

# Survey Control

### **Reference and Recovery Data**

## George Mason University

Fairfax West Campus Fairfax, Virginia



Prepared For: George Mason University 4400 University Drive Fairfax, Virginia 22030

Prepared By: christopher consultants, Itd. 9301 innovation drive manassas, virginia 20110

October 2015 Revised September 2018 ccl Project No. 83026.043.13



#### <u>Synopsis</u>

Provided are the remaining twenty (inter-visible) control points lying within the George Mason University Fairfax's West Campus. The control points are set in the interior of the campus and run with the existing road ways. Each monument is inter-visible with two adjacent monuments.

christopher consultants was contracted in December of 2013 to provide control points as described. Each point consists of a 3" aluminum rounded disk with a machined graphic of the GMU brand logo and a punch-scribed identification name on each. Each aluminum disk is molded into a 4" x 4" x 2' long concrete encasement and each was placed by hand into hand-dug holes and compacted flush to the finished grade. The control network was established using convention traverse methods with a Leica TCR 405 series total station for the horizontal positional qualities. Each station was traversed through with a mean angle and distance collected through four sets of angle turns to form a closed loop. Elevations were established on each monument through a closed bench loop using a Leica DNA 03 Digital Level to establish elevations. On selected GPS monuments, four Leica GPS 1200 systems were used to establish a static session over a one day period. The session times ranged between twenty to twenty five minutes depending on vector distance. Each unit was set to obtain a 15 mask angle and to record on a 15 second interval.

The control network was referenced to the National Geodetic Control Network utilizing four (4) First Order Horizontal and Third Order Vertical Monuments. Control network was further referenced to the Project control network specific to George Mason University utilizing eight (8) onsite christopher consultants control points.

Adhering to FGDC-STD-007.4-2002, Standards for Architecture, Engineering, Construction (A/E/C) and Facility Management of the Geospactial Position Accuracy Standards, as published by the Federal Geographic Data Committee of the U.S. Geological Survey, the network quality able to achieved was:

o Horizontal Second-Order, Class I (1:50,000)

o Vertical First-Order, Class I

#### **Contents of Report**

#### 1.) Overall Site Map

Delineates the location of each control point set in relation to the site limits. Vector delineation shown to show overall geometry of network.

2.) Recovery Datasheets

FX Points 38 through 57. Denotes adjusted horizontal and vertical data of each point within the GPS Network. Data shown includes GRID Coordinates, WORLD Coordinates and PROJECT Coordinates. Datasheets also provide Location Sketch of each point to physical features adjacent to set points.



#### Addendum #1

Date: February 3, 2017

In February 2017, christopher consultants computed a vertical transformation for all control points for additional reference. Utilizing Corpscon version 6.0.1, existing control point elevations were converted from vertical datum NAVD 88 (Geoid 03) to NGVD 29 (Geoid 03). The table provided below shows the adjusted elevations.

<b>Control Point</b>	NAVD 88	NGVD29
FX-38	445.41	446.19
FX-39	435.85	436.63
FX-40	424.97	425.74
FX-41	429.10	429.87
FX-42	421.26	422.03
FX-43	402.76	403.53
FX-44	381.47	382.24
FX-45	377.05	377.82
FX-46	379.80	380.57
FX-47	382.36	383.13
FX-48	393.76	394.53
FX-49	385.35	386.12
FX-50	407.61	408.38
FX-51	415.44	416.21
FX-52	410.51	411.28
FX-53	405.36	406.13
FX-54	399.73	400.50
FX-55	407.74	408.51
FX-56	404.41	405.18
FX-57	384.71	385.48

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#### Addendum #2

Date: September 5, 2018

In August 2018, christopher consultants performed a current GPS survey to transform all existing vertical control to the NAVD 88, (Geoid 12B) datum. The table provided below shows the adjusted elevations. Monuments noted below as destroyed are no longer in place.

<b>Control Point</b>	NAVD 88 (Geoid 12B)
FX-38	445.75
FX-39	436.19
FX-40	425.31
FX-41	429.44
FX-42	421.60
FX-43	403.10
FX-44	Destroyed
FX-45	Destroyed
FX-46	Destroyed
FX-47	382.70
FX-48	394.10
FX-49	407.95
FX-50	385.69
FX-51	415.78
FX-52	410.85
FX-53	405.70
FX-54	400.07
FX-55	408.08
FX-56	404.75
FX-57	385.05

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GEORGE MASON UNIVERSITY					
HORIZONTAL DATA		LOCATION SKETCH			
MAP PROJECTION: LAMBERT		N			
HORIZONTAL DATUM: NORTH AMERICAN DA COORDINATE SYSTEM: VIRGINIA COORDINAT	TUM OF 1983 E SYSTEM - NORTH (4501)	Ra Ra			
GRID NORTHING:	GRID EASTING:				
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LATITUDE:	LONGITUDE:	1 Politica Production Contraction of the Contractio			
38° 49' 53.19579" N	77° 18' 46.05283" W	AND HOLE CANDER IN I			
GMU PROJECT NORTHING:	GMU PROJECT EASTING:	- GUN SE MADINE SUT STA			
6,988,031.88 CONVERGENCE (): → 00° 44' 27, COMBINED FACTOR: 0.9999390	11,821,103.66 4" 32	SPEED HUMP			
AVG. COMBINED FACTOR: 0.9999397	14 (PROJECT)				
VERTI	CAL DATA	J S No Do			
VERTICAL DATUM: NORTH AMERICAN VE	RTICAL DATUM OF 1988 (NAVD 88 - GEOID 12B)				
ELEVATION:					
PHOTO AT STATION'					
		LIGHT FX-38			
		GEORGE			
STATION DESIGNATION	<b>FX-38</b>	MONUMENT: 4" x 4" x 2' CONCRETE MONUMENT WITH 2" STAMPED ALUMINUM CAP DATE SET: JULY 2015			
FX-38	UNITS: U.S. SURVEY FOOT CONVERSION: 1 FOOT = 0.3048 M	PROJECT NO. : 83026.050.16 SET BY : A. JOHNSON PREPARED BY : W. BRADFORD RECOVERED BY : S. OSBURN DATE : 9/4/18 REV. BY : M. SMITH REV. BY : M. SMITH			

GEORGE MASON UNIVERSITY					
HORIZONTAL DATA		LOCATION SKETCH			(NOT TO SCALE)
MAP PROJECTION: LAMBERT					N
HORIZONTAL DATUM: NORTH AMERICAN DA COORDINATE SYSTEM: VIRGINIA COORDINATI	TUM OF 1983 E SYSTEM - NORTH (4501)			TEN	
GRID NORTHING:	GRID EASTING:				
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LATITUDE:	LONGITUDE:	FIE GE			0/
38° 49' 55.55014 N	77° 18' 48.62340' W		62'		VPr I
GMU PROJECT NORTHING:	GMU PROJECT EASTING:		$\land \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	METAL	·′S
6,988,267.40 CONVERGENCE (): ↔ 00° 44' 25.	11,820,897.19 8"	STORM BOX	CANA	POLE	
COMBINED FACTOR: 0.9999395	32				
AVG. COMBINED FACTOR: 0.9999397	14 (PROJECT)		~0,	CUN PH	
VERTI	CAL DATA			DR. TO AND	
VERTICAL DATUM: NORTH AMERICAN VE	RTICAL DATUM OF 1988 (NAVD 88 - GEOID 12B)	1		SU SU	$^{\prime\prime}$
ELEVATION: 436.19		-		CUD	TER
				AND GUTTER	ATROT
				GE	ORGE
STATION DESIGNATION	FX-39	MONUMENT: 4" x 4" x 2' CONCRETE MONUMENT WITH 2" STAMPED ALUMINUM CAF DATE SET: JULY 2015		UNIVE FAIRFAX ( Wes	RSITY Campus St
FX-39	UNITS: U.S. SURVEY FOOT CONVERSION: 1 FOOT = 0.3048 M	PROJECT NO. : 83026.050.16 SET BY : A. JOHNSON PREPARED BY : W. BRADFORD	RECOVERED BY : S. OSBURN DATE : 9/4/18 REV. BY : M. SMITH	schristoph consultant 9301 innovation drive (suite 15 phone 703,393,9887	<b>S</b> (0) • manassas, va 20110 fax 703.273.6820

GEORGE MASON UNIVERSITY					
HORIZON	NTAL DATA	LOCATION SKETCH (NOT TO SCALE)			
MAP PROJECTION: LAMBERT		N			
HORIZONTAL DATUM: NORTH AMERICAN DA COORDINATE SYSTEM: VIRGINIA COORDINATI	TUM OF 1983 E SYSTEM - NORTH (4501)	FX-40			
GRID NORTHING:	GRID EASTING:	TO PADIE 14 35.8 1			
6,988,463.10	11,820,636.86	RIVER DAN			
LATITUDE:	LONGITUDE:	ROAD SICK AVA B			
38° 49' 57.51926' N	77° 18' 51.88123' W				
GMU PROJECT NORTHING:	GMU PROJECT EASTING:				
6 988 463 27	11 820 636 85				
$\frac{0,000,00027}{0,0000}$	81"				
	88				
AVG. COMBINED FACTOR. 0.99999391	14 (INGLEI)				
VERTIC	CAL DATA				
VERTICAL DATUM: NORTH AMERICAN VER	RTICAL DATUM OF 1988 (NAVD 88 - GEOID 12B)				
ELEVATION:					
425.31					
	HUNGHENSE				
STATION DESIGNATION	-FX-40	MONUMENT: 4" x 4" x 2' CONCRETE MONUMENT WITH 2" STAMPED ALUMINUM CAP			
FX-40	UNITS: U.S. SURVEY FOOT CONVERSION: 1 FOOT = 0.3048 M	PROJECT NO. : 83026.050.16   SET BY : A. JOHNSON   PREPARED BY : W. BRADFORD   REV. BY : S. OSBURN   DATE : 9/4/18   REV. BY : M. SMITH			





GEORGE MASON UNIVERSITY					
HORIZONTAL DATA		LOCATION SKETCH		(NOT TO SCALE)	
MAP PROJECTION: LAMBERT HORIZONTAL DATUM: NORTH AMERICAN DATU COORDINATE SYSTEM: VIRGINIA COORDINATE	JM OF 1983 SYSTEM - NORTH (4501)			Z	
6,988,525.42 LATITUDE: 38° 49' 58.25574" N GMU PROJECT NORTHING:	11,819,691.47 LONGITUDE: 77° 19' 03.81763" W GMU PROJECT EASTING:				
6,988,525.58	11,819,691.46				
COMPERGENCE () 0 00 44 16.4 COMBINED FACTOR: 0 99994116	3	3.8'	ASPHALT WALK		
AVG. COMBINED FACTOR: 0.99993971	4 (PROJECT)	EDGE OF STORM	METAL LIGHT	METAL	
VERTICAL DATA		96.4 FX-43	BOX	LIGHT *** POLE	
VERTICAL DATUM: NORTH AMERICAN VER	TICAL DATUM OF 1988 (NAVD 88 - GEOID 12B)				
ELEVATION: 403.10		TO RAPIDAN RIVER ROAD	DRIVE	TO PATRIOT CIRCLE	
FINITION STATION.		STORM BOX			
FX-43	UNITS: U.S. SURVEY FOOT CONVERSION: 1 FOOT = 0.3048 M	PROJECT NO. : 83026.050.16 SET BY : A. JOHNSON PREPARED BY : W. BRADFORD DATE : 9/4/18 REV. BY : M. SMITH	N Consulta 9301 innovation drive phone 703.393.9	(suite 150) · manassas, va 20110 887 · fax 703.273.6820	





















