



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

TUCSON QUADRANGLE  
ARIZONA 50  
N3200-W11045/15

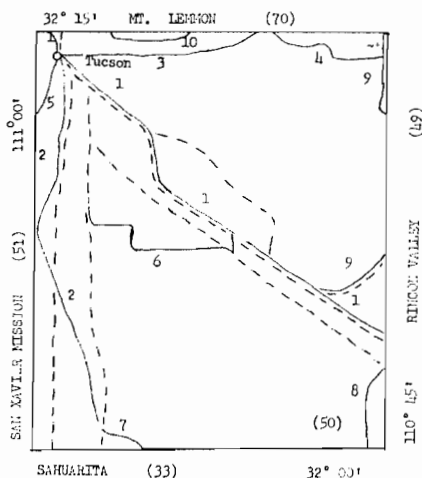
THIRD-ORDER LEVELING  
Sea Level Datum of 1929

Pima County

Edition of 5/8/67

Only the standard tablets  
are listed for lines run  
more than 25 years before  
the edition date.

USGS \_\_\_\_\_  
C&GS - - - - -  
C&GS LIST: 32 110 3



Index to Permanent Marks

Mark	Line No.
H1	6
H2 (Destroyed)	5
H3	6
H4	9
H8	9
H9	9
H10	7
H19	6
H17	6
H18	6
H75 (C&GS)	5
T158 R14E SEC 14 15 22 23	6
T150 R14E SEC 13 14 23 24	6
1/4 COR SECS 14 23	6
WILMOT 1935 (C&GS Tri. Sta.)	6
2313 NOGLS	1
2364 NOGLS (Destroyed)	2
2376 NOGLS	2
2412 NOGLS	3
2434 NOGLS	2
2452 NOGLS	3
2473 NOGLS	1
2481 NOGLS	3, 10
2515 NOGLS	4
2530 NOGLS	2, 20
2540 NOGLS	2
2594 NOGLS	2
2630 NOGLS	1
2651 NOGLS	5
2674 NOGLS	1
2770 NOGLS	1, 9
2903 NOGLS (Destroyed)	1, 9
FCND	
1939	10
2437.865	10
2443.29	10
2463.92	10
2469.205	10
2473.22	10
2486.57	10
2496.605	10
2532.295	10
ASHD	
2749.61 STA	6
2755.92 STA	6
2771.16 STA	6

(1) FROM MT. LEMMON QUADRANGLE (70) SOUTHEAST ALONG SOUTHERN PACIFIC RAILROAD VIA TUCSON AND RANCKIN SIDING INTO RINCON VALLEY (49) (by M.S. Bright, 1903; Book A 5124)

Stockham Ranch house, 60 ft. W. of; 5 ft. S. of gate; iron post stamped "2313 NOGLS" (Not Found, 1957)	2325.337
Tucson, 68 ft. SE. of Pima Courthouse, in SE. corner of yard, set flush with ground; aluminum tablet (Not Found, 1957)	2374.644
Tucson, 2.8 mi. SE. along the S.P. RR. from the station; 0.8 mi. W. of Polvo siding; 0.3 mi. NW. of milepost 987 at the P.F.E. yards; 225 ft. SW. across the track from the center of Aviation Rd.; 79 ft. SW. of the SW. rail of the SW. track; 81 ft. W. of the P.F.E. Yard sign; 22 ft. NW. of Pole 9; standard iron post with bronze cap stamped "2481 NOGLS 226" (Recovered by USC&GS, 1952)	2493.345
Wilmot siding, near W. end of; along S.P. RR.; 345 ft. NW. of spur track leading N.; 36 ft. SW. of SW. rail; 19 ft. SW. of station sign; standard iron post with bronze cap stamped "2651 NOGLS 222" (Not Found, 1957)	2643.426
Wilmot siding, 2.6 mi. SE. along the S.P. RR. from the station sign; 0.7 mi. W. of Rankin siding; 0.1 mi. SE. of milepost 993; 76 ft. SW. of the SW. rail; 6 ft. NE. of the SW. fence; standard iron post with bronze cap stamped "2770 NOGLS 219" (Recovered by USC&GS, 1952)	2762.593
Esmond siding, 2.2 mi. W. of; 125 ft. N. of milepost 995; 100 ft. N. of track; S. side of rd.; standard iron post with bronze cap stamped "2903 NOGLS" (Not Found, 1952) (Destroyed)	2915.638

(2) FROM SAHUARITA QUADRANGLE (33) NORTH ALONG ROAD TO TUCSON (by M.S. Bright, 1903; Book A 5124)

Tucson, 18.1 mi. S. of; 6.2 mi. N. of Hart Ranch; 10 ft. E. of rd.; 1 ft. N. of telephone pole; standard iron post with bronze cap stamped "2594 NOGLS" (Not Found, 1957)	2606.441
Tucson, 15.3 mi. S. of; 3.5 mi. N. of Hart Ranch; S. side of flat draw; 175 ft. SE. of adobe house; 100 ft. W. of rd.; 1 ft. N. of telephone pole; standard iron post with bronze cap stamped "2630 NOGLS"	2642.473
Tucson, 9.5 mi. S. of; 0.5 mi. S. of Sahuarito Butte; on ridge; 275 ft. E. of river bottom; 50 ft. W. of wire fence; 2 ft. S. of mesquite tree; in rd. junction; standard iron post with bronze cap stamped "2540 NOGLS"	2552.274
Tucson, 6.5 mi. S. of; in Indians Garden; at E. end of San Xavier School Rd.; at angle of rd.; 15 ft. W. of NW. corner of fence; standard iron post with bronze cap stamped "2452 NOGLS" (Reset elevation questionable.)	2464.294
Tucson, 4.2 mi. S. of; 1 mi. W. of 6th Avenue; at junction of two rds.; on N. side of Irvington Rd.; standard iron post with bronze cap stamped "2434 NOGLS" (Not Found, 1957)	2446.301
Tucson, 1.8 mi. S. of courthouse; 0.5 mi. E. of river; 150 ft. E. of river bottom; at S. end of Osborne Avenue; at angle to N.; 3 ft. W. of gate entrance to A. Duravo's pasture; standard iron post with bronze cap stamped "2376 NOGLS" (Not Found, 1957)	2388.512
Tucson, S. wall of Pima County courthouse; 11 ft. W. of S. entrance; in fourth foundation stone from ground; standard tablet stamped "2264 NOGLS" (Destroyed)	2376.202

(3) FROM TUCSON NORTHEAST ALONG ROAD INTO MT. LEMMON QUADRANGLE (70) (by M.S. Bright, 1904; Book A 5124)

Tucson, at the SE. corner of the intersection of East Second Street and Park Avenue; at the East Second Street entrance to the campus of the University of Arizona; 50 ft. S. of the center of East Second Street; 1 ft. W. of a 2 ft. stone wall and level with the sidewalk; standard iron post with bronze cap stamped "2412 NOGLS" (Recovered by USC&GS, 1951) (Reset by City Engineer of Tucson, 1939)	2423.050
T. 14 S., R. 14 E., in section 3; 2.3 mi. E. of Edmonson Ranch; 5 ft. S. of rd.; standard iron post with bronze cap stamped "2473 NOGLS" (Not Found, 1957)	2485.098
T. 14 S., R. 15 E., in N. edge of section 6; 5.2 mi. E. of Edmonson Ranch; on ridge in rd. junction; 1,000 ft. E. of Pantano Wash; standard iron post with bronze cap stamped "2515 NOGLS" (Disturbed, 1956-cap pounded in)	2527.229

(4) FROM MT. LEMMON QUADRANGLE (70) SOUTHEAST AND EAST ALONG ROAD INTO RINCON VALLEY QUADRANGLE (49) (by M.S. Bright, 1904; Book A 5124)

T. 14 S., R. 15 E., in Sec. 3; 15 ft. N. of Wm. H. Bush's adobe house; 15 ft. S. of rd.; standard iron post with bronze cap stamped "2530 NOGLS"	2642.298
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- (5) FROM TUCSON WEST ALONG ROAD TO CARNEGIE BOTANICAL LABORATORY (by M.S. Bright, 1907; Book A 5124)
- Tucson, 2.8 mi. W. of; at Carnegie Botanical Laboratory; 10 ft. N. of E. entrance; near NE. corner of building; aluminum tablet stamped "2674 1907" (records destroyed, stamping and elevation doubtful) 2363.665
- (6) FROM A POINT 5.6 MILES SOUTH OF TUCSON SOUTH ALONG U.S. HIGHWAY 89 TO A POINT NEAR SUNNYSIDE SCHOOL THENCE EAST ALONG ROAD TO WILMOT JUNCTION THENCE NORTH AND NORTHWEST TO WILMOT (by E.E. Harris, 1946; Book V 233)
- "R 75 1934" (USCGS) 2525.139
- Tucson, 6.2 mi. S. of; in SE. corner of intersection of U.S. Highway 89 and T-rd. E.; 300 ft. NE. of Sunnyside School; 70 ft. W. of S.P. RR.; in base on E. side of powerline pole; rail spike 2538.93
- Sunnyside School, 1.2 mi. E. of; 22 ft. S. and 160 ft. E. of intersection of dirt rd. to S.; 65 ft. E. of intersection of private driveway; 26 ft. W. of a powerline pole; 3 ft. N. of fence; in concrete post; standard tablet stamped "1946 H 1 2565" (Not Found, 1957) 2564.970
- Reference mark, 132 ft. E. of tablet; in base on N. side of powerline pole; rail spike 2564.967
- Sunnyside School, 2.2 mi. E. of; near W. gate to Double N Ranch; at junction of a T-rd. W.; on line with S. edge of rd. W.; near center of N-S. rd.; 40 ft. W. of gate; in base on NW. side of powerline pole; rail spike 2608.085
- Sunnyside School, 2.2 mi. E. thence 1 mi. S. from; 2 ft. S. and 2 ft. E. of a T-angle in fence line running E.; 53 ft. N. of center of gate across rd.; in concrete post; standard tablet stamped "1946 H 2 2613" (Destroyed, 1957) 2612.188
- Reference mark, 55 ft. S. of tablet; in base on NE. side of corner fencepost at gate; rail spike 2611.891
- Sunnyside School, 2.2 mi. E. thence 1 mi. S., thence 1 mi. E. from; 30 ft. S. of rd.; 5 ft. W. of fence line crossing rd. at a gate; in base on NE. side of a lone palo verde tree; copper nail and washer ~~Not Found~~ 2653.593
- Sunnyside School, 2.2 mi. E. thence 1 mi. S., thence 1.8 mi. E. from; 200 ft. N. of intersection of rd. leading to windmill; 150 ft. SSW. of windmill; 0.6 ft. N. of center of rd.; in concrete post; standard tablet stamped "1946 H 3 2691" 2690.361
- Reference mark, 110 ft. WSW. of tablet; in top of post; copper nail and washer 2689.347
- Sunnyside School, 2.2 mi. E. thence 1 mi. S., thence 2 mi. E. from; iron pipe with cap stamped "T158 R14E SEC 14 1 22 23" (Not Found, 1967) 2690.717
- Sunnyside School, 2.2 mi. E. thence 1 mi. S., thence 2.1 mi. E. from; iron pipe with cap stamped "1/4 COP SECS 14 23" ~~Not Found~~ 2713.723
- Sunnyside School, 2 mi. E. thence 1 mi. S., thence 2.9 mi. E. from; 0.5 mi. NW. thence 0.6 mi. W. from Wilmot Junction; 20 ft. S. of center of dirt rd.; in top of post; copper nail and washer 2730.447
- Wilmot Junction, 0.6 mi. NW. along U.S. Highway 80 thence 0.2 mi. W. from; iron pipe with cap stamped "T158 R14E SEC 14 23 24" (Not found, 1957) 2734.758
- Wilmot Junction, 0.6 mi. NW. of along U.S. Highway 80; 110 ft. NW. of a station in center of headwall of concrete culvert; Arizona State Highway Department standard bronze tablet stamped "2749.01 STA 405-00 1928" (Not found, 1957) 2748.533
- Wilmot Junction, 0.4 mi. NW. of along U.S. Highway 80; on NE. side of highway; in center of headwall of concrete culvert; ASHD standard bronze tablet stamped "2759.93 STA 415-00 1928" (Not found, 1957) 2754.979
- Wilmot Junction, 0.2 mi. NW. of along U.S. Highway 80; on NE. side of highway; in center of headwall of concrete culvert; ASHD standard bronze tablet stamped "2772.16 STA 425-30 1928" (Not found, 1957) 2770.214
- Wilmot triangulation station (USCGS), 10.1 mi. SE. along U.P. RR., thence 1 mi. along Wilmot Rd. from station at Tucson; at a junction of U.S. Highway 80; 4.5 ft. NE. of center of highway; 4.5 ft. W. of center of rd.; 5 ft. NE. of fence; in concrete post; USCGS standard triangulation disk stamped "WILMOT 1935" Latitude 32°05'53.525" Longitude 110°05'28.835" 2775.841
- Reference mark No. 1, 52.6 ft. NE. of station mark; 24 ft. E. of a power-transmission line pole with a transformer; 30 ft. W. of center of Wilmot Rd.; in concrete post; USCGS standard reference mark disk stamped "WILMOT NO 1 1935" 2776.015
- Reference mark No. 2, 59.1 ft. W. of station mark; 56 ft. NE. of center of U.S. Highway 80; 5 ft. NE. of fence; in concrete post; USCGS standard reference mark disk stamped "WILMOT 1935" 2775.277
- Wilmot Junction, 1 mi. N. of; on E. edge of rd.; at a RR. crossing; 10 ft. S. of the track; 2 ft. W. of fence; in top of post; copper nail and washer (Recovered by USCGS, 1957) 2755.231
- (7) FROM A POINT ON U.S. HIGHWAY 89 ABOUT 16 MILES SOUTH OF TUCSON SOUTHEAST ALONG ROAD INTO SAHUARITA QUADRANGLE (33) (by E.E. Harris, 1946; Book V 233)
- Petty Ranch, 1 mi. S. of; in center of triangle formed by junction of rd. E.; 29 ft. E. of center of N-S. rd.; in concrete post; standard tablet stamped "1946 H 10 2669" 2668.769
- Petty Ranch, 1 mi. S. thence 1 mi. SE. from; on N. edge of rd.; in base on SW. side of small mesquite tree; copper nail and washer 2705.407
- (8) FROM SAHUARITA QUADRANGLE (33) NORTH ALONG ROAD VIA VAIL TRIANGULATION STATION TO A TIE 1.8 MILES SOUTHEAST OF ESMOND IN RINCON VALLEY QUADRANGLE (49) (by E.E. Harris, 1946; Book V 233)
- Vail Junction, 3 mi. SW. along the Helvetia Rd., thence 1.5 mi. N. from, about 3.5 mi. SW. of VAIL Triangulation Station, about 0.5 mi. NE. of windmill, 24 ft. SE. of gate in fence line crossing rd., 3 ft. SW. from fence, in concrete post; standard tablet stamped "1946 H 17 3202" 3201.834
- T. 16 S., R. 15 E., NE. 1/4 sec. 24, 18 ft. W. of center of rd., in concrete post; standard tablet stamped "1946 H 18 3145" 3144.218
- Reference mark, 145 ft. SE. of tablet, E. of rd., in crotch of mesquite tree; copper nail and washer 3146.29
- VAIL Triangulation Station 3145.577
- Reference mark No. 1, VAIL Triangulation Station 3143.846
- Reference mark No. 2, VAIL Triangulation Station 3145.785
- (9) FROM A POINT 2.2 MILES SOUTHEAST OF RANKIN SOUTHEAST ALONG ABANDONED RAILROAD TO ESMOND THENCE NORTHEAST ALONG ROAD JOGGING IN AND OUT AND BACK INTO RINCON VALLEY QUADRANGLE (49) (by E.E. Harris, 1946; Book V 233)
- Esmond Siding, 2.2 mi. NW. of; standard iron post with bronze cap stamped "2903 NOGLS" (Described in Line 1) 2915.638
- Esmond, 1.6 mi. NW. of along S.P. RR. on the NE. side of track; in base on NE. side of Milepost 997; rail spike 2937.04
- Esmond, 0.6 mi. NW. of along S.P. RR. on NW. side of track; in base on SW. side of Milepost 998; rail spike 2981.59
- Esmond, 600 ft. NW. of station signboard; 170 ft. NE. of track; 13 ft. SE. of rd. at gate; 2 ft. SW. of the fence; in concrete post; standard table stamped "1946 H 4 3010" (Recovered by USCGS, 1952) *not found 05-15-67* 3010.085
- Reference mark, 155 ft. W. of tablet; in base on NE. side of telephone pole; rail spike 3005.94
- Esmond, 0.8 mi. NE. of along dim rd.; on the NE. edge of sharp angle in rd. from NE. to NW.; just S. of an earth tank; in root on E. side of small mesquite tree; copper nail and washer 2986.20
- Esmond, 1.8 mi. NE. of along a dim rd.; on the SE. edge of rd.; in root on N. side of a palo verde tree; copper nail and washer 2967.51
- LINE JOGS INTO RINCON VALLEY QUADRANGLE (49)
- Saguaro National Park Office, 1.8 mi. NW. of along the Tanque Verde Rd.; 4 mi. E. of Tanque Verde; 27 ft. E. of center of rd. at top of grade; 12 ft. S. of a dim crossroad; 2 ft. W. of fence; in concrete post; standard tablet stamped "1946 H 8 2980" *not found 4-7-81* 2979.590
- Reference mark, 70 ft. W. of tablet; in base on E. side of palo verde tree; copper nail and washer 2977.65
- Tanque Verde, 3 mi. S. of; in the NE. corner of dim crossroads in base of palo verde tree; copper nail and washer 2924.85
- Tanque Verde, 2 mi. S. of; 13 ft. E. of center of rd. at top of grade; 2 ft. NE. of corner fencepost; in concrete post; standard tablet stamped "1946 H 9 2833" *not found 4-7-81* 2833.066
- Reference mark, 170 ft. S. of tablet; at E. edge of rd.; in base on W. side of palo verde tree; copper nail and washer 2835.24
- Tanque Verde, 1 mi. S. of; in the SW. corner of junction; 5 ft. higher than E-W. rd. (Speedway); in base on NW. side of a prominent palo verde tree; copper nail and washer 2649.57
- (10) FROM MT. LEMMON QUADRANGLE (70) SOUTHWEST AND WEST ALONG PINA AVENUE TO A POINT 1 MILE WEST OF BLENNAN SCHOOL THENCE NORTH ALONG CAMPBELL AVENUE BACK INTO MT. LEMMON QUADRANGLE (70) (by E. E. Harris, 1946; Book V 233)
- Tanque Verde, 5.7 mi. W. of; standard iron post with bronze cap stamped "2515 NOGLS" (described in Line 3) *Discovered 1-6* 2527.229
- Tanque Verde, 5.9 mi. W. of; in SE. end of concrete highway bridge over Pantano Wash; Pina County Highway Department standard tablet (Not stamped) *Bridge 90m* 2510.559
- Tanque Verde, 6.2 mi. W. of; in center of SE. headwall of culvert; PCHD tablet stamped "1939" 2505.340
- Tanque Verde, 6.4 mi. W. of; in center of SE. headwall of culvert; PCHD tablet stamped "1939" 2500.820

- (10) Tanque Verde, 6.6 mi. W. of; 155 ft. W. of center of Tanque Verde Highway; 38 ft. E. of center of Wilmot Rd.; 23 ft. S. of center of Pima Avenue; 11 ft. E. of powerline pole; in concrete post; PCHD tablet stamped "2532.845 1942" ✕ 2529.017
- Tanque Verde, 7.1 mi. W. of; 32 ft. S. and 30 ft. E. of intersection; in concrete post; PCHD tablet (post is broken and in poor shape) 2509.59 ✕
- Tanque Verde, 7.6 mi. W. of; 0.5 mi. E. of Fort Lowell School; 28 ft. S. and 29 ft. W. of intersection of rds.; at NE. corner of wire fence and in line with fence S.; PCHD tablet stamped "2498.605 1942" 2494.825
- Fort Lowell School, 110 ft. W. of; 29 ft. N. of center of Pima Avenue; 28 ft. E. of center of dim crossroads; 5 ft. S. of SW. corner of yard fence; PCHD tablet stamped "2486.87 1942" 2483.114
- Fort Lowell School, 0.5 mi. W. of; 29 ft. S. and 31 ft. W. of intersection of Pima Avenue and Swan Avenue; 1 ft. N. of fence corner and in line with fence S.; in concrete post; PCHD tablet stamped "2483.22 1942" 2479.404
- Note: Line was carried SW. to tie to iron post described in Bull. 573, page 21, post was leaning 45° and ordered by R.C. Seitz, removed.
- Fort Lowell School, 1 mi. W. of; 1.5 mi. E. of Blenman School; 29 ft. S. and 30 ft. W. of intersection of Pima and Columbus Avenues; 6 ft. SW. of a powerline pole; in concrete post; PCHD tablet stamped "2469.205 1942" (Not Found, 1957) 2469.048
- Blenman School, 1 mi. E. of; 33 ft. S. and 33 ft. E. of intersection of Pima Avenue and Maple Boulevard; 1 ft. W. of a fence corner and in line with the fence E.; in concrete post; PCHD tablet stamped "2463.92 1942" (Not Found, 1957) 2463.772
- Blenman School, 0.5 mi. E. of; 30 ft. N. and 28 ft. W. of intersection of Pima Avenue and Palo Verde Rd.; in concrete post; PCHD tablet stamped "2437.865 1942" (Not Found, 1957), 2450.052
- Blenman School, 100 ft. NE. of; in SW. corner of intersection of Pima Avenue and Country Club Rd.; in base on N. side of powerline pole; rail spike 2456.00
- Blenman School, 0.5 mi. W. of; 33 ft. N. of center of East Elm Street (Pima Avenue) and 29 ft. E. of center of Tucson Boulevard; 1 ft. SW. of a corner fencepost; in concrete post; PCHD tablet stamped "2443.29 1942" (Not Found, 1957) 2439.019
- Blenman School, 1 mi. W. of; in the NE. corner of intersection of East Elm Street (Pima Avenue) and North Campbell Avenue; on the curve in the concrete curb to sidewalk; chiseled square 2438.40
- Note: Line turns N. along Campbell Avenue at this point for 1.5 mi.

TUCSON (50)

Arizona

32 110 33

D.O. Richardson, 1975

First Order      Adjusted Elevations Based on National  
Geodetic Vertical Datum of 1929

Book: PV 938 Holding 1962 Suppl. Adj. at BM B315 and BM R19  
Latitude 32°00' Longitude 110°45'

- (11) FROM THE WEST SIDE OF RINCON VALLEY QUADRANGLE (49) SOUTHERLY ALONG A ROAD TO THE SOUTHERN PACIFIC RAILROAD THENCE NORTHWESTERLY TO CRAYCROFT ROAD THENCE NORTH INTO THE SOUTH EDGE OF MOUNT LEMMON QUADRANGLE (70) (By D.O. Richardson, 1975; Book: PV 938)

\* ~~"2 DOR 1975" (second of line)~~

BM "E 315 1952" (NGS Quad 32 110 3, line 101) [1975 USGS ELEVATION]2947.873

BM "Y 317 1952" (NGS Quad 32 110 3, line 101) [1975 USGS ELEVATION]2980.576

Hwy. 10 (overpass), 2.1 mi N. of, along Houghton Rd. to Rita Pit Rd., thence 0.66 mi E. to a cattleguard; at 0.1 mi E. of the former Esmond Station; 1 ft N. of the south corner of the cattleguard; in concrete end of the cattleguard; standard tablet stamped "3 DOR 1975"

3035.581

BM "Z 317 1952" (NGS Quad 32 110 3, line 101) [1975 USGS ELEVATION]3011.528

Hwy. 10 (overpass), 2.1 mi N. of, along Houghton Rd. to a rd. leading W., thence 0.6 mi W. to a gas line X-ing.; 150 ft W. of the gas line X-ing., 30 ft SW. of an El Paso Gas Line Rd., 30 ft N. of rd., 3 ft E. of concrete post "EPNG ROW EPNG"; set on a copper-coated rod enclosed by a 6-inch transite pipe; standard tablet stamped "4 DOR 1975"

2992.850

Hwy. 10 (overpass), 1.4 mi N. of, along Houghton Rd. to a RR. overpass, thence 1.61 mi NW. along the Southern Pacific RR. to the former location of NGS BM "P 317" (Destroyed), formerly "RITA"; 42.3 ft NE. of the northeast rail, 3.2 ft E. of the east corner of a steel manhole cover; 0.4 ft NW. of shank of old NGS BM "P 317"; in old concrete RR. tank base; standard tablet stamped "5 DOR 1975"

2945.627

Hwy. 10 (overpass), 1.4 mi N. of, along Houghton Rd. to a RR. overpass, thence 2.5 mi NW. along Southern Pacific RR. to milepost 997; 94 ft SW. of and 3 ft lower than the southwest track, 37 ft W. of a cathodic test point of a pipe line, 35 ft NW. of small palo verde tree, 0.5 ft NE. of a fence; set on a copper-coated rod enclosed by a 6-inch black plastic pipe; standard tablet stamped "6 DOR 1975"

2899.888

Hwy. 10 (overpass), 1.4 mi N. of, along Houghton Rd. to a RR. overpass, thence 3.5 mi NW. along the Southern Pacific RR. to milepost 996; 100 ft SW. of and 2 ft lower than the southwest track at milepost 996 and two cathodic test points of a pipe line; set on a copper-coated rod enclosed by a 6-inch black plastic pipe; standard tablet stamped "7 DOR 1975"

2848.029

FILE COPY

TUCSON (50) Arizona 32 110 33  
D.O. Richardson, 1975

First Order Adjusted Elevations Based on National  
Geodetic Vertical Datum of 1929  
Book: PV 938 Holding 1962 Suppl. Adj. at BM B315 and BM R19

- (11) BM "S 317 1952" (NGS Quad 32 110 3, line 101) [1975 USGS ELEVATION]2827.736  
BM "T 317 1952" (NGS Quad 32 110 3, line 101) [1975 USGS ELEVATION]2808.789  
BM "F 317 1952" (NGS Quad 32 110 3, line 101) [1975 USGS ELEVATION]2765.616 ✓  
RM "CWA NO 1 1935" (NGS Quad 32 110 3, line 101) [1975 USGS  
ELEVATION] 2757.909 ✓  
BM "CWA 1935" TRIANGULATION STATION (NGS Quad 32 110 3, line 101)  
[1975 USGS ELEVATION] 2758.064 ✓  
RM "CWA NO 2 1935" (NGS Quad 32 110 3, line 101) [1975 USGS  
ELEVATION] 2757.279 ✓  
Tucson RR. Station, 10.1 mi SE. of, along the Southern Pacific RR.,  
thence 1.3 mi N. along Wilmot Rd.; 110 ft W. of rd., 54 ft W. of a  
cathodic test point, 0.5 ft E. of a fence; set on a copper-coated  
rod enclosed by a 6-inch black plastic pipe; standard tablet  
stamped "8 DOR 1975" 2727.376 ✓  
At Davis-Monthan Air Base; 1.15 mi SE. along Yuma Street from the  
intersection with Craycroft Rd.; 33 ft S. of Yuma Street, 21 ft E.  
of a T-rd., 5 ft N. of the south end of east concrete headwall of  
a two 28-inch concrete pipe culvert; in the concrete headwall;  
standard tablet stamped "9 DOR 1975" 2706.531  
At Davis-Monthan Air Base; 0.38 mi SE. along Yuma Street from the  
intersection with Craycroft Rd.; 100 ft NE. of the northeast rail,  
50 ft NE. of Yuma Street, 10 ft SE. of a power pole, 7 ft SW. of a  
fence; set on a copper-coated rod enclosed by a black plastic pipe;  
standard tablet stamped "10 DOR 1975" 2671.134 ✓  
At Davis-Monthan Air Base; between "M" and "N" Streets; 97 ft W. of  
the Base Recreation Center building at 4454 Craycroft Rd., 33 ft E.  
of Craycroft Rd., 1 ft N. of a sign post; set on a copper-coated  
rod in concrete and enclosed by a black plastic pipe; standard  
tablet stamped "11 DOR 1975" 2645.769 ✓  
Corps of Engineers BM "3" (NGS Quad 32 110 3, line 101) [1975 USGS  
ELEVATION] 2621.053  
BM "Q 260 1948" (NGS Quad 32 110 3, line 101) [1975 USGS ELEVATION]2612.244

FILE COPY

First Order Adjusted Elevations Based on National  
Geodetic Vertical Datum of 1929

Book: PV 938 Holding 1962 Suppl. Adj. at BM B315 and BM R19

- (11) At Davis-Monthan Air Base; 30 ft S. of the center of rd. at the signals at Craycroft Rd. and "C" Street, 10 ft E. of the west end of the south concrete headwall of two 6-ft pipe culverts; in the concrete headwall over the west pipe; standard tablet stamped "12 DOR 1975" 2633.959 ✓
- At Davis-Monthan Air Base; near the main entrance station; 4 ft NW. of the boundary fence; in the northeast end of the 2 x 10-ft concrete base of a brick sign "PEACE IS OUR PROFESSION"; standard tablet stamped "13 DOR 1975" 2624.311 ✓
- At Tucson; about 168 ft S. of 30th Street along Craycroft Rd., 40 ft W. of Craycroft Rd., 1 ft W. of a U.S. Mail Box drop; set in a copper-coated rod enclosed by a black plastic pipe; standard tablet stamped "14 DOR 1975" 2602.778 ✓
- At Tucson; about 450 ft W. of Craycroft Rd., about 200 ft S. of 22nd Street; in the northeast corner of a 5 x 5-ft concrete well curbing of a 16-inch well; standard tablet stamped "15 DOR 1975" (Also in USGS lines 12 and 13) 2586.393 ✓
- At Tucson; 66 ft S. of 16th Street, 56 ft W. of Craycroft Rd., 0.5 ft E. of a fence; set on a copper-coated rod enclosed by a black plastic pipe; standard tablet stamped "16 DOR 1975" 2565.468 ✓
- At Tucson; 40 ft W. of Craycroft Rd.; in the east end of the concrete curb of a center island in the center of Broadway; an AHD tablet stamped "2553.05" 2553.064 ✓
- At Tucson; about 60 ft W. of Craycroft Rd.; in east end of concrete curb of center island in center of 5th Street; standard tablet stamped "17 DOR 1975" 2547.893 ✓
- At Tucson; 56 ft S. of Speedway Blvd.; in north end of concrete curb of center island in center of Craycroft Rd.; standard tablet stamped "18 DOR 1975" 2514.071 ✓
- At Tucson; 60 ft S. of Pima Street, 50 ft W. of Craycroft Rd.; in south side of concrete base for 12-inch pipe signpost; standard tablet stamped "19 DOR 1975" (Also in USGS line 14) 2493.832 ✓
- should be in Quad (49)*
- \* Hwy. 10 (overpass), 4.9 mi N. of, along Houghton Rd. to a T-rd. E., thence 1.0 mi E. to a power line X-ing., thence 0.1 mi S., thence 0.18 mi SE. to a rd. S.; 32 ft E. of the rd. at a gate, 0.5 ft S. of a fence; set on a copper-coated rod enclosed by a 6-inch white transite pipe; standard tablet stamped "2 DOR 1975" 2897.395

FILE COPY

TUCSON (50) Arizona 32 110 33  
D.O. Richardson, 1975

First Order Adjusted Elevations Based on National  
Geodetic Vertical Datum of 1929  
Book: PV 938 Holding 1962 Suppl. Adj. at BM B315 and BM R19  
Latitude 32°00' Longitude 110°45'

(12) FROM THE INTERSECTION OF CRAYCROFT ROAD AND 22ND STREET IN TUCSON  
WEST ALONG 22ND STREET AND MISSION ROAD INTO THE EAST SIDE OF SAN  
XAVIER MISSION QUADRANGLE (51) (By D.O. Richardson, 1975; Book:  
PV 938)

BM "15 DOR 1975" (Described in USGS lines 11 and 13) 2586.393

At Tucson; in east end of concrete island in center of 22nd Street  
at west side of Rosemont Blvd.; standard tablet stamped "31 DOR  
1975" 2571.013

At Tucson; in east end of concrete island in center of 22nd Street  
at west side of Swan Rd.; an AHD tablet stamped "2551.27 1974" 2551.315

At Tucson; in east end of concrete island in center of 22nd Street  
at west side of Columbus Blvd.; an AHD tablet stamped "2534.65  
1974" 2534.638

At Tucson; 230 ft W. along 22nd Street from jct. of Alvernon Way,  
80 ft N. of 22nd Street; in center of northwest concrete headwall  
of a 20-ft box culvert; an AHD tablet stamped "2514.50 1968" 2514.487

At Tucson; in east end of concrete island in center of 22nd Street  
at west side of Randolph Way; an AHD tablet stamped "2500.68 1968" 2500.673

At Tucson; in east end of concrete island in center of 22nd Street  
at west side of Country Club Rd.; an AHD tablet stamped "2481.16  
1968" 2481.145

BM "226 NOGLS 2481" (on "E" as in GEOLOGICAL) (NGS Quad 32 110 3,  
line 101) [1975 USGS ELEVATION] 2493.342

BM "W 291 RESET 1961" (NGS Quad 32 110 3, line 101) [1975 USGS  
ELEVATION] 2450.242

At Tucson; 5.5 mi NW. of a brass sign "IN MEMORY OF RE BOB MURRAY  
1904-1965 PROJECT ENGINEER ARIZONA HIGHWAY DEPARTMENT"; in south  
concrete sidewalk at west end of 22nd Street Bridge over RR.  
tracks; an AHD tablet stamped "2458.65 1965" 2458.709

SBM: At Tucson; near center of South Park Ave. and 22nd Street;  
in small iron-covered hole; small steel pin 2427.301

FILE COPY

TUCSON (50) Arizona 32 110 33  
D.O. Richardson, 1975

First Order Adjusted Elevations Based in National  
Geodetic Vertical Datum of 1929  
Book: PV 938 Holding 1962 Suppl. Adj. at BM B315 and BM R19

(12) At Tucson; about 65 ft N. of 22nd Street, 25 ft W. of 4th Ave.,  
7 ft N. of fire hydrant; in concrete curb; standard tablet stamp-  
ed "32 DOR 1975" (Also in USGS line 15) 2414.272

SBM: At Tucson; near center of intersection of 22nd Street and 10th  
Ave.; in small iron-covered hole; small steel pin 2387.085

At Tucson; 0.72 mi N. along Mission Rd. from jct. with Silver Lake  
Rd.; 100 ft NW. of northwest side of Santa Cruz River (dry), 20  
ft NW. of Mission Rd. at about 21st Street; in east base of a  
stone mountain with a large white letter "A"; standard tablet  
stamped "33 DOR 1975" 2365.593

SPUR LINE TO NGS BM "L 39"

BM "L 39 1933" (NGS Quad 32 110 3, line 106) [1975 USGS ELEVATION] 2353.970

RETURN TO MAIN LINE

BM "33 DOR 1975" (as described above) 2365.593

LINE FROM THIS POINT ON IS THIRD ORDER

At Tucson; 140 ft N. of Silver Lake Rd., 27 ft W. of Mission Rd.;  
in center of west concrete headwall of 25-ft box culvert; standard  
tablet stamped "60 DOR 1975" 2375.995

At Tucson; 0.94 mi N. of, along Mission Rd. from jct. with Ajo Way,  
0.7 mi S. along Mission Rd. from jct. with Silver Lake Rd.; 48 ft  
E. of and 3 ft lower than Mission Rd., 21 ft N. of fence corner,  
2 ft W. of fence; under a power line; set on a copper-coated rod  
enclosed by a black plastic pipe; standard tablet stamped "61 DOR  
1975" 2395.961

TUCSON (50)

Arizona

32 110 33

D.O. Richardson, 1975

First Order          Adjusted Elevations Based on National  
   Geodetic Vertical Datum of 1929

Book: PV 938 Holding 1962 Suppl. Adj. at BM B315 and BM R19  
   Latitude 32°00' Longitude 110°45'

(13) FROM THE INTERSECTION OF CRAYCROFT ROAD AND 22ND STREET EASTERLY ALONG  
22ND STREET AND OLD SPANISH TRAIL INTO THE WEST SIDE OF RINCON VALLEY  
QUADRANGLE (49) (By D.O. Richardson, 1975; Book: PV 938)

BM "15 DOR 1975" (Described in USGS lines 11 and 12) 2586.393 ✓

At Tucson; near center of jct. of 22nd Street and South Colonia  
Ave.; brass disk; unstamped 2595.427

At Tucson; in east end of concrete island in center of 22nd Street  
at west side of Wilmot Rd.; an AHD tablet stamped "STA 52+31.33  
ELEV 2614.74" 2614.714 ✓

At Tucson; near center of jct. of 22nd Street with Fordham Drive;  
in 12 x 12-inch concrete post flush with pavement; brass disk  
stamped "DOR" 2627.010 ✓

At Tucson; 75 ft S. of 22nd Street, 75 ft W. of Kolb Rd.; in south-  
west concrete curb; an AHD tablet stamped "STA 104+73.79 ELEV  
2642.96" 2642.890 *not found 11-20-80*

At Tucson; 75 ft S. of 22nd Street, 56 ft E. of Prudence Rd.; set  
on a copper-coated rod enclosed by a black plastic pipe; standard  
tablet stamped "40 DOR 1975" 2658.298 *not found 11-19-80*

At Tucson; 20 ft N. of 22nd Street; in north end of east wingwall  
of concrete bridge over Pantano Wash; Pima County Hwy. Dept.  
tablet stamped "2623.605 1964" 2622.838 *not found 11-20-80*

At Tucson; 74.5 ft S. of 22nd Street, 54 ft E. of Sarnoff Dr.; set  
on a copper-coated rod enclosed by a black plastic pipe; standard  
tablet stamped "41 DOR 1975" 2650.375 ✓

At Tucson; 87 ft N. of 22nd Street, 61 ft E. of Camino Seco, 0.5  
ft W. of fence; set on a copper-coated rod enclosed by a black  
plastic pipe; standard tablet stamped "42 DOR 1975" 2694.512 ✓

At Tucson; 77 ft S. of 22nd Street, 31 ft E. of Brown Ave.; set on  
a copper-coated rod enclosed by a black plastic pipe; standard  
tablet stamped "43 DOR 1975" 2744.846 ✓

At Tucson; 80 ft E. of intersection of 22nd Street and Old Spanish  
Trail; set on a copper-coated rod enclosed by a black plastic pipe;  
standard tablet stamped "44 DOR 1975" 2799.344 ✓

FILE COPY



TUCSON (50)

Arizona

32 110 33

D.O. Richardson, 1975

First Order Adjusted Elevations Based on National  
Geodetic Vertical Datum of 1929

Book: PV 938 Holding 1962 Suppl. Adj. at BM B315 and BM R19  
Latitude 32°00' Longitude 110°45'

(14) FROM THE INTERSECTION OF CRAYCROFT ROAD AND PIMA STREET WEST ALONG PIMA  
AND ELM STREETS TO MIRACLE MILE (By D.O. Richardson, 1975; Book: PV 938)

BM "19 DOR 1975" (Described in USGS line 11) 2493.832

At Tucson; 145 ft W. of Magnolia Ave., 53 ft N. of Pima Street,  
36 ft S. of Fort Lowell School at 5151 East Pima Street, 1 ft S.  
of flag pole; in concrete sidewalk; standard tablet stamped "49  
DOR 1975" 2484.589

At Tucson; 56 ft E. of Swan Rd., 33 ft N. of Pima Street; in south  
side of 2 x 2-ft concrete traffic signal base; standard tablet  
stamped "50 DOR 1975" *not found 11/80* 2478.660

At Tucson; 40 ft W. of Columbus Rd., 36 ft N. of Pima Street; in  
concrete curb; standard tablet stamped "51 DOR 1975" *not found 11/80* 2468.617

At Tucson; 27 ft N. of Pima Street, 25 ft W. of and 2.5 ft higher  
than Alvernon Way; in top of southeast corner of 3 x 3-ft concrete  
traffic signal base; standard tablet stamped "52 DOR 1975" 2463.234

At Tucson; 45 ft S. of Pima Street, 25 ft W. of Palo Verde Rd.; in  
concrete curb; standard tablet stamped "53 DOR 1975" 2449.894

At Tucson; 105 ft W. of Country Club Rd., 67 ft S. of Elm Street;  
in northeast end of northwest concrete stairs headwall in entrance  
of Blenman School, 1 ft higher than sidewalk; standard tablet  
stamped "54 DOR 1975" 2459.177  
*54 DOR 1975 Reset 1992 Destroyed 10/21/92 See Attached Later No Elevation Available*

At Tucson; 50 ft W. of Tucson Blvd., 18 ft S. of Elm Street, 17  
ft W. of hydrant; in concrete curb; standard tablet stamped "55  
DOR 1975" 2436.409

At Tucson; 50 ft N. of Elm Street, 20 ft W. of Campbell Ave., 13  
ft N. of hydrant; in concrete curb; standard tablet stamped "56  
DOR 1975" *not found 11/80* 2438.072

At Tucson; 50 ft S. of Elm Street, 18 ft W. of Santa Rita Ave., 17  
ft S. of hydrant; in concrete curb; standard tablet stamped "57  
DOR 1975" 2436.596

FILE COPY



TUCSON (50) Arizona 32 110 33  
 D.O. Richardson, 1975

First Order Adjusted Elevations Based on National  
 Geodetic Vertical Datum of 1929  
 Book: PV 938 Holding 1962 Suppl. Adj. at BM B315 and BM R19  
 Latitude 32°00' Longitude 110°45'

(15) FROM THE INTERSECTION OF FOURTH AVENUE AND 22ND STREET NORTH ALONG  
 FOURTH AVENUE AND STATE HIGHWAY 89 INTO THE SOUTH EDGE OF MOUNT  
 LEMMON QUADRANGLE (70) (By D.O. Richardson, 1975; Book: PV 938)

BM "32 DOR 1975" (Described in USGS line 12) 2414.272

At Tucson; 50 ft E. of Fourth Ave., 28 ft S. of 15th Street; in  
 south concrete curb of 15th Street; standard tablet stamped "34  
 DOR 1975" 2406.048

BM "V 19 1933" (NGS Quad 32 110 3, line 101) [1975 USGS ELEVATION] 2388.557

SPUR TO USGS BM "2375"

USGS BM "2375 251" (NGS Quad 32 110 3, line 101) (Note by DOR:  
 Very poor mark, slopes 30°) [1975 USGS ELEVATION] 2386.613

RETURN TO MAIN LINE

BM "V 19 1933" (as described above) 2388.557

At Tucson; 50 ft W. of Stone Ave., 30 ft S. of 6th Street; in  
 concrete curb; an AHD tablet stamped "2364.78 1973" 2364.981

At Tucson; 37 ft S. of Speedway Blvd., 37 ft E. of and 3.5 ft  
 higher than Stone Ave.; in top of stone corner post with concrete  
 cap; standard tablet stamped "35 DOR 1975" 2379.259  
 TO BE DESTROYED  
 1-B6

At Tucson; 75 ft S. of Adams, 45 ft W. of Miracle Mile; in south  
 concrete base of east one of two stone and copper ore posts (3.5-  
 ft square) supporting a sign "HOME OF UNIVERSITY OF ARIZONA";  
 standard tablet stamped "36 DOR 1975" (Also in USGS line 14) 2356.229

FILE COPY

5/27/75 dld

BENCH MARK DESCRIPTIONS, FIELD SUMMARY

BENCH MARK DESCRIPTIONS, FIELD SUMMARY

Page Quads. State Adj. Miles Third Order Field Elevations Arizona M.D. Cummins, 1976  
 Bk. — Page Miles Third Order Field Elevations Arizona M.D. Cummins, 1976

Page Quads. State Adj. Miles Third Order Field Elevations Arizona M.D. Cummins, 1976  
 Bk. — Page Miles Third Order Field Elevations Arizona M.D. Cummins, 1976

TUCSON (50) Arizona M.D. Cummins, 1976  
 Third Order Field Elevations  
 Book: PV 982

TUCSON (50) Arizona M.D. Cummins, 1976  
 Third Order Field Elevations  
 Book: PV 982

(16) FROM THE NORTH EDGE OF SAHUARITA QUADRANGLE (33) NORTH TO A POINT ABOUT 5 MILES NORTH OF SAHUARITA  
 16.62 UE: At crossing rd. NW.-SE., at concrete manhole just N. of crossing rd. intersection, 1.4 ft higher than rd. surface, on top of south side of concrete manhole cover; chiseled square (Not a permanent enough mark for an SBM) 2706.478

k/71 20.82 BM "2626.88 ELEV +171+71.4 STA AHD 1938" (Found as described in NGS Quad 32 110 3, line 104)  
 2626.88 by NGS 2629.017  
 2626.88 this run 2628.759  
 Closure = -0.258  
 2626.88 1976 USGS 2628.776  
 2626.88 this run 2628.759  
 Closure = -0.017

17.07 Sahuarita Post Office, 3.6 mi N. of, along Hwy. 89, thence 1.25 mi E. along track rd., thence 0.5 mi S. along bladed rd., thence 0.1 mi E. along bladed rd.; at power line crossing rd., at first transmission tower N. of rd.; 1 ft higher than surrounding ground; cemented in top of east side of foundation of transmission tower; standard tablet stamped "78 MDC 1976 2695"  
 2695.472

2626.88 1976 USGS 2628.776  
 2626.88 this run 2628.759  
 Closure = -0.017

17.17 UE: At T-rd. jct.; centerline of rds. 2692.746  
 17.69 UE: Top of fill, in line with centerline of T-rd. W.; centerline of rd. 2687.529

2626.88 1976 USGS 2628.776  
 2626.88 this run 2628.759  
 Closure = -0.017

18.41 BM "H 10 1946 2669"(USGS) New Description by MDC: Sahuarita Post Office, 3.6 mi N. of, along Hwy. 89, thence 0.75 mi E. along track rd., thence 0.1 mi S. along track rd.; at triangle of rds.; 29 ft E. of centerline of N.-S. rd., in center of triangle; set in concrete post that projects 0.6 ft; standard tablet stamped "H 10 1946 2669"2668.482  
 H 10 prev. elev. 2668.769  
 H 10 this run 2668.482  
 Difference = -0.287

2626.88 1976 USGS 2628.776  
 2626.88 this run 2628.759  
 Closure = -0.017

19.27 Sahuarita Post Office, 3.6 mi N. of, along Hwy. 89, thence 0.05 mi E. along track rd.; at steel transmission tower that forms corner angle point in power line, at edge of field; 1 ft higher than surrounding ground; cemented in top of east side of east concrete footing of steel tower; standard tablet stamped "79 MDC 1976 2647" 2646.958

2626.88 1976 USGS 2628.776  
 2626.88 this run 2628.759  
 Closure = -0.017

20.54 BM "2631.08 ELEV +186+07.3 STA 1938 AHD" (Found as described in NGS Quad 32 110 3, line 104) 2632.950  
 2631.08 by NGS 2633.200  
 2631.08 this run 2632.950  
 Closure = -0.250

2626.88 1976 USGS 2628.776  
 2626.88 this run 2628.759  
 Closure = -0.017

FILE COPY

7/8/76 dld

7/8/76 dld

## BENCH MARK DESCRIPTIONS, FIELD SUMMARY

 UNITED STATES  
 DEPARTMENT OF THE INTERIOR  
 GEOLOGICAL SURVEY  
 9-1128

Page	Quads.	State	By	Altitude by
Bk. — Page	Miles	Adj.	Date	Field Book
	TUCSON (50)	Arizona	M.D. Cummins, 1976	
	Third Order	Field Elevations		
	Book: PV 982	Latitude 32°00' Longitude 110°45'		
	(17)	FROM THE ABANDONED SITE OF THE RITA RAILROAD SIDING SOUTHEAST ALONG SOUTHERN PACIFIC RAILROAD INTO THE SOUTHWEST SIDE OF RINCON VALLEY QUADRANGLE (49)		
f/2	0.00	BM "5 DOR 1975" (Described in USGS line 11)[1975 FIRST ORDER ELEVATION BY USGS]		2945.627
	1.13	BM "N 317 1952" (Described in NGS Quad 32 110 3, line 101)		2990.113
		N 317 by NGS            2990.092		
		N 317 this run <u>2990.113</u>		
		Difference            =    +0.021		
	2.20	BM "M 317 1952" (Described in NGS Quad 32 110 3, line 101)		3053.585
		M 317 by NGS            3053.557		
		M 317 this run <u>3053.585</u>		
		Difference            =    +0.028		
	2.74	BM "L 317 1952" (Described in NGS Quad 32 110 3, line 101)		3077.638
		L 317 by NGS            3077.632		
		L 317 this run <u>3077.638</u>		
		Difference            =    +0.006		
	3.10	BM "K 317 1952" (Described in NGS Quad 32 110 3, line 101)		3094.226
		K 317 by NGS            3094.180		
		K 317 this run <u>3094.226</u>		
		Difference            =    +0.046		



BENCH MARK DESCRIPTIONS, FIELD SUMMARY

Page	Quads.	Miles	State	By	Date	Altitude by
Bk.—Page	Adj.		Adj.			Field Book

BENCH MARK DESCRIPTIONS, FIELD SUMMARY

Page	Quads.	Miles	State	By	Date	Altitude by
Bk.—Page	Adj.		Adj.			Field Book

TUCSON (50)	Arizona	M.D. Cummins, 1976	Mean Field Elevations	By	Date	Altitude by
First Order						Field Book
Book: PV 980			Latitude 32°00' Longitude 110°45'			
			FROM A POINT 0.3 MILE NORTH ON WILMOT ROAD FROM THE JUNCTION OF SOUTHERN PACIFIC RAILROAD AND WILMOT ROAD THENCE SOUTH ALONG WILMOT ROAD TO THE TUCSON RAILROAD STATION			
			0.09 BM "T 260 1945" (NGS Quad 32 110 3, line 101)			2557.390
			T 260 by NGS 2557.505			
			T 260 this run 2557.390			
			Difference = -0.115			
			RETURN TO MAIN LINE			
			5.82 TBM: rail spike (As on previous page)			2554.560
			7.29 BM "2481 NOGLS USGS" (NGS Quad 32 110 3, line 101)			2493.314
			2481 1975 USGS 2493.342			
			2481 this run 2493.314			
			Closure = -0.028			

TUCSON (50)	Arizona	M.D. Cummins, 1976	Mean Field Elevations	By	Date	Altitude by
First Order						Field Book
Book: PV 980			Latitude 32°00' Longitude 110°45'			
			FROM A POINT 0.3 MILE NORTH ON WILMOT ROAD FROM THE JUNCTION OF SOUTHERN PACIFIC RAILROAD AND WILMOT ROAD THENCE SOUTH ALONG WILMOT ROAD TO THE TUCSON RAILROAD STATION			
			0.00 BM "CWA NO 1 1935" (NGS Quad 32 110 3, line 101) (1975 FIRST ORDER ELEVATION BY USGS IN USGS LINE 11)			2757.909
			0.80 BM "E 317 1952" (NGS Quad 32 110 3, line 101)			2731.746
			E 317 by NGS 2731.891			
			E 317 this run 2731.746			
			Difference = -0.145			
			1.53 BM "D 317 1952" (NGS Quad 32 110 3, line 101) <i>destroyed</i>			2701.393
			D 317 by NGS 2701.563			
			D 317 this run 2701.393			
			Difference = -0.170			
			2.29 BM "C 317 1952" (NGS Quad 32 110 3, line 101)			2666.231
			C 317 by NGS 2666.402			
			C 317 this run 2666.231			
			Difference = -0.171			
			3.29 BM "B 317 1952" (NGS Quad 32 110 3, line 101)			2628.513
			B 317 by NGS 2628.758			
			B 317 this run 2628.513			
			Difference = -0.245			
			4.32 BM "A 317 1952" (NGS Quad 32 110 3, line 101)			2592.815
			A 317 by NGS 2593.036			
			A 317 this run 2592.815			
			Difference = -0.221			
			5.10 BM "Z 316 1952" (NGS Quad 32 110 3, line 101)			2579.240
			Z 316 by NGS 2579.421			
			Z 316 this run 2579.240			
			Difference = -0.181			
			5.82 TBM: In pole near BM T 260; rail spike			2554.560
			(Note by MDC: BM T 260 was spurred from the above TBM as the BM is inside the AFB)			

Page	Quads.	State	By	Altitude by
Bk.—Page	Miles	Adj.	Date	Field Book
		Arizona	M.D. Cummins, 1976	
		TUCSON (50)		
		First Order Mean Field Elevations		
		Book: PV 980		
		Latitude 32°00' Longitude 110°45'		
(20)		FROM THE INTERSECTION OF 22ND STREET AND 4TH AVENUE IN TUCSON 0.3 MILE EAST ALONG 22ND STREET TO THE SOUTHERN PACIFIC RAILROAD THENCE SOUTH ALONG THE RAILROAD TO A POINT 5.1 MILES NORTH OF SAHUARITA		
a/33	0.00	BM "32 DOR 1975" [1975 FIRST ORDER ELEVATION BY USGS IN USGS LINE 12]	2414.272	
	0.65	BM "RV 276 (SP)" (NGS Quad 32 110 3, line 104)	2437.460	
		RV 276 by NGS 2437.456		
		RV 276 this run 2437.460		
		Difference = +0.004		
	0.66	BM "R 333 1953" (NGS Quad 32 110 3, line 104)	2437.475	
		R 333 by NGS 2437.469		
		R 333 this run 2437.475		
		Difference = +0.006		
	1.02	BM "RV 277 (SP)" (NGS Quad 32 110 3, line 104)	2444.189	
		RV 277 by NGS 2444.208		
		RV 277 this run 2444.189		
		Difference = -0.019		
	1.29	BM "RV 278 (SP)" (NGS Quad 32 110 3, line 104)	2448.271	
		RV 278 by NGS 2448.289		
		RV 278 this run 2448.271		
		Difference = -0.018		
	1.59	BM "RV 279 (SP)" (NGS Quad 32 110 3, line 104)	2453.821	
		RV 279 by NGS 2453.811		
		RV 279 this run 2453.821		
		Difference = +0.010		
	1.87	BM "RV 280 (SP)" (NGS Quad 32 110 3, line 104)	2462.544	
		RV 280 by NGS 2462.593		
		RV 280 this run 2462.544		
		Difference = -0.049		
	2.63	BM "G 75 1954" (NGS Quad 32 110 3, line 104)	2485.780	
		G 75 by NGS 2485.786		
		G 75 this run 2485.780		
		Difference = -0.006		
		Page 1 of 6		
		4	6/15/76 d1	

Page	Quads.	State	By	Altitude by
Bk.—Page	Miles	Adj.	Date	Field Book
		Arizona	M.D. Cummins, 1976	
		TUCSON (50)		
		First Order Mean Field Elevations		
		Book: PV 980		
a/52	6.82	BM "J 75 1934 RESET 1953" (NGS Quad 32 110 3, line 104)	2556.998	
		J 75 by NGS 2557.121		
		J 75 this run 2556.998		
		Difference = -0.123		
	7.47	BM "2566.55 ELEV +3080+00.34 STA 1951 AHD" (NGS Quad 32 110 3, line 104)	2566.036	
		2566.55 by NGS 2566.160		
		2566.55 this run 2566.036		
		Difference = -0.124		
	8.16	BM "XAVIER NO 1 1935" (NGS Quad 32 110 3, line 104)	2585.465	
		Xavier No. 1 by NGS 2585.516		
		Xavier No. 1 this run 2585.465		
		Difference = -0.042		
	8.17	BM "XAVIER NO 2 1935" (NGS Quad 23 110 3, line 104)	2585.852	
		Xavier No. 2 by NGS 2585.953		
		Xavier No. 2 this run 2585.852		
		Difference = -0.092		
	8.18	BM "XAVIER 1935" TRIANGULATION STATION (NGS): (NGS Quad 32 110 3, line 104)	2585.879	
		Xavier by NGS 2585.953		
		Xavier this run 2585.879		
		Difference = -0.074		
	8.48	BM "2588.15 ELEV +3027+07.35 STA 1951 AHD" (NGS Quad 32 110 3, line 104)	2587.607	
		2588.15 by NGS 2587.761		
		2588.15 this run 2587.607		
		Difference = -0.154		
		Page 3 of 6		
		6	6/15/76 d1d	

Page	Quads.	State	By	Altitude by
Bk.—Page	Miles	Adj.	Date	Field Book
		Arizona	M.D. Cummins, 1976	
		TUCSON (50)		
		First Order Mean Field Elevations		
		Book: PV 980		
e/41	2.91	BM "RV 281 (SP)" (NGS Quad 32 110 3, line 104)	2489.615	
		RV 281 by NGS 2489.651		
		RV 281 this run 2489.615		
		Difference = -0.036		
	3.71	BM "T 333 1953" (NGS Quad 32 110 3, line 104)	2504.860	
		T 333 by NGS 2504.926		
		T 333 this run 2504.860		
		Difference = -0.066		
	4.37	BM "2522.29 ELEV +3237+96.31 STA 1951 AHD" (NGS Quad 32 110 3, line 104)	2521.880	
		2522.29 by NGS 2521.947		
		2522.29 this run 2521.880		
		Difference = -0.067		
	4.38	BM "2522.26 ELEV +209+93.85 STA AHD" (NGS Quad 32 110 3, line 104)	2521.657	
		2522.26 by NGS 2521.734		
		2522.26 this run 2521.657		
		Difference = -0.077		
	5.54	BM "2541.76 ELEV +3176+90.37 STA 1951 AHD" (NGS Quad 32 110 3, line 104)	2541.268	
		2541.76 by NGS 2541.399		
		2541.76 this run 2541.268		
		Difference = -0.131		
	5.97	BM "B 261 1945" (NGS Quad 32 110 3, line 104)	2549.907	
		B 261 by NGS 2550.034		
		B 261 this run 2549.907		
		Difference = -0.127		
	6.24	BM "2551.85 ELEV +3143+80.00 STA 19__ AHD" (NGS Quad 32 110 3, line 104)	2551.368	
		2551.85 by NGS 2551.468		
		2551.85 this run 2551.368		
		Difference = -0.100		
	6.67	BM "2555.57 ELEV +3121+20.14 STA 1951 AHD" (NGS Quad 32 110 3, line 104)	2555.051	
		2555.57 by NGS 2555.175		
		2555.57 this run 2555.051		
		Difference = -0.124		
		Page 2 of 6		
		5	6/15/76 d1	

Page	Quads.	State	By	Altitude by
Bk.—Page	Miles	Adj.	Date	Field Book
		Arizona	M.D. Cummins, 1976	
		TUCSON (50)		
		First Order Mean Field Elevations		
		Book: PV 980		
a/57		SPUR LINE TO BM "2540 NOGLS"		
a/77	1.44	BM "2540 NOGLS" (USGS) New Description by MDC: Tucson RR. Station, 9.30 mi S. of, along Southern Pacific RR., thence 0.45 mi W. along route of single-pole power line (that leaves W. through private property and is in line with north edge of Hughes Access Rd.) till power line intersects a pair of double wooden-pole power lines, thence 0.60 mi NW. along northwest access rd. for pair of double wooden-pole power lines, thence 0.40 mi WNW. along track rd.; at top of small rise, at intersection of several track rds., at northeast edge of intersection of track rds., 2 ft S. of tree; set on 1 1/2-inch iron pipe projecting 1.0 ft; standard brass cap stamped "2540 NOGLS" (Also in USGS line 2)	2552.036	
		2540 NOGLS 2552.274		
		2540 NOGLS this run 2552.036		
		Difference = -0.238		
		RETURN TO MAIN LINE		
a/58	8.48	BM "2588.15 ELEV +3027+07.35 STA 1951 AHD" (As on previous page)	2587.607	
	8.92	BM "2594.48 ELEV +3004+72.20 STA 19__ AHD" (NGS Quad 32 110 3, line 104)	2593.915	
		2594.48 by NGS 2594.119		
		2594.48 this run 2593.915		
		Difference = -0.204		
	8.94	BM "2594.75 ELEV +443+17.7 STA AHD" (NGS Quad 32 110 3, line 104)	2594.036	
		2594.75 by NGS 2594.240		
		2594.75 this run 2594.036		
		Difference = -0.204		
	9.22	BM "X 333 1953" (NGS Quad 32 110 3, line 104)	2590.316	
		X 333 by NGS 2590.579		
		X 333 this run 2590.316		
		Difference = -0.263		
	9.41	BM "2583.95 ELEV +2981+53.04 STA 1949 AHD" (NGS Quad 32 110 3, line 104)	2585.884	
		2583.95 by NGS 2586.163		
		2583.95 this run 2585.884		
		Difference = -0.279		
		Page 4 of 6		
		7	6/15/76 d1d	

32 110 33

UNITED STATES  
DEPARTMENT OF THE  
GEOLOGICAL SURVEY  
9-1171

BENCH MARK DESCRIPTIONS, FIELD SUMMARY

Page Quads. Miles By Date  
Bl. - Page Adj. State

Bl. - Page	Quads.	Miles	State	By	Date	Altitude by Field Book
a/62			Arizona	M.D. Cummins,	1976	
			TUCSON (50)			
			First Order Mean Field Elevations			
			Book: PV 980			
			9.67 BM "AHD 1" (NGS Quad 32 110 3, line 104) 2584.042			
			1 AHD by NGS 2584.283			
			1 AHD this run 2584.042			
			Difference = -0.241			
			9.89 BM "2585.78 ELEV +24+43.3 STA 1938 AHD" (NGS Quad 32 110 3, line 104) 2587.759			
			2585.78 by NGS 2587.997			
			2585.78 this run 2587.759			
			Difference = -0.238			
			10.40 BM "2590.78 ELEV +51+53.2 STA 1938 AHD" (NGS Quad 32 110 3, line 104) 2592.723			
			2590.78 by NGS 2592.951			
			2590.78 this run 2592.723			
			Difference = -0.228			
			10.96 BM "L 75 1934" (NGS Quad 32 110 3, line 104) 2601.630			
			L 75 by NGS 2601.776			
			L 75 this run 2601.630			
			Difference = -0.146			
			11.52 BM "2612.19 ELEV +109+65.2 STA 1938 AHD" (NGS Quad 32 110 3, line 104) 2614.236			
			2612.19 by NGS 2614.398			
			2612.19 this run 2614.236			
			Difference = -0.162			
			11.81 BM "2614.39 ELEV +125+08.8 STA 1938 AHD" (NGS Quad 32 110 3, line 104) 2616.487			
			2614.39 by NGS 2616.632			
			2614.39 this run 2616.487			
			Difference = -0.145			
			11.96 BM "2616.64 ELEV +132+68.9 STA 1938 AHD" (NGS Quad 32 110 3, line 104) 2618.745			
			2616.64 by NGS 2618.892			
			2616.64 this run 2618.745			
			Difference = -0.147			

(20)

32 110 33

UNITED STATES  
DEPARTMENT OF THE  
GEOLOGICAL SURVEY  
9-1171

BENCH MARK DESCRIPTIONS, FIELD SUMMARY

Page Quads. Miles By Date  
Bl. - Page Adj. State

Bl. - Page	Quads.	Miles	State	By	Date	Altitude by Field Book
a/72			Arizona	M.D. Cummins,	1976	
			TUCSON (50)			
			First Order Mean Field Elevations			
			Book: PV 980			
			12.53 BM "2624.84 ELEV +162+90.5 STA 1938 AHD" (NGS Quad 32 110 3, line 104) 2626.816			
			2624.84 by NGS 2627.019			
			2624.84 this run 2626.816			
			Difference = -0.203			
			12.69 BM "2626.88 ELEV +171+71.4 STA 1938 AHD" (NGS Quad 32 110 3, line 104) 2628.776			
			2626.88 by NGS 2629.017			
			2626.88 this run 2628.776			
			Closure = -0.241			

BENCH MARK DESCRIPTIONS, FIELD SUMMARY

Page	Quads.	State	By	Altitude by
Bk.—Page	Miles	Adj.	Date	Field Book
	TUCSON (50)	Arizona	M.D. Cummins, 1976	
	First Order	Mean Field Elevations		
	Book: PV 980	Latitude 32°00' Longitude 110°45'		
	(2)	FROM THE CIVIL ENGINEERING BUILDING ON THE UNIVERSITY OF ARIZONA CAMPUS TO THE EAST SECOND STREET ENTRANCE TO THE UNIVERSITY OF ARIZONA CAMPUS		
c/32	0.00	BM "66 DOR 1975" (Described in USGS line 14)		2438.152
	0.12	UE: City BM "2429.598		2429.769
	0.28	BM "2412 NOGLS RESET 1976" Note by MDC, 1976: BM "2412 NOGLS" was destroyed as described in USGS line 3. A new tablet was reset in the exact place of the old and stamped "2412 NOGLS RESET 1976". The description as written still applies.)		2423.034
	0.30	UE: BM "6"		2422.992
	0.36	UE: City BM "2418.071"		2418.239

# BENCH MARK DESCRIPTIONS, FIELD SUMMARY

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
9-1128

Page \_\_\_\_\_ Quads. \_\_\_\_\_ State \_\_\_\_\_ By 32 110 32  
Bk. — Page \_\_\_\_\_ Miles \_\_\_\_\_ Adj. \_\_\_\_\_ Date \_\_\_\_\_ Altitude by  
Field Book \_\_\_\_\_

	TUCSON (50)	Arizona	G. N. Krueger, 1980	
	First Order	Mean Field Elevations		
	Book: PV 1060	Latitude 32° 00'	Longitude 110° 45'	
	(12)	FROM THE WEST SIDE OF RINCON VALLEY QUADRANGLE (49) SOUTHERLY ALONG ROAD TO SOUTHERN PACIFIC RAILROAD THENCE NORTHWESTERLY TO A POINT NEAR SENTINEL PEAK		
a/58	3.24	BM "E 315 1952" (NGS Quad 32 110 3, line 101)		2947.845
	4.40	BM "Y 317 1952" (NGS Quad 32 110 3, line 101)		2980.528
	5.39	BM "3 DOR 1975" (line 11)		3035.531
	5.87	BM "Z 317 1952" (NGS Quad 32 110 3, line 101)		3011.476
	6.64	BM "4 DOR 1975" (line 11)		2992.791
	7.68	BM "5 DOR 1975" (line 11 )		2945.542
	8.59	BM "6 DOR 1975" (line 11)		2899.774
	9.59	BM "7 DOR 1975" (line 11)		2847.919
	10.05	BM "S 317 1952" (NGS Quad 32 110 3, line 101)		2827.620
	10.55	BM "T 317 1952" (NGS Quad 32 110 3, line 101)		2808.674
	11.76	BM "F 317 1952" (NGS Quad 32 110 3, line 101)		2765.491
	12.64	BM "E 317 1952" (NGS Quad 32 110 3, line 101)		2731.615
	13.34	BM "C 418 1979" (NGS Summary L-24555, part 5)		2698.075
	14.12	BM "C 317 1952" (NGS Quad 32 110 3, line 101)		2666.098
	15.11	BM "B 317 1952" (NGS Quad 32 110 3, line 101)		2628.235
	16.14	BM "A 317 1952" (NGS Quad 32 110 3, line 101)		2592.531
	16.93	BM "Z 316 1952" (NGS Quad 32 110 3, line 101)		2579.074
	17.65	TBM near T 260 (line 19)		2554.367
		page 2 of 3 2		wr1/wr1 1/13/81

# BENCH MARK DESCRIPTIONS, FIELD SUMMARY

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
9-1128

Page \_\_\_\_\_ Quads. \_\_\_\_\_ State \_\_\_\_\_ By 32 110 32  
Bk. — Page \_\_\_\_\_ Miles \_\_\_\_\_ Adj. \_\_\_\_\_ Date \_\_\_\_\_ Altitude by  
Field Book \_\_\_\_\_

	TUCSON (50)	Arizona	G. N. Krueger, 1980	
	First Order	Mean Field Elevations		
	(22) Book: PV 1060	Latitude 32° 00'	Longitude 110° 45'	
a/59	19.11	BM "2481 NOGLS 1952" (line 12)		2493.195
	19.85	BM "2481.16 1961" (AHD) (line 12)		2481.011
	20.87	BM "W 291 RESET 1961" (NGS Quad 32 110 3, line 101)		2450.136
	21.05	BM "2458.65 1965" (AHD) (line 12)		2458.617
	21.65	TBM: At Tucson, near intersection of South Park Ave. & 22nd Street; NW. of intersection; southeast bolt of traffic signal		2427.306
	22.19	BM "32 DOR 1975" (line 12)		2414.151
	23.75	BM "33 DOR 1975" (line 12)		2365.441