PLANNING AND ENGINEERING GUIDELINES & STANDARDS (PEGS)
SUPPLEMENT NUMBER: PEGS-21-002

APRIL 12, 2021

BWI SURVEY CONTROL MANUAL
A. Volume 2, Appendix 2C, Section 2C.5.1 – BWI Survey Control Sheet
B. Volume 2, Appendix 2E, Section 2E.1 – BWI Survey Control Manual

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Effective immediately, the following modification shall be made to the MDOT MAA 2021 PEGS Manual:

A. Volume 2, Appendix 2C – BWI Survey Control Sheet, 2/11/2021
Remove Appendix 2C.5.1 in its entirety and replace with BWI Survey Control Sheet, with Revision date of 2/11/2021 (attachment 1).

B. Volume 2, Appendix 2E – BWI Survey Control Manual, April 2021
Remove Appendix 2E.1 in its entirety and replace with BWI Survey Control Manual, dated April 2021 (attachment 2).

Consultants listed herein are required to distribute this PEGS standard supplement to their respective staff and subconsultants.

If you believe this standard supplement conflicts with any other codes or regulations or if you should have any questions regarding this matter, please contact the Director, Office of Engineering and Construction at (410) 859-7093.

Tom Varughese, P.E., Director
Division of Planning and Engineering
Office of Engineering and Construction

Paul L. Shank, P.E., C.M., Chief Engineer
Division of Planning and Engineering

DISTRIBUTION

Attachments:

1. BWI Survey Control Sheet
2. BWI Survey Control Manual

Distribution:

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Mr. Shawn Ames
Mr. Royce Bassarab (HNTB)
Mr. Ted Blackerby (Jacobs)
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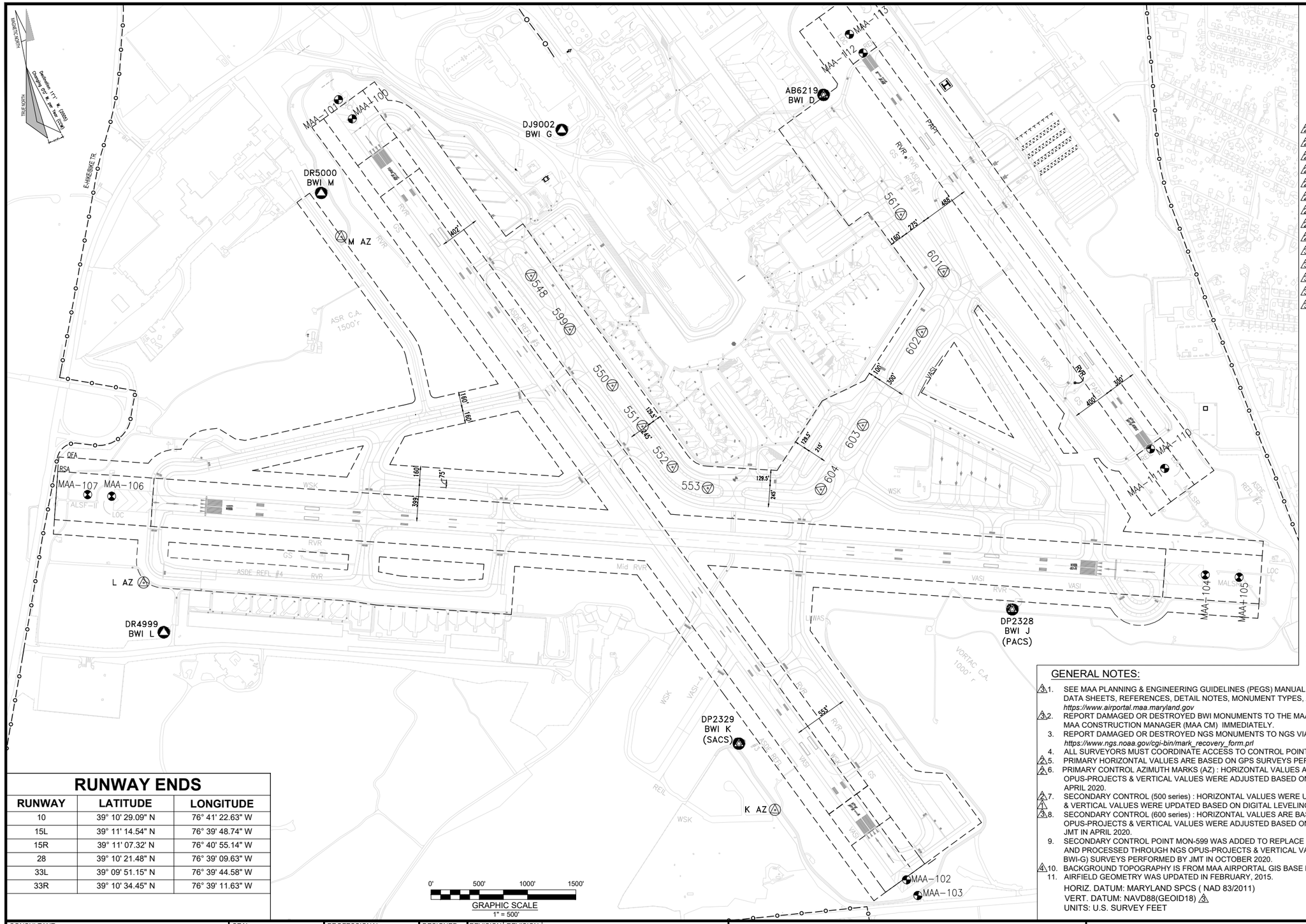
Mr. Tom Varughese
Mr. Jim Walsh
Mr. Scott Wardle (Baker)
Mr. Mark Williams

ATTACHMENT 1

BWI SURVEY CONTROL SHEET



SURVEY CONTROL

POINT	NORTHING	EASTING	ELEV .
*BWI D	553596.50	1407273.64	154.41
*BWI G	553233.75	1404563.59	166.38
*BWI J	548269.37	1409227.67	127.99 ⚠1
*BWI K	546879.47	1406396.46	135.92 ⚠1
*BWI L	548031.96	1400442.72	145.91 ⚠1
*BWI M	552580.43	1402072.54	102.73 ⚠1
⚠2 K AZ	546190.76	1406770.25	132.90 ⚠1
⚠2 L AZ	548543.12	1400234.07	133.83 ⚠1
⚠2 M AZ	552126.10	1402280.49	108.54 ⚠1
⚠2 MON-548	551723.75	1404244.82	132.25 ⚠1
⚠2 MON-550	550585.34	1405086.96	137.81 ⚠1
⚠2 MON-551	550161.61	1405397.63	141.64
⚠2 MON-552	549741.18	1405708.72	144.15 ⚠1
⚠2 MON-553	549523.63	1406074.18	143.99 ⚠1
⚠2 MON-561	552359.40	1408073.51	139.80 ⚠1
⚠3 **MON-599	551167.54	1404641.73	130.70
⚠3 MON-601	551767.32	1408515.54	136.35
⚠3 MON-602	551140.65	1408291.47	138.37
⚠3 MON-603	550173.70	1407679.47	139.62
⚠3 MON-604	549509.73	1407245.38	139.16

* NGS MONUMENT - "PID" IS LABELED ON THIS PLAN AND ON SURVEY CONTROL MANUAL SHEETS

** MON-549 WAS DESTROYED & RELOCATED AS MON-599

RUNWAY CENTERLINE MONUMENTS

POINT	NORTHING	EASTING	DESC.
MAA-100	**	**	**
MAA-101	**	**	**
MAA-102	**	**	**
MAA-103	**	**	**
MAA-104	548626.17	1411225.79	OFFSET 10' RT.
MAA-105	548601.77	1411575.15	OFFSET 10' RT.
MAA-106	549440.08	1399903.03	OFFSET 32' LT.
MAA-107	549457.51	1399653.72	OFFSET 32' LT.
MAA-110	549931.30	1410658.07	CENTERLINE
MAA-111	549728.96	1410804.97	CENTERLINE
MAA-112	554029.30	1407682.46	CENTERLINE
MAA-113	554223.41	1407541.50	CENTERLINE

**MONUMENT UNDER CONSTRUCTION, NO VALUES AVAILABLE AT THIS TIME.

RUNWAY CENTERLINE MONUMENTS REFLECT FAA PUBLISHED CENTERLINES, (NOT ACTUAL PAVEMENT MARKING CENTERLINES FOR RUNWAYS), AND ARE INTENDED ONLY FOR RECOVERY OF THE NAVIGATIONAL RUNWAY CENTERLINE AND SHALL NOT BE USED FOR CENTERLINE MARKINGS OR SURVEY CONTROL. SEE BWI SURVEY CONTROL MANUAL FOR RECOVERY COORDINATES & SKETCHES.

RUNWAY ENDS

RUNWAY	LATITUDE	LONGITUDE
10	39° 10' 29.09" N	76° 41' 22.63" W
15L	39° 11' 14.54" N	76° 39' 48.74" W
15R	39° 11' 07.32' N	76° 40' 55.14" W
28	39° 10' 21.48" N	76° 39' 09.63" W
33L	39° 09' 51.15" N	76° 39' 44.58" W
33R	39° 10' 34.45" N	76° 39' 11.63" W

GENERAL NOTES:

⚠3 1. SEE MAA PLANNING & ENGINEERING GUIDELINES (PEGS) MANUAL FOR SURVEY CONTROL MANUAL CONTAINING; DATA SHEETS, REFERENCES, DETAIL NOTES, MONUMENT TYPES, AND "HOW TO REACH" DESCRIPTIONS. *https://www.airportal.maa.maryland.gov*

⚠3 2. REPORT DAMAGED OR DESTROYED BWI MONUMENTS TO THE MAA PROJECT MANAGER (MAA PM) AND/OR MAA CONSTRUCTION MANAGER (MAA CM) IMMEDIATELY.

3. REPORT DAMAGED OR DESTROYED NGS MONUMENTS TO NGS VIA THEIR WEB PAGE AT *https://www.ngs.noaa.gov/cgi-bin/mark_recovery_form.prl*

4. ALL SURVEYORS MUST COORDINATE ACCESS TO CONTROL POINTS WITH AIRPORT OPERATIONS AT 410-859-7018.

⚠2 5. PRIMARY HORIZONTAL VALUES ARE BASED ON GPS SURVEYS PERFORMED BY JMT IN JUNE 2012 & UPDATED IN APRIL 2020.

⚠2 6. PRIMARY CONTROL AZIMUTH MARKS (AZ) : HORIZONTAL VALUES ARE BASED ON GPS STATIC SURVEYS AND PROCESSED THROUGH NGS OPUS-PROJECTS & VERTICAL VALUES WERE ADJUSTED BASED ON DIGITAL LEVELING (FROM AZ MATE) SURVEYS PERFORMED BY JMT IN APRIL 2020.

⚠2 7. SECONDARY CONTROL (500 series) : HORIZONTAL VALUES WERE UPDATED BASED ON GNSS RTK (BASE TO ROVER FROM BWI-D & BWI-G) ⚠1 & VERTICAL VALUES WERE UPDATED BASED ON DIGITAL LEVELING (FROM BWI-D & BWI-G) SURVEYS PERFORMED BY JMT IN APRIL 2020.

⚠3 8. SECONDARY CONTROL (600 series) : HORIZONTAL VALUES ARE BASED ON GPS STATIC SURVEYS AND PROCESSED THROUGH NGS OPUS-PROJECTS & VERTICAL VALUES WERE ADJUSTED BASED ON DIGITAL LEVELING (FROM BWI-D & BWI-G) SURVEYS PERFORMED BY JMT IN APRIL 2020.

9. SECONDARY CONTROL POINT MON-599 WAS ADDED TO REPLACE MON-549 : HORIZONTAL VALUES ARE BASED ON GPS STATIC SURVEYS AND PROCESSED THROUGH NGS OPUS-PROJECTS & VERTICAL VALUES WERE ADJUSTED BASED ON DIGITAL LEVELING (FROM BWI-D & BWI-G) SURVEYS PERFORMED BY JMT IN OCTOBER 2020.

⚠4 10. BACKGROUND TOPOGRAPHY IS FROM MAA AIRPORTAL GIS BASE MAPPING AND IS SHOWN FOR A VISUAL REFERENCE ONLY.

11. AIRFIELD GEOMETRY WAS UPDATED IN FEBRUARY, 2015.

HORIZ. DATUM: MARYLAND SPCS (NAD 83/2011)
VERT. DATUM: NAVD88(GEOID18) ⚠3
UNITS: U.S. SURVEY FEET

BWI D PRIMARY CONTROL STATIONS (NGS 'B' ORDER)
601 SECONDARY CONTROL (NGS 1st ORDER)
MAA-100 RUNWAY MONUMENTS (RECOVERY ONLY)

CONSULTANT:
JMT
40 WIGHT AVENUE | HUNT VALLEY, MD 21030
P: (410) 329-3100 | F: (410) 472-2200 | www.jmt.com

SEAL:

PROFESSIONAL CERTIFICATION:
"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND"

LICENSE NO. 21637
EXPIRATION DATE: 12/25/2021

DESIGNED:	DRAWN:	CHECKED:	APPROVED:
BRH	JAF	RHS	DAL

REVISION NO.	REVISION DATE	DESCRIPTION
⚠1	1/31/21	ELEVATIONS UPDATED FROM DIGITAL LEVELING
⚠2	1/31/21	COORDINATES UPDATED FROM GNSS SURVEYS
⚠3	1/31/21	NEW CONTROL POINTS ESTABLISHED
⚠4	2/11/21	UPDATED BACKGROUND TOPOGRAPHY

BALTIMORE/WASHINGTON INTERNATIONAL Thurgood Marshall AIRPORT

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND AVIATION ADMINISTRATION
OFFICE OF ENGINEERING AND CONSTRUCTION

PROJECT TITLE:

SHEET TITLE: SURVEY CONTROL SHEET

SCALE: 1"= 500'

DATE: APRIL 2021

CONTRACT NO.:

SHEET NO.: XX of XX

IDENTIFIER: XXXX

REV. FEB. 2015 IF THIS DRAWING IS LESS THAN 22" x 34", IT IS A REDUCED SIZE DRAWING

Q:\SMD\00-Aviation\MAA\BWI\Survey Control Sheet\Survey Control Sheet - 2020\BWI SURVEY CONTROL SHEET-2020.dwg

ATTACHMENT 2

BWI SURVEY CONTROL MANUAL

BALTIMORE/WASHINGTON INTERNATIONAL THURGOOD MARSHALL AIRPORT

Survey Control Manual
Revision 1

APRIL 2021

FINAL

Important Note:

All Surveys Performed at BWI Thurgood Marshall Airport after March 31, 2021 are to Utilize this Manual and must be tied to the BWI Thurgood Marshall Airport Survey Control Network.

This Baltimore/Washington International Thurgood Marshall Airport Survey Control Manual, Revision 1 supersedes the previous version of the Survey Control Manual dated February 2015. The previous version shall not be used for surveys beginning after March 31, 2021."

PEGS Appendix 2E

Survey Control

BWI Thurgood Marshall Airport Surveying Monuments

A network of 4 survey control points have been established at BWI Thurgood Marshall Airport to provide a reliable and accessible system of control for all surveys performed on the airport.

Consultants shall use the BWI Thurgood Marshall Airport Survey Control for all design and construction projects. All project surveys must be tied to the BWI Thurgood Marshall Airport Survey Control Network shown on the Survey Control Drawing and described in the Survey Control Manual. All contract drawing sets must contain the BWI Thurgood Marshall Airport "Survey Control" Plan Sheet and a 2nd geometric layout sheet containing the specific geometric layout and coordinate data for the project. This drawing shall also include any and all points set by the contractor for the specific project stating traverse closures and which BWI Thurgood Marshall Airport control points were used.

The survey control for BWI Thurgood Marshall Airport is based horizontally on the Maryland State Plane Coordinate System which is tied to the North American Datum of 1983 (NAD 83/2011) EPOCH 2010, and vertically on the North American Vertical Datum 1988 (NAVD 88) GEOID18. The primary control stations supplied in the manual meet or exceed 1st order horizontal survey control accuracies and 1st order vertical accuracies as indicated on the individual monument recovery sheet. All monuments are cast in place concrete, 48" deep with aluminum disks stamped "BWI Thurgood Marshall Airport – Survey Control", and with a point ID. All secondary control meet or exceed 3rd order horizontal accuracies as indicated on the individual monument recovery sheets. In addition to the primary and secondary control networks, there are five 1st order benchmarks.

All monuments are described on monument recovery sheets. Each monument recovery sheet contains "How to reach" descriptions for each control point, coordinates, elevations and pictures of each monument as well as reference sketches. The scale factor given on the recovery sheet is the measure of the linear distortion that has been mathematically imposed on ellipsoid distances so they may be projected onto a plane. Stability ratings for each monument are stated on the individual recovery sheets.

Elevations of monuments are based on the North American Vertical Datum of 1988 (NAVD88). Elevations are derived from differential leveling performed in 2007 using NGS methods for establishing 1st-order vertical benchmarks. This leveling project is included in NGS' National Spatial Reference System. Elevations are in U.S. Survey Feet.

The consultant is responsible for quality control checking of all new and existing monumentation prior to using the monuments in accordance with standard survey practices. Please contact the MAA Project Manager (MAA PM) and/or MAA Construction Manager (MAA CM) of damaged or destroyed monumentation immediately.

Immediately report any damaged or destroyed monumentation.

Please notify
NGS
and the
“Director, Office of Engineering and Construction”,
Maryland Aviation Administration

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: BWI D **(SACS)**
NGS PID: AB6219

DATE ESTABLISHED: 1991
READJUSTED **APRIL 2014**

MARYLAND STATE PLANE COORDINATES NAD 83 (2011):

*	**NORTHING (Y):**	553596.50 US ft.	168736.550 m
*	**EASTING (X):**	1407273.64 US ft.	428937.863 m
*	**ORTHOMETRIC HEIGHT (NAVD 88):**	154.41 US ft.	47.063 m
		CONTROLING VERTICAL BENCHMARK	
	CONVERGENCE ANGLE:	0° 12' 36.8"	
	SCALE FACTOR:	0.99996449	
	COMBINED SCALE FACTOR:	0.99996223	

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39° 11' 10.53791" (N)
LONGITUDE:	76° 39' 54.19381" (W)
ELLIPSOID HT:	14.374 m
GEOID HT: (GEOID18)	-32.700 m

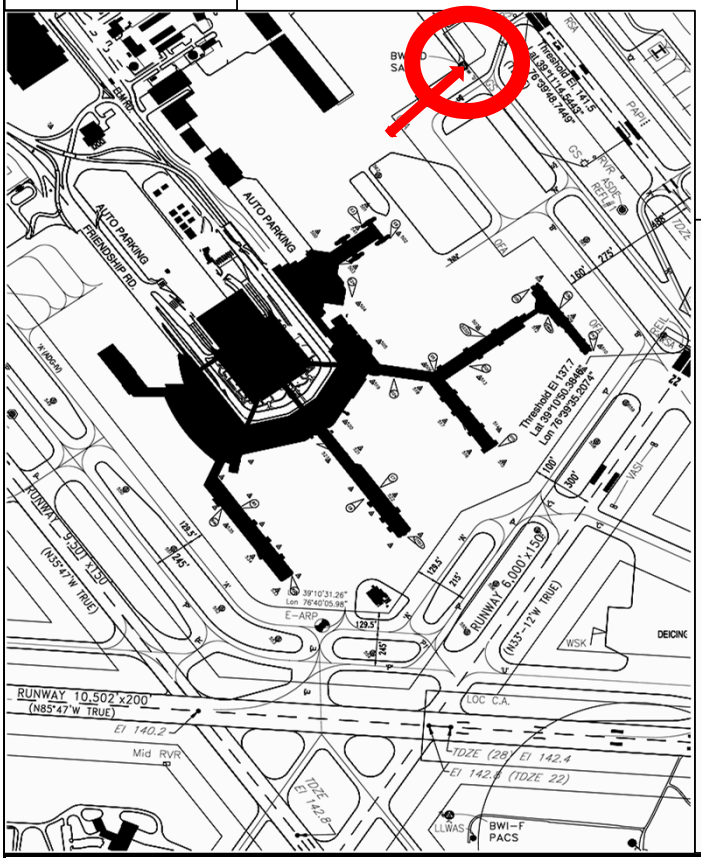
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GEODETIC AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)

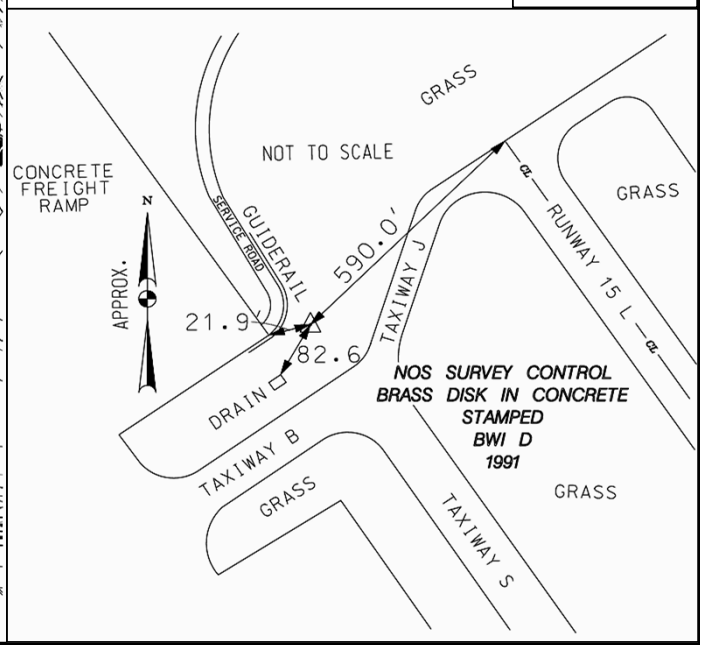
STATION DESCRIPTION:

* SEE ATTACHED NGS DATASHEETS

LOCATION PLAN



DETAIL MAP



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION:	BWI D	**DATE ESTABLISHED:**	1991
NGS PID:	AB6219		READJUSTED FEBRUARY 2007

SURVEYED BY:	**JMT**	**HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: BWI D
NGS PID: AB6219
DATE ESTABLISHED: 1991
READJUSTED **APRIL 2014**

1 National Geodetic Survey, Retrieval Date = APRIL 7, 2014
AB6219 **********
AB6219 SACS - This is a Secondary Airport Control Station.
AB6219 DESIGNATION - BWI D
AB6219 PID - AB6219
AB6219 STATE/COUNTY- MD/ANNE ARUNDEL
AB6219 COUNTRY - US
AB6219 USGS QUAD - RELAY (1974)
AB6219
AB6219 *CURRENT SURVEY CONTROL
AB6219 _____
AB6219* NAD 83(2011) POSITION- 39 11 10.53791(N) 076 39 54.19381(W) ADJUSTED
AB6219* NAD 83(2011) ELLIP HT- 14.374 (meters) (04/04/14) ADJUSTED
AB6219* NAD 83(2011) EPOCH - 2010.00
AB6219* NAVD 88 ORTHO HEIGHT - 47.063 (meters) 154.41 (feet) ADJUSTED
AB6219 _____
AB6219 NAD 83(2011) X - 1,141,753.153 (meters) COMP
AB6219 NAD 83(2011) Y - -4,816,831.118 (meters) COMP
AB6219 NAD 83(2011) Z - 4,008,374.852 (meters) COMP
AB6219 LAPLACE CORR - -5.66 (seconds) DEFLEC12A
AB6219 GEOID HEIGHT - -32.71 (meters) GEOID12A
AB6219 DYNAMIC HEIGHT - 47.038 (meters) 154.32 (feet) COMP
AB6219 MODELED GRAVITY - 980,094.8 (mgal) NAVD 88
AB6219
AB6219 VERT ORDER - FIRST CLASS II
AB6219
AB6219 FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
AB6219 Type Horiz Ellip Dist(km)
AB6219 ----------
AB6219 NETWORK 0.42 0.78
AB6219 ----------
AB6219 MEDIAN LOCAL ACCURACY AND DIST (008 points) 0.20 0.41 2.34
AB6219 ----------
AB6219 NOTE: Click here for information on individual local accuracy
AB6219 values and other accuracy information.
AB6219
AB6219
AB6219.This mark is at Baltimore-Washington Int'l Airport (BWI)
AB6219
AB6219.The horizontal coordinates were established by GPS observations
AB6219.and adjusted by the JOHNSON MIRMIRAN AND THOMPSON in April 2014.
AB6219
AB6219.NAD 83(2011) refers to NAD 83 coordinates where the reference
AB6219.frame has been affixed to the stable North American tectonic plate. See
AB6219.NA2011 for more information.
AB6219
AB6219.The horizontal coordinates are valid at the epoch date displayed above
AB6219.which is a decimal equivalence of Year/Month/Day.
AB6219
AB6219.The orthometric height was determined by differential leveling and
AB6219.adjusted by the NATIONAL GEODETIC SURVEY
AB6219.in June 2008.
AB6219
AB6219.No vertical observational check was made to the station.
AB6219
AB6219.Photographs are available for this station.
AB6219
AB6219.The X, Y, and Z were computed from the position and the ellipsoidal ht.
AB6219

SURVEYED BY: **JMT** **HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: BWI D
NGS PID: AB6219
DATE ESTABLISHED: 1991
READJUSTED **APRIL 2014**

AB6219
AB6219.The ellipsoidal height was determined by GPS observations
AB6219.and is referenced to NAD 83.
AB6219
AB6219.The dynamic height is computed by dividing the NAVD 88
AB6219.geopotential number by the normal gravity value computed on the
AB6219.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AB6219.degrees latitude (g = 980.6199 gals.).
AB6219
AB6219.The modeled gravity was interpolated from observed gravity values.
AB6219
AB6219. The following values were computed from the NAD 83(2011) position.
AB6219
AB6219; North East Units Scale Factor Converg.
AB6219;SPC MD - 168,736.550 428,937.863 MT 0.99996449 +0 12 36.8
AB6219;SPC MD - 553,596.50 1,407,273.64 sFT 0.99996449 +0 12 36.8
AB6219;UTM 18 - 4,338,766.913 356,194.721 MT 0.99985463 -1 03 08.0
AB6219
AB6219! - Elev Factor x Scale Factor = Combined Factor
AB6219!SPC MD - 0.99999774 x 0.99996449 = 0.99996223
AB6219!UTM 18 - 0.99999774 x 0.99985463 = 0.99985238
AB6219
AB6219 SUPERSEDED SURVEY CONTROL
AB6219
AB6219 NAD 83(2011)- 39 11 10.53795(N) 076 39 54.19385(W) AD(2010.00) 0
AB6219 ELLIP H (06/27/12) 14.357 (m) GP(2010.00)
AB6219 NAD 83(2007)- 39 11 10.53800(N) 076 39 54.19499(W) AD(2002.00) 0
AB6219 ELLIP H (02/10/07) 14.363 (m) GP(2002.00)
AB6219 ELLIP H (10/28/02) 14.378 (m) GP( ) 4 2
AB6219 NAD 83(1991)- 39 11 10.53909(N) 076 39 54.19473(W) AD( ) 1
AB6219 ELLIP H (05/31/01) 14.449 (m) GP( ) 4 2
AB6219 NAVD 88 (02/29/08) 47.06 (m) GEOID03 model used GPS OBS
AB6219 NAVD 88 (05/31/01) 47.08 (m) GEOID99 model used GPS OBS
AB6219
AB6219.Superseded values are not recommended for survey control.
AB6219
AB6219.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AB6219.See file dsdata.txt to determine how the superseded data were derived.
AB6219
AB6219_U.S. NATIONAL GRID SPATIAL ADDRESS: 18SUJ5619438766(NAD 83)
AB6219
AB6219_MARKER: DD = SURVEY DISK
AB6219_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AB6219_STAMPING: BWI D 1991
AB6219_MARK LOGO: NOS
AB6219_PROJECTION: RECESSED 5 CENTIMETERS
AB6219_MAGNETIC: N = NO MAGNETIC MATERIAL
AB6219_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AB6219+STABILITY: SURFACE MOTION
AB6219_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AB6219+SATELLITE: SATELLITE OBSERVATIONS - February 14, 2013
AB6219
AB6219 HISTORY - Date Condition Report By
AB6219 HISTORY - 1991 MONUMENTED NOS
AB6219 HISTORY - 20001130 GOOD NGS
AB6219 HISTORY - 20071107 GOOD JARICE
AB6219 HISTORY - 20120203 GOOD JMTMD
AB6219 HISTORY - 20130214 GOOD JMTMD
AB6219

SURVEYED BY: **JMT** **HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION:	BWI D	**DATE ESTABLISHED:**	1991
NGS PID:	AB6219		READJUSTED **APRIL 2014**

AB6219
AB6219 STATION DESCRIPTION
AB6219
AB6219 DESCRIBED BY NATIONAL OCEAN SERVICE 1991 (DAH)
AB6219 THE STATION IS LOCATED IN THE NORTH PART OF THE AIRPORT AT THE EAST
AB6219 CORNER OF A LARGE CONCRETE FREIGHT RAMP. IT IS 590 FT (179.8 M) SW OF
AB6219 THE CL END OF RWY 15L, NW OF THE INTERSECTION OF A TAXIWAY CL AND AN
AB6219 ILS HOLD LINE AND ON RANGE WITH THE HOLD LINE. IT IS 82.6 FT (25.2 M)
AB6219 NORTH OF THE CENTER OF A 3 FT (0.9 M) X 4 FT (1.2 M) STEEL DRAIN AND
AB6219 21.9 FT (6.7 M) EAST OF THE EAST CORNER OF THE RAMP (V-4-91 CHSQ). IT
AB6219 IS AT THE TOP OF A SLOPE AND JUST OUTSIDE A STEEL QUARDRAIL FOR A
AB6219 SERVICE ROAD. IT AN NOS DISK STAMPED BWI D 1991 AND SET IN THE TOP OF
AB6219 A CONCRETE POST FLUSH WITH THE GROUND.
AB6219
AB6219 STATION RECOVERY (2000)
AB6219
AB6219 RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2000 (APF)
AB6219 THE STATION IS LOCATED ON THE BALTIMORE-WASHINGTON
AB6219 INTERNATIONAL AIRPORT AT THE EAST CORNER OF A LARGE CONCRETE
AB6219 FREIGHT RAMP.
AB6219 TO REACH THE STATION FROM GATE L, KEEP PROCEEDING STRAIGHT IN A
AB6219 SOUTHWEST DIRECTION FOR 0.1 MI TO A PERIMETER ROAD, TURN RIGHT,
AB6219 HEADING NORTH, AND FOLLOW PERIMETER ROAD FOR 0.65 MI TO THE
AB6219 STATION ON THE LEFT AT THE TOP OF A SLOPE AND JUST OUTSIDE A STEEL
AB6219 GUARDRAIL FOR THE PERIMETER ROAD.
AB6219 THE STATION IS 590.0 FT SOUTHWEST FROM THE CENTERLINE END OF
AB6219 RUNWAY END 15L, 21.9 FT EAST OF THE EAST CORNER OF A CONCRETE
AB6219 MAINTENANCE AND FREIGHT RAMP, 82.6 FT NORTH OF THE CENTER OF A 3
AB6219 BY 4-FOOT STEEL DRAIN, AND THE MONUMENT IS FLUSH WITH THE GROUND
AB6219 SURFACE. NOTE--THIS STATION HAS BEEN DESIGNATED A SACS.
AB6219
AB6219
AB6219 STATION RECOVERY (2007)
AB6219
AB6219 RECOVERY NOTE BY J A RICE INC 2007 (MRA)
AB6219 RECOVERED AS DESCRIBED.
AB6219
AB6219 STATION RECOVERY (2012)
AB6219
AB6219 RECOVERY NOTE BY JMT 2012 (EAS)
AB6219 USED FOR GPS RTKN (KEYNET)
AB6219 N +0.02 E +0.07 Z -0.12
AB6219
AB6219 STATION RECOVERY (2013)
AB6219
AB6219 RECOVERY NOTE BY JMT 2013 (EAS)
AB6219 STATION RECOVERED AS DESCRIBED.

SURVEYED BY: **JMT** **HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: BWI G
NGS PID: DJ9002

DATE ESTABLISHED: OCTOBER 2007
READJUSTED **JUNE 2012**

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) :

*	**NORTHING (Y):**	553233.75 US ft.	168625.985 m
*	**EASTING (X):**	1404563.59 US ft.	428111.838 m
	ORTHOMETRIC HEIGHT (NAVD 88):	166.38 US ft.	50.714 m

CONTROLING VERTICAL BENCHMARK

CONVERGENCE ANGLE: 0° 12' 15.2"
SCALE FACTOR: 0.99996440
COMBINED SCALE FACTOR: 0.99996157

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE: 39° 11' 07.04940" (N)
LONGITUDE: 76° 40' 28.62941" (W)
ELLIPSOID HT: 18.042 m
GEOID HT: (GEOID18) -32.674 m

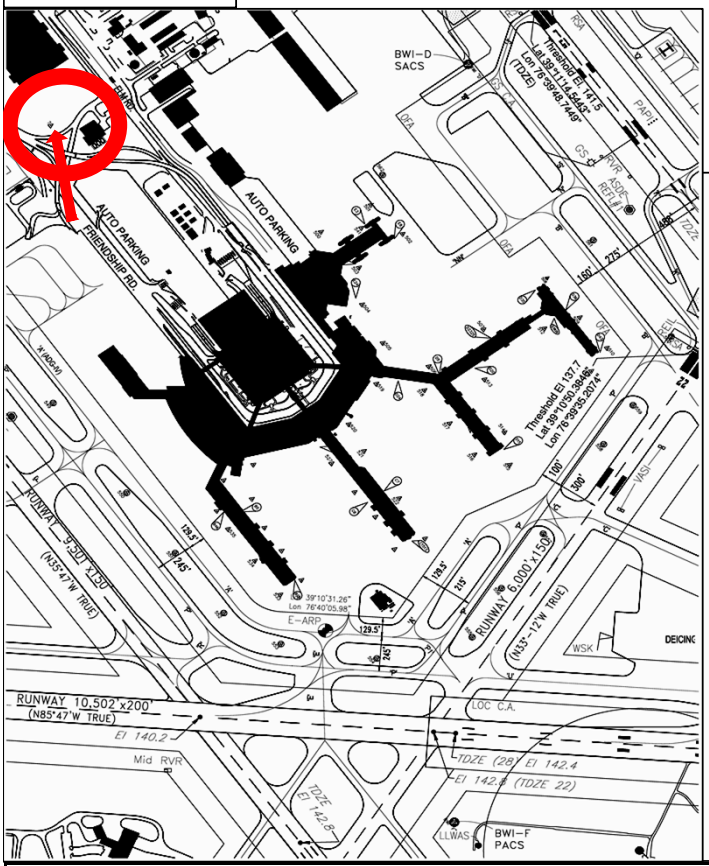
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GEODETIC AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)

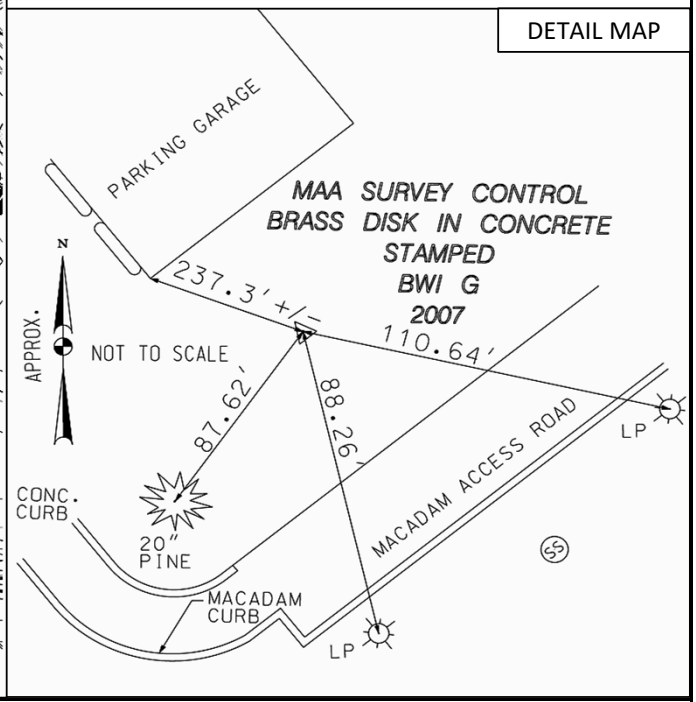
STATION DESCRIPTION:

* SEE ATTACHED NGS DATASHEETS

LOCATION PLAN



DETAIL MAP



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION:	BWI G	**DATE ESTABLISHED:**	OCTOBER 2007
NGS PID:	DJ9002		

SURVEYED BY:	**JMT**	**HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION:	BWI G	**DATE ESTABLISHED:**	OCTOBER 2007
NGS PID:	DJ9002		READJUSTED **JUNE 2012**

1 National Geodetic Survey, Retrieval Date = AUGUST 28, 2014
DJ9002 **********
DJ9002 DESIGNATION - BWI G
DJ9002 PID - DJ9002
DJ9002 STATE/COUNTY- MD/ANNE ARUNDEL
DJ9002 COUNTRY - US
DJ9002 USGS QUAD - RELAY (1974)
DJ9002
DJ9002 *CURRENT SURVEY CONTROL
DJ9002 _____
DJ9002 * NAD 83(2011) POSITION- 39 11 07.04940(N) 076 40 28.62941(W) ADJUSTED
DJ9002 * NAD 83(2011) ELLIP HT- 18.042 (meters) (06/27/12) ADJUSTED
DJ9002 * NAD 83(2011) EPOCH - 2010.00
DJ9002 * NAVD 88 ORTHO HEIGHT - 50.714 (meters) 166.38 (feet) ADJUSTED
DJ9002 _____
DJ9002 NAD 83(2011) X - 1,140,965.297 (meters) COMP
DJ9002 NAD 83(2011) Y - -4,817,090.575 (meters) COMP
DJ9002 NAD 83(2011) Z - 4,008,293.784 (meters) COMP
DJ9002 LAPLACE CORR - -5.64 (seconds) DEFLEC12A
DJ9002 GEOID HEIGHT - -32.68 (meters) GEOID12A
DJ9002 DYNAMIC HEIGHT - 50.687 (meters) 166.30 (feet) COMP
DJ9002 MODELED GRAVITY - 980,095.4 (mgal) NAVD 88
DJ9002
DJ9002 VERT ORDER - FIRST CLASS II
DJ9002
DJ9002 FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
DJ9002 Type Horiz Ellip Dist(km)
DJ9002 ----------
DJ9002 NETWORK 0.31 0.59
DJ9002 ----------
DJ9002 MEDIAN LOCAL ACCURACY AND DIST (006 points) 0.12 0.24 2.47
DJ9002 ----------
DJ9002 NOTE: Click here for information on individual local accuracy
DJ9002 values and other accuracy information.
DJ9002
DJ9002
DJ9002 .The horizontal coordinates were established by GPS observations
DJ9002 .and adjusted by the National Geodetic Survey in June 2012.
DJ9002
DJ9002 .NAD 83(2011) refers to NAD 83 coordinates where the reference
DJ9002 .frame has been affixed to the stable North American tectonic plate. See
DJ9002 .NA2011 for more information.
DJ9002
DJ9002 .The horizontal coordinates are valid at the epoch date displayed above
DJ9002 .which is a decimal equivalence of Year/Month/Day.
DJ9002
DJ9002 .The orthometric height was determined by differential leveling and
DJ9002 .adjusted by the NATIONAL GEODETIC SURVEY
DJ9002 .in June 2008.
DJ9002
DJ9002 .No vertical observational check was made to the station.
DJ9002
DJ9002 .Photographs are available for this station.
DJ9002
DJ9002 .The X, Y, and Z were computed from the position and the ellipsoidal ht.
DJ9002
DJ9002 .The Laplace correction was computed from DEFLEC12A derived deflections.
DJ9002
DJ9002

SURVEYED BY:	**JMT**	**HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION:	BWI G	**DATE ESTABLISHED:**	OCTOBER 2007
NGS PID:	DJ9002		READJUSTED **JUNE 2012**

DJ9002
DJ9002 .The ellipsoidal height was determined by
DJ9002 .and is referenced to NAD 83.
DJ9002
DJ9002 .The dynamic height is computed by dividing the NAVD 88
DJ9002 .geopotential number by the normal gravity value computed on the
DJ9002 .Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
DJ9002 .degrees latitude (g = 980.6199 gals.).
DJ9002
DJ9002 .The modeled gravity was interpolated from observed gravity values.
DJ9002
DJ9002 . The following values were computed from the NAD 83(2011) position.
DJ9002
DJ9002 ; North East Units Scale Factor Converg.
DJ9002 ;SPC MD - 168,625.985 428,111.838 MT 0.99996440 +0 12 15.2
DJ9002 ;SPC MD - 553,233.75 1,404,563.59 sFT 0.99996440 +0 12 15.2
DJ9002 ;UTM 18 - 4,338,674.584 355,366.550 MT 0.99985758 -1 03 29.7
DJ9002
DJ9002 ! - Elev Factor x Scale Factor = Combined Factor
DJ9002 !SPC MD - 0.99999717 x 0.99996440 = 0.99996157
DJ9002 !UTM 18 - 0.99999717 x 0.99985758 = 0.99985475
DJ9002
DJ9002 SUPERSEDED SURVEY CONTROL
DJ9002
DJ9002 NAD 83(2007)- 39 11 07.04959(N) 076 40 28.63045(W) AD(2002.00) 1
DJ9002 ELLIP H (02/29/08) 18.061 (m) GP(2002.00) 2 2
DJ9002 NAVD 88 (02/29/08) 50.7 (m) GEOID03 model used GPS OBS
DJ9002
DJ9002 .Superseded values are not recommended for survey control.
DJ9002
DJ9002 .NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DJ9002 .See file dsdata.txt to determine how the superseded data were derived.
DJ9002
DJ9002 _U.S. NATIONAL GRID SPATIAL ADDRESS: 18SUJ5536638674(NAD 83)
DJ9002
DJ9002 _MARKER: DD = SURVEY DISK
DJ9002 _SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DJ9002 _STAMPING: BWI G 2007
DJ9002 _MARK LOGO: MDAVIA
DJ9002 _PROJECTION: RECESSED 5 CENTIMETERS
DJ9002 _MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
DJ9002 _STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DJ9002 +STABILITY: SURFACE MOTION
DJ9002 _SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DJ9002 +SATELLITE: SATELLITE OBSERVATIONS - November 27, 2007
DJ9002
DJ9002 HISTORY - Date Condition Report By
DJ9002 HISTORY - 20071127 MONUMENTED JMTMD
DJ9002
DJ9002 STATION DESCRIPTION
DJ9002
DJ9002 'DESCRIBED BY JMT 2007
DJ9002 'THE MARK IS LOCATED ABOUT 3.3 MI (5.3 KM) SOUTH-SOUTHEAST OF RELAY,
DJ9002 '2.8 MI (4.5 KM) SOUTHEAST OF ELKRIDGE AND 2.7 MI (4.3 KM) EAST OF
DJ9002 'HANOVER. OWNERSHIP--BALTIMORE WASHINGTON INTERNATIONAL AIRPORT.
DJ9002 '
DJ9002 '
DJ9002 '
DJ9002 '
DJ9002 '

SURVEYED BY:	**JMT**	**HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION:	BWI G	**DATE ESTABLISHED:**	OCTOBER 2007
NGS PID:	DJ9002		READJUSTED **JUNE 2012**

DJ9002 'TO REACH FROM THE JUNCTION OF I-97 AND MD 176, GO WEST-SOUTHWEST ON MD
DJ9002 '176 FOR 0.24 MI (0.39 KM) TO AN INTERSECTION. TURN RIGHT AND GO NORTH
DJ9002 'ON MD 162 FOR 2.32 MI (3.74 KM) TO A INTERSECTION. CONTINUE STRAIGHT
DJ9002 'AHEAD FOR 0.74 MI (1.20 KM) TO A INTERSECTION. TURN LEFT AND GO SOUTH
DJ9002 'ON SCOTT DRIVE FOR 0.10 MI (0.17 KM) TO A SIDE ROAD LEFT. TURN LEFT
DJ9002 'AND GO SOUTHEAST ON ELM ROAD FOR 0.25 MI (0.40 KM) TO A RAMP ON THE
DJ9002 'RIGHT. TURN RIGHT AND GO SOUTHWEST ON THE RAMP FOR 0.09 MI (0.15 KM)
DJ9002 'TO THE MARK ON THE RIGHT.
DJ9002 '
DJ9002 'IT IS 192.8 FT (58.8 M) EAST OF A METAL SIGN SHAPED LIKE A HOT-AIR
DJ9002 'BALLOON, 89.0 FT (27.1 M) NORTHEAST OF A 30-IN (76 CM) SPRUCE TREE,
DJ9002 '88.5 FT (27.0 M) NORTH-NORTHWEST OF A STREET LIGHT POLE, 62.2 FT (19.0
DJ9002 'M) NORTHEAST OF A WATER VALVE NUMBERED 118, 57.0 FT (17.4 M) NORTHWEST
DJ9002 'OF THE CENTERLINE OF A PAVED PARKING LOT AND SET IN THE TOP OF A
DJ9002 '12-INCH (30 CM) ROUND CONCRETE POST.

SURVEYED BY:	**JMT**	**HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: BWI J **(PACS)**
NGS PID: DP2328

DATE ESTABLISHED: 2013
ADJUSTED **APRIL 2014**

MARYLAND STATE PLANE COORDINATES NAD 83 (2011):

*	**NORTHING (Y):**	548269.37 US ft.	167112.837 m
*	**EASTING (X):**	1409227.67 US ft.	429533.453 m
*	**ORTHOMETRIC HEIGHT (NAVD 88):**	128.0 US ft. (GPS OBS)	39.01

CONVERGENCE ANGLE: 0° 12' 36.8"
SCALE FACTOR: 0.99996314
COMBINED SCALE FACTOR: 0.99996215

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE: 39° 10' 17.81278" (N)
LONGITUDE: 76° 39' 29.62979" (W)
ELLIPSOID HT: 6.288 m
GEOID HT: (GEOID18) -32.733 m

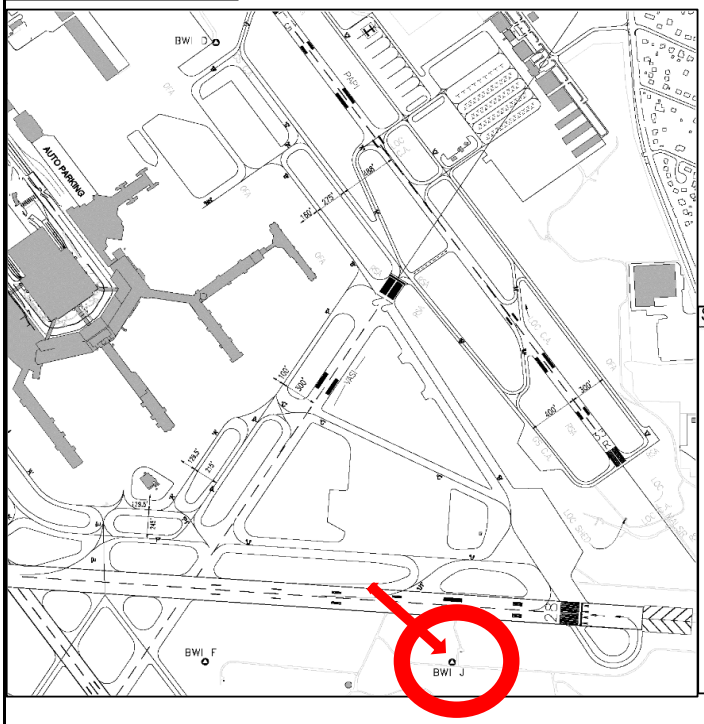
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GEODETIC AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)

STATION DESCRIPTION:

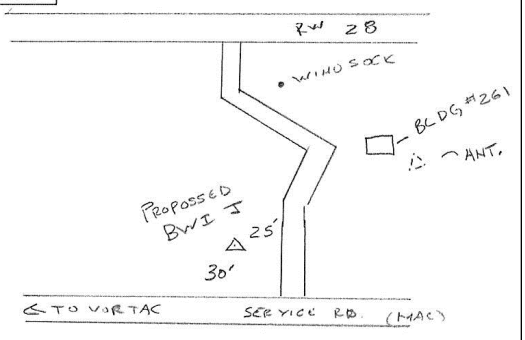
* SEE ATTACHED NGS DATASHEETS

LOCATION PLAN



DETAIL MAP

Station Location Sketch



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION:	BWI J **(PACS)**	**DATE ESTABLISHED:**	2013
NGS PID:	DP2328		ADJUSTED **APRIL 2014**

SURVEYED BY:	**JMT**	**HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: BWI J **(PACS)**	**DATE ESTABLISHED:** 2013
NGS PID: DP2328	ADJUSTED **APRIL 2014**

1 National Geodetic Survey, Retrieval Date = APRIL 7, 2014

DP2328 **********

DP2328 PACS - This is a Primary Airport Control Station.

DP2328 DESIGNATION - BWI J

DP2328 PID - DP2328

DP2328 STATE/COUNTY- MD/ANNE ARUNDEL

DP2328 COUNTRY - US

DP2328 USGS QUAD - RELAY (1974)

DP2328

DP2328 *CURRENT SURVEY CONTROL

DP2328 _____

DP2328* NAD 83(2011) POSITION- 39 10 17.81278(N) 076 39 29.62979(W) ADJUSTED

DP2328* NAD 83(2011) ELLIP HT- 6.288 (meters) (04/04/14) ADJUSTED

DP2328* NAD 83(2011) EPOCH - 2010.00

DP2328* NAVD 88 ORTHO HEIGHT - 39.01 (meters) 128.0 (feet) GPS OBS

DP2328 _____

DP2328 GEOID HEIGHT - -32.74 (meters) GEOID12A

DP2328 NAD 83(2011) X - 1,142,562.369 (meters) COMP

DP2328 NAD 83(2011) Y - -4,817,688.488 (meters) COMP

DP2328 NAD 83(2011) Z - 4,007,109.329 (meters) COMP

DP2328 LAPLACE CORR - -5.71 (seconds) DEFLEC12A

DP2328

DP2328 FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)

DP2328 Type Horiz Ellip Dist(km)

DP2328 ----------

DP2328 NETWORK 0.33 0.55

DP2328 ----------

DP2328 MEDIAN LOCAL ACCURACY AND DIST (006 points) 0.33 0.58 1.41

DP2328 ----------

DP2328 NOTE: Click here for information on individual local accuracy

DP2328 values and other accuracy information.

DP2328

DP2328

DP2328.This mark is at Baltimore-Washington Int'l Airport (BWI)

DP2328

DP2328.The horizontal coordinates were established by GPS observations

DP2328.and adjusted by the JOHNSON MIRMIRAN AND THOMPSON in April 2014.

DP2328

DP2328.NAD 83(2011) refers to NAD 83 coordinates where the reference

DP2328.frame has been affixed to the stable North American tectonic plate. See

DP2328.NA2011 for more information.

DP2328

DP2328.The horizontal coordinates are valid at the epoch date displayed above

DP2328.which is a decimal equivalence of Year/Month/Day.

DP2328

DP2328.The orthometric height was determined by GPS observations and a

DP2328.high-resolution geoid model.

DP2328

DP2328.GPS derived orthometric heights for airport stations designated as

DP2328.PACS or SACS are published to 2 decimal places. This maintains

DP2328.centimeter relative accuracy between the PACS and SACS. It does

DP2328.not indicate centimeter accuracy relative to other marks which are

DP2328.part of the NAVD 88 network.

DP2328

DP2328.The X, Y, and Z were computed from the position and the ellipsoidal ht.

DP2328

DP2328.The Laplace correction was computed from DEFLEC12A derived deflections.

DP2328

DP2328

SURVEYED BY: JMT **HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: BWI J **(PACS)**	**DATE ESTABLISHED:** 2013
NGS PID: DP2328	ADJUSTED **APRIL 2014**

DP2328
DP2328.The ellipsoidal height was determined by GPS observations
DP2328.and is referenced to NAD 83.
DP23283
DP2328. The following values were computed from the NAD 83(2011) position.
DP2328
DP2328; North East Units Scale Factor Converg.
DP2328;SPC MD - 167,112.837 429,533.453 MT 0.99996314 +0 12 52.2
DP2328;SPC MD - 548,269.37 1,409,227.67 sFT 0.99996314 +0 12 52.2
DP2328;UTM 18 - 4,337,130.654 356,754.336 MT 0.99985266 -1 02 51.3
DP2328
DP2328! - Elev Factor x Scale Factor = Combined Factor
DP2328!SPC MD - 0.99999901 x 0.99996314 = 0.99996215
DP2328!UTM 18 - 0.99999901 x 0.99985266 = 0.99985167
DP2328
DP2328 SUPERSEDED SURVEY CONTROL
DP2328
DP2328.No superseded survey control is available for this station.
DP2328
DP2328_U.S. NATIONAL GRID SPATIAL ADDRESS: 18SUJ5675437130(NAD 83)
DP2328
DP2328_MARKER: F = FLANGE-ENCASED ROD
DP2328_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)
DP2328_STAMPING: BWI J 2012
DP2328_MARK LOGO: MDAVIA
DP2328_PROJECTION: FLUSH
DP2328_MAGNETIC: I = MARKER IS A STEEL ROD
DP2328_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
DP2328_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DP2328+SATELLITE: SATELLITE OBSERVATIONS - February 12, 2013
DP2328_ROD/PIPE-DEPTH: 11.2 meters
DP2328_SLEEVE-DEPTH : 0.6 meters
DP2328
DP2328 HISTORY - Date Condition Report By
DP2328 HISTORY - 20130212 MONUMENTED JMTMD
DP2328
DP2328 STATION DESCRIPTION
DP2328
DP2328 DESCRIBED BY JMT 2013 (EAS)
DP2328 THE STATION IS LOCATED ON THE GROUNDS OF THE BALTIMORE-WASHINGTON
DP2328 INTERNATIONAL AIRPORT NEAR THE CENTER OF THE AIRPORT SOUTHWEST OF THE
DP2328 APPROACH END OF RUNWAY 28. IT IS WEST OF A MACADAM DRIVE LEADING TO
DP2328 BUILDING NUMBER 261. CONTACT AIRPORT OPERATIONS, AT 410-859-7018. A
DP2328 BWI BADGE WITH ESCORT CLEARANCE, PERMISSION TO OPERATE A VEHICLE ON
DP2328 AIRPORT GROUNDS AND TO UTILIZE POWER GATES IS REQUIRED TO ACCESS THIS
DP2328 MONUMENT.
DP2328
DP2328 TO REACH THE STATION FROM THE INTERSECTION OF I-195 AND MARYLAND ROUTE
DP2328 170 (AVIATION BOULEVARD) PROCEED SOUTH ON I-195 TO REACH THE AIRPORT.
DP2328 PROCEED ON THE AIRPORT GROUNDS TO GATE 'J' TO ACCESS THE INTERIOR
DP2328 ROADS LEADING EAST TO THE GENERAL AVIATION PARKING LOT. FROM THE
DP2328 SOUTH END OF THE GENERAL AVIATION PARKING LOT, GO SOUTH ON A GRAVEL
DP2328 SERVICE ROAD FOR A TOTAL OF 1.4 MI (2.3 KM) PAST THE APPROACH END OF
DP2328 RUNWAY 33R CONTINUING ON THE SAME GRAVEL ROAD NOW HEADING WEST AND
DP2328 PAST THE APPROACH END OF RUNWAY 28 TO A BEND IN THE ROAD HEADING NORTH
DP2328 AND THEN TO A TEE IN THE ROAD. TURN LEFT ON MACADAM SERVICE ROAD
DP2328 PARALLEL TO RUNWAY 28. CONTINUE WEST FOR 80 FT (24.4 M) TO A MACADAM
DP2328 DRIVE ON THE RIGHT. TURN RIGHT AND STOP. STATION IS ON THE LEFT IN
DP2328 GRASS AREA.

SURVEYED BY: JMT **HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION:	BWI J **(PACS)**	**DATE ESTABLISHED:**	2013
NGS PID:	DP2328		ADJUSTED **APRIL 2014**

DP2328
DP2328 THE STATION IS A STEEL ROD DRIVEN TO REFUSAL OF WHICH THE UPPER 2 FT
DP2328 (0.6 M) IS ENCASED IN A GREASE FILLED FINNED SLEEVE INSIDE OF A 4 FT
DP2328 (1.2 M) DEEP SAND FILLED PVC SLEEVE AND CAPPED FLUSH WITH THE GROUND.
DP2328 THE STATION IS 14.2 M (46.6 FT) NORTHWEST FROM THE INTERSECTION OF THE
DP2328 NORTH DRIVE AND THE SERVICE ROAD. THE STATION IS 9.1 M (29.9 FT)
DP2328 NORTH OF THE EDGE OF THE SERVICE ROAD. THE STATION IS 7.6 M (24.9 FT)
DP2328 WEST OF THE EDGE OF THE NORTH DRIVE. THIS STATION HAS BEEN DESIGNATED
DP2328 AS A PRIMARY AIRPORT CONTROL STATION.

SURVEYED BY:	**JMT**	**HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: BWI K **(SACS)**
NGS PID: DP2329

DATE ESTABLISHED: 2013
ADJUSTED **APRIL 2014**

MARYLAND STATE PLANE COORDINATES NAD 83 (2011):

*	**NORTHING (Y):**	546879.47 US ft.	166689.195 m
*	**EASTING (X):**	1406396.46 US ft.	428670.498 m
*	**ORTHOMETRIC HEIGHT (NAVD 88):**	135.92 US ft. (GPS OBS)	41.43 m

CONVERGENCE ANGLE: 0° 12' 36.8"
SCALE FACTOR: 0.99996280
COMBINED SCALE FACTOR: 0.99996143

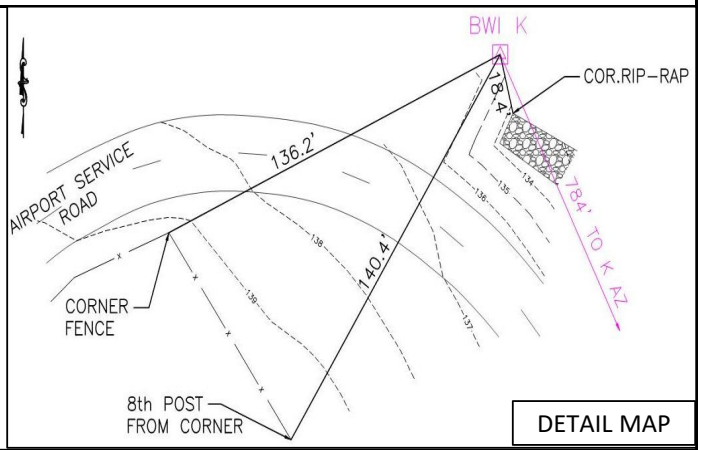
GEOGRAPHIC COORDINATES (NAD 83):

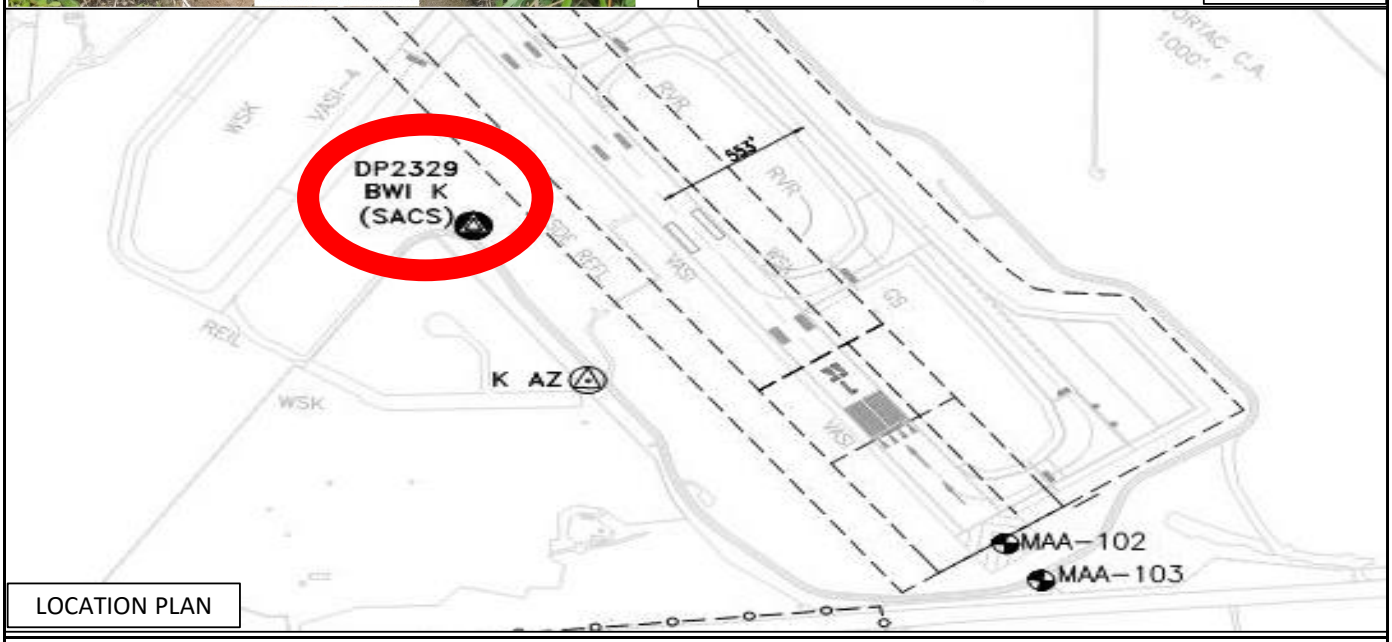
LATITUDE: 39° 10' 04.17817" (N)
LONGITUDE: 76° 40' 05.64453" (W)
ELLIPSOID HT: 8.730 m
GEOID HT: (GEOID18) -32.707 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GRID AZIMUTH	GRID DIST.(US FT.)	GRID DISTANCE (m)
K AZ	151°30'33.5"	783.60	238.843

STATION DESCRIPTION:
SEE ATTACHED NGS DATASHEET
DRIVEN TO REFUSAL ROD MONUMENT
WITH BERNTSEN TOP SECURITY SLEEVE & LID
STAMPING: BWI K 2012





SURVEYED BY: JMT
HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION:	BWI K **(SACS)**	**DATE ESTABLISHED:**	2013
NGS PID:	DP2329		ADJUSTED **APRIL 2014**

BWI K, BWI, 3N, SACS, 07JUNE2012

SURVEYED BY:	**JMT**	**HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: BWI K **(SACS)**	**DATE ESTABLISHED:** 2013
NGS PID: DP2329	ADJUSTED **APRIL 2014**

1 National Geodetic Survey, Retrieval Date = APRIL 7, 2014

DP2329 **********

DP2329 SACS - This is a Secondary Airport Control Station.

DP2329 DESIGNATION - BWI K

DP2329 PID - DP2329

DP2329 STATE/COUNTY- MD/ANNE ARUNDEL

DP2329 COUNTRY - US

DP2329 USGS QUAD - RELAY (1974)

DP2329

DP2329 *CURRENT SURVEY CONTROL

DP2329 _____

DP2329* NAD 83(2011) POSITION- 39 10 04.17817(N) 076 40 05.64453(W) ADJUSTED

DP2329* NAD 83(2011) ELLIP HT- 8.730 (meters) (04/04/14) ADJUSTED

DP2329* NAD 83(2011) EPOCH - 2010.00

DP2329* NAVD 88 ORTHO HEIGHT - 41.43 (meters) 135.9 (feet) GPS OBS

DP2329 _____

DP2329 GEOID HEIGHT - -32.72 (meters) GEOID12A

DP2329 NAD 83(2011) X - 1,141,782.838 (meters) COMP

DP2329 NAD 83(2011) Y - -4,818,148.175 (meters) COMP

DP2329 NAD 83(2011) Z - 4,006,784.889 (meters) COMP

DP2329 LAPLACE CORR - -5.66 (seconds) DEFLEC12A

DP2329

DP2329 FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)

DP2329 Type Horiz Ellip Dist(km)

DP2329 ----------

DP2329 NETWORK 0.39 0.59

DP2329 ----------

DP2329 MEDIAN LOCAL ACCURACY AND DIST (002 points) 0.25 0.59 1.51

DP2329 ----------

DP2329 NOTE: Click here for information on individual local accuracy

DP2329 values and other accuracy information.

DP2329

DP2329

DP2329.This mark is at Baltimore-Washington Int'l Airport (BWI)

DP2329

DP2329.The horizontal coordinates were established by GPS observations

DP2329.and adjusted by the JOHNSON MIRMIRAN AND THOMPSON in April 2014.

DP2329

DP2329.NAD 83(2011) refers to NAD 83 coordinates where the reference

DP2329.frame has been affixed to the stable North American tectonic plate. See

DP2329.NA2011 for more information.

DP2329

DP2329.The horizontal coordinates are valid at the epoch date displayed above

DP2329.which is a decimal equivalence of Year/Month/Day.

DP2329

DP2329.The orthometric height was determined by GPS observations and a

DP2329.high-resolution geoid model.

DP2329

DP2329.GPS derived orthometric heights for airport stations designated as

DP2329.PACS or SACS are published to 2 decimal places. This maintains

DP2329.centimeter relative accuracy between the PACS and SACS. It does

DP2329.not indicate centimeter accuracy relative to other marks which are

DP2329.part of the NAVD 88 network.

DP2329

DP2329.The X, Y, and Z were computed from the position and the ellipsoidal ht.

DP2329

DP2329

DP2329.The ellipsoidal height was determined by GPS observations

DP2329.and is referenced to NAD 83.

SURVEYED BY: JMT **HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: BWI K **(SACS)**	**DATE ESTABLISHED:** 2013
NGS PID: DP2329	ADJUSTED **APRIL 2014**

DP2329
DP2329. The following values were computed from the NAD 83(2011) position.
DP2329
DP2329; North East Units Scale Factor Converg.
DP2329;SPC MD - 166,689.195 428,670.498 MT 0.99996280 +0 12 29.6
DP2329;SPC MD - 546,879.47 1,406,396.46 sFT 0.99996280 +0 12 29.6
DP2329;UTM 18 - 4,336,726.166 355,882.354 MT 0.99985574 -1 03 13.8
DP2329
DP2329! - Elev Factor x Scale Factor = Combined Factor
DP2329!SPC MD - 0.99999863 x 0.99996280 = 0.99996143
DP2329!UTM 18 - 0.99999863 x 0.99985574 = 0.99985437
DP2329
DP2329 SUPERSEDED SURVEY CONTROL
DP2329
DP2329.No superseded survey control is available for this station.
DP2329
DP2329_U.S. NATIONAL GRID SPATIAL ADDRESS: 18SUJ5588236726(NAD 83)
DP2329
DP2329_MARKER: F = FLANGE-ENCASED ROD
DP2329_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)
DP2329_STAMPING: BWI K 2012
DP2329_MARK LOGO: MDAVIA
DP2329_PROJECTION: FLUSH
DP2329_MAGNETIC: I = MARKER IS A STEEL ROD
DP2329_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
DP2329_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DP2329+SATELLITE: SATELLITE OBSERVATIONS - February 12, 2013
DP2329_ROD/PIPE-DEPTH: 9.8 meters
DP2329_SLEEVE-DEPTH : 0.6 meters
DP2329
DP2329 HISTORY - Date Condition Report By
DP2329 HISTORY - 20130212 MONUMENTED JMTMD
DP2329
DP2329 STATION DESCRIPTION
DP2329
DP2329 DESCRIBED BY JMT 2013 (EAS)
DP2329 THE STATION IS LOCATED ON THE GROUNDS OF THE BALTIMORE-WASHINGTON
DP2329 INTERNATIONAL AIRPORT AT THE SOUTHERN END OF THE AIRPORT BETWEEN THE
DP2329 APPROACH ENDS OF RUNWAY 33L ~~AND RUNWAY 4~~. IT IS LOCATED AT THE
DP2329 NORTHEAST CORNER OF AN ABANDONED PARKING LOT. A BWI BADGE WITH ESCORT
DP2329 CLEARANCE AND PERMISSION TO OPERATE A VEHICLE ON AIRPORT GROUNDS IS
DP2329 REQUIRED TO ACCESS THIS MONUMENT. ACCESS TO THE STATION CAN BE
DP2329 OBTAINED BY CONTACTING AIRPORT OPERATIONS, AT 410-859-7018 AND AIRPORT
DP2329 SECURITY AT 410-859-7024 TO GET ACCESS PERMISSION AND KEYS TO GET
DP2329 THROUGH THREE LOCKED GATES.
DP2329
DP2329 TO REACH THE STATION FROM THE INTERSECTION OF MD 162 AND MD 176.
DP2329 PROCEED WEST ON MD 176 FOR 1.2 MI (1.9 KM) TO ROAD. TURN RIGHT INTO
DP2329 ABANDONED PARKING LOT. CONTINUE STRAIGHT TO FIRST GATE. MEANDER
DP2329 THROUGH PARKING LOT NORTH, EAST, NORTH, THEN WEST TO GATE 49 (~~APPROACH~~
DP2329~~ END OF RUNWAY 4~~). PROCEED THROUGH GATE. TURN RIGHT ON MACADAM
DP2329 SERVICE DRIVE AND FOLLOW FENCE LINE NORTHEAST TO SECOND ANGLE BREAK
DP2329 (NORTHEAST CORNER) IN FENCE LINE. CONTINUE 69 FT (21.0 M) SOUTHEAST
DP2329 FROM SECOND ANGLE BREAK AND STOP. THE STATION IS ON THE LEFT (EAST)
DP2329 OF THE FENCE LINE IN A GRASS AREA.
DP2329
DP2329
DP2329
DP2329

SURVEYED BY: **JMT**	**HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION:	BWI K **(SACS)**	**DATE ESTABLISHED:**	2013
NGS PID:	DP2329		ADJUSTED **APRIL 2014**

DP2329
DP2329 THE STATION IS A STEEL ROD DRIVEN TO REFUSAL OF WHICH THE UPPER 2 FT
DP2329 (0.6 M) IS ENCASED IN A GREASE FILLED FINNED SLEEVE INSIDE OF A 4 FT
DP2329 (1.2 M) DEEP SAND FILLED PVC SLEEVE AND CAPPED FLUSH WITH THE GROUND.
DP2329 THE STATION IS 329 FT (100.3 M) NORTHWEST OF A GRAVEL DRAINAGE AREA.
DP2329 THE STATION IS SOUTHEAST 75 FT (22.9 M) FROM THE NORTHEAST CORNER OF A
DP2329 FENCE LINE. THE STATION IS NORTHEAST 49 FT (14.9 M) PERPENDICULAR
DP2329 FROM THE FACE OF THE FENCE LINE. THIS STATION HAS BEEN DESIGNATED AS A
DP2329 SECONDARY AIRPORT CONTROL STATION.

SURVEYED BY:	**JMT**	**HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-SECONDARY SURVEY CONTROL DATA

NAME OF STATION: K-AZ
NGS PID: OPUS PROJECTS ID BZGDH9CG
DATE ESTABLISHED: APRIL 2020

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) EPOCH 2010

NORTHING (Y):	546190.76 US ft.		166479.277 m
EASTING (X):	1406770.25 US ft.		428784.430 m
ORTHOMETRIC HEIGHT (NAVD 88):	132.90 US ft. (GPS OBS)		40.507 m
	DIGITAL LEVELS FROM BWI K		
CONVERGENCE ANGLE:	0° 12' 32.58"		
COMBINED SCALE FACTOR:	0.99996141		

GEOGRAPHIC COORDINATES (NAD 83):

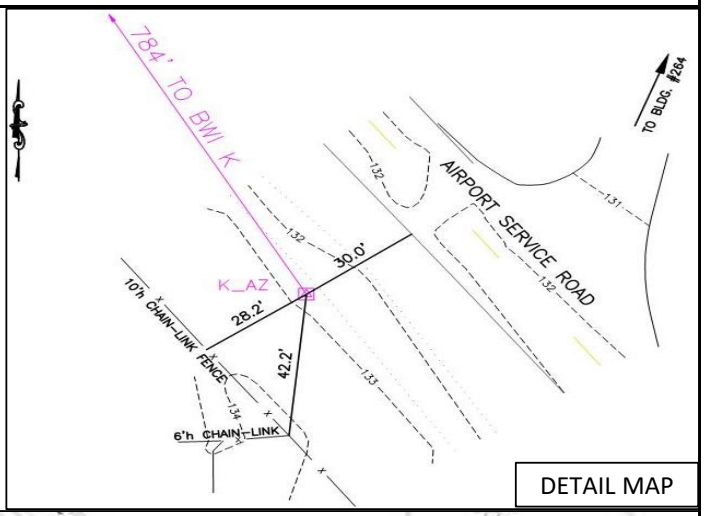
LATITUDE:	39° 09' 57.35751"	(N)
LONGITUDE:	76° 40' 00.93028"	(W)
ELLIPSOID HT:	7.794	m
GEOID HT: (GEOID18)	-32.713	m

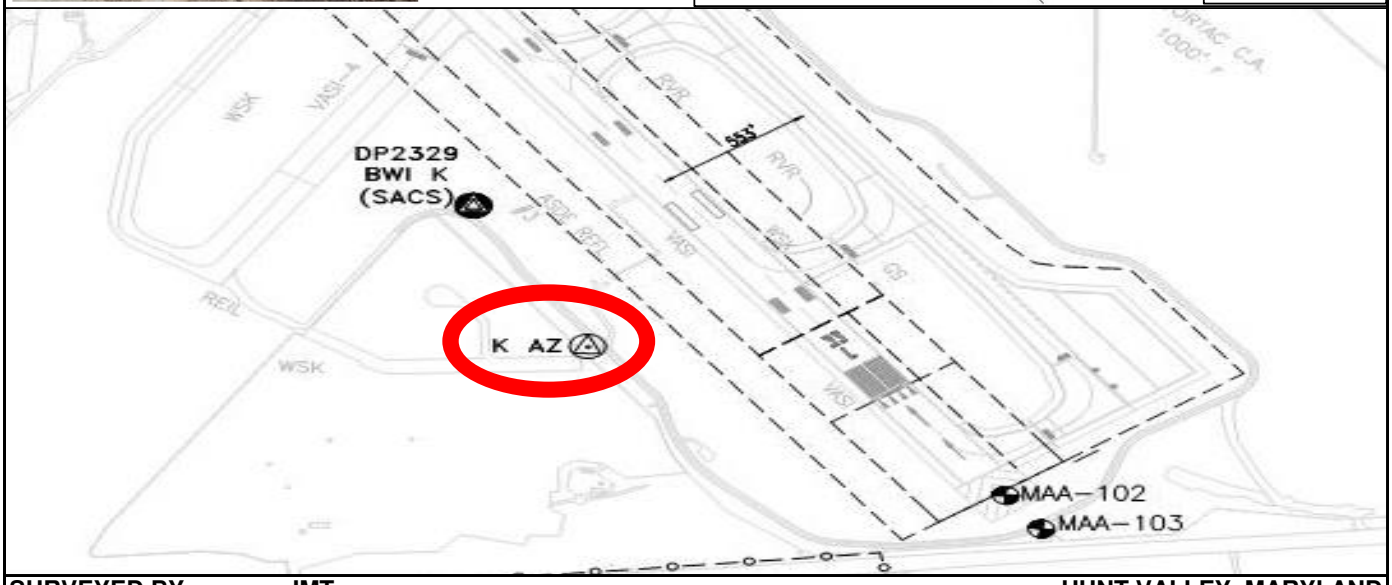
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GRID AZIMUTH	GRID DIST.(US FT.)	GRID DISTANCE (m)
BWI K	331°30'33.5"	783.60	238.843

STATION DESCRIPTION:
F1000SPK - 1000 mm (39.4") FENO Survey Marker
with 3 1/2" Aluminum Dome Cap (Concrete Protected)

STAMPING: K - AZ 2020





SURVEYED BY: JMT
HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: BWI L
NGS PID: DR4999
DATE ESTABLISHED: APRIL 2020

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) EPOCH 2010

NORTHING (Y):	548031.96 US ft.	167040.477 m
EASTING (X):	1400442.72 US ft.	426855.795 m
ORTHOMETRIC HEIGHT (NAVD 88):	145.91 US ft. (GPS OBS)	44.474 m
CONVERGENCE ANGLE:	0° 11' 42.20"	
COMBINED SCALE FACTOR:	0.99996123	

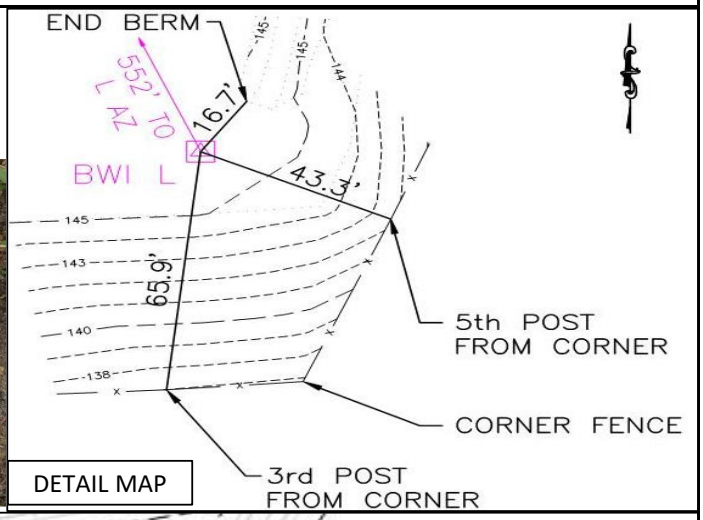
GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39° 10' 15.776644" (N)
LONGITUDE:	76° 41' 21.190987" (W)
ELLIPSOID HT:	11.828 m
GEOID HT: (GEOID18)	-32.646 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GRID AZIMUTH	GRID DIST.(US FT.)	GRID DISTANCE (m)
L AZ	337°47'40.9"	552.10	168.281

STATION DESCRIPTION:
SEE ATTACHED NGS DATASHEET
DRIVEN TO REFUSAL ROD MONUMENT
WITH BERNTSEN TOP SECURITY SLEEVE & LID
STAMPING: BWI L 2020



DETAIL MAP

LOCATION PLAN

SURVEYED BY: JMT
HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: BWI L | **DATE ESTABLISHED:** APRIL 2020
NGS PID: DR4999

1 National Geodetic Survey, Retrieval Date = MAY 27, 2020
DR4999 **********
DR4999 HT_MOD - This is a Height Modernization Survey Station.
DR4999 DESIGNATION - BWI L
DR4999 PID - DR4999
DR4999 STATE/COUNTY- MD/ANNE ARUNDEL
DR4999 COUNTRY - US
DR4999 USGS QUAD - RELAY (2016)
DR4999
DR4999 *CURRENT SURVEY CONTROL
DR4999 _____
DR4999* NAD 83(2011) POSITION- 39 10 15.77664(N) 076 41 21.19098(W) ADJUSTED
DR4999* NAD 83(2011) ELLIP HT- 11.822 (meters) (04/16/20) ADJUSTED
DR4999* NAD 83(2011) EPOCH - 2010.00
DR4999* NAVD 88 ORTHO HEIGHT - 44.47 (meters) 145.9 (feet) GPS OBS
DR4999 _____
DR4999 GEOID HEIGHT - -32.646 (meters) GEOID18
DR4999 NAD 83(2011) X - 1,139,966.608 (meters) COMP
DR4999 NAD 83(2011) Y - -4,818,348.526 (meters) COMP
DR4999 NAD 83(2011) Z - 4,007,064.145 (meters) COMP
DR4999 LAPLACE CORR - -5.50 (seconds) DEFLEC18
DR4999
DR4999 Network accuracy estimates per FGDC Geospatial Positioning Accuracy
DR4999 Standards:
DR4999 FGDC (95% conf, cm) Standard deviation (cm) CorrNE
DR4999 Horiz Ellip SD_N SD_E SD_h (unitless)
DR4999 ----------
DR4999 NETWORK 0.31 1.16 0.13 0.12 0.59 0.00943137
DR4999 ----------
DR4999 Click here for local accuracies and other accuracy information.
DR4999
DR4999
DR4999.The horizontal coordinates were established by GPS observations
DR4999.and adjusted by the JMT ENGINEERING in April 2020.
DR4999
DR4999.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
DR4999.been affixed to the stable North American tectonic plate. See
DR4999.NA2011 for more information.
DR4999
DR4999.The horizontal coordinates are valid at the epoch date displayed above
DR4999.which is a decimal equivalence of Year/Month/Day.
DR4999
DR4999.The orthometric height was determined by GPS observations and a
DR4999.high-resolution geoid model using precise GPS observation and
DR4999.processing techniques.
DR4999
DR4999.Significant digits in the geoid height do not necessarily reflect accuracy.
DR4999.GEOID18 height accuracy estimate available here.
DR4999
DR4999.Click photographs - Photos may exist for this station.
DR4999
DR4999.The X, Y, and Z were computed from the position and the ellipsoidal ht.
DR4999
DR4999.The Laplace correction was computed from DEFLEC18 derived deflections.
DR4999
DR4999.The ellipsoidal height was determined by GPS observations
DR4999.and is referenced to NAD 83.
DR4999
DR4999

SURVEYED BY: JMT **HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: **BWI L** **DATE ESTABLISHED:** **APRIL 2020**
NGS PID: DR4999

DR4999
DR4999
DR4999; North East Units Scale Factor Converg.
DR4999;SPC MD - 167,040.477 426,855.795 MT 0.99996309 +0 11 42.2
DR4999;SPC MD - 548,031.96 1,400,442.72 sFT 0.99996309 +0 11 42.2
DR4999;UTM 18 - 4,337,117.294 354,076.017 MT 0.99986219 -1 04 01.8
DR4999
DR4999! - Elev Factor x Scale Factor = Combined Factor
DR4999!SPC MD - 0.99999815 x 0.99996309 = 0.99996124
DR4999!UTM 18 - 0.99999815 x 0.99986219 = 0.99986034
DR4999
DR4999_U.S. NATIONAL GRID SPATIAL ADDRESS: 18SUJ5407637117(NAD 83)
DR4999
DR4999 SUPERSEDED SURVEY CONTROL
DR4999
DR4999.No superseded survey control is available for this station.
DR4999
DR4999_MARKER: F = FLANGE-ENCASED ROD
DR4999_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)
DR4999_STAMPING: BWI L 2020
DR4999_MARK LOGO: MAA
DR4999_PROJECTION: RECESSED 10 CENTIMETERS
DR4999_MAGNETIC: I = MARKER IS A STEEL ROD
DR4999_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
DR4999_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DR4999+SATELLITE: SATELLITE OBSERVATIONS - March 11, 2020
DR4999_ROD/PIPE-DEPTH: 15.8 meters
DR4999_SLEEVE-DEPTH : 1 meters
DR4999
DR4999 HISTORY - Date Condition Report By
DR4999 HISTORY - 20200311 MONUMENTED JMTMD
DR4999
DR4999 STATION DESCRIPTION
DR4999
DR4999' DESCRIBED BY JMT ENGINEERING 2020 (EAS)
DR4999' THE MARK IS LOCATED ON THE GROUNDS OF THE BALTIMORE-WASHINGTON
DR4999' INTERNATIONAL THURGOOD MARSHALL AIRPORT SOUTH OF THE APPROACH END OF
DR4999' RUNWAY 10. CONTACT AIRPORT OPERATIONS, AT 410-859-7018 FOR ACCESS TO
DR4999' THE MARK. A BWI BADGE WITH ESCORT CLEARANCE, PERMISSION TO OPERATE A
DR4999' VEHICLE ON AIRPORT GROUNDS AND TO UTILIZE POWER GATES IS REQUIRED TO
DR4999' ACCESS THIS MONUMENT.
DR4999'
DR4999' TO REACH THE STATION FROM THE INTERSECTION OF MD 170 AND MATHISON WAY
DR4999' PROCEED EAST ON MATHISON WAY FOR 0.3 MI (0.5 KM) TO FLASHING LIGHT.
DR4999' TURN LEFT TOWARDS GATE P (MUST HAVE BADGE FOR BWI). GO THROUGH GATE P
DR4999' AND CONTINUE FOR 240 FT (73.2 M). TURN LEFT INTO GRASS AND FOLLOW
DR4999' BERM TO TOP OF HILL.
DR4999'
DR4999' THE STATION IS A STEEL ROD DRIVEN TO REFUSAL OF WHICH THE UPPER 2 FT
DR4999' (0.6 M) IS ENCASED IN A GREASE FILLED FINNED SLEEVE INSIDE OF A 4 FT
DR4999' (1.2 M) DEEP SAND FILLED PVC SLEEVE AND CAPPED FLUSH WITH THE GROUND.
DR4999' THE STATION IS 65.9 FT (20.1 M) NORTH FROM THE THIRD FENCE POST WEST
DR4999' OF THE FENCE CORNER, 43.3 FT (13.2 M) NORTHWEST FROM THE FIFTH FENCE
DR4999' POST NORTH OF A FENCE CORNER, 16.7 FT (5.1 M) SOUTHWEST FROM THE TOE
DR4999' OF A GRASS BERM.

SURVEYED BY: **JMT** **HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-SECONDARY SURVEY CONTROL DATA

NAME OF STATION: L-AZ
NGS PID: OPUS PROJECTS ID BZGDH9CG

DATE ESTABLISHED: APRIL 2020

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) EPOCH 2010

NORTHING (Y):	548543.12 US ft.		167196.278 m
EASTING (X):	1400234.07 US ft.		426792.197 m
ORTHOMETRIC HEIGHT (NAVD 88):	133.84 US ft. (GPS OBS)		40.793 m
	DIGITAL LEVELS FROM BWI L		
CONVERGENCE ANGLE:	0° 11' 40.55"		
COMBINED SCALE FACTOR:	0.99996194		

GEOGRAPHIC COORDINATES (NAD 83):

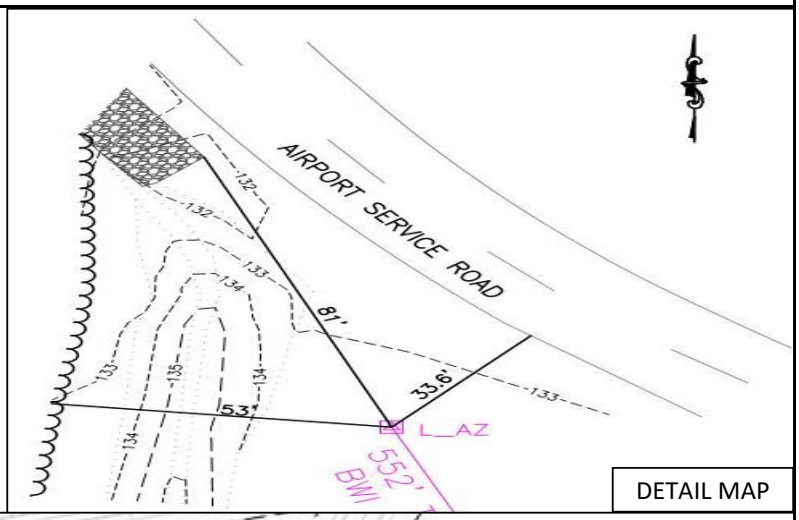
LATITUDE:	39° 10' 20.83596" (N)
LONGITUDE:	76° 41' 23.81841" (W)
ELLIPSOID HT:	8.150 m
GEOID HT: (GEOID18)	-32.643 m

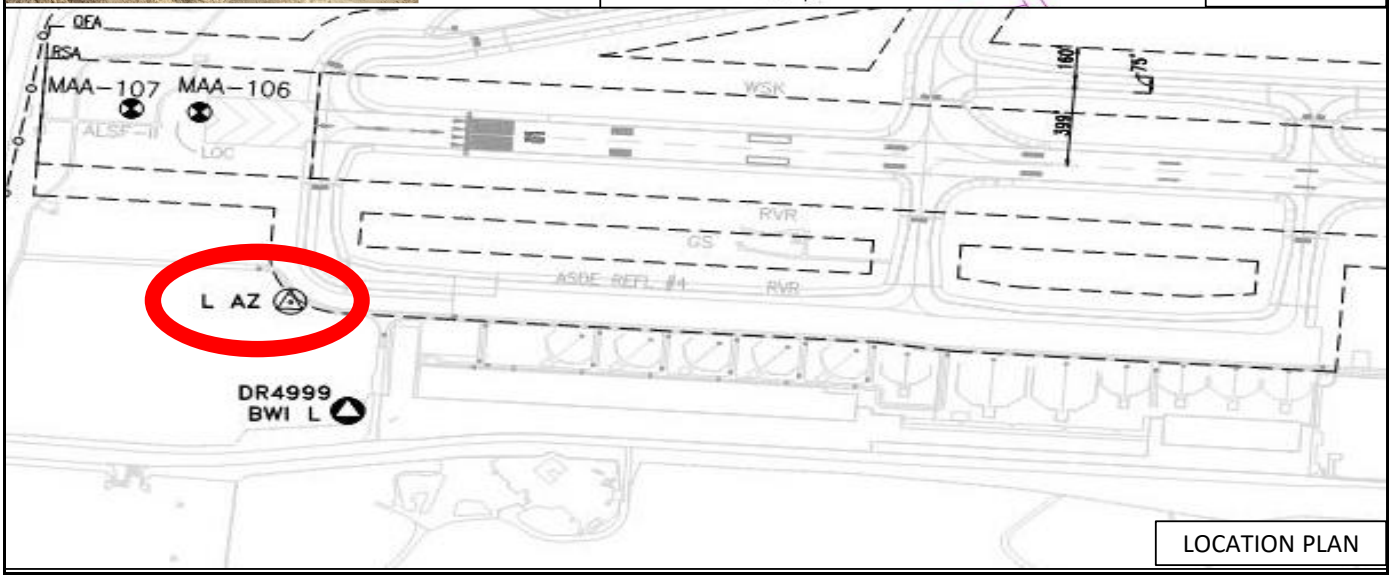
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GRID AZIMUTH	GRID DIST.(US FT.)	GRID DISTANCE (m)
BWI L	157°47'40.9"	552.10	168.281

STATION DESCRIPTION:
F1000SPK - 1000 mm (39.4") FENO Survey Marker with 3 1/2" Aluminum Dome Cap (Concrete Protected)

STAMPING: L - AZ 2020





SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: BWI M
NGS PID: DR5000
DATE ESTABLISHED: APRIL 2020

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) EPOCH 2010

NORTHING (Y):	552580.43	US ft.	168426.853 m
EASTING (X):	1402072.54	US ft.	427352.565 m
ORTHOMETRIC HEIGHT (NAVD 88):	102.73	US ft. (GPS OBS)	31.311 m
CONVERGENCE ANGLE:	0° 11' 55.32"		
COMBINED SCALE FACTOR:	0.99996444		

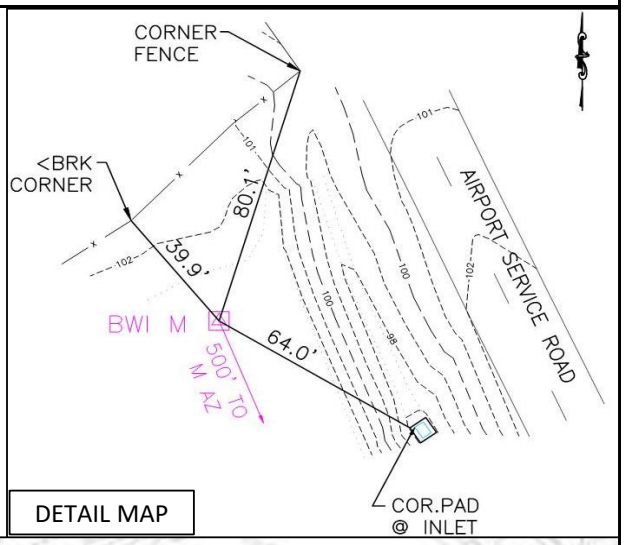
GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39° 11'00.678563" (N)
LONGITUDE:	76° 41' 00.295481" (W)
ELLIPSOID HT:	-1.341 m
GEOID HT: (GEOID18)	-32.652 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GRID AZIMUTH	GRID DIST.(US FT.)	GRID DISTANCE (m)
M AZ	155°24'22.2"	499.66	152.298

STATION DESCRIPTION:
SEE ATTACHED NGS DATASHEET
DRIVEN TO REFUSAL ROD MONUMENT
WITH BERSTEN TOP SECURITY SLEEVE & LID
STAMPING: BWI M 2020



DETAIL MAP

LOCATION PLAN

SURVEYED BY: JMT
HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: BWI M | **DATE ESTABLISHED:** APRIL 2020
NGS PID: DR5000

1 National Geodetic Survey, Retrieval Date = MAY 27, 2020
DR5000 **********
DR5000 HT_MOD - This is a Height Modernization Survey Station.
DR5000 DESIGNATION - BWI M
DR5000 PID - DR5000
DR5000 STATE/COUNTY- MD/ANNE ARUNDEL
DR5000 COUNTRY - US
DR5000 USGS QUAD - RELAY (2016)
DR5000
DR5000 *CURRENT SURVEY CONTROL
DR5000 _____
DR5000* NAD 83(2011) POSITION- 39 11 00.67857(N) 076 41 00.29548(W) ADJUSTED
DR5000* NAD 83(2011) ELLIP HT- -1.347 (meters) (04/16/20) ADJUSTED
DR5000* NAD 83(2011) EPOCH - 2010.00
DR5000* NAVD 88 ORTHO HEIGHT - 31.31 (meters) 102.7 (feet) GPS OBS
DR5000 _____
DR5000 GEOID HEIGHT - -32.652 (meters) GEOID18
DR5000 NAD 83(2011) X - 1,140,250.886 (meters) COMP
DR5000 NAD 83(2011) Y - -4,817,371.850 (meters) COMP
DR5000 NAD 83(2011) Z - 4,008,129.248 (meters) COMP
DR5000 LAPLACE CORR - -5.50 (seconds) DEFLEC18
DR5000
DR5000 Network accuracy estimates per FGDC Geospatial Positioning Accuracy
DR5000 Standards:
DR5000 FGDC (95% conf, cm) Standard deviation (cm) CorrNE
DR5000 Horiz Ellip SD_N SD_E SD_h (unitless)
DR5000 ----------
DR5000 NETWORK 0.31 1.12 0.13 0.12 0.57 0.04488460
DR5000 ----------
DR5000 Click here for local accuracies and other accuracy information.
DR5000
DR5000
DR5000.The horizontal coordinates were established by GPS observations
DR5000.and adjusted by the JMT ENGINEERING in April 2020.
DR5000
DR5000.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has
DR5000.been affixed to the stable North American tectonic plate. See
DR5000.NA2011 for more information.
DR5000
DR5000.The horizontal coordinates are valid at the epoch date displayed above
DR5000.which is a decimal equivalence of Year/Month/Day.
DR5000
DR5000.The orthometric height was determined by GPS observations and a
DR5000.high-resolution geoid model using precise GPS observation and
DR5000.processing techniques.
DR5000
DR5000.Significant digits in the geoid height do not necessarily reflect accuracy.
DR4999.GEOID18 height accuracy estimate available here.
DR5000
DR5000.GEOID18 height accuracy estimate available here.
DR5000
DR5000.Click photographs - Photos may exist for this station.
DR5000
DR5000.The X, Y, and Z were computed from the position and the ellipsoidal ht.
DR5000
DR5000.The Laplace correction was computed from DEFLEC18 derived deflections.
DR5000
DR5000.The ellipsoidal height was determined by GPS observations
DR5000.and is referenced to NAD 83.

SURVEYED BY: JMT **HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: BWI M | **DATE ESTABLISHED:** APRIL 2020

NGS PID: DR5000

DR5000. The following values were computed from the NAD 83(2011) position.
DR5000
DR5000; North East Units Scale Factor Converg.
DR5000;SPC MD - 168,426.853 427,352.565 MT 0.99996423 +0 11 55.3
DR5000;SPC MD - 552,580.43 1,402,072.54 sFT 0.99996423 +0 11 55.3
DR5000;UTM 18 - 4,338,492.249 354,603.155 MT 0.99986030 -1 03 49.6
DR5000
DR5000! - Elev Factor x Scale Factor = Combined Factor
DR5000!SPC MD - 1.00000021 x 0.99996423 = 0.99996444
DR5000!UTM 18 - 1.00000021 x 0.99986030 = 0.99986051
DR5000
DR5000_U.S. NATIONAL GRID SPATIAL ADDRESS: 18SUJ5460338492(NAD 83)
DR5000
DR5000 SUPERSEDED SURVEY CONTROL
DR5000
DR5000.No superseded survey control is available for this station.
DR5000_MARKER: F = FLANGE-ENCASED ROD
DR5000_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)
DR5000_STAMPING: BWI M 2020
DR5000_MARK LOGO: MAA
DR5000_PROJECTION: RECESSED 10 CENTIMETERS
DR5000_MAGNETIC: I = MARKER IS A STEEL ROD
DR5000_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
DR5000_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DR5000+SATELLITE: SATELLITE OBSERVATIONS - March 11, 2020
DR5000_ROD/PIPE-DEPTH: 8.8 meters
DR5000_SLEEVE-DEPTH : 1 meters
DR5000
DR5000 HISTORY - Date Condition Report By
DR5000 HISTORY - 20200311 MONUMENTED JMTMD
DR5000
DR5000 STATION DESCRIPTION
DR5000
DR5000' DESCRIBED BY JMT ENGINEERING 2020 (EAS)
DR5000' THE MARK IS LOCATED ON THE GROUNDS OF THE BALTIMORE-WASHINGTON
DR5000' INTERNATIONAL THURGOOD MARSHALL AIRPORT SOUTH OF THE APPROACH END OF
DR5000' RUNWAY 15R. CONTACT AIRPORT OPERATIONS, AT 410-859-7018 FOR ACCESS TO
DR5000' THE MARK. A BWI BADGE WITH ESCORT CLEARANCE, PERMISSION TO OPERATE A
DR5000' VEHICLE ON AIRPORT GROUNDS AND TO UTILIZE POWER GATES IS REQUIRED TO
DR5000' ACCESS THIS MONUMENT.
DR5000
DR5000' TO REACH THE STATION FROM THE INTERSECTION OF MD 170 (AVIATION BLVD.)
DR5000' AND TERMINAL ROAD. CONTINUE ON TERMINAL FOR 442 FT (134.7 M) TO ELM
DR5000' ROAD (FIRST LIGHT) TURN LEFT ONTO ELM ROAD AND CONTINUE FOR 865 FT
DR5000' (263.7 M) TO AIR CARGO SERVICE ROAD. TURN LEFT AND CONTINUE 813 FT
DR5000' (247.8 M) TO SPRING LANE. TURN LEFT TO GATE G (MUST HAVE BWI BADGE).
DR5000' GO THROUGH GATE G AND MAKE FIRST RIGHT ONTO SERVICE ROAD AND CONTINUE
DR5000' ON SERVICE ROAD FOR 2.78 MI (4.47 KM) PAST THE APPROACH END OF RUNWAY
DR5000' TO A CORNER OF METAL FENCING FOR NORTHROP GRUMMAN AIRPLANE RAMP. THE
DR5000' STATION WILL BE ON THE RIGHT ALONG THE TOP OF A BERM NEAR A RETAINING
DR5000' WALL.
DR5000
DR5000' THE STATION IS A STEEL ROD DRIVEN TO REFUSAL OF WHICH THE UPPER 2 FT
DR5000' (0.6 M) IS ENCASED IN A GREASE FILLED FINNED SLEEVE INSIDE OF A 4 FT
DR5000' (1.2 M) DEEP SAND FILLED PVC SLEEVE AND CAPPED FLUSH WITH THE GROUND.
DR5000' THE STATION IS 140.4 FT (42.8 M) NORTHEAST FROM THE EIGHTH FENCE POST
DR5000' SOUTH OF THE FENCE CORNER, 136.2 FT (41.5 M) NORTHEAST FROM THE FENCE
DR5000' CORNER, 18.4 FEET NORTH FROM THE NORTHERN MOST CORNER OF A RIP-RAP
DR5000' SWALE.

SURVEYED BY: JMT **HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-SECONDARY SURVEY CONTROL DATA

NAME OF STATION: M-AZ
NGS PID: OPUS PROJECTS ID BZGDH9CG
DATE ESTABLISHED: APRIL 2020

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) EPOCH 2010

NORTHING (Y):	552126.10 US ft.		168288.371 m
EASTING (X):	1402280.49 US ft.		427415.949 m
ORTHOMETRIC HEIGHT (NAVD 88):	108.54 US ft. (GPS OBS)		33.084 m
	DIGITAL LEVELS FROM BWI M		
CONVERGENCE ANGLE:	0° 11' 56.96"		
COMBINED SCALE FACTOR:	0.99996405		

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39° 10' 56.180757"	(N)
LONGITUDE:	76° 40' 57.674528"	(W)
ELLIPSOID HT:	0.430 m	
GEOID HT: (GEOID18)	-32.655 m	

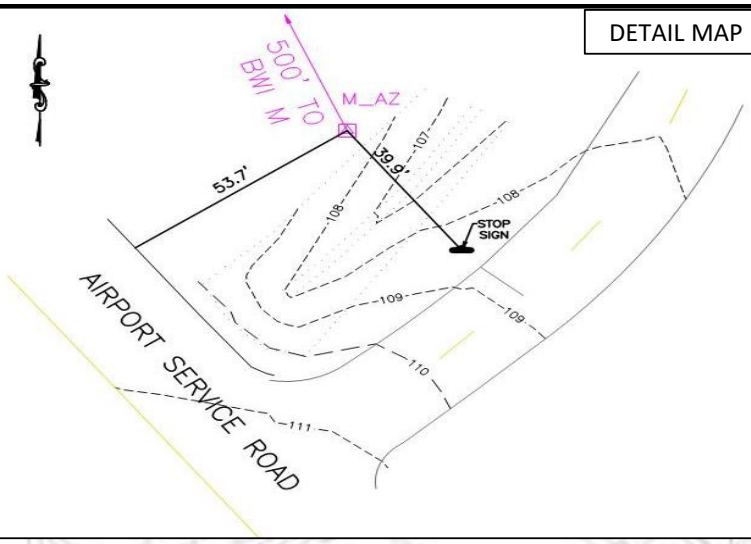
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GRID AZIMUTH	GRID DIST.(US FT.)	GRID DISTANCE (m)
BWI M	335°24'22.2"	499.66	152.298

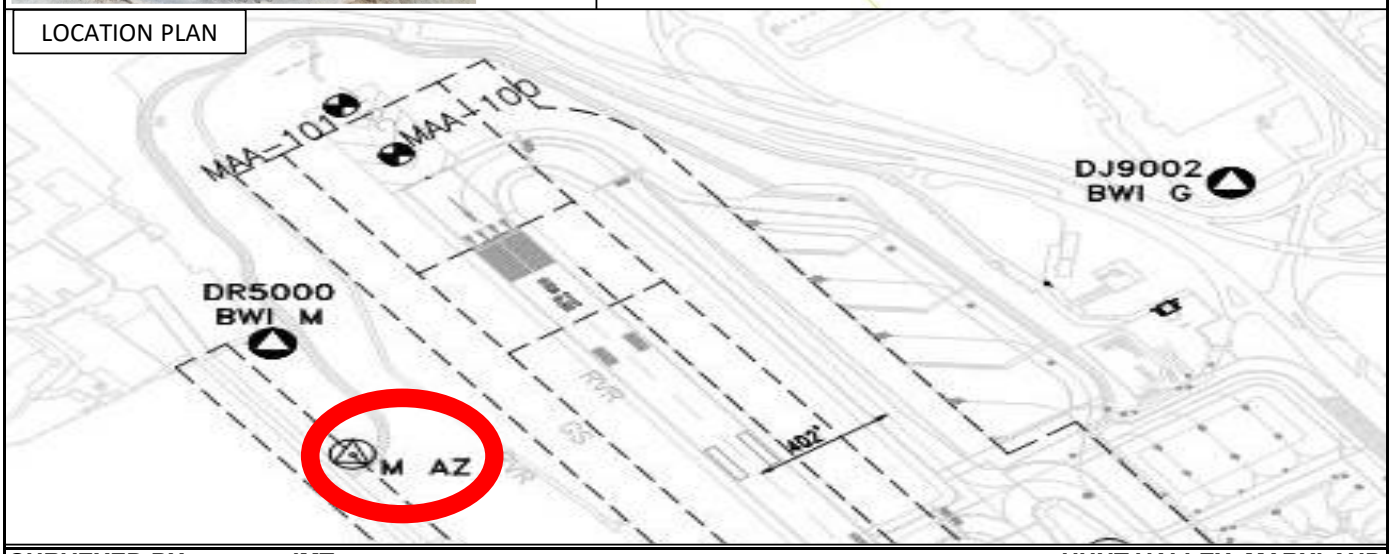
STATION DESCRIPTION:
F1000SPK - 1000 mm (39.4") FENO Survey Marker with 3 1/2" Aluminum Dome Cap (Concrete Protected)

STAMPING: M - AZ 2020

DETAIL MAP



LOCATION PLAN



SURVEYED BY: JMT
HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-SECONDARY SURVEY CONTROL DATA

NAME OF STATION: MON-548
NGS PID:

DATE ESTABLISHED: APRIL 2005
READJUSTED **APRIL 2020**

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) : (RTK FROM BWI-D & BWI-G)

NORTHING (Y):	551723.75	US ft.	168165.735 m
EASTING (X):	1404244.82	US ft.	428014.676 m
ORTHOMETRIC HEIGHT (NAVD 88):	132.25	US ft.	40.310 m

DIGITAL LEVELS FROM BWI D & BWI G

CONVERGENCE ANGLE:	00°12'12.61"
COMBINED SCALE FACTOR:	0.99996914

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39°10'52.13579"	(N)
LONGITUDE:	76°40'32.74593	(W)
ELLIPSOID HT:	7.666	m

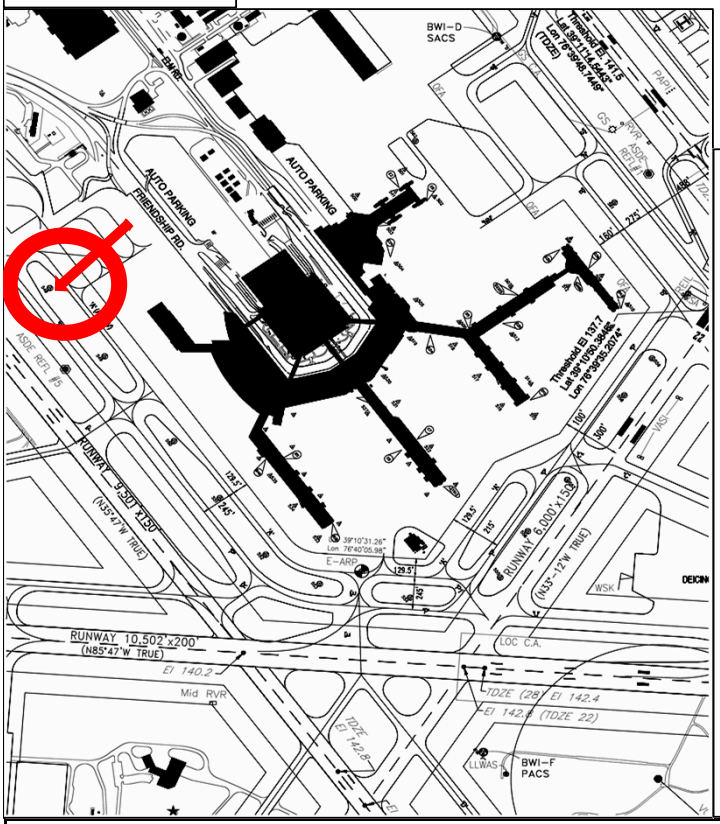
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GRID AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MON-599	144°29'17.4'	683.31	208.273

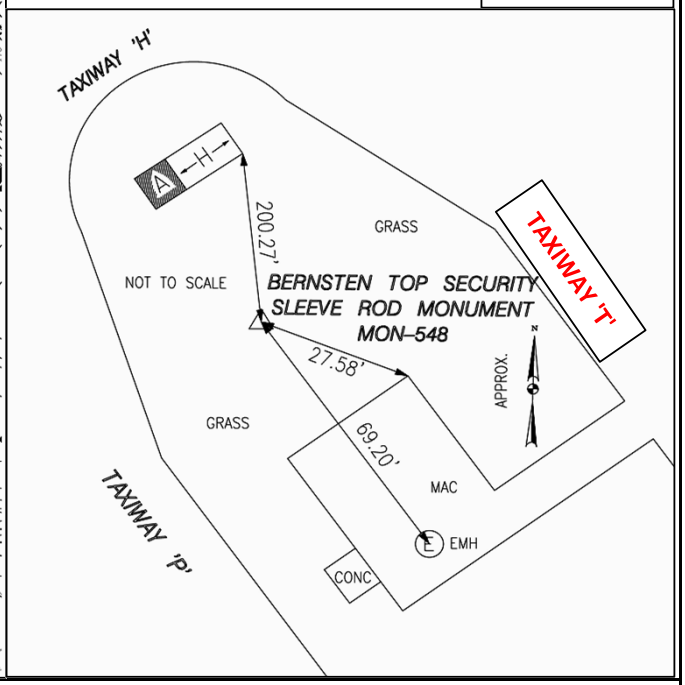
STATION DESCRIPTION:

DRIVEN TO REFUSAL ROD MONUMENT
WITH BERNTSEN TOP SECURITY SLEEVE & LID

LOCATION PLAN



DETAIL MAP



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: MON-548
NGS PID:

DATE ESTABLISHED: APRIL 2005

SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-SECONDARY SURVEY CONTROL DATA

NAME OF STATION: MON-599 (REPLACES MON-549)
NGS PID: OPUS PROJECTS ID FE83FJD4
DATE ESTABLISHED: OCTOBER 2020

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) EPOCH 2010

NORTHING (Y):	551167.54 US ft.	167996.202 m
EASTING (X):	1404641.73 US ft.	428135.656 m
ORTHOMETRIC HEIGHT (NAVD 88):	130.70 US ft.	39.838 m

DIGITAL LEVELS FROM BWI D & BWI G

CONVERGENCE ANGLE:	00°12'15.76"
COMBINED SCALE FACTOR:	0.99996275

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39°10'46.62413" (N)
LONGITUDE:	76°40'27.73056" (W)
ELLIPSOID HT:	7.158 m

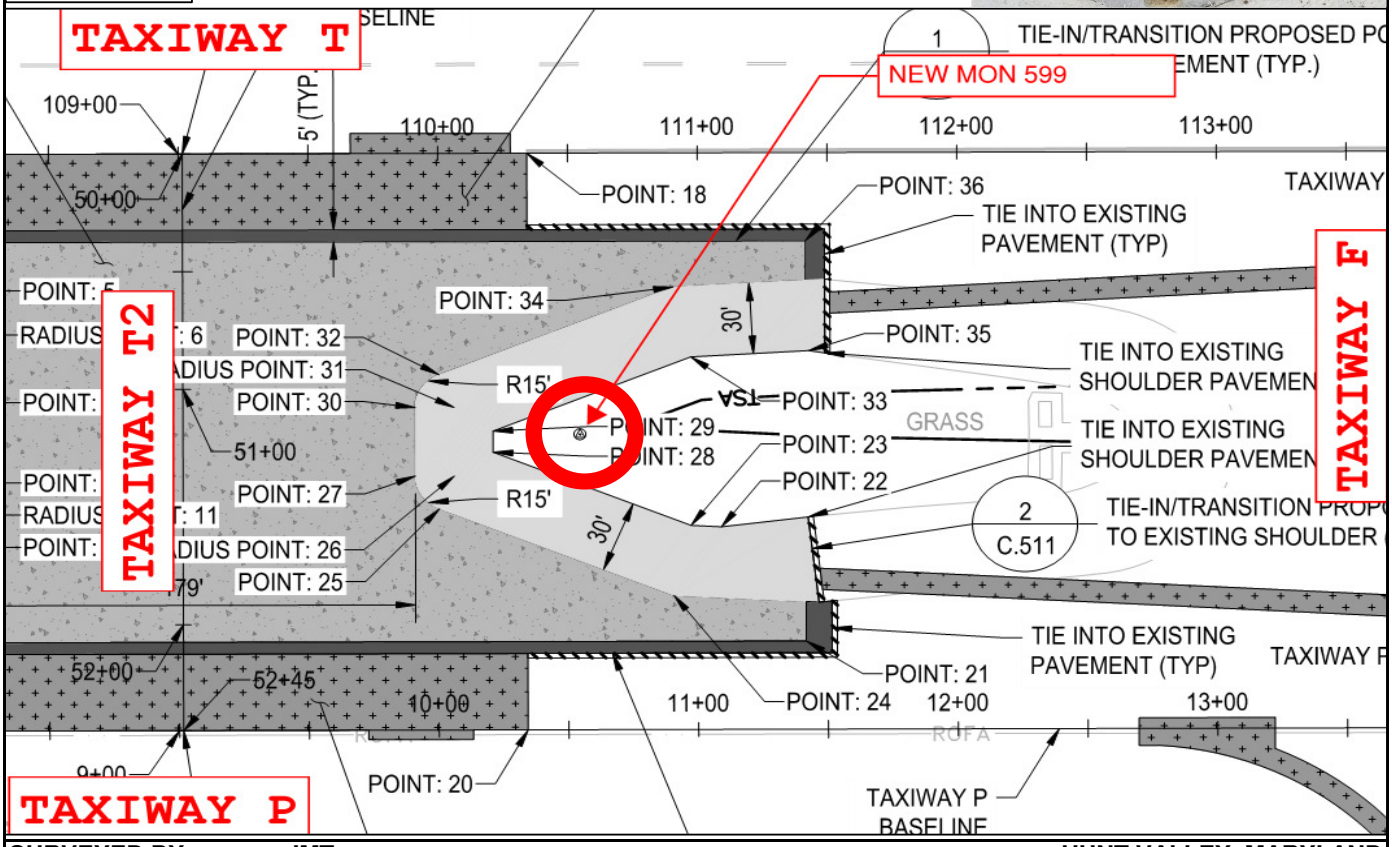
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GRID AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MON-548	324°29'17.4'	683.31	208.273
MON-550	142°35'36.8'	732.92	223.396

STATION DESCRIPTION:

DRIVEN TO REFUSAL ROD MONUMENT
WITH BERNTSEN TOP SECURITY SLEEVE & LID
(LID STAMPED 599)

DETAIL MAP



SURVEYED BY: JMT
HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: MON-599 (REPLACES MON-549)
NGS PID:

DATE ESTABLISHED: OCTOBER 2020

SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-SECONDARY SURVEY CONTROL DATA

NAME OF STATION: MON-550
NGS PID:

DATE ESTABLISHED: APRIL 2005
READJUSTED **APRIL 2020**

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) : (RTK FROM BWI-D & BWI-G)

NORTHING (Y):	550585.34	US ft.	167818.748	m
EASTING (X):	1405086.96	US ft.	428271.361	m
ORTHOMETRIC HEIGHT (NAVD 88):	137.81	US ft.	42.005	m

DIGITAL LEVELS FROM BWI D & BWI G

CONVERGENCE ANGLE: 00°12'19.29"
COMBINED SCALE FACTOR: 0.99996885

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39°10'40.85417"	(N)
LONGITUDE:	76°40'22.10267"	(W)
ELLIPSOID HT:	9.350	m

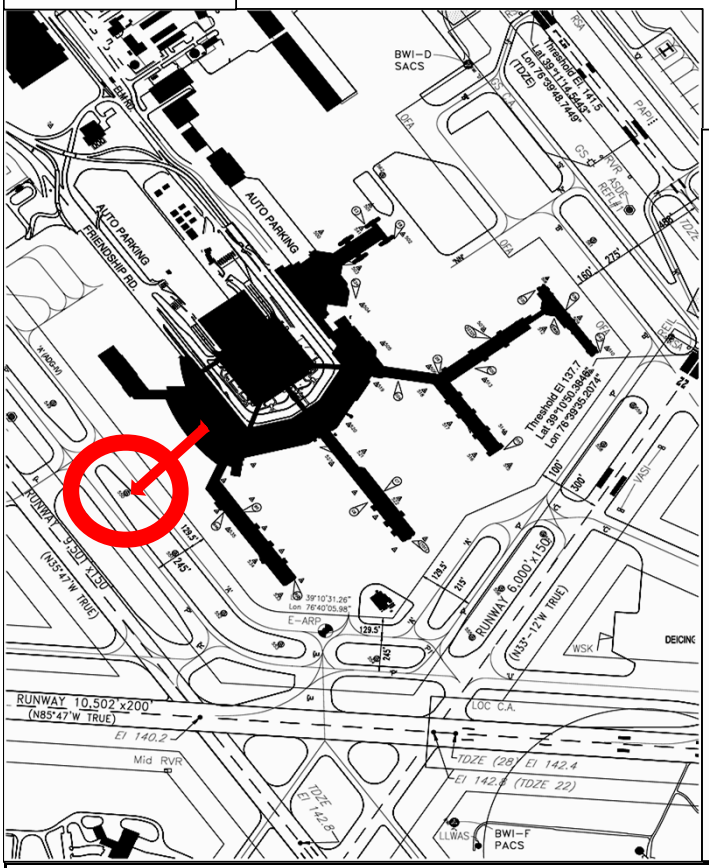
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GRID AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MON-599	322°35'36.8'	732.92	223.396
MON-551	143°57'32.8'	525.42	160.150

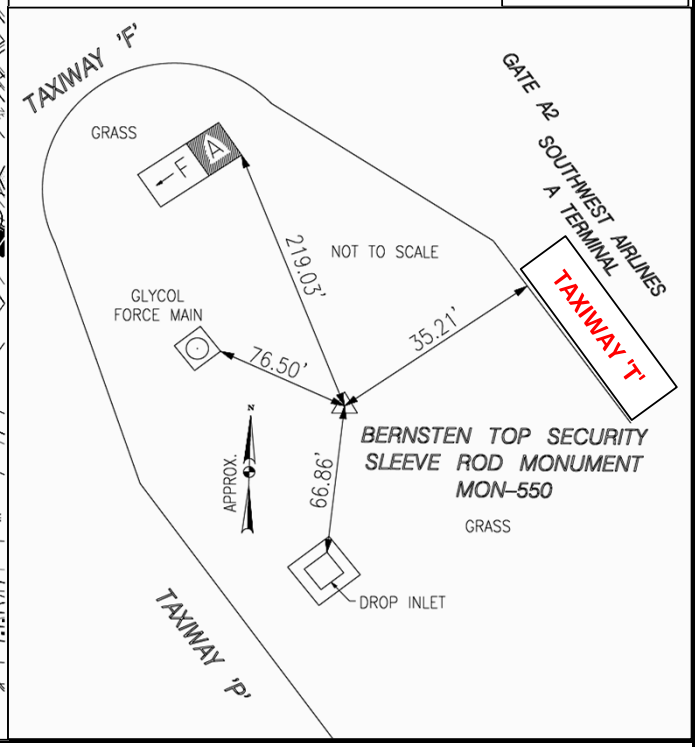
STATION DESCRIPTION:

DRIVEN TO REFUSAL ROD MONUMENT
WITH BERNTSEN TOP SECURITY SLEEVE & LID

LOCATION PLAN



DETAIL MAP



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: MON-550
NGS PID:

DATE ESTABLISHED: APRIL 2005

SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-SECONDARY SURVEY CONTROL DATA

NAME OF STATION: MON-551
NGS PID:

DATE ESTABLISHED: APRIL 2005
READJUSTED **APRIL 2020**

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) : (RTK FROM BWI-D & BWI-G)

NORTHING (Y):	550161.61 US ft.	167689.593 m
EASTING (X):	1405397.63 US ft.	428366.055 m
ORTHOMETRIC HEIGHT (NAVD 88):	141.64 US ft.	43.173 m

DIGITAL LEVELS FROM BWI D & BWI G

CONVERGENCE ANGLE: 00°12'21.75"
COMBINED SCALE FACTOR: 0.99996874

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE: 39°10'36.65484" (N)
LONGITUDE: 76°40'18.17693" (W)
ELLIPSOID HT: 10.513 m

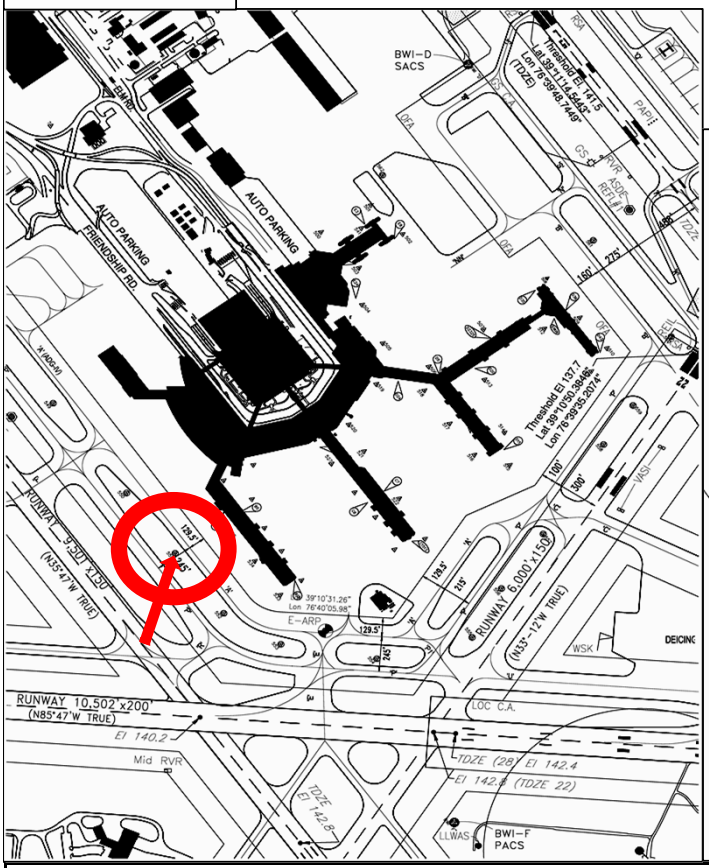
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GRID AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MON-550	323°57'32.8'	525.42	160.150
MON-552	143°30'02.6'	523.00	159.411

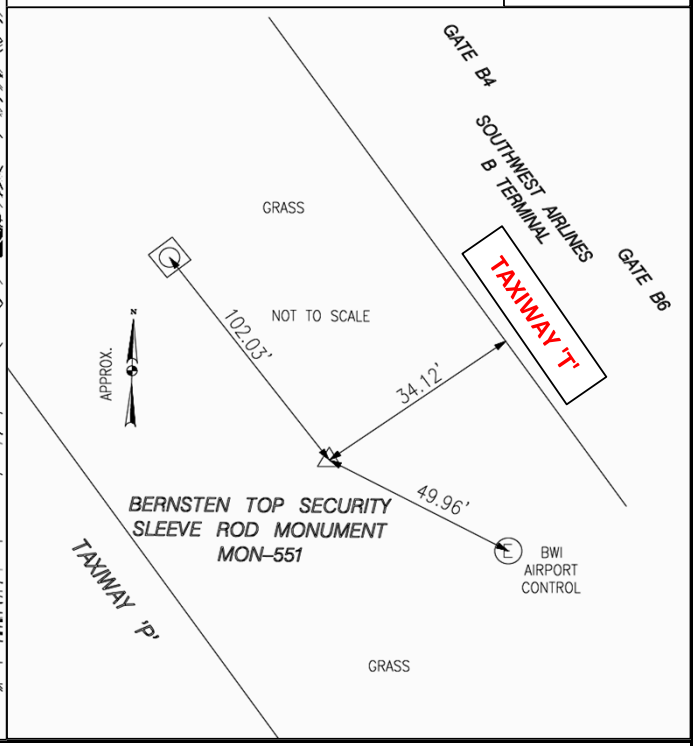
STATION DESCRIPTION:

DRIVEN TO REFUSAL ROD MONUMENT
WITH BERNTSEN TOP SECURITY SLEEVE & LID

LOCATION PLAN



DETAIL MAP



SURVEYED BY: JMT
HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: MON-551	**DATE ESTABLISHED:** APRIL 2005
NGS PID:	

SURVEYED BY: JMT	**HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-SECONDARY SURVEY CONTROL DATA

NAME OF STATION: MON-552
NGS PID:

DATE ESTABLISHED: APRIL 2005
READJUSTED **APRIL 2020**

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) : (RTK FROM BWI-D & BWI-G)

NORTHING (Y):	549741.18	US ft.	167561.448	m
EASTING (X):	1405708.72	US ft.	428460.875	m
ORTHOMETRIC HEIGHT (NAVD 88):	144.15	US ft.	43.937	m

DIGITAL LEVELS FROM BWI D & BWI G

CONVERGENCE ANGLE: 00°12'24.22"
COMBINED SCALE FACTOR: 0.99996864

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE: 39°10'32.48828" (N)
LONGITUDE: 76°40'14.24565" (W)
ELLIPSOID HT: 11.270 m

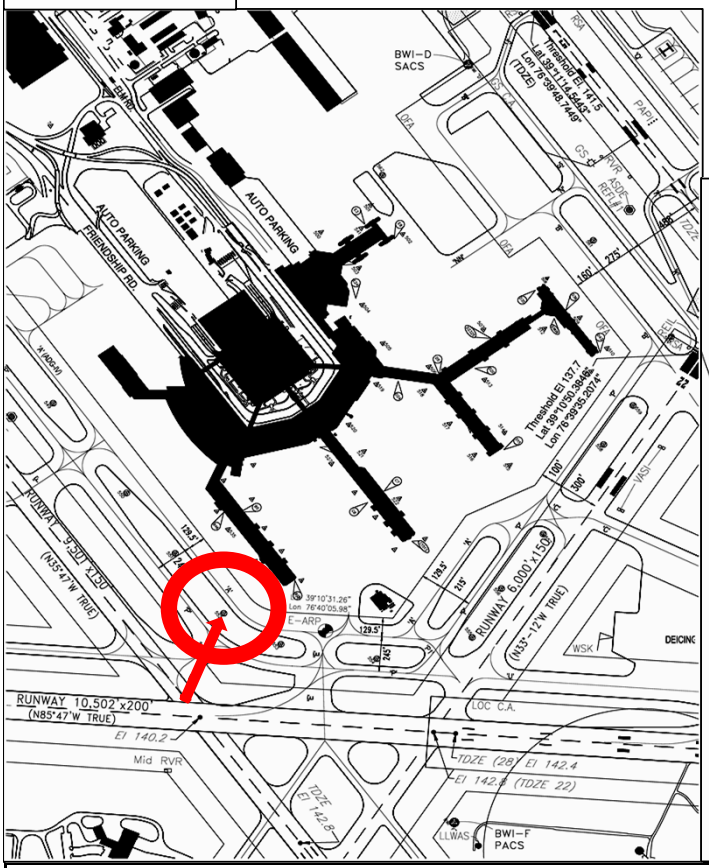
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GRID AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MON-551	323°30'02.6'	523.00	159.411
MON-553	120°45'56.5'	425.31	129.635

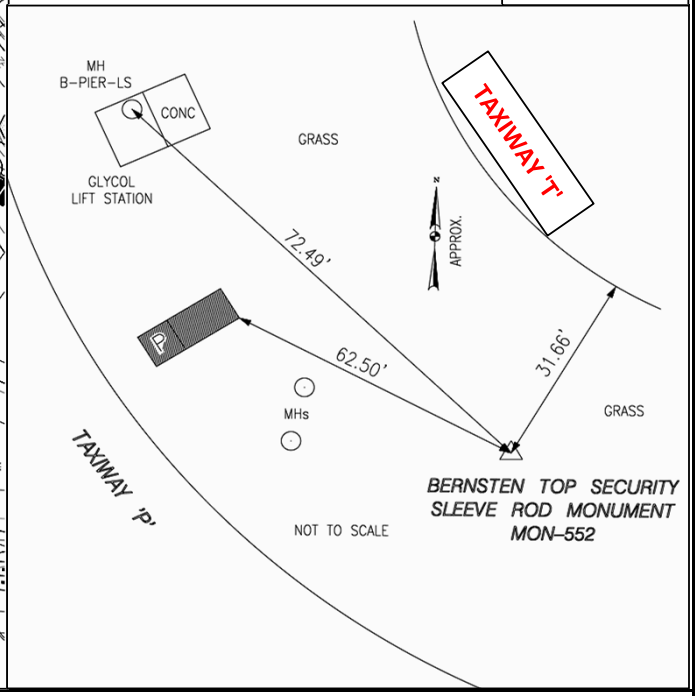
STATION DESCRIPTION:

DRIVEN TO REFUSAL ROD MONUMENT
WITH BERNTSEN TOP SECURITY SLEEVE & LID

LOCATION PLAN



DETAIL MAP



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: MON-552
NGS PID:

DATE ESTABLISHED: APRIL 2005

SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-SECONDARY SURVEY CONTROL DATA

NAME OF STATION: MON-553
NGS PID:

DATE ESTABLISHED: APRIL 2005
READJUSTED **APRIL 2020**

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) : (RTK FROM BWI-D & BWI-G)

NORTHING (Y):	549523.63	US ft.	167495.136	m
EASTING (X):	1406074.18	US ft.	428572.266	m
ORTHOMETRIC HEIGHT (NAVD 88):	143.99	US ft.	43.887	m

DIGITAL LEVELS FROM BWI D & BWI G

CONVERGENCE ANGLE: 00°12'27.13"
COMBINED SCALE FACTOR: 0.99996858

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39°10'30.32482"	(N)
LONGITUDE:	76°40'09.61496"	(W)
ELLIPSOID HT:	11.215	m

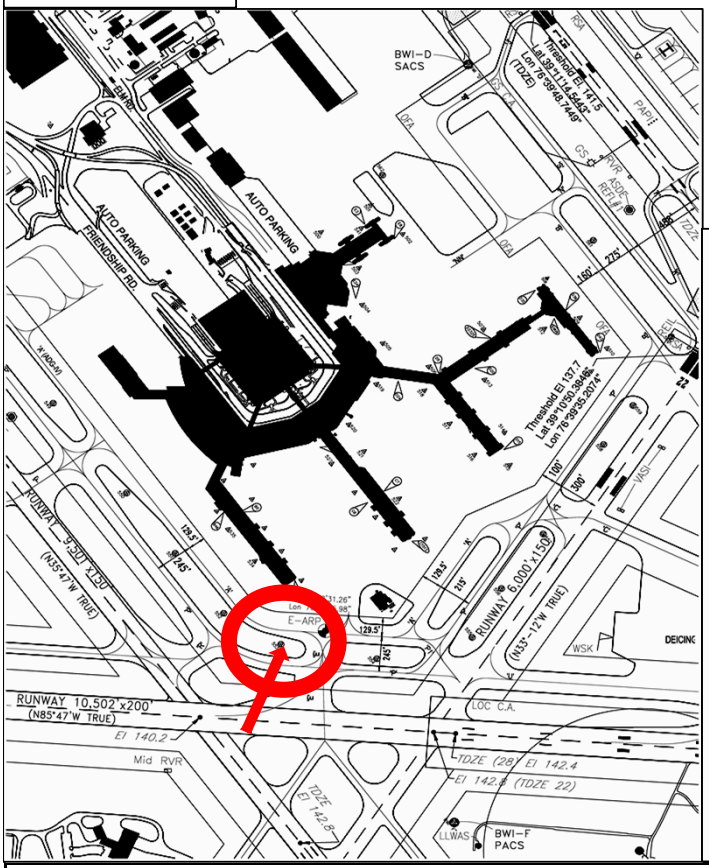
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GRID AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MON-552	300°45'56.5'	425.31	129.635
MON-604	90°40'47.0"	1171.29	357.009

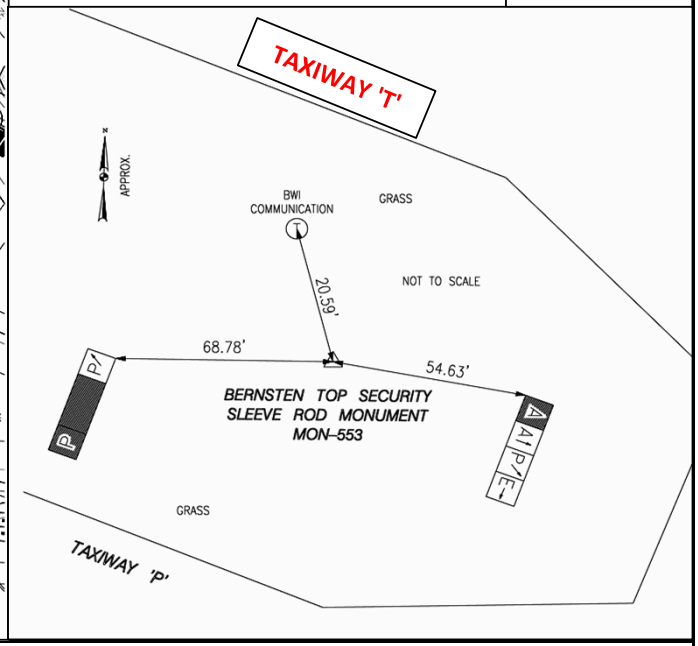
STATION DESCRIPTION:

DRIVEN TO REFUSAL ROD MONUMENT
WITH BERNTSEN TOP SECURITY SLEEVE & LID

LOCATION PLAN



DETAIL MAP



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: MON-553	**DATE ESTABLISHED:** APRIL 2005
NGS PID:	

SURVEYED BY: **JMT** **HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-SECONDARY SURVEY CONTROL DATA

NAME OF STATION: MON-561
NGS PID: DJ8998

DATE ESTABLISHED: MAY 2003
READJUSTED **APRIL 2020**

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) : (RTK FROM BWI-D & BWI-G)

NORTHING (Y):	552359.40 US ft.	168359.481 m
EASTING (X):	1408073.51 US ft.	429181.663 m
ORTHOMETRIC HEIGHT (NAVD 88):	**139.80** US ft.*	**42.611** m *

DIGITAL LEVELS FROM BWI D & BWI G

CONVERGENCE ANGLE: 00°12'43.14"
COMBINED SCALE FACTOR: 0.99996257

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39°10'58.28190" (N)
LONGITUDE:	76°39'44.09293" (W)
ELLIPSOID HT:	10.168 m
GEOID HT: (GEOID18)	-32.711 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GRID AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
BWI D	327°06'45.5'	1237.10	377.069

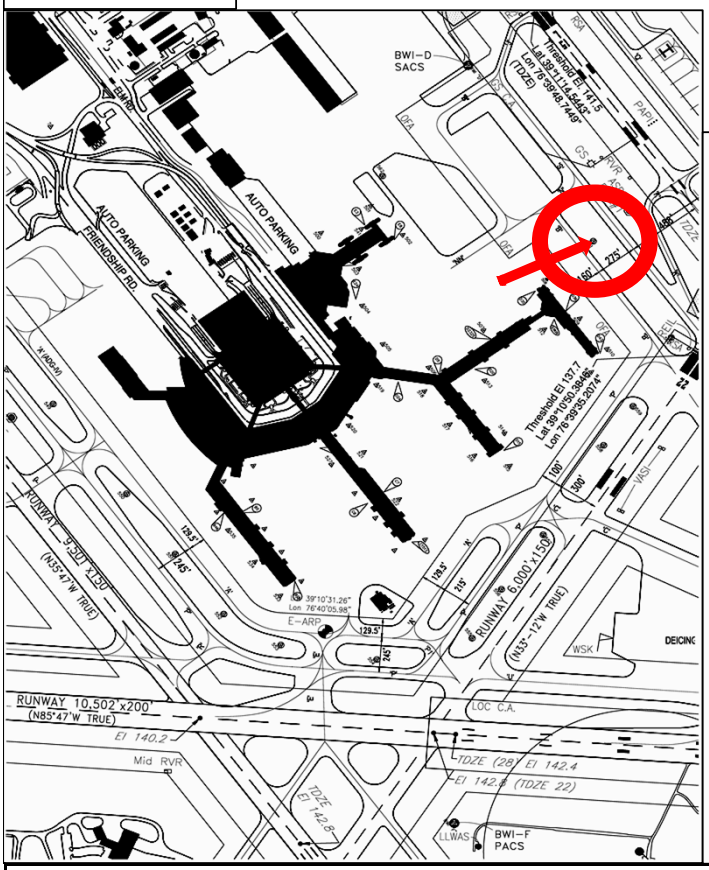
STATION DESCRIPTION:

DRIVEN TO REFUSAL ROD MONUMENT
WITH BERNTSEN TOP SECURITY SLEEVE & LID

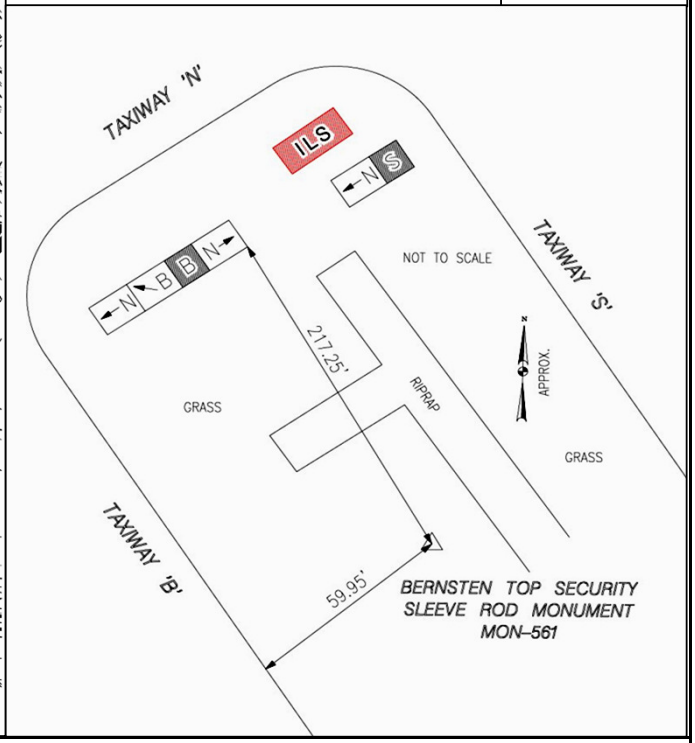
*** NOTE: TOP SECTION OF ROD HAS BEEN CUT**

* SEE ATTACHED NGS DATASHEETS

LOCATION PLAN



DETAIL MAP



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-SECONDARY SURVEY CONTROL DATA

NAME OF STATION: MON-561	**DATE ESTABLISHED:** MAY 2003
NGS PID: **DJ8998**	

SURVEYED BY: **JMT** **HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: MON-561	**DATE ESTABLISHED:** MAY 2003
NGS PID: **DJ8998**	READJUSTED JUNE 2008

1 National Geodetic Survey, Retrieval Date = AUGUST 28, 2014
DJ8998 **********
DJ8998 DESIGNATION - 561
DJ8998 PID - DJ8998
DJ8998 STATE/COUNTY- MD/ANNE ARUNDEL
DJ8998 COUNTRY - US
DJ8998 USGS QUAD - RELAY (1974)
DJ8998
DJ8998 *CURRENT SURVEY CONTROL
DJ8998 _____
DJ8998 * NAD 83(1986) POSITION- 39 10 58.28 (N) 076 39 44.09 (W) HD_HELD1
~~**DJ8998 * NAVD 88 ORTHO HEIGHT - 42.850 (meters) 140.58 (feet) ADJUSTED**~~
DJ8998 _____
DJ8998 GEOID HEIGHT - -32.72 (meters) GEOID12A
DJ8998 DYNAMIC HEIGHT - 42.827 (meters) 140.51 (feet) COMP
DJ8998 MODELED GRAVITY - 980,094.1 (mgal) NAVD 88
DJ8998
DJ8998 VERT ORDER - FIRST CLASS II
DJ8998
DJ8998 .The horizontal coordinates were determined by differentially corrected
DJ8998 .hand held GPS observations or other comparable positioning techniques
DJ8998 .and have an estimated accuracy of +/- 3 meters.
DJ8998 .
DJ8998 .The orthometric height was determined by differential leveling and
DJ8998 .adjusted by the NATIONAL GEODETIC SURVEY
DJ8998 .in June 2008.
DJ8998
DJ8998 .No vertical observational check was made to the station.
DJ8998
DJ8998 .Photographs are available for this station.
DJ8998
DJ8998 .The dynamic height is computed by dividing the NAVD 88
DJ8998 .geopotential number by the normal gravity value computed on the
DJ8998 .Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
DJ8998 .degrees latitude (g = 980.6199 gals.).
DJ8998
DJ8998 .The modeled gravity was interpolated from observed gravity values.
DJ8998
DJ8998 ; North East Units Estimated Accuracy
DJ8998 ;SPC MD - 168,359.4 429,181.7 MT (+/- 3 meters HH1 GPS)
DJ8998
DJ8998 SUPERSEDED SURVEY CONTROL
DJ8998
DJ8998 .No superseded survey control is available for this station.
DJ8998
DJ8998 _U.S. NATIONAL GRID SPATIAL ADDRESS: 18SUJ5643038384(NAD 83)
DJ8998
DJ8998 _MARKER: F = FLANGE-ENCASED ROD
DJ8998 _SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)
DJ8998 _STAMPING: 561 2003
DJ8998 _PROJECTION: FLUSH
DJ8998 _MAGNETIC: I = MARKER IS A STEEL ROD
DJ8998 _STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
DJ8998 _SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DJ8998 +SATELLITE: SATELLITE OBSERVATIONS - November 07, 2007
DJ8998
DJ8998
DJ8998
DJ8998

SURVEYED BY: **JMT**	**HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-PRIMARY SURVEY CONTROL DATA

NAME OF STATION: MON-561	**DATE ESTABLISHED:** MAY 2003
NGS PID: **DJ8998**	READJUSTED JUNE 2008

DJ8998
DJ8998 HISTORY - Date Condition Report By
DJ8998 HISTORY - 200305 MONUMENTED WHBCXM
DJ8998 HISTORY - 20071107 GOOD JARICE
DJ8998
DJ8998 STATION DESCRIPTION
DJ8998
DJ8998 'DESCRIBED BY J A RICE INC 2007 (MRA)
DJ8998 'THE MARK IS LOCATED ABOUT 3.8 MI (6.1 KM) SOUTHEAST OF RELAY, 3.4 MI
DJ8998 '(5.5 KM) SOUTHEAST OF ELKRIDGE AND 3.4 MI (5.4 KM) EAST-SOUTHEAST OF
DJ8998 'HANOVER AT BALTIMORE WASHINGTON INTERNATIONAL AIRPORT. CONTACT
DJ8998 'AIRPORT OPERATIONS AT 410-859-7018 FOR ACCESS TO THE MARK.
DJ8998 '
DJ8998 'IT IS IN A GRASS ISLAND BETWEEN TWO TAXIWAYS AT THE WEST EDGE OF A
DJ8998 'DITCH, 217.0 FT (66.1 M) SOUTH-SOUTHEAST OF A SIGN, 139.5 FT (42.5 M)
DJ8998 'WEST-SOUTHWEST OF THE WEST-SOUTHWEST EDGE OF TAXIWAY 'S', 64.0 FT
DJ8998 '(19.5 M) SOUTH-SOUTHEAST OF THE CENTERLINE OF RIPRAP, 59.6 FT (18.2 M)
DJ8998 'EAST-NORTHEAST OF THE EAST-NORTHEAST EDGE OF TAXIWAY ~~'A'~~ **'B'** AND 53.4 FT
DJ8998 '(16.3 M) WEST-SOUTHWEST OF THE WEST-SOUTHWEST CENTER OF A DRAINAGE
DJ8998 'DITCH.
DJ8998 '
DJ8998 'NOTE--ACCESS TO THE DATUM POINT IS THROUGH A 5-INCH (13 CM) LOGO CAP.

SURVEYED BY: **JMT**	**HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-SECONDARY SURVEY CONTROL DATA

NAME OF STATION: MON-601
NGS PID: OPUS PROJECTS ID BZGDH9CG
DATE ESTABLISHED: APRIL 2020

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) EPOCH 2010

NORTHING (Y):	551767.32	US ft.	168179.014 m
EASTING (X):	1408515.54	US ft.	429316.396 m
ORTHOMETRIC HEIGHT (NAVD 88):	136.35	US ft.	41.559 m

DIGITAL LEVELS FROM BWI D & BWI G

CONVERGENCE ANGLE: 00°12'46.65"
COMBINED SCALE FACTOR: 0.99996263

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39°10'52.41290"	(N)
LONGITUDE:	76°39'38.50726"	(W)
ELLIPSOID HT:	8.842	m
GEOID HT: (GEOID18)	-32.717	m

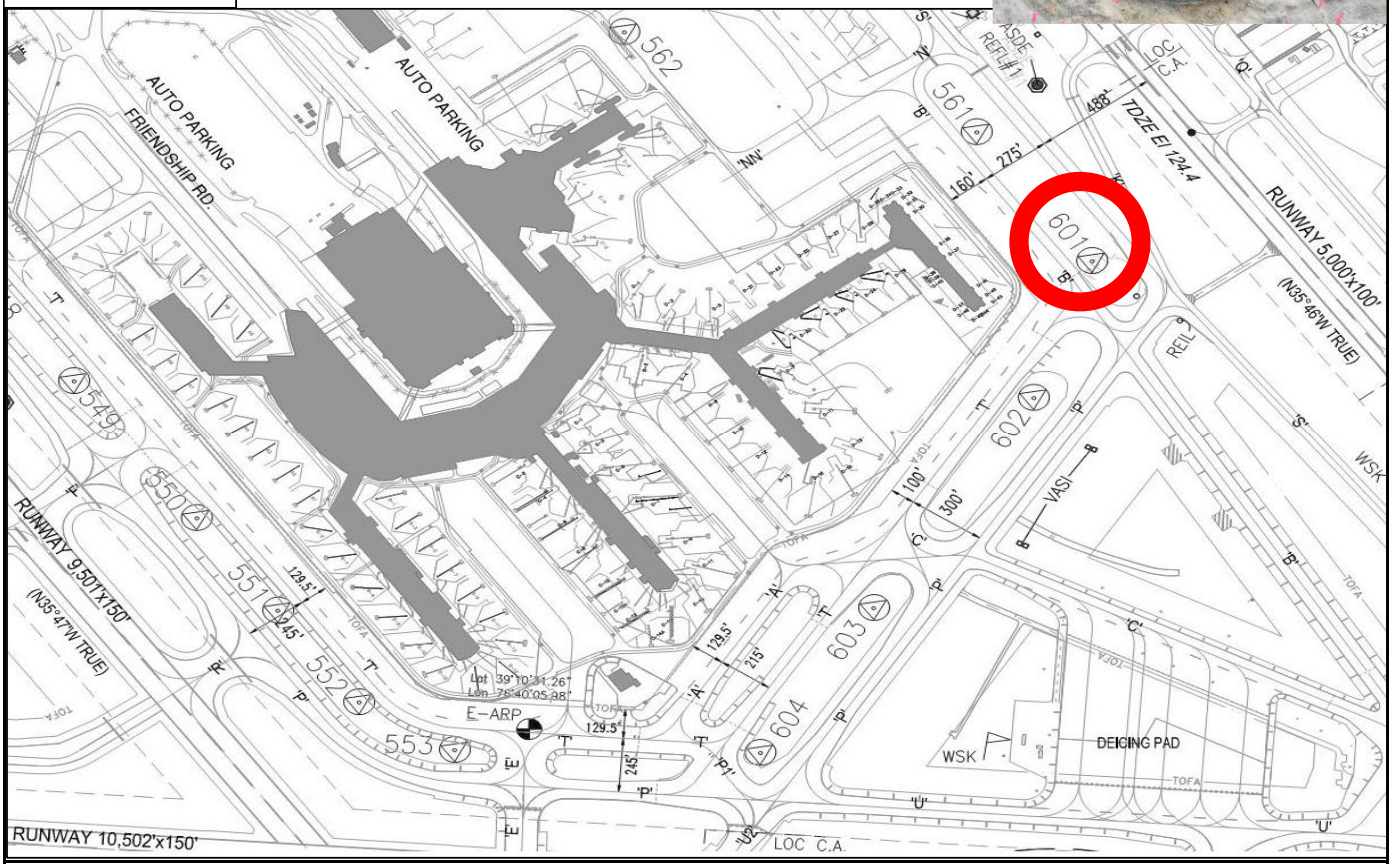
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT ID	GRID AZMIUTH	GRID DIST.(US FT.)	GRID DISTANCE (m)
MON-561	323°15'20.7"	738.86	225.204
MON-602	199°40'31.1"	665.52	202.851

STATION DESCRIPTION:
F1000SPK - 1000 mm (39.4") FENO Survey Marker
with 3 1/2" Aluminum Dome Cap (Concrete Protected)

STAMPING: 601 2020

LOCATION PLAN



SURVEYED BY: JMT
HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-SECONDARY SURVEY CONTROL DATA

NAME OF STATION: MON-602
NGS PID: OPUS PROJECTS ID BZGDH9CG
DATE ESTABLISHED: APRIL 2020

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) EPOCH 2010

NORTHING (Y):	551140.65 US ft.	167988.006 m
EASTING (X):	1408291.47 US ft.	429248.098 m
ORTHOMETRIC HEIGHT (NAVD 88):	138.37 US ft.	42.175 m

DIGITAL LEVELS FROM BWI D & BWI G

CONVERGENCE ANGLE: 00°12'44.85"
COMBINED SCALE FACTOR: 0.99996238

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39°10'46.22714" (N)
LONGITUDE:	76°39'41.38243" (W)
ELLIPSOID HT:	9.458 m
GEOID HT: (GEOID18)	-32.716 m

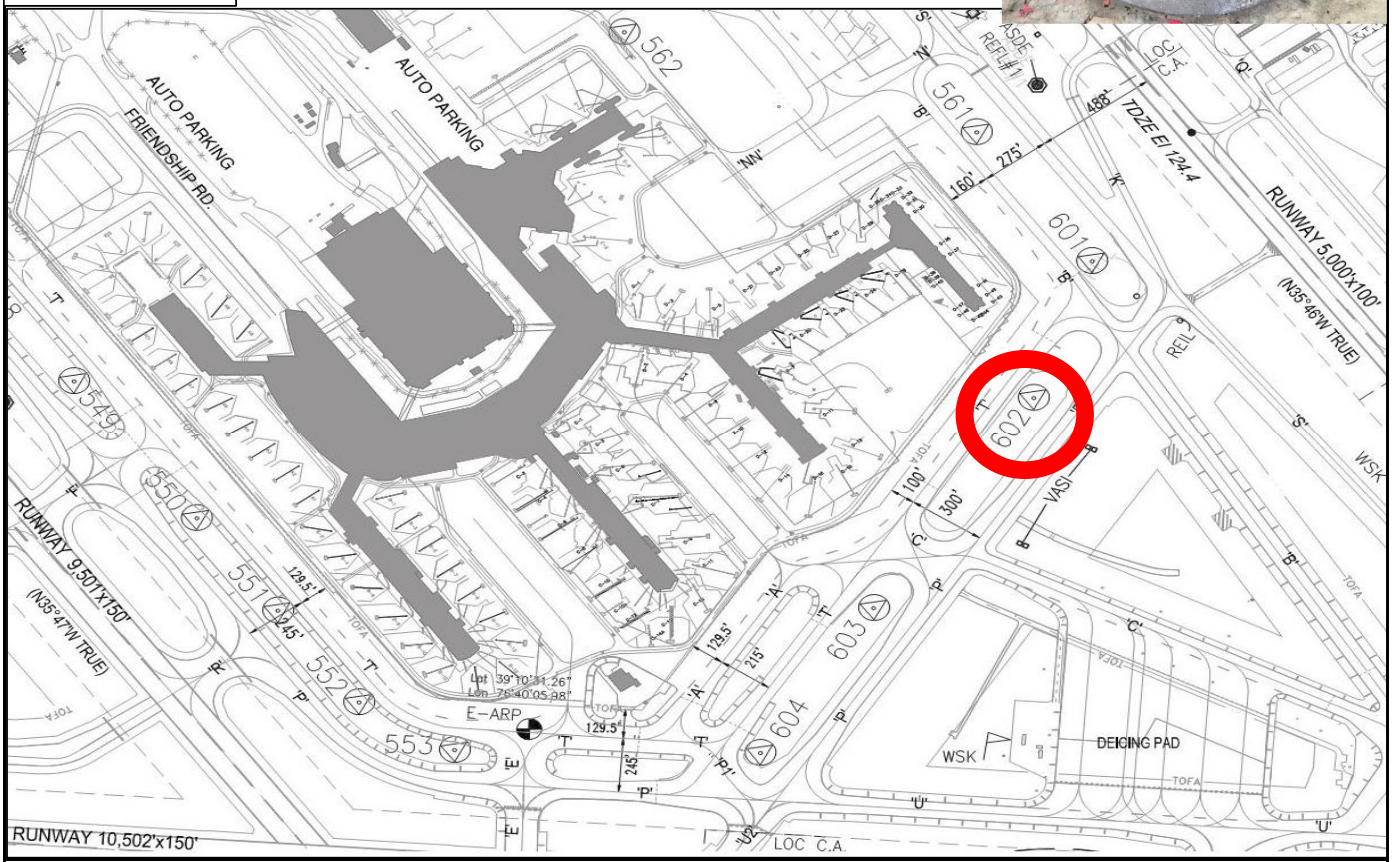
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT ID	GRID AZMIUTH	GRID DIST.(US FT.)	GRID DISTANCE (m)
MON-601	19°40'31.1"	665.52	202.851
MON-603	212°19'49.5"	1144.35	348.798

STATION DESCRIPTION:
F1000SPK - 1000 mm (39.4") FENO Survey Marker
with 3 1/2" Aluminum Dome Cap (Concrete Protected)

STAMPING: 602 2020

LOCATION PLAN



SURVEYED BY: JMT **HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-SECONDARY SURVEY CONTROL DATA

NAME OF STATION: MON-603
NGS PID: OPUS PROJECTS ID BZGDH9CG
DATE ESTABLISHED: APRIL 2020

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) EPOCH 2010

NORTHING (Y):	550173.70	US ft.	167693.279	m
EASTING (X):	1407679.47	US ft.	429061.561	m
ORTHOMETRIC HEIGHT (NAVD 88):	139.62	US ft.	42.557	m

DIGITAL LEVELS FROM BWI D & BWI G

CONVERGENCE ANGLE: 00°12'39.94"
COMBINED SCALE FACTOR: 0.99996207

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39°10'36.69214"	(N)
LONGITUDE:	76°39'49.19966"	(W)
ELLIPSOID HT:	9.845	m
GEOID HT: (GEOID18)	-32.712	m

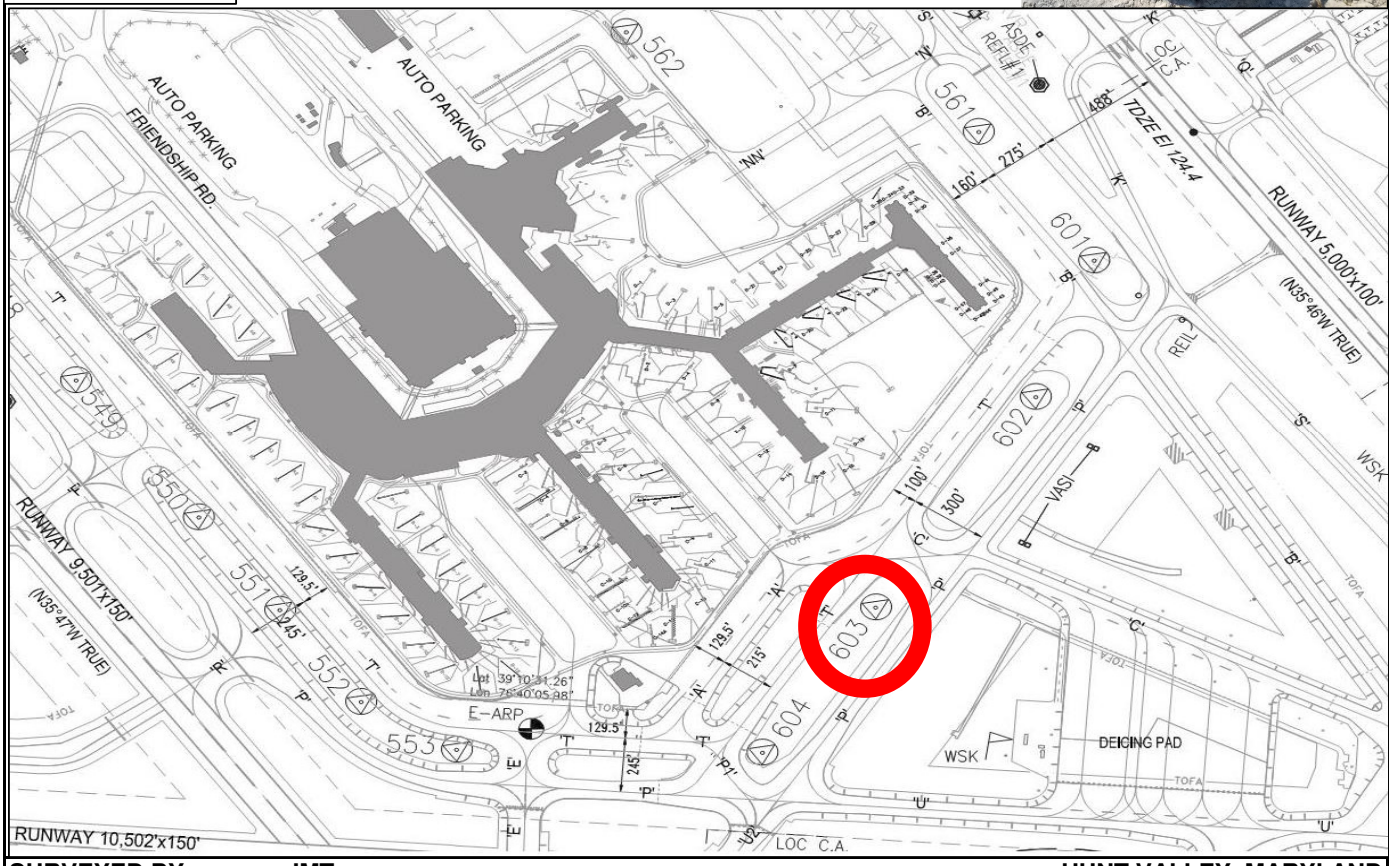
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT ID	GRID AZMIUTH	GRID DIST.(US FT.)	GRID DISTANCE (m)
MON-602	32°19'49.5"	1144.35	348.798
MON-604	213°10'33.1"	793.28	241.791

STATION DESCRIPTION:
F1000SPK - 1000 mm (39.4") FENO Survey Marker
with 3 1/2" Aluminum Dome Cap (Concrete Protected)

STAMPING: 603 2020

LOCATION PLAN



SURVEYED BY: JMT **HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-SECONDARY SURVEY CONTROL DATA

NAME OF STATION: MON-604
NGS PID: OPUS PROJECTS ID BZGDH9CG
DATE ESTABLISHED: APRIL 2020

MARYLAND STATE PLANE COORDINATES NAD 83 (2011) EPOCH 2010

NORTHING (Y):	549509.73	US ft.	167490.901 m
EASTING (X):	1407245.38	US ft.	428929.250 m
ORTHOMETRIC HEIGHT (NAVD 88):	139.16	US ft.	42.416 m

DIGITAL LEVELS FROM BWI D & BWI G

CONVERGENCE ANGLE: 00°12'36.46"
COMBINED SCALE FACTOR: 0.99996193

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39°10'30.14522"	(N)
LONGITUDE:	76°39'54.74304"	(W)
ELLIPSOID HT:	9.706	m
GEOID HT: (GEOID18)	-32.710	m

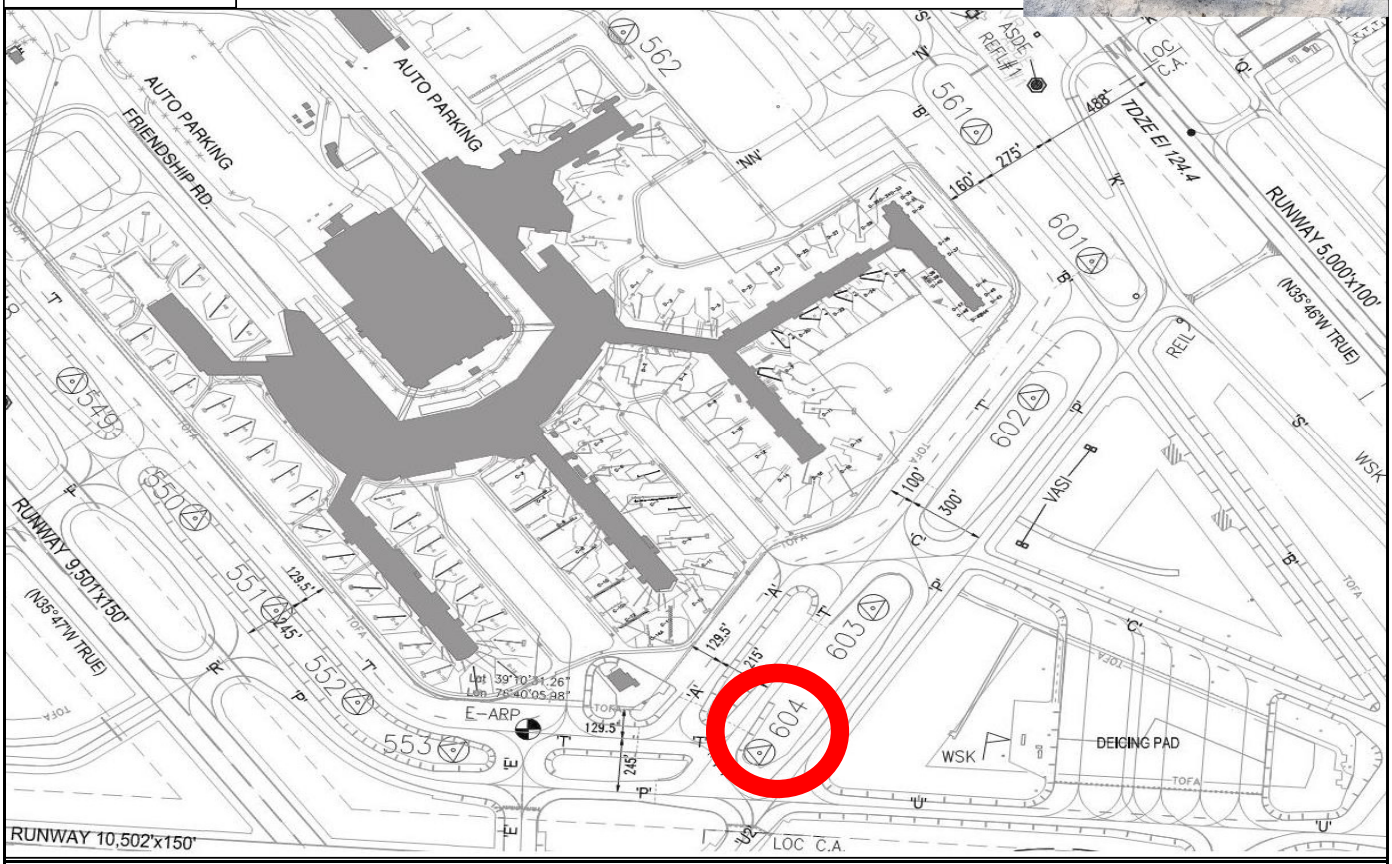
AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT ID	GRID BEARING	GRID DIST.(US FT.)	GRID DISTANCE (m)
MON-603	33°10'33.1"	793.28	241.791
MON-553	270°40'47.0"	1171.29	357.009

STATION DESCRIPTION:
F1000SPK - 1000 mm (39.4") FENO Survey Marker
with 3 1/2" Aluminum Dome Cap (Concrete Protected)

STAMPING: 604 2020

LOCATION PLAN



SURVEYED BY: JMT **HUNT VALLEY, MARYLAND**

BWI THURGOOD MARSHALL AIRPORT-RUNWAY CENTERLINE MONUMENTS

NAME OF STATION: MAA-100
NGS PID:

DATE ESTABLISHED: OCTOBER 2007

MARYLAND STATE PLANE COORDINATES (NAD 83):

NORTHING (Y):
EASTING (X):
ORTHOMETRIC HEIGHT (NAVD 88):
CONVERGENCE ANGLE:
COMBINED SCALE FACTOR:

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39° 11' 08.26" (N)
LONGITUDE:	76° 40' 56.17" (W)
ELLIPSOID HT:	8.9 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GEODETIC AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MAA-101		245	74.7

RUNWAY 15R-33L

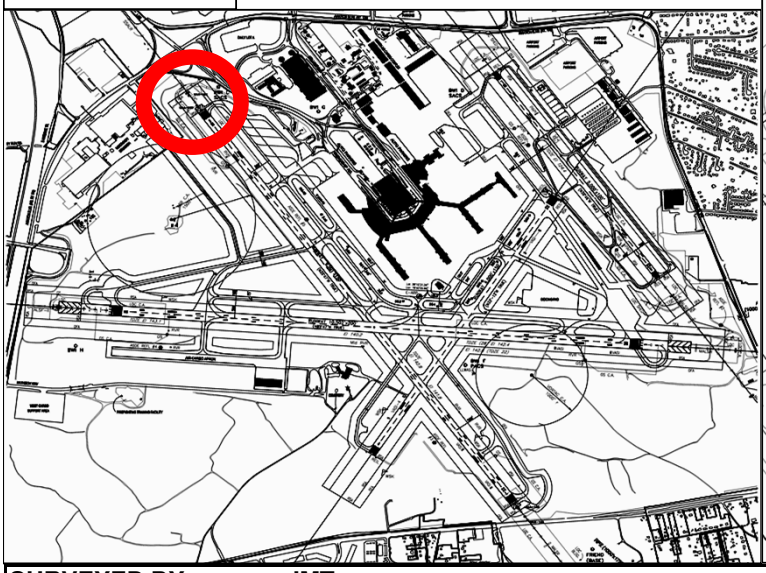
STATION DESCRIPTION:

***** SHALL NOT BE OCCUPIED FOR SURVEY CONTROL. THIS POINT IS INTENDED FOR RECOVERY OF THE RUNWAY CENTERLINE ONLY *****

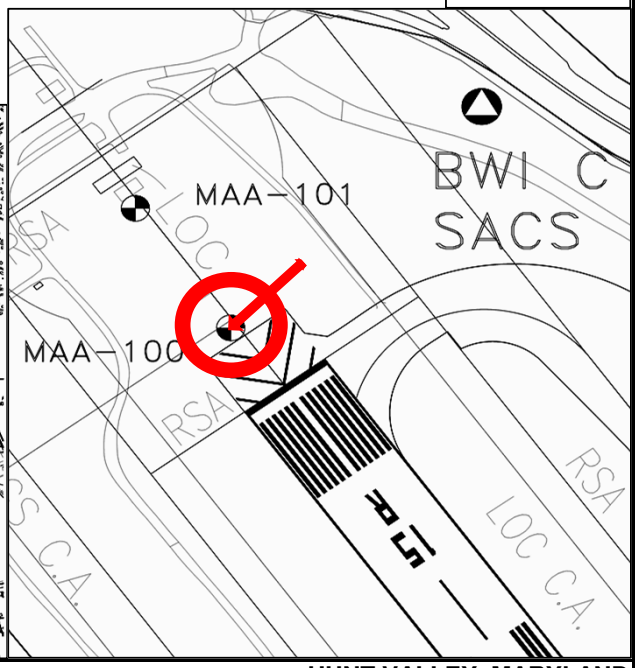
OFFSET 10' RIGHT
RUNWAY 15R
±25' FROM END OF
RUNWAY PAVING

FOR NAVGATION PURPOSES ONLY
NORTHING 553348.7 US ft.+/-
EASTING 1402394.4 US ft.+/-

LOCATION PLAN



DETAIL MAP



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-RUNWAY CENTERLINE MONUMENTS

NAME OF STATION: MAA-101
NGS PID:
DATE ESTABLISHED: OCTOBER 2007

MARYLAND STATE PLANE COORDINATES (NAD 83):

NORTHING (Y):
EASTING (X):
ORTHOMETRIC HEIGHT (NAVD 88):
CONVERGENCE ANGLE:
COMBINED SCALE FACTOR:

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39° 11' 10.23" (N)
LONGITUDE:	76° 40' 57.99" (W)
ELLIPSOID HT:	6.9 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GEODETIC AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MAA-100		245	74.7

RUNWAY 15R-33L

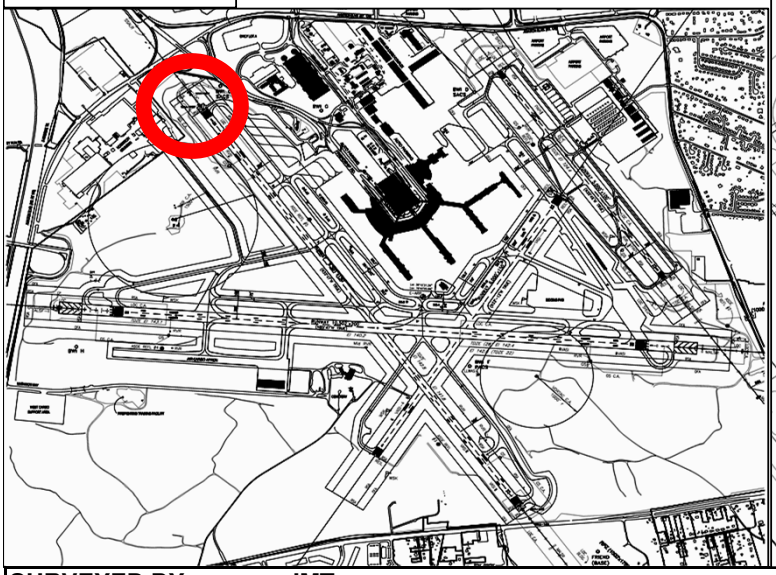
STATION DESCRIPTION:

***** SHALL NOT BE OCCUPIED FOR SURVEY CONTROL. THIS POINT IS INTENDED FOR RECOVERY OF THE RUNWAY CENTERLINE ONLY *****

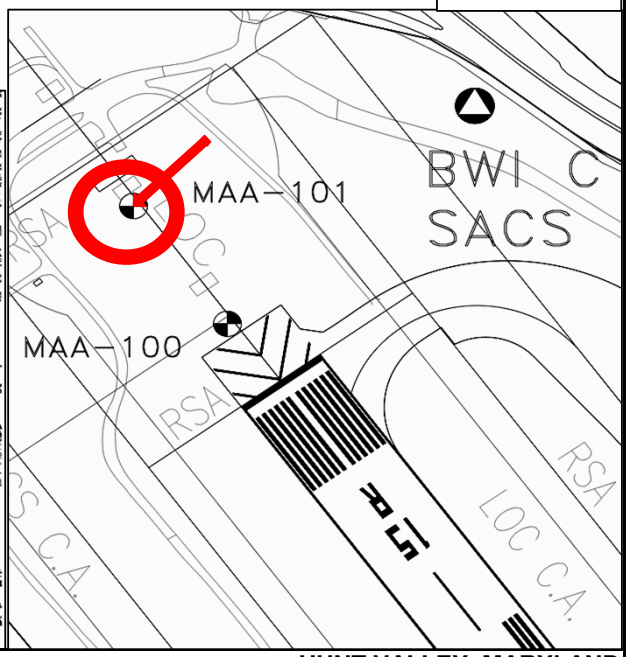
OFFSET 10' RIGHT
RUNWAY 15R
±270' FROM END OF
RUNWAY PAVING

FOR NAVGATION PURPOSES ONLY
NORTHING 553547.0 US ft.+/-
EASTING 1402250.5 US ft.+/-

LOCATION PLAN



DETAIL MAP



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-RUNWAY CENTERLINE MONUMENTS

NAME OF STATION: MAA-102
NGS PID:

DATE ESTABLISHED: OCTOBER 2007

MARYLAND STATE PLANE COORDINATES (NAD 83):

NORTHING (Y):
EASTING (X):
ORTHOMETRIC HEIGHT (NAVD 88):
CONVERGENCE ANGLE:
COMBINED SCALE FACTOR:

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39° 09' 50.17" (N)
LONGITUDE:	76° 39' 43.67" (W)
ELLIPSOID HT:	6.4 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GEODETIC AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MAA-103		200	61.0

RUNWAY 15R-33L

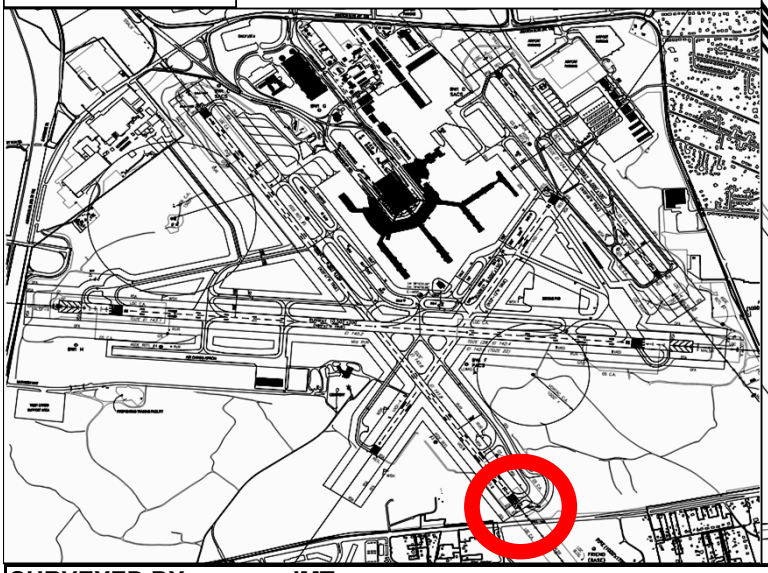
STATION DESCRIPTION:

***** SHALL NOT BE OCCUPIED FOR SURVEY CONTROL. THIS POINT IS INTENDED FOR RECOVERY OF THE RUNWAY CENTERLINE ONLY *****

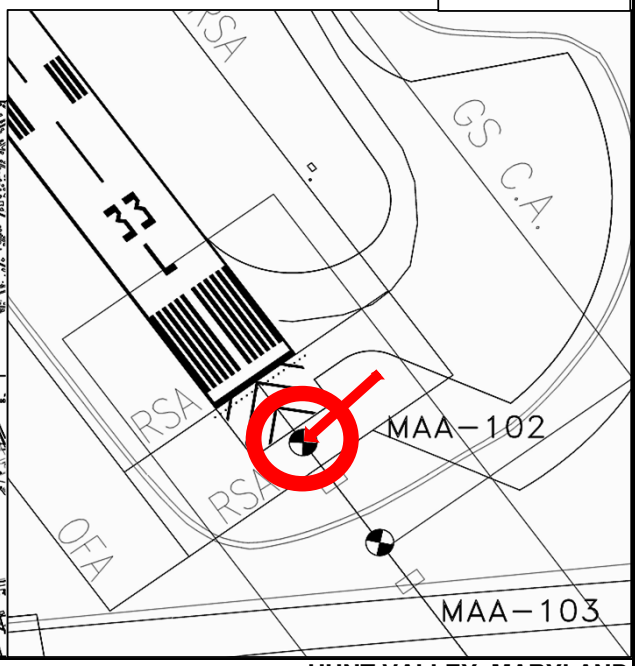
CENTERLINE
RUNWAY 33L
±50' FROM END OF
RUNWAY PAVING

FOR NAVGATION PURPOSES ONLY
NORTHING 545468.4 US ft.+/-
EASTING 1408132.0 US ft.+/-

LOCATION PLAN



DETAIL MAP



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-RUNWAY CENTERLINE MONUMENTS

NAME OF STATION: MAA-103
NGS PID:

DATE ESTABLISHED: OCTOBER 2007

MARYLAND STATE PLANE COORDINATES (NAD 83):

NORTHING (Y):
EASTING (X):
ORTHOMETRIC HEIGHT (NAVD 88):
CONVERGENCE ANGLE:
COMBINED SCALE FACTOR:

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39° 09' 48.56" (N)
LONGITUDE:	76° 39' 42.19" (W)
ELLIPSOID HT:	3.9 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GEODETIC AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MAA-102		200	61.0

RUNWAY 15R-33L

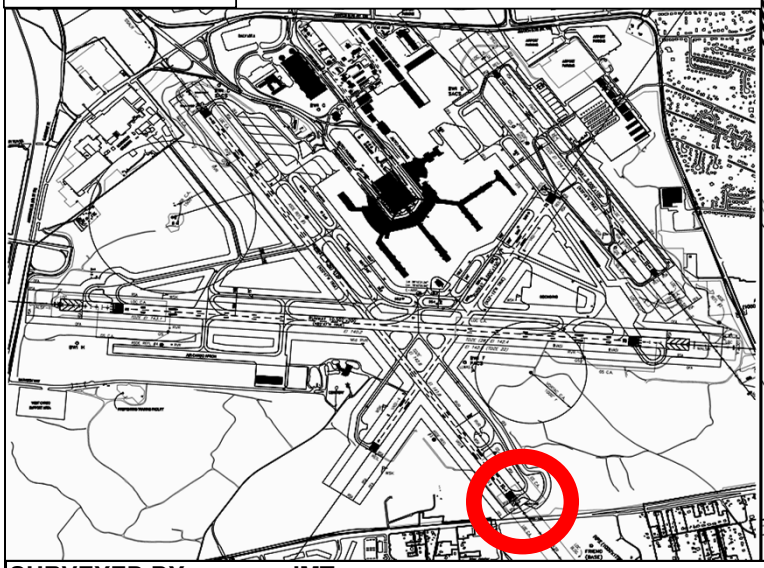
STATION DESCRIPTION:

***** SHALL NOT BE OCCUPIED FOR SURVEY CONTROL. THIS POINT IS INTENDED FOR RECOVERY OF THE RUNWAY CENTERLINE ONLY *****

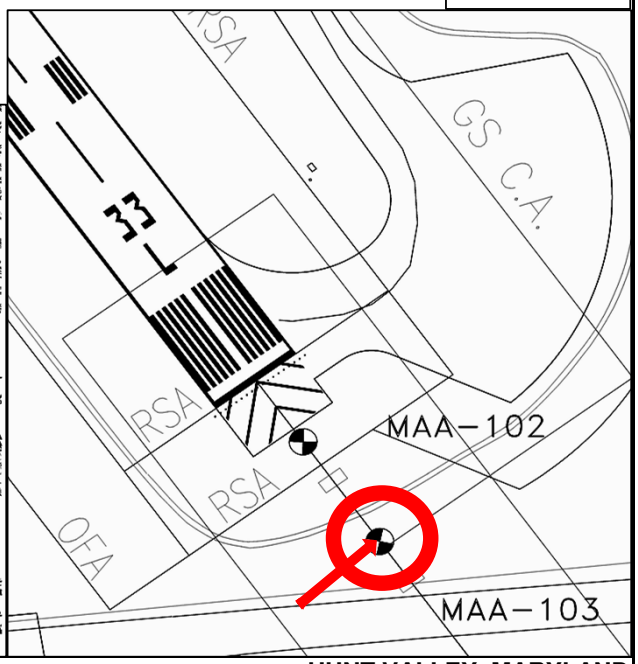
CENTERLINE
RUNWAY 33L
±250' FROM END OF
RUNWAY PAVING

FOR NAVGATION PURPOSES ONLY
NORTHING 545306.6 US ft.+/-
EASTING 1408249.5 US ft.+/-

LOCATION PLAN



DETAIL MAP



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-RUNWAY CENTERLINE MONUMENTS

NAME OF STATION: MAA-104
NGS PID:

DATE ESTABLISHED: OCTOBER 2007

MARYLAND STATE PLANE COORDINATES (NAD 83):

NORTHING (Y):
EASTING (X):
ORTHOMETRIC HEIGHT (NAVD 88):
CONVERGENCE ANGLE:
COMBINED SCALE FACTOR:

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39° 10' 21.26" (N)
LONGITUDE:	76° 39' 04.24" (W)
ELLIPSOID HT:	4.2 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GEODETIC AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MAA-105		350	106.7

RUNWAY 10-28

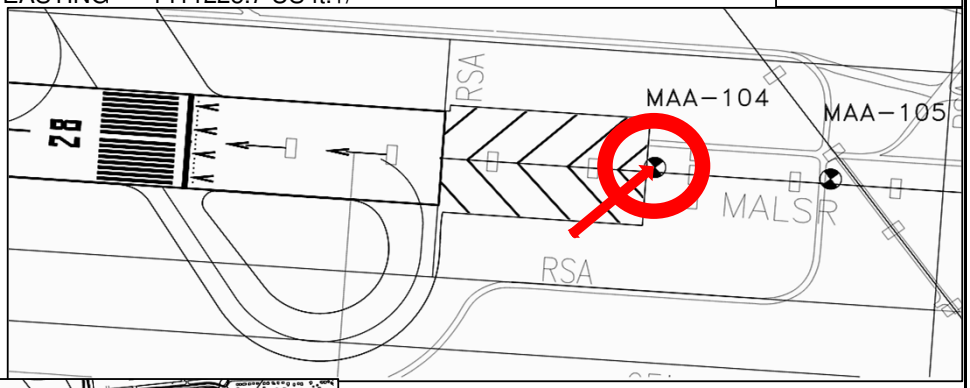
STATION DESCRIPTION:

***** SHALL NOT BE OCCUPIED FOR SURVEY CONTROL. THIS POINT IS INTENDED FOR RECOVERY OF THE RUNWAY CENTERLINE ONLY *****

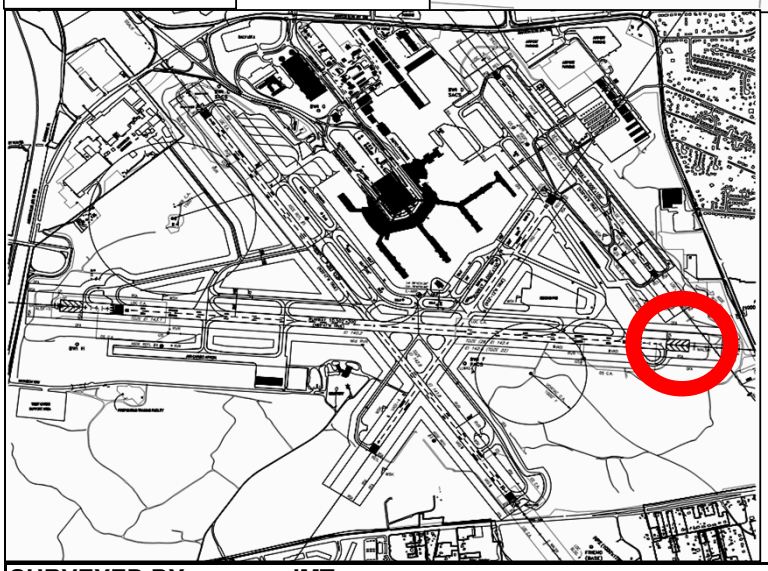
FOR NAVGA FOR NAVGATION PURPOSES ONLY
NORTHING 548626.2 US ft.+/-
EASTING 1411225.7 US ft.+/-

OFFSET 10' RIGHT RUNWAY 28 ±16' FROM END OF RUNWAY PAVING

DETAIL MAP



LOCATION PLAN



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-RUNWAY CENTERLINE MONUMENTS

NAME OF STATION: MAA-105
NGS PID:

DATE ESTABLISHED: OCTOBER 2007

MARYLAND STATE PLANE COORDINATES (NAD 83):

NORTHING (Y):
EASTING (X):
ORTHOMETRIC HEIGHT (NAVD 88):
CONVERGENCE ANGLE:
COMBINED SCALE FACTOR:

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39° 10' 21.01" (N)
LONGITUDE:	76° 38' 59.81" (W)
ELLIPSOID HT:	3.1 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GEODETIC AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MAA-104		350	106.7

RUNWAY 10-28

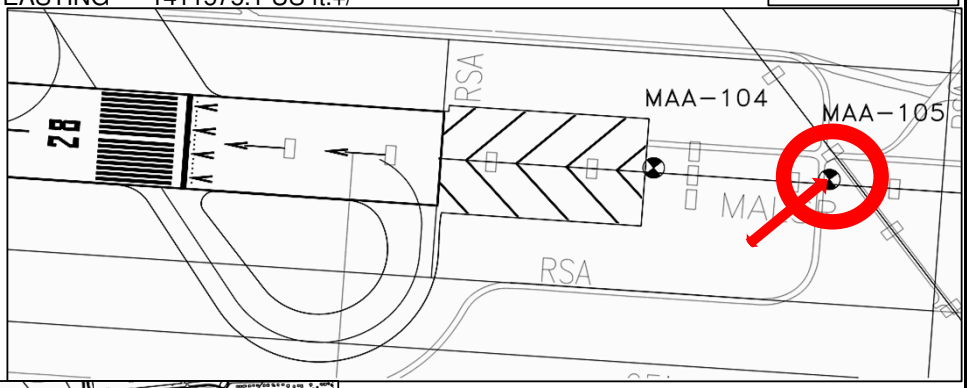
STATION DESCRIPTION:

***** SHALL NOT BE OCCUPIED FOR SURVEY CONTROL. THIS POINT IS INTENDED FOR RECOVERY OF THE RUNWAY CENTERLINE ONLY *****

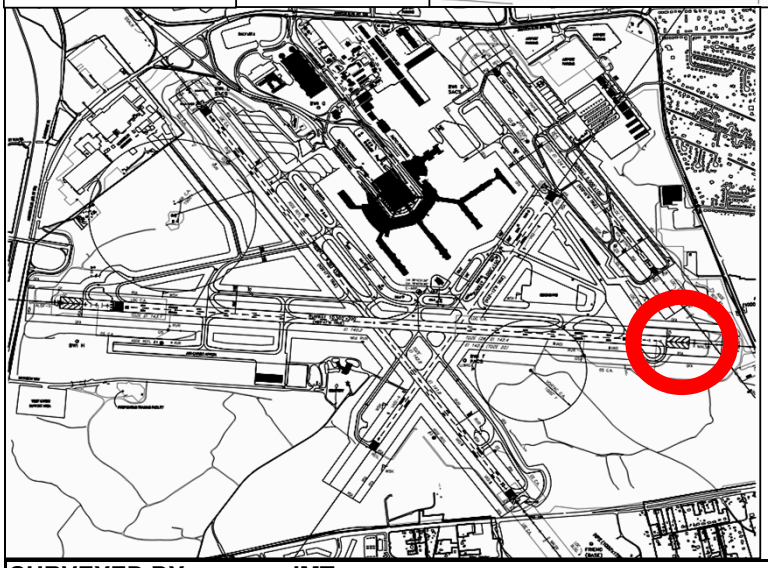
FOR NAVGATION PURPOSES ONLY
NORTHING 548601.8 US ft.+/-
EASTING 1411575.1 US ft.+/-

OFFSET 10' RIGHT RUNWAY 28 ±366' FROM END OF RUNWAY PAVING

DETAIL MAP



LOCATION PLAN



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-RUNWAY CENTERLINE MONUMENTS

NAME OF STATION: MAA-106
NGS PID:

DATE ESTABLISHED: OCTOBER 2007

MARYLAND STATE PLANE COORDINATES (NAD 83):

NORTHING (Y):
EASTING (X):
ORTHOMETRIC HEIGHT (NAVD 88):
CONVERGENCE ANGLE:
COMBINED SCALE FACTOR:

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39° 10' 29.71" (N)
LONGITUDE:	76° 41' 27.98" (W)
ELLIPSOID HT:	8.9 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GEODETIC AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MAA-107		250	76.2

RUNWAY 10-28

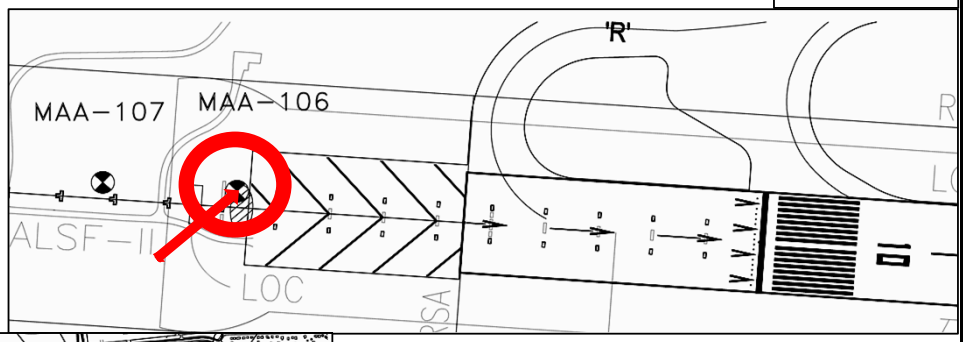
STATION DESCRIPTION:

***** SHALL NOT BE OCCUPIED FOR SURVEY CONTROL. THIS POINT IS INTENDED FOR RECOVERY OF THE RUNWAY CENTERLINE ONLY *****

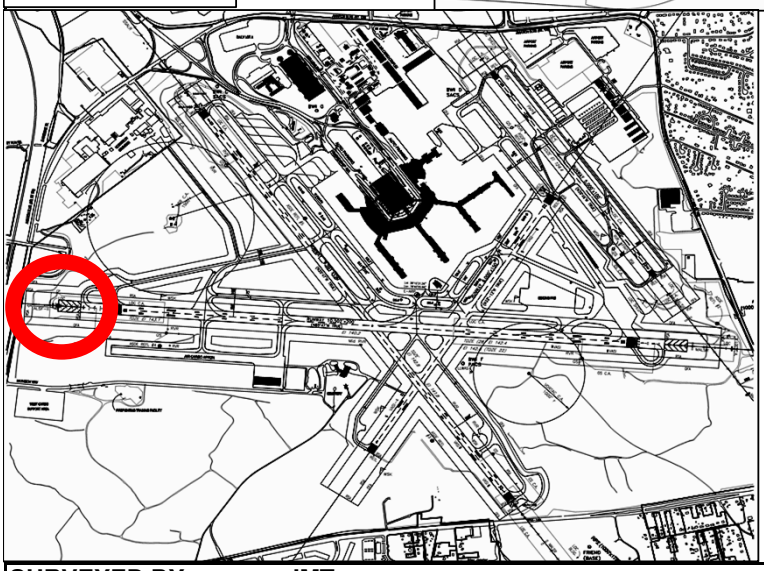
FOR NAVGATION PURPOSES ONLY
NORTHING 549440.1 US ft.+/-
EASTING 1399902.9 US ft.+/-

OFFSET 32' LEFT RUNWAY 10 ±23' FROM END OF RUNWAY PAVING

DETAIL MAP



LOCATION PLAN



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-RUNWAY CENTERLINE MONUMENTS

NAME OF STATION: MAA-107
NGS PID:

DATE ESTABLISHED: OCTOBER 2007

MARYLAND STATE PLANE COORDINATES (NAD 83):

NORTHING (Y):
EASTING (X):
ORTHOMETRIC HEIGHT (NAVD 88):
CONVERGENCE ANGLE:
COMBINED SCALE FACTOR:

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39° 10' 29.89" (N)
LONGITUDE:	76° 41' 31.15" (W)
ELLIPSOID HT:	7.7 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GEODETIC AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MAA-106		250	76.2

RUNWAY 10-28

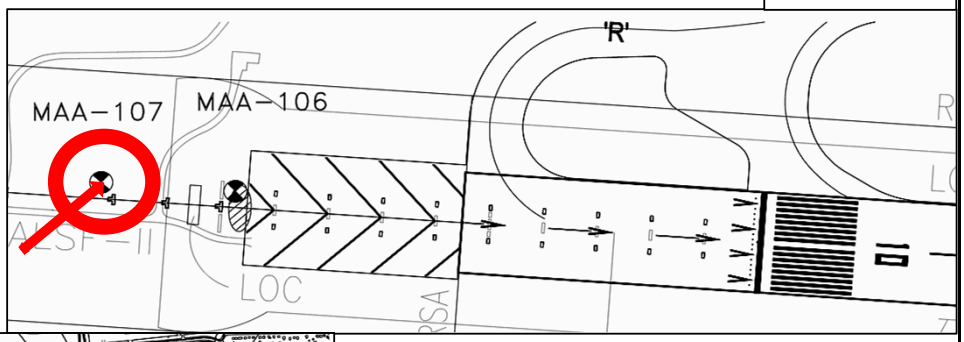
STATION DESCRIPTION:

***** SHALL NOT BE OCCUPIED FOR SURVEY CONTROL. THIS POINT IS INTENDED FOR RECOVERY OF THE RUNWAY CENTERLINE ONLY *****

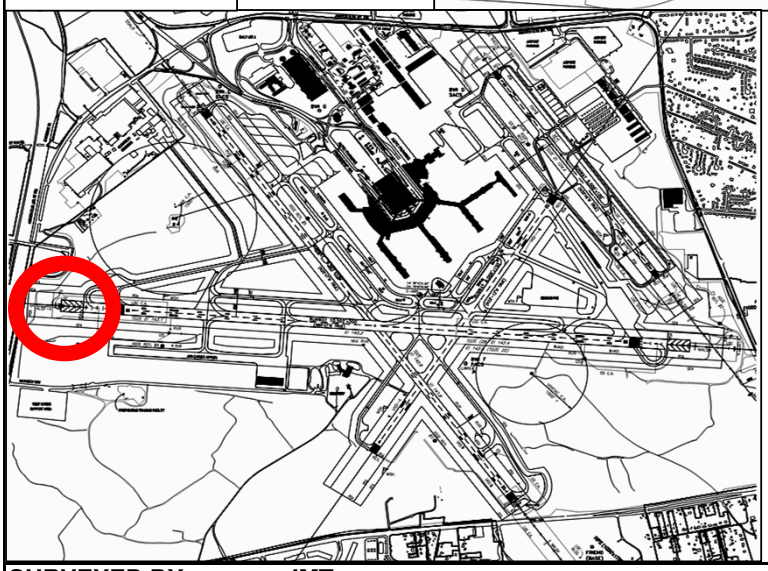
FOR NAVGATION PURPOSES ONLY
NORTHING 549457.5 US ft.+/-
EASTING 1399653.6 US ft.+/-

OFFSET 32'LEFT
RUNWAY 10
±273' FROM END OF
RUNWAY PAVING

DETAIL MAP



LOCATION PLAN



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-RUNWAY CENTERLINE MONUMENTS

NAME OF STATION: MAA-110
NGS PID:

DATE ESTABLISHED: OCTOBER 2007

MARYLAND STATE PLANE COORDINATES (NAD 83):

NORTHING (Y):
EASTING (X):
ORTHOMETRIC HEIGHT (NAVD 88):
CONVERGENCE ANGLE:
COMBINED SCALE FACTOR:

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39° 10' 34.19" (N)
LONGITUDE:	76° 39' 11.39" (W)
ELLIPSOID HT:	1.7 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GEODETIC AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MAA-111		250	76.2

RUNWAY 15L-33R

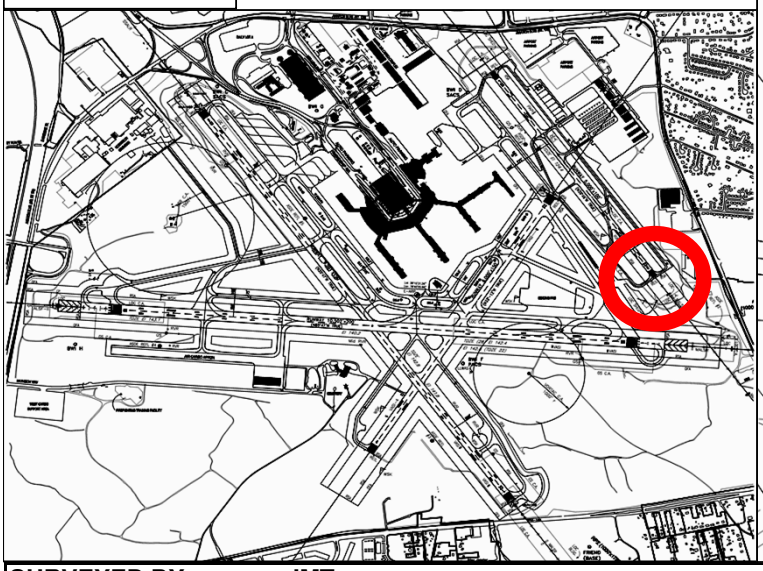
STATION DESCRIPTION:

***** SHALL NOT BE OCCUPIED FOR SURVEY CONTROL. THIS POINT IS INTENDED FOR RECOVERY OF THE RUNWAY CENTERLINE ONLY *****

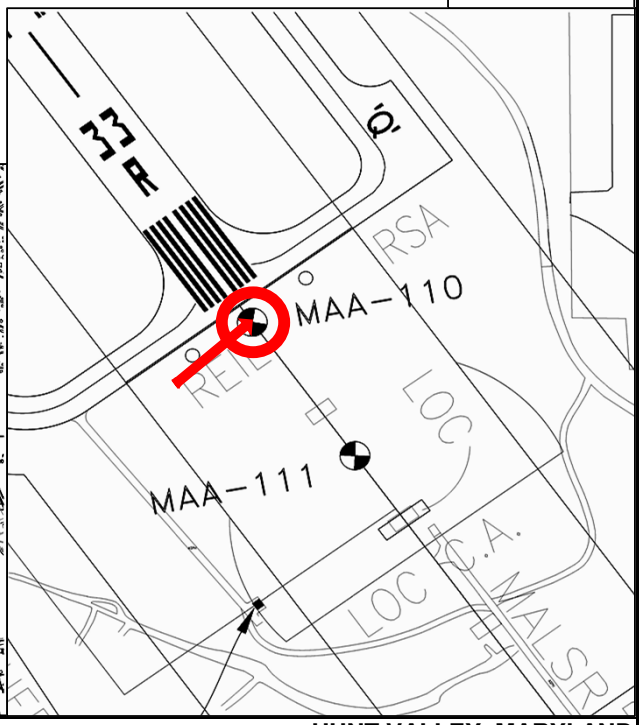
CENTERLINE RUNWAY 33R ±30' FROM END OF RUNWAY PAVING

FOR NAVGATION PURPOSES ONLY
NORTHING 549931.3 US ft.+/-
EASTING 1410658.0 US ft.+/-

LOCATION PLAN



DETAIL MAP



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-RUNWAY CENTERLINE MONUMENTS

NAME OF STATION: MAA-111
NGS PID:

DATE ESTABLISHED: OCTOBER 2007

MARYLAND STATE PLANE COORDINATES (NAD 83):

NORTHING (Y):
EASTING (X):
ORTHOMETRIC HEIGHT (NAVD 88):
CONVERGENCE ANGLE:
COMBINED SCALE FACTOR:

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39° 10' 32.18" (N)
LONGITUDE:	76° 39' 09.53" (W)
ELLIPSOID HT:	0.1 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GEODETIC AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MAA-110		250	76.2

RUNWAY 15L-33R

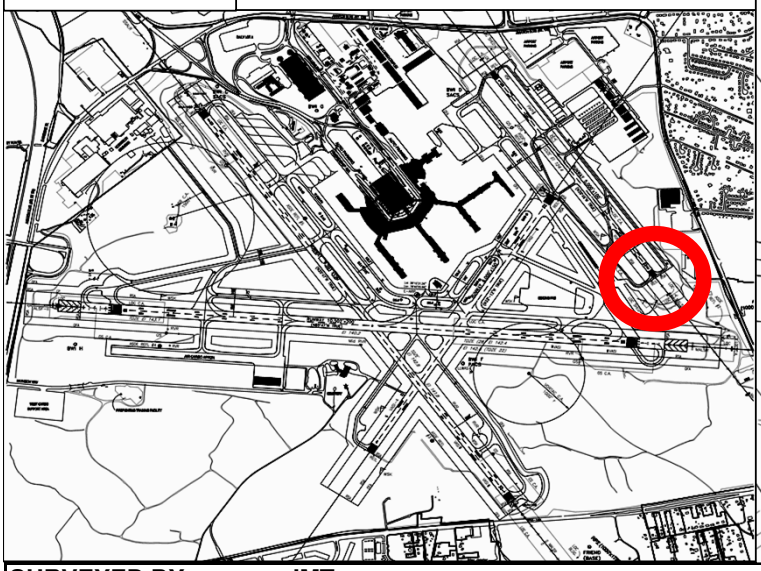
STATION DESCRIPTION:

***** SHALL NOT BE OCCUPIED FOR SURVEY CONTROL. THIS POINT IS INTENDED FOR RECOVERY OF THE RUNWAY CENTERLINE ONLY *****

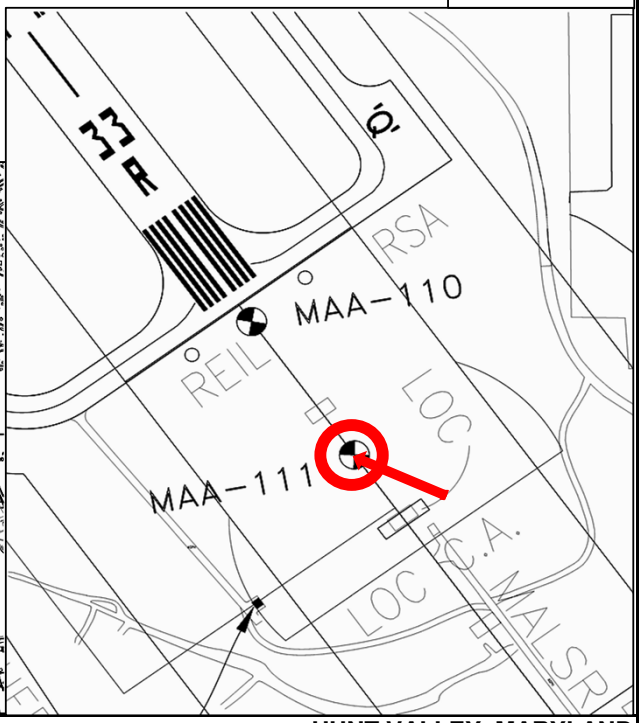
CENTERLINE
RUNWAY 33R
±280' FROM END OF
RUNWAY PAVING

FOR NAVGATION PURPOSES ONLY
NORTHING 549729.0 US ft.+/-
EASTING 1410804.9 US ft.+/-

LOCATION PLAN



DETAIL MAP



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-RUNWAY CENTERLINE MONUMENTS

NAME OF STATION: MAA-112
NGS PID:

DATE ESTABLISHED: OCTOBER 2007

MARYLAND STATE PLANE COORDINATES (NAD 83):

NORTHING (Y):
EASTING (X):
ORTHOMETRIC HEIGHT (NAVD 88):
CONVERGENCE ANGLE:
COMBINED SCALE FACTOR:

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE: 39° 11' 14.80" (N)
LONGITUDE: 76° 39' 48.98" (W)
ELLIPSOID HT: 10.0 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GEODETIC AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MAA-113		240	73.1

RUNWAY 15L-33R

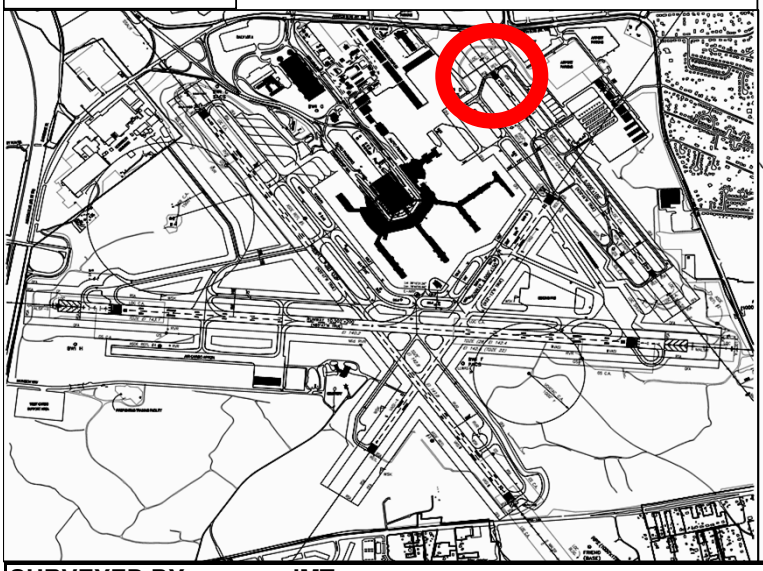
STATION DESCRIPTION:

***** SHALL NOT BE OCCUPIED FOR SURVEY CONTROL. THIS POINT IS INTENDED FOR RECOVERY OF THE RUNWAY CENTERLINE ONLY *****

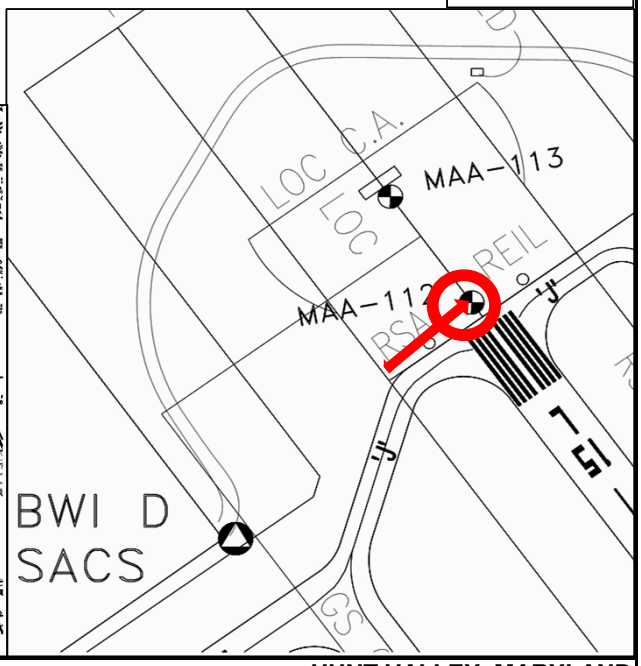
CENTERLINE RUNWAY 15L ±32' FROM END OF RUNWAY PAVING

FOR NAVGATION PURPOSES ONLY
NORTHING 554029.3 US ft.+/-
EASTING 1407682.4 US ft.+/-

LOCATION PLAN



DETAIL MAP



SURVEYED BY: JMT

HUNT VALLEY, MARYLAND

BWI THURGOOD MARSHALL AIRPORT-RUNWAY CENTERLINE MONUMENTS

NAME OF STATION: MAA-113
NGS PID:

DATE ESTABLISHED: OCTOBER 2007

MARYLAND STATE PLANE COORDINATES (NAD 83):

NORTHING (Y):
EASTING (X):
ORTHOMETRIC HEIGHT (NAVD 88):
CONVERGENCE ANGLE:
COMBINED SCALE FACTOR:

GEOGRAPHIC COORDINATES (NAD 83):

LATITUDE:	39° 11' 16.72" (N)
LONGITUDE:	76° 39' 50.76" (W)
ELLIPSOID HT:	8.6 m

AVAILABLE CONVENTIONAL BACKSIGHT POINTS (COMPUTED DATA):

POINT	GEODETIC AZIMUTH	DISTANCE (US FT.)	DISTANCE (m)
MAA-112		240	73.1

RUNWAY 15L-33R

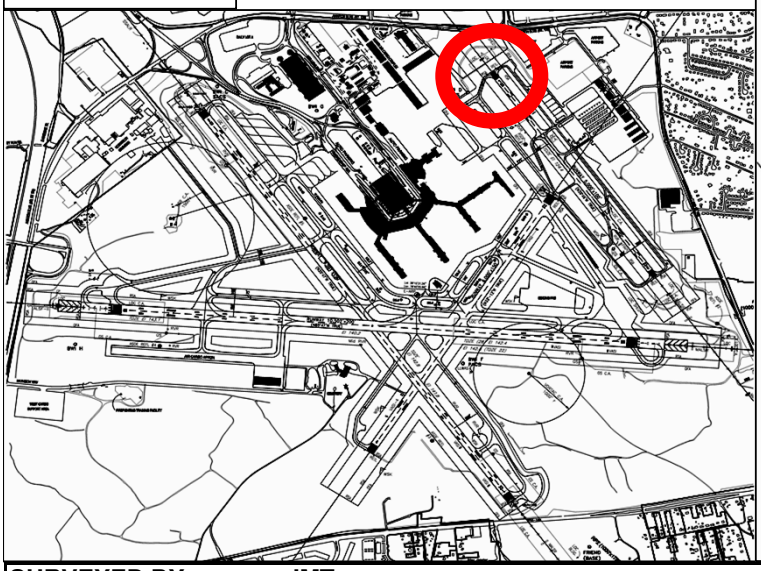
STATION DESCRIPTION:

***** SHALL NOT BE OCCUPIED FOR SURVEY CONTROL. THIS POINT IS INTENDED FOR RECOVERY OF THE RUNWAY CENTERLINE ONLY *****

CENTERLINE
RUNWAY 15L
±272' FROM END OF
RUNWAY PAVING

FOR NAVGATION PURPOSES ONLY
NORTHING 554223.4 US ft.+/-
EASTING 1407541.4 US ft.+/-

LOCATION PLAN



DETAIL MAP

SURVEYED BY: JMT

HUNT VALLEY, MARYLAND