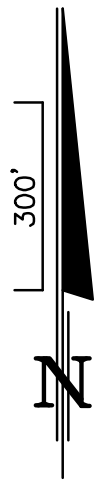




APPENDIX F

COMPENSATING STORAGE

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- LEGEND**

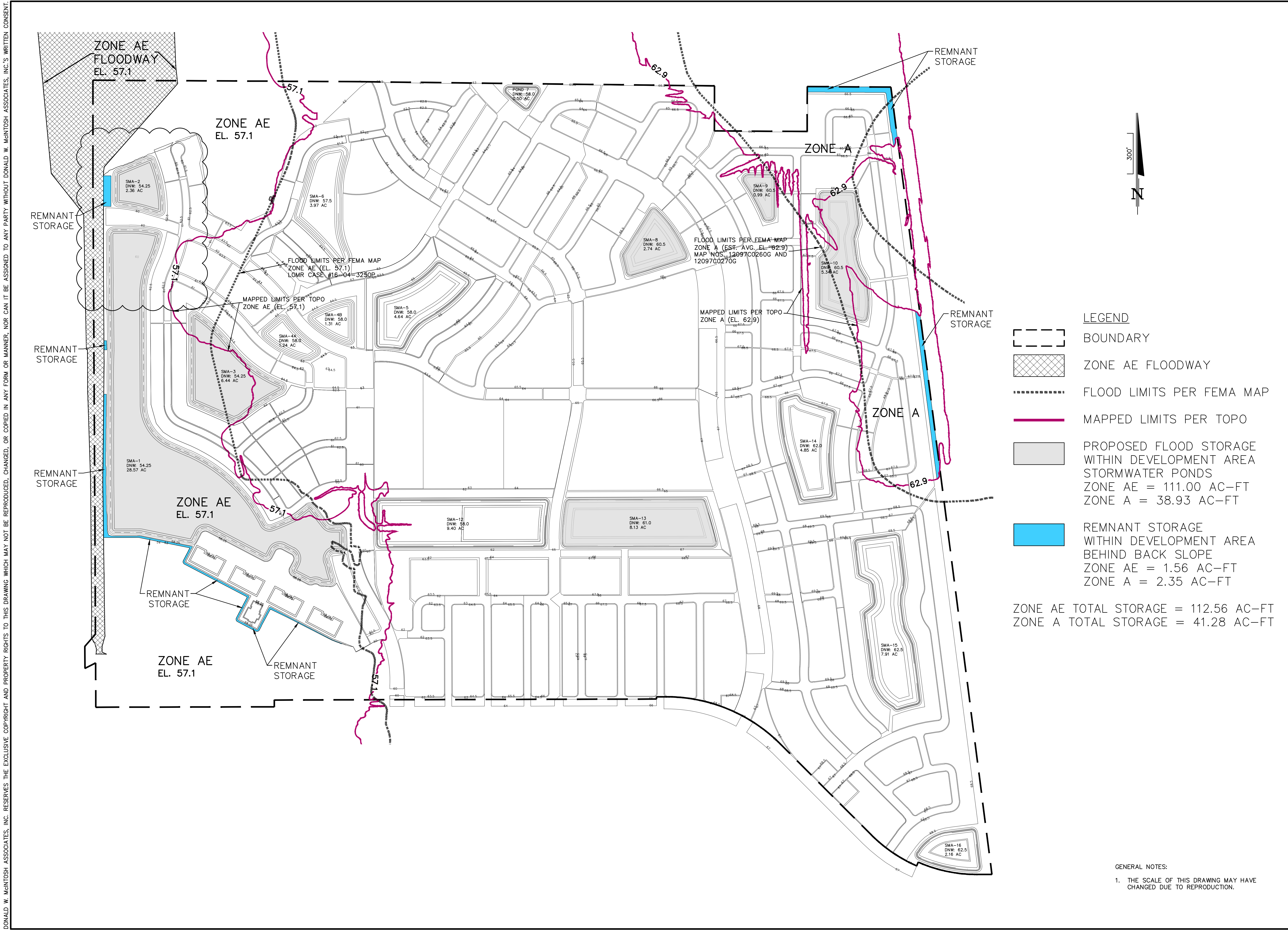
 - BOUNDARY
 - EXISTING FLOOD STORAGE AREA
 - ZONE AE FLOODWAY
 - FLOOD STORAGE WITHIN DEVELOPMENT AREA
 ZONE AE = 112.56 AC-FT
 ZONE A = 39.64 AC-FT
 - FLOOD LIMITS PER FEMA MAP
 - MAPPED LIMITS PER TOPO

GENERAL NOTES:

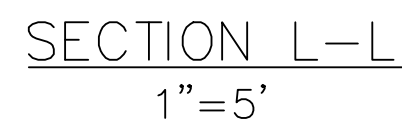
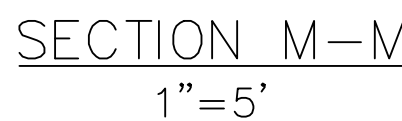
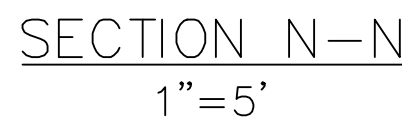
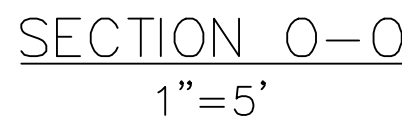
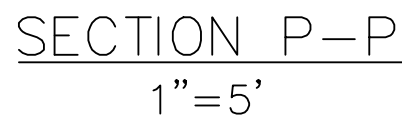
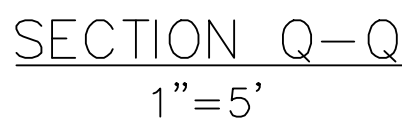
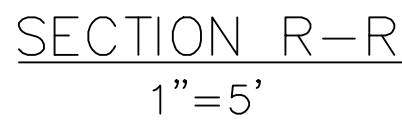
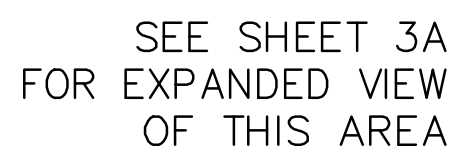
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DRAWING 13189-XCOMP	SHEET 2 OF 7	FONTANA OSCEOLA COUNTY, FL COMPENSATING STORAGE EXHIBIT PROPOSED STORAGE				DONALD W. MCINTOSH ASSOCIATES, INC. PLANNERS ENGINEERS 2800 PARK AVENUE NORTH, WINTER PARK, FL 32789 407.644.4088 CERTIFICATE OF AUTHORIZATION NO. 68				JAMES C. NUGENT FLORIDA P.E. No. 57553 DATE: _____				10/18/18 UPDATED MULTI-USE ROAD, SMA1, 2, 4 AND 6 09/01/18 REVISED PER SFMD COMMENTS 6/5/2018 REVISED PROPOSED STORAGE PER SFMD COMMENTS				NO. DATE REVISIONS				CHK.



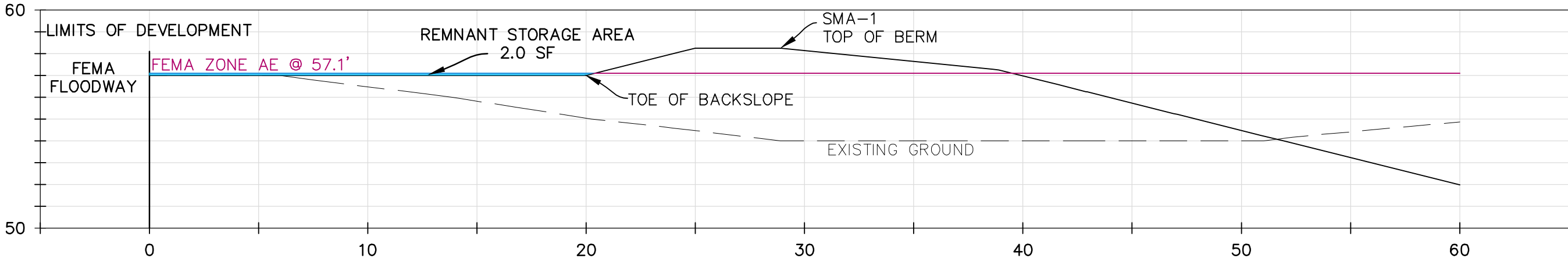
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2. ALL ELEVATIONS ARE IN NAVD88 DATUM.

 **DONALD W. MCINTOSH ASSOCIATES, INC.**
ENGINEERS PLANNERS SURVEYORS
2200 PARK AVENUE NORTH, WINTER PARK, FL 32789 407.644.4068
CERTIFICATE OF ATTACHMENT NO. 68

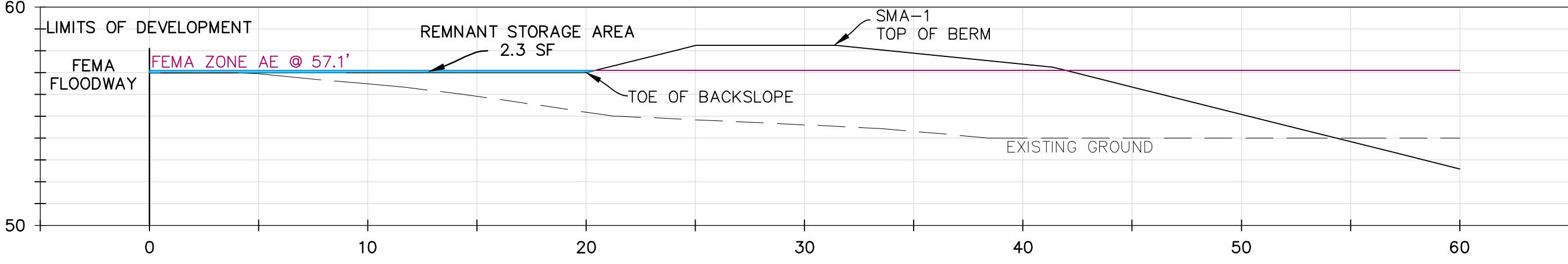
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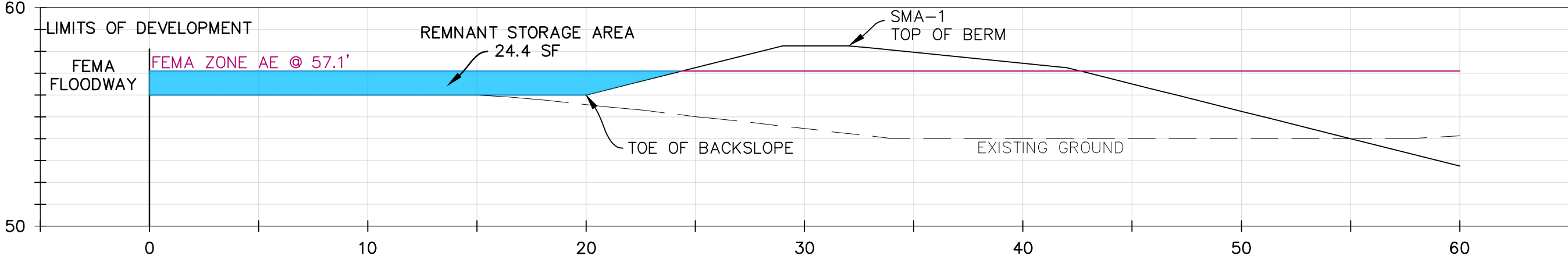
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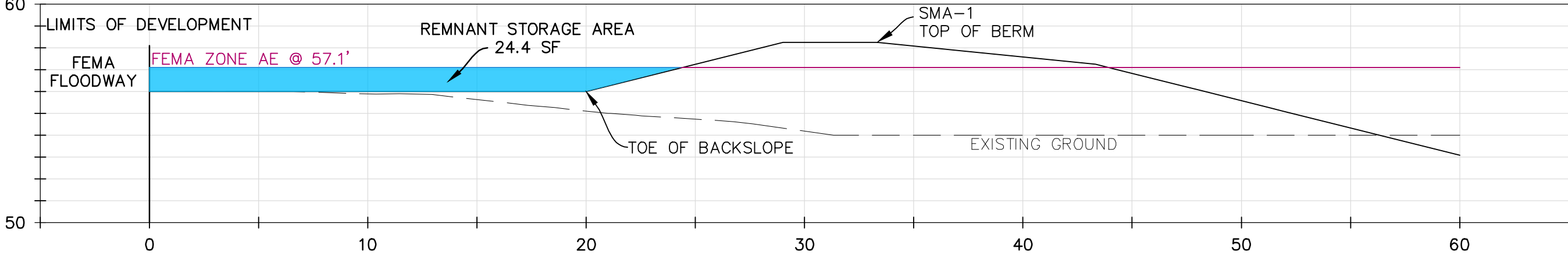
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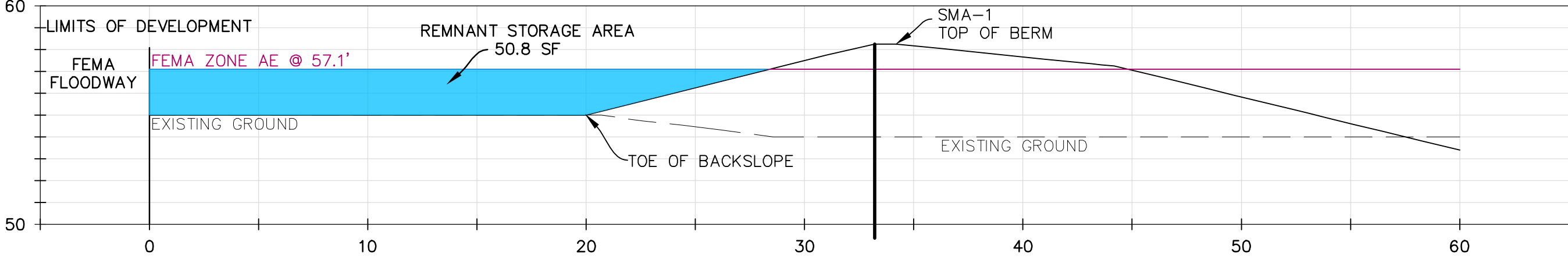
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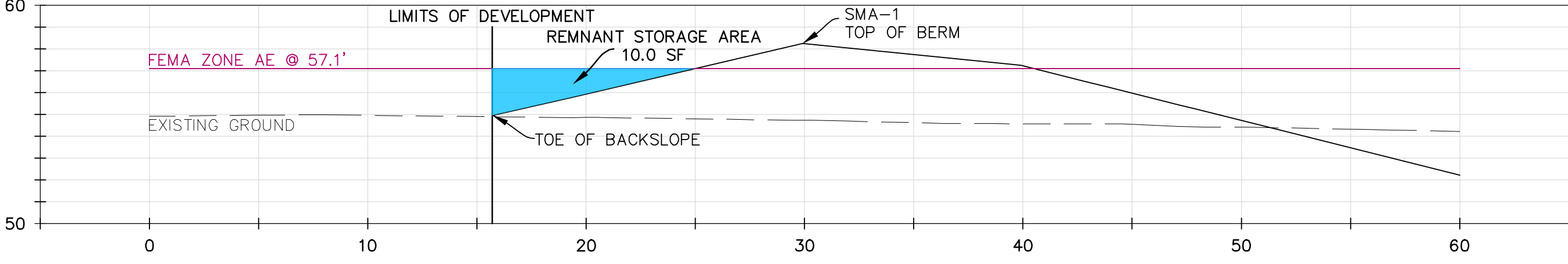
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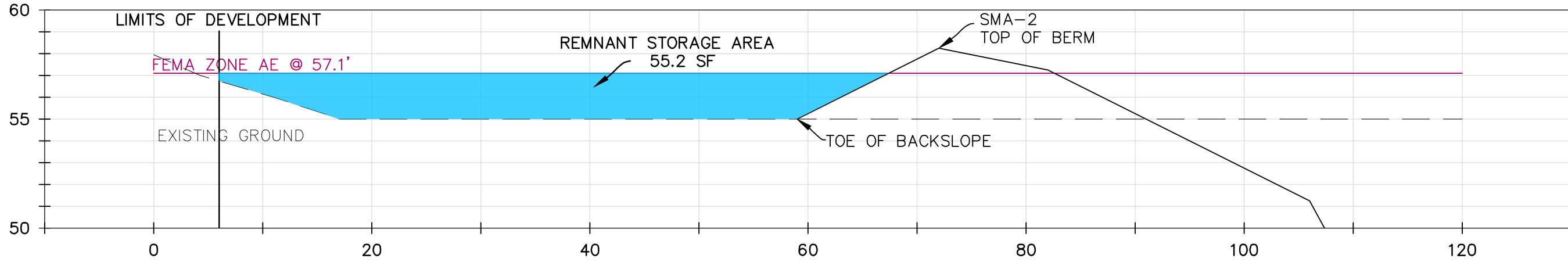
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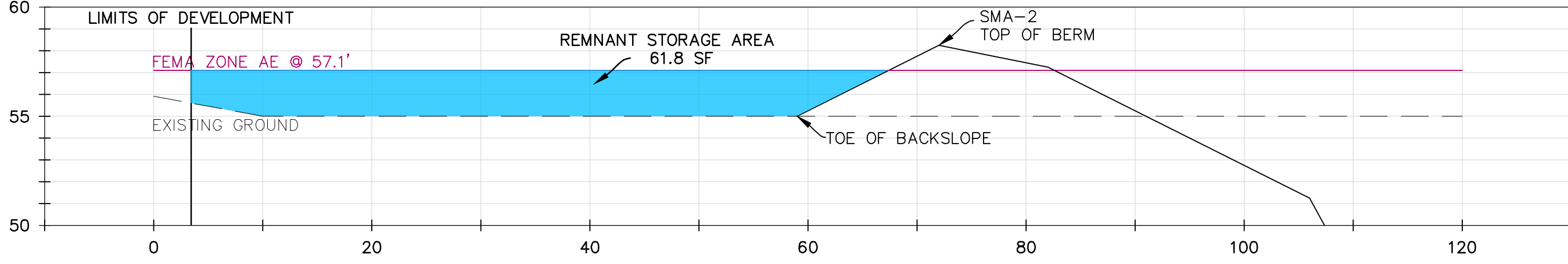
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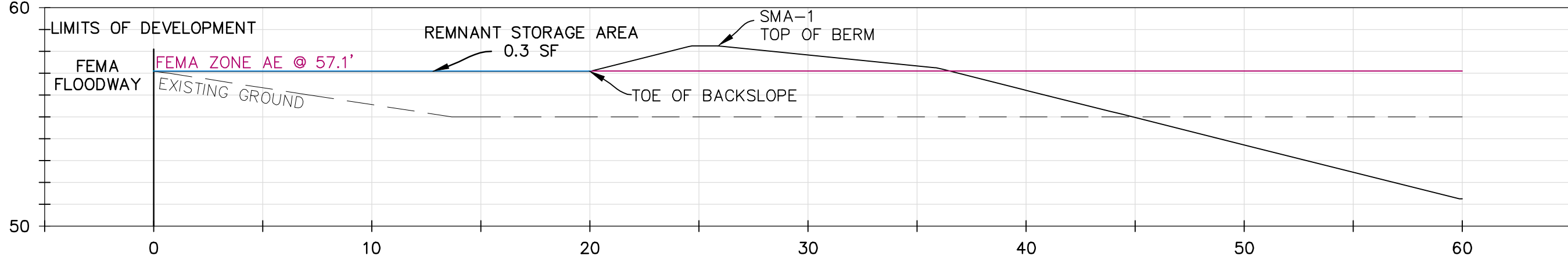
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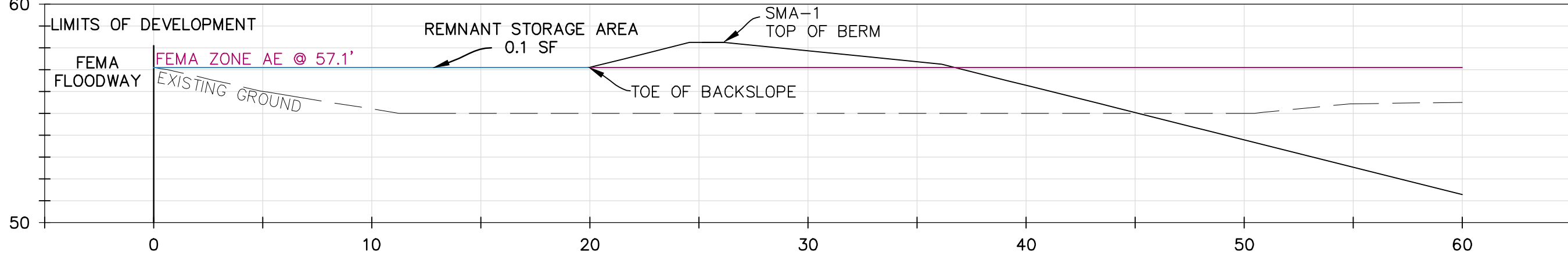
SECTION DD-DD
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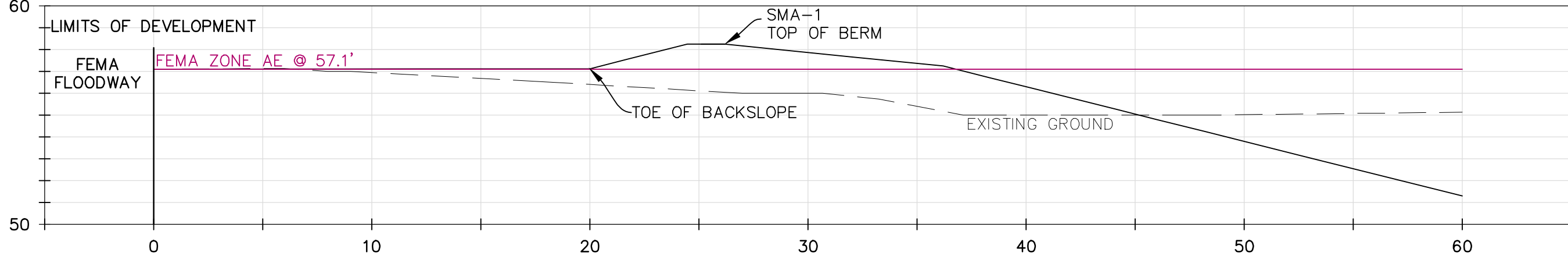
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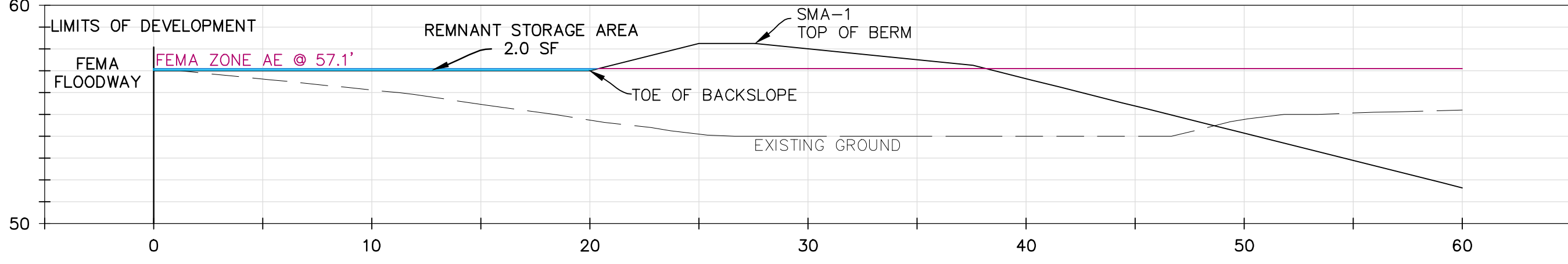
SECTION BB-BB
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SECTION AA-AA
1"=5'



SECTION Z-Z
1"=5'



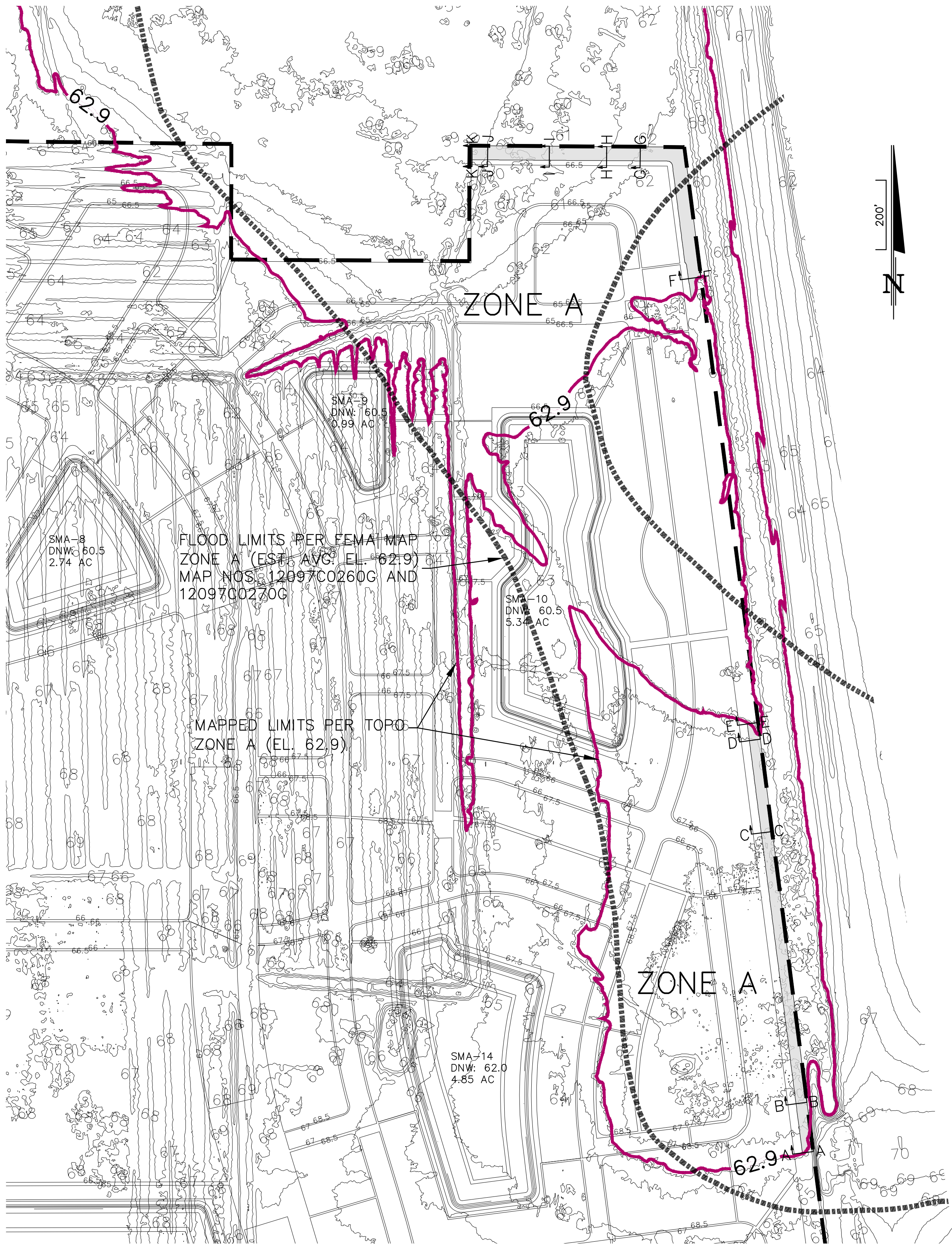
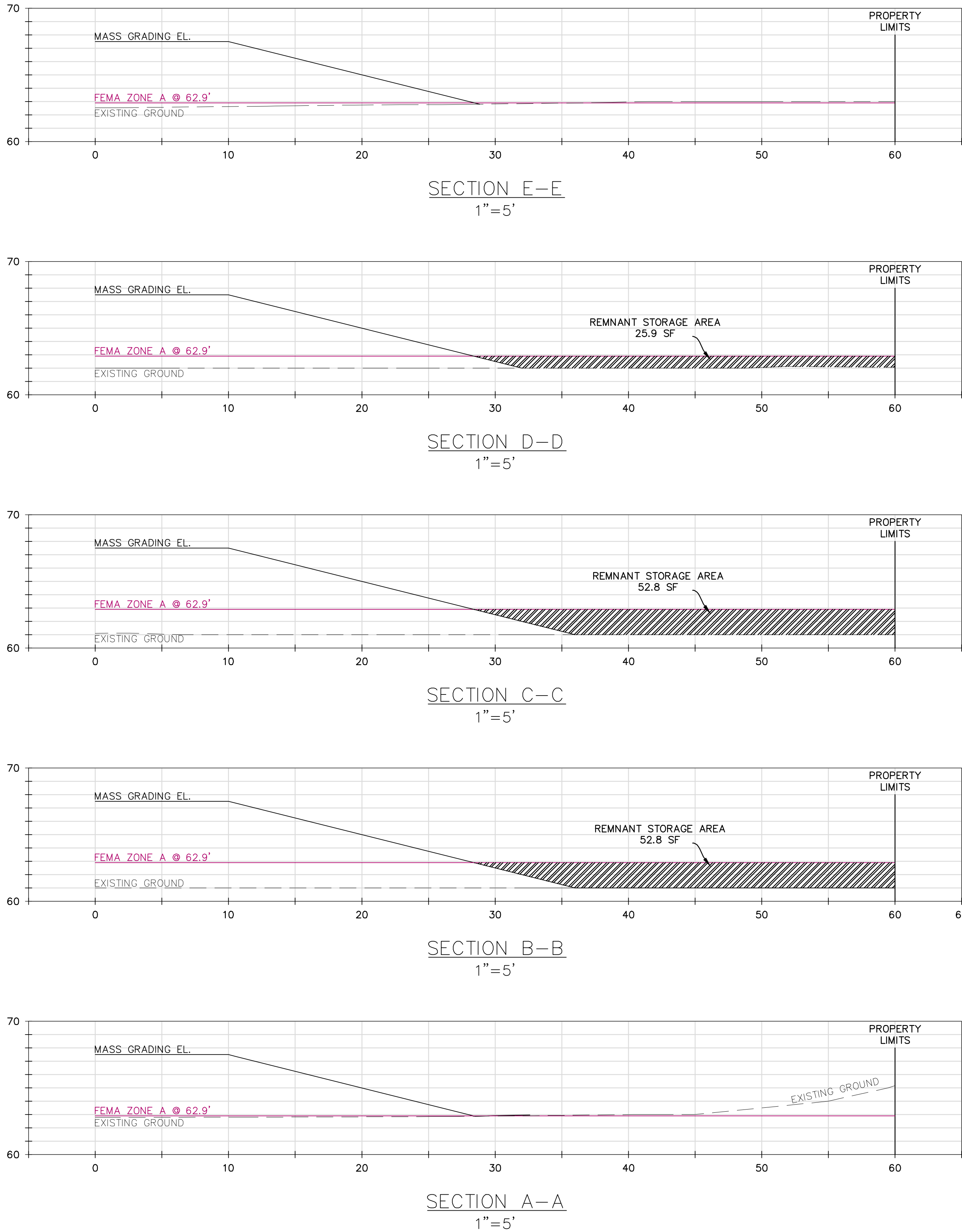
SECTION Y-Y
1"=5'

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DONALD W. MCINTOSH ASSOCIATES, INC. ENGINEERS 2200 PARK AVENUE NORTH, WINTER PARK, FL 32789 407.644.4088 CERTIFICATE OF AUTHORIZATION NO. 68		JAMES C. NUGENT FLORIDA P.E. No. 57553 DATE: _____	
FONTANA OSCEOLA COUNTY, FL ZONE AE REMNANT STORAGE BEHIND BACKSLOPE		JOB NUMBER 13189	
DRAWING 13189-XCOMP		SHEET 4 OF 7	
DATE 6/4/2018		SCALE AS SHOWN	
CHECKED BY JCN		DESIGNED BY ACC	
NO.		DATE	
1		06/05/18	
2		06/07/18	
3		10/18/18	
REVISED PER SWMD COMMENTS		UPDATED MULTI-USE ROAD, SMA1, 2, 4 AND 6	
REVISIONS		CHK.	

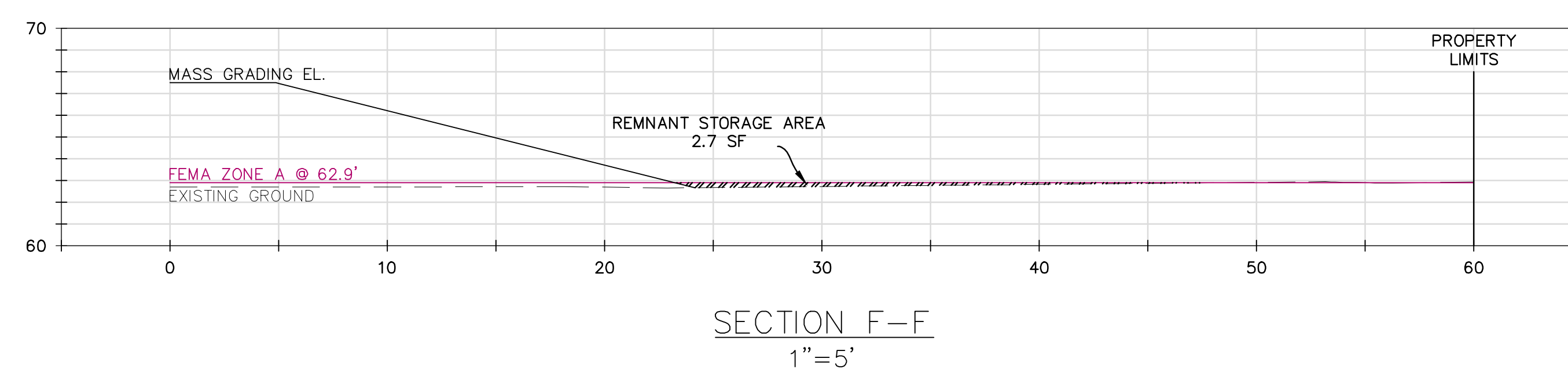
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DRAWING 13189-XCOMP	SHEET 6 OF 7	FONTANA OSCEOLA COUNTY, FL ZONE A REMNANT STORAGE BEHIND BACKSLOPE				DONALD W. MCINTOSH ASSOCIATES, INC. ENGINEERS 2200 PARK AVENUE NORTH, WINTER PARK, FL 32789 407.644.4088 CERTIFICATE OF AUTHORIZATION NO. 68				JAMES C. NUGENT FLORIDA P.E. No. 57553 DATE: _____				NO. 1 DATE 6/5/2018 ADDED SHEET PER SPWMD COMMENTS				CHK.
		DESIGNED BY ACC				CHECKED BY JCN				DATE 6/4/2018				JOB NUMBER 13189				DATE
		SCALE AS SHOWN				DATE 6/4/2018				AS SHOWN				JOB NUMBER 13189				DATE



GENERAL NOTES:

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2. ALL ELEVATIONS ARE IN NAVD88 DATUM.

Fontana
Compensating Storage Calculations - Existing Storage

Date: 6/5/2018
 By: ACC
 Chk: JCN
 Rev: 10/18/2018

FEMA Flood Zone:	ZONE AE
Base Flood Elevation (BFE):	57.1'

AWS = Average Wet Season

ArcMap Output¹

Dataset	Plane Height	Reference	Z_Factor	Area_2D (sqft)	Area_3D (sqft)	Volume (cu ft)
..pStor\CompStor.gdb\ZONEAEAreas	54.25	BELOW	1	459907.8093	459938.2572	112196.7352
..pStor\CompStor.gdb\ZONEAEAreas	57.1	BELOW	1	3451458.555	3452302.6	5015397.957

Stage (ft - NAVD)	Area (ac)	Volume to Ground (ac-ft)	
54.25	10.56	2.58	AWS
57.1	79.25	115.14	BFE

Existing Storage between 57.1' and 54.25' = 112.56 ac-ft

FEMA Flood Zone:	ZONE A
Base Flood Elevation (BFE):	62.9'

ArcMap Output¹

Dataset	Plane Height	Reference	Z_Factor	Area_2D (sqft)	Area_3D (sqft)	Volume (cu ft)
..mpStor\CompStor.gdb\ZONEAAreas	60.5	BELOW	1	88022.26096	88087.53753	46415.32784
..mpStor\CompStor.gdb\ZONEAAreas	62.9	BELOW	1	1412884.091	1413535.566	1773153.104

Stage (ft - NAVD)	Area (ac)	Volume to Ground (ac-ft)	
60.5	2.02	1.07	AWS
62.9	32.45	40.71	BFE

Existing Storage between 62.9' and 60.5' = 39.64 ac-ft

¹Values were calculated using ArcGIS ArcMap (version 10.5) made by ESRI. The Surface Volume tool within the 3D Analyst Toolbox was used. The volume is the difference between a plane and a surface.
 Please see <http://pro.arcgis.com/en/pro-app/tool-reference/3d-analyst/surface-volume.htm> for more details.

Fontana**Compensating Storage Calculations - Proposed Storage**

Date: 6/5/2018
 By: ACC
 Chk: JCN
 Rev: 10/18/2018

FEMA Flood Zone:	ZONE AE
Base Flood Elevation (BFE):	57.1'
Existing Storage:	112.56 ac-ft
Comp Storage Ponds:	SMA-1,2,3

DNW = Design Normal Water
 AWS = Average Wet Season

Pond Data					
Stage (ft - NAVD)	SMA-1 Area (ac)	SMA-2 Area (ac)	SMA-3 Area (ac)	Volume (ac-ft)	
54.25	28.57	2.36	6.44	0.00	DNW/AWS
55.25	29.34	2.48	6.65	37.92	
56.25	30.12	2.60	6.86	76.95	
57.10	30.77	2.70	7.05	111.00	BFE
57.25	30.89	2.72	7.08	117.09	
58.25	32.84	3.04	7.64	159.19	Outside Top of Berm

Pond Storage Provided @ 57.1' = 111.00 ac-ft

ZONE AE Remnant Storage behind Backslope from Cross Sections = 1.56 ac-ft

Total Proposed Storage between 57.1' and 54.25' = 112.56 ac-ft

FEMA Flood Zone:	ZONE A
Base Flood Elevation (BFE):	62.9'
Existing Storage:	39.64 ac-ft
Comp Storage Ponds:	SMA-8,9,10,13

Pond Data						
Stage (ft - NAVD)	SMA-8 Area (ac)	SMA-9 Area (ac)	SMA-10 Area (ac)	SMA-13 Area (ac)	Volume (ac-ft)	
60.5	2.74	0.99	5.34		0.00	DNW/AWS
61.0	2.80	1.03	5.45	8.13	4.59	DNW/AWS (SMA-13)
61.5	2.87	1.07	5.56	8.26	13.38	
62.5	3.00	1.16	5.78	8.51	31.49	
62.9	3.05	1.20	5.87	8.62	38.93	BFE
63.5	3.13	1.25	6.01	8.77	50.31	
64.5	3.38	1.49	6.59	9.23	70.23	Outside Top of Berm (SMA-9, 10)
65	3.55			9.56	78.68	Outside Top of Berm (SMA-8, 13)

Pond Storage Provided @ 62.9' = 38.93 ac-ft

ZONE A Remnant Storage behind Backslope from Cross Sections = 2.35 ac-ft

Total Proposed Storage between 62.9' and 60.5' = 41.28 ac-ft