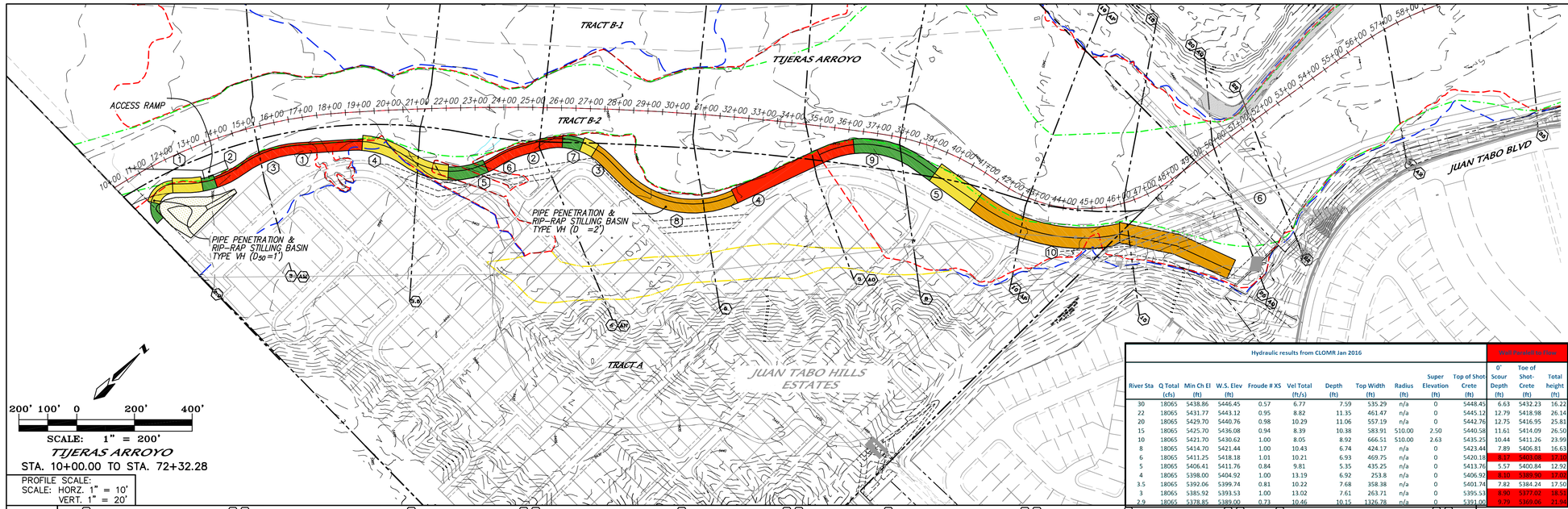

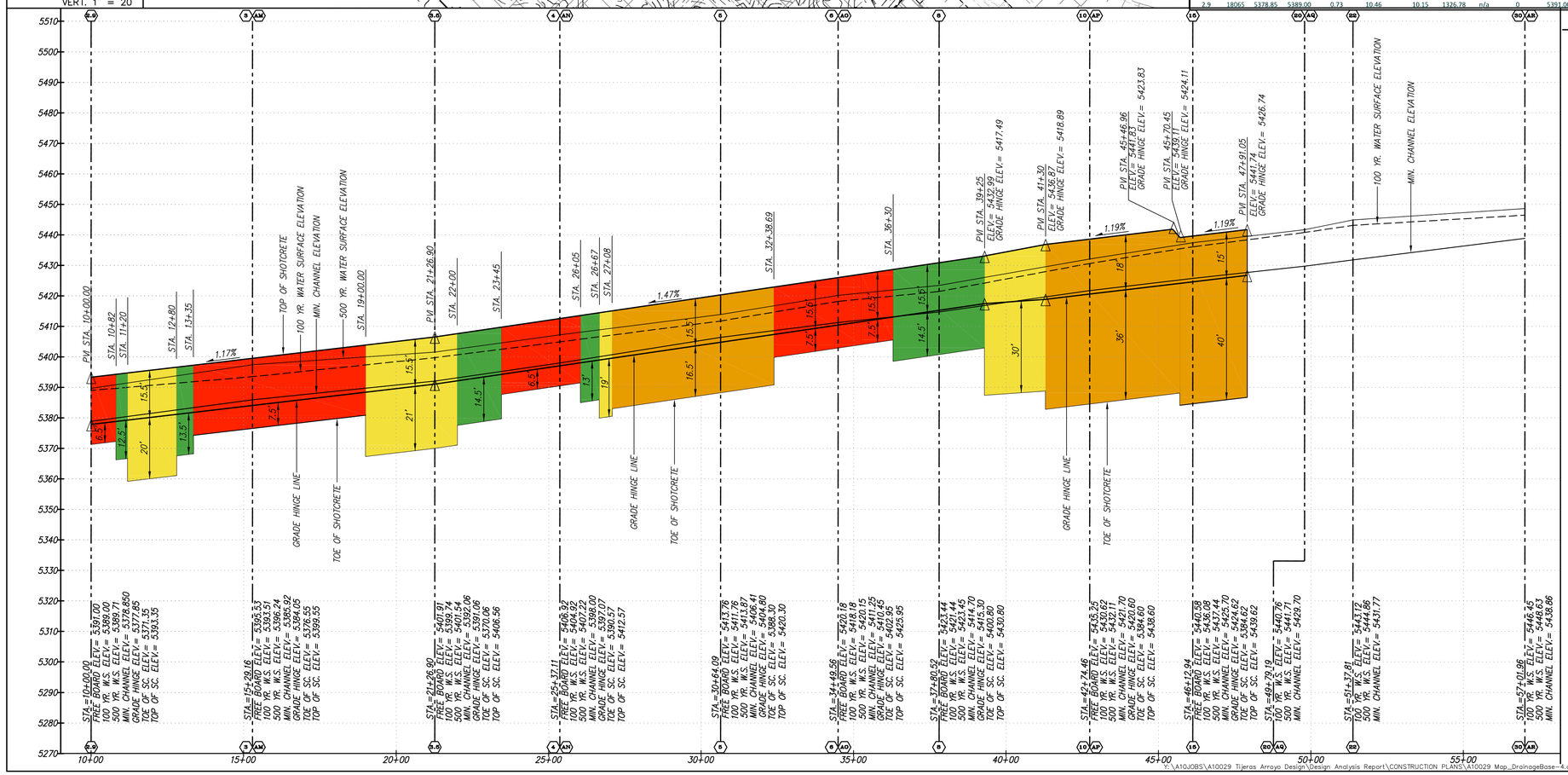

Hydraulic results from CLOMR Jan 2016											Retaining Wall Flow			Wall 0°-15° to Flow			Wall 15°-30° to Flow			Wall Perpendicular to Flow			Wall 30°-45° to Flow		
River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Froude # XS	Vel Total (ft/s)	Depth (ft)	Top Width (ft)	Radius (ft)	Super Elevation (ft)	Top of Shot-Crete (ft)	0' Scour Depth (ft)	Toe of Shot-Crete (ft)	Total height (ft)	15' Scour Depth (ft)	Toe of Shot-Crete (ft)	Total height (ft)	30' Scour Depth (ft)	Toe of Shot-Crete (ft)	Total height (ft)	90' Scour Depth (ft)	Toe of Shot-Crete (ft)	Total height (ft)	45' Scour Depth (ft)	Toe of Shot-Crete (ft)	Total height (ft)
30	18065	5438.86	5446.45	0.57	6.77	7.59	535.29	n/a	0	5448.45	6.63	5432.23	16.22	12.93	5425.93	22.52	18.35	5420.51	27.94	25.22	5413.64	34.81	22.52	5416.34	32.11
22	18065	5431.77	5443.12	0.95	8.82	11.35	461.47	n/a	0	5445.12	12.79	5418.98	26.14	23.92	5407.85	37.27	33.40	5398.37	46.75	44.64	5387.13	57.99	40.61	5391.16	53.96
20	18065	5429.70	5440.76	0.98	10.29	11.06	557.19	n/a	0	5442.76	12.75	5416.95	25.81	23.70	5406.00	36.76	33.01	5396.69	46.07	43.95	5385.75	57.01	40.09	5389.61	53.15
15	18065	5425.70	5436.08	0.94	8.39	10.38	583.91	510.00	2.50	5440.58	11.61	5414.09	26.50	21.75	5403.95	36.64	30.40	5395.30	45.28	40.68	5385.02	55.56	36.98	5388.72	51.84
10	18065	5421.70	5430.62	1.00	8.05	8.92	666.51	510.00	2.63	5435.25	10.44	5411.26	23.99	19.32	5402.38	32.87	26.88	5394.82	40.43	35.68	5386.02	49.23	32.61	5389.09	46.16
8	18065	5414.70	5421.44	1.00	10.43	6.74	424.17	n/a	0	5423.44	7.89	5406.81	16.63	14.60	5400.10	23.34	20.31	5394.39	29.05	26.96	5387.74	35.70	24.64	5390.06	33.38
6	18065	5411.25	5418.18	1.01	10.21	6.93	469.75	n/a	0	5420.18	8.17	5403.08	17.10	15.09	5396.16	24.02	20.98	5390.27	29.91	27.81	5383.44	36.74	25.44	5385.81	34.37
5	18065	5406.41	5411.76	0.84	9.81	5.35	435.25	n/a	0	5413.76	5.57	5400.84	12.92	10.61	5395.80	17.96	14.92	5391.49	22.27	20.20	5386.21	27.55	18.22	5388.19	25.57
4	18065	5398.00	5404.92	1.00	13.19	6.92	253.8	n/a	0	5406.92	8.10	5387.90	17.02	14.99	5383.01	23.91	20.85	5377.15	29.77	27.68	5370.32	36.60	25.30	5372.70	34.22
3.5	18065	5392.06	5399.74	0.81	10.22	7.68	358.38	n/a	0	5401.74	7.82	5384.24	17.50	14.98	5377.08	24.66	21.10	5370.96	30.78	28.66	5363.40	38.34	25.79	5366.27	35.47
3	18065	5385.92	5393.53	1.00	13.02	7.61	263.71	n/a	0	5395.53	8.90	5377.02	18.51	16.48	5369.44	26.09	22.93	5362.99	32.54	30.44	5355.48	40.05	27.82	5358.10	37.43
2.9	18065	5378.85	5389.00	0.73	10.46	10.15	1326.78	n/a	0	5391.00	9.79	5369.06	21.94	18.93	5359.92	31.08	26.78	5352.07	38.93	36.60	5342.25	48.75	32.80	5346.05	44.95

CURVE DATA – TOP OF SHOTCRETE

1. Δ=30°08'26" L=184.12 R=350.00 Tan=94.24
2. Δ=37°55'34" L=231.68 R=350.00 Tan=120.26
3. Δ=32°21'15" L=197.64 R=350.00 Tan=101.53
4. Δ=38°49'36" L=186.36 R=275.00 Tan=96.92
5. Δ=68°09'28" L=356.87 R=300.00 Tan=202.95
6. Δ=17°51'44" L=93.53 R=300.00 Tan=47.15
7. Δ=60°36'42" L=222.15 R=210.00 Tan=122.74
8. Δ=70°27'14" L=448.82 R=365.00 Tan=257.74
9. Δ=61°03'59" L=322.21 R=302.32 Tan=178.31
10. Δ=33°54'37" L=383.52 R=648.00 Tan=197.56
11. Δ=17°56'44" L=191.37 R=611.00 Tan=96.47

LINE DATA – TOP OF SHOTCRETE

1. N41°08'27"E 185.211'
2. N29°40'19"E 69.74'
3. S89°42'59"E 79.46'
4. N19°49'46"E 338.81'
5. N81°09'26"E 251.48'
6. N25°04'21"E 468.37'

NOTES

1. CONCEPTUAL DESIGN IS BASED ON HEC-RES MODEL OF REVISED FEMA FLOOD PLAINS FOR THIS PROJECT WITH FLOW RATES: FEMA Q = 18,065 cfs, FEMA Q = 30,500 cfs AND FUTURE Q = 35,853 cfs.
2. CURRENT EFFECTIVE FEMA FLOOD PLAINS ARE BASED ON A INFORMATION CONTAINED IN A LETTER OF MAP REVISION, LOMR, DATED FEB. 1, 2013 THAT BECAME EFFECTIVE JUNE 17, 2013.
3. THE BANK PROTECTION IS LOCATED AS CLOSE TO THE ARROYO AS POSSIBLE WITHOUT PLACING ANY FILL IN FEMA'S REGULATORY FLOODWAY AND WITHOUT ANY OF THE BANK PROTECTION INSIDE THE TIJERAS ARROYO JURISDICTIONAL WATERS OF THE UNITED STATES.
4. THE LOCATION OF THE WATERS OF THE UNITED STATES ARE FROM A DELINEATION REPORT BY ECOSYSTEM MANAGEMENT INC. FEB. 2014 AS SUBMITTED TO THE CORPS OF ENGINEERS FOR APPROVED JURISDICTIONAL DETERMINATION MARCH 7, 2014.
5. THE 500 YR WATER SURFACE ELEVATIONS SHOWN IN THE PROFILE ARE BASED ON THE FUTURE FLOW OF 35,853 cfs FOR DESIGN.
6. CONCEPTUAL SCOUR DEPTHS ARE CALCULATED IN ACCORDANCE WITH AMAFCA'S EROSION DESIGN GUIDE BY RESOURCE CONSULTANTS & ENGINEERS, INC. MARCH 1994, EQUATION (3.90) $Ys / Y = (0.73 + 0.14\ \pi\ Fr^2)\cos\theta + 4Fr0.33 \sin\theta$

LEGEND

- LIMITS 100 YEAR FLOOD PLAIN
- LIMITS 500 YEAR FLOOD PLAIN
- LIMITS OF FLOODWAY
- LIMITS AO ZONE
- BANK PROTECTION WITH IMPINGING FLOW ANGLE OF = 30° TO 45°
- BANK PROTECTION WITH IMPINGING FLOW ANGLE OF = 30° TO 15°
- BANK PROTECTION WITH IMPINGING FLOW ANGLE OF = 15° TO 0°
- BANK PROTECTION WITH PARALLEL FLOW
- EXISTING SOIL CEMENT BANK PROTECTION
- MITIGATION 0.5 ac SWQ POND

JUAN TABO HILLS ESTATES - OCTOBER 2015

PRELIMINARY
TIJERAS ARROYO BANK PROTECTION

MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505)828-2200, FAX (505)797-9539

Designed: JDH	Drawn: ACH	Checked: DMG	Sheet 1 of 1
Scale: 1" = 100'	Date: 02/10/16	Job: A10029	