

Map Location #	Fault	Location	Latitude/Longitude	Fault Strike	Style: <sup>1</sup> Component	Slip <sup>2</sup> mm - mx	Age of Offset <sup>2,4</sup> (1000 years) mm - mx	Slip Rate <sup>2</sup> (mm / yr) pf	Feature Offset	Method of Age Estimation	US US <sup>3</sup>	Reference(s)	Comments	Compiler's Initials
<b>Cascade-Mojave Plateau</b>														
CM BCK01	Battle Creek	Coleman Forebay	40°24.1' / 122°7.8'	070	N:V T	126-130 m 126-130 m	450-1000	.14 .31 .7	fan/loaminate	BCK01 correlation, K-Ar	A B	Harwood and others (1980); Helley and others (1981); Harwood and others (1983)	Possible small RL horizontal component. Offset fan/loaminate correlated with Red Bluff fm., which is bracketed by volcanic units dated as 0.45 and 1.00 m.y. Measured dip of fault 70-80°	DH
CM BCK02	Battle Creek	Battle Creek, near Black Butte	40°26.1' / 121°09.8'	070	N:V T	330-336 m 336-338 m	450-1000	.34 .76 .4	fan/loaminate	BCK02 correlation	A B	References same as BCK01	Comments same as BCK01.	DH
CM BCK03	Battle Creek	Battle Creek, north of Manton	40°26.1' / 121°57.5'	070	N:V T	433-439 m 440-467 m	450-1000	.44 1 .5	fan/loaminate	BCK03 correlation	A B	References same as BCK01	Comments same as BCK01.	DH
CM UNM02	Unnamed	SE of Eagle Lake	40°36.0' / 120°43.8'	035	N:V T	150-260 m 160-340 m	100-240	.7 3.4 1.6	basalt flow	UNM02 K-Ar	C A	Roberts and Gross, 1982 and written comm., 1983	Fault forms SE boundary of Eagle Lake volcano-tectonic depression. Offset basalt is not exposed on downthrown block, but offset is constrained by geologic relations. T derived by MC assuming fault dip of 50°-70°. Preferred slip rate uses Roberts and Gross' preferred value of 230 m for V, 60° for dip and 0.17 m/yr for age.	MC
<b>Great Valley</b>														
GV ZAM01	Zamora	Zamora	38°42.1' / 121°53.3'	142	N:V	216-222 m	450-1000	.22 .49 .25	bediment	ZAM01 correlation, K-Ar	C B	Harwood and others (1981); Harwood and Helley (1982)	Redbluff fm. present on footwall block. Offset is a minimum, derived from depth drilled to Rockland ash bed, which elsewhere directly overlies Redbluff fm. See age comments of BCK01.	DH KH
<b>Mojave Desert</b>														
MD CAL01	Calico	Rodman Mountains	34°44' / 116°25'	140	RL:H <sub>s</sub>	7-9 km	2000-20000	.4 5 --	projection of Kane Springs F <sub>0</sub>	CAL01 fossils, K-Ar, correlation	C C	Dokka (1983), Miller and Morton (1980)	Kane Springs fault is the southern boundary (originally continuous) of Miocene extensional terrane, now offset by strike-slip faults of central Mojave desert. Dokka (1983) estimates inception of faulting after 20 m.y. R <sub>0</sub> probably in Pliocene or Quaternary time. Offset estimated from Fig. 2 of Dokka (1983). Fault has evidence of late Quaternary offset.	MC
MD CPK01	Camp Rock	Newberry Mountains	34°44' / 116°29'	135	RL:H <sub>s</sub>	1.6-4 km	2000-20000	.08 2 --	same as for CAL01	CPK01 same as for CAL01	C C	Dokka (1983); Morton and others (1980)	Same as for CAL01, except that offset is from Table 1 of Dokka (1983).	MC
MD GAR01	Garlock	Oak Creek	35°02.2' / 118°23.1'	053	LL:H <sub>s</sub>	200-300 m	90-190	1 3 2	stream channels	GAR01 correlation	B C	La Violette and others (1980)	Age of offset surface into which stream channels are incised based on preliminary correlation with dated soils of San Joaquin Valley. Minor (10 m) and variable vertical component is present. 200 to 300 m offset permitted by Fig. 3 of La Violette and others (1980).	MC
MD GAR02	Garlock	Koehn Lake	35°22.3' / 117°51.0'	060	LL:H <sub>s</sub>	75-85 m	11-15	5 8 7	lake bar	GAR02 14C from tuffs, ostracodes	A C	Clark & Lajoie (1975); Burke & Clark (1978)	Age of lake based on tuffs on bar and on ostracodes in adjacent lacustrine silt. Age has been checked as too young, based on appearance of soil on bar. Vertical component < 1 m.	MC
MD GAR03	Garlock	Goler Gulch	35°26' / 117°43'	065	LL:H <sub>s</sub>	16-220 km	<650-3000	5 >30 11	alluvial gravel from source	GAR03 correlation and vertebrate fossils	B B	Carter (1980, 1982)	Displaced gravels correlated by lithology, texture and degree of consolidation to similar gravels next to bedrock source that overlie silt beds containing Pleistocene fossils. Carter's preferred rate of 11 mm/yr is compatible with rate derived from nearby displaced Pliocene deposits.	MC
MD GAR04	Garlock	Christmas Canyon	35°31.1' / 117°22.1'	077	LL:H <sub>s</sub>	7-9 m	8-10	.7 1.1 1	former stream channel	GAR04 correlation, 14C	B A	Smith (1975); G.I. Smith, oral commun., 1983	Faulted channels occur in lacustrine and alluvial gravels correlated with 14C-dated stratigraphy established elsewhere in Searles Valley. No significant vertical component.	MC
MD HDL01	Helendale	Near Interstate 15	34°42' / 117°13'	135	RL:H <sub>s</sub>	1/2 km	2000-20000	-- 1 --	pluton contact	HDL01 see comments	C C	Dokka (1983), Miller and Morton (1980); Morton and others (1980)	Miller and Morton estimate 1-2 km maximum horizontal offset of pluton boundary assuming no vertical offset, but vertical offset is possible. Dokka (1983) assumed that offset began at same time as offset on subparallel faults to NE (see CAL01, CPK01, LWO01, HRP01). Fault has evidence of late Quaternary offset.	MC
MD LWO01	Lenwood	Newberry Mountains	34°45' / 116°56'	120-160	RL:H <sub>s</sub>	1-5 km	2000-20000	.05 2.5 --	same as for CAL01	LWO01 same as for CAL01	C C	Dokka (1983); Miller and Morton (1980)	Same as for CAL01	MC
MD RDP01	Rodman & Pisgah	Lava Bed Mountains	34°39' / 116°29'	150	RL:H <sub>s</sub>	6.4-14.4 km	2000-20000	.3 7 --	same as for CAL01	RDP01 same as for CAL01	C C	Dokka (1983); Miller and Morton (1980)	Same comment as CPK01. Slip is combined for Rodman and Pisgah faults.	MC
<b>Northern Coast Ranges</b>														
NC ADC01	Adobe Creek	Kelseyville	38°58.9' / 122°51.8'	030	?:V	32-36 m	120-450	.07 .30 --	Kelsey Tuff Member	ADC01 correlation	C C	M. J. Rymer, unpub. data, Sarna-Wojcicki, written comm., 1983	Only the vertical separation is known. Maximum possible age of Kelsey Tuff Member (1.0-1.7 m thick) is approximated by correlation of ash bed underlying the tuff (Sarna-Wojcicki, written comm., 1983). Minimum age is determined by correlation of diatoms (J. P. Bradbury, written comm., 1983) in the Kelseyville Formation with diatoms in Clear Lake cores.	MR
NC ANV01	Año Nuevo	Año Nuevo	37°06.9' / 122°19.5'	141	R:T	5.5 m P	105 E	-- -- .05	marine wave-cut platform	ANV01 paleontology, amino acids, geomorphology, dated sea-level curve	B B	Weber (1980); Weber and Lajoie (1980); K. R. Lajoie, unpub. data	Reverse fault exposed in sea cliff. Lateral extent not known. Five to seven offset events. Holocene displacement. Lateral slip not known. Assume all dip slip. Age from correlation with sea-level curve (K. R. Lajoie, unpub. data).	KL
NC BEN01	Bay Entrance	Fields Landing	40°44.1' / 122°13.1'	166	R:D	270 m P	120-200	1.4 2.2 1.8	top lower Hookton Formation	BEN01 stratigraphy	C C	Woodward-Clyde Consultants (1980)	Top of lower Hookton Fm. repeated in test well. Older horizons offset rates of 0.5-1.2 mm/yr. Part of Little Salmon fault system. No surface evidence of fault. Dip separation reported; horizontal component of slip unknown.	KL
NC BGW01	Big Valley	Shaul Valley	38°56.7' / 122°48.5'	153	RL:H <sub>s</sub>	180-210 m	<500-580	.3 >.4 --	slender outcrop of basalt, <u>bms</u>	BGW01 K-Ar date on rhyolite, <u>UCC</u> , intruded by <u>bms</u>	C C	B. C. Hearn, written comm., 1983; Hearn and others (1976)	Low rating of displacement estimates reflects uncertainty in true structure of <u>bms</u> . Stratigraphic relations elsewhere suggest <u>bms</u> was emplaced soon after <u>bms</u> , but how soon is unclear, thus minimum age and maximum rate may not be accurate.	JL
NC BGW02	Big Valley	Kelseyville	38°59.1' / 122°51.1'	110	?:V	65-69 m	120-450	.14 .58 --	Kelsey Tuff Member	BGW02 correlation	C C	M. J. Rymer, unpub. data	Same comment as ADC01.	MR
NC COL01	Collayon	Camel Back Ridge	38°54.0' / 122°47.9'	136	RL:H <sub>s</sub>	0-0.5 km	520-700	0 1 --	rhyolite units & <u>ro</u> , Clear Lake Volcanics	COL01 K-Ar dating	D A	B. C. Hearn, written comm., 1983; Hearn and others (1976)	Southern limit of <u>ro</u> and general distribution of <u>g</u> suggest RL offset, but critical evidence covered by landslide & colluvium. Apparent RL may also be caused by vertical offset followed by erosion.	JL
NC CSM01	Coastways	Año Nuevo	37°07.5' / 122°17.8'	160	RL:H <sub>s</sub>	1800 m E	105 E	-- -- 17	ancient marine shoreline	CSM01 paleontology, amino acids, geomorphology, dated sea-level curve	B B	Weber & Lajoie (1980); K. R. Lajoie, unpub. data	Major strand in San Gregorio fault zone. Shoreline crosses fault at acute angle therefore, slip is very uncertain. Small vertical slip component may be present.	KL
NC CSM02	Coastways	Año Nuevo	37°08.2' / 122°18.5'	160	RL:H <sub>s</sub>	1400 m E	200 E	7 -- 7	ancient marine shoreline	CSM02 geomorphology, dated sea-level curve	C C	G. E. Weber & K. R. Lajoie, unpub. data	Major strand of San Gregorio fault zone. Shoreline and fault geometry obscured by landslides. Strand cuts younger features to south. This is probably most reliable estimate of H <sub>0</sub> for this fault. Small vertical slip component may be present.	KL
NC FRJ01	Frijoles	Año Nuevo	37°07.0' / 122°19.7'	157	RV:V?	3 m E	8.4 E	-- -- .4	strata	FRJ01 14C on charcoal and organic sediment	B A	Weber and Lajoie (1980); K. R. Lajoie, unpub. data	Holocene peaty beds exposed in natural sea cliff separated 3 m vertically. Fold of <u>ro</u> indicates some horizontal component. H <sub>0</sub> may be much greater than V. Part of San Gregorio fault zone; subparallel to Coastways fault. Frijoles may be most active strand over past .10 m.y.	KL
NC FRJ02	Frijoles	Año Nuevo	37°07.0' / 122°19.7'	157	RV:V?	25 m E	105 E	-- -- .3	marine wave-cut platform	FRJ02 paleontology, amino acids, geomorphology, dated sea-level curve	B B	Weber & Lajoie (1980); K. R. Lajoie, unpub. data	Apparent vertical component of RL fault at same location as FRJ01. V/H <sub>0</sub> not known, but H <sub>0</sub> probably greater than V. Part of San Gregorio fault zone.	KL
NC FRJ03	Frijoles	Año Nuevo	37°08.4' / 122°20.0'	167	RL:H <sub>s</sub>	460-540 m	200 E	2.3 2.7 2.3	ancient marine shoreline	FRJ03 same as FRJ02	C B	Weber and Cotton (1981); K. R. Lajoie, unpub. data	Holocene displacement on this strand. Part of San Gregorio fault zone.	KL
NC FRJ04	Frijoles	Año Nuevo	37°08.4' / 122°20.0'	146	RL:H <sub>s</sub>	200-260 m	105 E	2.0 2.5 2.0	ancient marine shoreline	FRJ04 same as FRJ02	C B	G. E. Weber; K. R. Lajoie, unpub. data; Weber and Cotton (1981)	Reconstructed shoreline offset, not tightly constrained. Holocene displacement on this strand.	KL
NC FRJ05	Frijoles	Pescadero	37°16.8' / 122°24.5'	165	RR:V?	43 m E	100-200	.2 .4 .7	wave-cut platform of marine terrace	FRJ05 geomorphology, dated sea-level curve	B C	K. R. Lajoie, unpub. data	Three subparallel fault strands cut an emergent marine terrace and vertically separate the wave-cut platform a total of 43 m. This series of faults probably has a large, but unknown horizontal component (H <sub>0</sub> ) of right slip. These faults are part of the San Gregorio fault zone.	KL
NC GSL01	Goose Lake	Hydesville	40°30.5' / 122°05.3'	113	RR:T	4-8.5 m	9-16	.3 1.0 1.0	lake strata	GSL01 14C on wood	B B	Woodward-Clyde Consultants (1980)	Trench across fault scarp exposed faulted sand-dune deposits. May be bedding-plane slip on limb of syncline associated with Little Salmon fault 1 km to north. 2 events recorded, 2-4m per event. Displacement based on slickensides.	KL
NC LPS01	Las Positas, north branch, two strands only	Arroyo Seco	37°40.6' / 121°42.1'	060	LN:V H <sub>0</sub> T	.25 m S 3.1-4.6 m .1 m S 3.1-4.6 m	3-80	.04 1.6 --	base of terrace gravels	LPS01 soil development	B D	Carpenter and Clark (1982); Herd & Brabb (1978); D. G. Herd, oral commun., 1983	60-70 cm, S-side-down vertical separation assumed equal to V. Rate on slickensides of 15° (N60E) showing at least 50 m slip, and 80° SE dip used with V to compute H <sub>0</sub> and H <sub>1</sub> for that strand. The other strand, 45-95 m of beside-down vertical separation, and a measured dip of 89° NE, are combined with tenuous assumptions, made by compiler that: (1) 18° rate and (2) soil-age, apply to this strand also, to compute H <sub>0</sub> , H <sub>1</sub> and V, which are then summed over both strands. Other strands are present.	JL
NC LTS01	Little Salmon	Fields Landing	40°42.7' / 124°12.8'	135	RR:D	360 m P	120-200	1.8 3.0 2.4	top of lower Hookton Formation	LTS01 stratigraphy	C C	Woodward-Clyde Consultants (1980)	Top of lower Hookton Fm. repeated in test well. 30° dip on fault assumed to see dip slip. Older horizons offset at rates of 1.4-2.2 mm/yr. Surface expression. Strands exposed in trenches. Dip separation reported, H <sub>0</sub> unknown.	KL
NC MCV01	McKinleyville	McKinleyville	39°58.8' / 124°06.8'	135	RR:T	19 m P	82 E	-- -- 0.2	marine wave-cut platform	MCV01 regional correlation	B C	Woodward-Clyde Consultants (1980)	Fault exposed in trench across topographic fault scarp in marine terrace. Recurrence 5,000-20,000 yr. Slickensides used to estimate 1.	KL
NC MDW01	Midway	east of Altamont	37°44' / 121°35'	143	R:V H <sub>0</sub> T	25-35 m 25-35 m 35-50 m	100-600	.06 .5 --	pediment	MDW01 similarity to Los Banos alluvium	C D	Shedlock and others (1980); D. G. Herd, oral commun., 1983	H <sub>0</sub> and V derived from unmeasured, assumed dip of 45°. Local constraints on age not available. Style appears similar to that of the O'Neill fault system.	JL
NC ONL01	O'Neill	Los Banos Creek	36°57.5' / 121°00.5'	140	R:V H <sub>0</sub> T	110-130 m 130-130 m 160-180 m	100-600	.3 1.8 --	pediment	ONL01 U-series on bone & groundwater carbonates; correlation	B C	Lettis (1982)	Pediment age; see comments for San Joaquin fault. Dip used to compute H <sub>0</sub> and V, is only approximate and relies on assumption of bedding plane slip. No evidence for strike-slip component.	JL
NC ORT01	Ortigalita	Los Banos Creek	36°57.5' / 121°02.2'	134	?:V	6-7 m	500-700	.01 .01 --	stratum, Tulare Fm.	ORT01 correlation	C B	Anderson and others (1982); L. W. Anderson, written comm., 1983	Probable match of stratum across fault, but not certain. Null-shear basin in this region suggests late Neogene strike-slip rates of 2-8 mm/yr. Holocene geomorphic expression is consistent with this. See comments for ORT02.	JL
NC ORT02	Ortigalita	San Luis Reservoir	37°06.5' / 122°08.0'	156	?:V	.18-.22 m	5-15	.01 .04 --	colluvial lens	ORT02 soil development	C C	Anderson and others (1982); L. W. Anderson, oral commun., 1983	Horizontal slickensides and nearly vertical dip suggest a large strike-slip component, thus both Ortigalita fault slip rates in this table are extreme minima, possibly too low by one or two orders of magnitude.	JL
NC SAN85	San Andreas	Woodside	37°29.3' / 122°19.9'	142	RL:H <sub>s</sub>	3.1-4.2 km	350-450	6.9 12 --	gravels of the Woodside member, Santa Clara Fm.	SAN85 fixation track & K-Ar dates on tuff correlated to one found in Woodside member	B B	J. C. Cummings, oral commun., 1983; Cummings (1983)	Arkosic gravels derived from northernmost Rodano Fm., matched across fault by contouring near east side. Tuff seems to be near base of Woodside member. Because adjacent Canada fault shows no late Pleistocene offset, slip-rate range prob. that of entire San Andreas fault zone.	JL
NC SAN90	San Andreas	Crystals Springs Reservoir	37°33.7' / 122°23.6'	145	RL:H <sub>s</sub>	2.1-3.3 m * <.068 S H <sub>0</sub> 8.5-14.3 m * .94-1.2	31 48 --	7.1 15.2 12	pre-1998 fence and cypress tree stream channel	SAN90 1838 AD to 1906 AD	A D	Hall, in press	Speculative assumption by compiler that strain released in 1906 accumulated entirely after 1838 earthquake. 14C-date on charcoal gives age of youngest dated alluvium deposited before channel offset. Compiler estimates 37 to 47 feet of total offset. Minimum slip rate uses minimum estimate of offset less 8 ft. of slip in 1906 event. Charcoal samples probably consisted entirely of two-sized plants and therefore were not already old at deposition. Preferred value from Hall.	JL
NC SGR01	San Gregorio	Año Nuevo	37°07.1' / 122°18.2'	160	RL:H <sub>s</sub>	740-1160 m	105 E	7 11 7	ancient marine shoreline	SGR01 paleontology, amino acids, geomorphology, dated sea-level curve	C B	Weber & Cotton (1980); K. R. Lajoie, unpub. data	Sums displacement across CSM01 and FRJ04 in the San Gregorio fault zone to give minimum estimate of offset less 8 ft. of slip in 1906 event. Long-term slip rate (Mio.) for this fault zone is about 8 mm/yr.	KL
NC SJQ01	San Joaquin	Laguna Seca Hills	36°55' / 120°50'	137	?:V	140-200 m	100-600	.2 2 --	pediment overlaid by the middle unit of Los Rios all	SJQ01 U-series on bone & groundwater carbonates, and correlation	B C	Lettis (1982)	Middle unit at least 100,000 years old by U-series dating, and is considerably younger than the .62-.72 m.y. Corcoran Clay. A buried soil with .08-.10 m.y. of development lies stratigraphically between middle-unit and that clay. Dip and some of fault are unknown. Maximum estimated offset is compiler's estimate using geologic map of Lettis.	JL
NC SLC01	Seal Cove	Half Moon Bay	37°30.06' / 122°30.1'	141	RL:V	U-50 m	82-105	.5 .6 --	marine wave cut platform	SLC01 paleontology, amino acids, dated sea-level curve	C B	K. R. Lajoie, unpub. data	Half Moon Bay marine terrace is displaced across the vertical Seal Cove fault. The resulting linear scarp (SW side up) represents vertical separation. Terrace is warped differently on each side of the fault. Right-lateral displacement and H <sub>0</sub> are not known, but may be large. Locally strands appear to cut Holocene alluvium.	KL
NC TRN01	Andersen Ranch	Trinidad	41°03.5' / 124°08.6'	155	R:T	14-30 m	82 E	.2 .4 .4	surface of marine terrace	TRN01 regional tectonic uplift rate and dated sea-level curve	A B	Woodward-Clyde Consultants (1980); Rust (1982c)	Fault exposed in trench across topographic scarp on marine terrace. Slickensides indicate dip slip. Named by Rust, 1982c; subsequently referred to as Trinidad fault by Woodward-Clyde Consultants, (1980).	KL
NC TRN02	Andersen Ranch	Trinidad	41°04.5' / 124°09.3'	120	R:D	5 m P	60 E	.09 .2 --	surface of marin terrace and alluvial gravels	TRN02 regional tectonic uplift rate and dated sea-level curve	A B	Woodward-Clyde Consultants (1980); Rust (1982c)	Fault exposed in sea-cliff exposure on projection of topographic scarp. Slickensides indicate dip slip. See comments for TRN01 regarding name.	KL
NC VCA01	Vaca	Cannon Hills	38°18.8' / 121°58.3'	148	RL:H <sub>s</sub>	30-40 m	10-20	.3 4 --	stream channel	VCA01 soil development	D D	Kneupper (1977); P. L. Kneupper, oral commun., 1983	Erosion alone may have caused apparent RL offset; only geomorphic evidence is available, thus slip rate may actually have been zero since time of channel formation.	JL
NC VER01	Verona	Vallecitos Valley	37°36.7' / 121°50.5'	125	R:T	5.5-8.4 m	70-300	.02 >.1 >.1	buried soil	VER01 climatic assumption about soil development	B C	Herd and Brabb (1980); D. G. Herd, oral commun., 1983	Buried soil probably formed in last major interglacial period, but may be older. Total offset is summed dip slip on 3 breaks. 14C-dated offset at site suggests much greater Holocene rate; Pleistocene Livermore gravel offset allows up to 0.15 mm/yr. Erosional destruction of offset buried soil makes preferred rate a minimum.	JL
NC ZAV01	Zayante-Vergeles	Elkhorn Valley	36°52' / 121°39'	108	?:V	4.9-8.5 m	75-115	.04 .1 .06	fluvial terrace	ZAV01 correlation of soil development to Watsonville terrace	B D	Coppersmith (1979)	Soil of the offset lower Elkhorn Valley terrace apparently is same age as soils developed on Watsonville terrace, thus comments about that terrace's age apply here as well; see ZAV02.	JL
NC ZAV02	Zayante-Vergeles	Pinto Lake	36°57' / 121°47'	136	?:V	10-17 m	75-115	.09 .2 .1	Watsonville terrace	ZAV02 fill terrace grades to marine shoreline angle	C C	Dupe (1975); Hall and others (1978); Coppersmith (1979); K. R. Lajoie, written comm., 1983; K. R. Lajoie, unpub. data	Age of shoreline angle prob. .085 or .105 m.y.; .105 m.y. more likely (K. R. Lajoie, oral commun., 1983) is m offset of Dupre (1975) and .105 m.y. used for prefer. rate. Minimum of one 20 ft. contour offset at Pinto Lake scarp and 2/3 of a contour on adjacent College Lake scarp. Focal mechanisms suggest RL style, but RR seen 12 km north at ZAV03.	JL
NC ZAV03	Zayante-Vergeles	Bean Hill	37°01.2' / 121°50.6'	127	RR:V H <sub>0</sub> T	1.2-2.4 m .3-1.1 m 1.0-4.2 m 1.6-6.7 m	5-15	.1 1.3 --	pebbly layer	ZAV03 sag-pond fillings-rates and soil development	B D	Coppersmith (1979)	Vertical offsets not fully exposed. Lateral component range on range of rake angles measured on various shears exposed in trench, 23°-50°, and thus may not encompass the range of strike-slip at this site.	JL

1-Style: strike-slip RL right lateral LL left lateral  
dip-slip R reverse or thrust, compressional N normal, extensional  
oblique-slip RR right-reverse LR left-reverse RN right-normal LN left-normal RV right-vertical LV left-vertical

Components: refer to block diagram  
 $T = H_0 + D + H_1 + V$   
 $T = \sqrt{H_0^2 + H_1^2 + V^2}$

