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INFORMATION CIRCULAR 59

WASHINGTON GRAVITY BASE STATION NETWORK

By

TOR H. NILSEN

1976

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FOREWORD

With the advent of more sophisticated techniques and concepts, the geoscience profession requires additional base-line data for the study of the earth's crust. This report on gravity base stations in Washington State contains base-line data that are part of a nation-wide network. Such a network is very valuable because it allows all gravity measurements to be standardized and tied to a gravity station with a known gravity value.

Dr. Tor Nilsen, who prepared this report, spent two years in the military doing gravity base station work for the U.S. Army Topographic Command. His work took him all over the United States and to many areas of the world. He has published, with others, gravity base station network reports for Utah and Iceland, and co-authored a gravity map of the Trona 1° by 2° quadrangle in California. Dr. Nilsen received his master's and doctor's degrees in geology from the University of Wisconsin and is currently employed as an environmental geologist by the U.S. Geological Survey in Menlo Park, California.

Vaughn E. Livingston, Jr.
Washington State Geologist

March 31, 1976

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ABSTRACT

The principal facts and descriptions for a network of 47 gravity base stations established in Washington between 1965 and 1972 are provided in this report. A least squares network adjustment provides an analysis of errors in the network and an evaluation of the relative accuracy of each station. The principal facts and descriptions are also provided for (a) the five U.S. National Gravity Base Net stations that were held fixed in the reduction of the gravity data and in the network adjustment; (b) eleven previously established local base stations; and (c) two new U.S. National Gravity Base Net excenter stations in the Seattle area.

INTRODUCTION

A network of 47 gravity base stations was established in the State of Washington between 1965 and 1972 by the Gravity Branch of the Department of Geodesy and Geophysics, Defense Mapping Agency Topographic Center (DMATC), formerly known as the U.S. Army Map Service (AMS), and U.S. Army Topographic Command (TOPOCOM). The stations were established to provide widely distributed, equidistant, accurate, and easily recoverable bases to be used for regional and local gravity surveys; their distribution is shown on figure 1.

The network, part of a larger program of gravity surveys being conducted in the western United States by DMATC (Nilsen, 1969), has been used in local and regional gravity surveys by the University of Puget Sound (Daneš, 1969), University of Washington (Christensen and others, 1969), and Princeton University (Bonini, 1969). More recently it has been utilized in the preparation of the new Bouguer gravity anomaly map of Washington (Bonini and others, 1974). The network will be useful for standardizing and interfacing future local and regional gravity surveys in Washington.

The Washington base station network was adjusted together with the Oregon gravity base station network, established in 1971. Many of the statistical parameters for the network, the list of instruments used, and the gravity values upon which the network is based therefore include data from Oregon and cannot be separated from the Oregon network. The two networks were interconnected in order to improve the overall adjustment scale conditions. The data reduction and network adjustment were completed at DMATC in Washington, D.C., and summarized in Department of Geodesy Report 97 (DMATC, 1973). The principal facts for the state base stations are summarized in Appendix I.

In addition to the 47 state base stations, 11

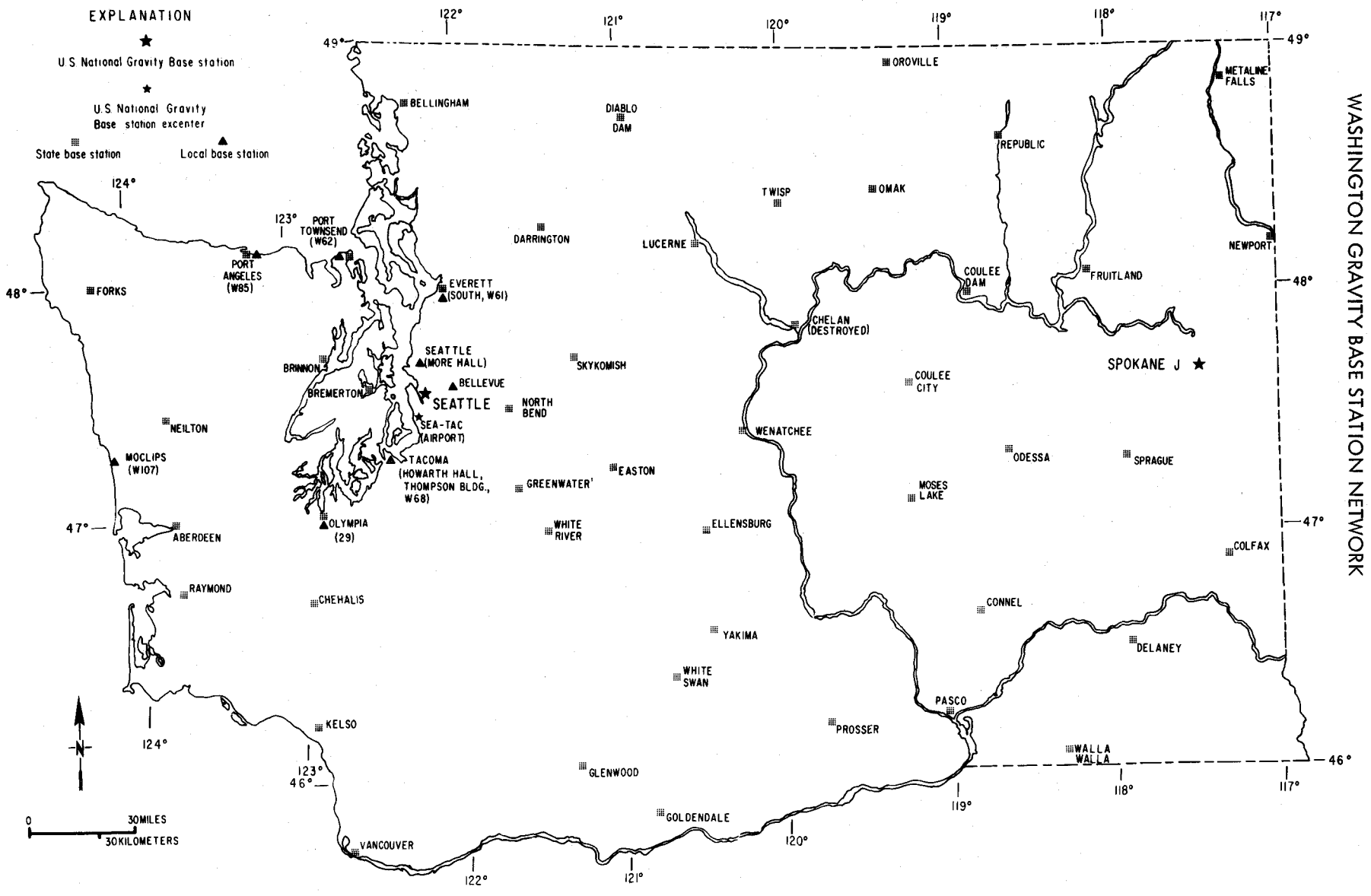

FIGURE 1.—Location of Washington gravity base stations.

previously established local base stations were resurveyed and adjusted in the network; the principal facts for these stations are summarized separately in Appendix II. These stations were reoccupied for the purpose of permitting the readjustment of older regional surveys and should not be used for new work because of proximity to a "noise" source or other reasons.

The entire network is tied to U.S. National Gravity Base Net (USNGBN) stations in Seattle and Spokane, Washington; in Portland and Medford, Oregon; and in Boise, Idaho (Schwimmer and Rice, 1969). The principal facts for these stations are summarized in Appendix III. The USNGBN is based on a datum of 980118.0 milligals (mgals) at the Washington A National Fundamental Station located in the U.S. Department of Commerce Building in Washington, D.C. This datum is in turn based on ties to the old international gravity base station at Potsdam. More recent absolute gravity measurements suggest that the absolute gravity values in the northern United States are about 13.64 mgals lower (Hammond and Faller, 1971); however, the USNGBN has not yet been adjusted to this new datum.

Most of the base stations in Washington were tied during the fieldwork phase of the survey to the old Seattle J USNGBN station at Sea-Tac Airport. Unfortunately, this station was destroyed in 1968 and 1969. However, ties from Seattle J to Seattle C and other stations are believed to have been well established, permitting the use of Seattle C in the network adjustment. Two new stations were established at Sea-Tac Airport in 1972, USNGBN excenter stations Seattle TB and Seattle TC; the principal facts for these stations are summarized in Appendix IV.

INSTRUMENTS

La Coste and Romberg Model G land gravity meters numbered 10, 12, 24, 41, 42, 64, 67, 68, and 115 were used for the Washington and Oregon surveys. The scale factors applied to the meter calibrations were determined from prior tests on long-range calibration lines; the normal factory calibration

TABLE 1.—Scale factors applied to La Coste and Romberg Model G gravity meters used in survey prior to network adjustment

Instrument number	Scale factor for interval	Source of scale factor data	Year	67 percent confidence level for scale factor
10	1.00000	Factory	-	-
12	.99606	Utah base net	1967	-
24	1.00000	Factory	-	-
41	1.00057	ECCL[1/]	1967	±.00010
42	1.00046	ECCL	1963	±.00017
64	1.00014	ECCL	1964	±.00018
67	1.00045	ECCL	1964	±.00017
68	1.00022	ECCL	1964	±.00017
115	1.00017	ACL[2/]	1967	±.00001

[1/] East Coast Calibration Line [2/] American Calibration Line

data were used for meters that had not been tested on calibration lines. These scale factors, which were applied to the observations prior to network adjustment, are shown in table 1.

FIELD PROCEDURES

All of the gravity base stations were established using a looping technique, with the duration of almost all loops less than 24 hours. Automobiles were used for transportation, and the gravity meters were strapped in with seat belts. Each loop originated either from one of the USNGBN stations or from one of the previously established stations of the present survey that had been very accurately tied to one of the USNGBN stations by repeated measurements. The observed stations in a loop were reobserved on the return leg in a ladder sequence (ABCDCBA) method of observation. All loops terminated at the starting base station and most loops are intertied at the turn-around stations. All base station loops were completed using two gravity meters that were read simultaneously; the same observer read the same instrument over the entire loop.

The repeat observations in each loop assisted in the detection of instrument tares between stations and provided for the determination of instrument drift. The difference in gravity values between stations observed on the foreleg and backleg of the loop never exceeded ±0.09 mgal and averaged ±0.01 mgal after earth-tide, instrument-drift, and tare corrections were made. Drift readings were taken at all stops longer than 30 minutes.

Nearly all of the base stations were established at monumented bench marks where horizontal and vertical geodetic control had been established by topographic surveying. Horizontal control was obtained principally from $7\frac{1}{2}$- and 15-minute topographic quadrangle maps of the U.S. Geological Survey (scales of 1:24,000 and 1:62,500, respectively). In areas where these maps were not available, DMATC (Army Map Service) maps at a scale of 1:250,000 were used. Vertical control was obtained by using bench marks from first- to third-order level lines established by the U.S. Coast and Geodetic Survey (now part of the National Oceanographic and Atmospheric Sciences Administration-NOAA), U.S. Geological Survey, or other federal, state, or city agencies. In areas where bench marks of this type were not available, spot elevations (usually established by photogrammetric means) or check spot elevations (usually established by spirit leveling) from topographic maps were used.

The stations were established at localities considered to be relatively permanent, such as courthouses, schools, and other public buildings, and at sites near major roads or airports that are easily accessible. Descriptions and maps showing the locations of each state base station are included in Appendix V, those of resurveyed local base stations in Appendix VI, those of the USNGBN stations in Appendix VII and those of the USNGBN excenter stations in Seattle in Appendix VIII. Since the network was first established, the Chelan station has been reported destroyed and unrecoverable; the principal facts and description of this station are included, however, because some older regional or local gravity surveys may have been tied to this station and the observations were necessary to the network. Destruction of other stations should be reported promptly so that new substitute stations can be established.

DATA REDUCTION AND ADJUSTMENT

The gravity data were reduced and adjusted by DMATC using a UNIVAC 1108 computer and the

computer program GRAVIT (Ziegler, 1972). The reductions included corrections for instrument calibration and scale, earth tides, instrument drift, and possible instrument tares and jumps. The scale factors shown in table 1 were applied prior to adjustment. The USNGBN stations were held fixed, Seattle C at 980737.70 mgals, Spokane J at 980646.72 mgals, Portland K at 980647.50 mgals, Medford J at 980235.62 mgals, and Boise B at 980217.35 mgals. The total number of observations and loops as well as the statistical parameters for the combined Washington-Oregon base station network are summarized in table 2.

The least squares adjustment of the base station network provides an analysis of the errors in the network that were generated by observational procedures (Ziegler, 1972). These calculations permit an evaluation of the relative accuracy of each station in the network in terms of the confidence that can be placed in the final gravity value for each station. The error propagation statistics for the entire network are shown in table 2. The uncertainty value for each station (see Appendixes I, II, and IV) represents the root mean square (RMS) or 68 percent confidence level for the station with respect to the fixed USNGBN stations. Among the state base stations, only White River had an RMS as large as ±0.03 mgal; among the local base stations, only Port Angeles (W-85) had an RMS that large. The standard error for any single observation in the entire network is ±0.03 mgal. The uncertainty value for each station is a function of the consistency of observations at the station, the number of observations at the station, and the geometry of its ties to the fixed USNGBN

TABLE 2.—Summary of observations, loops, and statistical parameters for combined Washington-Oregon state base stations network

Fixed stations (USNGBN)	5
Drift stations	12
State base stations	88
Total stations:	105
Number of observations	869
Number of loops	102
Mean loop root mean square	±0.01 mgal
Maximum loop root mean square	±0.09 mgal
Standard error for a single observation	±0.03 mgal
Mean standard propagated error at a station	±0.02 mgal
Maximum standard propagated error at a station	±0.03 mgal

TABLE 3.—Revised gravity values derived from the Washington-Oregon base station network adjustment of some USNGBN stations in Seattle

Station	Gravity value based on 1973 adjustment (mgals)	USNGBN value (mgals)	Difference (mgals)
Seattle A	980 737.98±0.02	980 738.02	-0.04
Seattle B	980 738.00±0.02	980 738.05	-0.05
Seattle J (1965)	980 775.43±0.01	980 775.46	-0.03
Seattle J (1967)	980 775.44±0.01	980 775.46	-0.02
Seattle Q	980 737.13±0.01	980 737.17	-0.04

TABLE 4.—Corrections and uncertainties of gravimeter scale factors derived from the Washington-Oregon base station network adjustment

Instrument number	Corrections to scale factor (mgals)	67 percent confidence level for scale factor (mgals)	New scale factor derived from calibration tests and network adjustment* (mgals)
10	-0.00040	±.00012	0.99960
12	-0.00019	±.00011	0.99587
24	+0.00070	±.00013	1.00070
41	-0.00152	±.00020	0.99905
42	0.00000	±.00004	1.00046
64	-0.00145	±.00020	0.99901
67	-0.00029	±.00011	1.00016
68	-0.00014	±.00010	1.00008
115	+0.00006	±.00004	1.00023

*Algebraic sum of scale factor given in table 1 and correction to scale factor given here in column 2.

stations. Those stations tied most directly to the USNGBN stations generally have the lowest uncertainty values.

The computer reduction and network adjustment of the gravity data also generated new values for some USNGBN stations, which were not held fixed in the adjustment; the revised values for those stations in Seattle are shown in table 3. These discrepancies in USNGBN station values are indicative of some of the difficulties encountered by attempting to intertie two gravity networks in which the relative precision of all parts of both networks is incompletely known. It is possible that some of the differences in gravity values in the Seattle area result from temporal changes in gravity caused by elevation changes related to tectonic uplift or downwarping (Couch, 1967). By holding one or more of the other USNGBN stations in Seattle fixed, the adjusted values of the base station network might be altered, but such a readjustment is not warranted until all the causes of the discrepancies are understood.

The network adjustment permitted the determination of corrections to the gravimeter scale factors for the Washington-Oregon gravity interval; these corrections, their reliability, and the new scale factors are listed in table 4. The scale factor corrections would not have yielded significantly different revised values for the Seattle USNGBN stations if one of the other Seattle USNGBN stations had been held fixed.

Free-air or simple Bouguer anomalies for each station may be calculated using the appropriate free-air correction of 0.30855 mgal/meter and simple Bouguer correction of 0.1119 mgal/meter, respectively, assuming a density of 2.67 gm/cc.

RESULTS

The results of the gravity survey are given in the Appendixes. The principal facts (station name, latitude, longitude, elevation, observed gravity after reduction and adjustment, and station uncertainty) are given for the state base stations in Appendix I, the local base stations in Appendix II, the USNGBN stations used in the network adjustment in Appendix III, and the USNGBN excenters stations in Seattle in Appendix IV.

Descriptions and maps showing the base station locations are given for the state base stations in Appendix V, the local base stations in Appendix VI, the USNGBN stations in Appendix VII, and the USNGBN excenter stations in Seattle in Appendix VIII. The descriptions provide the following information:

Station name

Location by city and state

Latitude, longitude and elevation

Nature, inscription, and source of the bench marks used for the stations; the name and scale of maps or other sources that show the location of the station or bench mark

Reference and source for the elevation of the station or bench mark; differences between the elevation of the station and elevation of the bench mark in cases where the bench mark is emplaced vertically on walls rather than on the ground or where the instrument could not be placed directly over the bench mark

Description of the location of and access to the station

Oriented map showing the location of the station

Date, agency, and individual(s) who last recovered or established the station

Where not stated otherwise, the gravity meter was placed directly over the bench mark. The elevation given on the description forms and in the principal facts is the elevation of the station, not the elevation of the bench mark.

ACKNOWLEDGMENTS

I gratefully acknowledge the work of R. E. Ziegler, of DMATC, who supervised the reduction of the observed gravity data and wrote the computer programs for the reduction and adjustment of the network; R. B. Veruff, of DMATC, who supervised the field surveys and ensured logistical support; and Professor Z. F. Daneš, of the University of Puget Sound in Tacoma, who provided invaluable assistance during the fieldwork phase of the report. The base station network was established by the following DMATC personnel: S. Hummell in 1965, T. H. Nilsen and J. F. Lambert in 1967, R. B. Beruff in 1971, and R. E. Russman, D. A. Bailey, and W. G. Spita in 1972. The manuscript has benefitted from critical reviews by D. F. Barnes, W. F. Hanna, S. L. Robbins, W. E. Bonini, Z. F. Daneš, R. S. Crosson, N. I. Christensen, V. E. Livingston, R. E. Ziegler, and R. B. Beruff.

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APPENDIX I

PRINCIPAL FACTS OF STATE GRAVITY BASE STATIONS

Station name	Latitude (north)	Longitude (west)	Elevation (meters)	Observed gravity (mgal)	Station uncertainty (± mgal)
Aberdeen	46°58.6	123°49.1	5.8	980782.05	±0.01
Bellingham	48°45.2	122°29.1	5.0	888.09	.02
Bremerton	47°33.6	122°38.8	4.5	829.23	.02
Brinnon	47°37.7	122°57.5	4.2	855.12	.02
Chehalis	46°39.7	122°58.1	56.6	747.01	.01
Chelan (destroyed)	47°48.5	119°58.5	226.9	750.02	.01
Colfax	46°53.0	117°22.0	598.6	579.14	.02
Connell	46°39.8	118°51.7	256.0	660.23	.01
Coulee City	47°37.2	119°18.5	481.4	701.35	.02
Coulee Dam	47°57.3	118°59.2	344.6	724.28	.02
Darrington	48°18.2	121°36.0	169.4	784.42	.01
Delaney	46°30.5	117°58.5	285.3	614.23	.02
Diablo Dam	48°42.9	121°07.8	371.9	747.55	.02
Easton	47°15.1	121°11.0	676.8	605.62	.01
Ellensburg	46°59.7	120°32.8	467.3	619.31	.01
Everett	47°58.6	122°12.3	47.2	779.07	.01
Forks	47°56.9	124°22.9	92.6	809.76	.02
Fruitland	48°04.3	118°11.9	557.9	698.66	.01
Glenwood	46°01.0	121°16.5	576.0	524.33	.02
Goldendale	45°49.3	120°49.4	597.8	540.66	.01
Greenwater	47°09.5	121°39.5	513.9	610.58	.02
Kelso	46°08.6	122°54.7	9.0	721.94	.01
Lucerne	48°12.1	120°35.2	337.4	696.85	.02
Metaline Falls	48°51.5	117°22.5	637.0	727.73	.02
Moses Lake	47°05.9	119°19.1	329.3	695.70	.01
Neilton	47°24.7	123°52.9	147.2	784.55	.01
Newport	48°10.7	117°03.0	657.7	700.84	.02
North Bend	47°29.8	121°46.8	134.9	737.02	.01
Odessa	47°20.1	118°41.4	472.3	676.39	.01
Olympia	47°02.7	122°53.3	15.2	816.13	.01

APPENDIX I. Principal facts of gravity base stations in Washington—Continued

Station name	Latitude (north)	Longitude (west)	Elevation (meters)	Observed gravity (mgal)	Station uncertainty (± mgal)
Omak	48°24.2	119°30.7	262.3	980783.70	.02
Oroville	48°56.2	119°26.1	282.3	795.83	.02
Pasco	46°14.2	119°05.6	118.0	660.55	.01
Port Angeles	48°07.4	123°27.3	62.5	870.08	.02
Port Townsend	48°06.7	122°46.0	29.7	858.34	.02
Prosser	46°12.8	119°47.0	207.8	653.05	.02
Raymond	46°41.1	123°44.0	3.1	793.02	.02
Republic	48°37.2	118°43.8	683.0	696.84	.01
Skykomish	47°42.5	121°21.5	283.9	706.02	.01
Sprague	47°19.5	117°58.9	617.2	645.06	.01
Twisp	48°21.7	120°06.8	482.5	734.29	.02
Vancouver	45°37.7	122°40.6	23.6	642.03	.01
Walla Walla	46°03.9	118°20.5	286.1	587.41	.01
Wenatchee	47°25.2	120°19.5	221.4	710.76	.01
White River	46°58.7	121°32.5	842.6	526.44	.03
White Swan	46°22.9	120°44.0	297.6	608.80	.01
Yakima	46°36.3	120°30.3	324.6	616.81	.01

APPENDIX II

PRINCIPAL FACTS OF SOME LOCAL GRAVITY BASE STATIONS

Station name	Latitude (north)	Longitude (west)	Elevation (meters)	Observed gravity (mgal)	Station uncertainty (± mgal)
Bellevue	47°34.8	122°08.0	?	980726.03	±0.02
Everett South	47°58.3	122°12.7	53.2	777.69	.02
Everett W-61	47°58.7	122°12.5	41	779.84	.02
Moclips W-107	47°03.4	122°52.7	17.2	770.20	.02
Olympia 29	47°02.8	122°53.3	18.2	814.66	.02
Port Angeles W-85	48°07.0	123°25.9	25.0	874.33	.03
Port Townsend W-62	48°06.7	122°46.1	32	857.82	.02
Seattle More Hall	47°39.2	122°18.2	32.0	737.36	.02
Tacoma Howarth Hall	47°15.8	122°28.7	109.7	771.62	.01
Tacoma Thompson Building	47°15.8	122°28.9	?	770.28	.02
Tacoma W-68	47°15.2	122°26.2	261.5	785.65	.02

APPENDIX III

PRINCIPAL FACTS OF USNGBN STATIONS USED IN THE NETWORK ADJUSTMENT

Station name	Latitude (north)	Longitude (west)	Elevation (meters)	Observed gravity (mgal)
Seattle C	47°36.1	122°19.8	17.9	980737.70
Spokane J	47°37.0	117°32.0	723.0	980646.72
Portland K	45°35.0	122°36.0	7.0	980647.50
Medford J	42°22.2	122°52.2	403.8	980235.62
Boise B	43°36.7	116°12.7	814.0	980217.35

APPENDIX IV

PRINCIPAL FACTS OF USNGBN EXCENTER STATIONS ESTABLISHED IN SEATTLE

Station name	Latitude (north)	Longitude (west)	Elevation (meters)	Observed gravity (mgal)	Station uncertainty (±mgal)
Seattle TB	47°26.6	122°18.1	121.0	980774.42	.01
Seattle TC	47°26.6	122°18.0	113.5	980776.68	.01

APPENDIX V

DESCRIPTIONS OF STATE GRAVITY BASE STATIONS

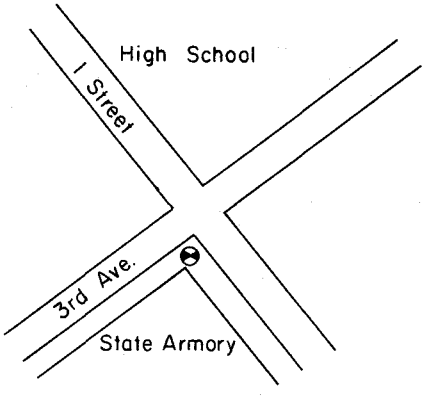
The following abbreviations are used on these and other descriptions: USGS— U.S. Geological Survey; USCGS or USC+GS— U.S. Coast and Geodetic Survey (now National Oceanographic and Atmospheric Sciences Administration); DMATC—Defense Mapping Agency Topographic Center; USBR— U.S. Bureau of Reclamation; USACE—U.S. Army Corps of Engineers; BPR—Bureau of Public Roads. The locations of the base stations on maps are shown by ⊖ .

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Aberdeen B
COUNTRY	STATE	CITY
USA	Washington	Aberdeen
LATITUDE	LONGITUDE	ELEVATION
46°58.6' N.	123°49.1' W.	5.8 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	18.658 Aberdeen 1933
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Aberdeen
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	Aberdeen 1933
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on USC+GS bench mark "18.658 Aberdeen," which is set in the top of a concrete post at the northeast corner of the National Guard Armory at the intersection of East Third Ave. and I St. in central Aberdeen, Washington. The concrete post, flush with the ground, is located 90 feet north of the main entrance to the Armory, 19.4 feet north of the north corner of the building, and 2.8 feet east of the west sidewalk. The Armory is located 3 blocks northwest of City Hall and 4 blocks northwest of U.S. Highway 101 along I Street.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman	DMATC	June 9, 1972

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Bellingham B
COUNTRY	STATE	CITY
USA	Washington	Bellingham
LATITUDE	LONGITUDE	ELEVATION
48°45.2' N.	122°29.1' W.	5 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None	-	-
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Bellingham North 1954
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	N6 Reset 1951

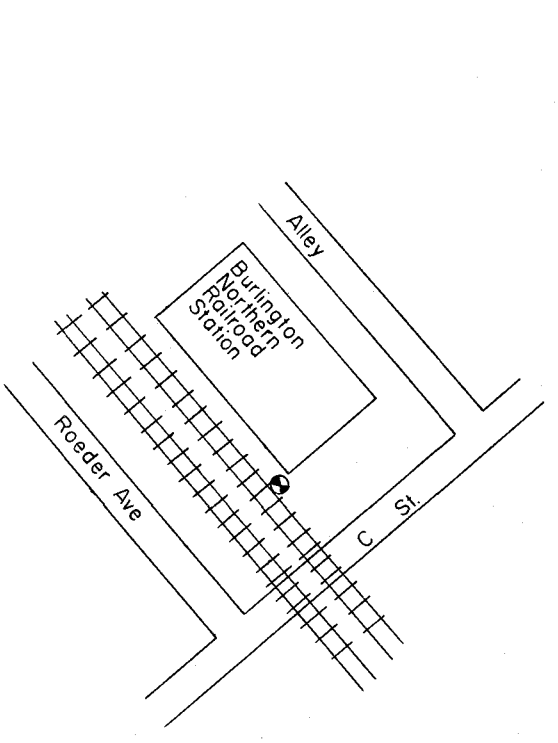
POSITION/ELEVATION REMARKS

Gravity station located .2 meter below bench mark.

DESCRIPTION

The station is located on the pavement underneath USC+GS bench mark "N6 Reset 1951," about 1 foot southwest of the south corner of the Burlington Northern railroad station building near the intersection of Roeder Ave. and C St. in central Bellingham.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman, D. A. Bailey	DMATC	June 1972

TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

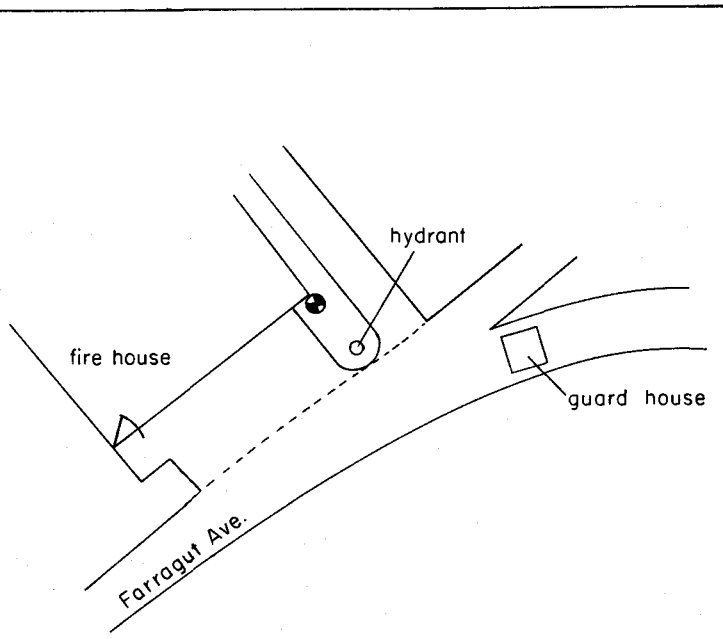
GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Bremerton B
COUNTRY	STATE	CITY
USA	Washington	Bremerton
LATITUDE	LONGITUDE	ELEVATION
47°33.6' N.	122°38.8' W.	4.5 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Bremerton West
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	XX255

POSITION/ELEVATION REMARKS

Gravity station 2.5 feet below bench mark

DESCRIPTION The station is located on the concrete sidewalk 2.5 feet below USC+GS bench mark "XX255 1944," which is set vertically in the east wall of Fire Station No. 2 (Building 503) of the Puget Sound Navy Yard in the southern part of Bremerton, Washington. The station is one foot west of the southeast corner of the fire station, adjacent to a driveway to the rear of the building. The fire station is located north of and 0.2 mile east along Farragut Ave. from the Charleston Gate entrance to the navy yard, which is located on Washington Highway 3.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman	DMATC	June 13, 1972

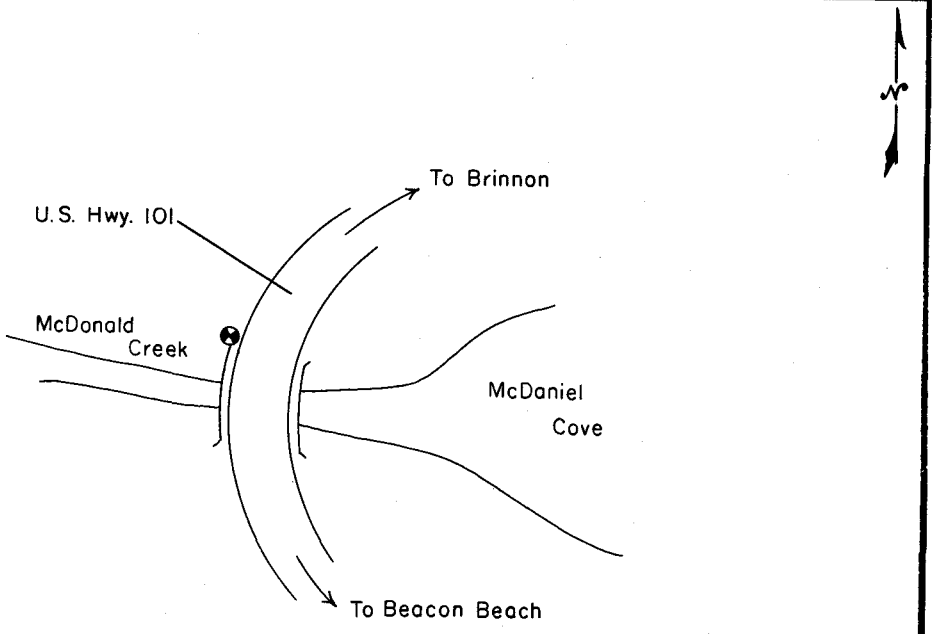
TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Brinnon B
COUNTRY	STATE	CITY
USA	Washington	Brinnon
LATITUDE	LONGITUDE	ELEVATION
47°37.7' N.	122°57.5' W.	4.2 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	T15-1931
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Brinnon
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	T15
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located on USC+GS bench mark "13.871 T15 1931," which is set in the top of the west end of the north concrete abutment of bridge 9/202 over McDonald Creek, about 5.2 miles south along U.S. Highway 101 from Brinnon, Washington. The bridge is located 2.4 miles south of the Jefferson-Mason County Line, where the highway turns west at McDaniel Cove.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman	DMATC	June 1972

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Chehalis B
COUNTRY	STATE	CITY
USA	Washington	Chehalis
LATITUDE	LONGITUDE	ELEVATION
46°39.7' N.	122°58.1' W.	56.6 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None	-	-
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Centralia
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	185.32 Ex 1932

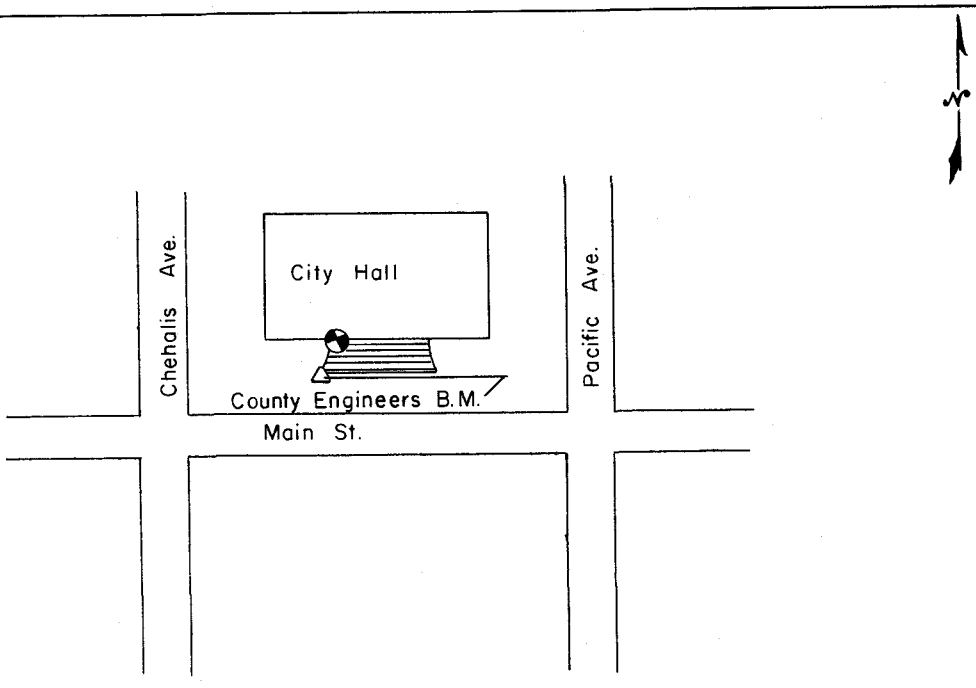
POSITION/ELEVATION REMARKS

Gravity station is 1.1 meters above bench mark.

DESCRIPTION

The station is located 3.6 feet above and 10 feet north of USC+GS bench mark "185.32 Ex 1932," which is set in the top of the west end of the bottom step of the main (south) entrance to the Lewis County Courthouse in downtown Chehalis, Washington. The station is located on the west end of the top step of the entrance, which faces Main St. (Washington Highway 6); the building is on Main St. between Chehalis Ave. and Pacific Ave.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman	DMATC	June 19, 1972

TPC FORM 115-29 MAY 70

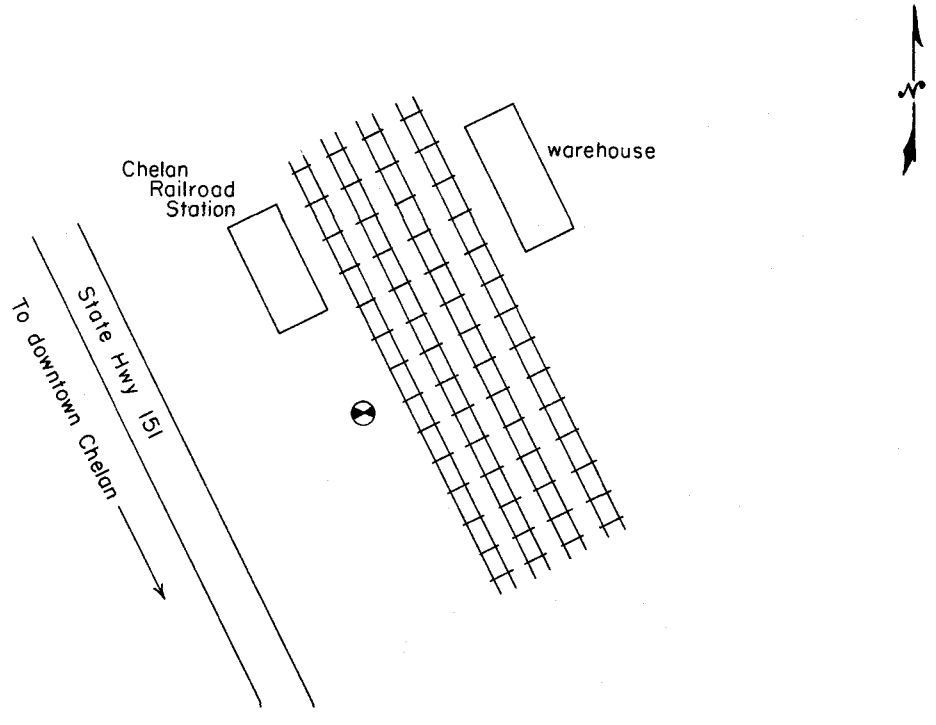
REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Chelan B
COUNTRY	STATE	CITY
USA	Washington	Chelan
LATITUDE	LONGITUDE	ELEVATION
47°48.8' N.	119°58.7' W.	226.855 Meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	X19 1931
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	AMS 1:250,000	Ritzville
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	X19
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on USC+GS bench mark "X19 1931," which is set in the top of a concrete post located south of the Chelan railroad station building between Washington Highway 151 and the railroad tracks in central Chelan, Washington.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
S. Hummell	DMATC	Jan. 9, 1965

TPC FORM 115-29
MAY 70

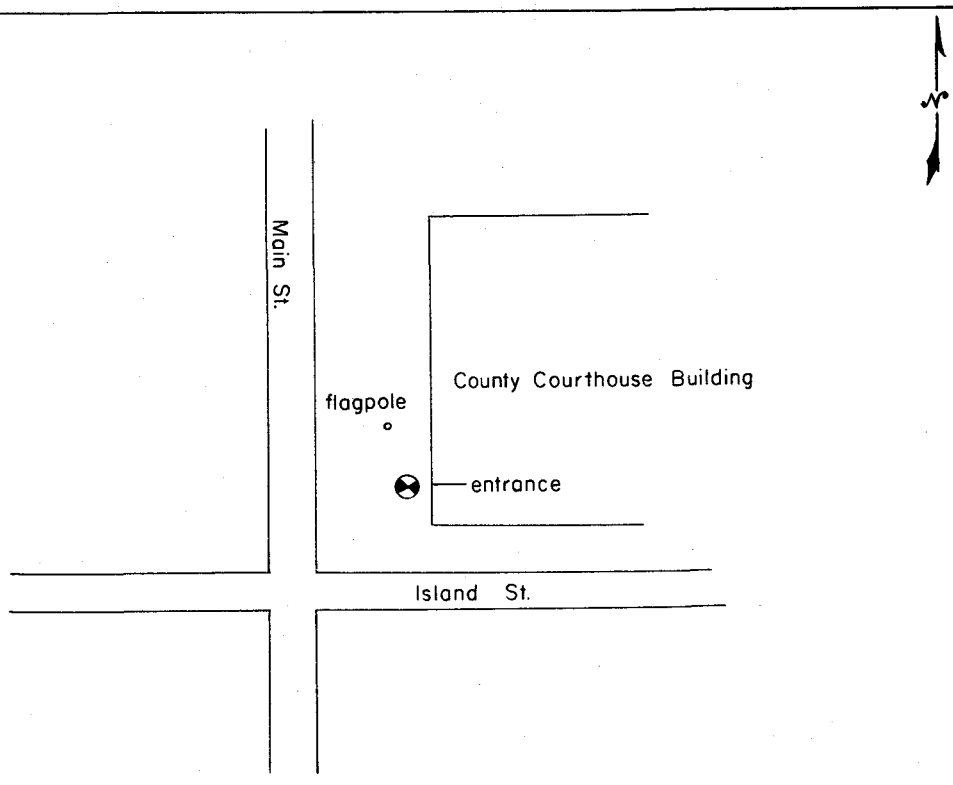
REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Colfax B
COUNTRY	STATE	CITY
USA	Washington	Colfax
LATITUDE	LONGITUDE	ELEVATION
46°53.0' N.	117°22.0' W.	598.6 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Pullman
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USGS	1965 S
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on the concrete sidewalk immediately beneath the bulletin board that is median between the two entrance doorways (southwest entrance) to the Whitman County Courthouse at the intersection of Main St. (U.S. Highway 195) and Island St. in downtown Colfax, Washington. The station is adjacent to USGS bench mark "USGS 1965 S," which is located 14 inches below the ground near the entrance to the courthouse. The station is directly beneath the lettering "1955" on the front wall (facing Main St.) of the courthouse.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29
MAY 70

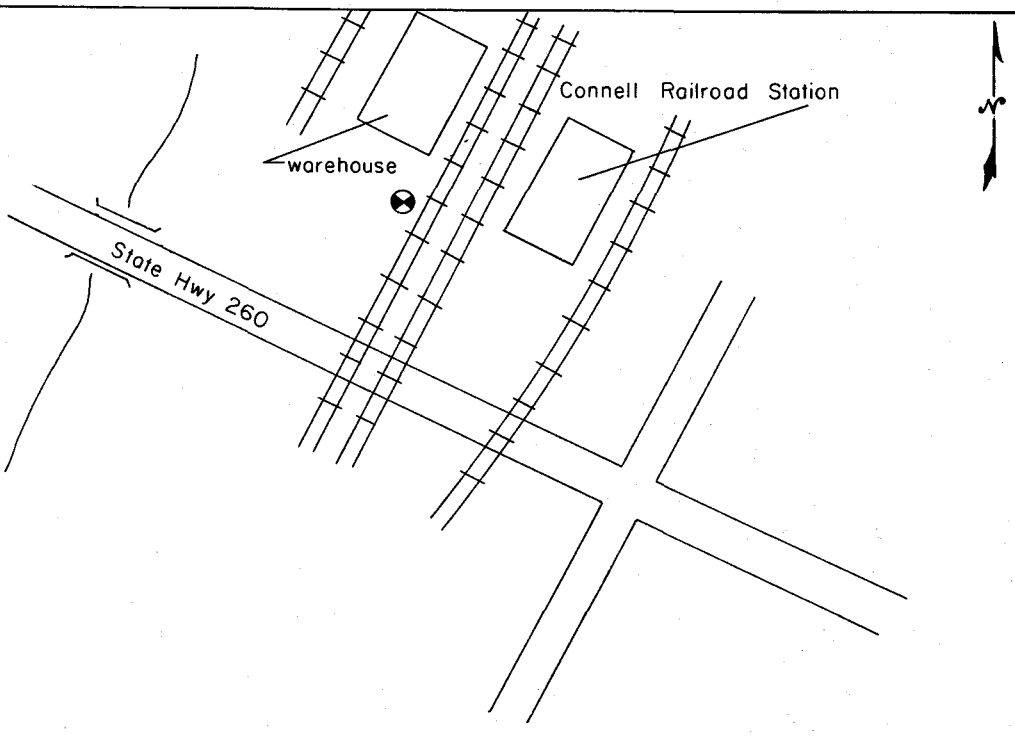
REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Connell B
COUNTRY	STATE	CITY
USA	Washington	Connel
LATITUDE	LONGITUDE	ELEVATION
46°39.8' N.	118°51.7' W.	256.0 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	Y - 34 - 1933
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 30'	Connell
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	Y34
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on USC+GS bench mark "Y34 1933," which is set in the top of a concrete post at the Connell station of the Burlington Northern Railroad. The Connell station is located immediately northwest of a right-angle turn to the west of Washington Highway 260, where it crosses the railroad tracks near downtown Connell, Washington. The concrete post, 0.7 foot high, is located 150 feet southwest of and across the main tracks from the station building, 33 feet southwest of the main track, 200 feet southeast of milepost 110, and about 20 feet southwest of a small shed.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29 MAY 70

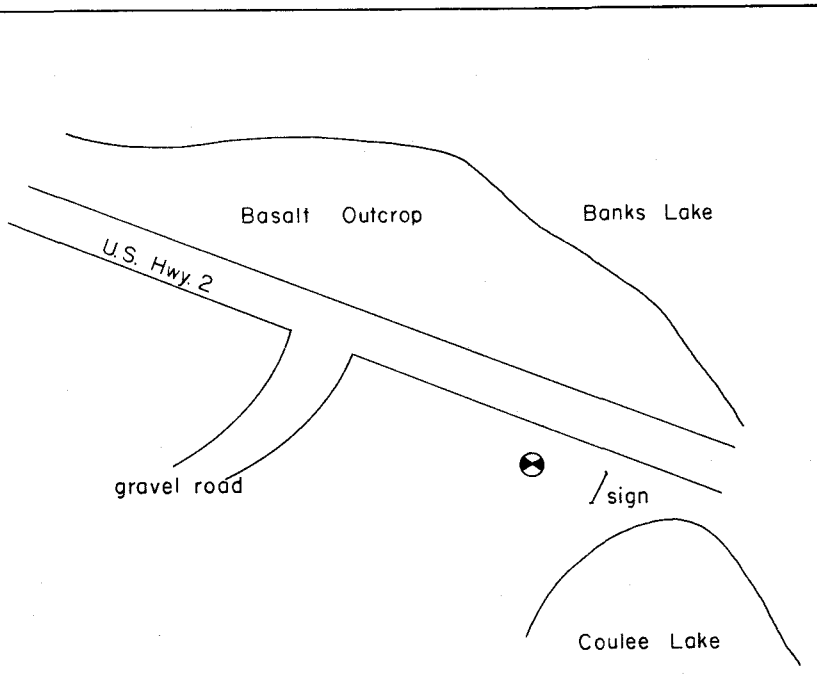
REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Coulee City B
COUNTRY	STATE	CITY
USA	Washington	Coulee City
LATITUDE	LONGITUDE	ELEVATION
47°37.2' N.	119°18.5' W.	481.4 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	J388 1959
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Coulee City
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	J388 1959
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on USC+GS bench mark "J388 1959," which is set flush with the ground in the top of a flat outcrop of lava (basalt), about 0.8 mile west along U.S. Highway 2 from the "T" junction of Fourth St. and U.S. Highway 2 in Coulee City, Washington. The bench mark is located 39 feet southwest of the centerline of the highway, 7.8 feet northeast of a fence, 41 feet west of the west end of a guard rail, and adjacent to a highway sign "Coulee City - right - one mile."

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Coulee Dam B
COUNTRY	STATE	CITY
USA	Washington	Coulee Dam
LATITUDE	LONGITUDE	ELEVATION
47°57.3' N.	118°59.2' W.	344.6 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Grand Coulee Dam
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USBR	Osborne 2

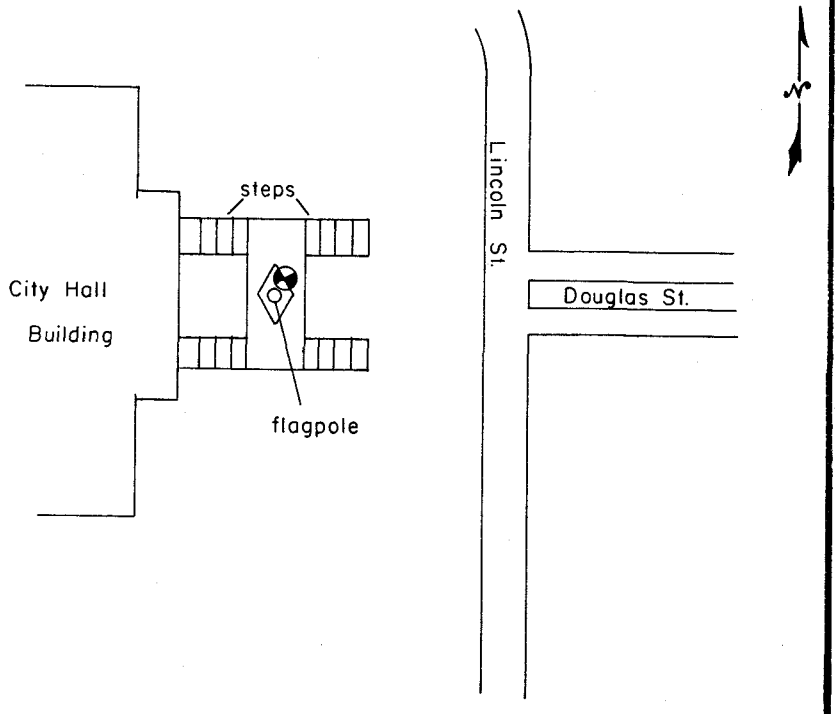
POSITION/ELEVATION REMARKS

Gravity station is located 2.5 meters above bench mark

DESCRIPTION

The station is located on the east end of the bottom step of the concrete base of the flagpole in front of the main (east) entrance to the Coulee Dam City Hall at the intersection of Douglas St. and Lincoln St. in the southwest part of Coulee Dam, Wash., west of the Columbia River. The station is adjacent to USBR bench mark "1123.752 Osborne 2 1935," which is set in a cast-iron monument box in the top of a concrete post about one foot below street level at the center of the intersection of Lincoln and Douglas Sts. The station is about 9 feet above and about 50 feet west of the covered bench mark. The station can be reached by turning west on Douglas St. from Washington Highway 155 for 3 blocks.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29
MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

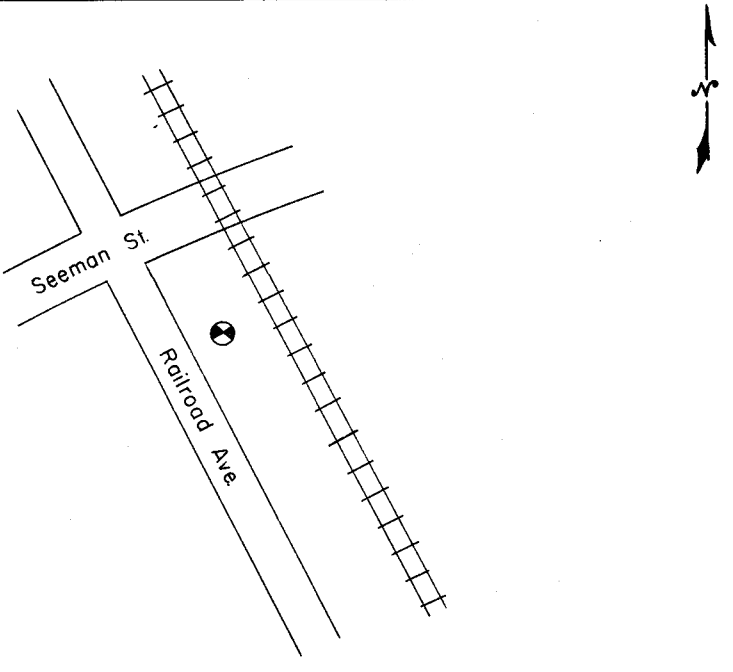
GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Darrington B
COUNTRY	STATE	CITY
USA	Washington	Darrington
LATITUDE	LONGITUDE	ELEVATION
48°18.2' N.	121°36.0' W.	169.4 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	State Highway Dept.	BM 31 106
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Darrington
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	State Highway Dept.	BM 31 106

POSITION/ELEVATION REMARKS

DESCRIPTION

The station is located on a Washington Highway Department bench mark set in the top of a square concrete post in the southeast corner of the intersection of Railroad Ave. and Seeman St. in the northeast part of Darrington, Washington. The concrete post is located between the railroad tracks and Railroad Ave. immediately south of a railroad signal post. The intersection can be reached by traveling 2 blocks north on Railroad Ave. from Washington Highway 530 (Riddle St.).

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman, D. A. Bailey	DMATC	June 1972

TPC FORM 115-29 MAY 70

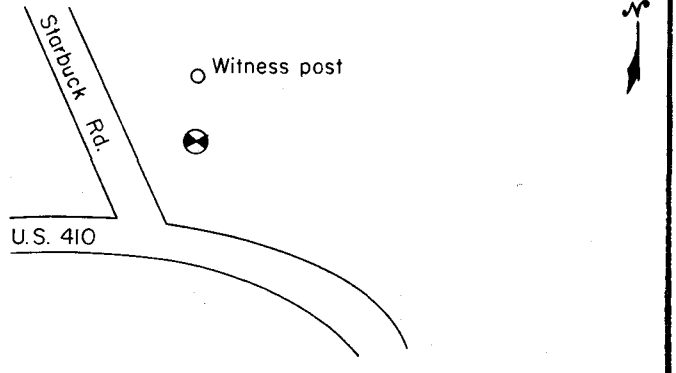
REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Delaney B
COUNTRY	STATE	CITY
USA	Washington	Delaney
LATITUDE	LONGITUDE	ELEVATION
46°30.5' N.	117°58.5' W.	285.3 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	WSCGS	C39 Reset 1966
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Hay
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	C39
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on USC+GS bench mark "C39 Reset 1966," which is set in the top of a concrete post 1.2 miles north along U.S. Highway 410 from the service station at Delaney, Washington. The concrete post, 0.5 foot high, is located about 150 feet north of the "T" junction with a road northwest to Starbuck, Lyons Ferry, and Palouse Falls State Park, 75 feet north of the centerline of the highway, and 1.5 feet south of a white witness post.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

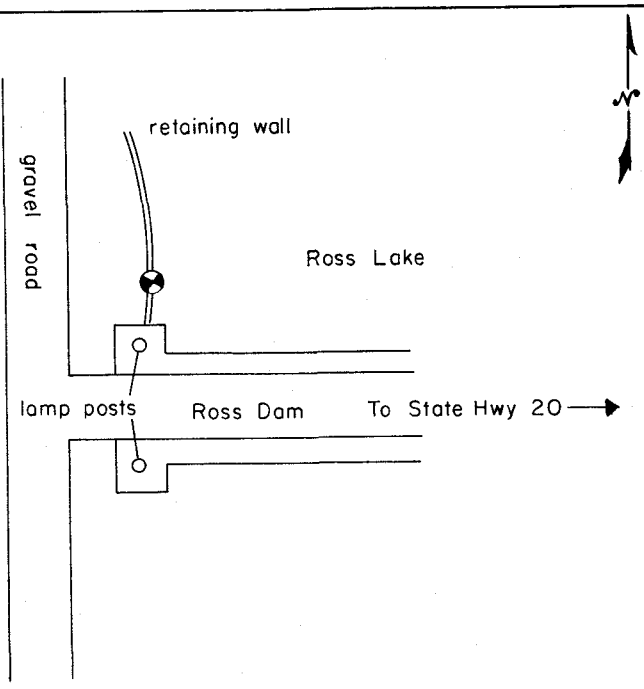
TPC FORM 115-29
MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Diablo Dam B
COUNTRY	STATE	CITY
USA	Washington	Diablo
LATITUDE	LONGITUDE	ELEVATION
48°42.9' N.	121°07.8' W.	371.9 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	Seattle Dept. of Lighting	City of Seattle
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Diablo Dam
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	Seattle Dept. of Lighting	None
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located on City of Seattle Department of Lighting bench mark "City of Seattle," which is set in the top of the concrete retaining wall at the northwest end of Diablo Dam, one-half mile east of Diablo, Washington, in Mount Baker National Forest. The Dam can be reached by traveling 6 miles northeast from Newhalem on Washington Highway 20 and then 0.4 mile northeast on the gravel road to Ross Dam. The bench mark is flush with the top of the dam, 17 feet north of the centerline of the top of the dam, 2.0 feet northeast of a concrete base for a steel lamppost, and 0.8 foot northwest of an iron pipe guardrail.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 13, 1967

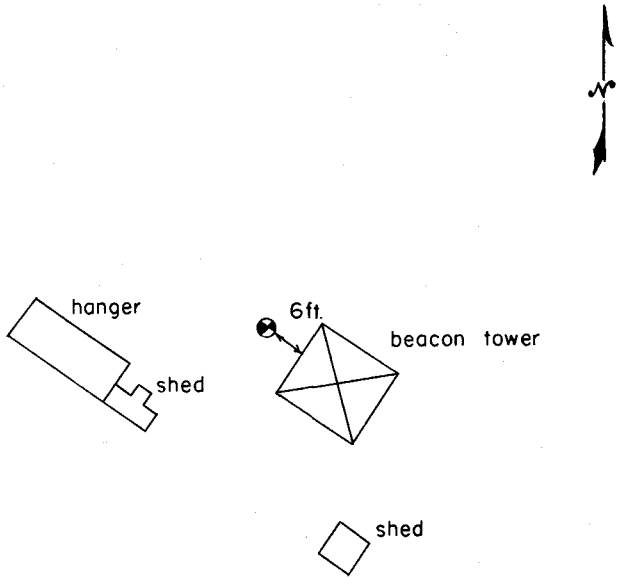
TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Easton J
COUNTRY	STATE	CITY
USA	Washington	Easton
LATITUDE	LONGITUDE	ELEVATION
47°15.1' N.	121°11.0' W.	676.8 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	Easton A - 1944
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Kachess Lake
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	Easton A
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on USC+GS bench mark "Easton A 1944," which is set in the top of a concrete post adjacent to the beacon tower at the Easton Airport, 0.8 mile north along U.S. Highway 10 from the post office at Easton, Washington, and then 0.5 mile northeast along a gravel road to the airport. The concrete post, 0.6 foot high, is located between the beacon tower and the beacon light-control building, 9.8 feet east of the south corner of the building, 8.3 feet south of the east corner, and 5 feet west of the north leg of the beacon tower.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Ellensburg B
COUNTRY	STATE	CITY
USA	Washington	Ellensburg
LATITUDE	LONGITUDE	ELEVATION
46°59.7' N.	120°32.8' W.	467.3 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Ellensburg South
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	R1

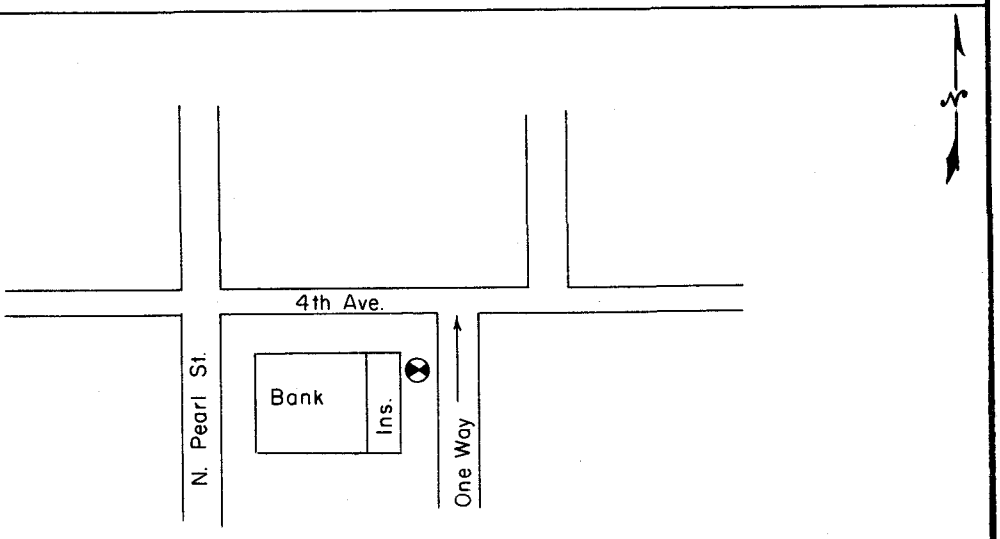
POSITION/ELEVATION REMARKS

Gravity station is 1.1 meters below bench mark.

DESCRIPTION

The station is located on the ground 1.1 meters below USC+GS bench mark "R1 1947," which is set vertically in the east wall of the building occupying the southeast corner of the intersection of Fourth Ave. and North Pearl St. in downtown Ellensburg, Washington. The station is about 3 feet south of the northeast corner of the building, just west of a one-way north driveway exiting into Fourth Ave. The building is presently occupied by the First National Bank of Washington and the Hugh Hitchcock Insurance Company.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman	DMATC	June 7, 1972

TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Everett B
COUNTRY	STATE	CITY
USA	Washington	Everett
LATITUDE	LONGITUDE	ELEVATION
47°58.6' N.	122°12.3' W.	47.2 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS $7\frac{1}{2}$'	Everett
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	R296

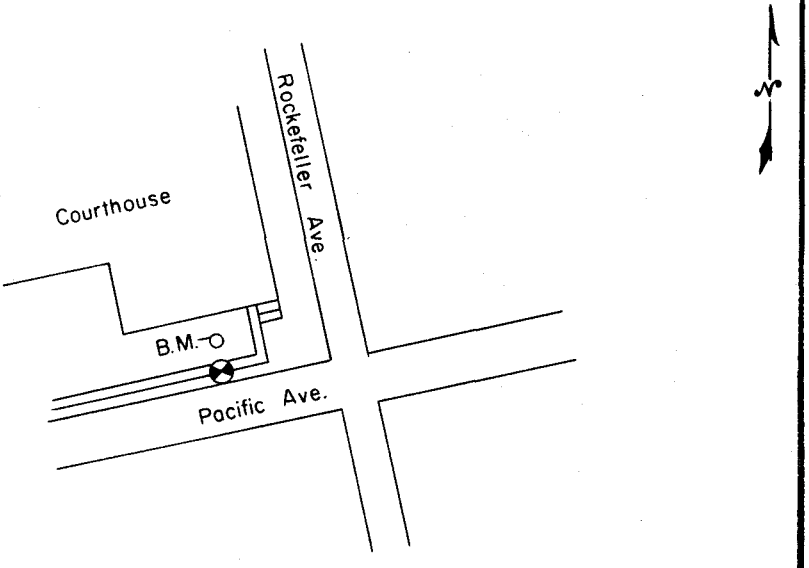
POSITION/ELEVATION REMARKS

Gravity station is 3.0 feet below bench mark.

DESCRIPTION

The station is located 3.0 feet below and 4.0 feet south of USC+GS bench mark "R296," which is set in the top of the south concrete retaining wall surrounding the Snohomish County Courthouse at the intersection of Pacific Ave. and Rockefeller Ave. near downtown Everett, Washington. The bench mark is located 5.3 feet west of the southeast corner of the building. The station is located on a small projection of the concrete sidewalk toward the building.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman	DMATC	June 6, 1972

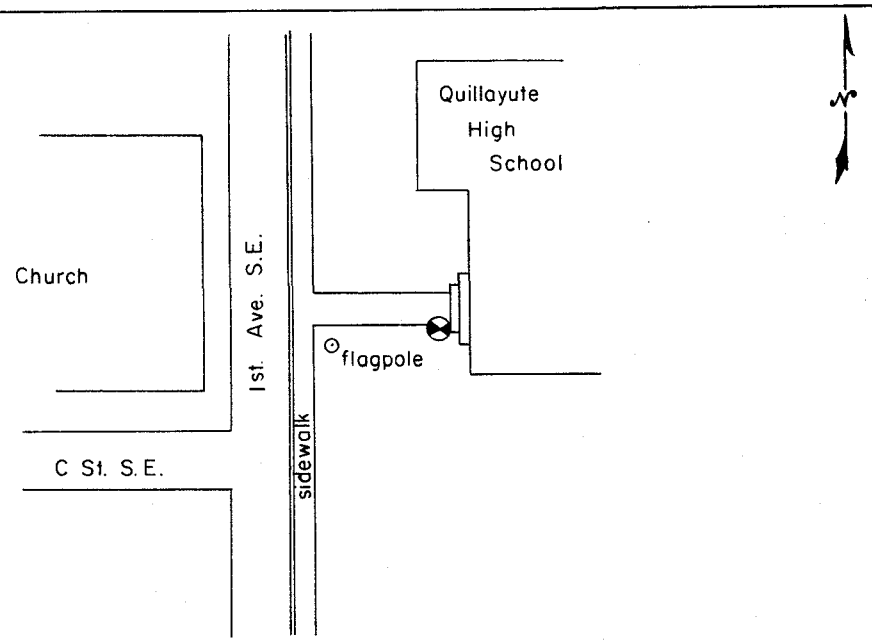
TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Forks B
COUNTRY	STATE	CITY
USA	Washington	Forks
LATITUDE	LONGITUDE	ELEVATION
47°56.9' N.	124°22.9' W.	92.6 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Forks
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	Z27
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located on the south end of the bottom step of the main (west) entrance to Quillayute High School at the intersection of C St. SE. and First Ave. SE. near downtown Forks, Washington. The station is level with and adjacent to USC+GS bench mark "303.556 Z27 1933," which is set vertically in the west face of concrete foundation of the school, one foot south of the south side of the recessed entranceway.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman	DMATC	June 1972

TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

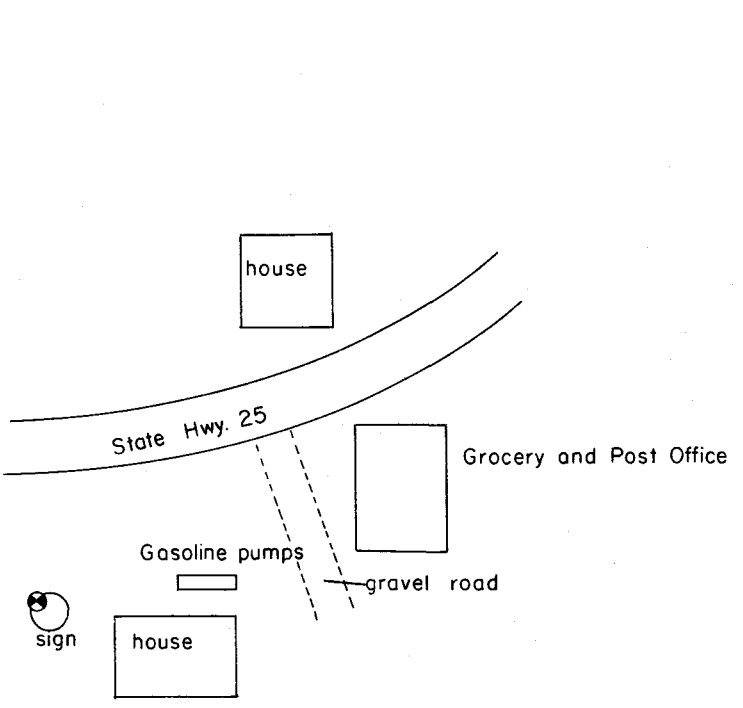
GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Fruitland B
COUNTRY	STATE	CITY
USA	Washington	Fruitland
LATITUDE	LONGITUDE	ELEVATION
48°04.3' N.	118°11.9' W.	557.9 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Hunters
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	N31

POSITION/ELEVATION REMARKS

Bench mark not recovered. Elevation assumed.

DESCRIPTION The station is located on the concrete base of a "Chevron Gasoline" sign suspended from a tall post just south of the Chevron service station in Fruitland, Washington, at the intersection of Washington Highway 25 and a gravel road east to Turk. The station is adjacent to the former location of USC+GS bench mark "N31 1933," which was not recovered. The station is located about 30 feet east of the centerline of the highway and about 50 feet south of the gasoline pumps.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

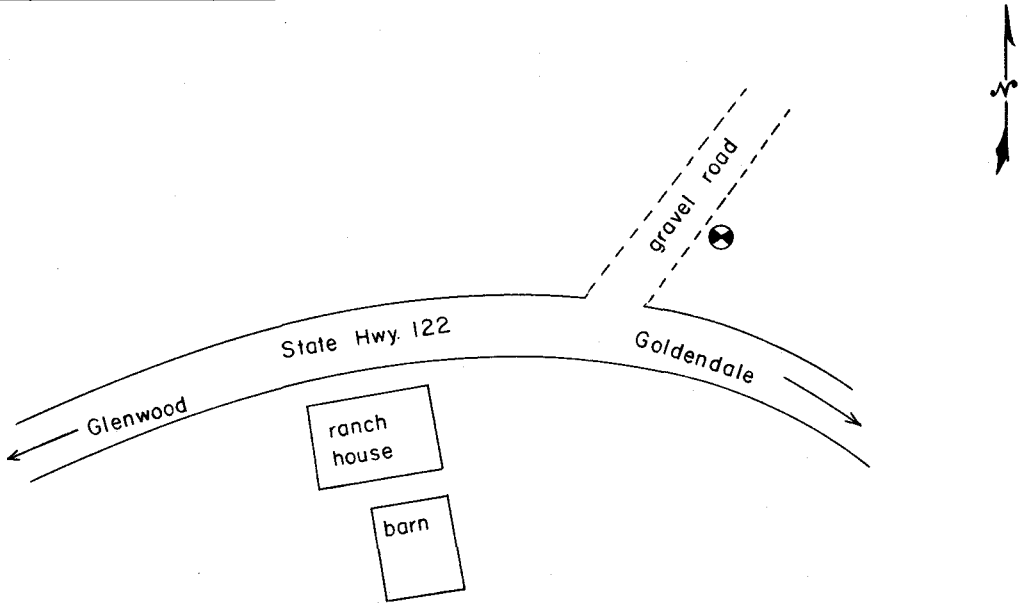
GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Glenwood B
COUNTRY	STATE	CITY
USA	Washington	Glenwood
LATITUDE	LONGITUDE	ELEVATION
46°01.0' N.	121°16.5' W.	576.0 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	R - 275 - 1946
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 30'	Mount Adams
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	R275

POSITION/ELEVATION REMARKS

DESCRIPTION

The station is located on USC+GS bench mark "R275 1946," which is set in a concrete post 0.3 miles east of the Glenwood School in Glenwood, Washington, along the Glenwood to Goldendale Road. The concrete post, 0.5 foot high, is located 65 feet north of the centerline of the Glenwood-Goldendale Road and 21 feet east of the centerline of a gravel road that makes a "T" intersection with the Glenwood-Goldendale Road; this gravel road goes north to the Flying L Range, the Cougar Creek G.S., and Big Muddy Road. The post is one foot west of a barbed wire fence and 15 feet north of a telephone pole.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Goldendale B
COUNTRY	STATE	CITY
USA	Washington	Goldendale
LATITUDE	LONGITUDE	ELEVATION
45°49.3' N.	120°49.4' W.	498.9 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Goldendale, Washington
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	S42

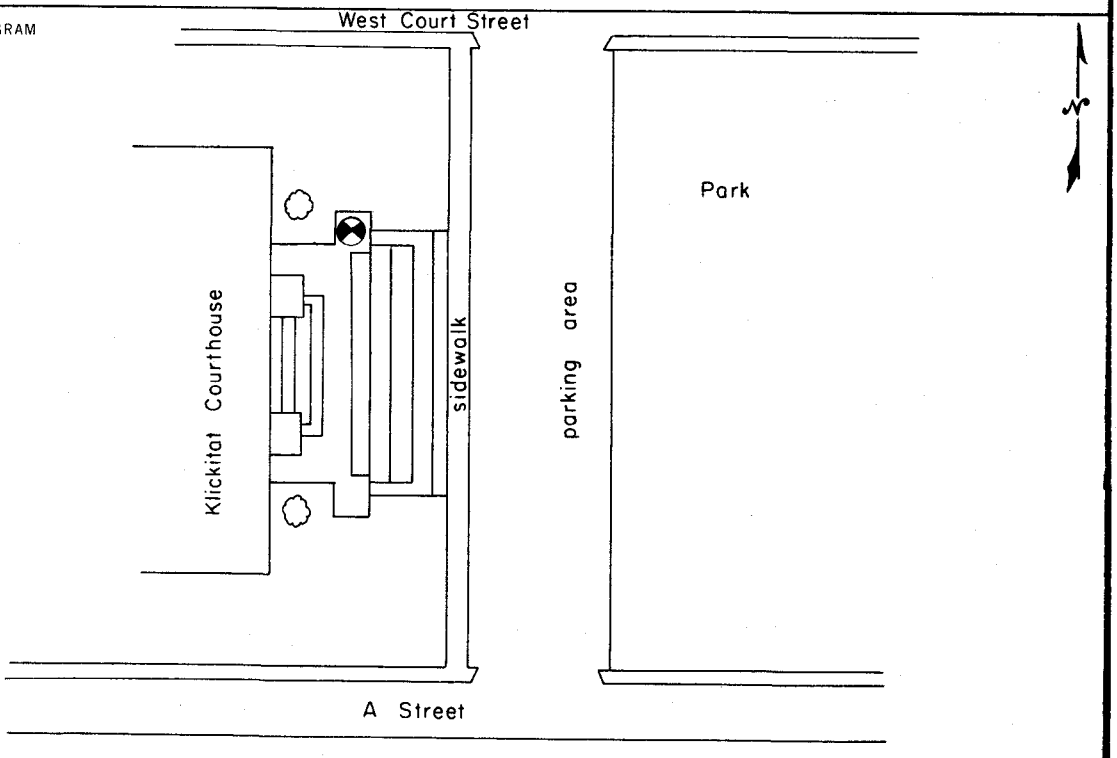
POSITION/ELEVATION REMARKS

Gravity station is 1.1 meters above bench mark.

DESCRIPTION

The station is located about 200 feet west-southwest and 1.1 meters above USC+GS bench mark "S42 1933," on the north coping above the sidewalk of the first landing to the Columbus Ave. entrance to the Klickitat County Courthouse between West Court St. and A St. in central Goldendale, Washington.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. B. Beruff	DMATC	June 1971

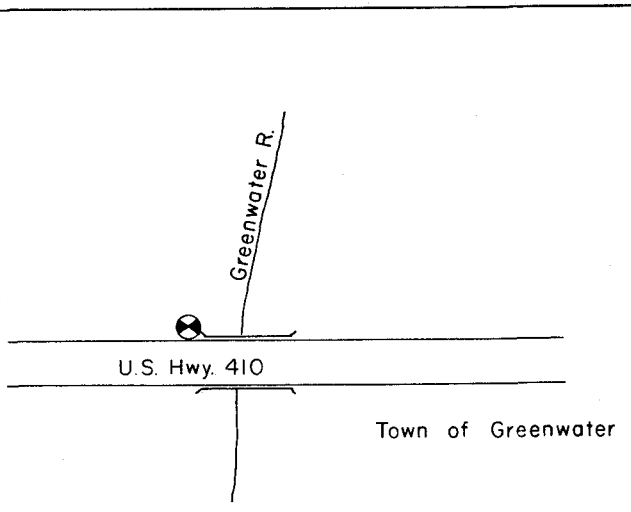
TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Greenwater B
COUNTRY	STATE	CITY
USA	Washington	Greenwater
LATITUDE	LONGITUDE	ELEVATION
47°09.5' N.	121°39.5' W.	513.9 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USGS	SWF 1955
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Greenwater
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Benchmark	USGS	SWF 1955
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located on USGS bench mark "SWF 1955," which is set in the top of the northwestern concrete abutment of the bridge over the Greenwater River along U.S. Highway 410 in Greenwater, Washington.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Kelso B
COUNTRY	STATE	CITY
USA	Washington	Kelso
LATITUDE	LONGITUDE	ELEVATION
46°08.6' N.	122°54.7' W.	9.0 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½	Kelso
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	FTL8

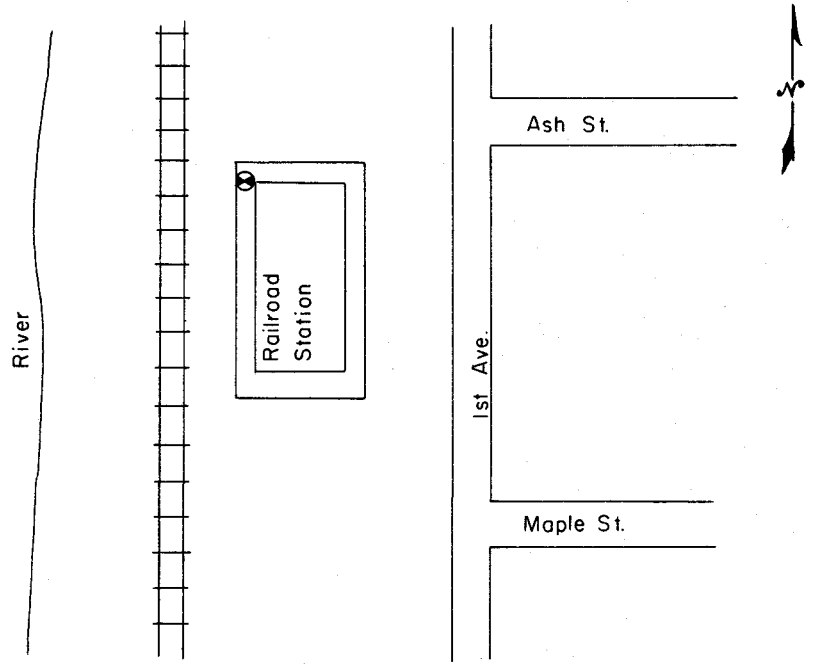
POSITION/ELEVATION REMARKS

Gravity station 7.6 cm below bench mark.

DESCRIPTION

The station is located on the brick waiting platform directly below USGS bench mark "Elev 29.153 FTL8 1920," which is set vertically in the west face of the stone water table at the northwest corner of the Kelso station of the Burlington Northern Railroad on First Ave. between Ash St. and Maple St. in downtown Kelso, Washington. The bench mark is located 3 inches above the brick platform and 6 inches south of the northwest corner of the station.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29 MAY 70

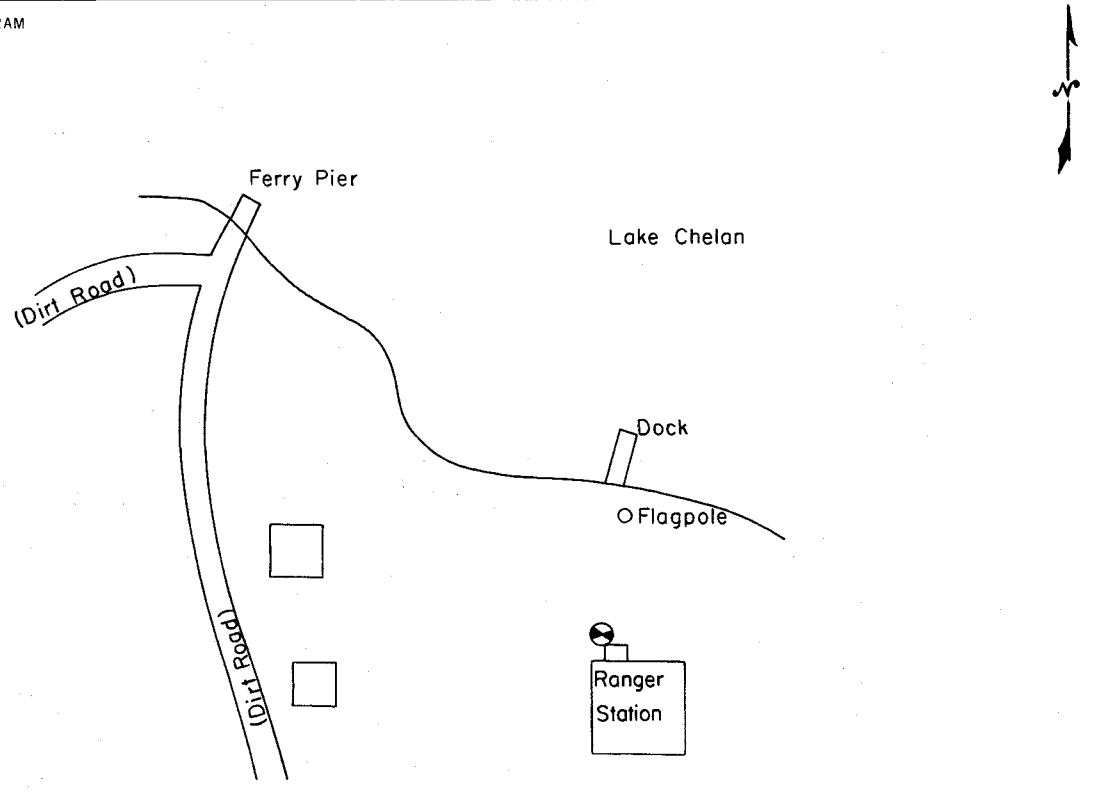
REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Lucerne B
COUNTRY	STATE	CITY
USA	Washington	Lucerne
LATITUDE	LONGITUDE	ELEVATION
48°12.1' N.	120°35.2' N.	337.4 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Lucerne
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Temporary mark	UPS	None
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on a University of Puget Sound temporary bench mark painted on the northwest end of the lower step of the main entrance to the ranger station at Lucerne, Washington. The bench mark is indicated by a painted white cross on the step, which faces Lake Chelan. Access to Lucerne is by Lake Chelan Ferry northwest from Chelan. The ranger station is located about 500 feet southeast of the ferry pier.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Metaline Falls B
COUNTRY	STATE	CITY
USA	Washington	Metaline Falls
LATITUDE	LONGITUDE	ELEVATION
48°51.5' N.	117°22.5' W.	637.0 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 30'	Metaline
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	F235

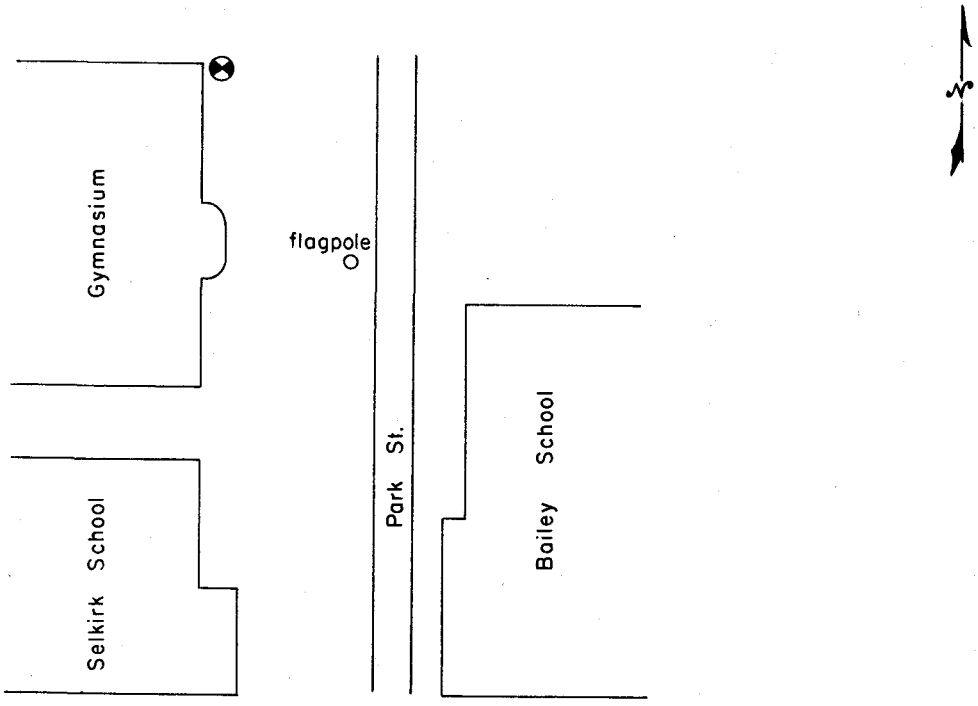
POSITION/ELEVATION REMARKS

Gravity station is 3.0 feet below bench mark.

DESCRIPTION

The station is located 3 feet below USC+GS bench mark "F235 1942," which is set vertically in the east wall of the gymnasium building immediately north of Selkirk Junior High School and across Park Street from the Lillian M. Bailey Elementary School near downtown Metaline Falls, Washington. The bench mark is located 2 feet south of the northeast corner of the gymnasium and 39 feet northwest of the east door leading to the gymnasium.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

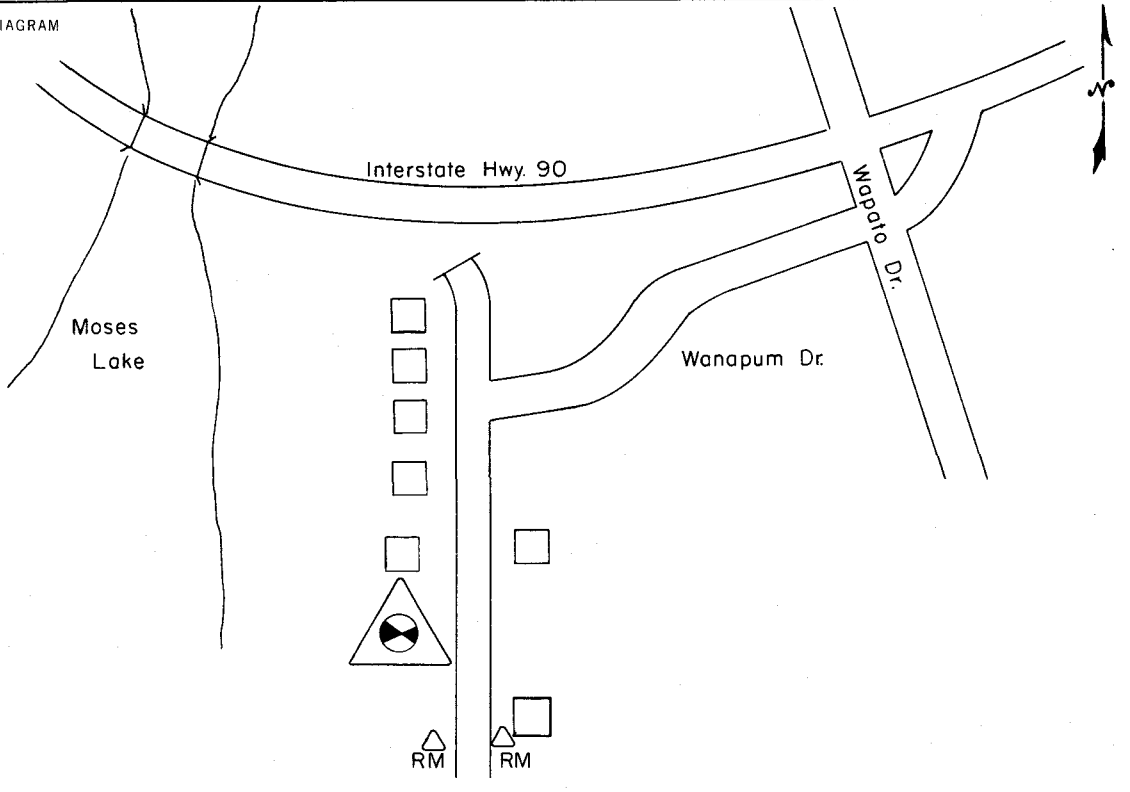
TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Moses Lake B
COUNTRY	STATE	CITY
USA	Washington	Moses Lake
LATITUDE	LONGITUDE	ELEVATION
47°05.9' N.	119°19.1' W.	329.3 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	Parker 1957
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Moses Lake South 1956
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	Parker 1957
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located on USC+GS bench mark "Parker 1957," which is set into a concrete post located 25 feet west of the centerline of Lakeshore Drive, about 1000 feet south of the intersection of Lakeshore Drive and Interstate Highway 90 where it crosses the western arm of Moses Lake, approximately 2 miles southwest of the town of Moses Lake, Washington. The station is located 6 feet south of a white witness post marked "USA" and about 20 feet north of two reference marks located on the east and west sides of Lakeshore Drive.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman, D. A. Bailey	DMATC	June 1972

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

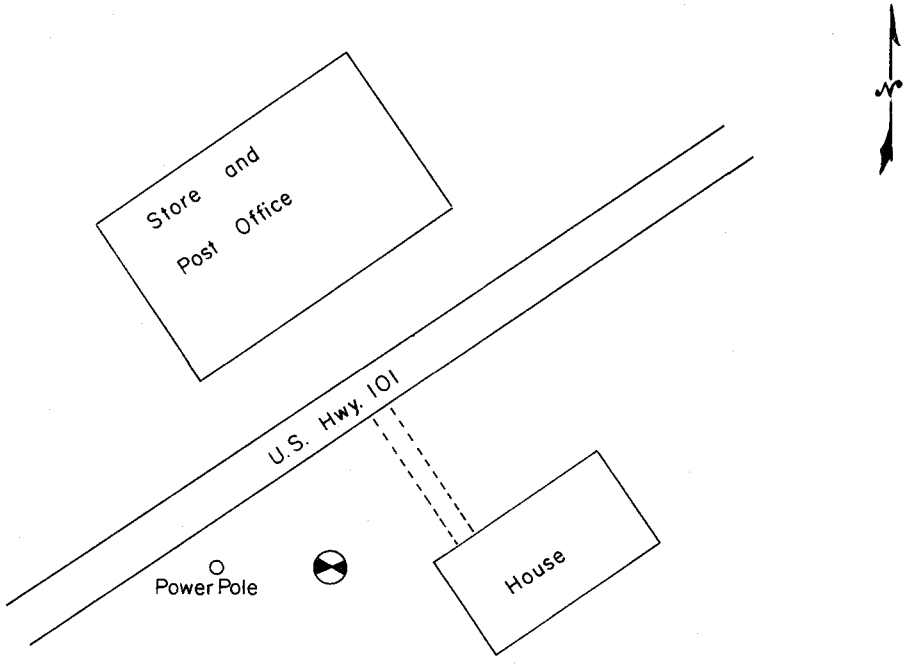
GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Neilton B
COUNTRY	STATE	CITY
USA	Washington	Neilton
LATITUDE	LONGITUDE	ELEVATION
47°24.7' N.	123°52.9' W.	147.2 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	N-26-1933
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Quinault Lake
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	N26

POSITION/ELEVATION REMARKS

DESCRIPTION

The station is located on USC+GS bench mark "482.512 N 26 1933," which is set into a concrete post across U.S. Highway 101 from and directly opposite the post office and general store in Neilton, Washington, about 3.5 miles south of Quinault Lake (sec. 12, T. 22 N., R. 10 W.). The concrete post, 0.4 foot high, is located in the northwest corner of a grass lawn, 48 feet east of the centerline of the highway, just south of a driveway, and adjacent to a power pole and highway mileage marker "123."

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman	DMATC	June 14, 1972

TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Newport B
COUNTRY	STATE	CITY
USA	Washington	Newport
LATITUDE	LONGITUDE	ELEVATION
48°10.7' N.	117°03.0' W.	657.7 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 30'	Newport
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	Newport 1934

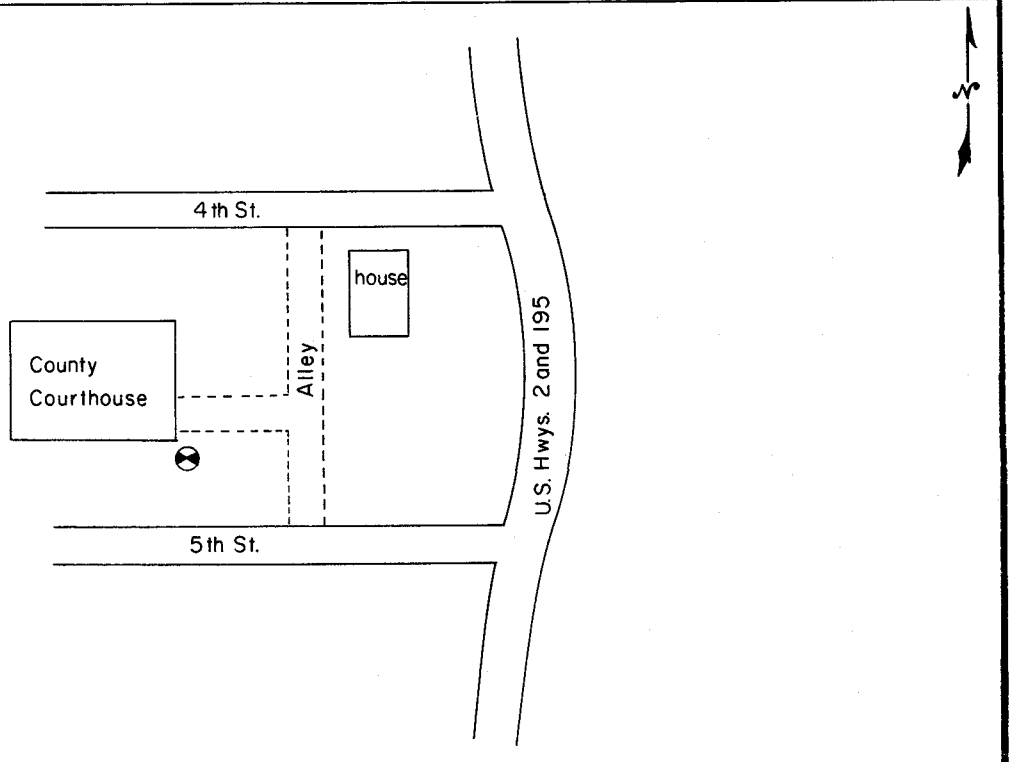
POSITION/ELEVATION REMARKS

Gravity station is 1.0 foot below bench mark.

DESCRIPTION

The station is located one foot below and adjacent to USC+GS bench mark "Newport 1934," which is set in a concrete post projecting one foot above the grounds of the Pend Oreille County Courthouse in southwest Newport, Washington. The concrete post is located 9.5 feet southeast of the southeast corner of the building, 5 feet west of a side alley, and 4 feet north of the sidewalk leading to the rear entrance of the building. The courthouse is located one block west of the intersection of U.S. Highways 2 and 195 with Fourth St.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

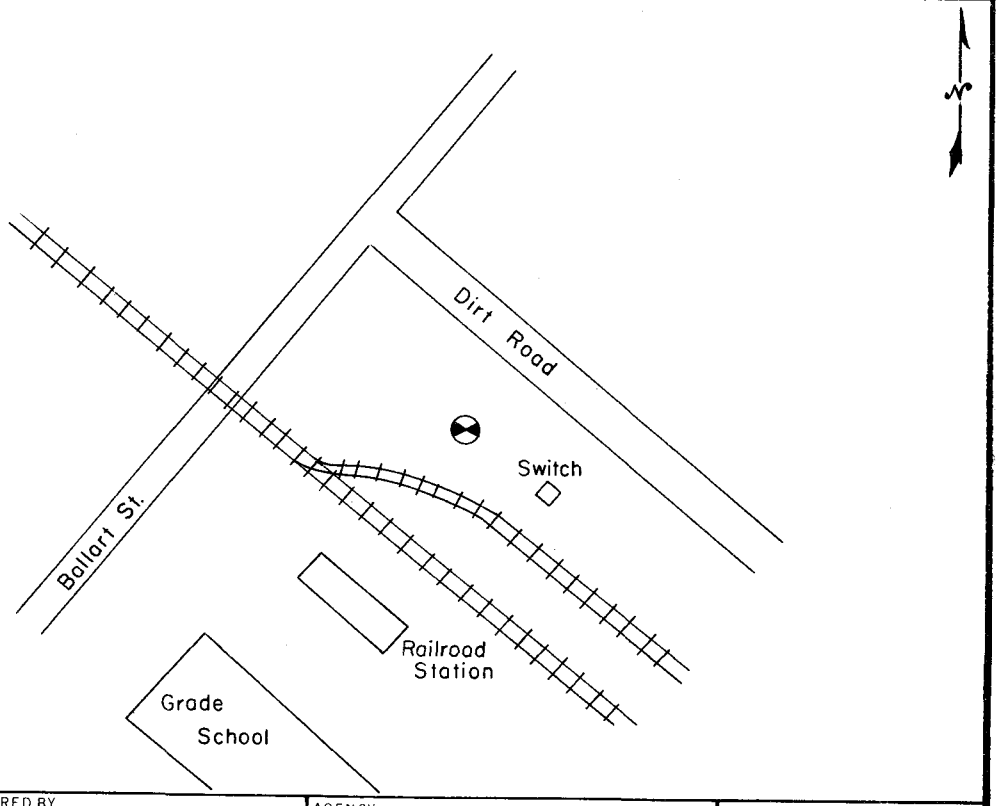
TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	North Bend B
COUNTRY	STATE	CITY
USA	Washington	North Bend
LATITUDE	LONGITUDE	ELEVATION
47°29.8' N.	121°46.8' W.	134.9 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	M-67-1934
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	North Bend
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	M67
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on USC+GS bench mark "M67 1934," which is set in the top of a concrete post 43 feet north of the north corner of the old Chicago, Milwaukee, St. Paul and Pacific Railroad station on Ballart St. in downtown North Bend, Washington. The concrete post is located 4 rails southeast of the switch fork at the northwest end of the railway siding, 8 feet northwest of a small switch fork northeast of the station, and 7 feet northeast of the northeast track.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

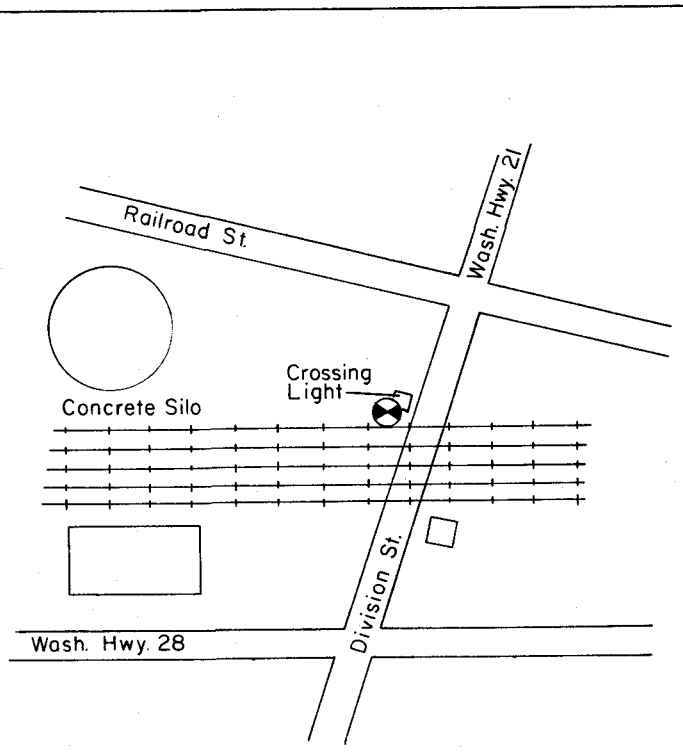
TPC FORM 115-29
MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Odessa B
COUNTRY	STATE	CITY
USA	Washington	Odessa
LATITUDE	LONGITUDE	ELEVATION
47°20.1' N.	118°41.4' W.	472.3 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	Y69-1934
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	AMS 1:250,000	Ritzville
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	Y69
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located on USC+GS bench mark "Y69 1934," which is set in the top of the southwest corner of the concrete base of a railroad crossing light signal about 60 yards northeast of the Odessa station of the Burlington Northern railroad near downtown Odessa, Washington. The railroad station is located at the intersection of Washington Highway 28 and Division St. (Wash. Highway 21). The light signal is 57 feet north of the main track, northwest of the intersection of the track and Division St., and about 100 feet east of a large concrete silo adjoining the track.

DIAGRAM



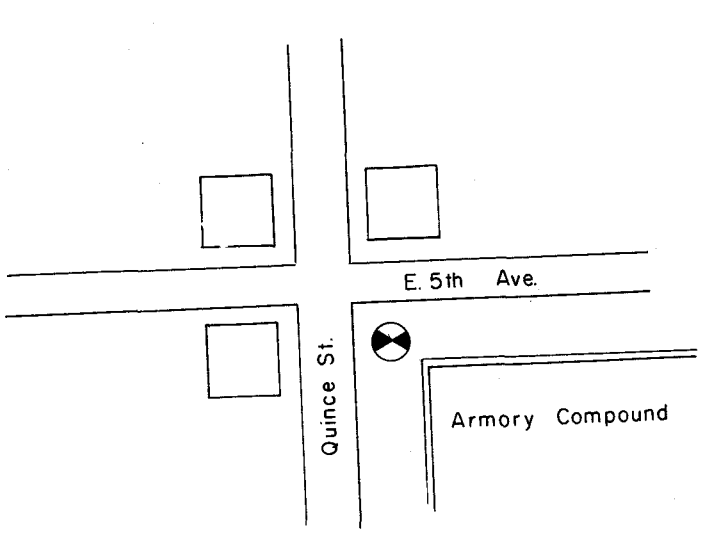
DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman	DMATC	June 20, 1967

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Olympia B
COUNTRY	STATE	CITY
USA	Washington	Olympia
LATITUDE	LONGITUDE	ELEVATION
47°02.7' N.	122°53.3' W.	15.24 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Olympia
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Olympia 1949
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located on the sidewalk adjacent to a low wall at the northwest corner of the Washington State Armory Compound building at the southeast corner of the intersection of East Fifth Ave. and Quince St. in central Olympia, Washington.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman, D. A. Bailey	DMATC	June 1972

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

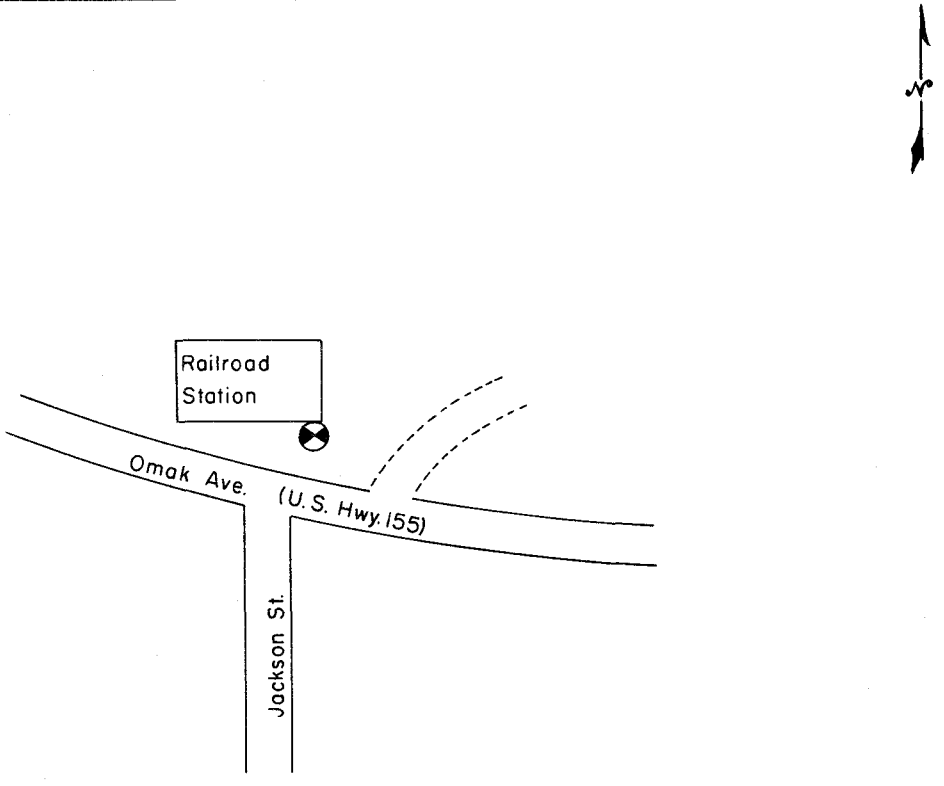
GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Omak B
COUNTRY	STATE	CITY
USA	Washington	Omak
LATITUDE	LONGITUDE	ELEVATION
48°24.2' N.	119°30.7' W.	262.3 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Okanogan
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	E21

POSITION/ELEVATION REMARKS

Bench mark not recovered; gravity station elevation assumed.

DESCRIPTION The station is located on the ground beneath the south wall at the southeast corner of the Omak station of the Burlington Northern railroad in southeast Omak, Washington. The railroad station is located north of and along U.S. Highway 155, one block west of the eastern Omak city boundary. The station is 62 feet southeast of the former location of USC+GS bench mark "860.799 E21 1931," which was not recovered.

DIAGRAM



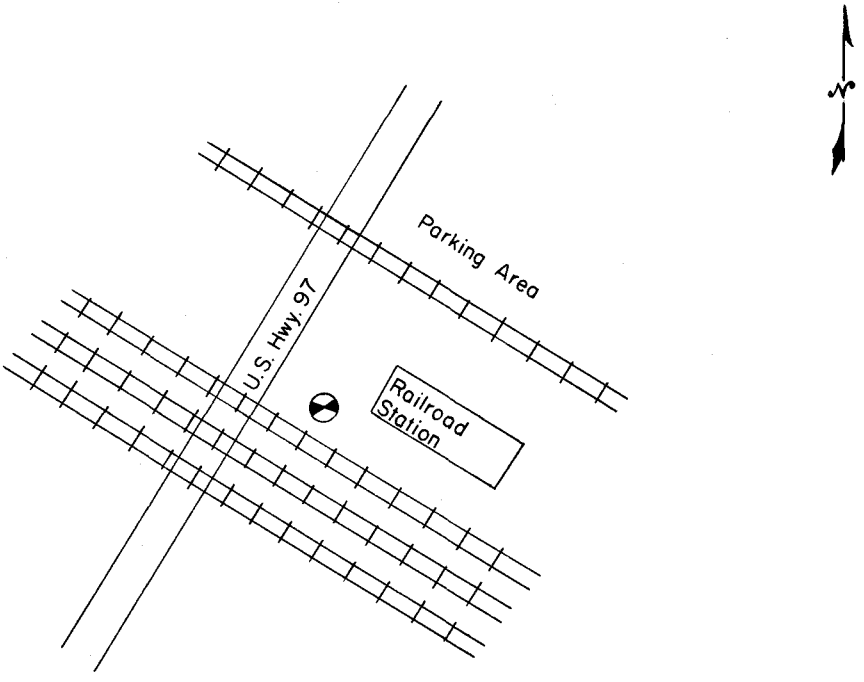
DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Oroville B
COUNTRY	STATE	CITY
USA	Washington	Oroville
LATITUDE	LONGITUDE	ELEVATION
48°56.2' N.	119°26.1' W.	282.3 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	E22-1931
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Oroville
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	E22
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located on USC+GS bench mark "926.419 E22 1931," which is set in the top of a concrete post adjacent to the Oroville station of the Burlington Northern railroad along U.S. Highway 97 in downtown Oroville, Washington. The concrete post, 0.5 foot high, is located 15 feet west of and about 3 feet south of the southwest corner of the station, 1.5 feet west of a power pole.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29
MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

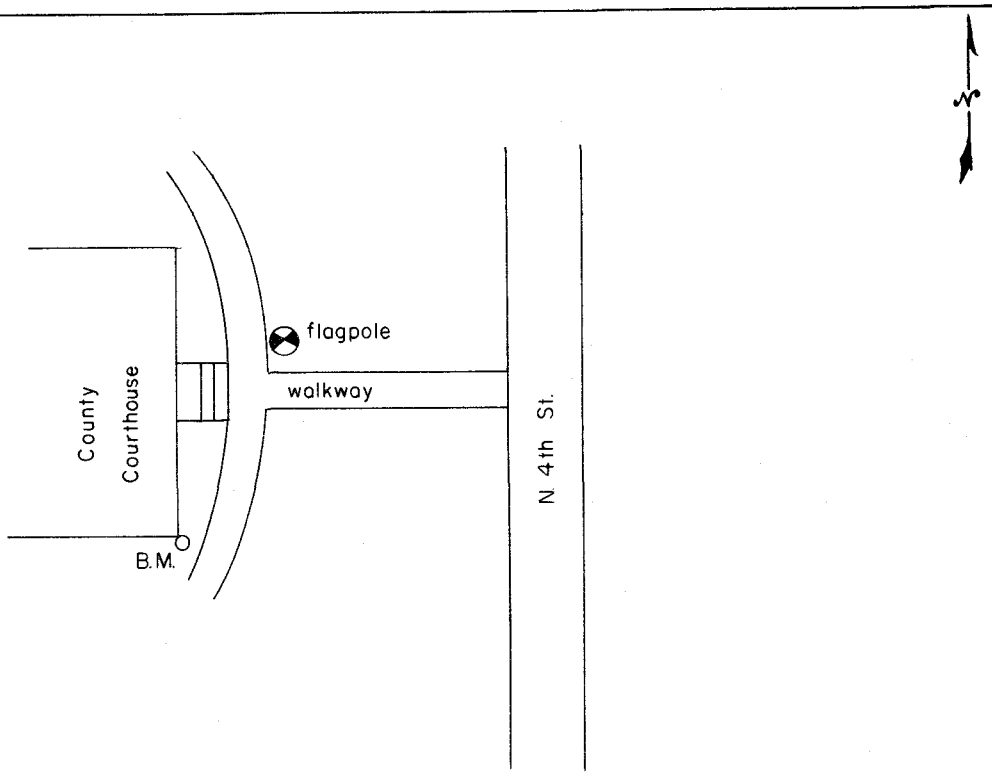
GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Pasco B
COUNTRY	STATE	CITY
USA	Washington	Pasco
LATITUDE	LONGITUDE	ELEVATION
46°14.2' N.	119°05.6' W.	118.0 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Pasco
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	Courthouse 1949

POSITION/ELEVATION REMARKS

Gravity station 2.0 feet below bench mark.

DESCRIPTION The station is located on top of the east end of the concrete base of the flagpole in the northeast lawn of the grounds of the Franklin County Courthouse on North Fourth St. in downtown Pasco, Washington. The station is about 1 foot below and about 75 feet northeast of USC+GS bench mark "Courthouse 1949," which is set vertically in the southeast corner of the east wall of the Courthouse. The flagpole is just northeast of the main entrance (east) of the Courthouse. The station was originally established by W. E. Bonini of Princeton University.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29 MAY 70

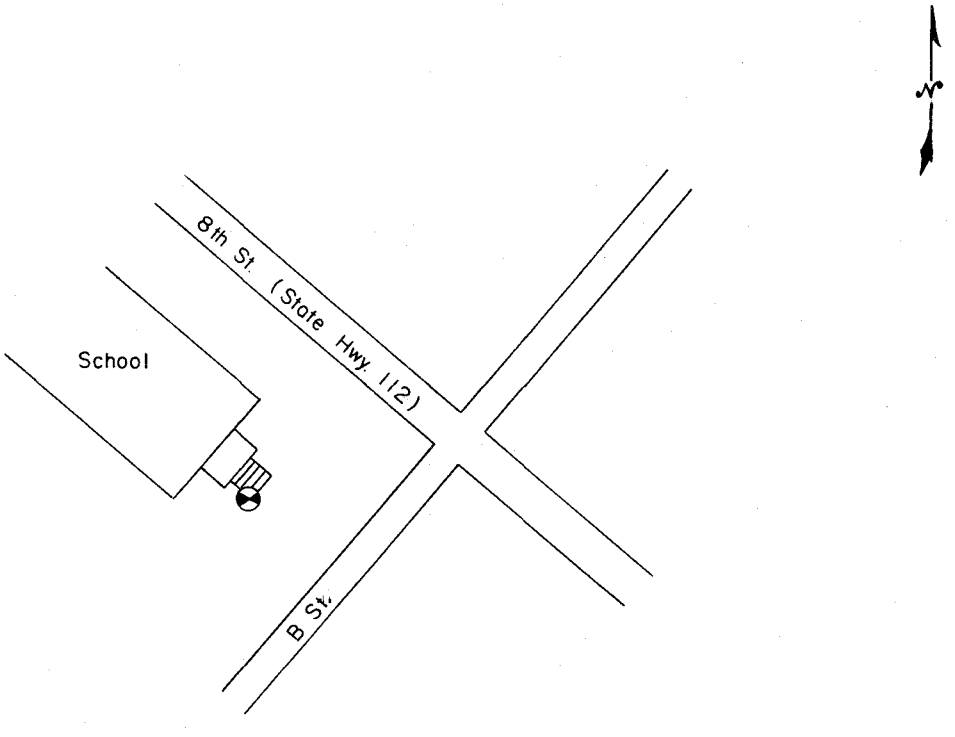
REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Port Angeles B
COUNTRY	STATE	CITY
USA	Washington	Port Angeles
LATITUDE	LONGITUDE	ELEVATION
48°07.4' N.	123°27.3' W.	62.5 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	205,144 6-G14-1931
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Port Angeles
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	G14

POSITION/ELEVATION REMARKS

DESCRIPTION The station is located on USC+GS bench mark "205.144 G14 1931," which is set in the southwest end of the bottom step of the southeast entrance to the Lincoln School, at the intersection of Washington Highway 112 (Eighth St.) and B St., in the western part of Port Angeles, Washington. The bench mark is flush with the step, and about 250 feet southwest of the intersection of Eighth St. and B St.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman	DMATC	June 13, 1972

TPC FORM 115-29 MAY 70

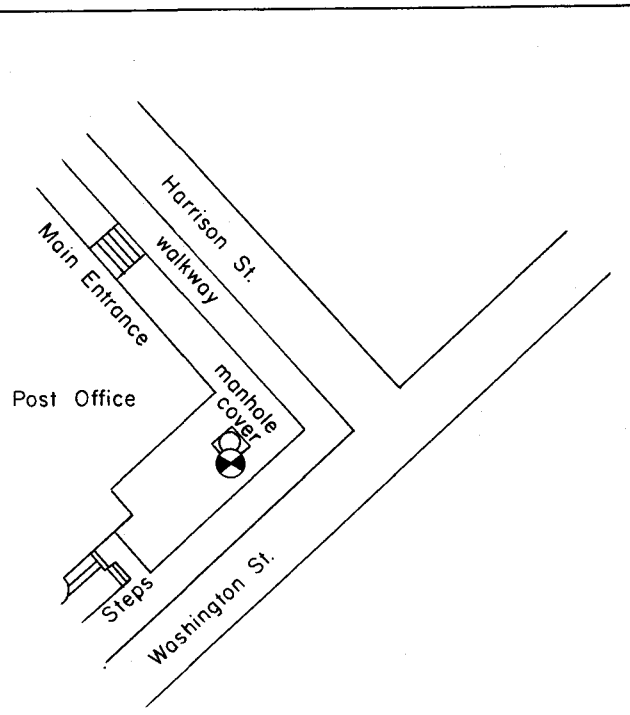
REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Port Townsend B
COUNTRY	STATE	CITY
USA	Washington	Port Townsend
LATITUDE	LONGITUDE	ELEVATION
48°06.7' N.	122°46.0' W.	29.7 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USACE	P.B.M. B-5-36
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Port Townsend South
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USACE	B-5-36
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on U.S. Army Corps of Engineers bench mark "P.B.M. B-5-36 97.542," which is set in the top of the southwest end of a water-system manhole cover in the northeast lawn surrounding the post office at the west corner of the intersection of Washington St. and Harrison St., in downtown Port Townsend, Washington. The bench mark, flush with the concrete cover, is located 25 feet south of the east corner of the post office, and 13 feet northwest of the northwest curb of Washington St., about 3 feet above the sidewalk.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman	DMATC	June 13, 1972

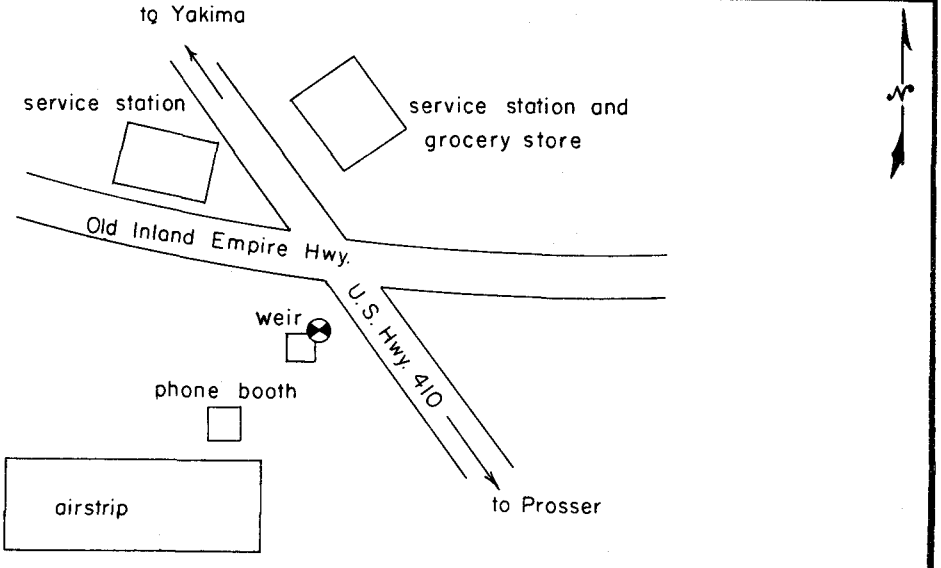
TPC FORM 115-29
MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Prosser B
COUNTRY	STATE	CITY
USA	Washington	Prosser
LATITUDE	LONGITUDE	ELEVATION
46°12.8' N.	119°47.0' W.	207.8 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	A318-1949
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Prosser
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	A318
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located on USC+GS bench mark "A318 1949," which is set in the top of the north corner of a concrete irrigation weir (small dam) adjacent to the intersection of the Old Inland Empire Highway and U.S. Highway 410, about 0.9 mile northwest along Highway 410 from the Burlington Northern railroad station in Prosser, Washington. The weir is located in the southwest corner of the intersection, at the entrance to the Prosser Airport, 95 feet northeast of the northeast corner of the east hangar, and projects 2.5 feet above the ground.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Raymond B
COUNTRY	STATE	CITY
USA	Washington	Raymond
LATITUDE	LONGITUDE	ELEVATION
46°41.1' N.	123°44.0' W.	3.1 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Raymond
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	Raymond 1934

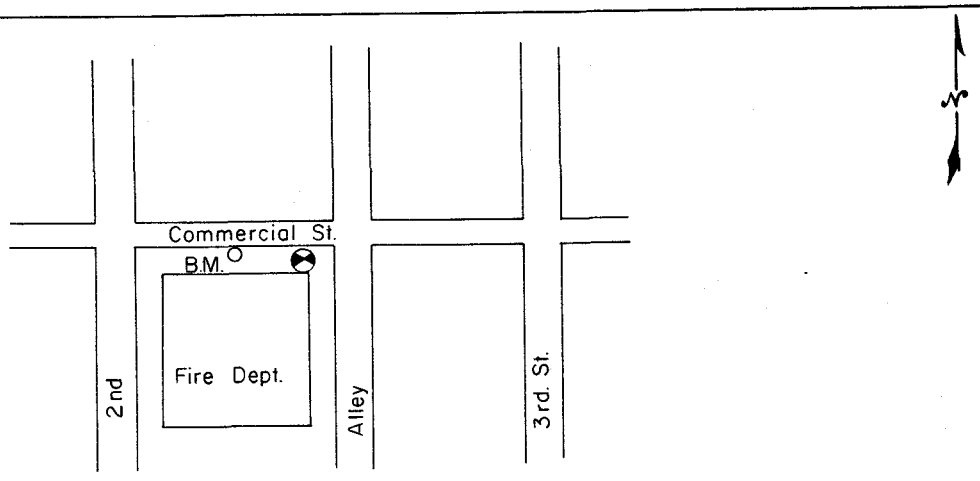
POSITION/ELEVATION REMARKS

Gravity station is 1.1 meters below bench mark.

DESCRIPTION

The station is located 3.6 feet below and 25 feet east of USC+GS bench mark "Raymond 1934," which is set vertically in the north wall of the Raymond Fire Department building, facing Commercial St., near central Raymond, Washington. The station is at the northeast corner of the building, which is located at the intersection of Second St. and Commercial St., one block west of U.S. Highway 101. The bench mark is located 30 feet south of the centerline of Commercial St., 3.6 feet above the sidewalk.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

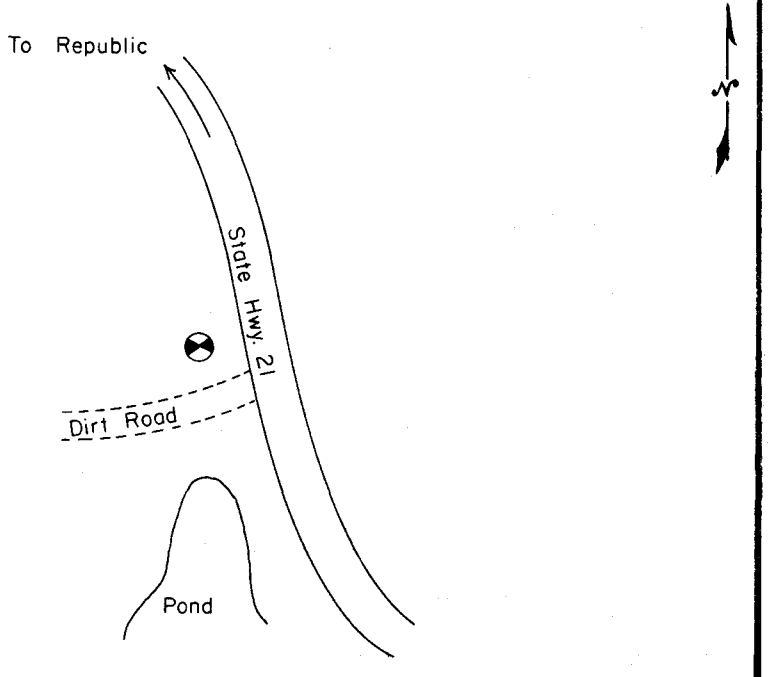
TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Republic B
COUNTRY	STATE	CITY
USA	Washington	Republic
LATITUDE	LONGITUDE	ELEVATION
48°37.2' N.	118°43.8' W.	683.0 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USBR	OE-54-1940
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Republic
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USBR	OE54
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located on USBR bench mark "OE 54 1940," which is set in the top of a concrete post about 2.2 miles south along Washington Highway 21 from the post office in Republic, Washington. The concrete post, 0.4 foot high, is located in low brush, 36 feet west of center of the highway, 50 feet north of the northernmost white post of highway guard rail. (Fence removed.)

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

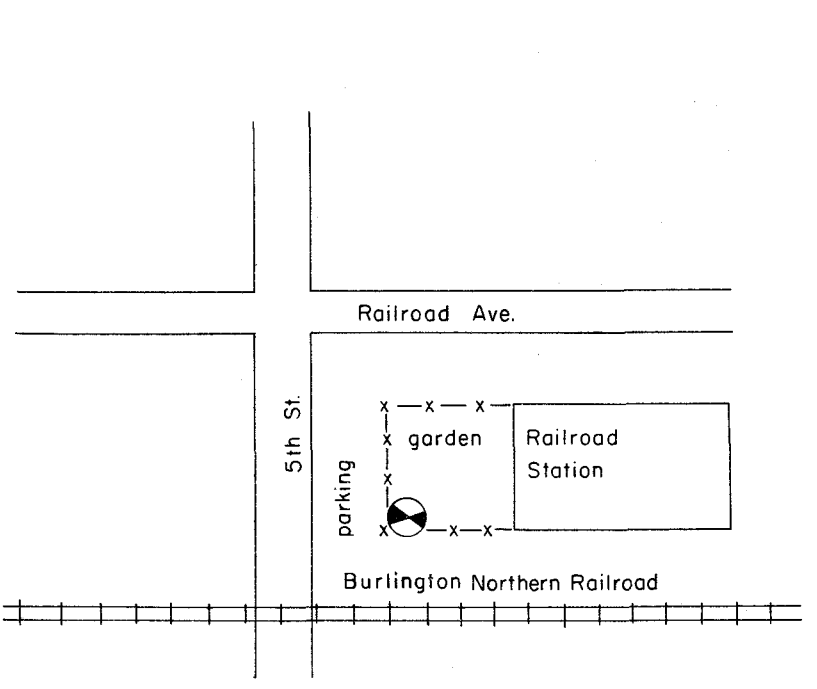
TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Skykomish B
COUNTRY	STATE	CITY
USA	Washington	Skykomish
LATITUDE	LONGITUDE	ELEVATION
47°42.5' N.	121°21.5' W.	283.9 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	Z58-1934
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Skykomish
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	Z58
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on USC+GS bench mark "931.438 Z58 1934," which is set in the top of a concrete post in the southwest corner of a fenced-in flower garden, west of the Skydomish station of the Burlington Northern railroad, at Fifth St. and Railroad Ave. in the south-central part of Skykomish, Washington. The concrete post is located 161 feet west of the station, 17 feet north of the northernmost track, 3.5 feet east of the west fence, and 2 feet north of the south fence.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman	DMATC	June 7, 1972

TPC FORM 115-29 MAY 70

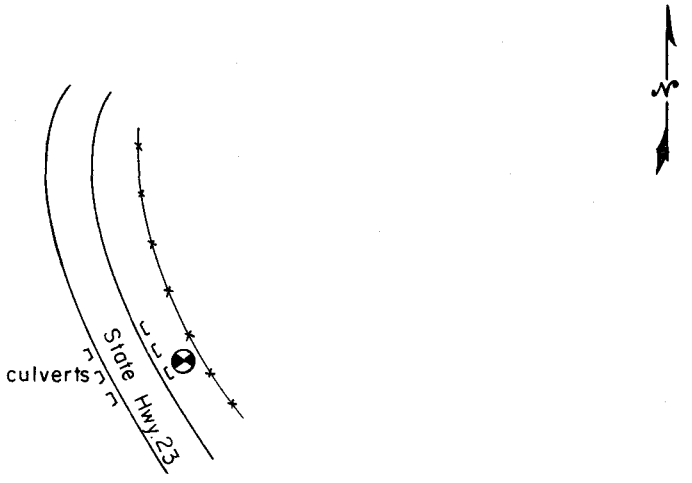
REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Sprague B
COUNTRY	STATE	CITY
USA	Washington	Sprague
LATITUDE	LONGITUDE	ELEVATION
47°19.5' N.	117°58.9' W.	617.2 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	G-53-1934
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Sprague
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	G53
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on USC+GS bench mark "G53 1934," which is set in the top of a concrete post along Washington Highway 23 about 2.0 miles northwest from the post office at Sprague, Washington. The concrete post, 0.2 foot high, is located 27 feet northeast of the centerline of the highway, one foot southwest of a barbed wire right-of-way fence, and immediately northeast of a culvert. A white witness post is present.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

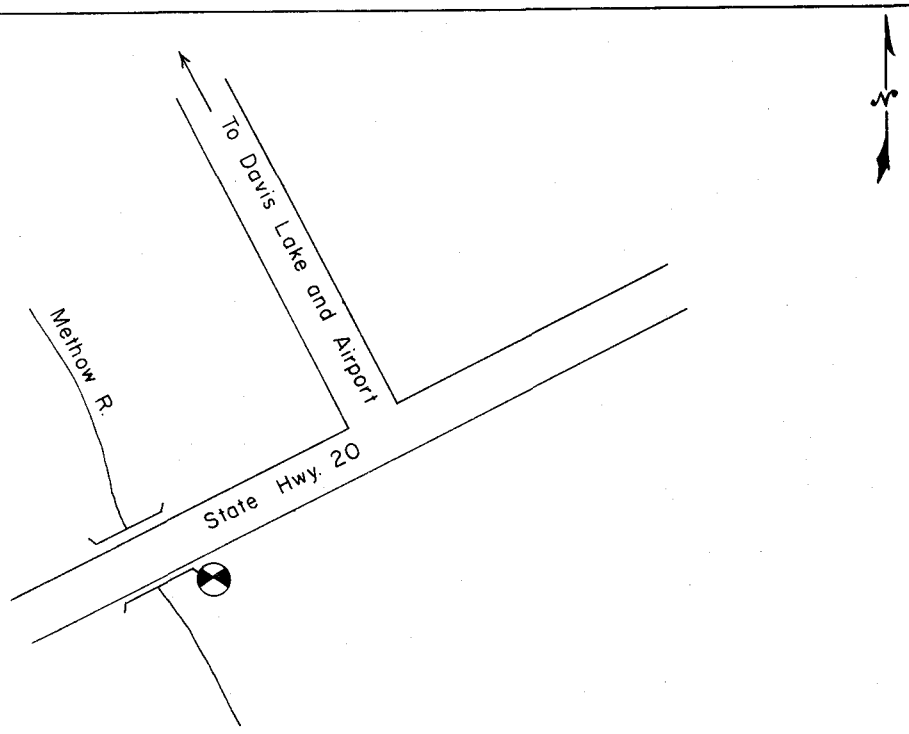
TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Twisp B
COUNTRY	STATE	CITY
USA	Washington	Twisp
LATITUDE	LONGITUDE	ELEVATION
48°21.7' N.	120°06.8' W.	482.5 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	B378-1958
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 30'	Methow
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	B378
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on USC+GS bench mark "B378," which is set in the top of the south concrete sidewalk at the east end of the concrete bridge over the Methow River, 0.57 mile east along Washington Highway 20 from the school in Twisp, Washington. The station is 13.5 feet southeast of the centerline of the highway and 0.5 foot above the highway.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29 MAY 70

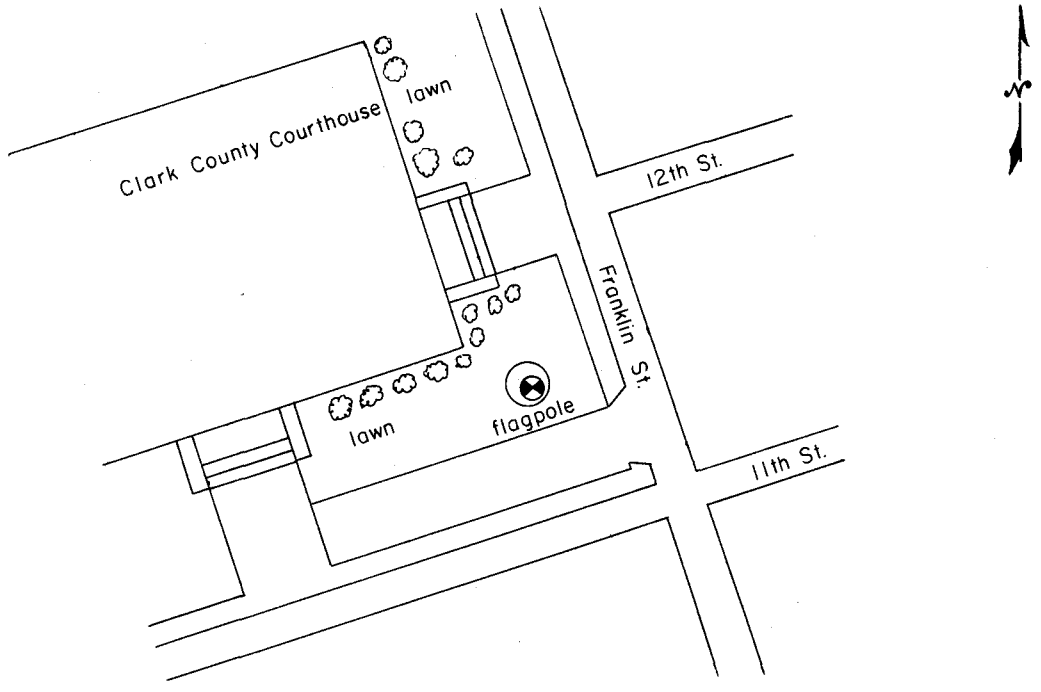
REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Vancouver B
COUNTRY	STATE	CITY
USA	Washington	Vancouver
LATITUDE	LONGITUDE	ELEVATION
45°37.7' N.	122°40.6' W.	23.6 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	No. 4 1942
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Vancouver
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	No. 4 1942
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on USC+GS bench mark "No. 4 1942," which is set in the base of the flagpole in the lawn on the southeast side of the Clark County Courthouse at the intersection of 11th St. and Franklin St. in central Vancouver, Washington.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. B. Beruff	DMATC	June 1971

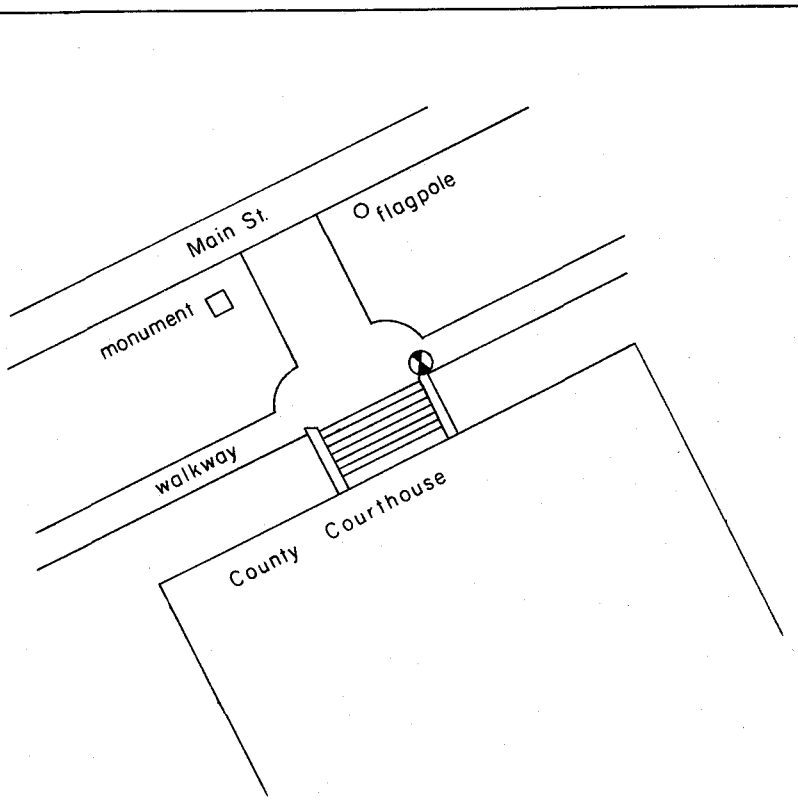
TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Walla Walla B
COUNTRY	STATE	CITY
USA	Washington	Walla Walla
LATITUDE	LONGITUDE	ELEVATION
46°03.9' N.	118°20.5' W.	286.1 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USGS	938-1926
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Walla Walla
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USGS	938
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located on USGS bench mark "938 1926," which is set in the top of the northeast end of the lowest step of the main entrance to the Walla Walla County Courthouse, on Main St. between Fifth and Sixth Ave. in downtown Walla Walla, Washington.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

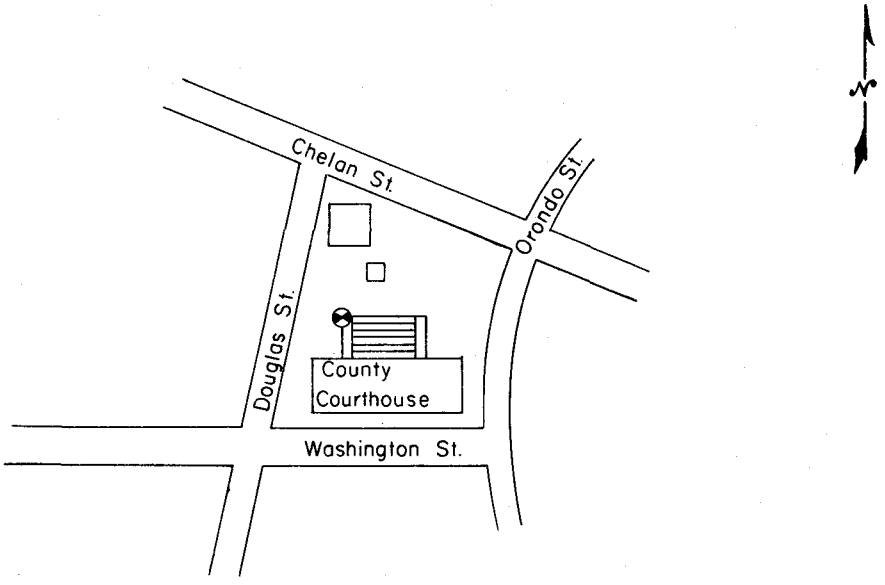
TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Wenatchee B
COUNTRY	STATE	CITY
USA	Washington	Wenatchee
LATITUDE	LONGITUDE	ELEVATION
47°25.2' N.	120°19.5' W.	221.4 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	"726.737 G19 1931"
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Wenatchee
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	G19 1931
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on USC+GS bench mark "726.737 G19 1931," which is set in the top of the west concrete railing at the north entrance to the Chelan County Courthouse at the northeast corner of the intersection of Washington St. and Douglas St. in downtown Wenatchee, Washington.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman, D. A. Bailey	DMATC	June 1972

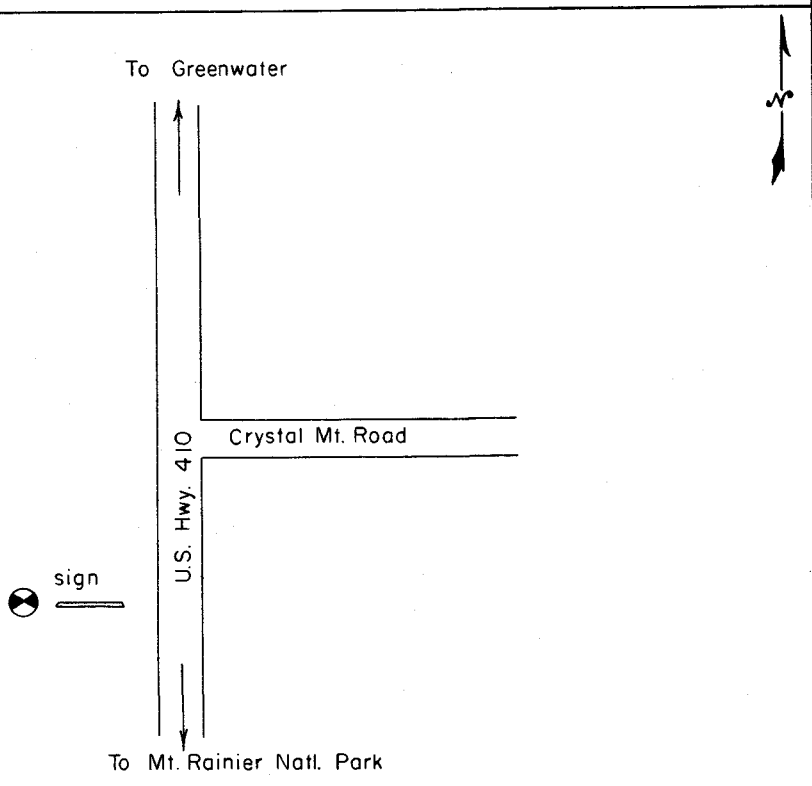
TPC FORM 115-29
MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	White River B
COUNTRY	STATE	CITY
USA	Washington	Crystal Mountain
LATITUDE	LONGITUDE	ELEVATION
46°58.7' N.	121°32.5' W.	842.6 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	BPR	2764.44-1934
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Mt. Rainier
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	BPR	None
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located on Bureau of Public Roads bench mark "2764.44 1934," which is set in the top of a concrete post along U.S. Highway 410 at the White River entrance (N.E.) to Mt. Rainier National Park, Washington. The concrete post, 0.8 foot high, is located one foot west of the west end of a U.S. Department of Agriculture sign "Snoqualmie National Forest," 82 feet west of the centerline of the highway, and about 200 feet south of the junction of Highway 410 and a road east to Crystal Mountain.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	White Swan B
COUNTRY	STATE	CITY
USA	Washington	White Swan
LATITUDE	LONGITUDE	ELEVATION
46°22.9' N.	120°44.0' W.	297.6 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	White Swan
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	P276

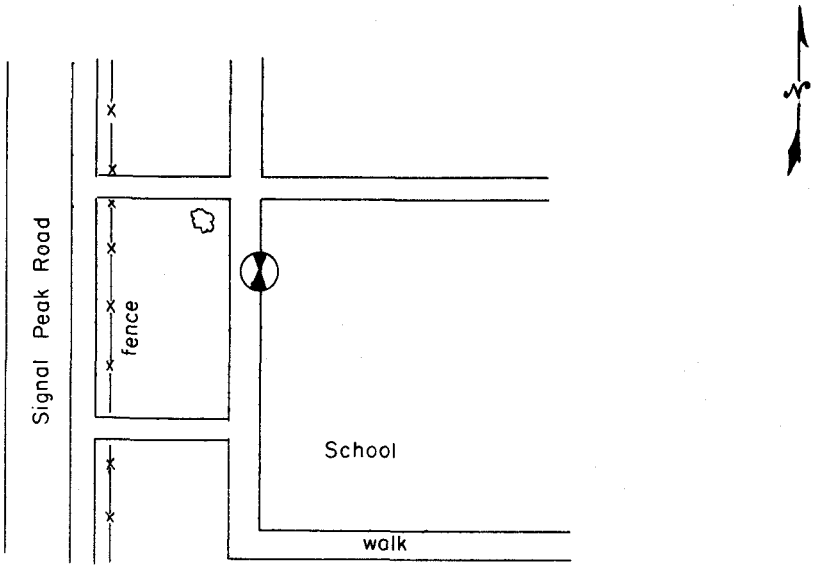
POSITION/ELEVATION REMARKS

Gravity station is 1.0 foot below bench mark.

DESCRIPTION

The station is located on the ground 1.0 foot below USC+GS bench mark "P276 1946," which is set vertically in the concrete base of the west brick wall of the White Swan High School on Signal Peak Road in White Swan, Washington. The station is 0.8 foot south of the northwest corner of the building on the concrete sidewalk surrounding the building, directly beneath the bench mark.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
J. F. Lambert, T. H. Nilsen	DMATC	Sept. 1967

TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

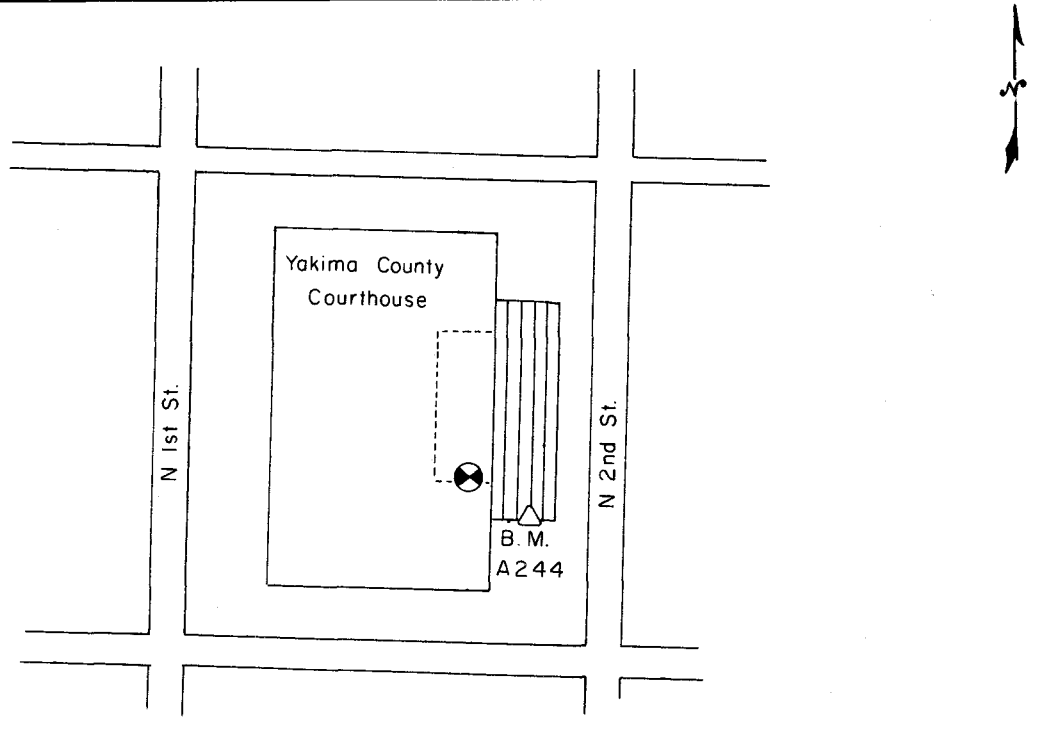
GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	State Base	Yakima B
COUNTRY	STATE	CITY
USA	Washington	Yakima
LATITUDE	LONGITUDE	ELEVATION
46°36.3' N.	120°30.3' W.	324.6 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Yakima West
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	A244

POSITION/ELEVATION REMARKS

Gravity station is 0.3 meter above bench mark.

DESCRIPTION The station is located one foot above USC+GS bench mark "A244 1944," which is set in the top of the south end of the bottom step of the main (east) entrance to the Yakima County Courthouse on North Second St. in downtown Yakima, Washington. The courthouse is located one block east of U.S. Highway 410 (North First St.) and 2 blocks north of Yakima Avenue. The station is located on the south end of the top step, at the base of the south wall of the entrance.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman	DMATC	June 19, 1972

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

APPENDIX VI

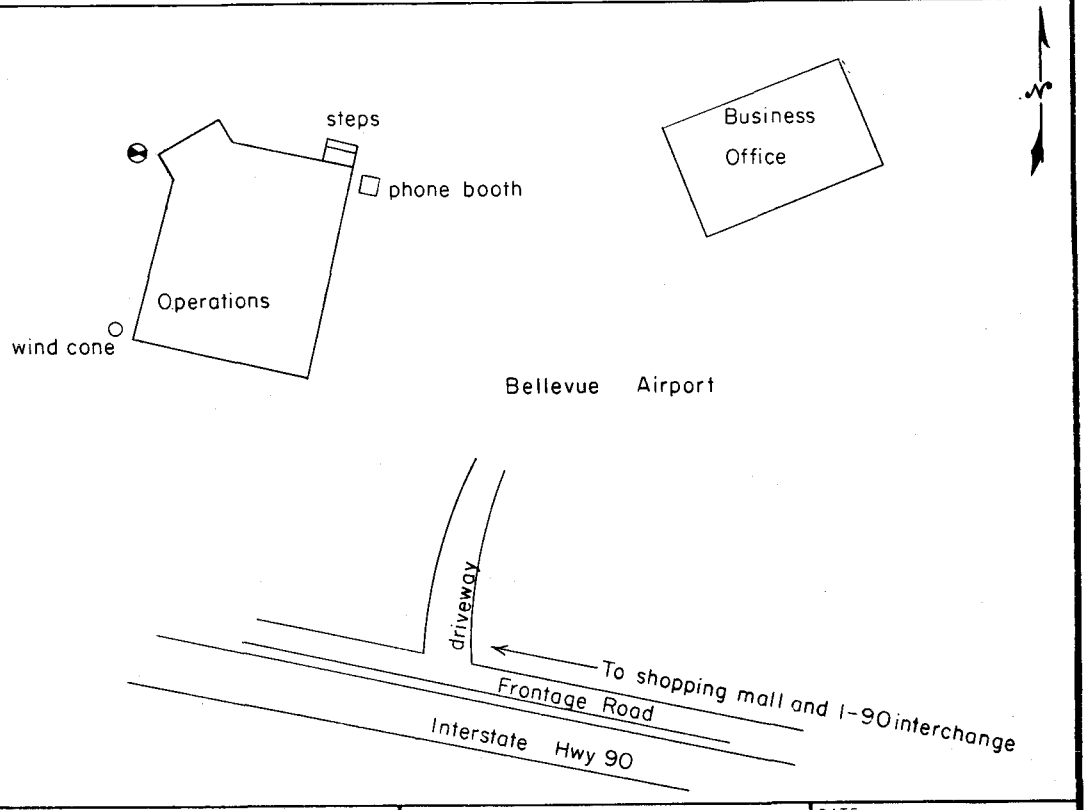
DESCRIPTIONS OF SOME LOCAL GRAVITY BASE STATIONS

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	Local Base	Bellevue
COUNTRY	STATE	CITY
USA	Washington	Eastgate
LATITUDE	LONGITUDE	ELEVATION
47°34.8' N.	122°08.0' W.	
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	USC+GS	L386
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Mercer Island
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	L386
POSITION/ELEVATION REMARKS		

DESCRIPTION

The station is located on USC+GS bench mark "L386," which is set in the top of the asphalt aircraft taxiway about 2 feet west of the northwest corner of the Operations Building (westernmost building) at the Bellevue Airport north of the town of Eastgate and just east of the Eastgate Interchange on Interstate Highway 90.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
W. G. Spita	DMATC	July 1972

TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

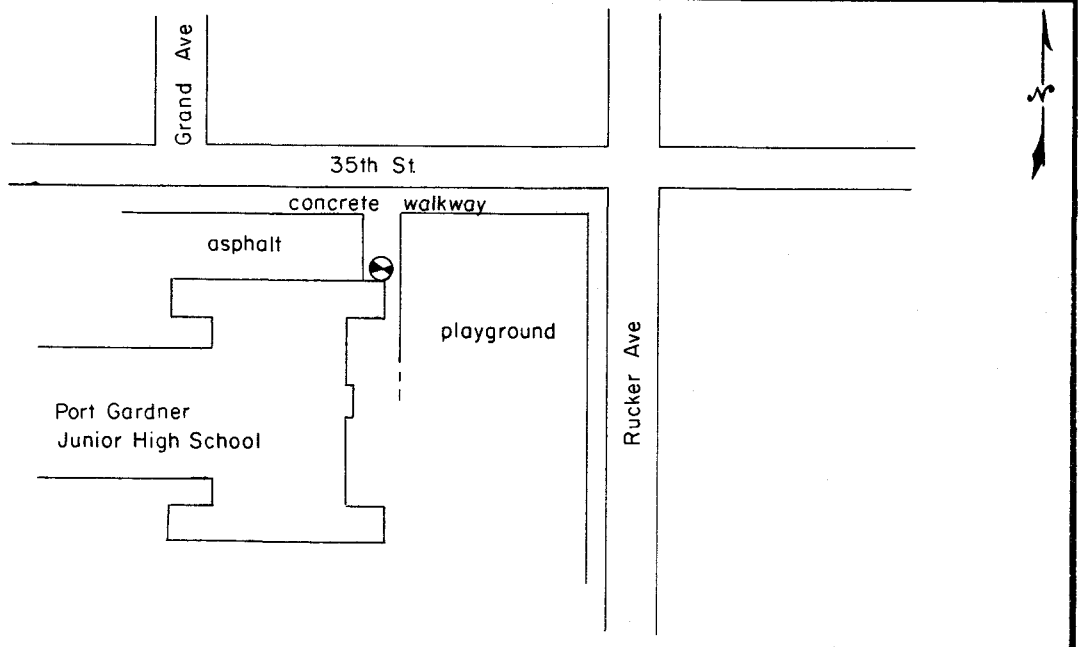
GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	Local Base	Everett South
COUNTRY	STATE	CITY
USA	Washington	Everett
LATITUDE	LONGITUDE	ELEVATION
47°58.3' N.	122°12.7' W.	53.2 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Everett
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark	USC+GS	S296

POSITION/ELEVATION REMARKS

Gravity station distance below bench mark not measured.

DESCRIPTION The station is located on the concrete walkway directly beneath USC+GS bench mark "S296," which is set in the east end of the north wall of Port Gardner Junior High School (formerly South Junior High School) at the intersection of Rucker Ave. and 35th St. in Everett, Washington.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
W. G. Spita	DMATC	July 1972

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	Local Base	Everett W-61
COUNTRY	STATE	CITY
USA	Washington	Everett
LATITUDE	LONGITUDE	ELEVATION
47°58.7' N.	122°12.5' W.	41 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Everett
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Everett 1953

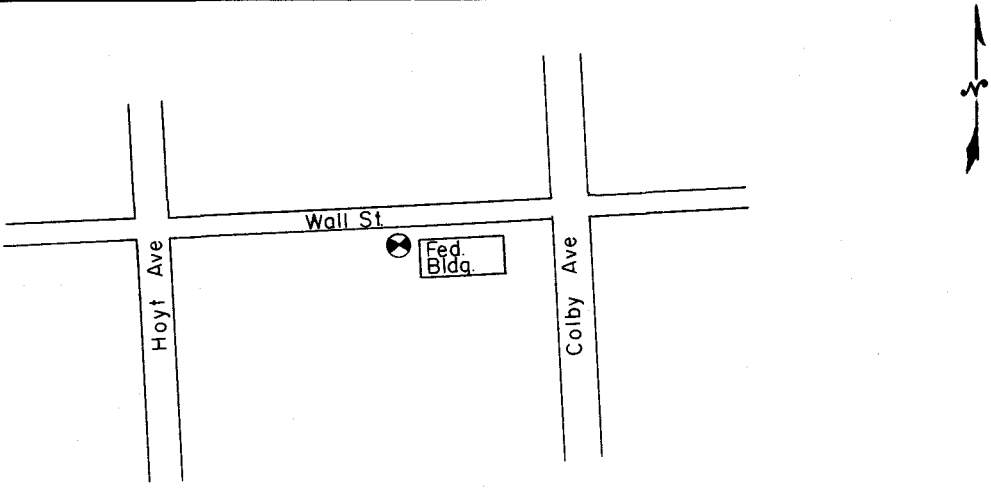
POSITION/ELEVATION REMARKS

Elevation by contour interpolation.

DESCRIPTION

The station is located on a paved surface 5 feet west of the northwest corner of the Federal Building at the intersection of Colby Ave. and Wall St. in Everett, Washington. The original location of U.S. Pendulum Station No. 221 is in the basement of the building.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman, D. A. Bailey	DMATC	June 1972

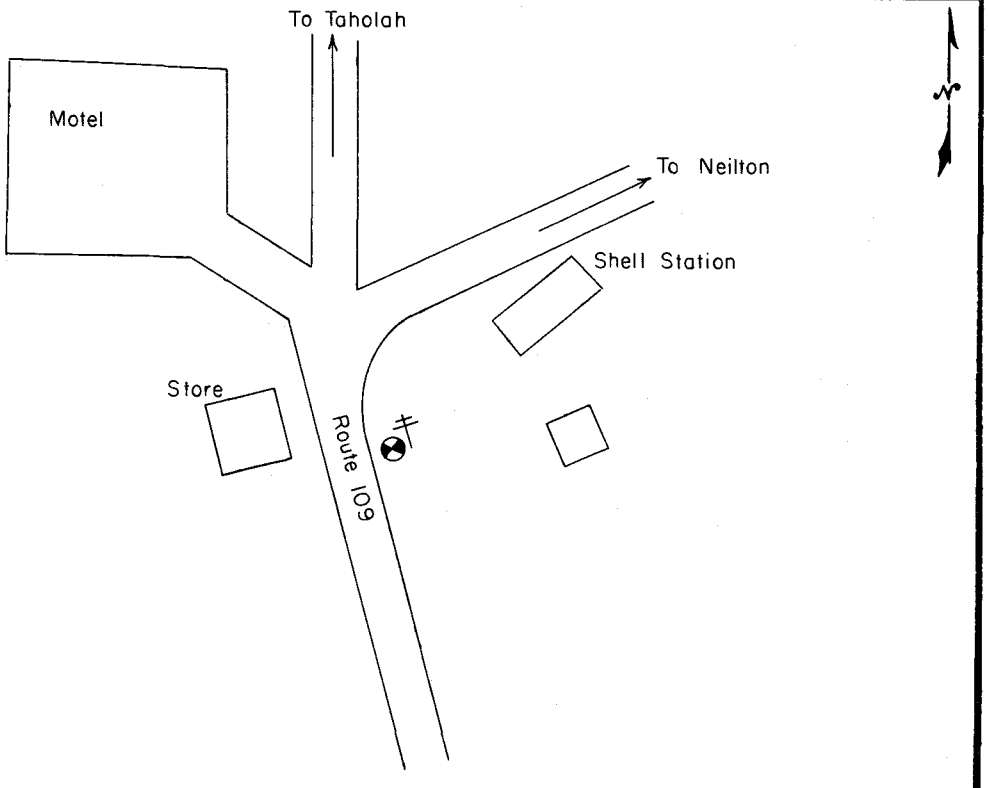
TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	Local Base	Moclips W-107
COUNTRY	STATE	CITY
USA	Washington	Moclips
LATITUDE	LONGITUDE	ELEVATION
47°03.4' N.	122°52.7' W.	16.3 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Old description		
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Old description		
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located on the ground 1 foot west of a telephone pole just southeast of the intersection of State Highway 109 and a road to Neilton, in Moclips, Washington.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman, D. A. Bailey	DMATC	June 1972

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

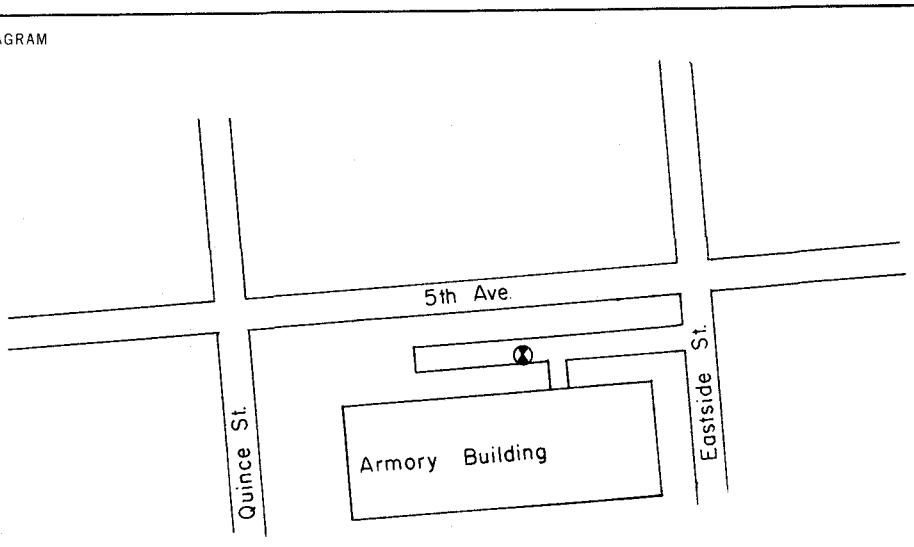
GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	Local Base	Olympia 29
COUNTRY	STATE	CITY
USA	Washington	Olympia
LATITUDE	LONGITUDE	ELEVATION
47°02.8' N.	122°53.3' W.	18.2 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Olympia
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Map	USGS 15'	Olympia

POSITION/ELEVATION REMARKS

Elevation by contour interpolation.

DESCRIPTION The station is located near an expansion joint on the south side of a concrete driveway about 10 feet west of the north entrance to the Washington State Armory Building at the intersection of 5th Ave. and Eastside St. in Olympia, Washington.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman, D. A. Bailey	DMATC	June 1972

TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	Local Base	Port Angeles W-85
COUNTRY	STATE	CITY
USA	Washington	Port Angeles
LATITUDE	LONGITUDE	ELEVATION
48°07.0' N	123°25.9' W	25 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Port Angeles
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Port Angeles

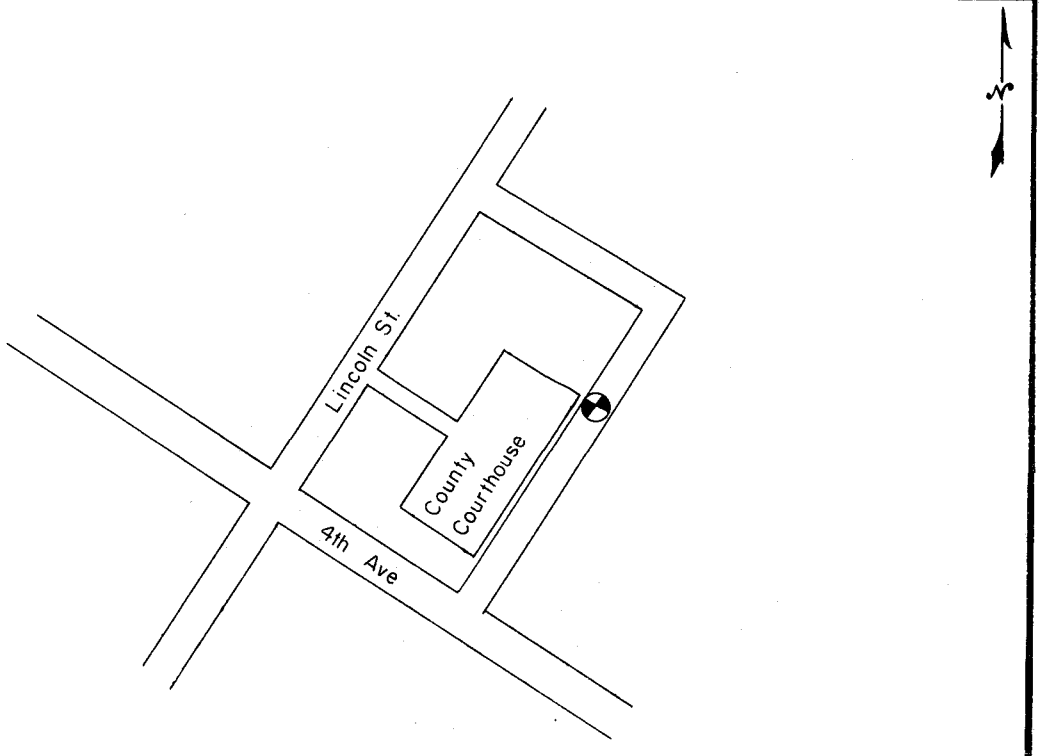
POSITION/ELEVATION REMARKS

Elevation by contour interpolation.

DESCRIPTION

The station is located on the ground adjacent to the parking area 1 foot from the east corner of the back of the Clallam County Courthouse at the intersection of Lincoln St. and 4th Ave. in Port Angeles, Washington.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman, D. A. Bailey	DMATC	June 1972

TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

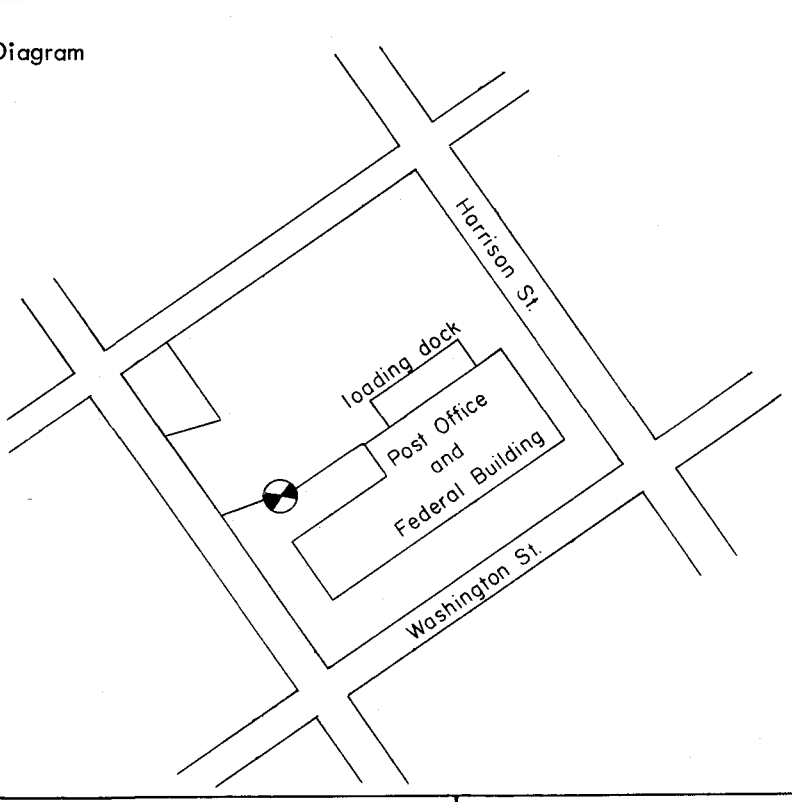
GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	Local Base	Port Townsend W-62
COUNTRY	STATE	CITY
USA	Washington	Port Townsend
LATITUDE	LONGITUDE	ELEVATION
48°06.7' N.	122°46.1' W.	32 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Port Townsend South
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Bench mark		"PBM B-5-36 97.542"

POSITION/ELEVATION REMARKS

Station approximately 2.3 meters above adjacent bench mark.

DESCRIPTION The station is located on the curb at the edge of a driveway about 14 feet north of and in line with the northwest side of the Federal Building and Post Office at the intersection of Harrison and Washington Sts. in Port Townsend, Washington.

Diagram



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman, D. A. Bailey	DMATC	June 1972

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	Local Base	Seattle More Hall
COUNTRY	STATE	CITY
USA	Washington	Seattle
LATITUDE	LONGITUDE	ELEVATION
47°39.2' N.	122°18.2' W	32 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
Disk	University of Washington	UWCE G3
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Seattle North
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Seattle North

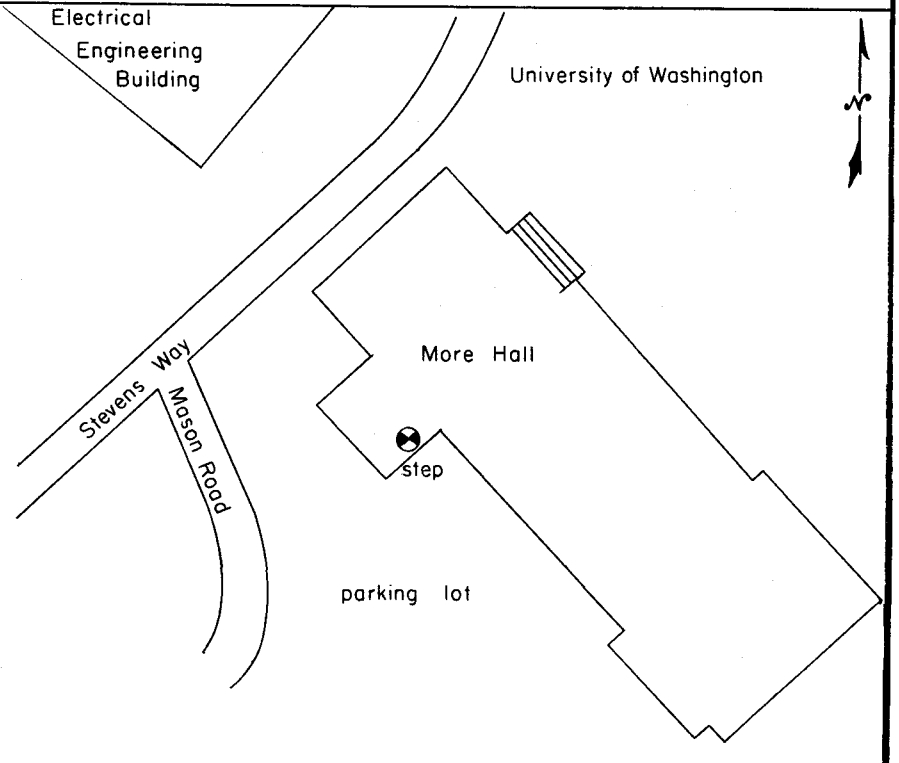
POSITION/ELEVATION REMARKS

Elevation by contour interpolation.

DESCRIPTION

The station is located on University of Washington bench mark "UWCE G3," which is set on top of the south corner of the concrete step at the entrance to the southwest side of More Hall on the campus of the University of Washington, east of the intersection of Stevens Way and Mason Road in the northern part of Seattle, Washington.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
W. G. Spita	DMATC	July 1972

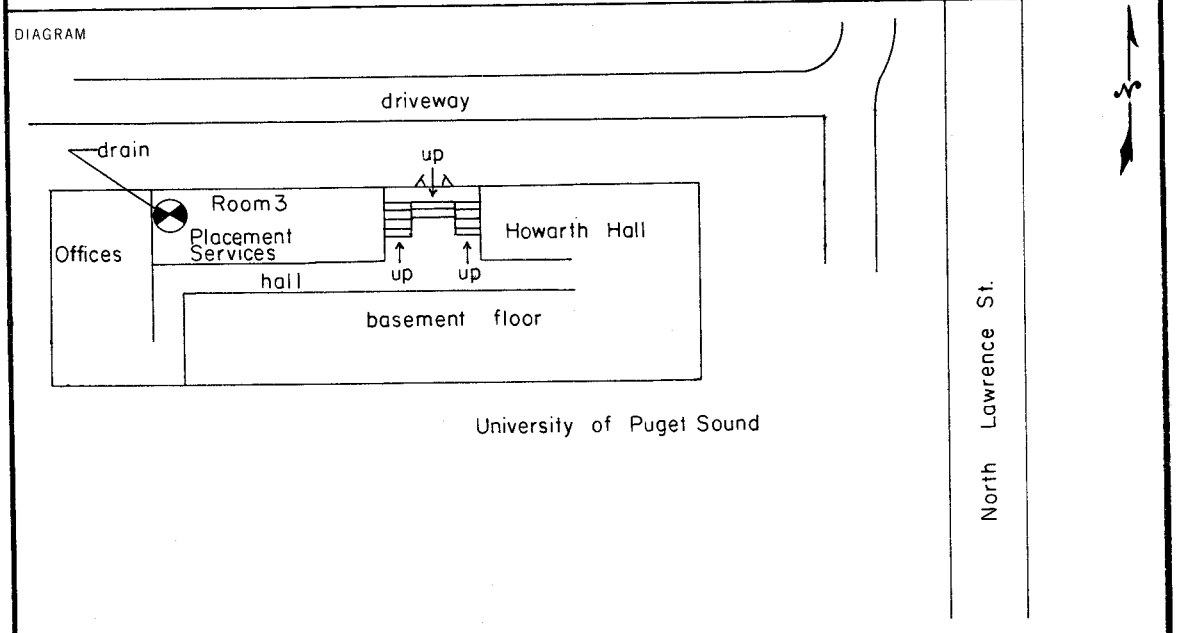
TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	Local Base	Tacoma, Howarth Hall
COUNTRY	STATE	CITY
USA	Washington	Tacoma
LATITUDE	LONGITUDE	ELEVATION
47°15.8' N.	122°28.7' W.	109.7 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Tacoma North
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Unknown		
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located between the west wall and storm drain on the concrete floor of room 3 (situated just west of the main stairway) in the basement of Howarth Hall on the campus of the University of Puget Sound, southwest of the intersection of North Lawrence St. and North 15th St. in Tacoma, Washington.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
W. G. Spita	DMATC	July 1972

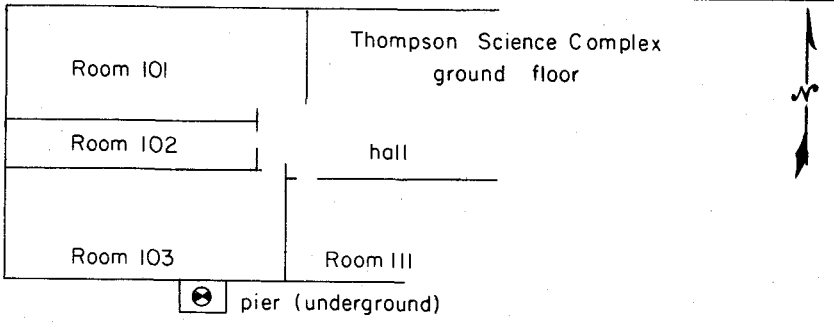
TPC FORM 115-29 MAY 70

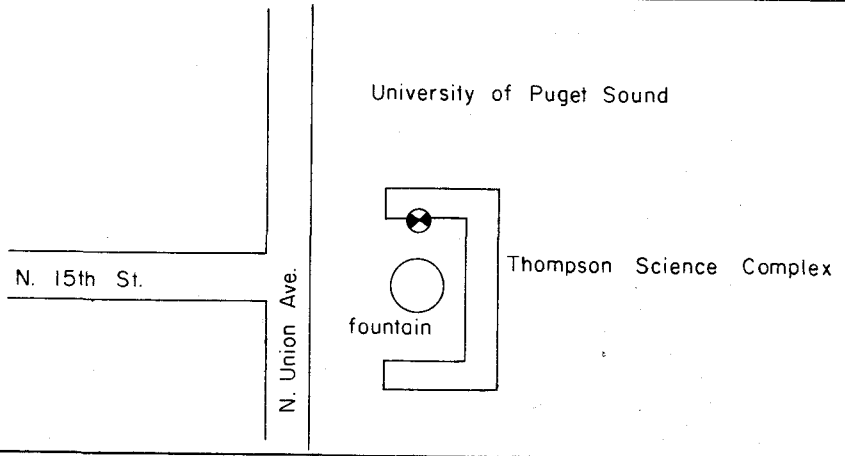
REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	Local Base	Tacoma Thompson Building
COUNTRY	STATE	CITY
USA	Washington	Tacoma
LATITUDE	LONGITUDE	ELEVATION
47°15.8' N.	122°28.9' W.	
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Tacoma North
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
None		
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located on top of the circular concrete pier in the underground seismic pier room south of and below room 103 (entrance from room 103) in the north wing of the Thompson Science Complex building northeast of the intersection of North Union Avenue and North 15th St. on the campus of the University of Puget Sound in Tacoma, Washington.

DIAGRAM





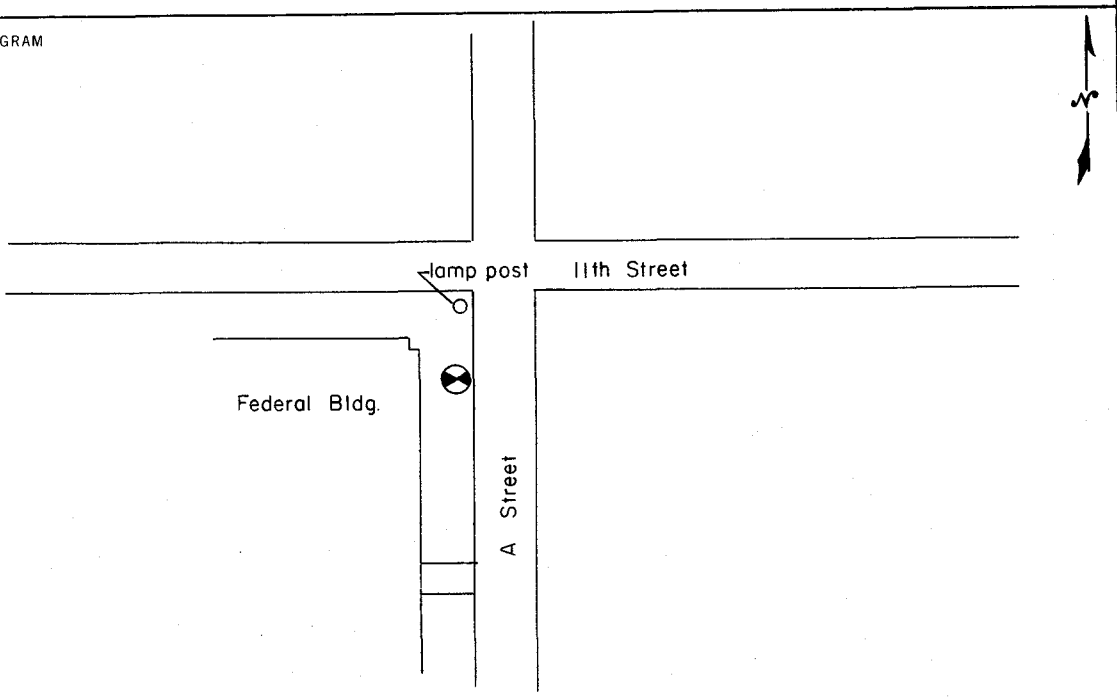
DESCRIBED/RECOVERED BY	AGENCY	DATE
W. G. Spita	DMATC	July 1972

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	Local Base	Tacoma W-68
COUNTRY	STATE	CITY
USA	Washington	Tacoma
LATITUDE	LONGITUDE	ELEVATION
47°15.2' N.	122°26.2' W.	279 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Tacoma North
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Tacoma North
POSITION/ELEVATION REMARKS		

DESCRIPTION The station is located on the curb side of the sidewalk about 21 feet south of a lamp post and 5 feet north of a parking meter (near a hole where a parking meter had been) adjacent to the northeast corner of the Federal Building at the southwest corner of the intersection of 11th St. and A St. in Tacoma, Washington.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
R. E. Russman, D. A. Bailey	DMATC	June 13, 1972

TPC FORM 115-29 MAY 70 REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

APPENDIX VII

DESCRIPTIONS OF USNGBN STATIONS USED IN THE NETWORK ADJUSTMENT

GRAVITY BASE DESCRIPTION

COUNTRY	STATE	NEAREST TOWN	DATE PREPARED
USA	Idaho	Boise	July 67

IGB CODE	STATION NAME	LATITUDE N+	LONGITUDE W+	ELEV. IN METERS
15636B	Boise	43°36.70'	116°12.70'	814.00

APPROX. G MGALS	SITE SUITABILITY: GOOD( ) FAIR( ) POOR( )
980 217.36	

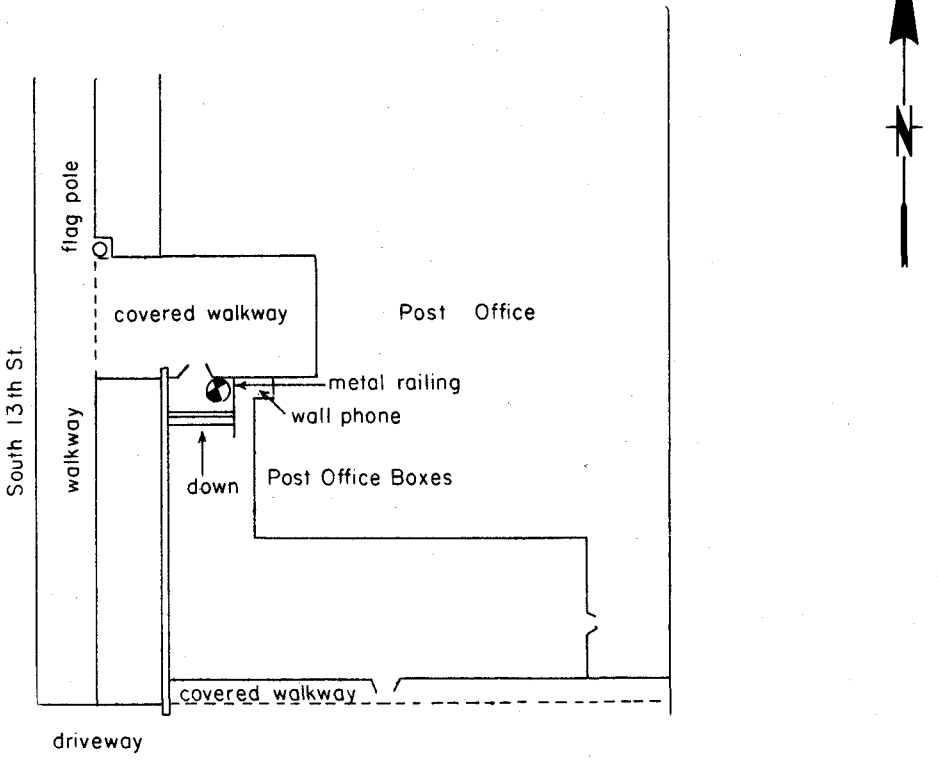
VERBAL DESCRIPTION

The station is in Boise at the new Post Office (770 South 13th Street), at the 13th Street entrance (near the west corner of the building), inside the entrance, on the small landing at the foot of two stairs, in the east corner (nearest the wall telephone), below the railing, on the terrazzo floor.

Station is monumented with a National Gravity Base disk.

OTHER DESIGNATIONS

DIAGRAM



GRAVITY BASE DESCRIPTION

COUNTRY	STATE	NEAREST TOWN	DATE PREPARED
USA	Washington	Seattle	Nov. 66

IGB CODE	STATION NAME	LATITUDE N+	LONGITUDE W+	ELEV. IN METERS
157720	Seattle C	47°36.10'	122°19.80'	17.9

APPROX. G MGALS

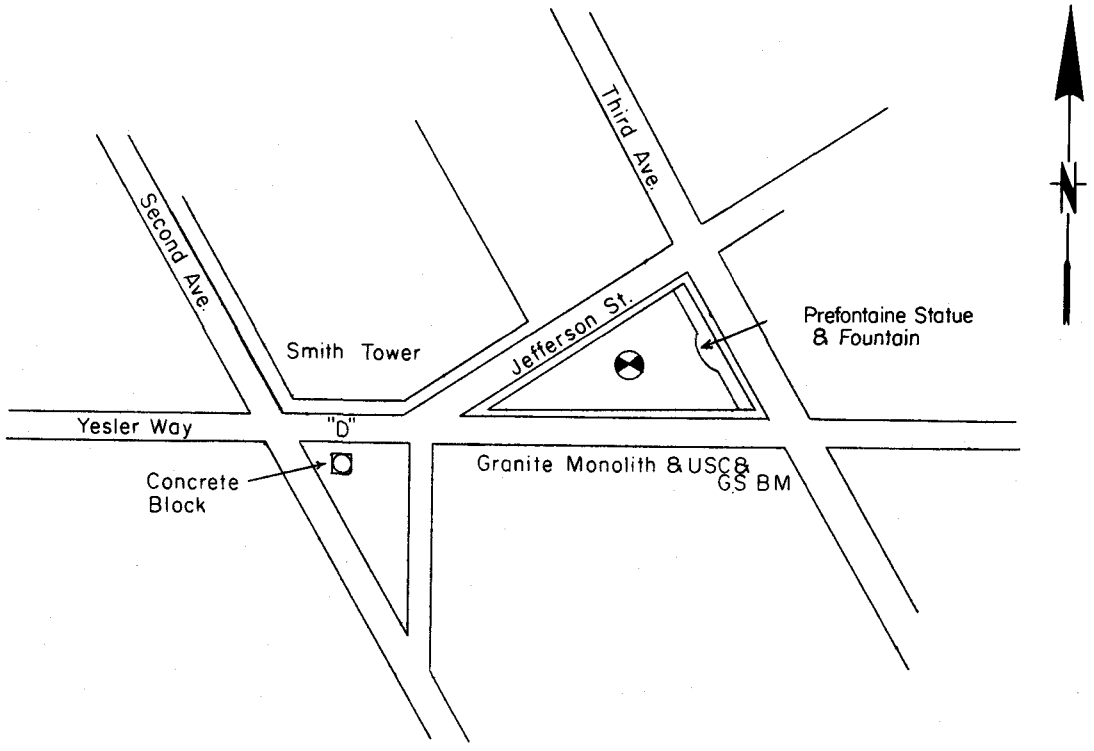
SITE SUITABILITY: GOOD( ) FAIR( ) POOR( )

VERBAL DESCRIPTION

The station is in downtown Seattle at the center of Profontaine Triangle (a large, parklike triangular traffic island bounded by Jefferson St., Third Ave., and Yesler Way), west of the Profontaine Statue and Fountain, on top of the 0.3 meter square, 0.6 meter high granite monolith, at the unnumbered USG&GS BM (basic bench mark, 1929).

OTHER DESIGNATIONS

DIAGRAM



GRAVITY BASE DESCRIPTION

COUNTRY	STATE	NEAREST TOWN	DATE PREPARED
USA	Washington	Spokane	Nov. 66

IGB CODE	STATION NAME	LATITUDE N+	LONGITUDE W+	ELEV. IN METERS
15677J	Spokane J	47°37.00'	117°32.00'	723.00

APPROX. G MGALS

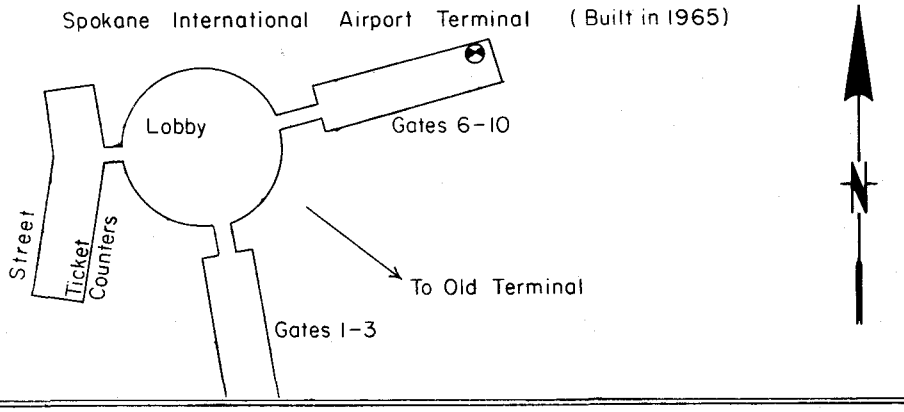
SITE SUITABILITY: GOOD( ) FAIR( ) POOR( )

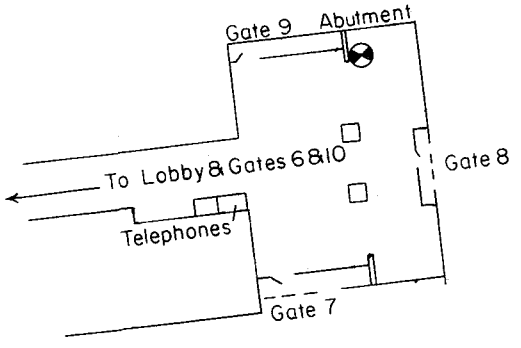
VERBAL DESCRIPTION

The station is about three miles southwest of Spokane at the Spokane International Airport Terminal (built in 1965), in the eastern concourse (Gates 6-10, about four meters east of the Gate 9 door, one meter south of the north wall, at the southern end of the north-south abutment. The station is monumented with a National Gravity Base Disk.

OTHER DESIGNATIONS

DIAGRAM





Inset

GRAVITY BASE DESCRIPTION

COUNTRY	STATE	NEAREST TOWN	DATE PREPARED
USA	Oregon	Medford	Nov. 66

IGB CODE	STATION NAME	LATITUDE N+	LONGITUDE W+	ELEV. IN METERS
5722J	Medford J	42°22.20'	122°52.20'	403.80

APPROX. G MGALS

SITE SUITABILITY: GOOD( ) FAIR( ) POOR( )

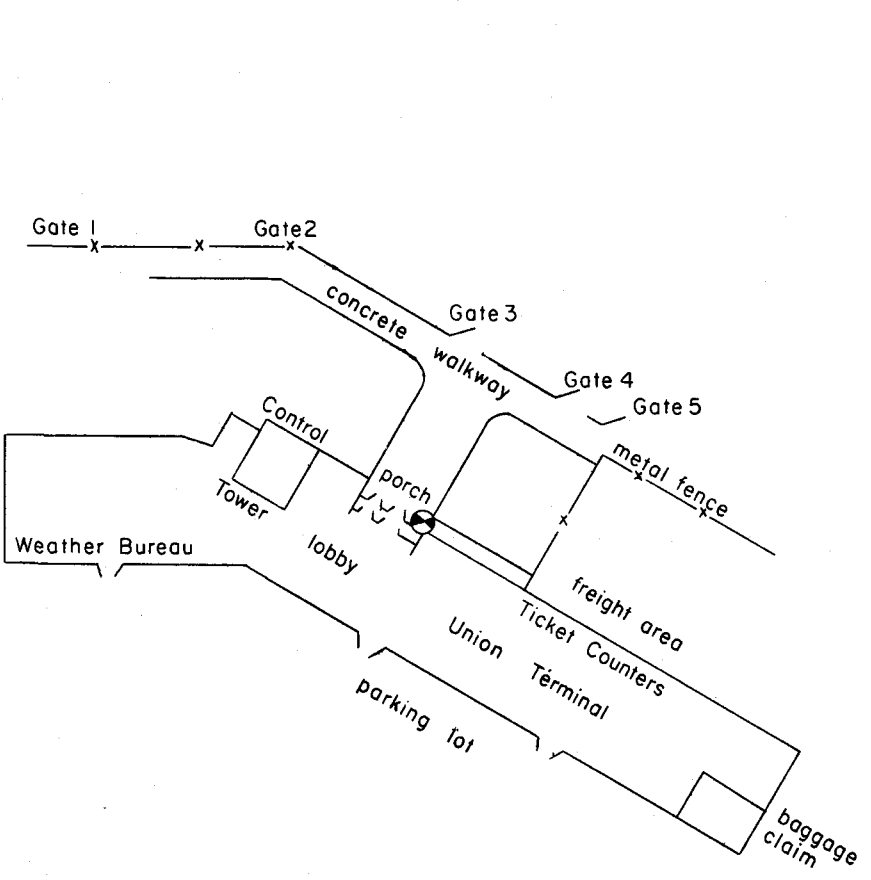
VERBAL DESCRIPTION

The station is about two miles north of Medford at Medford Municipal Airport (Union Terminal), at the field (north) side entrance (opposite Gate 3), on the concrete porch, southeast of the double doors, at the wall. The station is monumented with a U.S. National Gravity Base Disk.

OTHER DESIGNATIONS

U. of Wis: WA 141 AFCRL: Medford Muni. Ore. State U:

DIAGRAM



GRAVITY BASE DESCRIPTION

COUNTRY	STATE	NEAREST TOWN	DATE PREPARED
USA	Oregon	Portland	Nov. 66

IGB CODE	STATION NAME	LATITUDE N+	LONGITUDE W+	ELEV. IN METERS
15752K	Portland, OR K	45°35.00'	122°36.00'	7.00

APPROX. G MGALS

SITE SUITABILITY: GOOD( ) FAIR( ) POOR( )

VERBAL DESCRIPTION

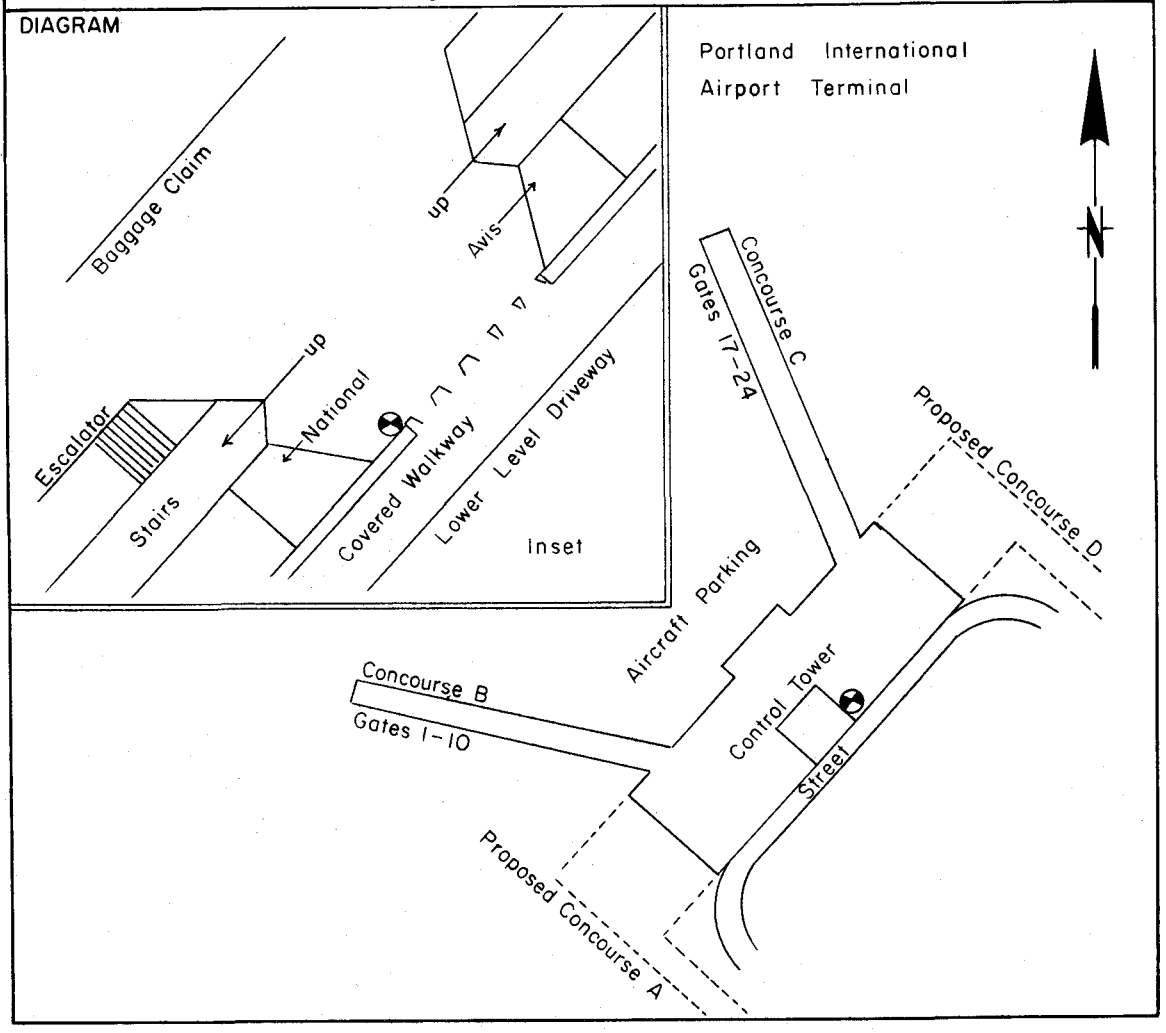
The station is northeast of Portland at the Portland International Airport Terminal, on the street side, at the lower level, at the exit under the word "International" on the building roof, inside, one meter southwest of the doors (between the southwest door and the National Car Rental counter), at the wall, on the terrazzo floor.

Station is monumented with a National Gravity Base disk.

OTHER DESIGNATIONS

U. of Wis: WA 142 Oregon State U:

DIAGRAM



APPENDIX VIII

DESCRIPTIONS OF USNGBN EXCENTER STATIONS ESTABLISHED IN SEATTLE

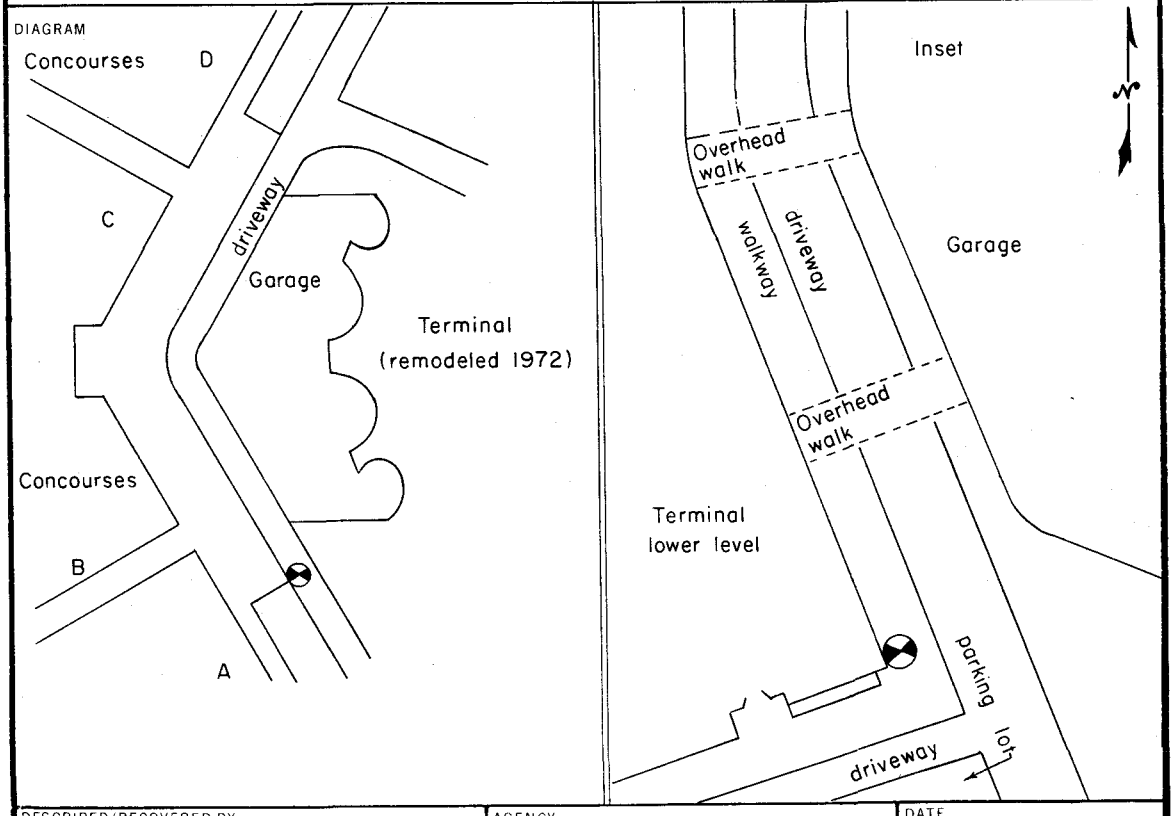
GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	National Base Excenter	Seattle TC (temporary)
COUNTRY	STATE	CITY
USA	Washington	Burien
LATITUDE	LONGITUDE	ELEVATION
47°26.6' N.	122°18.0' W.	113.5 meters
GRAVITY STATION MARK	AGENCY/SOURCE	INSCRIPTION
None		
POSITION REFERENCE	POSITION SOURCE	SOURCE DESIGNATION
Map	USGS 7½'	Des Moines
ELEVATION REFERENCE	ELEVATION SOURCE	SOURCE DESIGNATION
	Airport Engineer Office	None

POSITION/ELEVATION REMARKS

DESCRIPTION

The station is located six miles south of Seattle at the Sea-Tac International Airport, at the terminal, on the lower level, street side. Observations were made outside and adjacent to the southeast corner of the building, about three meters west of the driveway, on the concrete walkway.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
W. G. Spita	DMATC	July 1972

TPC FORM 115-29 MAY 70

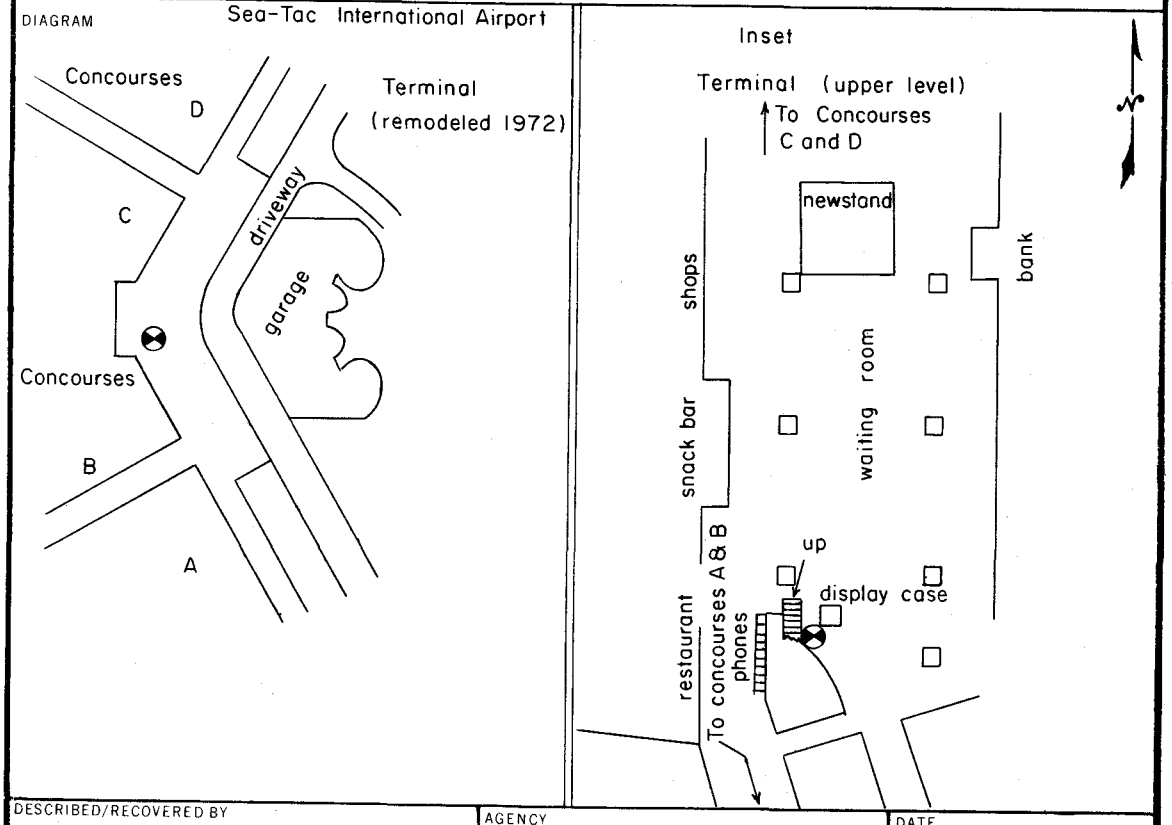
REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE

GRAVITY STATION DESCRIPTION	STATION TYPE	STATION DESIGNATION
	National Base Excenter	Seattle TB (temporary)
COUNTRY: USA	STATE: Washington	CITY: Burien
LATITUDE: 47°26.6' N.	LONGITUDE: 122°18.1' W.	ELEVATION: 121.0 meters
GRAVITY STATION MARK: None	AGENCY/SOURCE:	INSCRIPTION:
POSITION REFERENCE: Map	POSITION SOURCE: USGS 7½'	SOURCE DESIGNATION: Des Moines
ELEVATION REFERENCE:	ELEVATION SOURCE: Airport Engineer Office	SOURCE DESIGNATION: None
POSITION/ELEVATION REMARKS:		

DESCRIPTION

The station is located six miles south of Seattle at the Sea-Tac International Airport, at the terminal, near the center of the upper level. Observations were made just north of the hall to Concourses A and B, east of the restaurant, at the south end of the waiting room. The station is between the display case and the corner formed by the stairs and the rounded wall, on the terrazo floor.

DIAGRAM



DESCRIBED/RECOVERED BY	AGENCY	DATE
W. G. Spita	DMATC	July 1972

TPC FORM 115-29 MAY 70

REPLACES TEST EDITION, AUG 69, WHICH IS OBSOLETE