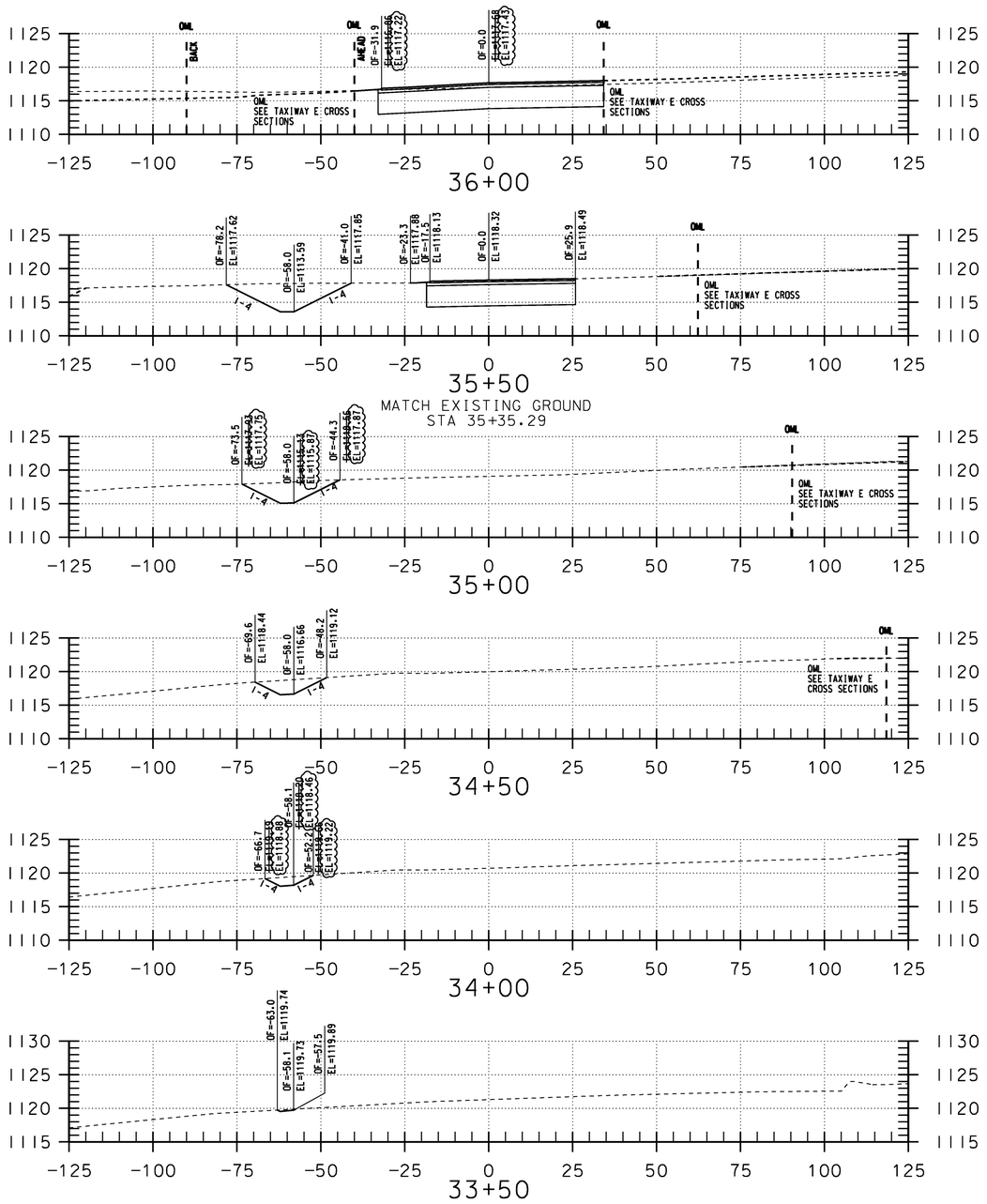
STA.27+50 TO STA.33+00

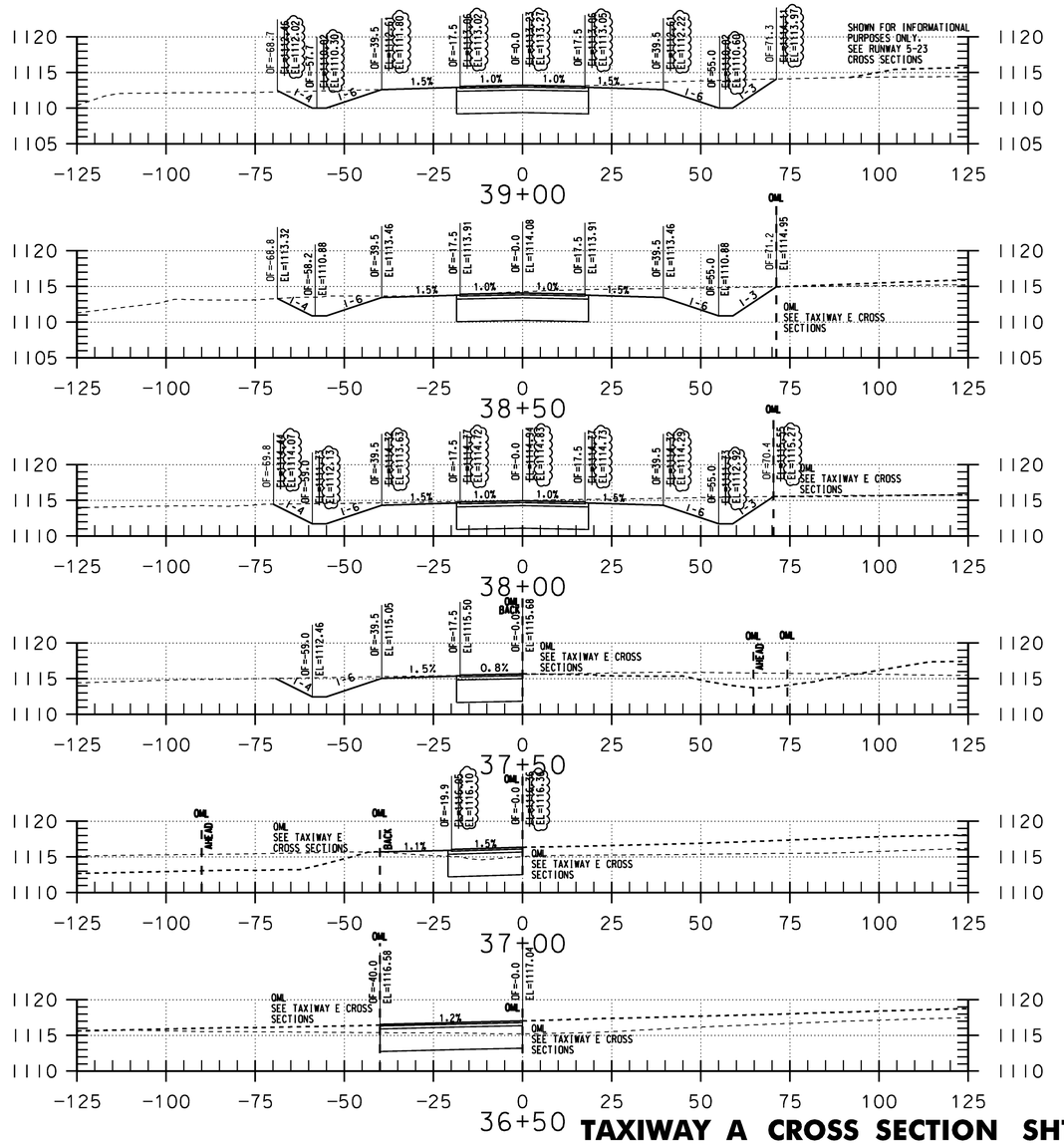
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803.sht_cxsec_A.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY A CROSS SECTION SHT7

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 125 OF 173





TAXIWAY A CROSS SECTION SHT8

STA. 33+50 TO STA. 39+00

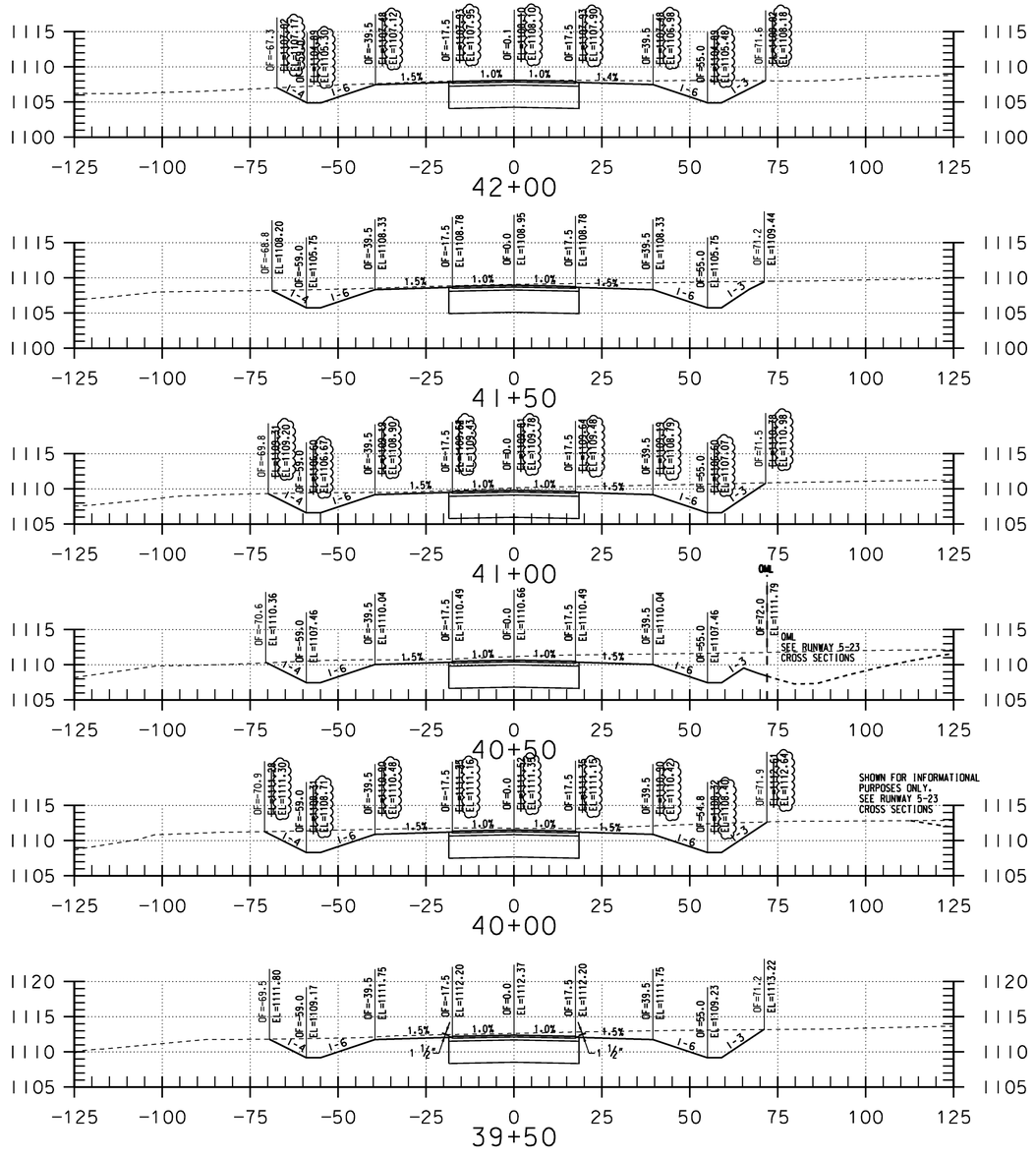
HORIZONTAL
0 10 20 30
SCALE IN FEET

VERTICAL
0 5 10 15

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A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_A.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY A CROSS SECTION SHT8
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 126 OF 173



TAXIWAY A CROSS SECTION SHT9

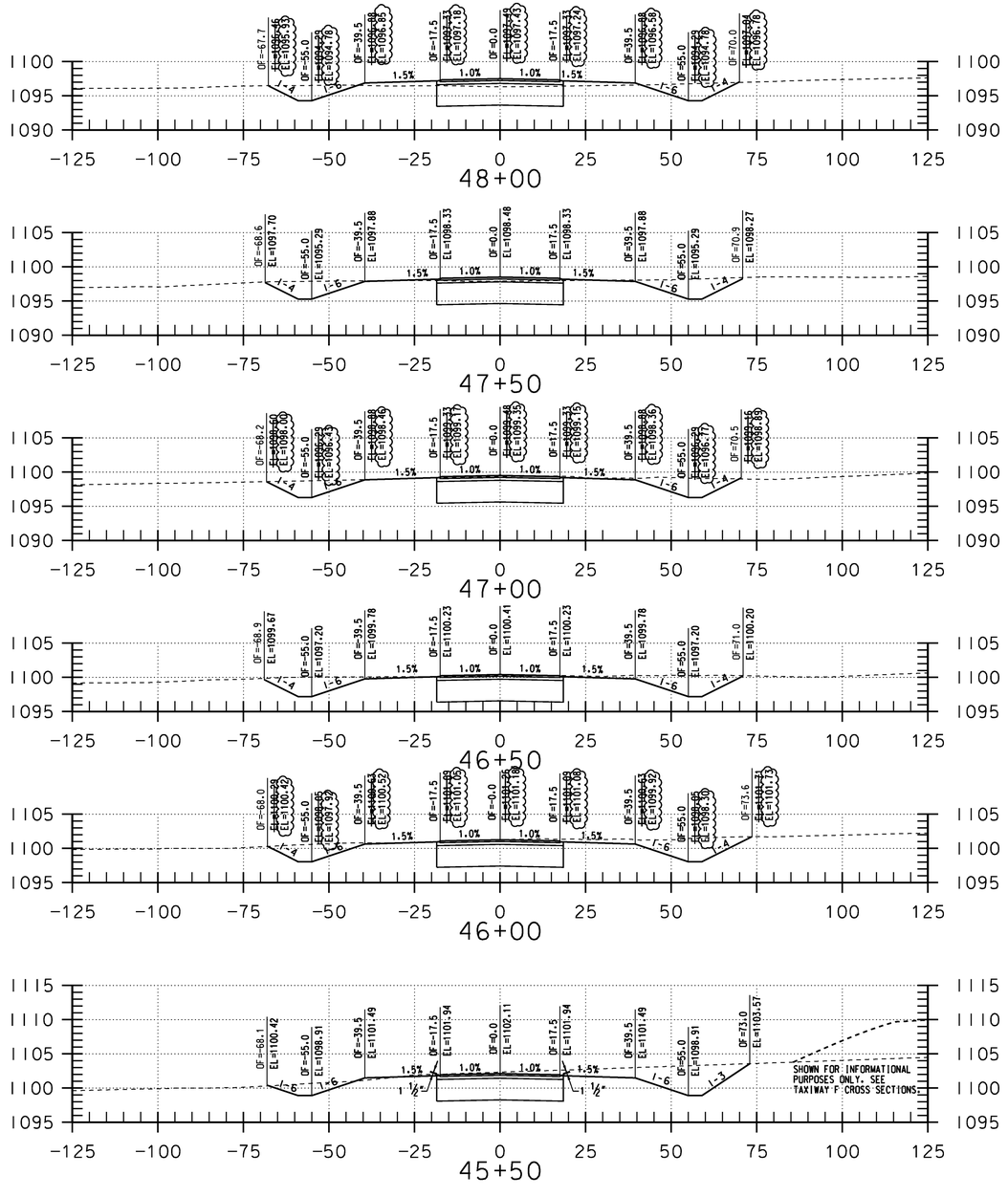
STA. 39+50 TO STA. 45+00

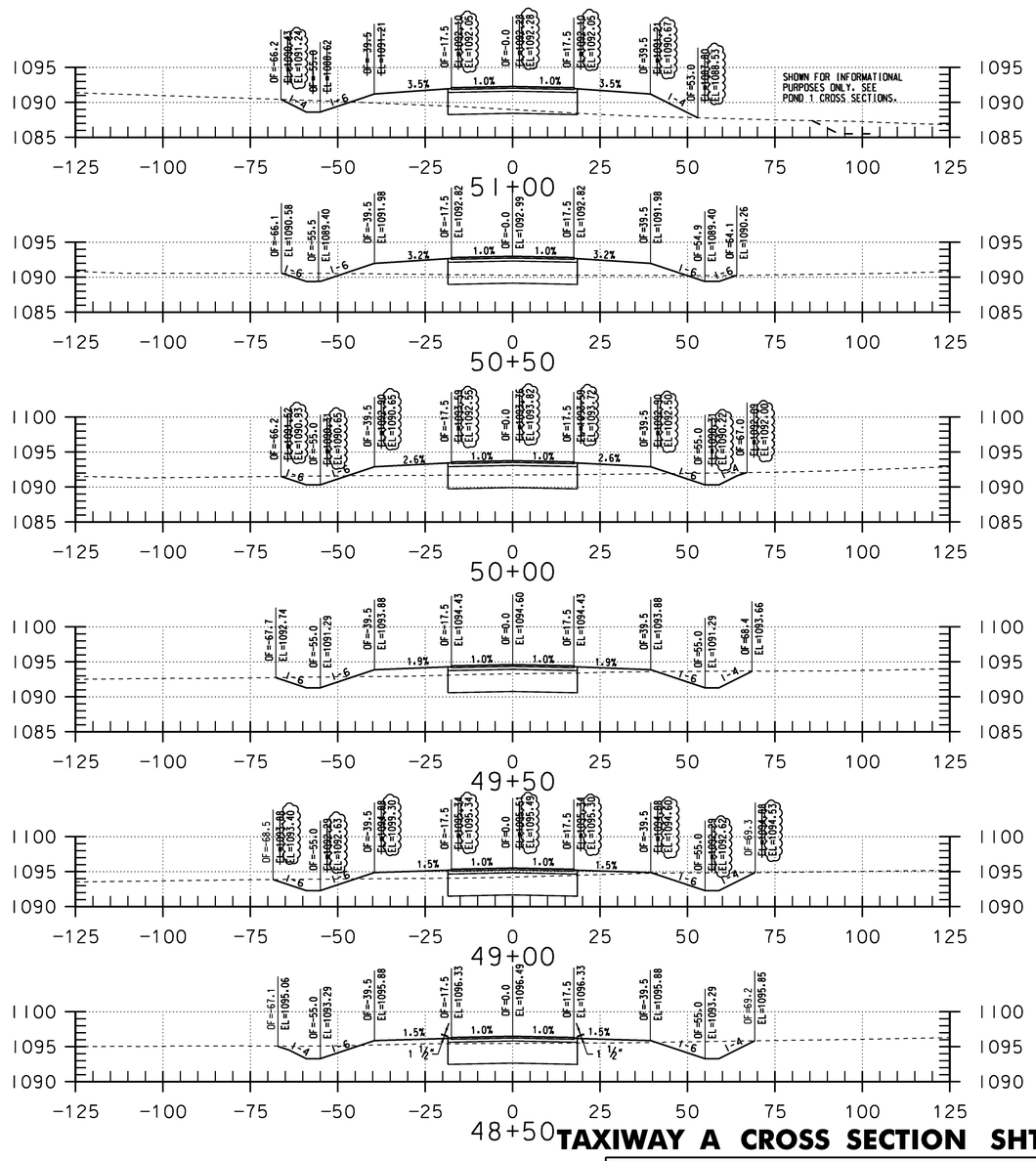
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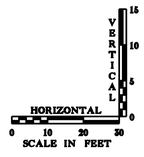
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_A.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY A CROSS SECTION SHT9

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 127 OF 173







STA. 45+50 TO STA. 51+00

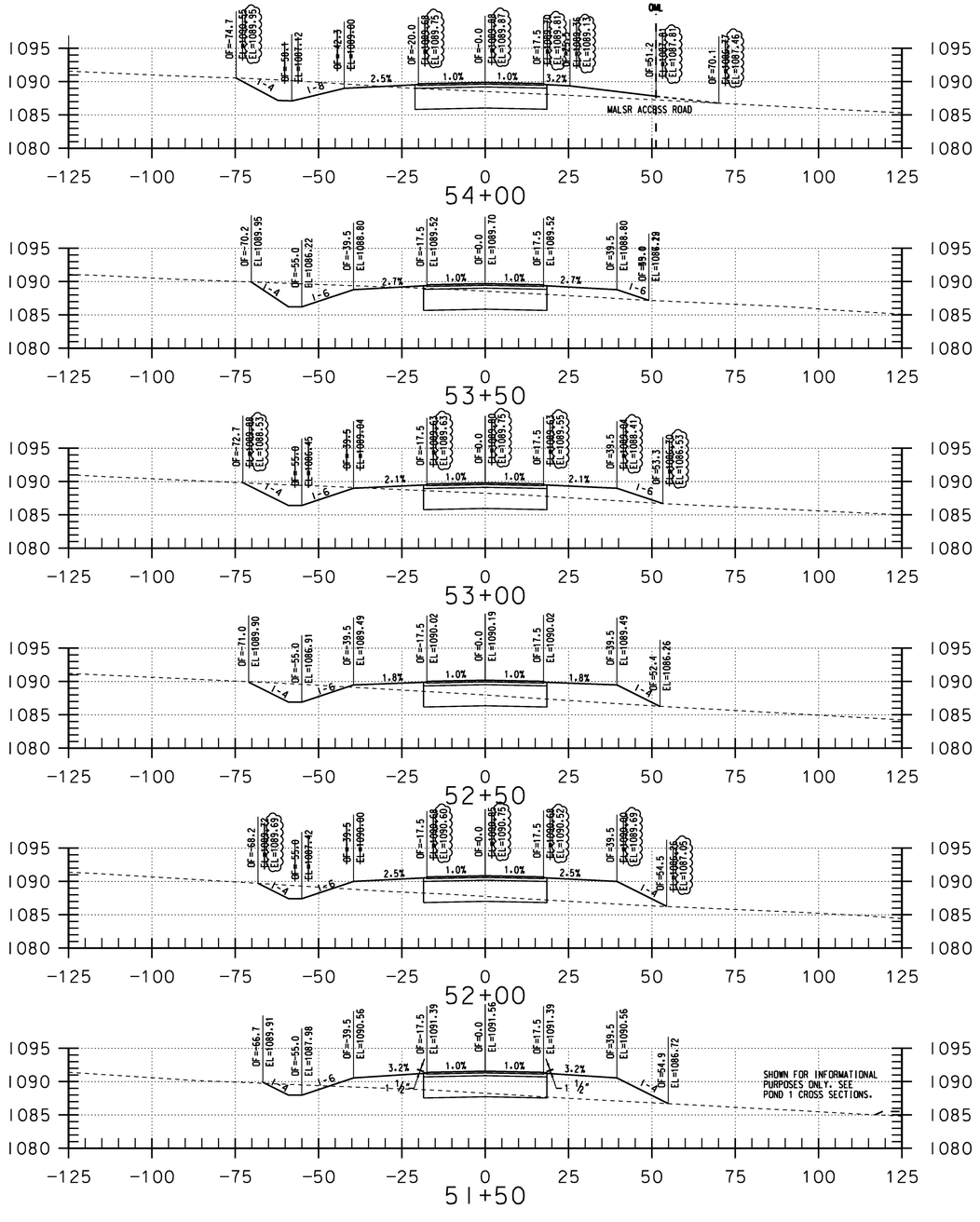
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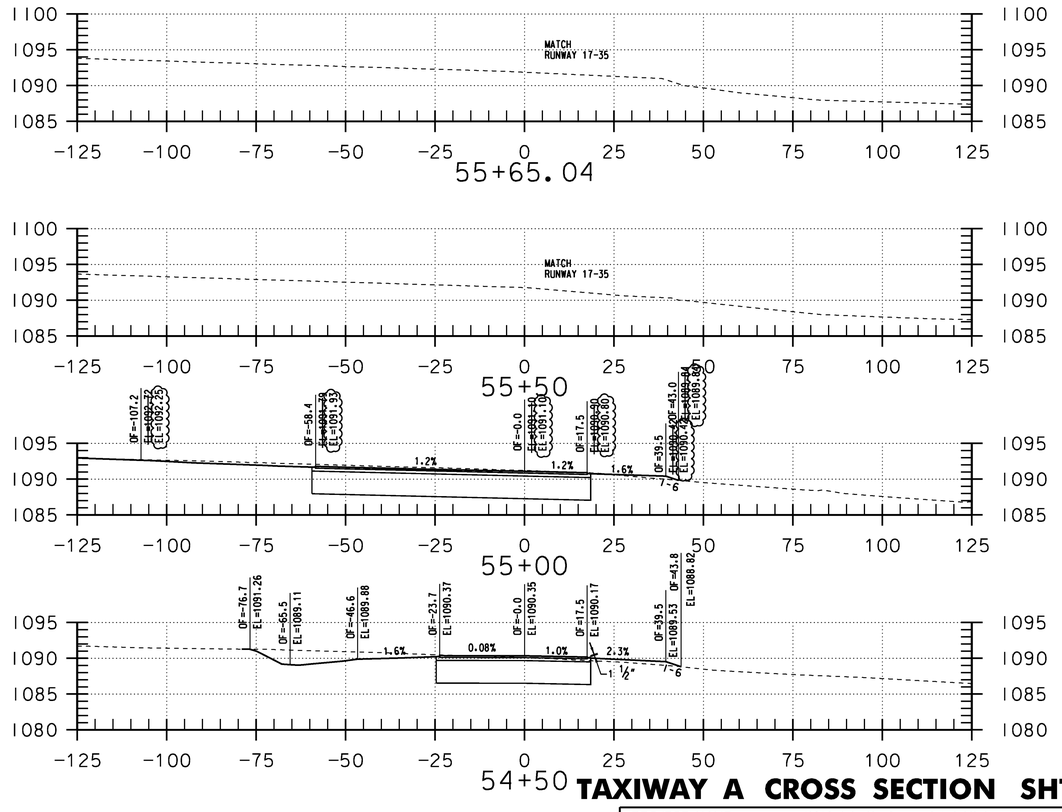
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A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_A.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY A CROSS SECTION SHT10

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 128 OF 173





TAXIWAY A CROSS SECTION SHT11

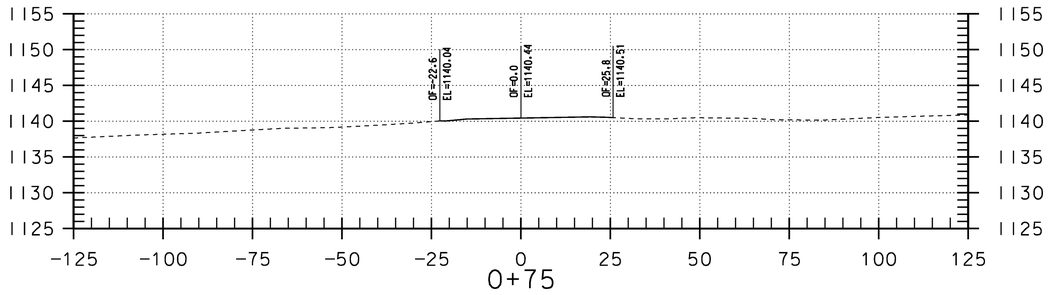
STA.51+50 TO STA.55+65

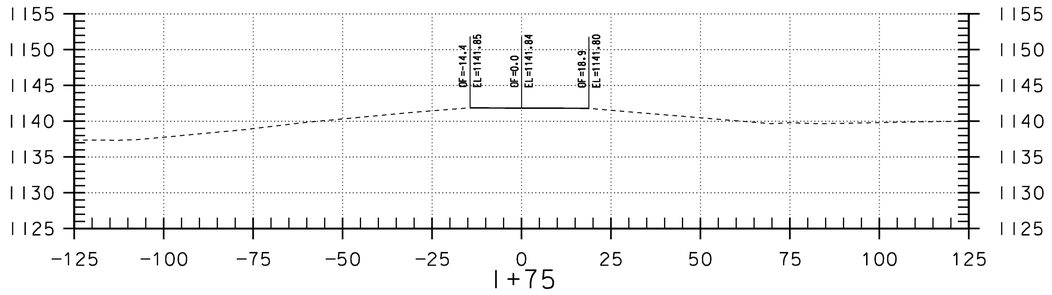
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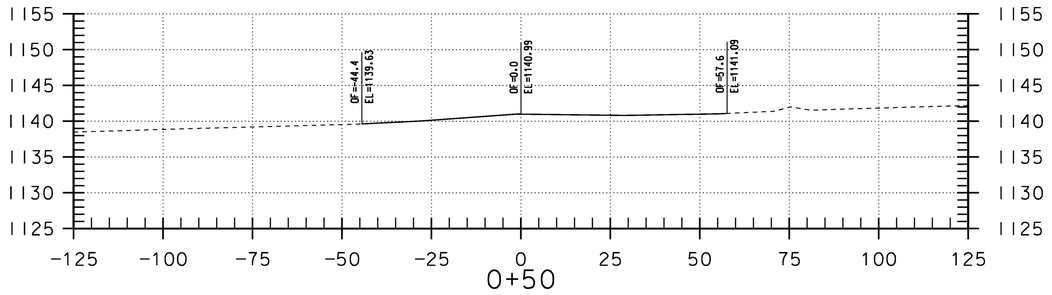
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

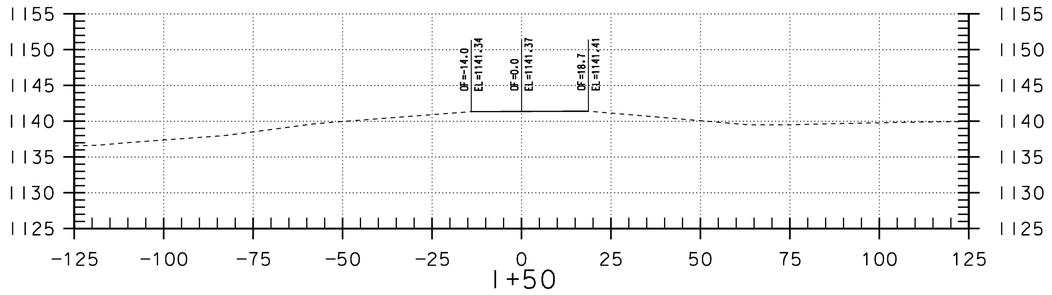
FILE NAME: 302803_sht_cxsec_A.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY A CROSS SECTION SHT11

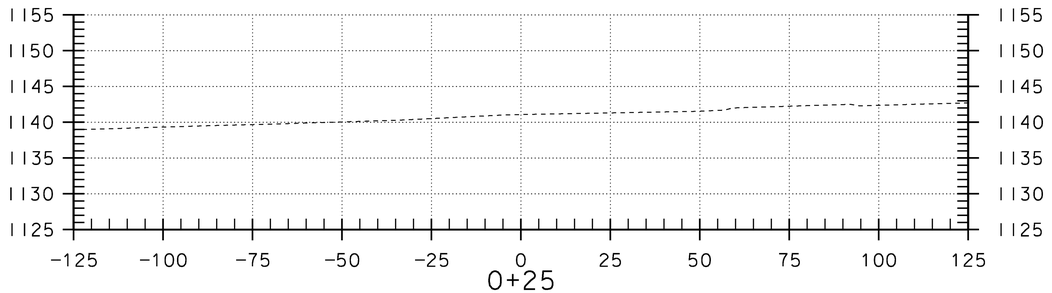
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

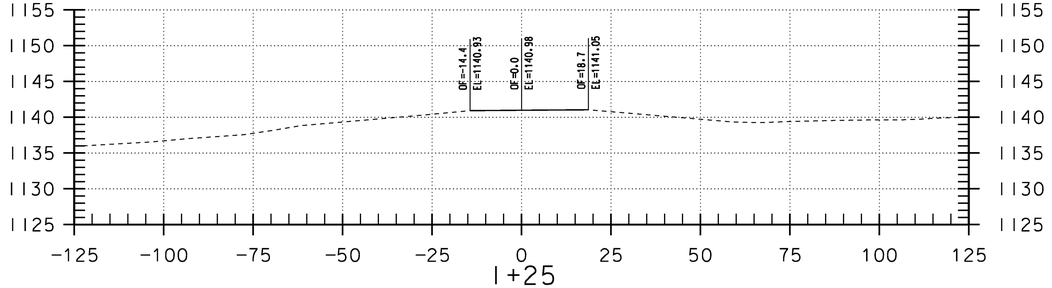


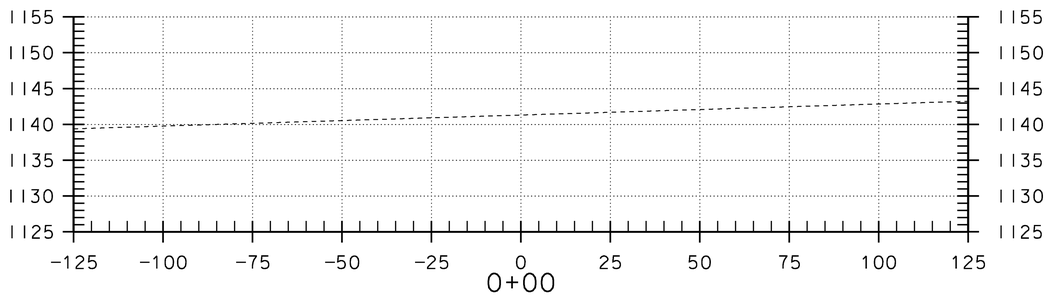


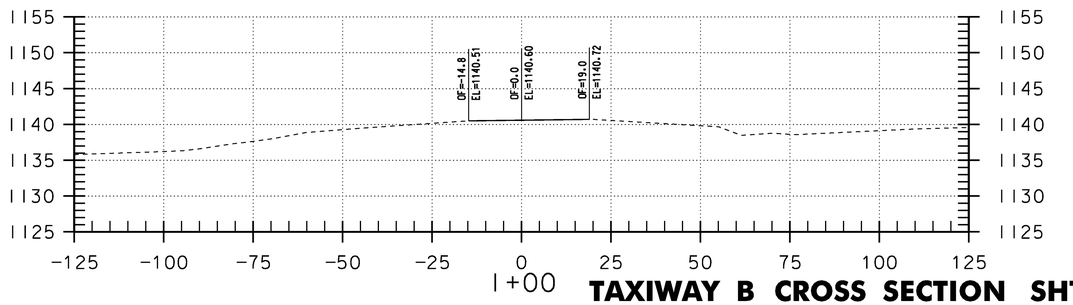












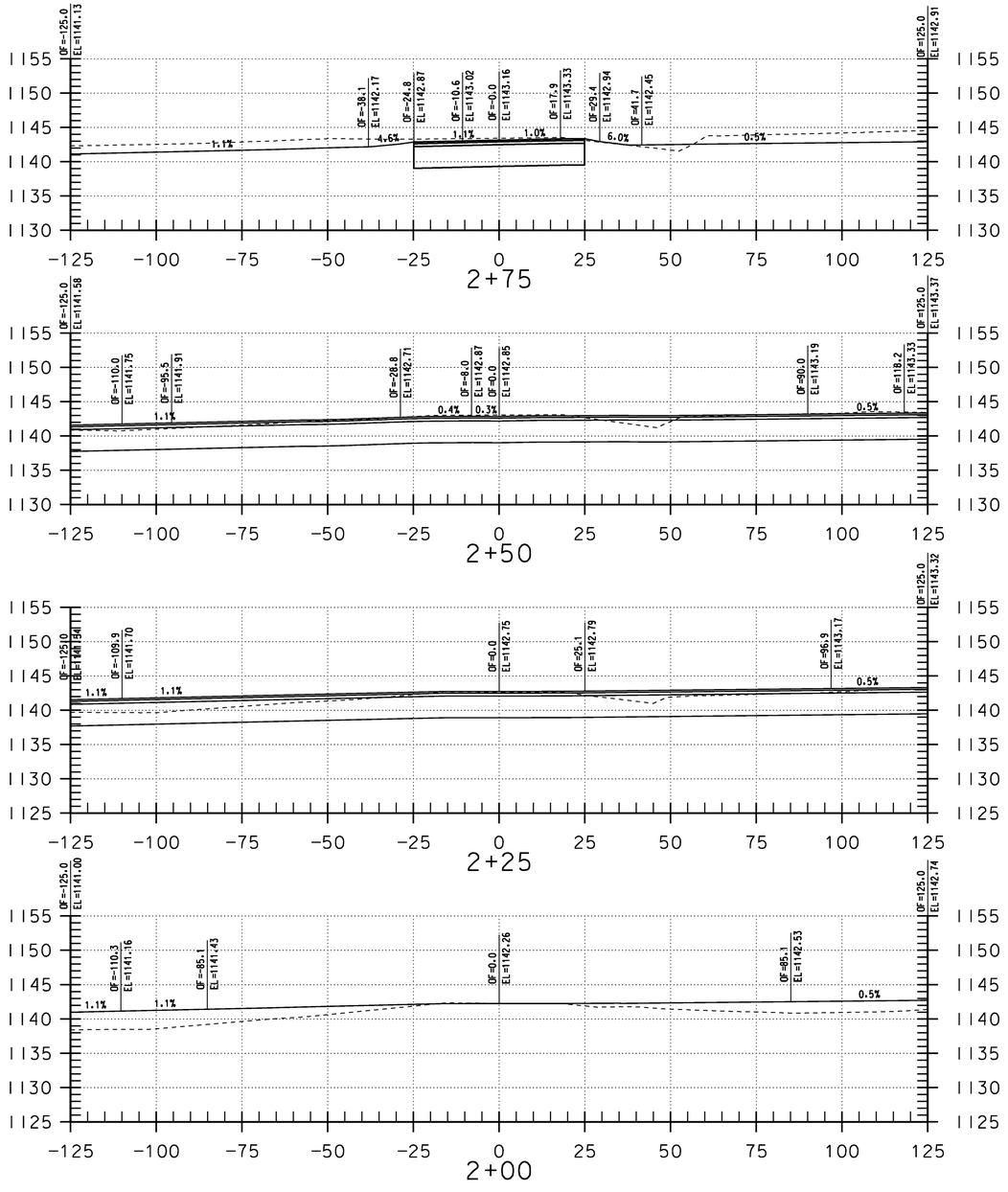
TAXIWAY B CROSS SECTION SHT1

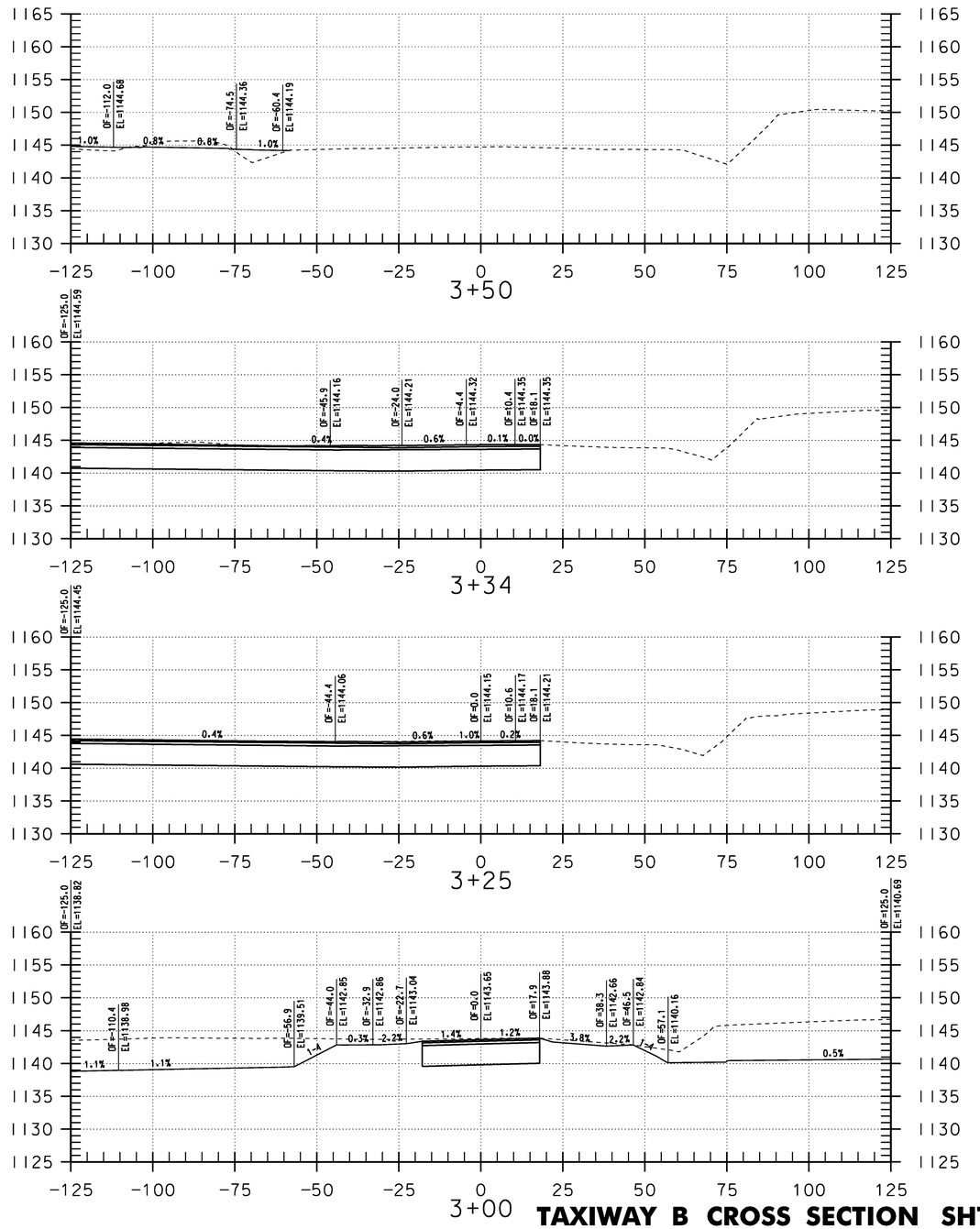
STA.0+00 TO STA.1+75

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A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_B.dgn
PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY
DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD
CHECKED BY: J. DOWNAR
TAXIWAY B CROSS SECTION SHT1
SHEET 130 OF 173





TAXIWAY B CROSS SECTION SHT2

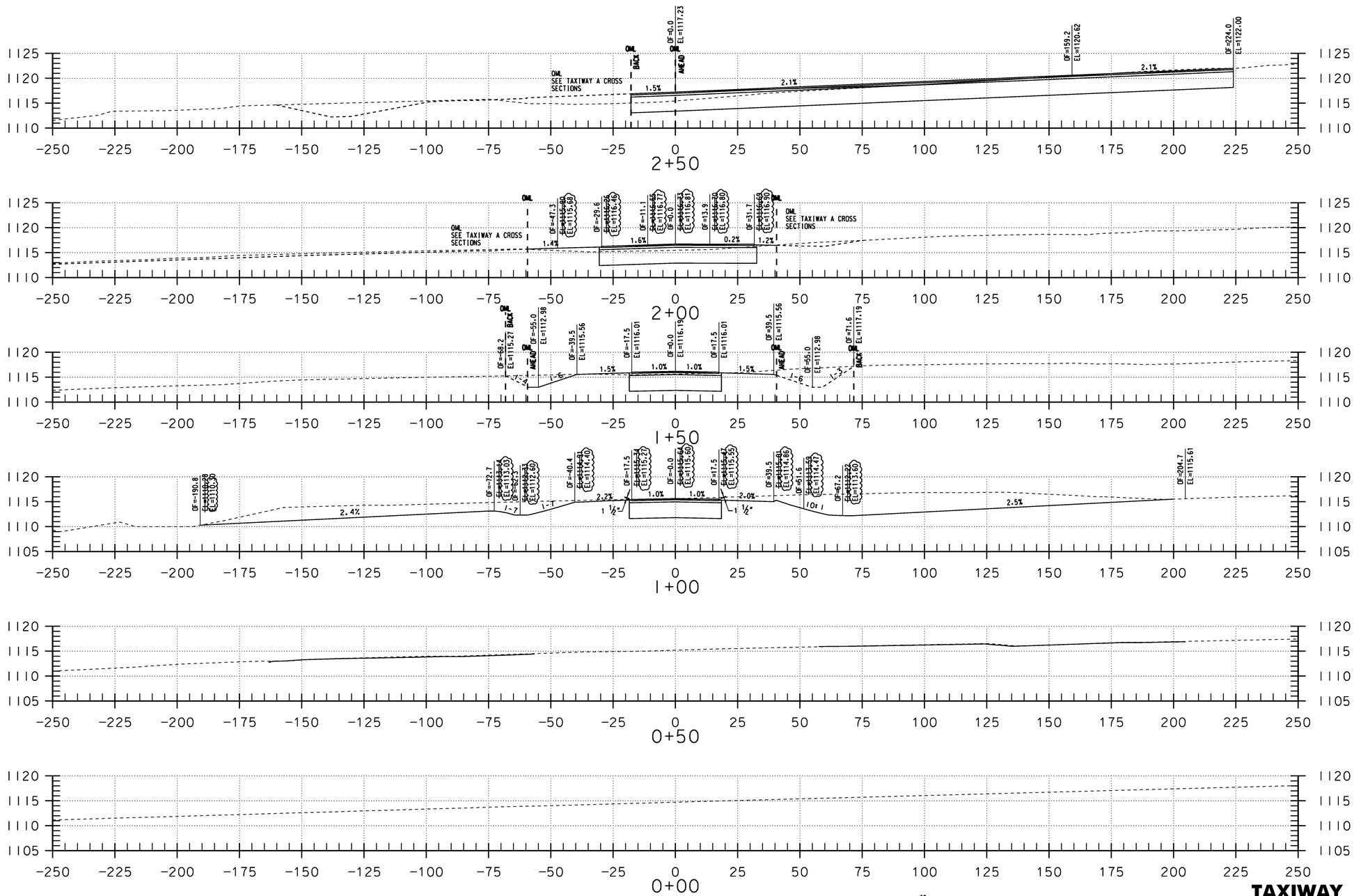
STA. 2+00 TO STA. 3+34

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_B.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY B CROSS SECTION SHT2

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR



STA. 0+00 TO STA. 2+50

HORIZONTAL
0 10 20 30
SCALE IN FEET
VERTICAL
0 5 10 15

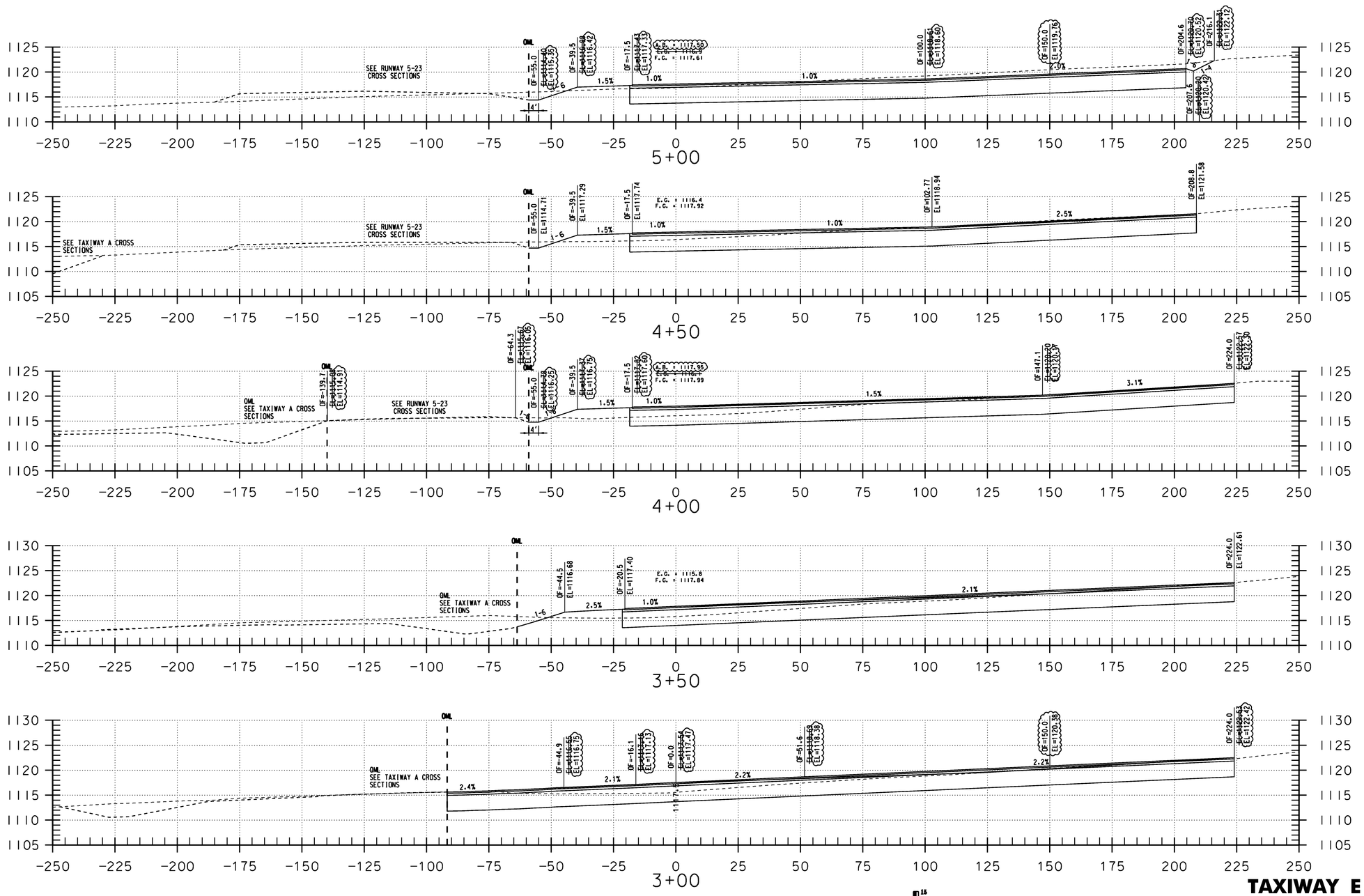
TAXIWAY E CROSS SECTION SHT 1

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_E.dgn
PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY
DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD
CHECKED BY: J. DOWNAR
TAXIWAY E CROSS SECTION SHT 1
SHEET 132 OF 173



TAXIWAY E CROSS SECTION SHT 2

STA. 3+00 TO STA. 5+00

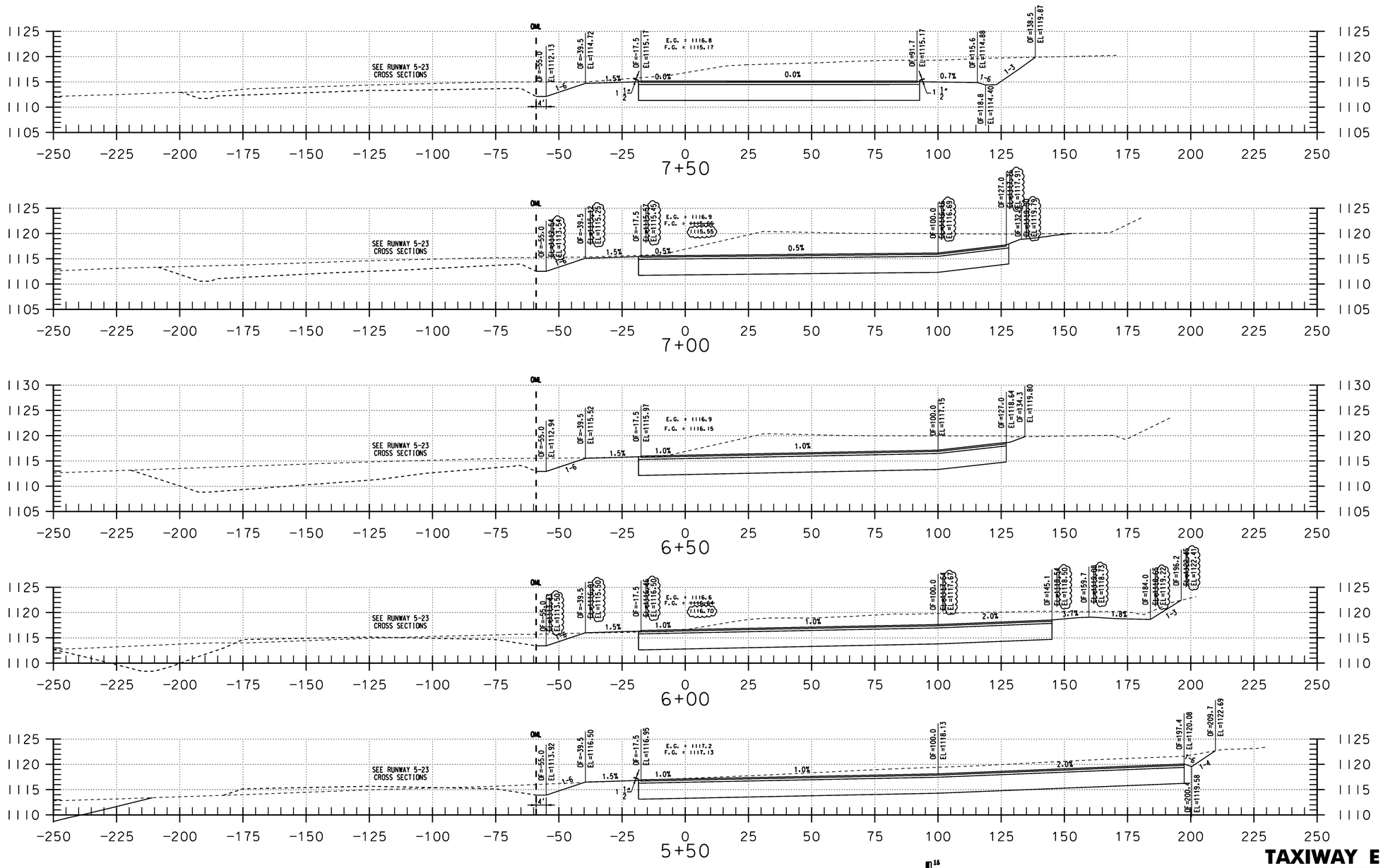
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PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_E.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY E CROSS SECTION SHT 2

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 133 OF 173



TAXIWAY E CROSS SECTION SHT 3

STA.5+50 TO STA.7+50

HORIZONTAL
0 10 20 30
SCALE IN FEET
VERTICAL
0 5 10 15

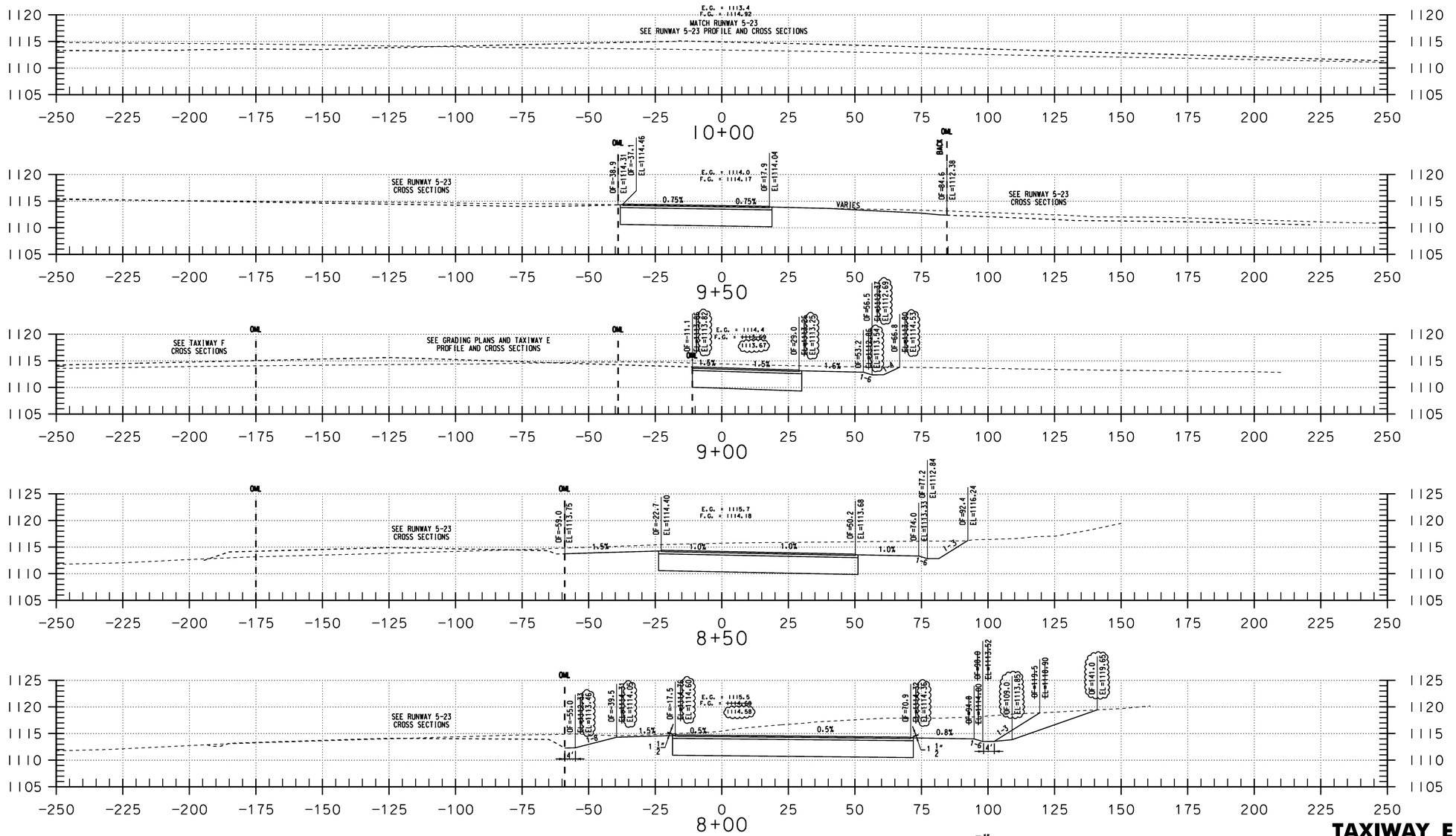
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150 Dow Street
Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_E.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY E CROSS SECTION SHT 3

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 134 OF 173



TAXIWAY E CROSS SECTION SHT 4

STA. 8+00 TO STA. 10+00

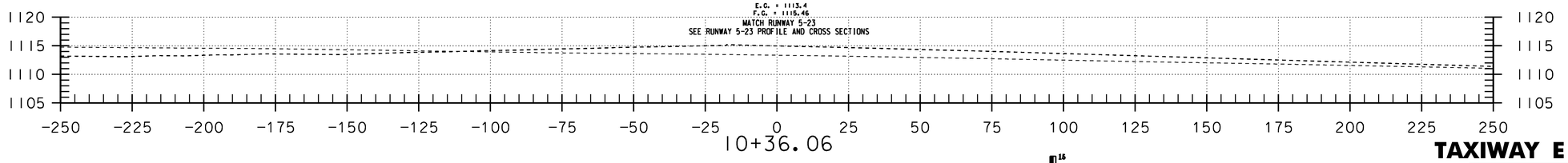
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_E.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY E CROSS SECTION SHT 4

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 135 OF 173



TAXIWAY E CROSS SECTION SHT 5

STA. 10+36.06 TO STA. 10+36.06

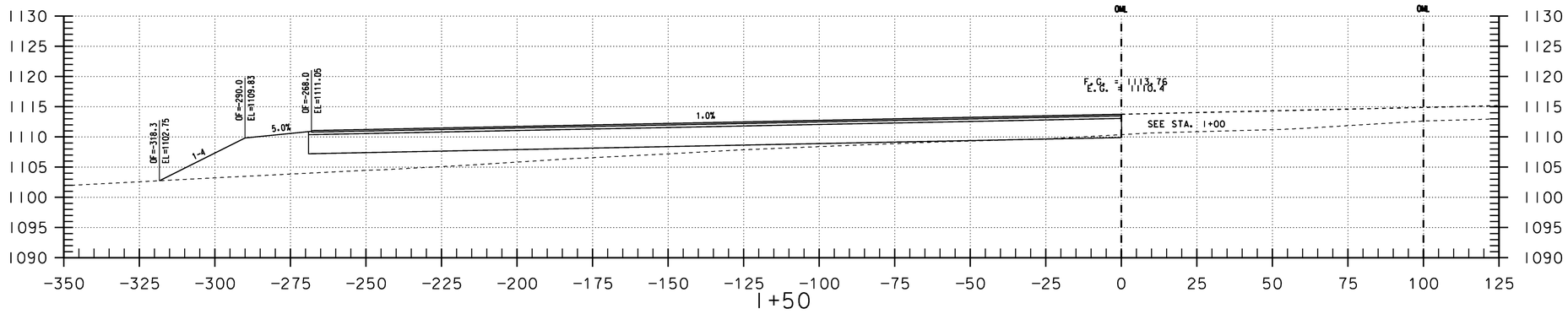
HORIZONTAL 0 10 20 30
VERTICAL 0 5 10 15
SCALE IN FEET

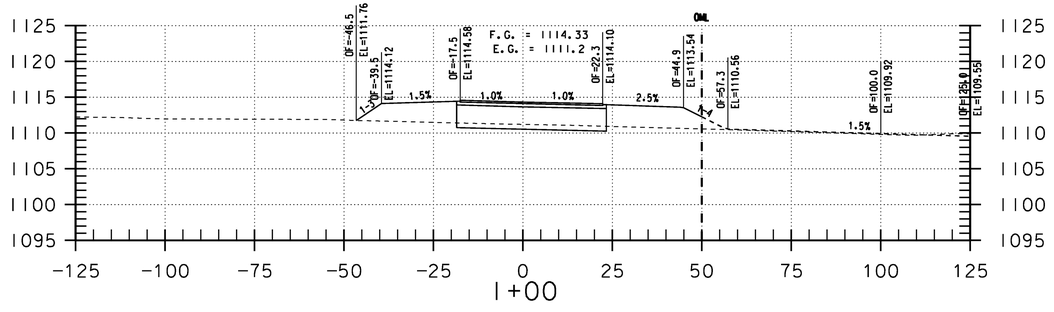
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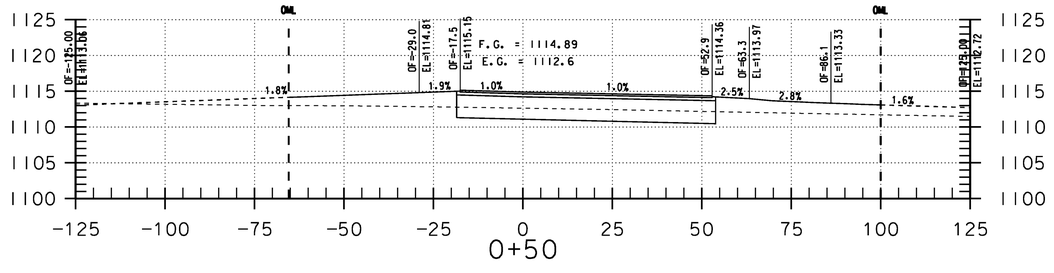
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

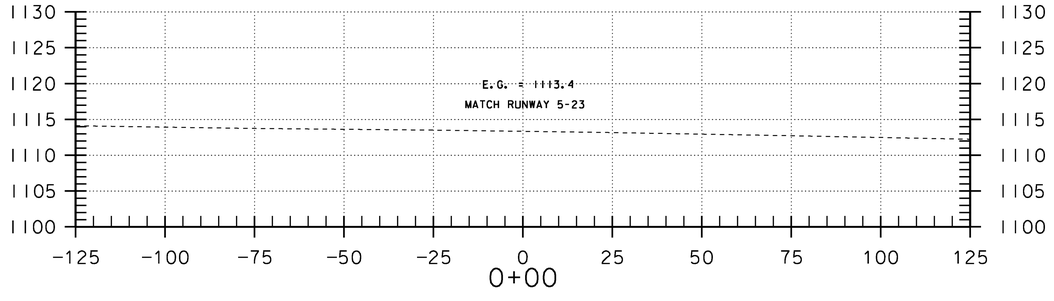
FILE NAME: 302803_sht_cxsec_E.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY E CROSS SECTION SHT 5

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 136 OF 173

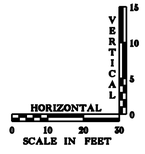








STA. 0+00 TO STA. 1+50



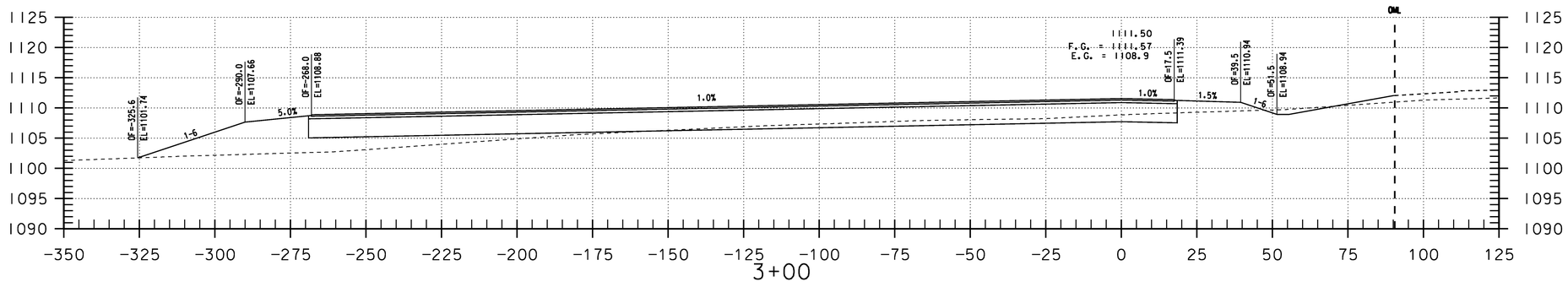
TAXIWAY F CROSS SECTION SHT 1

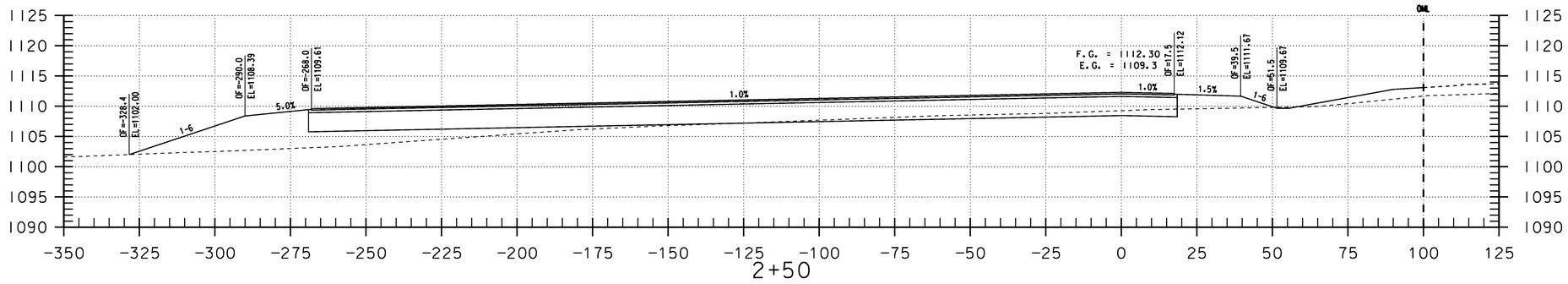
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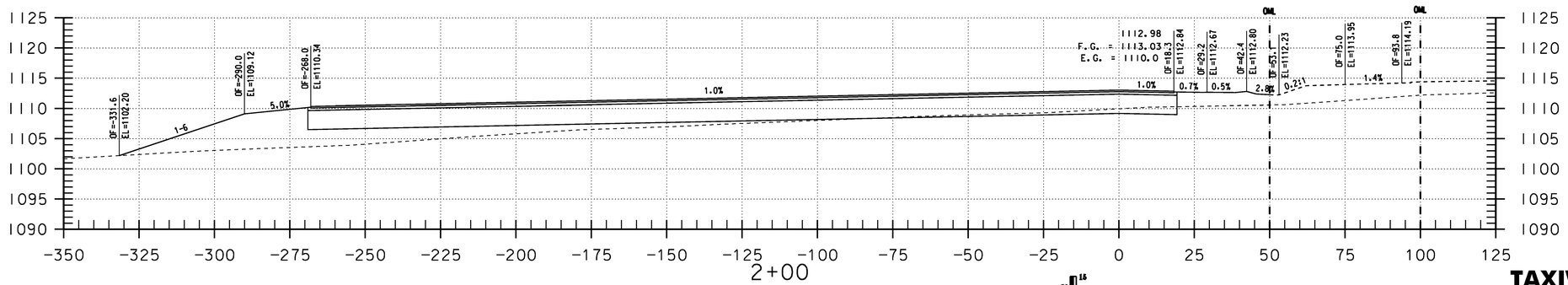
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_F.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY F CROSS SECTION SHT 1

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

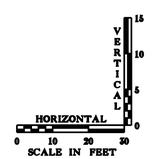






TAXIWAY F CROSS SECTION SHT 2

STA.2+00 TO STA.3+00

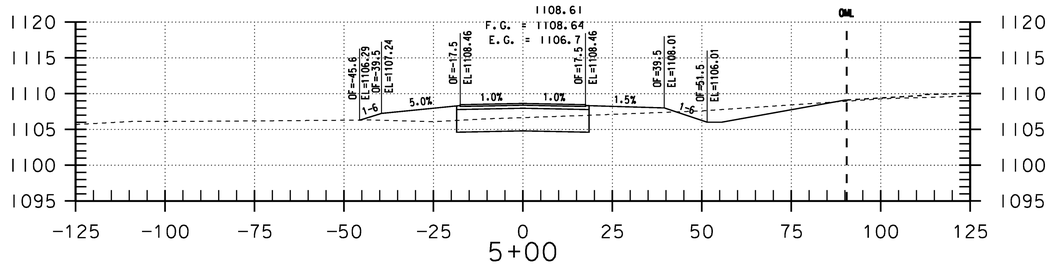


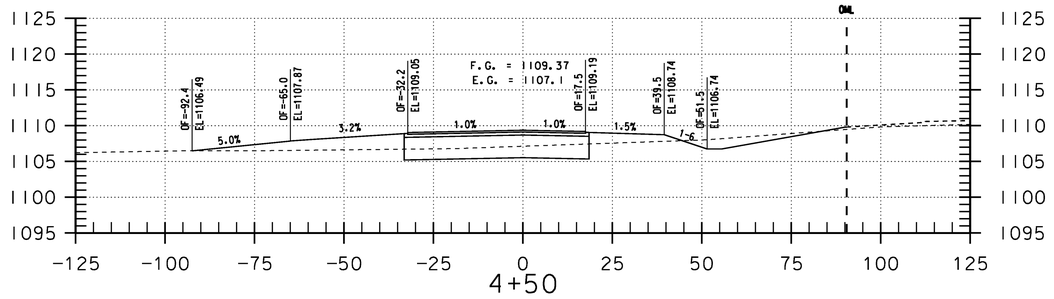
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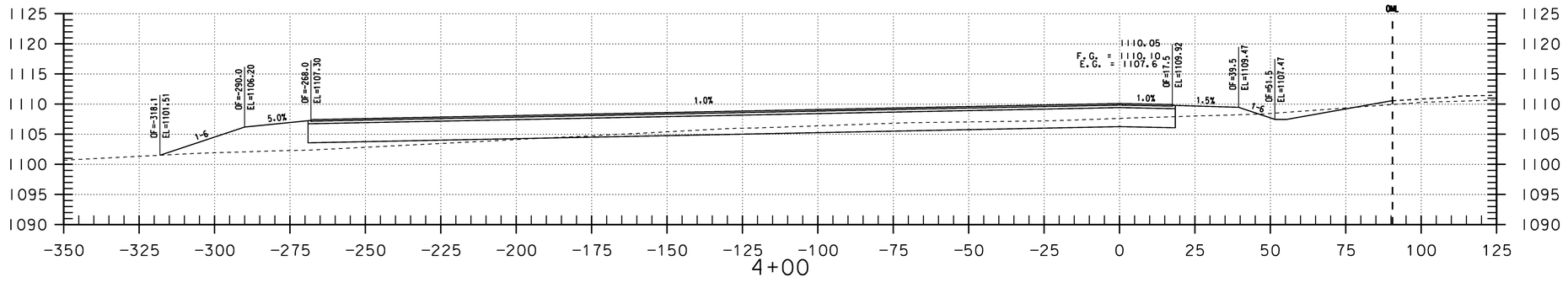
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

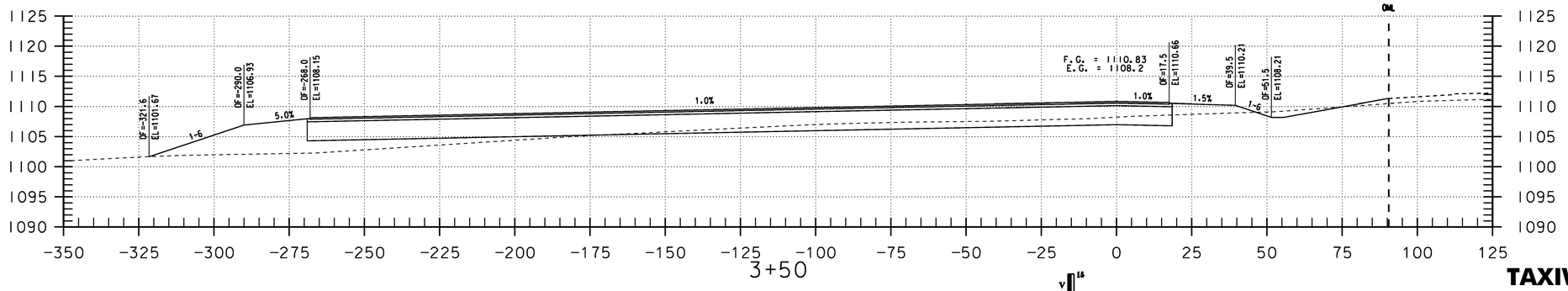
FILE NAME: 302803_sht_cxsec_F.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY F CROSS SECTION SHT 2

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 138 OF 173



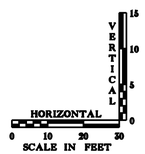






TAXIWAY F CROSS SECTION SHT 3

STA. 3+50 TO STA. 5+00

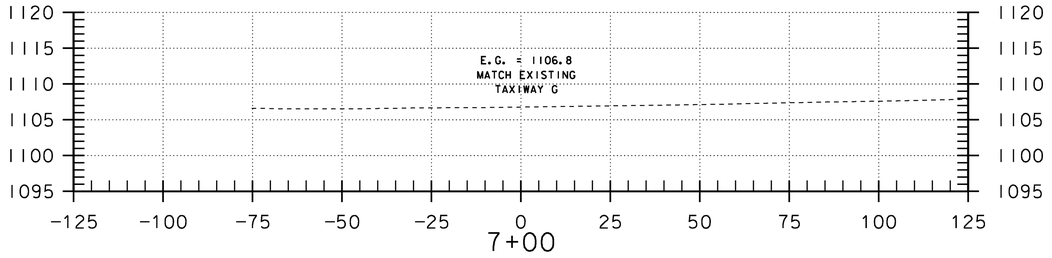


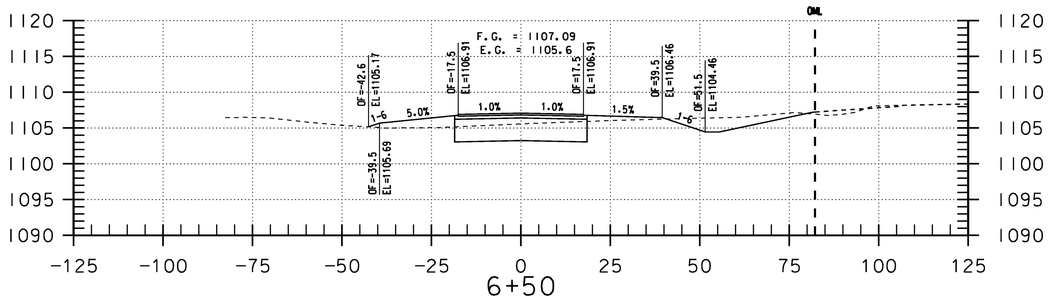
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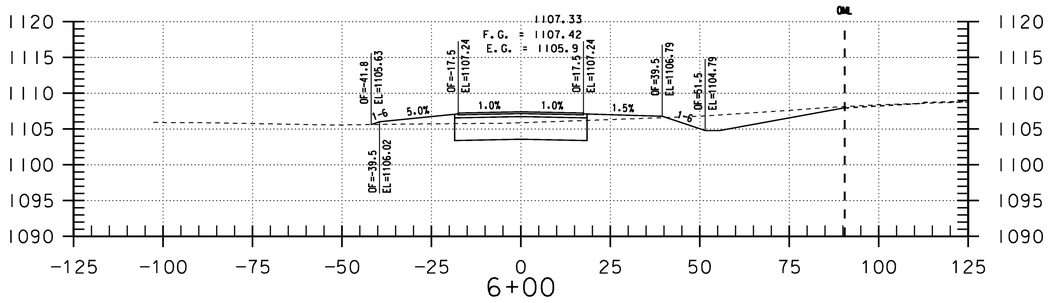
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

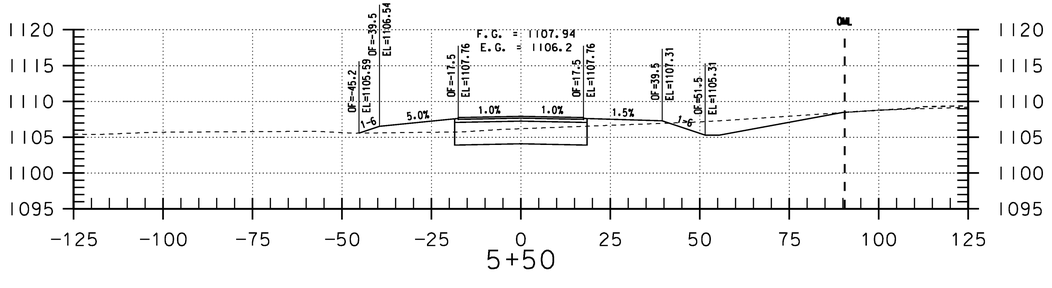
FILE NAME: 302803_sht_cxsec_F.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY F CROSS SECTION SHT 3

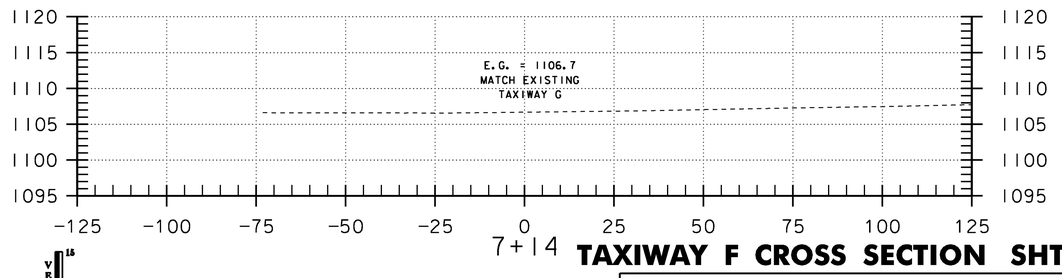
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 139 OF 173





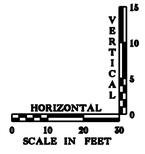






TAXIWAY F CROSS SECTION SHT 4

STA.5+50 TO STA.7+14

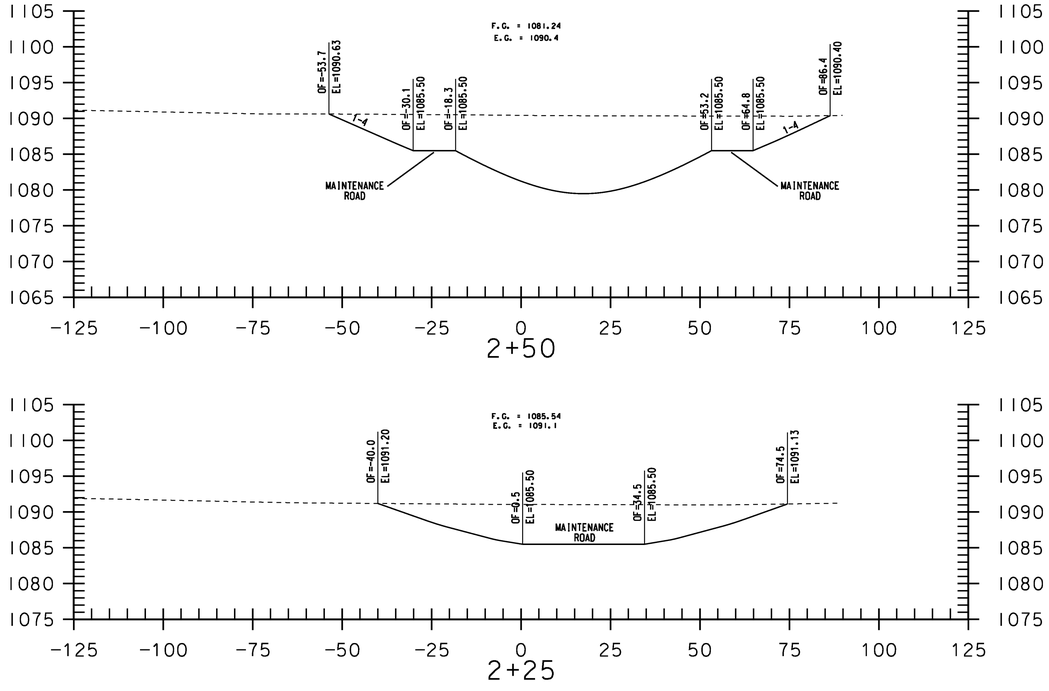


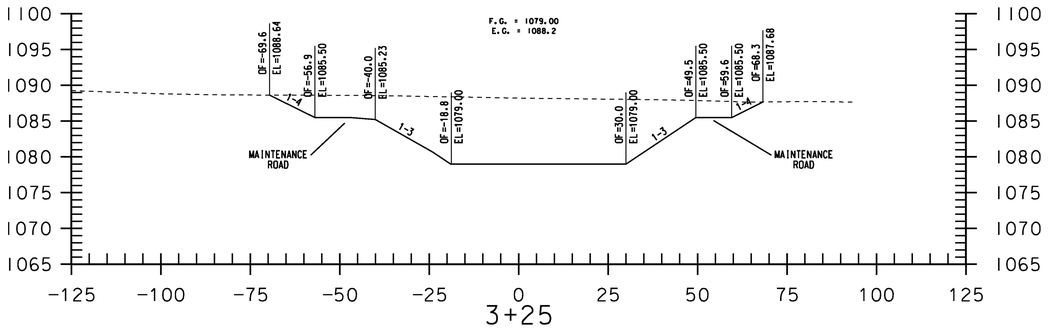
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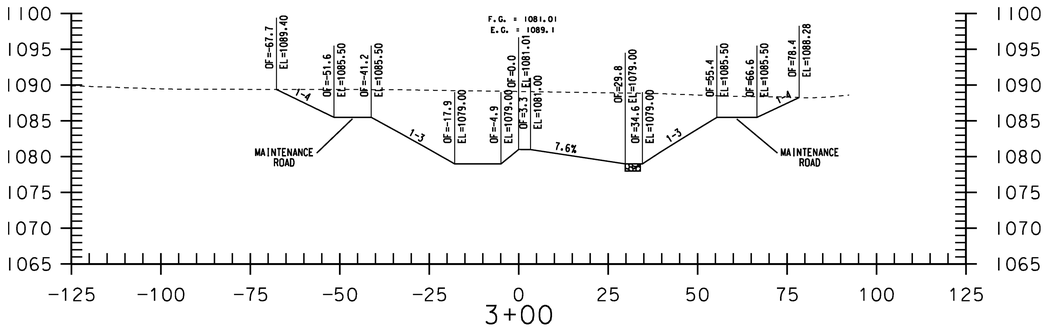
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

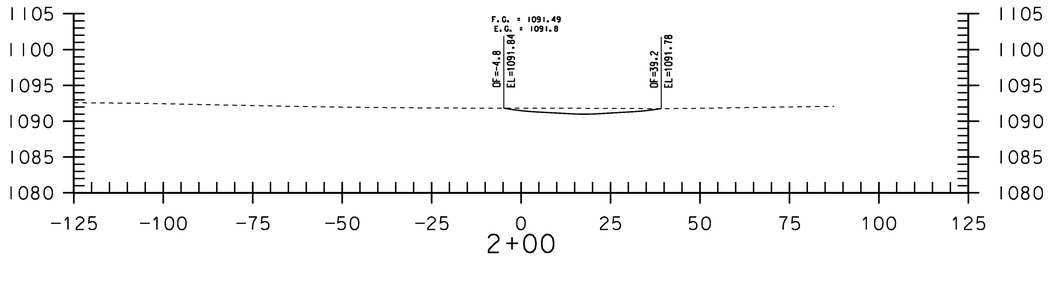
FILE NAME: 302803_sht_cxsec_F.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
TAXIWAY F CROSS SECTION SHT 4

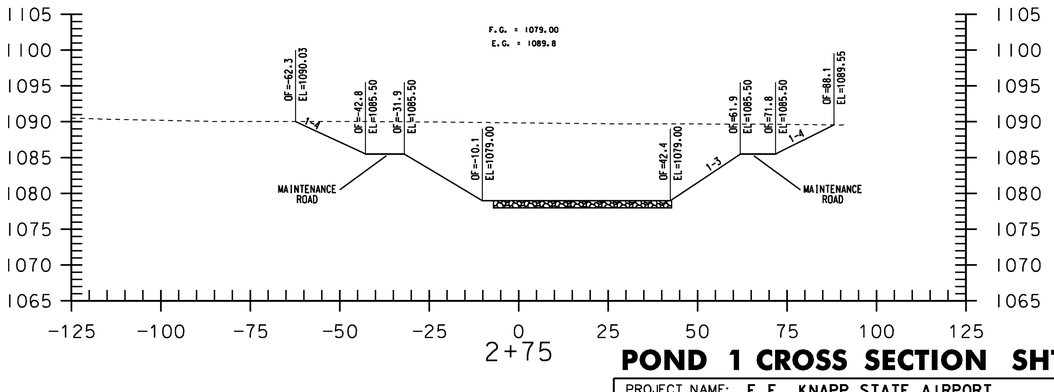
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 140 OF 173

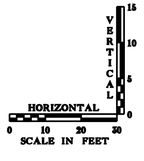












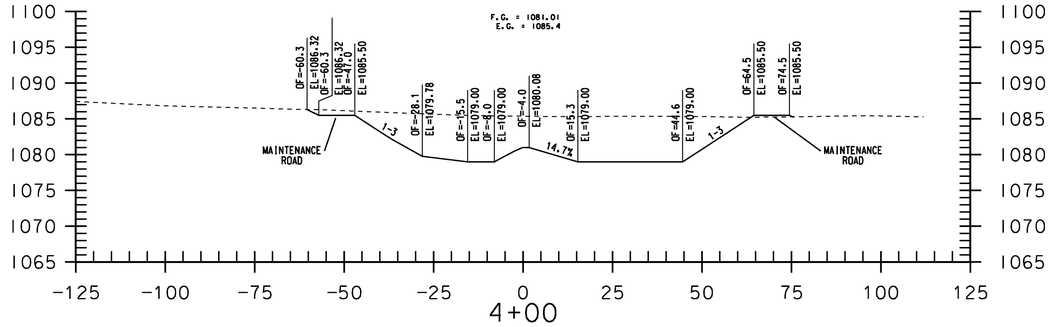
STA.2+00 TO STA.3+25

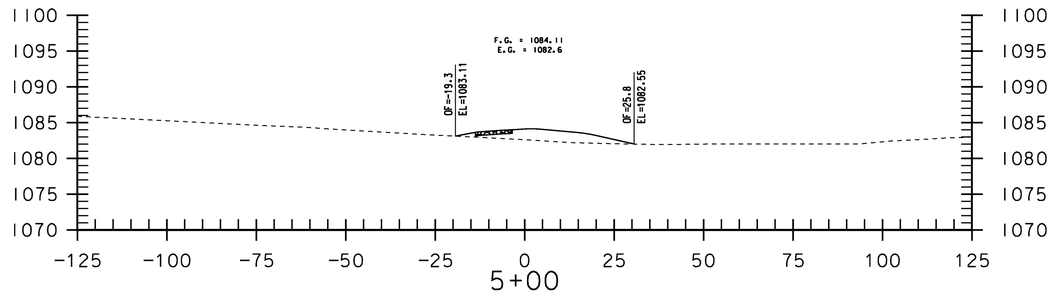
POND 1 CROSS SECTION SHT 1

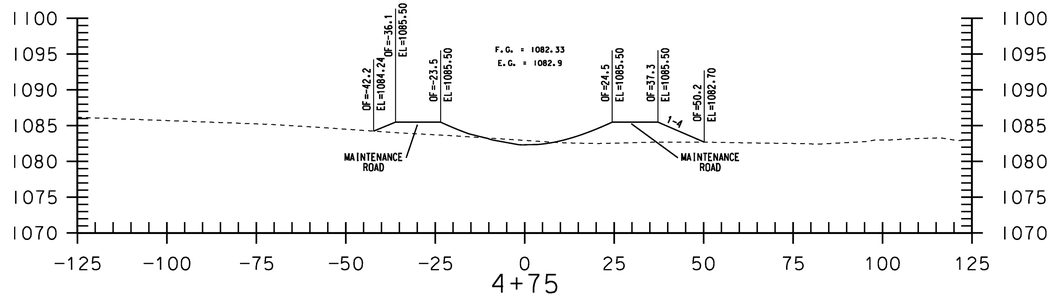
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

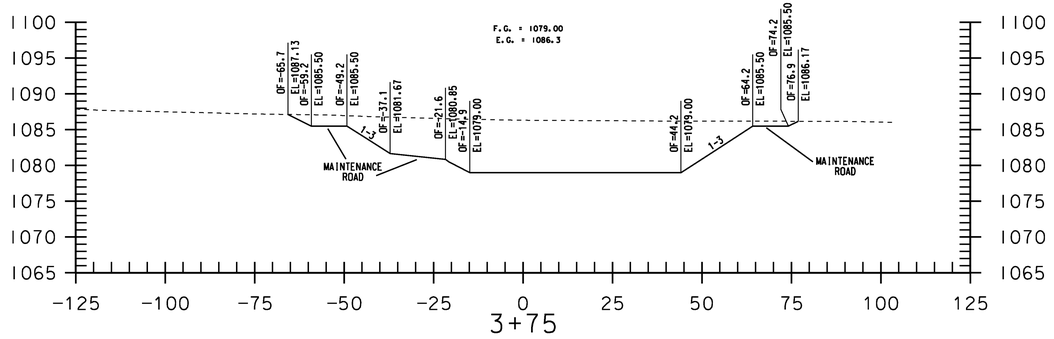
FILE NAME: z05h378sht_xsl_Pond1.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
POND 1 CROSS SECTION SHT 1 SHEET 141 OF 173

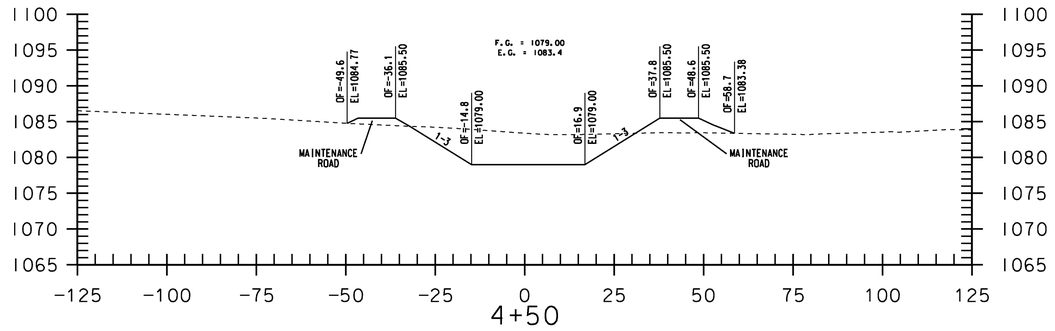
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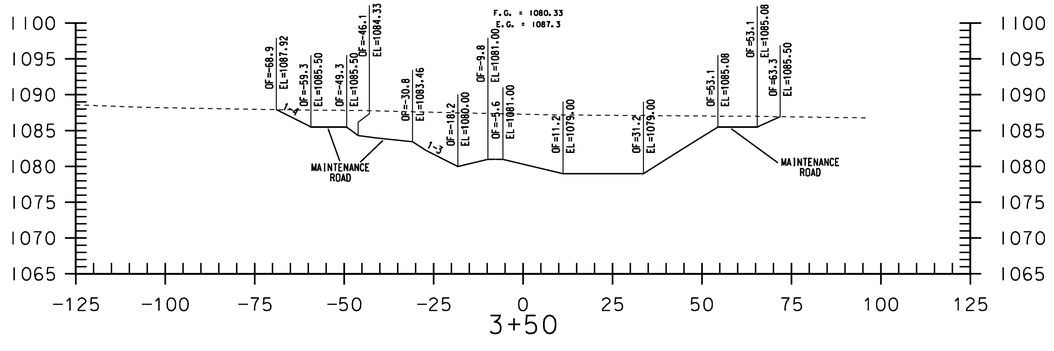


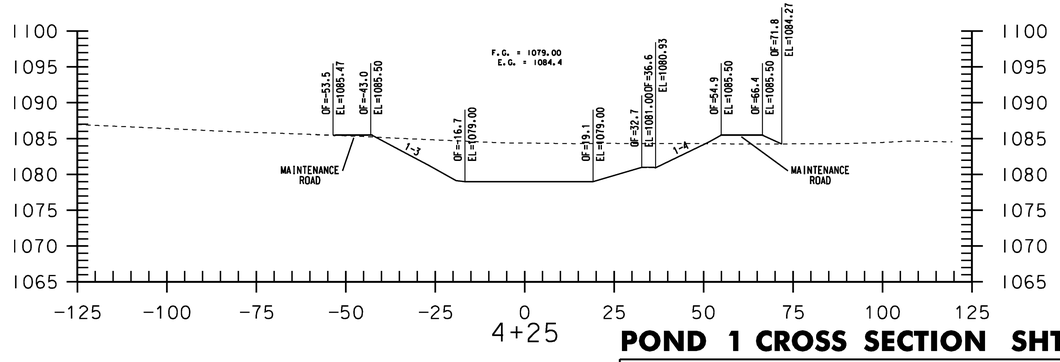


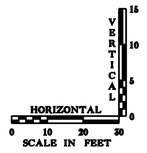












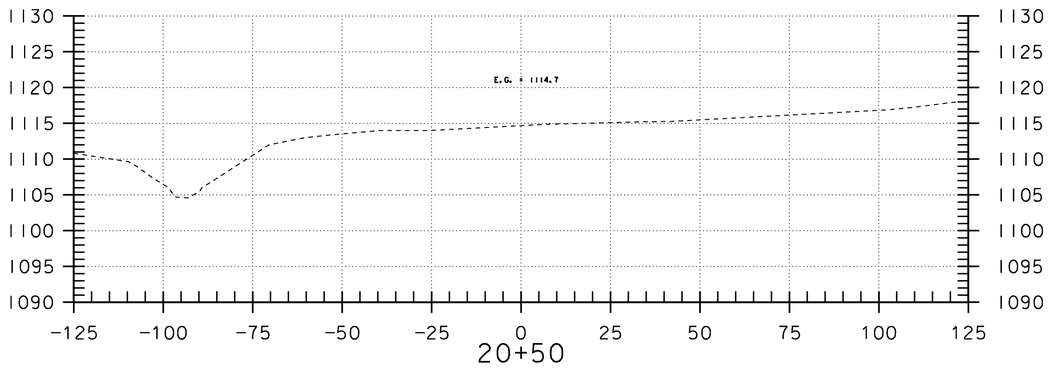
STA.3+50 TO STA.5+00

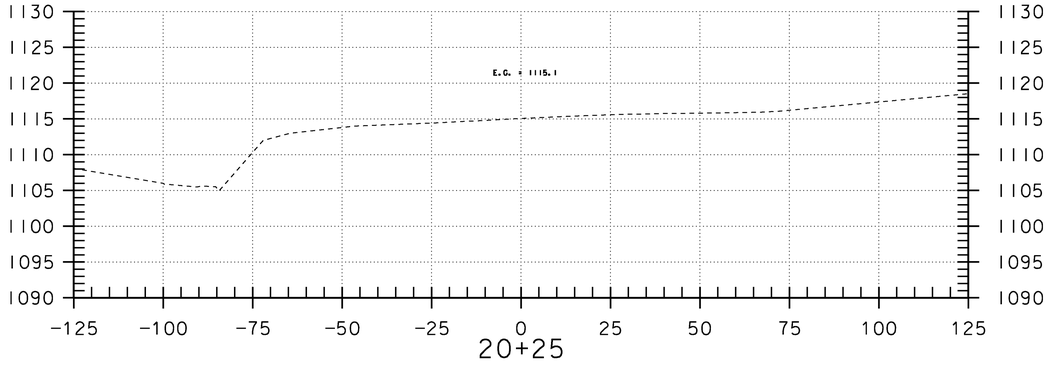
POND 1 CROSS SECTION SHT 2

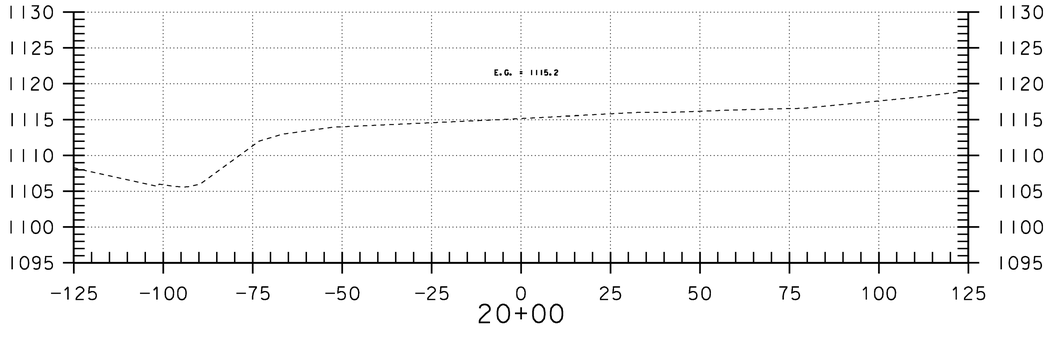
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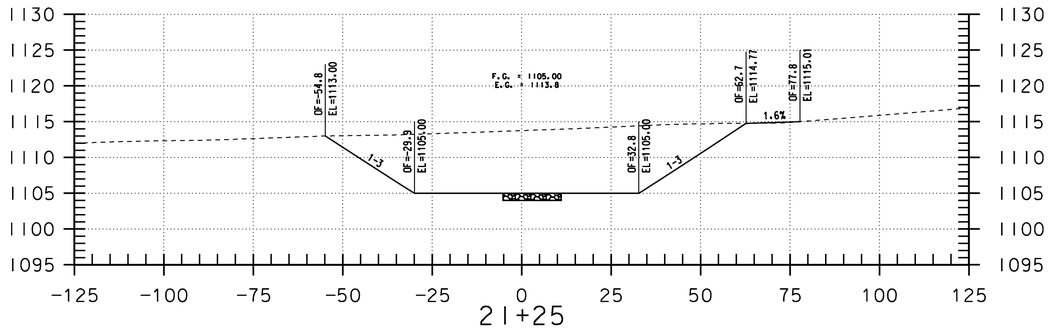
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

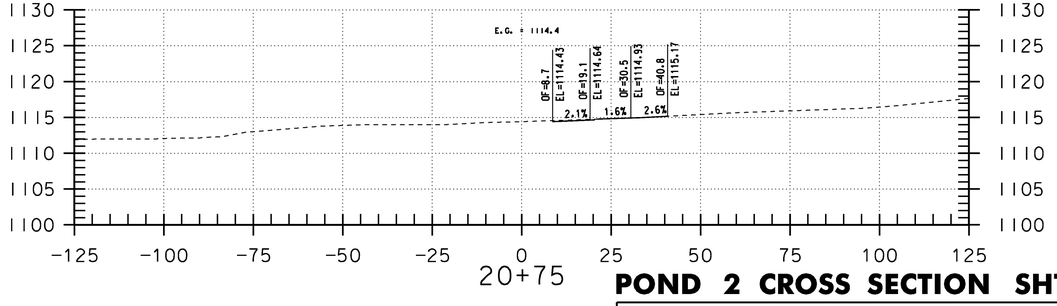
FILE NAME: z05h378sht_xsl_Pond1.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
POND 1 CROSS SECTION SHT 2 SHEET 142 OF 173

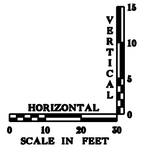












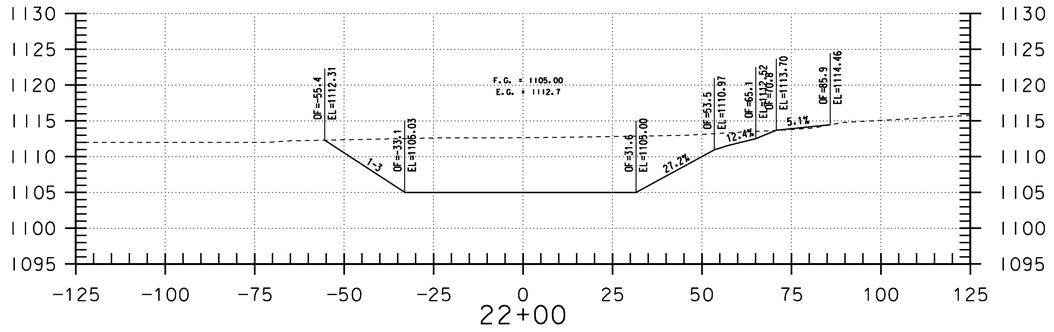
STA.20+00 TO STA.21+25

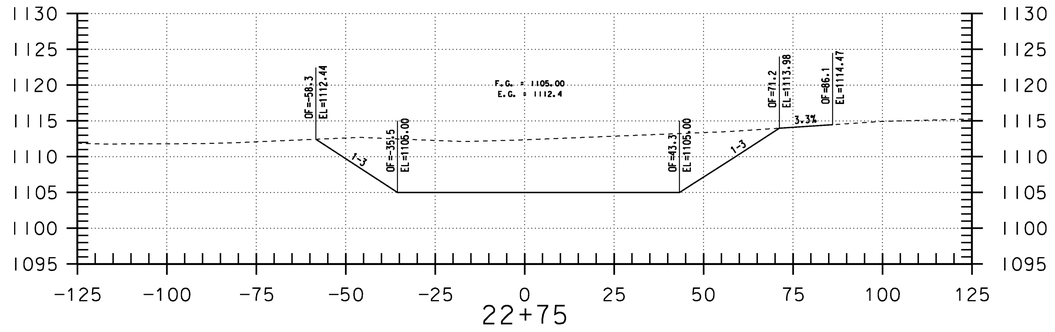
POND 2 CROSS SECTION SHT 1

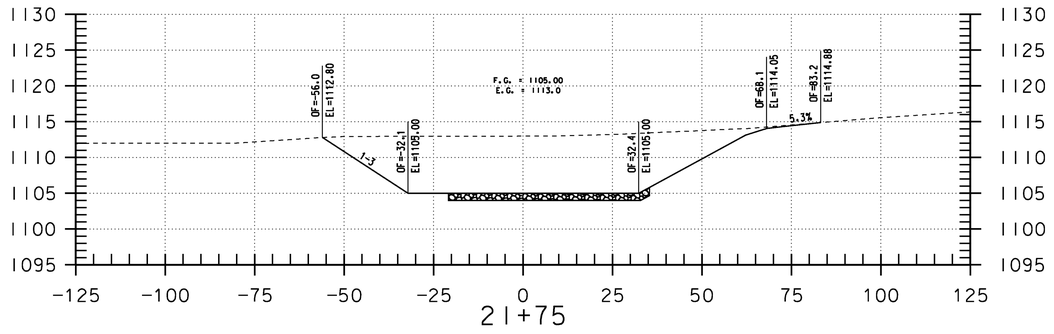
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

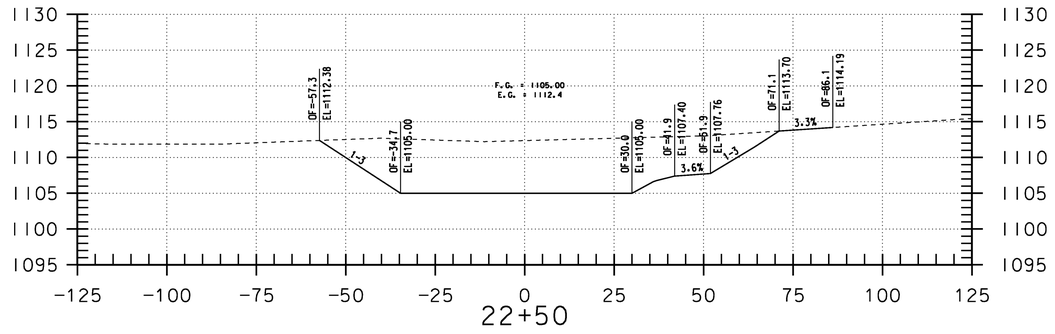
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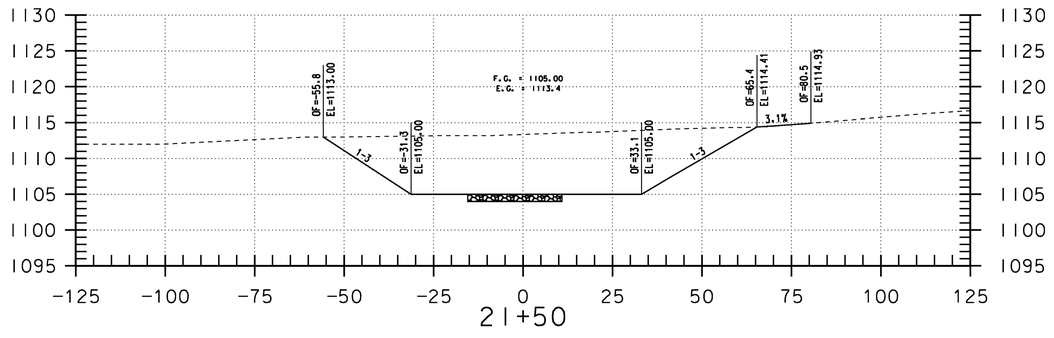
FILE NAME: z05h378sht_xs2_Pond2.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
POND 2 CROSS SECTION SHT 1 SHEET 143 OF 173

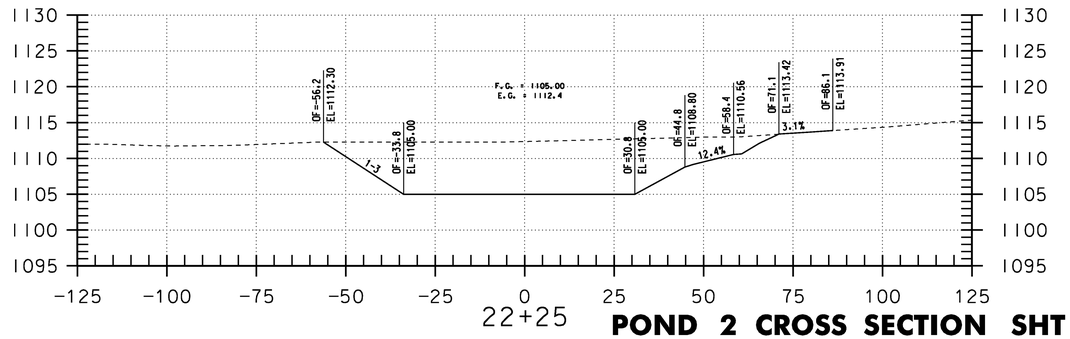


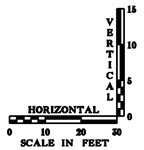












STA.21+50 TO STA.22+75

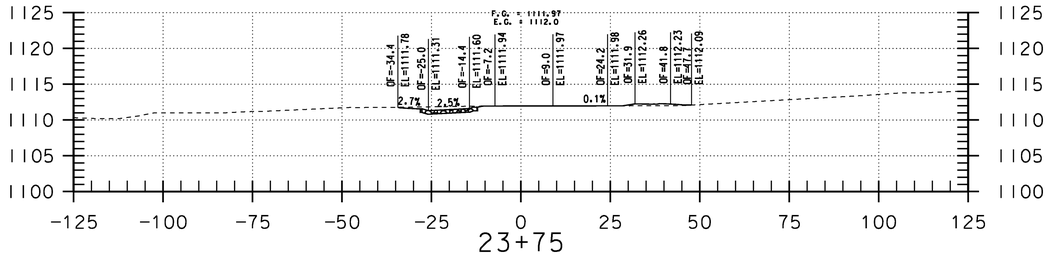
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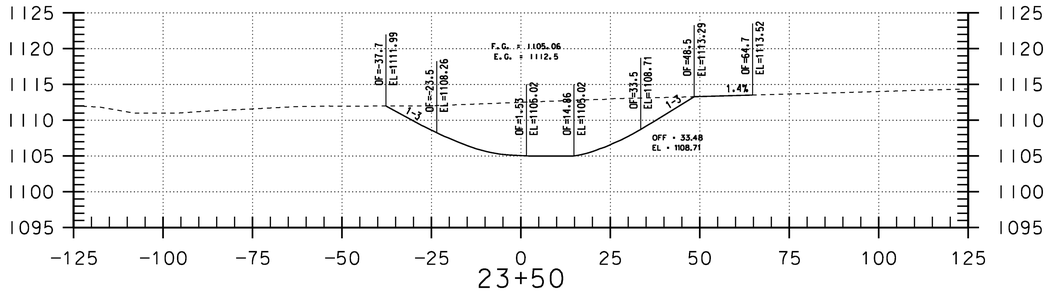
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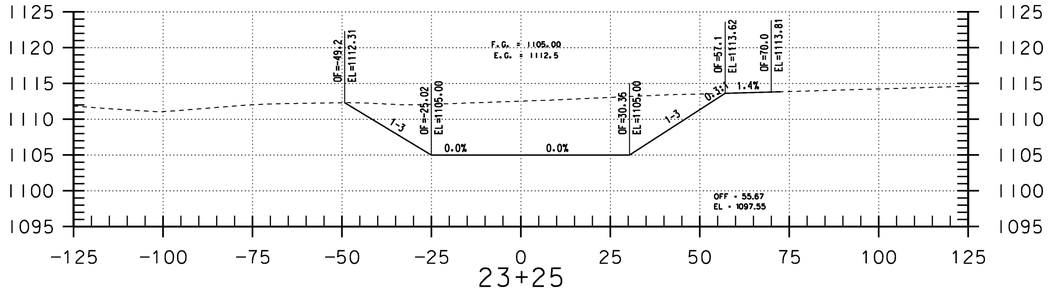
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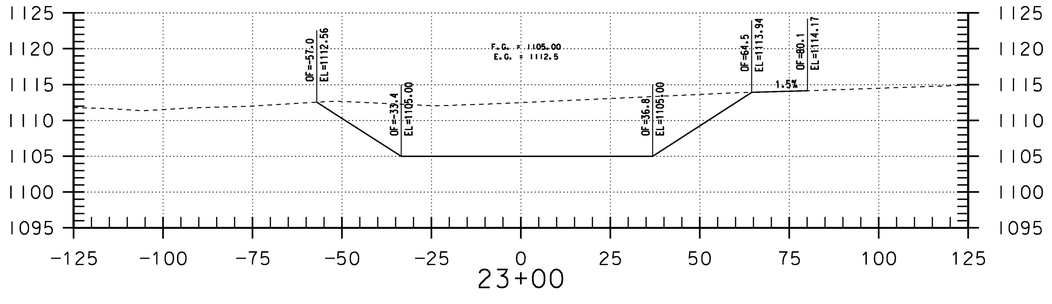
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

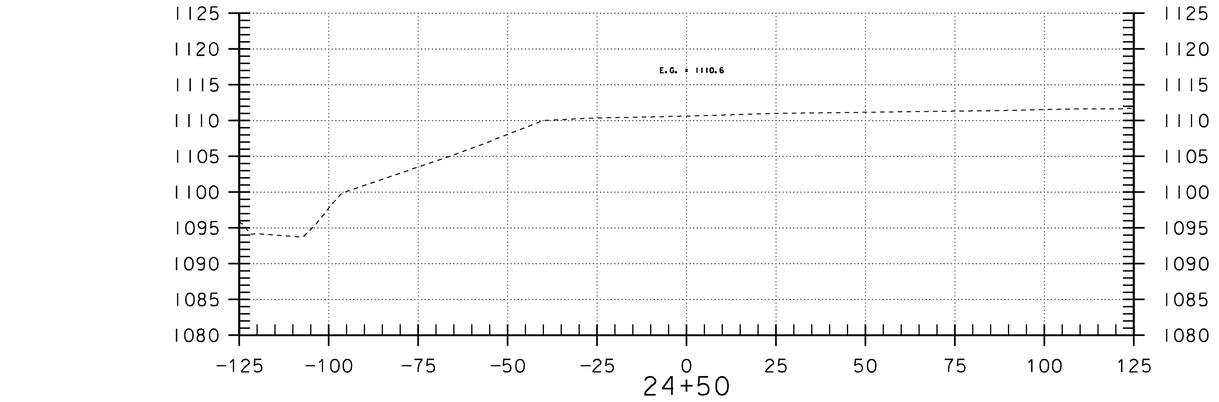
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PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
POND 2 CROSS SECTION SHT 2 SHEET 144 OF 173

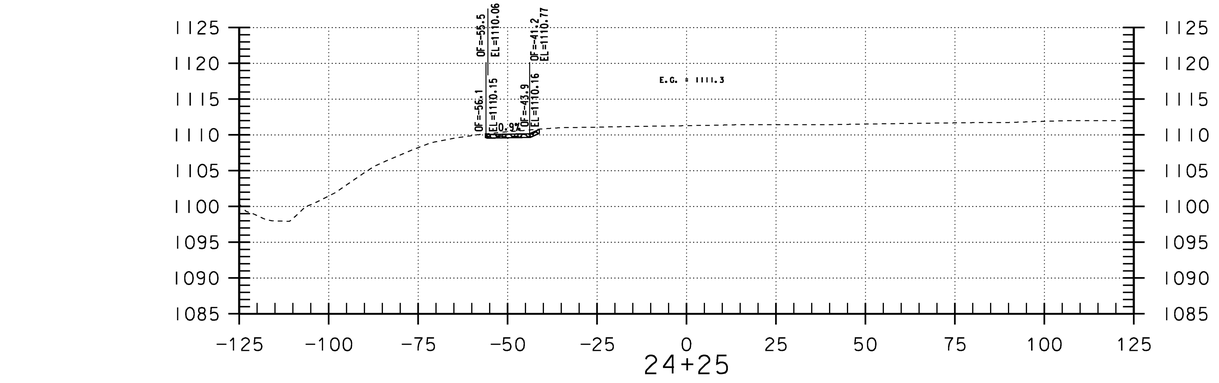


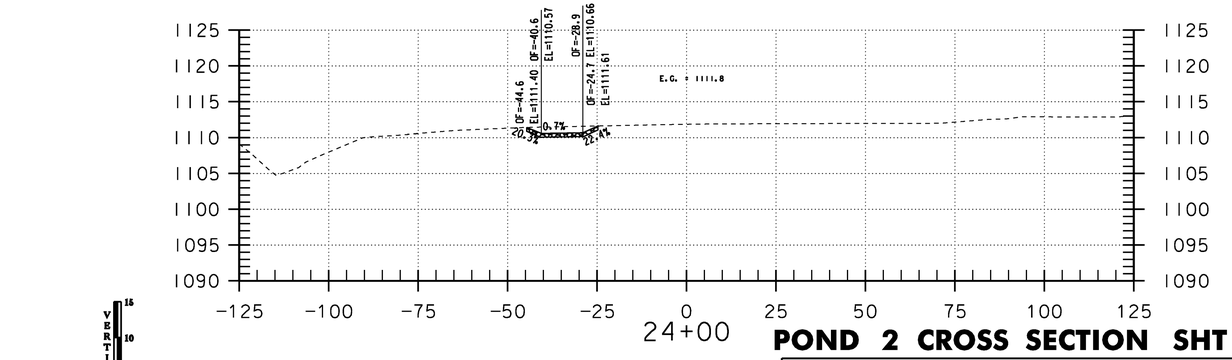


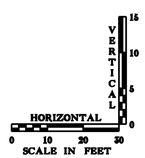












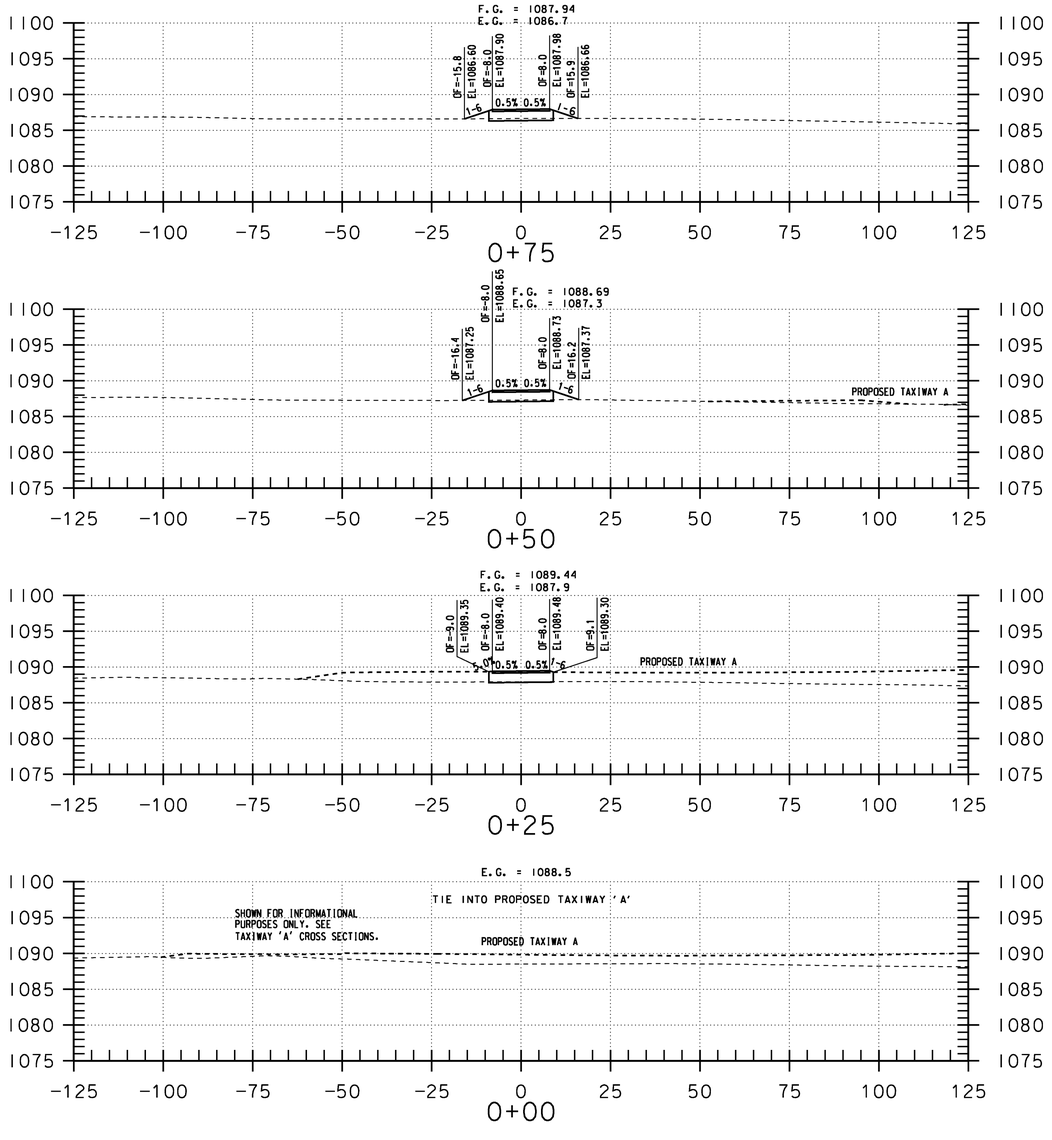
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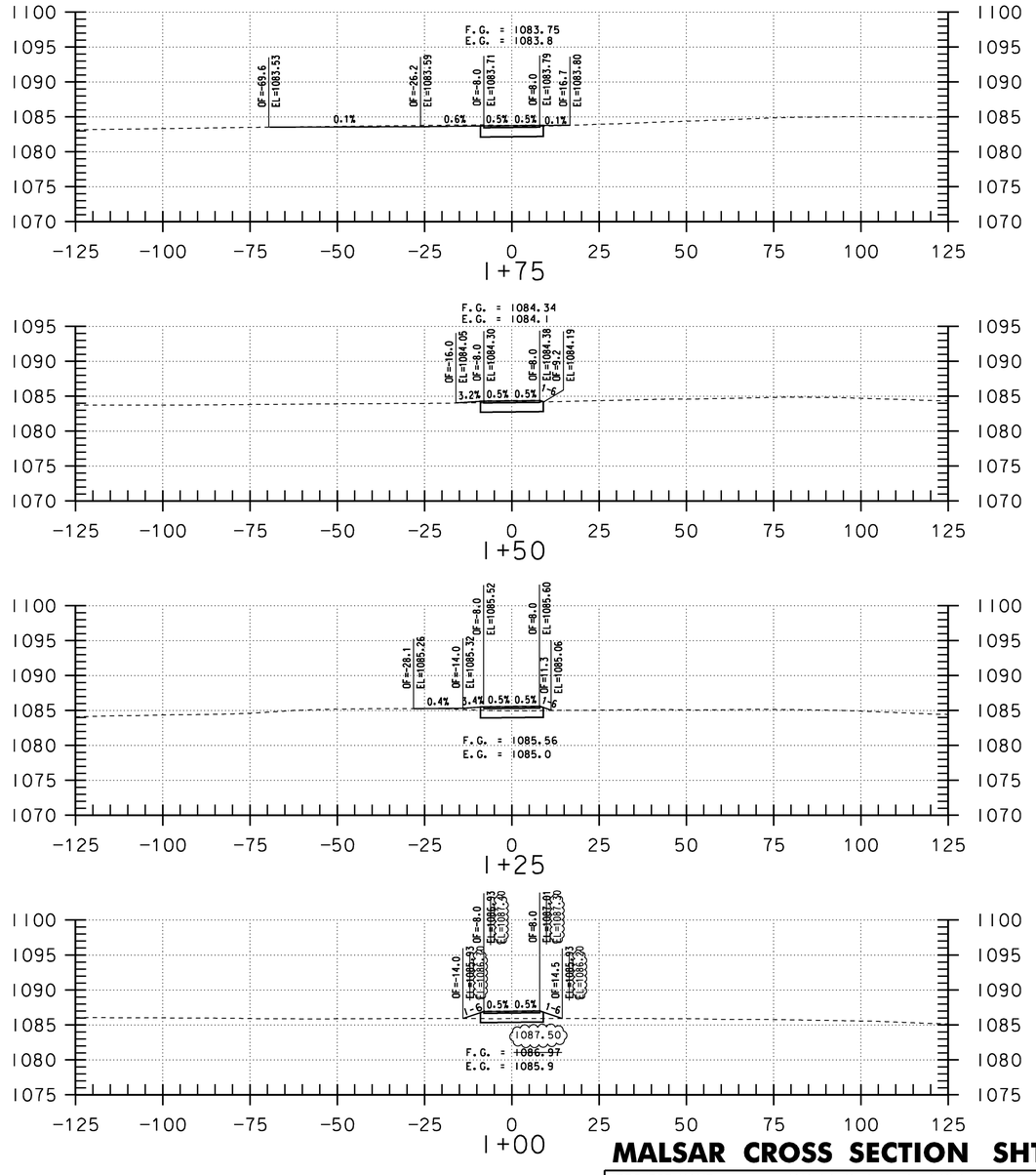
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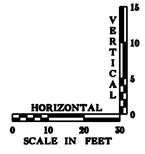
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

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PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
POND 2 CROSS SECTION SHT 3 SHEET 145 OF 173







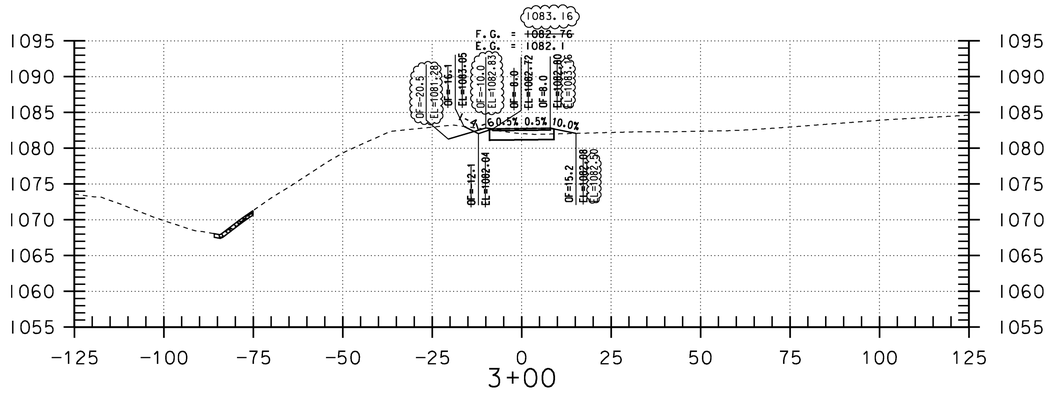
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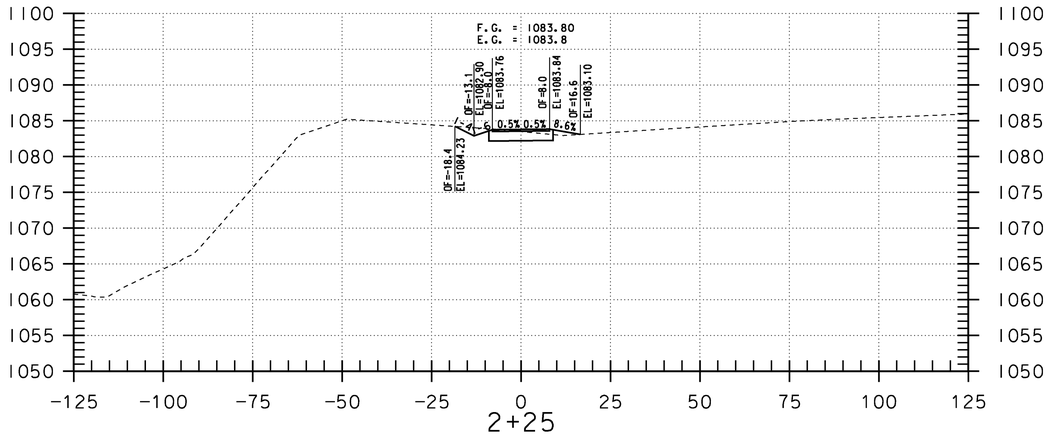
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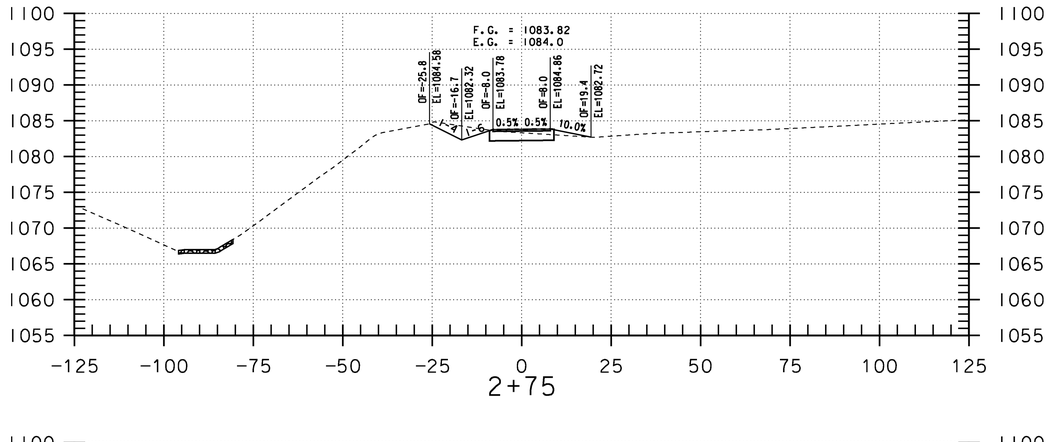
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

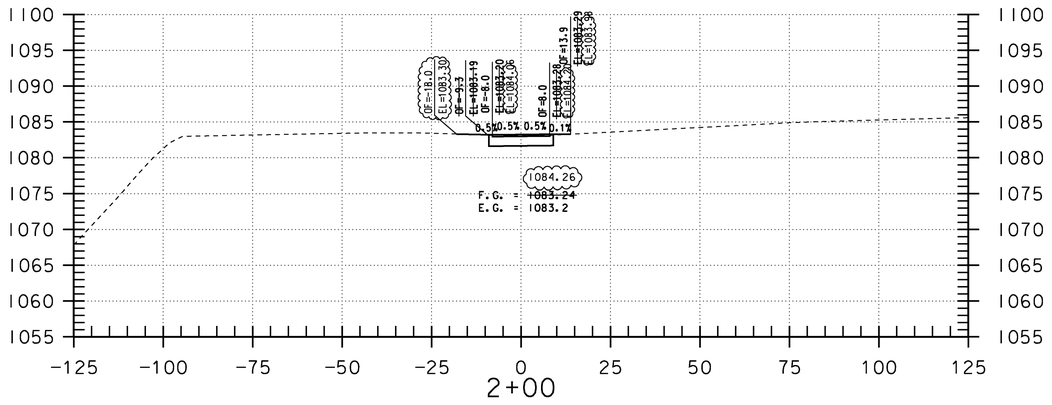
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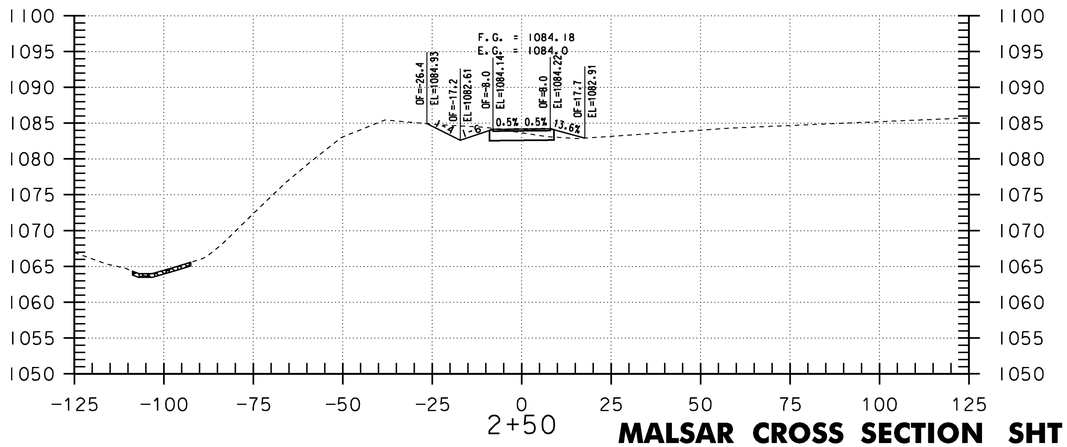
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PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
MALSAR CROSS SECTION SHT 1 SHEET 146 OF 173

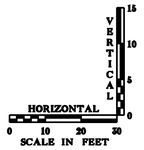












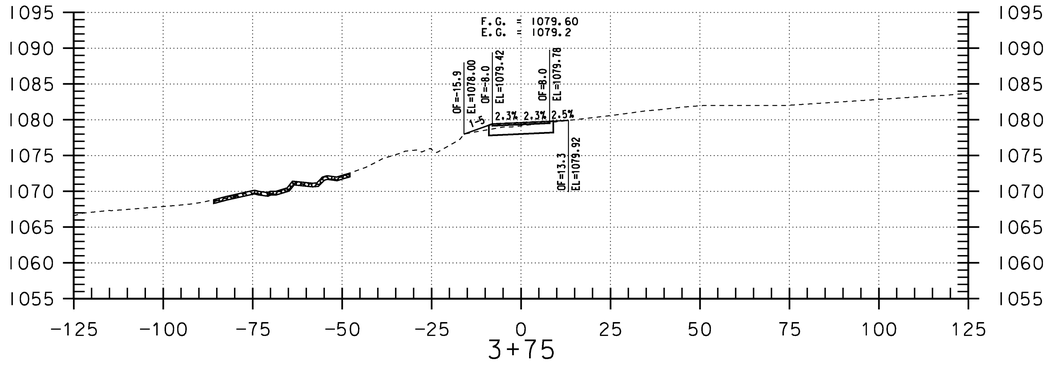
STA. 2+00 TO STA. 3+00

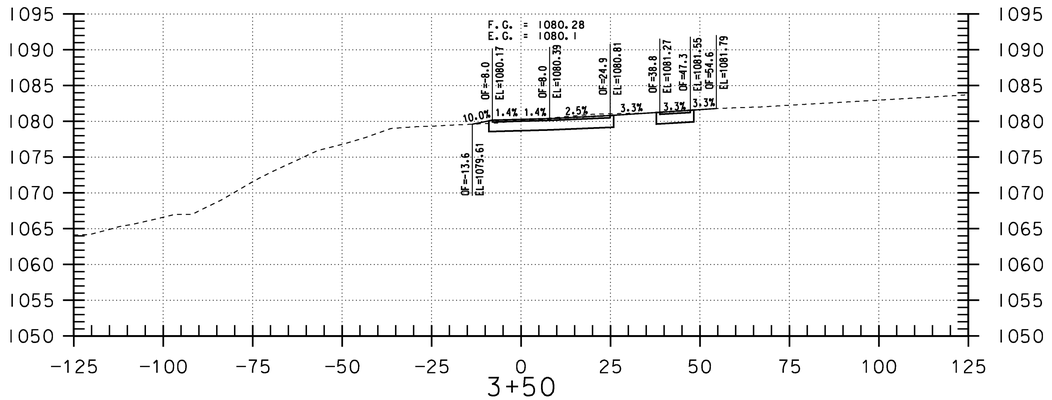
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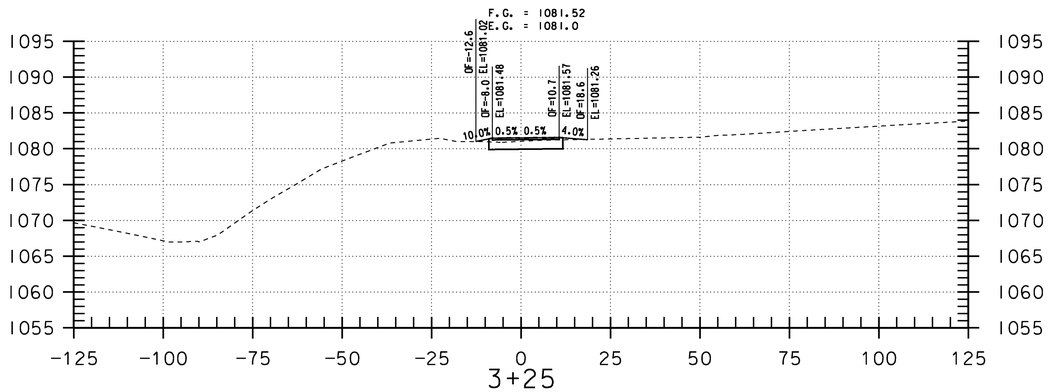
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

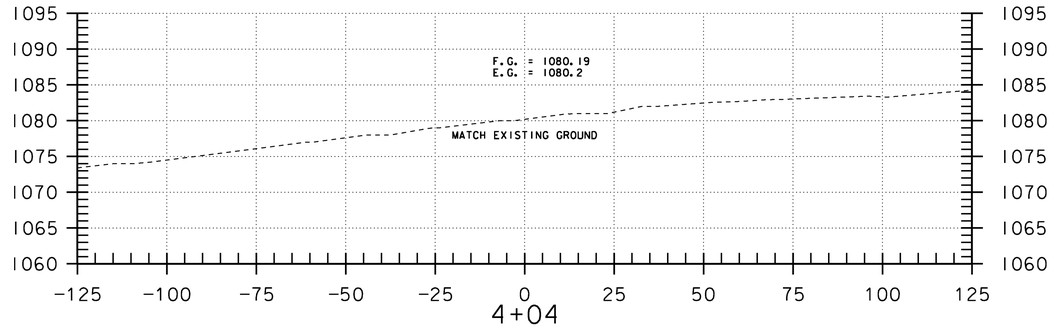
FILE NAME: z05h378sht_xs3_MALSAR.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
MALSAR CROSS SECTION SHT 2 SHEET 147 OF 173

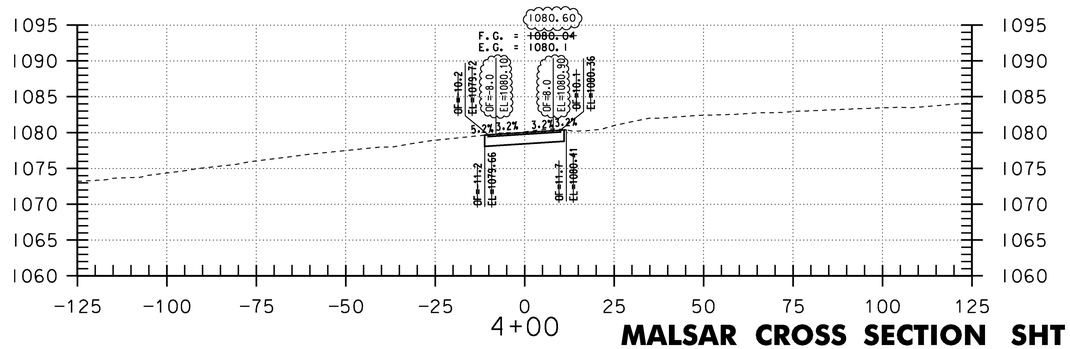
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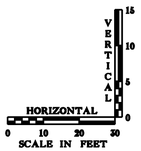












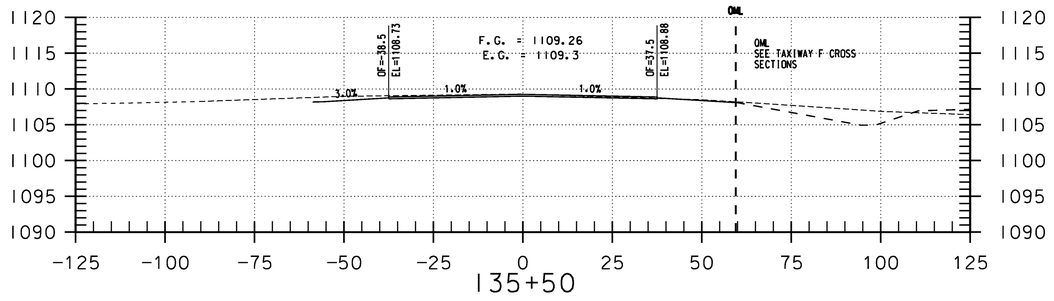
STA. 3+25 TO STA. 4+04

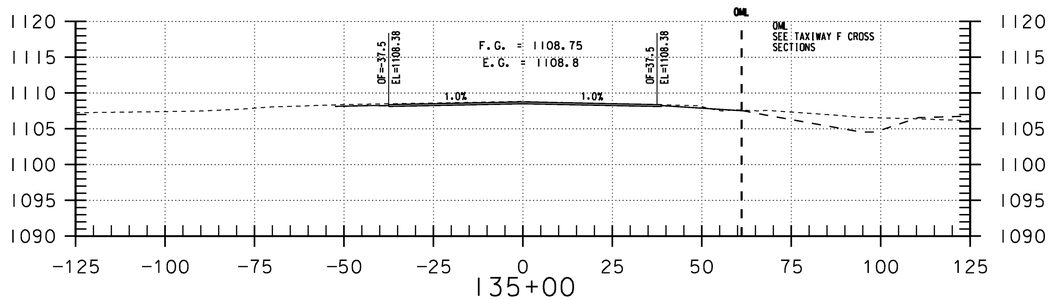
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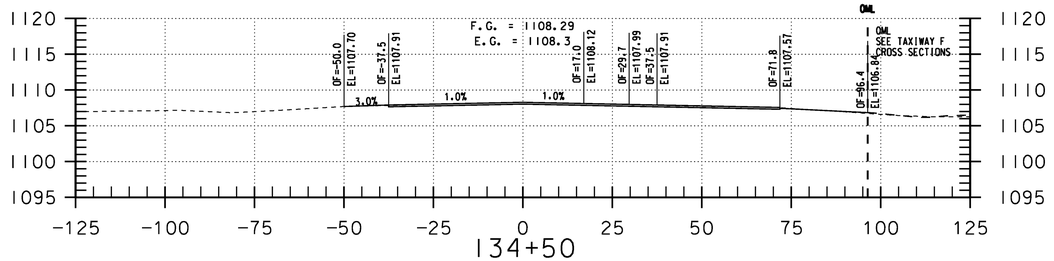
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

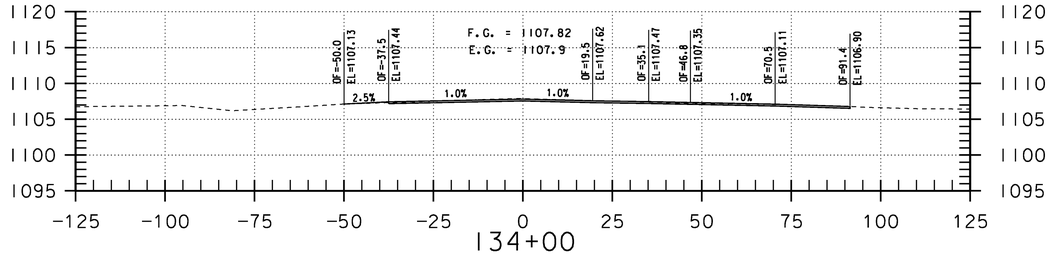
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PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
MALSAR CROSS SECTION SHT 3 SHEET 148 OF 173

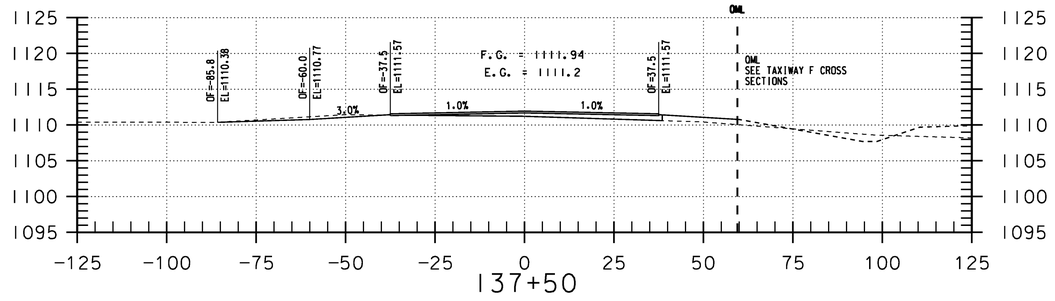
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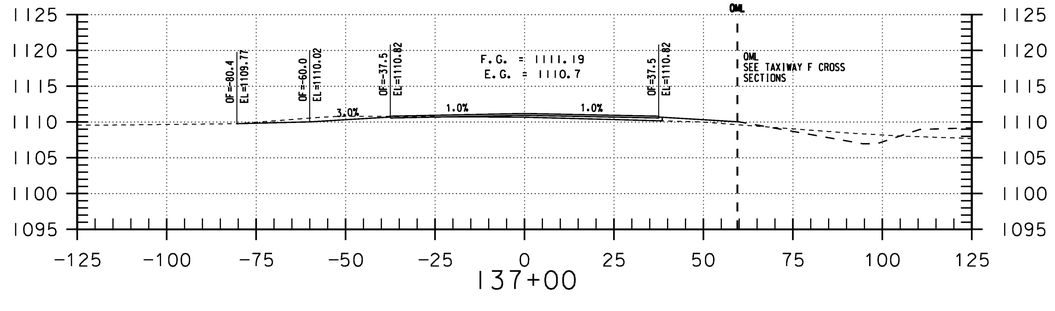


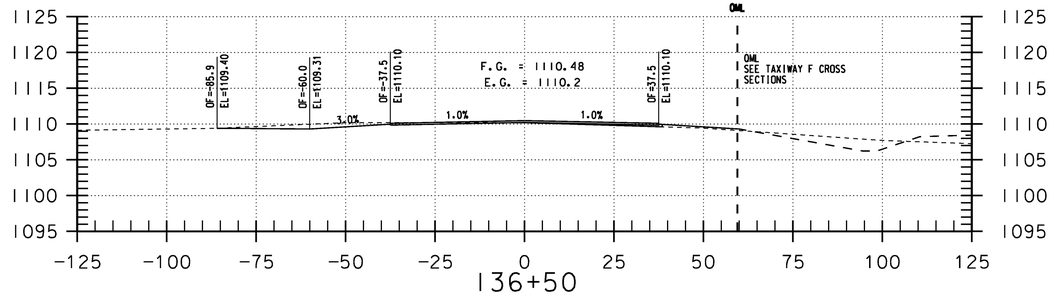


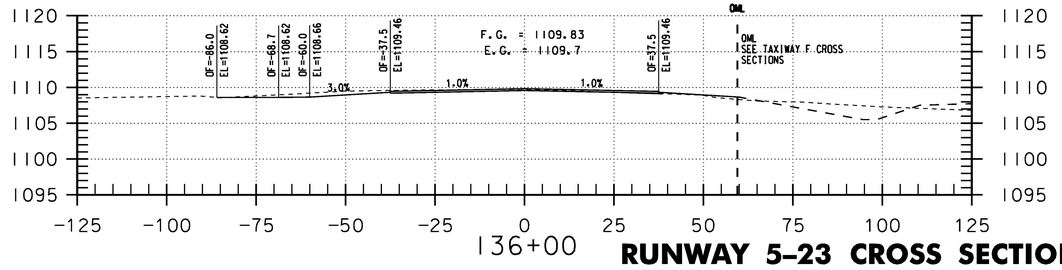


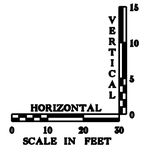












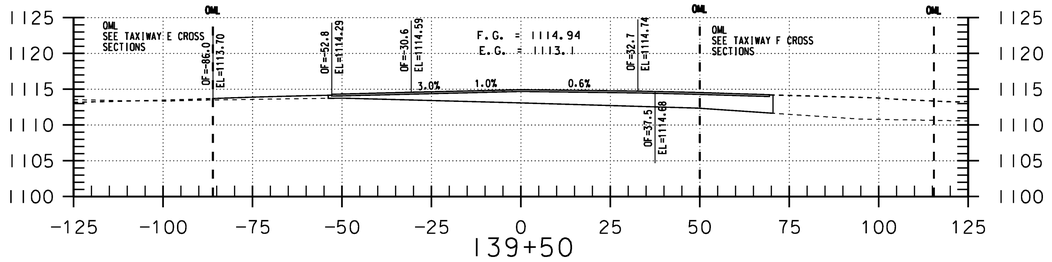
STA. 134+00 TO STA. 137+50

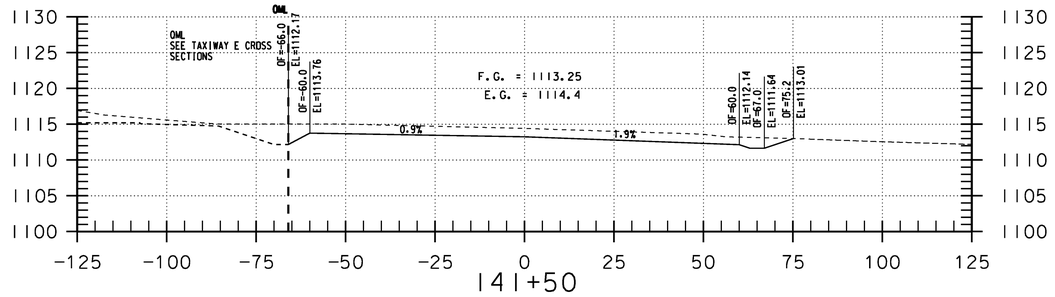
RUNWAY 5-23 CROSS SECTIONS

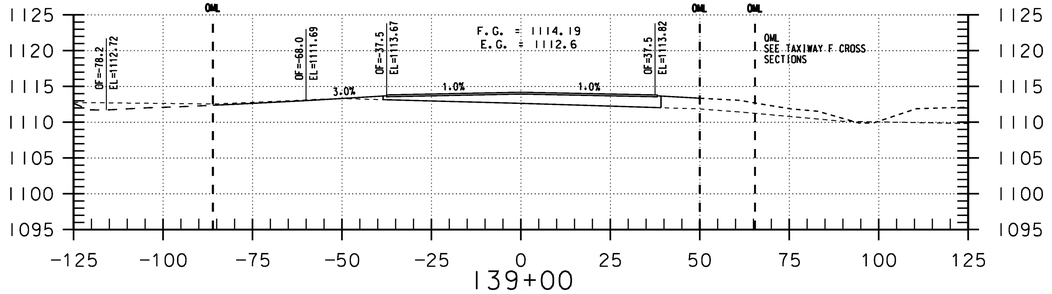
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

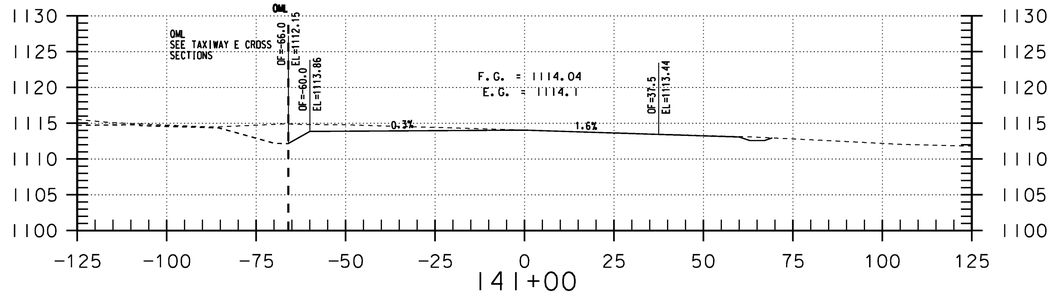
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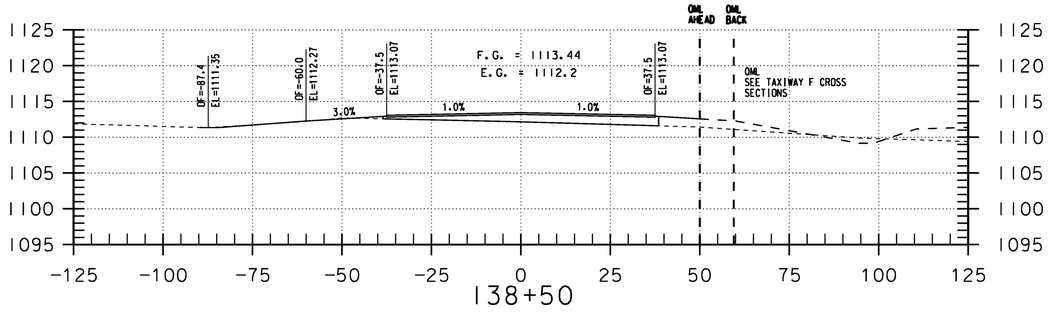
FILE NAME: 302803_sht_cxsec_5-23.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
RUNWAY 5-23 CROSS SECTIONS SHEET 149 OF 173

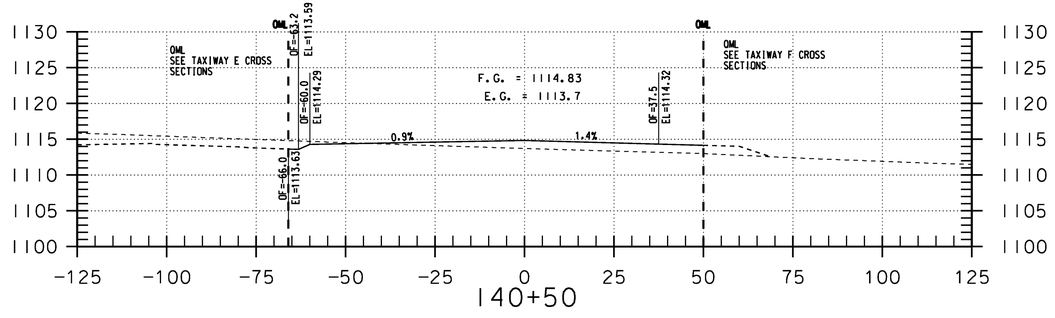


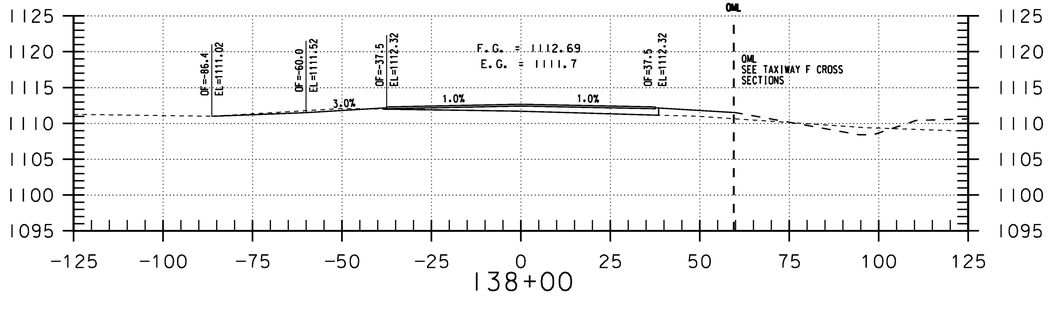


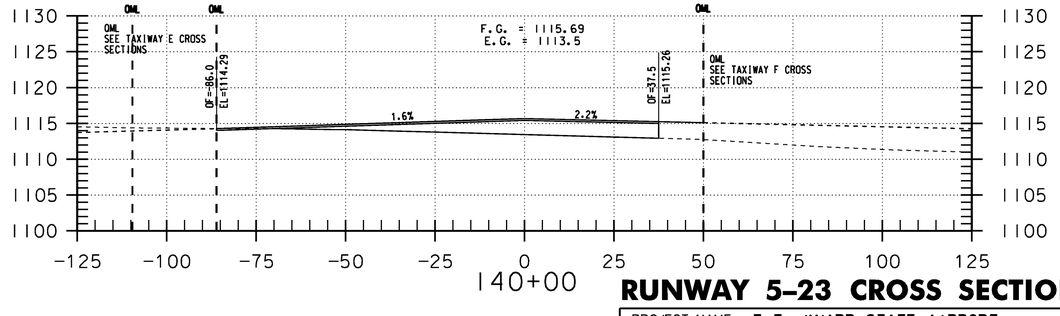


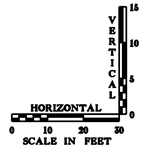












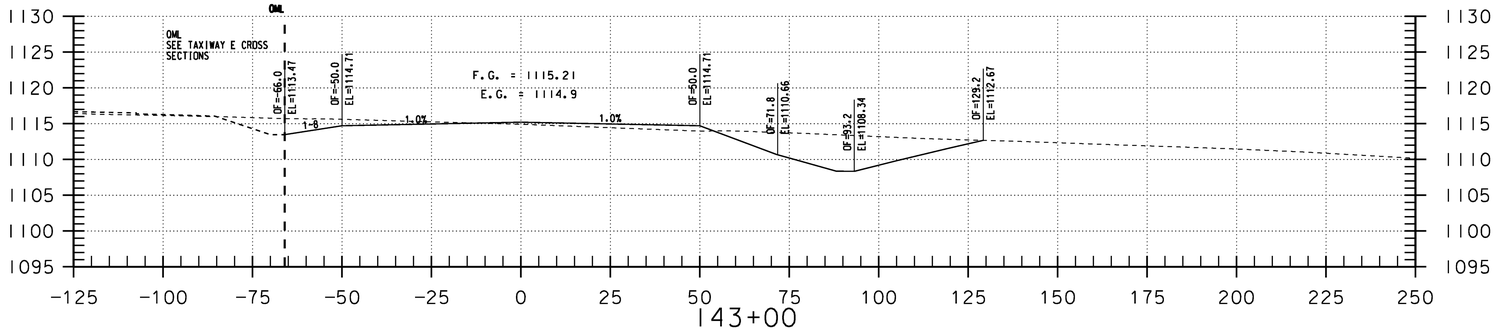
STA. 138+00 TO STA. 141+50

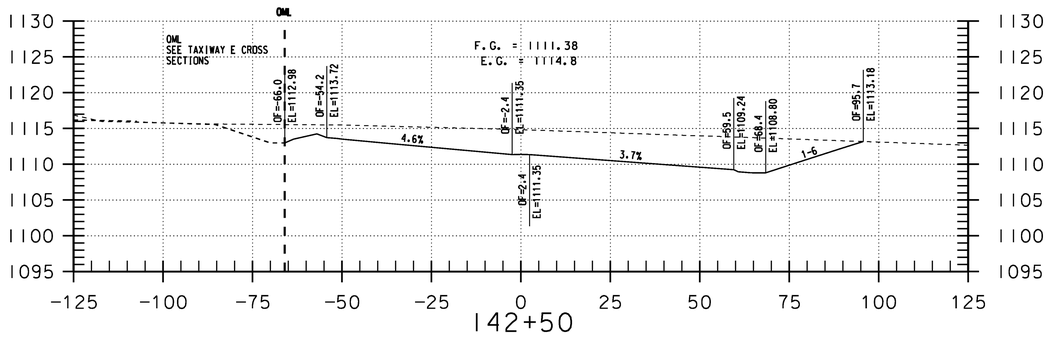
RUNWAY 5-23 CROSS SECTIONS

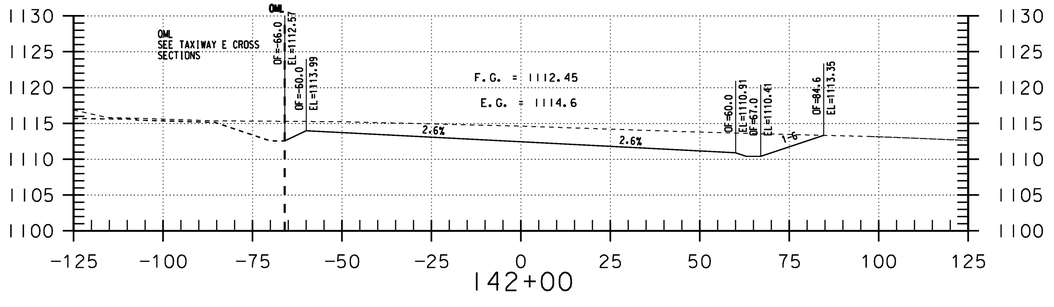
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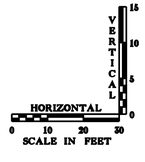
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_5-23.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
RUNWAY 5-23 CROSS SECTIONS SHEET 150 OF 173









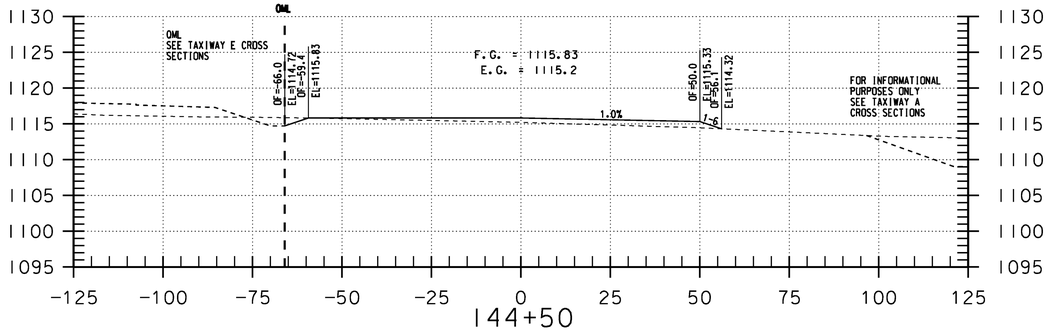
STA. 142+00 TO STA. 143+00

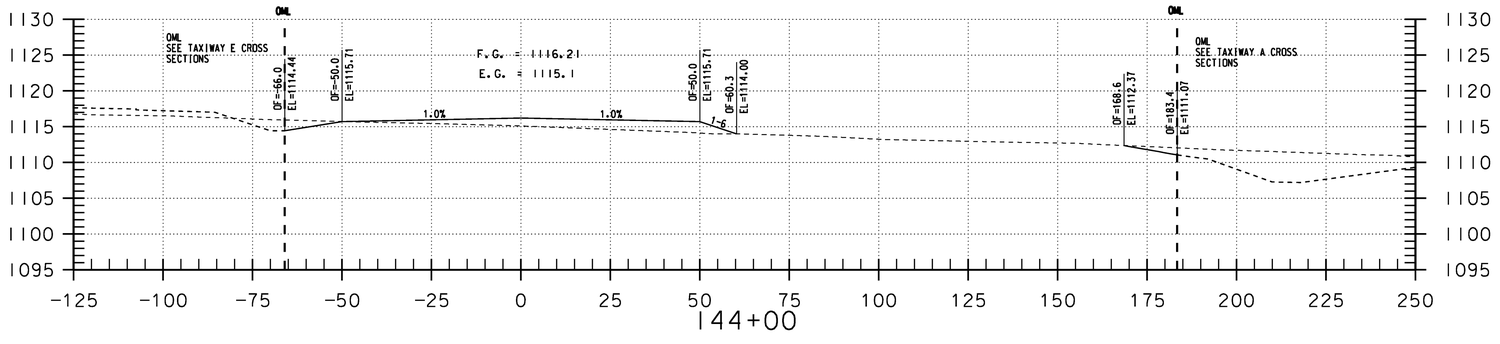
RUNWAY 5-23 CROSS SECTIONS

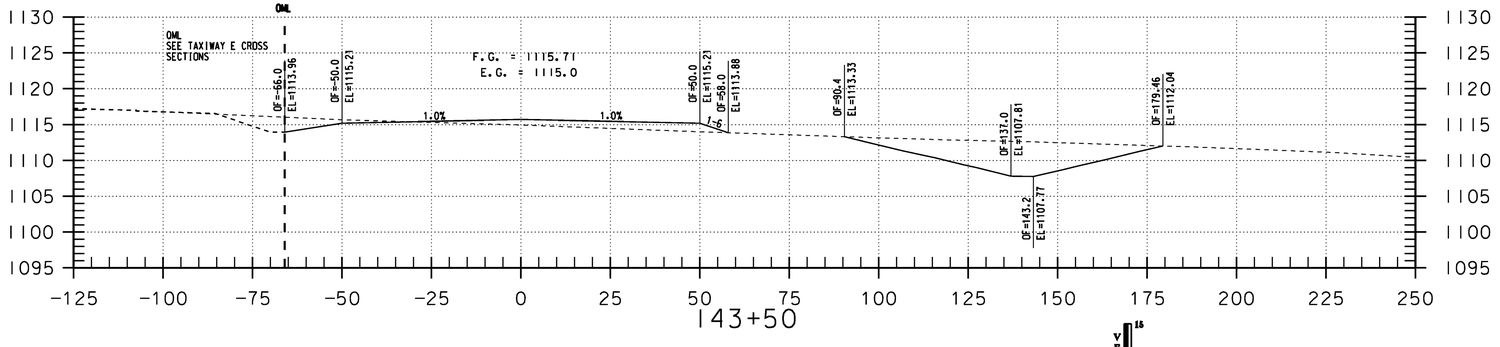
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_5-23.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
RUNWAY 5-23 CROSS SECTIONS SHEET 151 OF 173

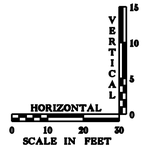
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STA. 143+50 TO STA. 144+50

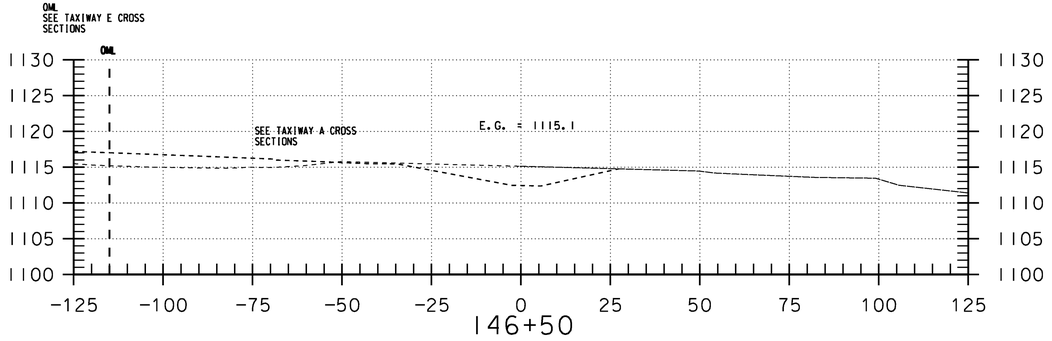


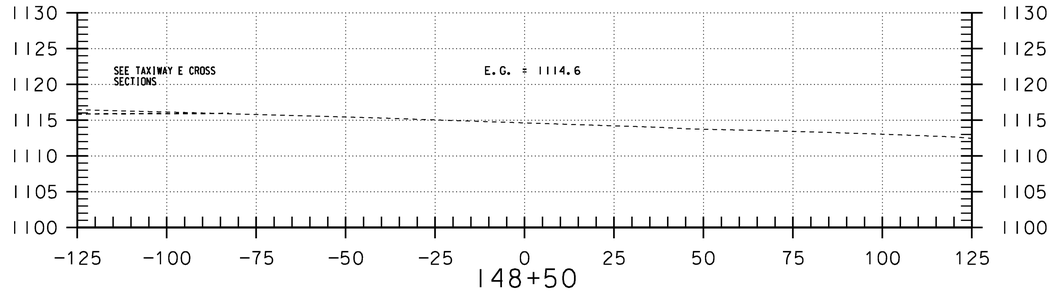
RUNWAY 5-23 CROSS SECTIONS

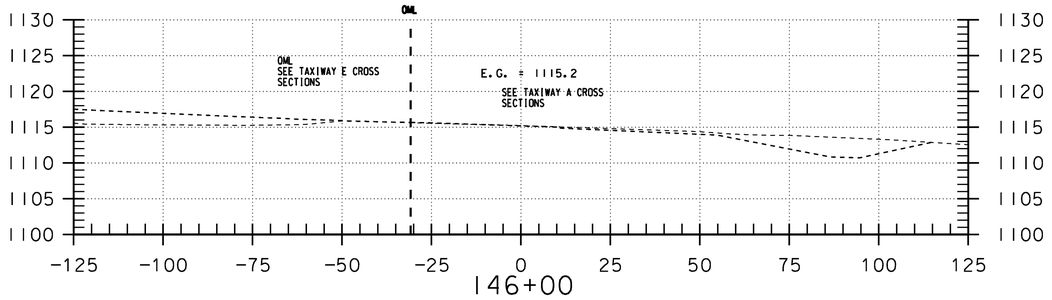
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

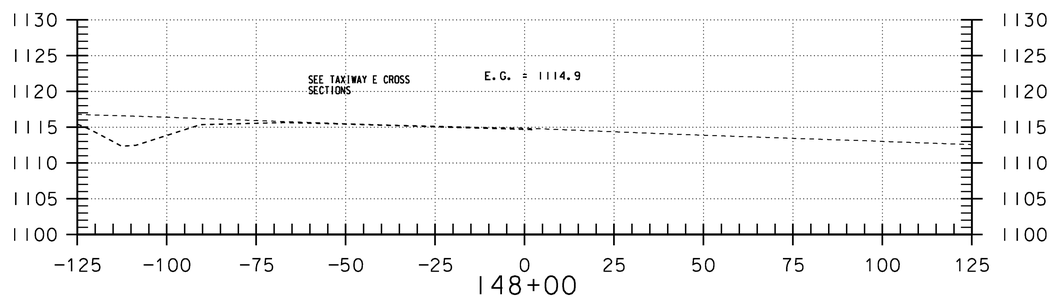
FILE NAME: 302803_sht_cxsec_5-23.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
RUNWAY 5-23 CROSS SECTIONS SHEET 152 OF 173

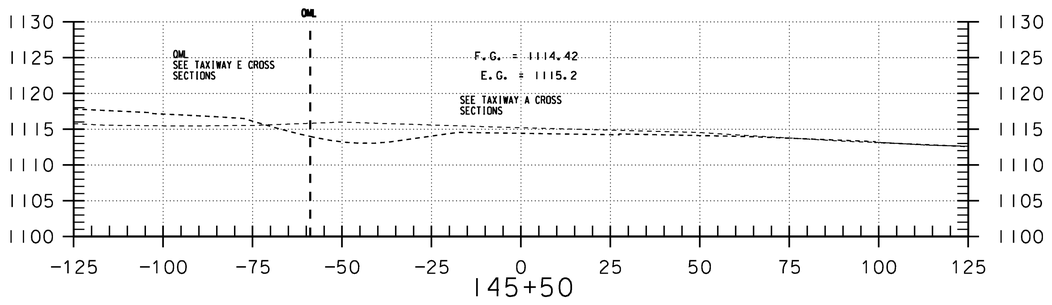
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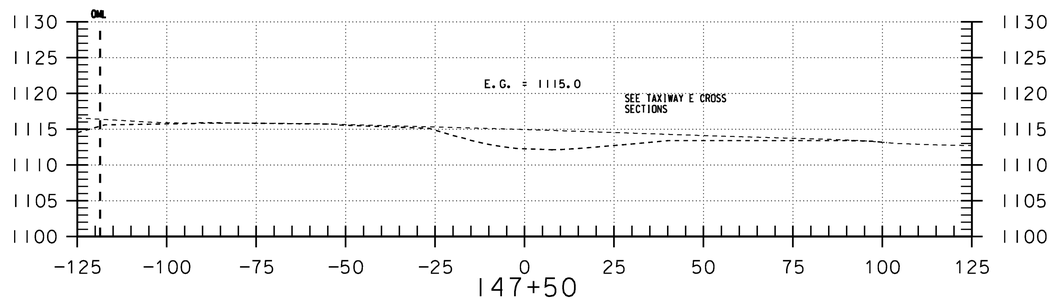


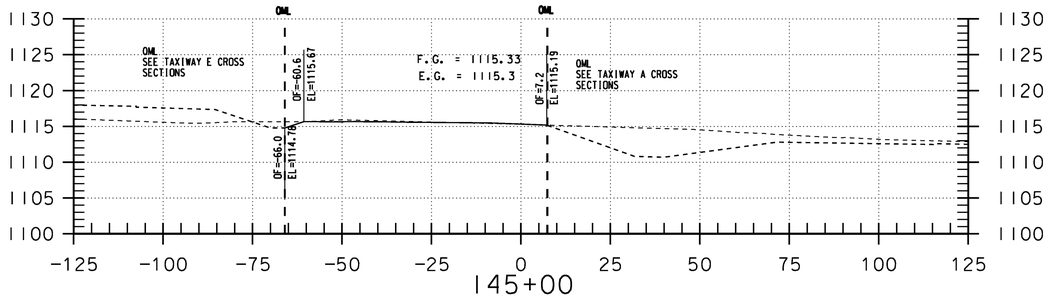


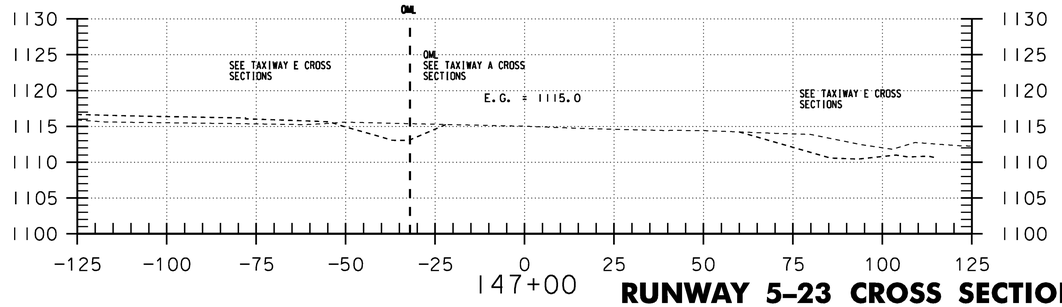


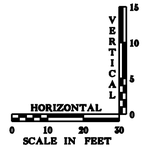












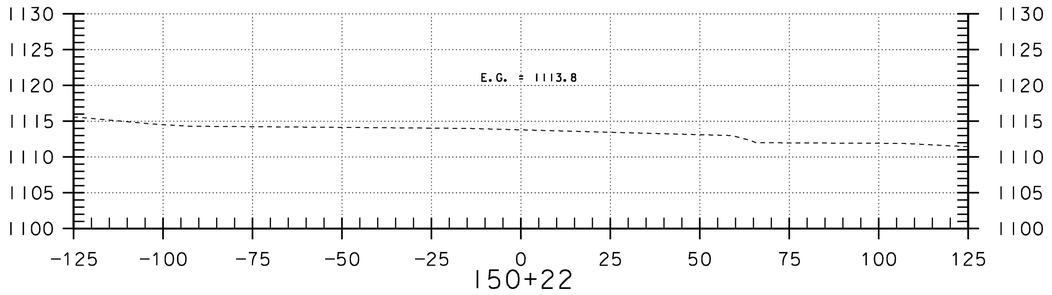
STA. 145+00 TO STA. 148+50

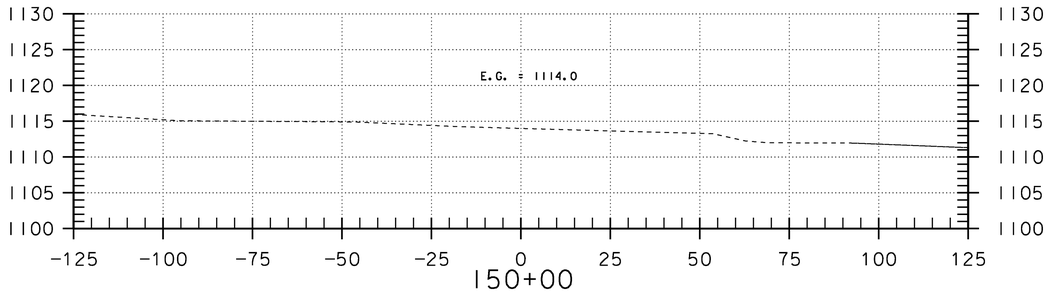
RUNWAY 5-23 CROSS SECTIONS

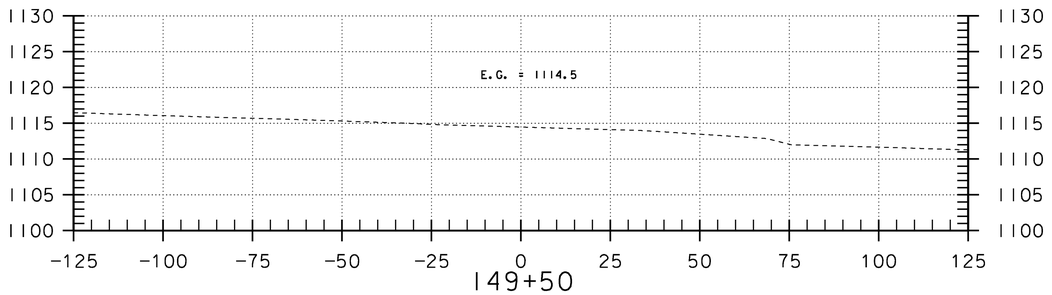
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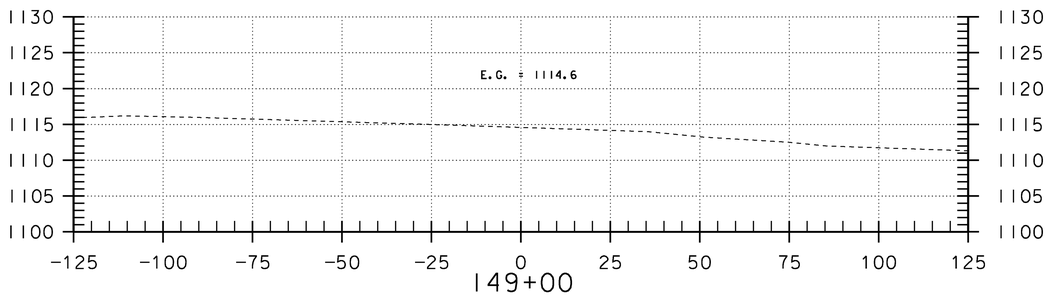
PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_5-23.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
RUNWAY 5-23 CROSS SECTIONS SHEET 153 OF 173

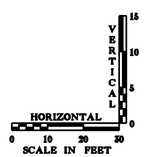








STA. 149+00 TO STA. 150+22



RUNWAY 5-23 CROSS SECTIONS

PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: 302803_sht_cxsec_5-23.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
RUNWAY 5-23 CROSS SECTIONS SHEET 154 OF 173

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GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033 Fax: 802-674-5943
1233 Shelburne Rd, Suite 360, South Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-01
Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Don Howey
Date Started: July 12, 2006 Date Finished: July 12, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	H.S.A.	Sampler:	SS
I.D.:	2.25 in.		1.38 in.
Hammer Wt.:	NA	140 lbs	
Hammer Fall:	NA	30 in.	
Rig Type:	Simco 2800		
Hammer Type:	Safety Hammer		

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/12/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft.	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 Inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
		1	SS	24	16	0	6	15	12	13			Topsoil		
													Sandy Silt		Medium dense, brown SILT, trace fine to coarse Sand, trace fine Gravel, (moist)
		2	SS	24	17	2	17	12	21	22					Dense, brown SILT, some fine to medium Sand, trace fine Gravel, (moist)
5		3	SS	24	12	4	40	30	10	8					Dense, brown SILT, some fine to coarse Sand, trace fine Gravel, (moist)
		4	SS	24	12	6	7	23	12	12					Dense, brown SILT, some fine to coarse Sand, little fine to coarse Gravel, (moist)
		5	SS	24	12	8	8	9	8	9					Medium dense, brown SILT, some fine to coarse Sand, trace fine Gravel, (moist)
10													10		Bottom of Exploration at 10.0 ft
15															
20															

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-01

GEODESIGN INCORPORATED
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1233 Shelburne Rd, Suite 360, South Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-02
Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Don Howey
Date Started: July 12, 2006 Date Finished: July 12, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	H.S.A.	Sampler:	SS
I.D.:	2.25 in.		1.38 in.
Hammer Wt.:	NA	140 lbs	
Hammer Fall:	NA	30 in.	
Rig Type:	Simco 2800		
Hammer Type:	Safety Hammer		

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/12/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft.	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 Inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
		1	SS	24	9	0	1	7	13	12			Sandy Silt		Medium dense, brown SILT, little fine to coarse Gravel, trace fine to coarse Sand, trace Root fibers, (moist)
		2	SS	24	16	2	9	11	12	12					Medium dense, brown SILT, some (+) fine Sand, trace fine Gravel, (moist)
5		3	SS	24	12	4	93	21	12	10			4 Possible Weathered Bedrock		Dense, gray fine to coarse GRAVEL, some fine to coarse Sand, trace Silt, (fractured Rock fragments)
		4	SS	24	11	6	12	18	9	11					Medium dense, gray to brown, fine to coarse GRAVEL (fractured Rock fragments – possible Shale), some fine to coarse Sand, some Silt, (moist)
		5	SS	24	NR	8	12	28	22	17					Dense, gray fine to coarse GRAVEL, some fine to coarse Sand, trace Silt, (fractured Rock fragments)
10													10		Bottom of Exploration at 10.0 ft
15															
20															

Remarks: NR = not recorded

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-02

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1233 Shelburne Rd, Suite 360, South Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-03
Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Don Howey
Date Started: July 12, 2006 Date Finished: July 12, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	H.S.A.	Sampler:	SS
I.D.:	2.25 in.		1.38 in.
Hammer Wt.:	NA	140 lbs	
Hammer Fall:	NA	30 in.	
Rig Type:	Simco 2800		
Hammer Type:	Safety Hammer		

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/12/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft.	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 Inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
		1	SS	24	14	0	2	3	8	14			Sandy Silt		Medium dense, brown SILT, little fine to coarse Gravel, trace (+) fine to coarse Sand, trace Root fibers, (moist)
		2	SS	24	16	2	4	6	12	22					Medium dense, brown SILT, little fine to coarse Gravel, trace (+) fine to coarse Sand, (moist)
5		3	SS	24	18	4	15	10	12	16			6		Medium dense, brownish gray SILT, trace (+) fine to coarse Sand, trace fine to coarse Gravel, (moist)
		4	SS	24	20	6	18	20	19	25			Glacial Till		Dense, brown SILT, trace fine to coarse Sand, trace fine to coarse Gravel, (moist)
		5	SS	24	14	8	23	25	29	37					Very dense, brown SILT, trace fine to coarse Sand, trace fine to coarse Gravel, (moist)
10													10		Bottom of Exploration at 10.0 ft
15															
20															

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-03

VT BORING LOG.PRO 5/21/04 965-03.GPJ GEODESIGN PROMPT97-12-04.GDT 4/24/09

Notes:

1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.
6) Bedrock cores collected at locations c-1, c-2, and c-3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality. the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th efissile planes between approximately 60 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe-ramming and splitting. A alternative method of removal is blasting.
8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
9) Rock Reuse Potential - the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216
FILE NAME: z05h378sht_br1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
BORING LOGS B01-B03
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033 Fax: 802-674-5943
1233 Shelburne Rd, Suite 360, South Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-04
Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 12, 2006 Date Finished: July 12, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	H.S.A.
I.D.:	2.25 in.
Hammer Wt.:	NA
Hammer Fall:	NA
Rig Type:	Simco 2800
Hammer Type:	Safety Hammer

Sampler:	SS
	1.38 in.
	140 lbs
	30 in.

Groundwater Observations	Date	Depth (ft)	Elev. (ft)	Notes
	▼ 7/12/06, 0:00			None observed
	▼			
	▼			

Depth (ft)	Casing Blows/ft.	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 Inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
		1	SS	24	8	0	2	2	4	7			Sandy Silt		Loose, grayish brown SILT, little fine to medium Sand, trace Root fibers, (moist)
5		2	SS	24	16	5	6	17	38	29			5 Glacial Till		Very dense, brown SILT, little fine to medium Sand, little fine to coarse slatey Gravel
10													9.5 Bottom of Exploration at 9.5 ft		
15															
20															

Remarks: Ground surface elevation estimated to be approximately 10 to 15 feet above adjacent runway elevation using hand level.
Auger refusal at 9.5 foot deepth on possible bedrock.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-04

GEODESIGN INCORPORATED
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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-05
Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 12, 2006 Date Finished: July 12, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	H.S.A.
I.D.:	2.25 in.
Hammer Wt.:	NA
Hammer Fall:	NA
Rig Type:	Simco 2800
Hammer Type:	Safety Hammer

Sampler:	SS
	1.38 in.
	140 lbs
	30 in.

Groundwater Observations	Date	Depth (ft)	Elev. (ft)	Notes
	▼ 7/12/06, 0:00			None observed
	▼			
	▼			

Depth (ft)	Casing Blows/ft.	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 Inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
		1	SS	24	12	0	1	3	7	12			Sandy Silt		Medium dense, grayish brown SILT, little fine to coarse Gravel, little fine to coarse Sand, trace Root fibers, (moist)
5		2	SS	24	19	5	26	36	39	79			5 Glacial Till		Very dense, dark gray SILT, little fine to coarse Gravel, little fine to coarse Sand, trace Root fibers
10													7.5 Bottom of Exploration at 7.5 ft		
15															
20															

Remarks: Ground surface elevation estimated to be approximately 10 feet above adjacent runway elevation using hand level.
Auger grinding and refusal at 7.5 foot deepth on possible bedrock.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-05

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-06
Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 12, 2006 Date Finished: July 12, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	H.S.A.
I.D.:	2.25 in.
Hammer Wt.:	NA
Hammer Fall:	NA
Rig Type:	Simco 2800
Hammer Type:	Safety Hammer

Sampler:	SS
	1.38 in.
	140 lbs
	30 in.

Groundwater Observations	Date	Depth (ft)	Elev. (ft)	Notes
	▼ 7/12/06, 0:00			None observed
	▼			
	▼			

Depth (ft)	Casing Blows/ft.	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 Inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
		1	SS	24	NR	0	1	4	6	57			Glacial Till		Medium dense, brownish gray SILT, some f. Sand, little (-) fine Gravel, trace Root fibers, (moist)
2													Bottom of Exploration at 2.0 ft		
5															
10															
15															
20															

Remarks: NR = Not Recorded
Ground surface estimated to be approximately 5 feet above adjacent runway elevation using hand level.
Observed rock outcrop approximately 50 feet towards the road.
Auger grinding and refusal at 2.0 foot deepth on possible bedrock.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-06

VT BORING LOG PID 5/21/04 965-03.GPJ GEODESIGN PROFTEST-12-04.GDT 4/24/09

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.
6) Bedrock cores collected at locations c-1, c-2, and c-3 typically consist of gray, soft, moderately weathered phyillite bedrock of very poor to fair quality. the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th efissile planes between approximately 60 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe-ramming and splitting. A alternative method of removal is blasting.
8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
9) Rock Reuse Potential - the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216
FILE NAME: z05h378sht_br1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
BORING LOGS B04-B06
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 156 OF 173

BORING LOG — B-07B

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers
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1233 Shelburne Rd, Suite 360, South Burlington, VT 05403, Phone: 802-652-5140

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-07B | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 12, 2006 Date Finished: July 12, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	30 in.	Simco 2800	Safety Hammer

Groundwater Observations: Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/12/06, 0:00			None observed

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation (feet)	Symbol	Sample Description (Classification System: Burmister)
		1	SS	24	16	0	1	3	7	21			Sandy Silt		Medium dense, brown SILT, little fine to coarse Sand, trace fine Gravel, trace Root fibers
													2		
		2	SS	8	3	2	42	65/2"					Silty Sand & Gravel		Very dense, greenish gray, fine to coarse SAND, some (+) fine to coarse Gravel, little Silt, (moist)
													2.7 Bottom of Exploration at 2.7 ft		
5															
10															
15															
20															

Remarks: Split spoon refusal at 1 foot below grade (B-7A); moved boring approximately 5 feet toward boring B-08; observed outcrop about 40 feet toward road.
Split spoon refusal at 2.7 feet below grade; moved boring again 5 feet toward B-08 and attempted to advance using HSA (B-7C; auger refusal at 1.5 feet below grade.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-07B

BORING LOG — B-08

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers
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1233 Shelburne Rd, Suite 360, South Burlington, VT 05403, Phone: 802-652-5140

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-08 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 12, 2006 Date Finished: July 12, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	30 in.	Simco 2800	Safety Hammer

Groundwater Observations: Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/12/06, 15:00	6.0		Wet sample

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation (feet)	Symbol	Sample Description (Classification System: Burmister)
		1	SS	24	12	0	2	8	8	9			Sandy Silt (possible fill)		Medium dense, tan, fine to coarse SAND, some fine to coarse Gravel, some Silt, trace Root fibers, (moist)
													2		
		2	SS	24	21	2	5	9	10	10			Sandy Silt		Very stiff, tan CLAY and SILT, little fine to coarse Gravel, little fine to coarse Sand, (moist)
		3	SS	24	15	4	8	11	17	21					Medium dense, tan SILT, little fine to coarse Sand, layered, (moist)
5															
		4	SS	24	12	6	18	20	21	23					Dense, tan SILT, little fine to coarse Sand, little fine to coarse Gravel, (wet)
		5	SS	24	20	8	21	19	5	7					Medium dense, tan SILT, little fine to coarse Sand, (wet)
10													10 Bottom of Exploration at 10.0 ft		
15															
20															

Remarks: Ground surface elevation estimated to be approximately 2-3 feet above adjacent runway elevation using hand level.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-08

BORING LOG — B-09

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers
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1233 Shelburne Rd, Suite 360, South Burlington, VT 05403, Phone: 802-652-5140

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-09 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 12, 2006 Date Finished: July 12, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	30 in.	Simco 2800	Safety Hammer

Groundwater Observations: Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/12/06, 14:30	4.0		Wet sample

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation (feet)	Symbol	Sample Description (Classification System: Burmister)
		1	SS	24	17	0	1	6	8	15			Possible Fill		Medium dense, greenish gray SILT, little fine to coarse Gravel, little fine to coarse Sand, trace Root fibers, (moist)
													3		Medium dense, Top 13": gray SILT and CLAY, little fine to coarse Sand, trace fine Gravel, (moist)
		2	SS	24	16	2	16	9	8	9			3.5 Old Topsoil		Bottom 3": dark brown ORGANIC SILT, (moist)
		3	SS	24	19	4	11	16	17	14			Sandy Silt		Dense, gray to tan fine to medium SAND, some Silt, trace (+) fine to coarse Gravel, (wet)
5															
		4	SS	24	15	6	8	10	11	16					Medium dense, gray SILT, trace fine Gravel, (wet)
		5	SS	24	7	8	11	10	8	7					Very stiff, gray CLAY and SILT, trace fine to coarse Sand, (wet)
10													10 Bottom of Exploration at 10.0 ft		
15															
20															

Remarks: Ground Surface elevation estimated to be at approximately the adjacent runway elevation.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-09

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.
6) Bedrock cores collected at locations c-1, c-2, and c-3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality. the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th efissile planes between approximately 60 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe-ramming and splitting. A alternative method of removal is blasting.
8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
9) Rock Reuse Potential - the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_br1.dgn | PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY | DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD | CHECKED BY: J. DOWNAR
BORING LOGS B07B-B09 | SHEET 157 OF 173

VT BORING LOG FID 5/21/04 965-03.GPJ GEODESIGN PRMTTEST-12-04.GDT 4/24/09

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers

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1233 Shelburne Rd, Suite 360, South Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-10 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 13, 2006 Date Finished: July 13, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA / 140 lbs	NA / 30 in.	Simco 2800	Safety Hammer

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/13/06, 9:00	8.0		Wet sample

Depth (ft)	Casing Blows/ft.	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 Inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation (feet)	Symbol	Sample Description Classification System: Burmister
		1	SS	24	12	0	2	6	9	7			Topsoil / Fill		Medium dense, brown SILT, little (+) fine to coarse Sand, little fine Gravel, trace Root fibers, (moist)
		2	SS	24	14	2	14	28	27	13					Very dense, gray SILT, some fine to coarse Sand, little fine to coarse Gravel, (moist)
5		3	SS	24	5	4	3	4	4	6			6		Loose, gray SILT (slightly plastic), some fine to coarse Sand, (piece of clay pipe in sample), (moist)
		4	SS	24	17	6	3	4	6	17			Sandy Silt		Medium dense, gray CLAY and SILT (top) grading to SILT (bottom), little fine Gravel, trace fine to coarse Sand, (with one 2" fine to coarse Sand seam), (moist)
		5	SS	24	24	8	27	33	41	56			8 Glacial Till		Very dense, Top 10": gray fine to coarse SAND, (wet) Bottom 14": olive SILT, trace fine to coarse Sand, (moist)
10													10 Bottom of Exploration at 10.0 ft		
15															
20															
													Remarks		

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-10

VT BORING LOG PRO 5/21/04 965-03.GPJ GEODESIGN PRJMTEST7-12-04.GDT 4/24/09

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers

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1233 Shelburne Rd, Suite 360, South Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-11 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 13, 2006 Date Finished: July 13, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA / 140 lbs	NA / 30 in.	Simco 2800	Safety Hammer

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/13/06, 0:00			None observed

Depth (ft)	Casing Blows/ft.	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 Inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation (feet)	Symbol	Sample Description Classification System: Burmister
		1	SS	24	8	0	3	6	6	31			Topsoil / Sandy Silt		Medium dense, brown fine to medium SAND, some (+) fine to coarse Gravel, little(-) Silt, trace Root fibers, (moist)
		2	SS	24	16	2	10	18	15	18			4		Dense, olive gray SILT, little fine to coarse Sand, trace fine Gravel, (damp)
5		3	SS	24	14	4	11	26	18	26			Glacial Till		Dense, olive gray SILT, some fine to coarse slatey Gravel, little fine to coarse Sand, (damp)
		4	SS	24	19	6	19	28	35	62					Very dense, olive gray SILT, some fine to coarse Gravel, little fine to coarse Sand, (moist)
		5	SS	12	13	8	71	92					9		Very dense, olive gray SILT, some fine to coarse Sand, trace fine Gravel, (moist)
10													Bottom of Exploration at 10.0 ft		
15															
20															
													Remarks		

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-11

VT BORING LOG PRO 5/21/04 965-03.GPJ GEODESIGN PRJMTEST7-12-04.GDT 4/24/09

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers

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1233 Shelburne Rd, Suite 360, South Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-12 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 14, 2006 Date Finished: July 14, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA / 140 lbs	NA / 30 in.	Simco 2800	Safety Hammer

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/14/06, 0:00			None observed

Depth (ft)	Casing Blows/ft.	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 Inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation (feet)	Symbol	Sample Description Classification System: Burmister
		1	SS	24	17	0	3	7	9	8			Topsoil / Sandy Silt		Medium dense, brown fine to coarse SAND, little (+) Silt, little fine to coarse Gravel, (moist)
		2	SS	24	20	2	6	7	11	12					Medium dense, light brown SILT, some (-) fine to coarse Sand, (moist)
5		3	SS	24	17	4	8	7	11	13			6		Medium dense, light brown/olive SILT, some fine to coarse Sand, little fine to coarse Gravel, (moist)
		4	SS	24	22	6	14	18	20	25			Glacial Till		Dense, light brown/olive SILT, some fine to coarse Sand, little fine to coarse Gravel, (moist)
		5	SS	24	17	8	29	36	42	53					Very dense, brown/olive fine to coarse SAND, some (-) Silt, little fine to coarse Gravel, (moist)
10													10 Bottom of Exploration at 10.0 ft		
15															
20															
													Remarks		

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-12

VT BORING LOG PRO 5/21/04 965-03.GPJ GEODESIGN PRJMTEST7-12-04.GDT 4/24/09

Notes:

1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.
6) Bedrock cores collected at locations c-1, c-2, and c-3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality. the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th efissile planes between approximately 60 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe-ramming and splitting. A alternative method of removal is blasting.
8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
9) Rock Reuse Potential - the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_br1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
BORING LOGS B10-B12

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 158 OF 173

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-13
Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 18, 2006 Date Finished: July 18, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	140 lbs	Simco 2800	Safety Hammer
				NA	30 in.		

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/18/06, 0:00			None observed
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 Inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation (feet)	Symbol	Sample Description: Classification System: Burmister
		1	SS	18	13	0.5	40	28	19				Pavement		
													Base Course Sand & Gravel 1.3		Very dense,
													Subbase Sand 2		Top 7": pinkish tan fine to coarse GRAVEL and fine to coarse SAND, trace Silt, (moist)
		2	SS	24	12	2	13	13	21	13			Sandy Silt		Bottom 6": dark brown fine to coarse SAND, some fine to coarse Gravel, trace (+) Silt, (moist)
															Dense, light brown SILT, little fine to coarse Sand, little (+) fine to coarse Gravel, (moist)
5		3	SS	24	16	4	11	13	15	21					Medium dense, light brown SILT, little fine to coarse Sand, trace fine Gravel, (with 3" thick layer of very dark brown fine Sand), (moist)
		4	SS	24	19	6	25	21	35	46			Till 6		Very dense, light brown SILT, little fine to coarse Sand, little (–) fine to coarse Gravel, (moist)
		5	SS	24	19	8	38	33	41	72					Very dense, light brown SILT, little fine to coarse Sand, little (+) fine to coarse Gravel, (moist)
10													10		
													Bottom of Exploration at 10.0 ft		
15															
20															
													Remarks		

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-13

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-14
Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 17, 2006 Date Finished: July 17, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	140 lbs	Simco 2800	Safety Hammer
				NA	30 in.		

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/17/06, 0:00			None observed
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 Inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation (feet)	Symbol	Sample Description: Classification System: Burmister
		1	SS	24	18	0	1	4	7	10			0.5 Topsoil		Top 6": TOPSOIL
													Sandy Silt		Bottom 12": Medium dense, brown SILT, some fine to coarse Sand, little fine to coarse Gravel, (moist)
		2	SS	24	22	2	10	11	11	13					Medium dense, brown SILT, some (–) fine to coarse Sand, trace fine to coarse Gravel, (moist)
5		3	SS	24	18	4	8	13	17	22					Dense, brown SILT, some (–) fine to coarse Sand, trace fine to coarse Gravel, (moist)
		4	SS	24	19	6	27	30	28	34			Glacial Till 6		Very dense, brown SILT and fine to coarse SAND, little (–) fine to coarse Gravel, (moist)
		5	SS	24	17	8	35	31	40	44					Very dense, brown SILT, some (–) fine to coarse Sand, trace fine to coarse Gravel, (moist)
10													10		
													Bottom of Exploration at 10.0 ft		
15															
20															
													Remarks		

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-14

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-15
Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 17, 2006 Date Finished: July 17, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	140 lbs	Simco 2800	Safety Hammer
				NA	30 in.		

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/17/06, 0:00			None observed
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 Inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation (feet)	Symbol	Sample Description: Classification System: Burmister
		1	SS	24	10	0.5	12	14	11	-			Pavement		
													Base Course Gravel & Sand 1.3		Medium Dense
													Subbase Sand 2		Top 6": pinkish tan fine to coarse GRAVEL, and medium to coarse SAND, little (+) Silt, (moist)
		2	SS	24	13	2	5	4	3	1			Sandy Silt		Bottom 4": brown fine to coarse SAND, little (–) Silt, little fine Gravel, (moist)
															Loose, gray SILT and fine to coarse SAND, (moist)
5		3	SS	24	16	4	2	1	1	2					Very loose, Clayey SILT, little (–) fine to coarse Sand, (moist)
		4	SS	24	20	6	5	13	20	28			8		Dense, brown SILT, some fine to coarse Sand, little (–) fine Gravel, (moist)
		5	SS	24	20	8	25	24	26	35			Glacial Till		Very dense, brown SILT, some (–) fine to coarse Gravel, little (–) fine to coarse Sand, (moist), (TILL)
10													10		
													Bottom of Exploration at 10.0 ft		
15															
20															
													Remarks		

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-15

VT BORING LOG FID 5/21/04 965-03.GPJ GEODESIGN PDMTEST7-12-04.GDT 4/24/09

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.
6) Bedrock cores collected at locations c-1, c-2, and c-3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality. the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th efissile planes between approximately 60 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe-ramming and splitting. A alternative method of removal is blasting.
8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
9) Rock Reuse Potential – the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_br1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
BORING LOGS B13-B15

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

GEODESIGN INCORPORATED
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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-16
Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Don Howey
Date Started: July 17, 2006 — Date Finished: July 17, 2006
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): —
Station: — Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	2.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Simco 2800	
Hammer Type:	Safety Hammer	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/17/06, 14:30	7.5		Wet sample
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft.	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description
															Classification System: Burmister
	1	SS	24	15	0	1	5	8	7				0.5 Topsoil		Top 6": TOPSOIL Bottom 9": Medium dense brown SILT and fine to coarse SAND, (moist)
	2	SS	24	19	2	1	12	12	17				Sandy Silt		Medium dense, brown SILT and fine to coarse SAND, (moist)
5	3	SS	24	19	4	14	21	29	34				4 Glacial Till		Very dense, brown SILT and fine to coarse SAND, little fine to coarse Gravel, (moist), (TILL)
	4	SS	24	17	6	23	30	25	37						Very dense, Top 12": brown SILT and fine to coarse SAND, little fine to coarse Gravel, (moist) Bottom 5": dark brown fine SAND, little Silt, (wet)
10													8 Bottom of Exploration at 8.0 ft		
15															
20															

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-16

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers
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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-17
Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Don Howey
Date Started: July 17, 2006 — Date Finished: July 17, 2006
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): —
Station: — Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	2.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Simco 2800	
Hammer Type:	Safety Hammer	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/17/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft.	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description
															Classification System: Burmister
	1	SS	24	20	0	2	4	9	11				0.5 Topsoil		Top 6": TOPSOIL Bottom 14": medium dense brown SILT, some fine to coarse Sand, (moist)
	2	SS	24	18	2	11	16	18	22				Sandy Silt		Dense, brown SILT, some fine to coarse Sand, little fine to coarse Gravel, (moist)
5	3	SS	24	15	4	14	20	27	48				4 Glacial Till		Dense, brown SILT, some fine to coarse Sand, little fine to coarse Gravel, (moist)
	4	SS	24	17	6	45	58	68	79						Very dense, brown SILT, some fine to coarse Sand, little fine to coarse Gravel, (moist)
10													8 Bottom of Exploration at 8.0 ft		
15															
20															

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-17

GEODESIGN INCORPORATED
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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-18
Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Don Howey
Date Started: July 17, 2006 — Date Finished: July 17, 2006
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): —
Station: — Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	2.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Simco 2800	
Hammer Type:	Safety Hammer	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/17/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft.	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description
															Classification System: Burmister
	1	SS	18	12	0.5	18	13	10	—				Pavement		
													1 Base Course Gravel & Sand		Dense, Top 10": light gray fine to coarse SAND, and fine to coarse GRAVEL, little (–) Silt, (moist)
	2	SS	24	14	2	6	8	10	12				Sandy Silt		Bottom 2": brown SILT, some fine to coarse Sand, (moist)
5	3	SS	24	17	4	8	10	21	22						Medium dense, brown SILT, some fine to coarse Sand, little (+) fine to coarse Gravel, (two ½" dark brown fine Sand seams), (moist)
															Dense, brown SILT, some (+) fine to coarse Sand, (moist)
	4	SS	9	7	6	18	50/3"						6.5 Glacial Till		Very dense, brown SILT and fine to coarse SAND, some fine to coarse Gravel, (moist)
10													Bottom of Exploration at 6.8 ft		
15															
20															

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-18

YT BORING LOG PD 5/21/04 965-03.GPJ GEODESIGN PROFTEST-12-04.GDT 4/24/09

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.
6) Bedrock cores collected at locations c-1, c-2, and c-3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality. the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th efissile planes between approximately 60 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe-ramming and splitting. A alternative method of removal is blasting.
8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
9) Rock Reuse Potential – the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_br1.dgn — PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY — DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD — CHECKED BY: J. DOWNAR
BORING LOGS B16-B18 — SHEET 160 OF 173

GEODESIGN INCORPORATED
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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-19 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Don Howey
Date Started: July 17, 2006 Date Finished: July 17, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	30 in.	Simco 2800	Safety Hammer

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/18/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft.	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 inch interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Times (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
	1	SS	24	17	0	3	13	19	21			0.5 Topsoil		Top 6": TOPSOIL Bottom 11": Dense, brown SILT, some fine to coarse Sand, trace Root fibers, (moist)
	2	SS	24	18	2	13	10	10	15			Sandy Silt		Medium dense, brown SILT, some fine to coarse Sand, little fine to coarse Gravel, trace Root fibers, (moist)
5	3	SS	24	16	4	16	13	14	16					Medium dense, brown SILT, some fine to coarse Sand, little fine to coarse Gravel, trace Root fibers, (moist)
	4	SS	24	21	6	14	13	16	21			8		Medium dense, brown SILT, little (+) fine to coarse Sand, little fine to coarse Gravel, trace Root fibers, (moist)
	5	SS	24	20	8	23	29	31	46			Glacial Till		Very dense, brown SILT, some (+) fine to coarse Sand, (moist)
10												10 Bottom of Exploration at 10.0 ft		
15														
20														

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-19

GEODESIGN INCORPORATED
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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-20 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Don Howey
Date Started: July 17, 2006 Date Finished: July 17, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	30 in.	Simco 2800	Safety Hammer

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/17/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft.	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 inch interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Times (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
	1	SS	24	12	0	3	9	12	8			0.6 Topsoil		Medium dense, brown SILT, some fine to coarse Sand, trace fine Gravel, (moist)
2												Fill		
	2	SS	24	15	2	22	31	20	14			Sand & Gravel		Very dense, Top 8": gray to brown fine to coarse SAND, some fine to coarse Gravel, trace Silt, (moist) Bottom 7": brown SILT, some (-) fine to coarse Sand, little fine to coarse Gravel, (moist)
	3	SS	24	5	4	14	20	25	29			3.5 Glacial Till		Dense, grayish brown SILT, some fine to coarse Sand, some (+) fine to coarse Gravel, (moist)
5	4	SS	24	20	6	17	9	13	14					Medium dense, grayish brown SILT and fine to coarse SAND, trace fine Gravel, (moist)
	5	SS	15	11	8	25	75	50/3"				8.7 Possible Bedrock		Medium dense, grayish brown SILT and fine to coarse SAND, trace fine Gravel, (moist)
												9.3 Bottom of Exploration at 9.3 ft		Very dense, Top 5": grayish brown SILT and fine to coarse SAND, trace fine Gravel, (moist) Bottom 6": weathered ROCK pieces (possible Shale)
10														
15														
20														

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-20

GEODESIGN INCORPORATED
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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-21 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Don Howey
Date Started: July 17, 2006 Date Finished: July 17, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	30 in.	Simco 2800	Safety Hammer

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/17/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft.	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 inch interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Times (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													Pavement		
	1	SS	18	12	0.5	21	20	24	-			Base Course Gravel & Sand		Dense, Top 6": light gray fine to coarse GRAVEL and fine to coarse SAND, trace Silt, (moist) Bottom 6": brown fine to coarse SAND, trace (+) fine Gravel, trace Silt, (moist)
	2	SS	24	16	2	26	29	27	22			Subbase Sand		Very dense, brown fine to coarse SAND, trace (+) fine Gravel, trace Silt, (moist)
5	3	SS	24	12	4	13	6	9	18			4 Sandy Silt		Medium dense, brown SILT, some fine to coarse Sand, little (-) fine Gravel, (moist)
	4	SS	24	17	6	10	7	8	30					Medium dense, brown SILT, some fine to coarse Sand, little (-) fine Gravel, (moist)
	5	SS	24	23	8	33	35	42	67			8 Glacial Till		Very dense, brown SILT, some fine to coarse Sand, little (-) fine Gravel, (moist), (TILL)
10												10 Bottom of Exploration at 10.0 ft		
15														
20														

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-21

VT BORING LOG PRO 5/21/04 965-03.GPJ GEODESIGN PDAFTE07-12-04.GDT 4/24/09

Notes:

1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.
6) Bedrock cores collected at locations c-1, c-2, and c-3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality. the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th efissile planes between approximately 60 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe-ramming and splitting. A alternative method of removal is blasting.
8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
9) Rock Reuse Potential – the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_br1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
BORING LOGS B19-B21

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 161 OF 173

GEODESIGN INCORPORATED
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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-22 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 17, 2006 Date Finished: July 17, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler:	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	NA	NA	Simco 2800	Safety Hammer
		1.38 in.	140 lbs	30 in.		

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
∓ 7/17/06, 0:00			None observed
∓			
∓			

Depth (ft)	Casing Blow/ft.	Sample No.	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	PID Reading (ppm)	Strata Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
		1	SS	18	14	0.05	17	16	15	–			Pavement		
													Base Course Gravel & Sand 1.		Dense, Top 5": light gray fine to coarse GRAVEL and fine to coarse SAND, trace Silt, (moist)
													Subbase Sand		Bottom 9": brown fine to coarse SAND, little (–) fine Gravel, trace Silt, (moist)
		2	SS	24	13	2	18	18	18	18					Dense, brown fine to medium SAND, little Silt, trace fine Gravel, (moist)
													4		
5		3	SS	24	15	4	22	21	22	27			Glacial Till		Dense, brown SILT, some fine to coarse Sand, little (–) fine Gravel, (moist)
		4	SS	24	0	6	38	37	36	39					Very dense, no recovery, (may have been driving cobble)
													8		Bottom of Exploration at 8.0 ft
10															
15															
20															

Remarks:

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-22

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-23 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 17, 2006 Date Finished: July 17, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler:	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	NA	NA	Simco 2800	Safety Hammer
		1.38 in.	140 lbs	30 in.		

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
∓ 7/17/06, 0:00			None observed
∓			
∓			

Depth (ft)	Casing Blow/ft.	Sample No.	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	PID Reading (ppm)	Strata Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
		1	SS	18	11	0.5	7	11	27	–			Pavement		
													Base Course Gravel & Sand 1.		Medium dense, Top 5": light gray fine to coarse GRAVEL and fine to coarse SAND, trace Silt, (moist)
													Subbase Sand		Bottom 6": brown fine to coarse SAND, trace fine Gravel, (moist)
		2	SS	24	12	2	17	12	12	22					Medium dense, brown fine to coarse SAND, little fine to coarse Gravel, (moist)
													4		
5		3	SS	24	16	4	23	27	37	29			Glacial Till		Very dense, brown SILT, and (–) medium to coarse SAND, trace fine Gravel, (moist)
		4	SS	24	11	6	18	17	50/4"						Very Dense, brown SILT, little fine to coarse Sand, little fine to coarse Gravel, one ½" thick fine Sand seam at bottom of sample, (moist)
													7. 3		Bottom of Exploration at 7.3 ft
10															
15															
20															

Remarks: Split spoon refusal @ 7.3 ft. possibly on bedrock

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-23

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-24 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 17, 2006 Date Finished: July 17, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler:	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	NA	NA	Simco 2800	Safety Hammer
		1.38 in.	140 lbs	30 in.		

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
∓ 7/17/06, 0:00			None observed
∓			
∓			

Depth (ft)	Casing Blow/ft.	Sample No.	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	PID Reading (ppm)	Strata Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
		1	SS	18	10	0.5	17	18	17	–			Pavement		
													Base Course Gravel & Sand Subbase Sand 1.		Dense, orange to gray fine to coarse SAND and fine to coarse GRAVEL, trace Silt, (moist)
		2	SS	24	18	2	16	16	16	14					Dense, brown fine to medium SAND, trace fine Gravel, trace Silt, (moist)
													4		
5		3	SS	24	9	4	21	47	16	27			Glacial Till		Very dense, brown to gray SILT, and fine to medium SAND, trace (–) fine Gravel, trace Root fibers, (moist)
		4	SS	24	2	6	39	30	26	25					Very dense, brown to gray SILT, little (+) fine to coarse Sand, trace Root fibers, (moist)
		5	SS	24	22	8	11	12	13	18					Very stiff, gray Clayey SILT, little (+) fine to coarse Sand, trace fine to coarse Gravel, (moist)
10													10		Bottom of Exploration at 10.0 ft
15															
20															

Remarks:

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-24

VT BORING LOG PD 5/21/04 965-03.GPJ GEODESIGN PDIAFTER7-12-04.GDT 4/24/09

Notes:

1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.
6) Bedrock cores collected at locations c–1, c–2, and c–3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality. the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th efissile planes between approximately 60 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe–ramming and splitting. A alternative method of removal is blasting.
8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
9) Rock Reuse Potential – the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_br1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
BORING LOGS B22-B24
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 162 OF 173

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033, Fax: 802-674-5943
1233 Shelburne Rd, Suite 360, South Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-25 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 14, 2006 Date Finished: July 14, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type:	H.S.A.
I.D.:	2.25 in.
Hammer Wt.:	NA
Hammer Fall:	NA
Rig Type:	Simco 2800
Hammer Type:	Safety Hammer

Sampler:	
Type:	SS
I.D.:	1.38 in.
Hammer Wt.:	140 lbs
Hammer Fall:	30 in.

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/14/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													Pavement		
		1	SS	18	13	0.5	11	14	13	-			Base Course Gravel & Sand 1.3		Medium dense, Top 6": light gray fine to coarse GRAVEL and fine to coarse SAND, trace Silt, (moist)
		2	SS	24	13	2	20	36	34	25			Subbase Sand		Bottom 7": light brown fine to coarse SAND, (moist)
													4		Very dense, brown fine to coarse SAND, trace fine to coarse Gravel, trace Silt, (moist)
5		3	SS	24	12	4	21	23	26	22			Glacial Till		Dense, brown SILT, little fine to coarse Gravel, little (–) fine to coarse Sand, (moist)
		4	SS	24	18	6	18	17	22	23					Dense, alternating 3" layers of gray SILT, little fine to coarse Sand and blackish brown fine SAND, some Silt, (moist)
		5	SS	24	15	8	11	25	35	28					Very dense, olive gray SILT, little (+) fine to coarse Sand, little fine to coarse Gravel, (with occasional seams of black fine Sand, (moist)
10													10 Bottom of Exploration at 10.0 ft		
15															
20															

Remarks:

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-25

VT BORING LOG FID 5/21/04 965-03.GPJ GEODESIGN PRGMTEST-12-04.GDT 4/24/09

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-26 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 14, 2006 Date Finished: July 14, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type:	H.S.A.
I.D.:	2.25 in.
Hammer Wt.:	NA
Hammer Fall:	NA
Rig Type:	Simco 2800
Hammer Type:	Safety Hammer

Sampler:	
Type:	SS
I.D.:	1.38 in.
Hammer Wt.:	140 lbs
Hammer Fall:	30 in.

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/14/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
		1	SS	18	10	0.5	15	18	56	-			0.3 Pavement		
													Base Coarse Gravel & Sand 1.3		dense, Top 7": light gray fine to coarse SAND and fine to coarse GRAVEL, trace Silt, (moist)
		2	SS	24	14	2	24	24	18	13			Subbase Sand		Bottom 3": light brown fine to coarse SAND, trace Silt, (moist)
													4		Dense, light brown fine to coarse SAND, trace fine Gravel, trace Silt, (moist)
5		3	SS	24	12	4	6	30	30	33			Glacial Till		Very dense, brown SILT, some (+) fine to coarse SAND, fine to coarse slatey Gravel in bottom 5", (moist)
													5.5 Possible Weathered Bedrock		
		4	SS	5.5	2	6	100/5.5"						6.5 Bottom of Exploration at 6.5 ft		Very dense, gray weathered ROCK fragments (possible Bedrock)
10															
15															
20															

Remarks:

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-26

VT BORING LOG FID 5/21/04 965-03.GPJ GEODESIGN PRGMTEST-12-04.GDT 4/24/09

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-27 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 14, 2006 Date Finished: July 14, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type:	H.S.A.
I.D.:	2.25 in.
Hammer Wt.:	NA
Hammer Fall:	NA
Rig Type:	Simco 2800
Hammer Type:	Safety Hammer

Sampler:	
Type:	SS
I.D.:	1.38 in.
Hammer Wt.:	140 lbs
Hammer Fall:	30 in.

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/14/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													0.3 Pavement		
		1	SS	18	15	0.5	18	15	17	-			Base Coarse Gravel & Sand 1.3		Dense, Top 7": light gray fine to coarse GRAVEL and fine to coarse SAND, trace Silt, (moist)
		2	SS	24	13	2	22	31	21	22			Subbase Sand		Bottom 8": light brown fine to medium SAND, trace Silt, (moist)
													4		Very dense, light brown fine to medium SAND, trace Silt, trace fine Gravel (moist)
5		3	SS	24	14	4	13	14	12	11			Glacial Till		Medium dense, dark brown SILT, little fine to coarse Gravel, little fine to coarse Sand, (moist)
		4	SS	24	18	6	9	19	24	26					Dense, dark brown SILT, little fine to coarse Gravel, little fine to coarse Sand, (moist), (TILL)
													8 Bottom of Exploration at 8.0 ft		
10															
15															
20															

Remarks:

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-27

VT BORING LOG FID 5/21/04 965-03.GPJ GEODESIGN PRGMTEST-12-04.GDT 4/24/09

Notes:

1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.
6) Bedrock cores collected at locations c–1, c–2, and c–3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality. the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th efissile planes between approximately 60 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe–ramming and splitting. A alternative method of removal is blasting.
8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
9) Rock Reuse Potential – the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3–50–0001–011–2009
PROJECT NUMBER: BERLIN AIR 04–3216

FILE NAME: z05h378sht_br1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
BORING LOGS B25–B27

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 163 OF 173

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033, Fax: 802-674-5943
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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-28 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 14, 2006 Date Finished: July 14, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	2.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Simco 2800	
Hammer Type:	Safety Hammer	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/14/06, 0:00			None observed
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description
0													0.3 Pavement		Classification System: Burmister
		1	SS	18	14	0.5	15	17	14	–			Base Course Gravel & Sand 1.3		Dense, Top 6": light gray fine to coarse SAND and fine to coarse GRAVEL, trace (+) Silt, (moist) Bottom 8": brown fine to medium SAND, trace Silt, (moist)
		2	SS	24	14	2	12	15	28	29			Subbase Sand 4		Dense, brown fine to coarse SAND, trace Silt, (moist)
5		3	SS	24	17	4	13	10	9	8			Sandy Silt (possible fill) 6		Medium dense, dark gray SILT, some fine to coarse Gravel, little (+) fine to coarse Sand, trace Roots/Organics, organic odor towards bottom, (moist)
		4	SS	24	16	6	12	21	39	28			Glacial Till 8		Very dense, brown SILT, some (+) fine to coarse Gravel, some fine to coarse Sand, (moist)
													Bottom of Exploration at 8.0 ft		
10															
15															
		Remarks													

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Codings: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-28

GEODESIGN INCORPORATED
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1233 Shelburne Rd, Suite 360, South Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-29 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 14, 2006 Date Finished: July 14, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	2.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Simco 2800	
Hammer Type:	Safety Hammer	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/14/06, 0:00			None observed
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description
0													0.3 Pavement		Classification System: Burmister
		1	SS	18	10	0.5	18	23	20	–			Base Course Gravel & Sand 1.3		Dense, Top 7": light gray fine to coarse GRAVEL and fine to coarse SAND, trace Silt Bottom 3": light brown fine to medium SAND, trace Silt, (moist)
		2	SS	24	13	2	21	32	29	74			Subbase Sand 4		Very dense, brown fine to medium SAND, trace (+) Silt, trace fine Gravel, (moist)
5		3	SS	24	12	4	11	15	12	20			Sandy Silt 6		Medium dense, dark brown SILT, some (–) fine to medium Sand, little fine Gravel, (moist)
		4	SS	24	20	6	26	28	36	30			Sand 7		Very dense, Top 9": brown fine to medium SAND, (moist) Bottom 11": brown SILT, little fine to coarse Gravel, little(+) fine to coarse Sand, (moist)
		5	SS	24	15	8	11	17	16	13			Glacial Till 10		Dense, brown SILT, little fine to coarse Gravel, little (+) fine to coarse Sand, (moist)
													Bottom of Exploration at 10.0 ft		
10															
15															
		Remarks													

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Codings: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-29

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-30 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 14, 2006 Date Finished: July 14, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	2.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Simco 2800	
Hammer Type:	Safety Hammer	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/14/06, 0:00			None observed
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description
0													0.3 Pavement		Classification System: Burmister
		1	SS	18	15	0.5	18	20	13	–			Base Course Gravel & Sand 1.3		Dense, Top 8": light gray, fine to coarse SAND, and fine to coarse GRAVEL, trace (+) Silt, (moist) Bottom 7": light brown, fine to medium SAND, trace Silt, (moist)
		2	SS	24	14	2	17	18	22	26			Subbase Sand 4		Dense, light brown, fine to medium SAND, trace Silt, trace fine Gravel,(moist)
5		3	SS	24	18	4	18	21	27	27			Glacial Till		Dense, brown SILT, little (–) fine Sand, (moist)
		4	SS	24	14	6	24	27	27	36			8		Very dense, dark brown SILT, little (–) fine Sand, (moist)
													Bottom of Exploration at 8.0 ft		
10															
15															
		Remarks													

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Codings: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-30

YT BORING LOG PRO 5/21/04 965-03.GPJ GEODESIGN PRAFTER7-12-04.GDT 4/24/09

Notes:

1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Codings: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.
6) Bedrock cores collected at locations c–1, c–2, and c–3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality. the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th efissile planes between approximately 60 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe–ramming and splitting. A alternative method of removal is blasting.
8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
9) Rock Reuse Potential – the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3–50–0001–011–2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_brl.dgn | PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY | DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD | CHECKED BY: J. DOWNAR
BORING LOGS B28-B30 | SHEET 164 OF 173

GEODESIGN INCORPORATED
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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-31 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 14, 2006 Date Finished: July 14, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	NA	Simco 2800	Safety Hammer

Groundwater Observations	Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/14/06, 0:00				None observed
▼				
▼				

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													0.3 Pavement		
		1	SS	18	19	0.5	19	17	17	–			Base Course Gravel & Sand 1.3		Dense, Top 5": light gray fine to coarse SAND and fine to coarse GRAVEL, trace Silt; Bottom 9": light brown fine to medium SAND, trace Silt, (moist)
		2	SS	24	17	2	17	30	23	32			Subbase Sand (with Silt seam) 4		Very dense, brown fine to medium SAND, trace fine Gravel, trace Silt, with 3/4" Silt seam, (moist)
5		3	SS	24	16	4	17	14	20	26			Glacial Till		Dense, brown SILT, little (+) fine to coarse Sand, (moist)
		4	SS	24	17	6	23	26	25	31			8		Very dense, brown SILT, little (+) fine to coarse Sand, trace fine to coarse Gravel, (moist)
													Bottom of Exploration at 8.0 ft		
10															
15															

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-31

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-32 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 14, 2006 Date Finished: July 14, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	NA	Simco 2800	Safety Hammer

Groundwater Observations	Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/14/06, 0:00				None observed
▼				
▼				

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													0.3 Pavement		
		1	SS	18	12	0.5	20	22	19	–			Base Course Gravel & Sand 1.3		Dense, Top 6": light gray fine to coarse SAND and fine to coarse GRAVEL, trace Silt; Bottom 6": brown fine to medium SAND, little fine Gravel, trace Silt, (moist)
		2	SS	24	17	2	23	34	41	46			Subbase Sand (with Silt seam) 4		Very dense, brown fine to medium SAND, some Silt, trace (–) fine Gravel, with ½" thick Silt seam, (moist)
5		3	SS	18	8	4	26	48	97				Glacial Till		Very dense, brown SILT, some (–) fine to medium Sand, (moist)
													5.5 Bottom of Exploration at 5.5 ft		
10															
15															

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-32

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-33 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 14, 2006 Date Finished: July 14, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	NA	Simco 2800	Safety Hammer

Groundwater Observations	Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/14/06, 0:00				None observed
▼				
▼				

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													Pavement		
		1	SS	18	13	0.5	19	35	37	–			Base Course Gravel & Sand 1.3		Very dense, light brown fine to coarse SAND, some (+) fine to coarse Gravel, trace (–) Silt, (moist)
		2	SS	24	18	2	28	46	61	64			Subbase Sand 4		Very dense, light brown fine to medium SAND, trace (+) fine to coarse Gravel, trace Silt, (moist)
5		3	SS	24	17	4	27	38	37	40			Glacial Till		Very dense, brown SILT and fine Sand, trace fine Gravel, (moist)
		4	SS	24	18	6	41	51	58	55					Very dense, brown SILT, some fine to coarse Sand, little (–) fine to coarse Gravel, (moist), (TILL)
		5	SS	24	15	8	48	50	50	46					Very dense, brown SILT, some fine to coarse Sand, little (–) fine to coarse Gravel, (moist), (TILL)
10													10 Bottom of Exploration at 10.0 ft		
15															
20															

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-33

VT BORING LOG FID 5/21/04 965-03.GPJ GEODESIGN PROMTEP7-12-04.GDT 4/24/09

Notes:

1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Bedrock cores collected at locations c–1, c–2, and c–3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality. the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th efissile planes between approximately 60 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
6) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe–ramming and splitting. A alternative method of removal is blasting.
7) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
8) Rock Reuse Potential – the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3–50–0001–011–2009
PROJECT NUMBER: BERLIN AIR 04-3216
FILE NAME: z05h378sht_br1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
BORING LOGS B31-B33
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 165 OF 173

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-34 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Don Howey
Date Started: July 17, 2006 Date Finished: July 17, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	NA	Simco 2800	Safety Hammer

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/17/06, 9:00	8.0		Wet sample
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample No.	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
		1	SS	24	15	0	3	7	15	11			Topsoil		Medium dense, brown SILT, some fine to coarse Sand, trace (+) fine to coarse Gravel, (moist)
		2	SS	24	16	2	6	5	11	15			Sandy Silt		Medium dense, gray SILT, some fine Sand, trace (–) fine Gravel, (moist)
5		3	SS	24	18	4	9	10	12	14					Medium dense, grayish brown SILT, trace (+) fine SAND, (moist)
		4	SS	24	22	6	9	10	12	16					Medium dense, brown SILT, some fine to coarse SAND, (moist)
		5	SS	24	24	8	10	16	12	16					Medium dense, gray SILT, little fine to coarse Sand, trace fine Gravel, (with occasional ½" thick fine Sand seams), (wet)
10													10 Bottom of Exploration at 10.0 ft		
15															
20															

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-34

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-35 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Jake Wimett
Date Started: July 21, 2006 Date Finished: July 21, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	NA	Simco 2800	Safety Hammer

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/21/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample No.	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
		1	SS	24	12	0	2	7	12	14			0.5 Topsoil		Medium dense,
		2	SS	24	20	2	6	7	8	12			Sandy Silt		Top 6": TOPSOIL Bottom 6": fractured ROCK, some fine Sand, little (–) Silt, (moist) Medium dense, brownish tan fine SAND and SILT, trace coarse Sand, trace Root fibers, (moist)
5		3	SS	24	16	4	6	7	12	16					Medium dense, brown SILT and fine SAND, little (–) medium Sand, (moist)
		4	SS	24	19	6	16	15	18	27					Dense, brownish gray fine SAND and SILT, little medium to coarse Sand, little fine to coarse Gravel, (with pieces of fractured Rock), (moist)
		5	SS	24	19	8	12	12	13	17					Medium dense, fine SAND and SILT (slightly plastic), little coarse Sand, little fine Gravel, (moist to wet)
10													10 Bottom of Exploration at 10.0 ft		
15															
20															

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-35

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-36 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Don Howey
Date Started: July 18, 2006 Date Finished: July 18, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
H.S.A.	2.25 in.	SS	1.38 in.	NA	NA	Simco 2800	Safety Hammer

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/18/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample No.	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
		1	SS	24	12	0	1	3	5	5			0.5 Topsoil		Top 6": TOPSOIL
		2	SS	24	17	2	6	6	13	26			Sandy Silt		Bottom 6": Loose, brown SILT, little fine to coarse Sand, little fine to coarse Gravel, trace Root fibers, (moist) Medium dense, brown SILT, little fine to coarse Sand, trace fine to coarse Gravel, (moist)
5		3	SS	24	4	4	30	26	23	15			4 Glacial Till		Dense, greenish brown SILT, little fine Sand, (moist)
		4	SS	24	9	6	11	10	22	43					Dense, brown Clayey SILT, little (+) fine to coarse Sand, trace (+) fine Gravel, (moist to wet)
		5	SS	24	24	8	31	34	45	60					Very dense, brown SILT and fine to coarse SAND, little fine to coarse Gravel, (moist)
10													10 Bottom of Exploration at 10.0 ft		
15															
20															

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-36

VT BORING LOG.PRO 5/21/04 965-03.GPJ GEODESIGN PROMTEST-12-04.GDT 4/24/09

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.
6) Bedrock cores collected at locations c-1, c-2, and c-3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality. the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th efissile planes between approximately 60 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe-ramming and splitting. A alternative method of removal is blasting.
8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
9) Rock Reuse Potential – the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_br1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
BORING LOGS B34-B36

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 166 OF 173

GEODESIGN INCORPORATED
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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-37 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 18, 2006 Date Finished: July 18, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing:	Sampler:
Type: H.S.A.	SS
I.D.: 2.25 in.	1.38 in.
Hammer Wt.: NA	140 lbs
Hammer Fall: NA	30 in.
Rig Type: Simco 2800	
Hammer Type: Safety Hammer	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/18/06, 0:00			None observed
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description
		1	SS	24	13	0	1	3	5	6			Topsoil / Sandy Silt		Top 4": TOPSOIL Bottom 9": Loose, brown SILT, little fine Gravel, trace Root fibers, (moist)
		2	SS	24	16	2	2	4	6	6			4		Medium dense, brown SILT, and (–) fine Sand, little fine Gravel, trace Root fibers, (moist)
5		3	SS	24	0	4	20	21	17	35			Glacial Till		Dense, no recovery
		4	SS	24	15	6	21	21	35	33					Very dense, brown SILT, some (+) fine to coarse Sand, trace fine Gravel, (moist)
		5	SS	24	9	8	34	39	43	58					Very dense, brown SILT, little fine to coarse Sand, trace fine Gravel, (moist)
10													10		Bottom of Exploration at 10.0 ft
15															
20															

Classification System: Burmister

Remarks:

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580B Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Codings: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/R = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-37

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers
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1233 Shelburne Rd, Suite 360, South Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-38 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 18, 2006 Date Finished: July 18, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing:	Sampler:
Type: H.S.A.	SS
I.D.: 2.25 in.	1.38 in.
Hammer Wt.: NA	140 lbs
Hammer Fall: NA	30 in.
Rig Type: Simco 2800	
Hammer Type: Safety Hammer	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/18/06, 0:00			None observed
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description
		1	SS	24	6	0	1	3	11	13			0.5 Topsoil / Sandy Silt		Medium dense, brown ORGANIC SILT, trace fine to coarse Sand, trace Root fibers, (moist)
		2	SS	24	9	2	15	20	29	27			2 Glacial Till		Dense, brown SILT, some fine to coarse Sand, little (–) fine to coarse Gravel, (moist)
5		3	SS	24	21	4	14	20	27	34					Dense, gray SILT and fine to coarse SAND, (moist)
		4	SS	23.5	19	6	36	40	57	100/5.5"			8		Very dense, brown SILT (layered), some (+) fine to coarse Sand, little fine to coarse Gravel, (moist)
10															Bottom of Exploration at 8.0 ft
15															
20															

Classification System: Burmister

Remarks:

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580B Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Codings: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/R = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-38

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-39 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 18, 2006 Date Finished: July 18, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing:	Sampler:
Type: H.S.A.	SS
I.D.: 2.25 in.	1.38 in.
Hammer Wt.: NA	140 lbs
Hammer Fall: NA	30 in.
Rig Type: Simco 2800	
Hammer Type: Safety Hammer	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/18/06, 0:00			None observed
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description
		1	SS	24	18	0	1	4	7	10			Topsoil / Sandy Silt		Top 3": TOPSOIL Bottom 15": Medium dense, brown SILT, some (+) fine to coarse Sand, little (–) fine to coarse Gravel, trace Root fibers, (moist)
		2	SS	24	14	2	19	14	30	25			2 Glacial Till		Dense, brown SILT, some (+) fine to coarse Sand, little fine to coarse Gravel, trace Root fibers, (moist)
5		3	SS	24	20	4	8	10	13	32					Medium dense, brown SILT, little fine to coarse Sand, trace fine Gravel, with two ½" thick dark brown Silty Sand seams, (moist)
		4	SS	24	20	6	23	27	29	40					Very dense, gray SILT, little fine to coarse Sand, little fine to coarse Gravel, (moist)
													8		Bottom of Exploration at 8.0 ft
10															
15															
20															

Classification System: Burmister

Remarks: While drilling at 8 foot depth, thunderstorm started and boring was ended.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580B Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Codings: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/R = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-39

VT BORING LOG.PRO 5/21/04 965-03.GPJ GEODESIGN PRJMTEST-12-04.GDT 4/24/09

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_br1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
BORING LOGS B37-B39

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-40 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Jake Wimett
Date Started: July 21, 2006 Date Finished: July 21, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	2.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Simco 2800	
Hammer Type:	Safety Hammer	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/21/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
		1	SS	24	17	0	1	4	6	4			0.5 Topsoil		Top 6": TOPSOIL
													Sandy Silt (possible fill)		Bottom 11": Medium dense, brownish gray fine SAND, little Silt, little fine Gravel, trace Root fibers, (moist)
		2	SS	24	22	2	4	11	17	14			2.7 Sandy Silt		Medium dense, Top 9": brown SILT, little fine Sand, trace fine Gravel, trace Roots fibers, (moist)
															Bottom 13": brownish gray SILT and fine SAND, trace fine Gravel, trace (–) coarse Sand, (moist)
5		3	SS	24	19	4	10	14	17	20					Dense, brownish gray fine SAND, some Silt, trace fine Gravel and coarse Sand, trace (–) Root fibers, (moist)
		4	SS	24	21	6	24	27	32	38			6 Glacial Till		Very dense, brownish gray fine SAND and SILT, trace fine Gravel, (moist)
		5	SS	24	18	8	36	36	51	71					Very dense, brownish gray fine SAND, some Silt, trace fine Gravel and coarse Sand, (moist)
10													10 Bottom of Exploration at 10.0 ft		
15															
20															

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-40

GEODESIGN INCORPORATED
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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-41 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 18, 2006 Date Finished: July 18, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	2.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Simco 2800	
Hammer Type:	Safety Hammer	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/18/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
		1	SS	24	15	0	2	9	5	5			0.4 Topsoil		Top 5": TOPSOIL
													Sandy Silt (possible fill)		Bottom 10": Medium dense, brown fine SAND, some (+) Silt, trace fine to coarse Gravel, trace Root fibers, (moist)
		2	SS	24	15	2	3	4	5	10					Loose, brown SILT, some fine to coarse Sand, trace fine to coarse Gravel, trace Root fibers, (moist)
5		3	SS	24	12	4	29	29	35	41			4 Glacial Till		Very dense, brown SILT, some (+) fine to coarse Gravel, some (–) fine to coarse Sand, (moist)
		4	SS	24	18	6	43	45	63	70					Very dense, brown SILT, some (–) fine to coarse Sand, trace fine to coarse Gravel, (moist)
10													8 Bottom of Exploration at 8.0 ft		
15															
20															

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-41

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-42 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 18, 2006 Date Finished: July 18, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	2.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Simco 2800	
Hammer Type:	Safety Hammer	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/18/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
		1	SS	24	17	0	1	4	5	6			0.4 Topsoil		Top 5": TOPSOIL
													Sandy Silt		Bottom 12": Loose, brown SILT, little (+) fine to coarse Sand, trace fine Gravel, trace Root fibers, (moist)
		2	SS	24	16	2	5	8	7	6					Medium dense, orangish brown SILT, some fine Sand, trace f. Gravel, trace Root fibers, (moist)
5		3	SS	24	20	4	3	5	8	17					Medium dense, orangish brown SILT, some fine Sand, (moist)
		4	SS	24	16	6	21	21	41	63			8 Glacial Till		Very dense, brown SILT, little (+) fine to coarse Sand, trace fine Gravel, trace Root fibers, Rock fragments in tip approx. 2" diameter, (moist)
10													Bottom of Exploration at 8.0 ft		
15															
20															

Remarks

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-42

VT BORING LOG.PRO 5/21/04 965-03.GPJ GEODESIGN PROMTEST-12-04.GDT 4/24/09

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.
6) Bedrock cores collected at locations c–1, c–2, and c–3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality. the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th efissile planes between approximately 60 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe–ramming and splitting. A alternative method of removal is blasting.
8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
9) Rock Reuse Potential – the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3–50–0001–011–2009
PROJECT NUMBER: BERLIN AIR 04–3216

FILE NAME: z05h378sht_br1.dgn | PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY | DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD | CHECKED BY: J. DOWNAR
BORING LOGS B40–B42 | SHEET 168 OF 173

GEODESIGN INCORPORATED
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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-43 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 18, 2006 Date Finished: July 18, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing:	Sampler:	Groundwater Observations			
Type: H.S.A.	SS	Date	Depth (ft)	Elev. (ft)	Notes
I.D.: 2.25 in.	1.38 in.				
Hammer Wt.: NA	140 lbs	▼ 7/18/06, 0:00			None observed
Hammer Fall: NA	30 in.	▼			
Rig Type: Simco 2800		▼			
Hammer Type: Safety Hammer		▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
		1	SS	24	17	0	2	3	4	3			0.4 Topsoil / Sandy Silt		Top 5": TOPSOIL Bottom 12": Loose, brown SILT, little fine to coarse Sand, trace fine Gravel, trace Root fibers, (moist)
		2	SS	24	17	2	3	5	5	9					Medium dense, brown SILT, little fine to coarse Sand, trace fine Gravel, trace Root fibers, (moist)
5		3	SS	24	16	4	11	15	25	29			4 Glacial Till		Dense, brown SILT, little fine to coarse Sand, trace fine Gravel, 2" thick seam of very dark brown silty fine Sand at very bottom (possibly weathered Gravel, (moist)
		4	SS	24	21	6	23	21	27	37					Dense, light brown SILT and fine to coarse SAND, some fine to coarse Gravel, (moist)
		5	SS	24	18	8	24	15	17	26					Dense, light brown SILT, some fine to coarse Gravel, little fine to coarse SAND, (moist)
10													10 Bottom of Exploration at 10.0 ft		
15															
20															

Remarks:

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-43

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-44 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 18, 2006 Date Finished: July 18, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing:	Sampler:	Groundwater Observations			
Type: H.S.A.	SS	Date	Depth (ft)	Elev. (ft)	Notes
I.D.: 2.25 in.	1.38 in.				
Hammer Wt.: NA	140 lbs	▼ 7/18/06, 9:10	6.0		Wet sample
Hammer Fall: NA	30 in.	▼			
Rig Type: Simco 2800		▼			
Hammer Type: Safety Hammer		▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
		1	SS	24	15	0	2	6	7	7			Topsoil / Sandy Silt		Top 4": TOPSOIL Bottom 11": Medium dense, light brown/olive SILT, some (+) fine to coarse Sand, (moist)
		2	SS	24	17	2	5	8	9	13					Medium dense, light brown/olive SILT, some f. Sand, trace fine Gravel (moist)
5		3	SS	24	16	4	9	11	13	16					Medium dense, brown fine to medium SAND, some Silt, (moist)
		4	SS	24	10	6	13	15	12	18			8		Medium dense, light brown/olive SILT, some (+) fine to medium Sand, (wet)
		5	SS	24	16	8	17	21	32	49			Glacial Till		Very dense, light brown/olive SILT, little (+) fine to coarse Sand, trace fine Gravel (moist)
10													10 Bottom of Exploration at 10.0 ft		
15															
20															

Remarks:

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-44

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-45 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: John Wimett
Date Started: July 21, 2006 Date Finished: July 21, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing:	Sampler:	Groundwater Observations			
Type: H.S.A.	SS	Date	Depth (ft)	Elev. (ft)	Notes
I.D.: 2.25 in.	1.38 in.				
Hammer Wt.: NA	140 lbs	▼ 7/21/06, 0:00			None observed
Hammer Fall: NA	30 in.	▼			
Rig Type: Simco 2800		▼			
Hammer Type: Safety Hammer		▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
		1	SS	18	12	0.5	41	52	63	-			0.5 Pavement		
													Base Course Gravel & Sand		Very dense, gray-white fine to coarse SAND, some fine to coarse Gravel, trace Silt, (dry)
		2	SS	24	15	2	41	54	56	68			2 Subbase Sand		Very dense, light brown fine to coarse SAND, little fine to coarse Gravel, trace Silt, (moist)
5		3	SS	24	15	4	26	44	57	74			5.2 Glacial Till		Very dense, Top 14": light brown fine to coarse SAND, little fine to coarse Gravel, trace Silt, (moist) Bottom 1": brownish gray fine SAND, and SILT, some fine Gravel, little coarse Sand, (moist)
		4	SS	24	16	6	46	41	53	68			8 Bottom of Exploration at 8.0 ft		Very dense, brownish gray fine to medium SAND and SILT, little (+) fine to coarse Gravel, trace coarse Sand, (moist to wet)
10															
15															
20															

Remarks: Boring location on the runway.
Augered through 6" of asphalt prior to sampling S-1 from .5 to 2 feet below grade.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-45

VT BORING LOG.PRO 5/21/04 965-03.GPJ GEODESIGN PRJMTEST-12-04.GDT 4/24/09

Notes:

1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.
6) Bedrock cores collected at locations c-1, c-2, and c-3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality, the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th effissile planes between approximately 60 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe-ramming and splitting. A alternative method of removal is blasting.
8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
9) Rock Reuse Potential - the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_br1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
BORING LOGS B43-B45

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 169 OF 173

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-46 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Jake Wimett
Date Started: July 21, 2006 Date Finished: July 21, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing:	Sampler:	Groundwater Observations			
Type: H.S.A.	SS	Date	Depth (ft)	Elev. (ft)	Notes
I.D.: 2.25 in.	1.38 in.				
Hammer Wt.: NA	140 lbs	▼ 7/21/06, 0:00	8.0		Wet sample
Hammer Fall: NA	30 in.	▼			
Rig Type: Simco 2800		▼			
Hammer Type: Safety Hammer		▼			

Depth (ft)	Casing Blows/ft	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
		1	SS	24	18	0	1	2	7	11			0.5 Topsoil		Top 6": TOPSOIL
													Silty Sand		Bottom 12": Loose, brownish gray fine SAND, some Silt, little fine to coarse Gravel, trace medium to coarse Sand, trace Root fibers, (moist)
		2	SS	24	24	2	11	10	11	10					Medium dense, brownish gray SILT, some fine Sand, trace fine Gravel, (moist)
5		3	SS	24	19	4	6	11	13	22					Medium dense, brownish gray fine to medium SAND, some Silt, little fine to coarse Gravel, (with pieces of fractured Rock), (moist to wet)
		4	SS	24	24	6	19	16	18	18			5.5 Glacial Till		Dense, brownish gray fine to medium SAND, some Silt, little fine to coarse Gravel, (with pieces of fractured Rock), (moist to wet)
		5	SS	24	22	8	12	14	16	23					Dense, brownish gray fine to medium SAND, some Silt, little fine to coarse Gravel, (with pieces of fractured Rock), (wet)
10													10 Bottom of Exploration at 10.0 ft		
15															
20															

Remarks: No augers used below 10 foot depth.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580B Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. E. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After casing; N.R. = Not Recorded.
3) Sample Type Codings: A = Auger; C = Core; B = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/R = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-46

VT BORING LOG.PRO 5/21/04 965-03.GPJ GEODESIGN PRJMTLTEF7-12-04.GDT 4/24/09

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-51 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Jake Wimett
Date Started: July 21, 2006 Date Finished: July 21, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing:	Sampler:	Groundwater Observations			
Type: H.S.A.	SS	Date	Depth (ft)	Elev. (ft)	Notes
I.D.: 2.25 in.	1.38 in.				
Hammer Wt.: NA	140 lbs	▼ 7/21/06, 0:00	7.0		Wet sample
Hammer Fall: NA	30 in.	▼			
Rig Type: Simco 2800		▼			
Hammer Type: Safety Hammer		▼			

Depth (ft)	Casing Blows/ft	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
		1	SS	24	20	0	2	4	6	6			0.5 Topsoil		Top 6": TOPSOIL
													Sandy Silt		Bottom 14": Medium dense, brownish gray fine SAND, some (+) Silt, little fine Gravel, trace medium to coarse Sand, trace Root fibers, (moist)
		2	SS	24	14	2	5	13	18	24					Dense, brownish gray fine to medium SAND, some Silt, some (–) fine to coarse Gravel, trace coarse Sand, (with one 1.5" piece of fractured Quartz 3" from bottom), (moist)
5		3	SS	24	17	4	16	16	19	25					Dense, brownish gray (with oxidized orange) fine to medium SAND, little (+) fine to coarse Gravel, little Silt, trace coarse Sand, (moist)
		4	SS	24	17	6	21	10	8	8					Medium dense, brownish gray SILT, some fine Sand, trace fine Gravel, (wet at bottom)
		5	SS	24	14	8	7	9	20	26					Medium dense,
10															Top 12": brownish gray SILT, some fine Sand, trace fine Gravel
		6	SS	24	15	10	6	11	13	13					Bottom 2": brown medium SAND and SILT, (wet)
															Medium dense, fine to medium SAND and SILT (layered), (wet)
		7	SS	24	7	12	8	14	16	18					Dense, (wet)
															Top 6": brown fine to medium SAND, trace Silt, trace fine Gravel
15		8	SS	24	15	14	14	16	13	15					Middle 7": gray/brown SILT and fine SAND, trace coarse Sand
															Bottom 4": brown fine to medium SAND, trace Silt, trace fine Gravel
													16 Bottom of Exploration at 16.0 ft		Medium dense, brownish gray fine to medium SAND (layered), some (–) Silt, trace coarse Sand, (wet)
20															

Remarks: No augers used below 10 foot depth.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580B Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. E. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After casing; N.R. = Not Recorded.
3) Sample Type Codings: A = Auger; C = Core; B = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/R = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-51

VT BORING LOG.PRO 5/21/04 965-03.GPJ GEODESIGN PRJMTLTEF7-12-04.GDT 4/24/09

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-52 | Page No.: 1 of 1 | File No.: 965-03 | Checked By: KEW/AMH

Boring Company: Specialty Drilling & Investigation
Foreman: Chris Aldrich
GeoDesign Rep.: Dan Howey
Date Started: July 13, 2006 Date Finished: July 13, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing:	Sampler:	Groundwater Observations			
Type: H.S.A.	SS	Date	Depth (ft)	Elev. (ft)	Notes
I.D.: 2.25 in.	1.38 in.				
Hammer Wt.: NA	140 lbs	▼ 7/13/06, 0:00			None observed
Hammer Fall: NA	30 in.	▼			
Rig Type: Simco 2800		▼			
Hammer Type: Safety Hammer		▼			

Depth (ft)	Casing Blows/ft	Sample Number	Sample Type	Penetration (inches)	Recovery (inches)	Sample Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
		1	SS	24	17	0	4	6	12	15			Topsoil		Medium dense, brown SILT, little (+) fine to coarse Gravel, little (–) fine to coarse Sand, trace Root fibers, (moist)
													Sandy Silt		
		2	SS	24	19	2	10	12	16	16					Medium dense, brown SILT, and (–) fine to coarse Sand, trace fine Gravel, (moist)
5		3	SS	24	16	4	2	2	2	4					Loose, brown SILT, and (–) fine to coarse Sand, trace fine Gravel, (moist)
		4	SS	24	17	6	7	7	8	11					Medium dense, reddish gray SILT, and (–) fine to coarse Sand, trace fine Gravel, trace Root fibers, (moist)
		5	SS	24	15	8	20	34	28	24			8 Glacial Till		Very dense, light brown SILT, little (+) fine to coarse Sand, trace fine Gravel, (moist), (TILL)
10													10 Bottom of Exploration at 10.0 ft		
15															
20															

Remarks: Boring relocated to approximately 10 feet away from runway due to original location's proximity to utility marking.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580B Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. E. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After casing; N.R. = Not Recorded.
3) Sample Type Codings: A = Auger; C = Core; B = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/R = Weight of Rod/Hammer
4) Proportions Used: Trace = 1–10%; Little = 10–20%; Some = 20–35%; And = 35–50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-52

VT BORING LOG.PRO 5/21/04 965-03.GPJ GEODESIGN PRJMTLTEF7-12-04.GDT 4/24/09

Hoyle, Tanner & Associates, Inc.
150 Dow Street
Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com
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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_br1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
BORING LOGS B46-B52

PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 170 OF 173

GEODESIGN INCORPORATED
Geotechnical Engineers–Environmental Consultants–Construction Engineers

P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033, Fax: 802-674-5943
1233 Shelburne Rd, Suite 360, South Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: B-53
Page No.: 1 of 1
File No.: 965-03
Checked By: KEW/AMH

Boring Company: Seaboard Drilling
Foreman: Chris Aldrich
GeoDesign Rep.: Jake Wimett
Date Started: July 21, 2006 Date Finished: July 21, 2006
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing:	Sampler:
Type: H.S.A.	SS
I.D.: 2.25 in.	1.38 in.
Hammer Wt.: NA	140 lbs
Hammer Fall: NA	30 in.
Rig Type: Simco 2800	
Hammer Type: Safety Hammer	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 7/21/06, 0:00			None observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
		1	SS	24	17	0	2	3	6	6			Topsoil / Sandy Silt		Loose, brown Top 4": TOPSOIL Bottom 13": fine SAND, little (+) Silt, trace coarse Sand, (moist)
		2	SS	24	12	2	4	10	12	37					Medium dense, tannish brown fine SAND and SILT, trace coarse Sand and fine Gravel, trace Root fibers, (moist)
5		3	SS	24	20	4	16	17	24	25					Dense, brownish gray SILT, some fine Sand, little fine to coarse Gravel, trace Root fibers, (with pieces of fractured Rock throughout sample), (moist)
		4	SS	24	13	6	22	24	32	31			6 Glacial Till		Very dense, brownish gray fine to medium SAND, little Silt, little fine Gravel, (moist)
													8 Bottom of Exploration at 8.0 ft		
10															
15															
20															

Remarks: Auger grinding and chatter at 3.5 feet below grade.
Stopped augers at 3.8 feet below grade; grinding on inferred rock; auger refusal at 5.8 feet below grade; relocated borehole 5 feet west.
Continued sampling with S-3 at 4 feet below grade.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: B-53

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: HA-1
Page No.: 1 of 1
File No.: 965-03
Checked By:

Boring Company:
Foreman:
GeoDesign Rep.:
Date Started: Date Finished:
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing:	Sampler:
Type:	
I.D.: in.	in.
Hammer Wt.:	
Hammer Fall:	
Rig Type:	
Hammer Type:	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼			
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description (Classification System:)
		53				2.5									
5															
10															
15															
20															

Remarks:

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: HA-1

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BORING LOG

Project Name: Knapp Airport, Berlin, Vermont

Boring No.: HA-3B
Page No.: 1 of 1
File No.: 965-03
Checked By:

Boring Company:
Foreman:
GeoDesign Rep.:
Date Started: Date Finished:
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

Casing:	Sampler:
Type:	
I.D.: in.	in.
Hammer Wt.:	
Hammer Fall:	
Rig Type:	
Hammer Type:	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼			
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description (Classification System:)
		S2				1.5									
5															
10															
15															
20															

Remarks:

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: HA-3B

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.
6) Bedrock cores collected at locations c-1, c-2, and c-3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality. the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th efissile planes between approximately 00 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe-ramming and splitting. A alternative method of removal is blasting.
8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
9) Rock Reuse Potential - the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_br1.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
BORING LOGS B53-HA-3B
PLOT DATE: 11/22/2011
DRAWN BY: D. STANDISH
CHECKED BY: J. DOWNAR
SHEET 171 OF 173

VT BORING LOG PID 5/21/04 965-03.GPJ GEODESIGN PDMATTERY-12-04.GDT 4/24/09

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BORING LOG

Project Name: Knapp Airport Taxiway A — Berlin, VT

Boring No.: C-1 | Page No.: 1 of 1 | File No.: 965-03.1 | Checked By: JAG

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: March 31, 2009 — Date Finished: March 31, 2009
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): 1158
Station: — Offset: ft

Casing: Type	Casing: Dbl.	Sampler: Type	Sampler: Dbl.
FJ		FJ	
I.D.: 3.0 in.		I.D.: 2.0 in.	
Hammer Wt.: 300 lbs		Hammer Fall: 30 in.	
Rig Type: CME 75 Track		Hammer Type: Auto	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/31/09 12:00			None Observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
													Overburden Soil (Inferred)		
5													5		
		C1	C	42	42	5						1.9	Cobble 1157.5 Glacial Till 152.6		C1) Top 2": Cobble/Coarse Gravel. Middle 20": Gray SILT and fine SAND, some fine to coarse Gravel (Glacial Till). Bottom 20": Moderately hard, slightly to moderately weathered, dark gray with orange weathering in joints, very closely jointed, very poor quality PHYLLITE (RQD = 0%). Fractured 60-70 degrees from horizontal, gray wash water with dark gray/black graphite staining on the surface of the wash tub water.
							[REC= 100%; RQD= 0%]					3.7	6.8		
													Bedrock 1151.2 (Phyllite)		
												2.7			
		C2	C	36	36	8.5					4/.5' 5/2'				C2) Moderately hard, slightly to moderately weathered, dark gray with orange weathering in joints, very closely jointed, very poor quality PHYLLITE (RQD = 11%). Fractured 60-70 degrees from horizontal, gray wash water with dark gray/black graphite staining on the surface of the wash tub water. Lost an estimated 25 to 30+ gallons of water during core run.
10							[REC= 100%; RQD= 11%]								
												4			
		C3	C	36	28	11.5						3			
							[REC= 78%; RQD= 0%]					2.5			
												8	14.5		
15													Bottom 1143.5 of Exploration at 14.5 ft		C3) Moderately hard to soft, slightly weathered, dark gray with orange weathering in joints, very closely jointed, very poor quality PHYLLITE (RQD = 0%). Fractured 60-70 degrees from horizontal, gray wash water with dark gray/black graphite staining on the surface of the wash tub water. Lost an estimated 30+ gallons of water during core run.
20															
25															
30															

Remarks:
1) Ground surface elevation estimated by GeoDesign from topographic base plan provided by Hoyle Tanner and Associates.
2) Drove casing to 4.5' deep. Borehole advanced to 5' deep using a roller bit prior to coring.
3) Driller noted consistent water loss beginning at 9' deep.
4) Began to observe occasional complete loss of water return while advancing core barrel from 13.5' to 14.5'.
5) Driller terminated core runs C1, C2, and C3 to retrieve core samples due to a blocked core barrel.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: C-1

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BORING LOG

Project Name: Knapp Airport Taxiway A — Berlin, VT

Boring No.: C-2 | Page No.: 1 of 1 | File No.: 965-03.1 | Checked By: JAG

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: March 31, 2009 — Date Finished: March 31, 2009
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): 1164
Station: — Offset: ft

Casing: Type	Casing: Dbl.	Sampler: Type	Sampler: Dbl.
FJ		FJ	
I.D.: 3.0 in.		I.D.: 2.0 in.	
Hammer Wt.: 300 lbs		Hammer Fall: 30 in.	
Rig Type: CME 75 Track		Hammer Type: Auto	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/31/09 14:00			None Observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
													Overburden Soil (Inferred)		
5		C1	C	28	28	4.5						2.9	4.5		
							[REC= 100%; RQD= 0%]						Bedrock 1159.5 (Phyllite)		C1) Moderately hard to soft, moderately weathered, dark gray with orange weathering in joints, very closely jointed, very poor quality PHYLLITE (RQD = 0%). Fractured 60-70 degrees from horizontal (with occasional 80 degree fracture), gray wash water with dark gray/black graphite staining on the surface of the wash tub water.
												2.7			
		C2	C	37	36	6.9					9/4' 2/.5'				C2) Moderately hard to soft, slightly weathered, dark gray with orange weathering in joints, very closely jointed, very poor quality PHYLLITE (RQD = 11%). Fractured 60-70 degrees from horizontal, gray wash water with dark gray/black graphite staining on the surface of the wash tub water.
							[REC= 97%; RQD= 11%]					2.8			
10												3.1			
		C3	C	36	35	10					3/.5	2.3			C3) Moderately hard to soft, slightly weathered, dark gray with orange weathering in joints, very closely jointed, poor quality PHYLLITE (RQD = 44%). Fractured 60-70 degrees from horizontal, gray wash water with dark gray/black graphite staining on the surface of the wash tub water.
							[REC= 97%; RQD= 44%]					2.7			
												3	13		
15													Bottom 1151 of Exploration at 13.0 ft		
20															
25															
30															

Remarks:
1) Ground surface elevation estimated by GeoDesign from topographic base plan provided by Hoyle Tanner and Associates.
2) Drove casing to 4.5'. Advanced borehole to 4.5' deep using a roller bit prior to coring.
3) Driller terminated core runs C1, C2, and C3 to retrieve core samples due to a blocked core barrel.
4) Noted a thicker layer of graphite on the surface of the wash tub water than observed at C-1 or C-3.
5) Driller noted no noticeable water loss during coring operations.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: C-2

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BORING LOG

Project Name: Knapp Airport Taxiway A — Berlin, VT

Boring No.: C-3 | Page No.: 1 of 1 | File No.: 965-03.1 | Checked By: JAG

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: March 31, 2009 — Date Finished: March 31, 2009
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): 1165
Station: — Offset: ft

Casing: Type	Casing: Dbl.	Sampler: Type	Sampler: Dbl.
FJ		FJ	
I.D.: 3.0 in.		I.D.: 2.0 in.	
Hammer Wt.: 300 lbs		Hammer Fall: 30 in.	
Rig Type: CME 75 Track		Hammer Type: Auto	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/31/09 16:00			None Observed
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
													1 Overburden Soil (Inferred) Possible 116.4		
		C1	C	48	48	2.5							2.5 Weathered Rock		
							[REC= 100%; RQD= 13%]						Bedrock 1162.5 (Phyllite)		C1) Moderately hard to soft, slightly to moderately weathered, dark gray with orange weathering in joints, very closely jointed, very poor quality PHYLLITE (RQD = 13%). Fractured 60-70 degrees from horizontal (with occasional 80 degree fracture), gray wash water with dark gray/black graphite staining on the surface of the wash tub water.
5															
		C2	C	60	57	6.5									C2) Moderately hard to soft, slightly weathered, dark gray with orange weathering in joints, very closely jointed, fair quality PHYLLITE (RQD = 55%). Fractured 60-70 degrees from horizontal, gray wash water with dark gray/black graphite staining on the surface of the wash tub water.
							[REC= 95%; RQD= 55%]								
10															
													11.5		
													Bottom 1153.5 of Exploration at 11.5 ft		
15															
20															
25															
30															

Remarks:
1) Ground surface elevation estimated by GeoDesign from topographic base plan provided by Hoyle Tanner and Associates.
2) Drove casing to 2.5'. Advanced borehole to 2.5' deep. Using a roller bit prior to coring.
3) Driller inferred weathered rock from 1' to 1.5' while driving casing/roller bitting. Casing approximately 1' into top of competent bedrock.
4) Driller noted approximately 20+ gallons of water loss throughout both core runs but inferred that water loss was primarily around the outside of the casing on the water return and not through seams in the rock.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

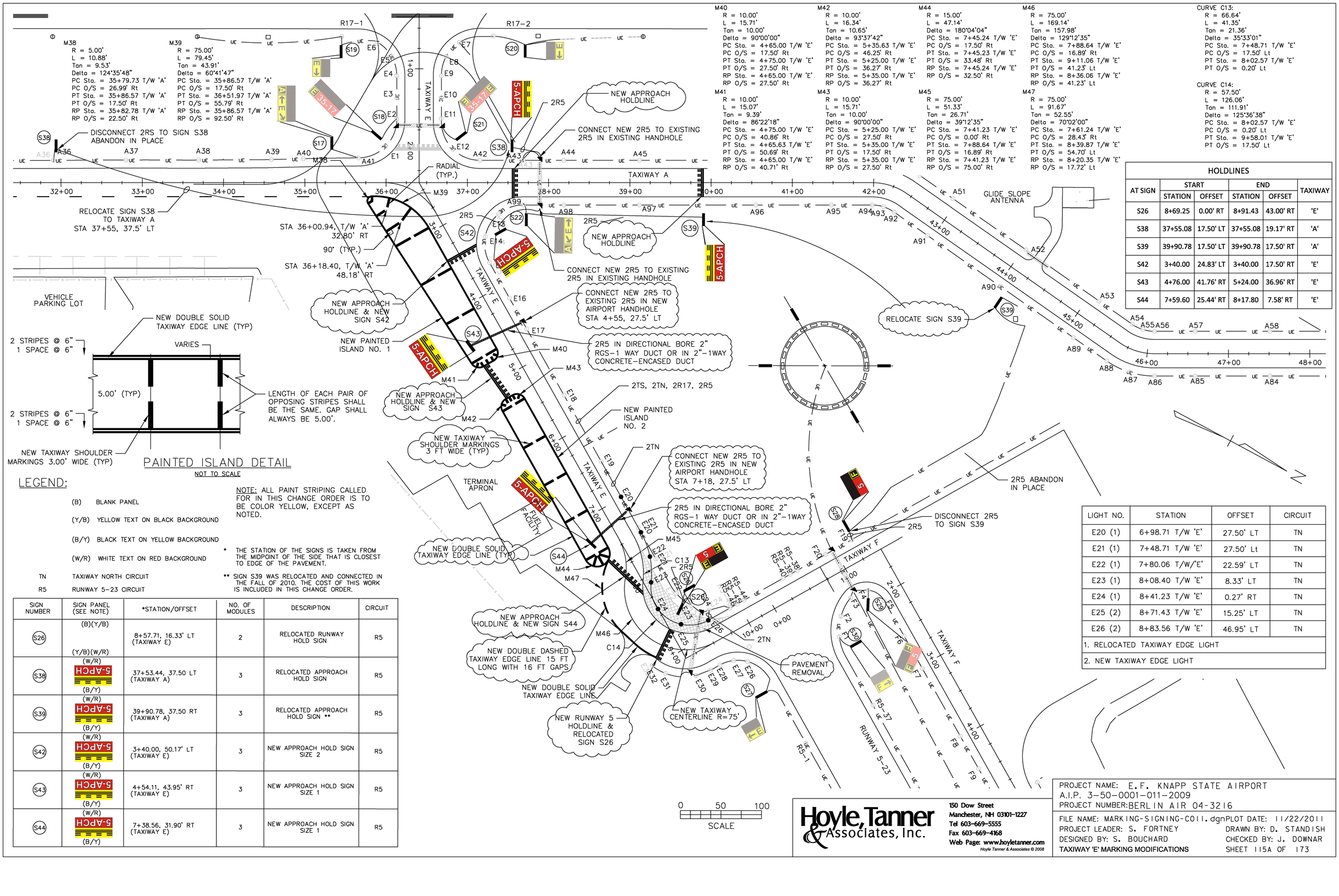
Boring No.: C-3

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.
6) Bedrock cores collected at locations c-1, c-2, and c-3 typically consist of gray, soft, moderately weathered phyllite bedrock of very poor to fair quality. the rock was fissile and crumbled with moderate finger pressure. Fractures were typically noted along th efissile planes between approximately 80 and 70 degrees (measures from the horizontal). Rock quality designation (RQD) values ranged between 0 and 55%. The rock type was consistent with mapping data published on the Contennial Geologic Map of Vermoont (doll, 1961) and a rock outcrop located approximately 500 feet north of the site (along Airport Road).
7) Bedrock removal for this project can be accomplished using conventional mechanical equipment. Mechanical removal methods can include excavating, ripping, hoe-ramming and splitting. A alternative method of removal is blasting.
8) The effort and difficulty of rock removal will generally increase with the depth once the upper, more weathered rock has been penetrated (estimated up to between 5 and 10 feet deep).
9) Rock Reuse Potential - the type and condition of rock anticipated for removal will be poor aggregate for use in the base course below new pavements.

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378sht_br1.dgn — PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY — DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD — CHECKED BY: J. DOWNAR
BORING LOGS C-1-C-3 — SHEET 172 OF 173



PAINTED ISLAND DETAIL

NOT TO SCALE

LEGEND:

(B) BLANK PANEL

(Y/B) YELLOW TEXT ON BLACK BACKGROUND

(B/Y) BLACK TEXT ON YELLOW BACKGROUND

(W/R) WHITE TEXT ON RED BACKGROUND

TN TAXIWAY NORTH CIRCUIT

R5 RUNWAY 5-23 CIRCUIT

NOTE: ALL PAINT STRIPING CALLED FOR IN THIS CHANGE ORDER IS TO BE COLOR YELLOW, EXCEPT AS NOTED.

* THE STATION OF THE SIGNS IS TAKEN FROM THE MIDPOINT OF THE SIDE THAT IS CLOSEST TO EDGE OF THE PAVEMENT.

** SIGN S39 WAS RELOCATED AND CONNECTED IN THE FALL OF 2010. THE COST OF THIS WORK IS INCLUDED IN THIS CHANGE ORDER.

SIGN NUMBER	SIGN PANEL (SEE NOTE)	*STATION/OFFSET	NO. OF MODULES	DESCRIPTION	CIRCUIT
S26	(B)(Y/B) (Y/B)(W/R)	8+57.71, 16.33' LT (TAXIWAY E)	2	RELOCATED RUNWAY HOLD SIGN	R5
S38	(W/R) 5-APCH (B/Y)	37+53.44, 37.50 LT (TAXIWAY A)	3	RELOCATED APPROACH HOLD SIGN	R5
S39	(W/R) 5-APCH (B/Y)	39+90.78, 37.50 RT (TAXIWAY A)	3	RELOCATED APPROACH HOLD SIGN **	R5
S42	(W/R) 5-APCH (B/Y)	3+40.00, 50.17' LT (TAXIWAY E)	3	NEW APPROACH HOLD SIGN SIZE 2	R5
S43	(W/R) 5-APCH (B/Y)	4+54.11, 43.95' RT (TAXIWAY E)	3	NEW APPROACH HOLD SIGN SIZE 1	R5
S44	(W/R) 5-APCH (B/Y)	7+38.56, 31.90' RT (TAXIWAY E)	3	NEW APPROACH HOLD SIGN SIZE 1	R5

HOLDLINES

AT SIGN	START STATION	START OFFSET	END STATION	END OFFSET	TAXIWAY
S26	8+69.25	0.00' RT	8+91.43	43.00' RT	'E'
S38	37+55.08	17.50' LT	37+55.08	19.17' RT	'A'
S39	39+90.78	17.50' LT	39+90.78	17.50' RT	'A'
S42	3+40.00	24.83' LT	3+40.00	17.50' RT	'E'
S43	4+76.00	41.76' RT	5+24.00	36.96' RT	'E'
S44	7+59.60	25.44' RT	8+17.80	7.58' RT	'E'

LIGHT NO.	STATION	OFFSET	CIRCUIT
E20 (1)	6+98.71 T/W 'E'	27.50' LT	TN
E21 (1)	7+48.71 T/W 'E'	27.50' Lt	TN
E22 (1)	7+80.06 T/W/'E'	22.59' LT	TN
E23 (1)	8+08.40 T/W 'E'	8.33' LT	TN
E24 (1)	8+41.23 T/W 'E'	0.27' RT	TN
E25 (2)	8+71.43 T/W 'E'	15.25' LT	TN
E26 (2)	8+83.56 T/W 'E'	46.95' LT	TN
1. RELOCATED TAXIWAY EDGE LIGHT			
2. NEW TAXIWAY EDGE LIGHT			

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PROJECT NAME: E.F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: MARKING-SIGNING-C011.dgn PLOT DATE: 11/22/2011
PROJECT LEADER: S. FORTNEY DRAWN BY: D. STANDISH
DESIGNED BY: S. BOUCHARD CHECKED BY: J. DOWNAR
TAXIWAY 'E' MARKING MODIFICATIONS SHEET 115A OF 173