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THIRD-ORDER LEVELS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

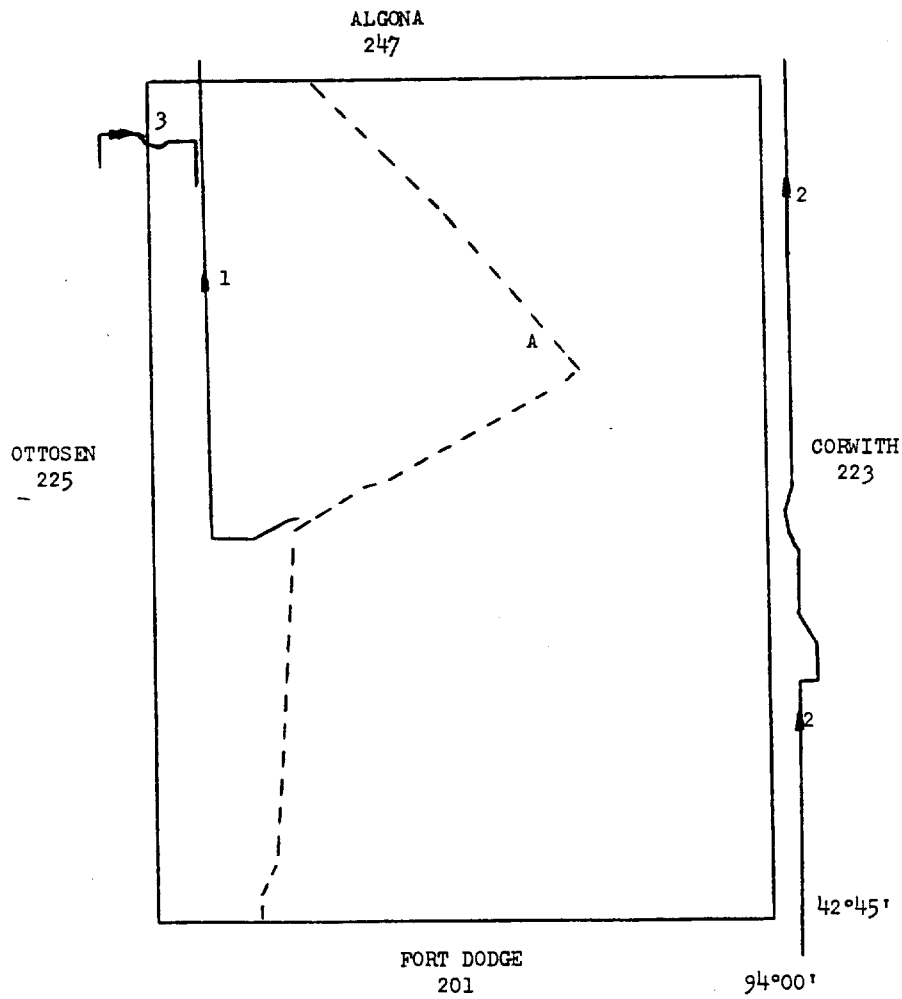
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

42-094-11
LIVERMORE QUADRANGLE
224 - IOWA
N4245-W9400/15
DIAGRAM NK 15-4
FORT DODGE

Edition of: 2-17-77

PR: ADP/LB/cb

Humboldt County



U.S.G.S. (USC&GS) VERTICAL CONTROL DATA

Quadrangle 420941

224-A

LINE 1

FEET

W.E. Knouse, 1972; Book CV-2870

1	2	0.0	At Livermore, Humboldt County, 0.2 mi NE. of the Minneapolis and St. Louis RR. station at a street crossing, 92 ft S. of the N. property line of State Hwy. 222, 92 ft E. of the E. property line of the N.-S. street, 24 ft SE. of the centerline of the track, and 4 ft from a pole. A standard disk, stamped "11 26.976 B 2 1930" and set in the top of a concrete post	1126.976
2		0.2	UE B 2 A, in Livermore, at junction of State Hwy. 222 and main N.-S. street; cross streets at Coop Gas Station; center of cross streets; painted square	1129.2
3		1.4	UE B 2 B, T. 93 N., R. 28 and 29 W., near cor. secs. 18, 19, 13 and 24; center of Hwy. 222 at crossroads, (center of Hwy. opposite centerline of the portion going NW); painted square	1099.4
4		1.9	UE B 2 C, T. 93 N., R. 29 W., near quarter cor. secs. 13 and 24; center of State Hwy. 222 at fence S.; painted square	1127.1
5		2.4	UE B 2 D, T. 93 N., R. 29 W., near cor. secs. 13, 14, 23 and 24; center of U.S. 169 at State Hwy. 222; top of small nail at center of chiseled cross	1127.13
6		3.1	RM 1 WEK, T. 93 N., R. 29 W., about 0.3 mi S. cor. secs. 11, 12, 13 and 14; on top and center of E. headwall of small concrete box culvert; Iowa State bolt type B.M.	1123.60
7		3.1	Livermore 2.0 mi W. from, along U.S. Hwy. 169, 2.5 mi S. from St. Joseph; T. 93 N., R. 29 W., about 0.3 mi S. cor. secs. 11, 12, 13 and 14; on top and center of W. end of small concrete box culvert; a standard cap stamped "1 WEK 1972"	1123.568
8		3.4	UE 1 A, T. 93 N., R. 29 W., near cor. secs. 11, 12, 13 and 14; center of U.S. Hwy. 169 at rd. W.; chiseled square	1104.8
9		3.5	UE 1 B, T. 93 N., R. 29 W., N. of cor. secs. 11, 12, 13 and 14, about 360 ft, center floor of concrete bridge and 13.2 ft above water level in drain (06-08-72), painted square	1105.9
10		3.9	UE 1 C, T. 93 N., R. 29 W., near quarter cor. secs. 11 and 12; T-rd. E. (U.S. Hwy. 169 Rd. E.), copper nail and washer	1117.2
11		4.0	UE 1 D, T. 93 N., R. 29 W., about 0.85 mi S. of cor. secs. 1, 2, 11 and 12, center floor of bridge and 9.0 ft above water level of drain; painted square (6-8-72)	1108.3
12		4.4	UE 1 E, T. 93 N., R. 29 W., near cor. secs. 1, 2, 11 and 12; center of U.S. Hwy. 169 W. Rd. W.; chiseled square	1130.4
13		4.6	UE 1 F, T. 93 N., R. 29 W., about 0.2 mi N. of cor. secs. 1, 2, 11 and 12, center floor of bridge and 10.9 ft above water level (6-8-72); painted square	1112.7
14		5.1	UE 1 G, T. 93 N., R. 29 W., about 0.25 mi N. of quarter cor. secs. 1 and 2; center U. S. Hwy. 169 at rd. W.; chiseled square	1119.0
15		5.5	UE 1 H, T. 94 N., R. 29 W., between SE $\frac{1}{4}$ sec. 35 and SW $\frac{1}{4}$ sec. 36; T-rd. E. (U.S. Hwy. 169 and State Hwy. 408 E.); chiseled square (at county line)	1136.0
16		6.0	UE 1 I, T. 94 N., R. 29 W., near quarter cor. secs. 35 and 36; center of U.S. Hwy. 169 at rd. W.; top of copper rod set flush with hwy.	1102.5
17		6.3	RM 2 WEK, T. 94 N., R. 29 W., near N. sixteenth cor. between secs. 35 and 36; center of floor of bridge and 10.5 ft above water level; chiseled cross	1098.48

FEET

LINE 1 (Cont'd)

1	18	6.3	BM 2 WEK, St. Joseph, about 0.3 mi N. from along U.S. Hwy. 169, 9.5 mi S. of Algona; T. 94 N., R. 29 W., near N. sixteenth cor. secs. 35 and 36; on top of NW. wing of concrete bridge; a standard cap stamped "2 WEK 1972"	1098.924
	19	6.5	UE 2 A, T. 94 N., R. 29 W., near cor. secs. 25, 26, 35 and 36; center of U.S. Hwy. 169 at rd. E.; chiseled square	1096.5
	20	7.0	UE 2 B, T. 94 N., R. 29 W., near quarter cor. secs. 25 and 26, center of U.S. Hwy. 169 at rd. W.; chiseled cross	1096.5
	21	7.4	UE 2 C, T. 94 N., R. 29 W., about 0.1 mi S. of cor. secs. 23, 24, 25 and 26; at center of bridge over E. fork Des Moines River and 15.3 ft above water level (06-12-72); chiseled square	1104.8
	22	8.0	UE 2 D, T. 94 N., R. 29 W., near quarter cor. secs. 23 and 24; center of U.S. Hwy. 169 at Fence E.; chiseled cross	1102.9
	23	8.5	UE 2 E, T. 94 N., R. 29 W., near cor. secs. 13, 14, 23 and 24; center of U.S. Hwy. 169 E.-W. rds.; chiseled square	1098.7
	24	8.9	BM 3 WEK, St. Joseph, 3.0 mi N. from along U.S. Hwy. 169, 6.5 mi S. of Algona; T. 94 N., R. 29 W., about 400 ft S. of quarter cor. secs. 13 and 14, 21 ft E. of center of U.S. Hwy. 169 at culvert; on N. end of E. headwall of concrete culvert; a standard cap stamped "3 WEK 1972"	1099.658
	25	9.0	RM 3 WEK, T. 94 N., R. 29 W., near quarter cor. secs. 13 and 14, center of U.S. Hwy. 169 at fence E.; chiseled square	1103.97
	26	9.5	UE 3 A, T. 94 N., R. 29 W., near cor. secs. 11, 12, 13 and 14, center of U.S. Hwy. 169 at fence E., top of copper rod flush with pavement	1117.6
	27	10.0	UE 3 B, T. 94 N., R. 29 W., near quarter cor. secs. 11 and 12; center of U.S. Hwy. 169 at fence E.; top copper rod flush with Hwy. surface (paved)	1104.5
	28	10.5	UE 3 C, T. 94 N., R. 29 W., near cor. secs. 1, 2, 11 and 12, center of U.S. Hwy. 169 at County Road B 58, E., E.-W. rd. staggered slightly; top of copper rod flush with surface of road cement	1120.8
	29	12.9	Reference mark 2, a standard USC&GS disk stamped DALE NO 2 1971, is set in the top of a 12-in. cylindrical concrete monument which projects 2 in. above ground. It is 43 ft N. of the center of the rd., 37.0 ft W. of the witness post, 1.7 ft S. of the fence and level with the station.	1157.508
	30	10.7	Triangulation Station DALE 1971. The station is located 10 mi SW. of Sexton, 6.0 mi S. of Algona, 0.2 mi E. of U.S. Hwy. 169, on road right-of-way, in sec. 1, T. 94 N., R. 29 W., go W. on the the paved rd. for 5.0 mi to a crossroads, continue W. of Route B 58 for 1.1 mi to a dirt road left.	1157.013
	31	10.7	Reference mark 1, a standard disk stamped DALE NO 1 1971, is set in the top of a 12-in. cylindrical concrete monument which projects 2-in. above the ground. It is 39.5 ft N. of the center of the road, 30.7 ft E.-SE. of the witness post, 8.0 ft W. of the S. power line pole, 5 ft S. of the fence, and 2 ft lower than the station	1155.234
	33	10.7	UE DALE A, T. 94 N., R. 29 W., near quarter cor. secs. 1 and 2; near center of U.S. Hwy. 169 at fence E. (fence W.) staggered little, top copper rod flush with concrete surface	1120.7

LINE 1 (Cont'd)

LIVERMORE QUAD. - 224

FEET

1 34 11.9 UE Dale B, T. 94 N., and 95 N., R. 29 W., near cor. secs. 1, 2, 35 and 36; center of U.S. 169 at rd. E.; chiseled cross 1117.0

ALGONA QUAD. 247

35 12.3 UE DALE C, T. 95 N., R. 29 W., about 0.1 mi S. of quarter cor. secs. 35 and 36; at center of floor of bridge over East Fork Des Moines River and 17.8 ft above water level (06-13-72); chiseled square 1116.5

36 12.9 UE DALE D, T. 95 N., R. 29 W., near cor. secs. 25, 26, 35 and 36; center of U.S. Hwy. 169, at county road crossing, (county rd. B-55), copper nail and washer 1144.1

LINE 2

W.E. Knouse, 1972; Book CV-2870

EAGLE GROVE QUAD. - 200

3 12 4.4 UE 10 D, T. 92 N., R. 27 W., near quarter cor. secs. 35 and 26; centerline of rd. at E.-W. fence, top of RR. spike in gravel rd. 1150.7

13 4.9 UE 10 E., T. 92 N., R. 27 W., near cor. secs. 25, 26, 35 and 36, on top of W. end of N. wheel guard of bridge and 0.2 ft higher than center of bridge and 18.3 ft higher than Water Level (06-24-72); copper nail and washer 1126.10

CORWITH QUAD. - 223

14 5.3 Reference mark 11 WEK, T. 92 N., R. 27 W., about 0.1 mi S $\frac{1}{4}$ cor. secs. 25 and 26, 34 ft E. and 8 ft N. of rd. at a field entrance E.; in base of N. gate post and in W. side of 60d nail 1126.13

15 5.3 Renwick, 5.0 mi S. and 0.5 mi W. from, 3.0 mi E. and 4.5 mi N. of Thor; T. 92 N., R. 27 W., about 0.1 mi S. of cor. secs. 25 and 26, 34 ft E. and 15 ft N. of centerline of rd. at field entrance E., 1 ft W. of E. right-of-way fence; a standard cap on top of copper rod and encased in 6-in. by 1 ft piece of well casing; stamped "11 WEK 1972" 1125.630

17 5.9 UE 11 B, T. 92 N., R. 27 W., near cor. secs. 23, 24, 25 and 26; centerline of gravel rd. at E.-W. fence; top of RR. spike 1139.9

18 6.4 UE 11 C, T. 92 N., R. 27 W., near quarter cor. secs. 23 and 24; 80 ft S. and 31 ft E. of rd. at fence E.; in W. side of telephone pole and near ground level; 60d nail 1130.13

20 6.9 UE 11 D, T. 92 N., R. 27 W., near cor. secs. 13, 14, 23 and 24; crossroads, top of monel metal nail in asphalt rd. and flush with rd. surface 1143.5

21 7.4 UE 11 E., T. 92 N., R. 27 W., near quarter cor. secs. 13 and 14; centerline of gravel road, fence W.; top of RR. spike 1141.4

22 7.0 UE 11 F, T. 92 N., R. 27 W., near cor. secs. 11, 12, 13 and 14; crossroads, top of RR. spike (in gravel crossroads) 1126.3

24 8.4 RM 12 WEK, T. 92 N., R. 27 W., near quarter cor. secs. 11 and 12; 34 ft W. of centerline of rd. at fence W., in E. base of fence corner post; 60d nail 1130.42

CORWITH QUAD. - 223

FEET

LINE 2 (Cont'd)

3	25	8.5	BM 12 WEK, Renwick, 2.0 mi S. and 0.5 mi W. from along county dirt roads; T. 92 N., R. 27 W., about 400 ft N. of quarter cor. secs. 11 and 12, 32 ft W. of centerline of rd.; 1 ft E. of W. right-of-way fence on top of copper coated rod and encased in a 6-in. by 1 ft piece of well casing; a standard cap stamped "12 WEK 1972"	1127.006
27		8.9	UE 12 A, T. 92 N., R. 27 W., near cor. secs. 1, 2, 11 and 12, 33 ft N. and 32 ft E. of crossroads, in N. side of power pole and about 0.8 ft above ground level; RR. spike	1131.91
29		9.6	UE 12 B, T. 92 N., R. 27 W., near N. sixteenth cor. secs. 1 and 2, on top and center of W. headwall of concrete bridge and 1.3 ft higher than center of rd. at bridge and 16.5 ft higher than water level; chiseled square	1128.98
31		10.5	UE 12 C, T. 92 and 93 N., R. 27 W., near quarter cor. secs. 1 and 36; road at curve 0.5 in. S. of Renwick; copper nail and washer	1137.65
32		11.0	RM 13 WEK, T. 93 N., R. 27 W., about 300 ft N. of center sec. 36 in Renwick; where N.-S. street W. edge meets E.-W. main street cross streets; copper nail and washer	1155.80
33		11.0	BM 13 WEK, At Renwick, in West portion of town, 85 ft W. of street intersection (N.-S.) street and E.-W. street) the E.-W. street makes turn to NW. at intersection, 19.5 ft N. of projected centerline of E.-W. street, 39 ft SE. of centerline of E.-W. street after it turns NW.; 3.5 ft SW. of NE. cor. of sidewalk 3.5 ft ENE. of NE. cor. of Nutreana Feeds Office Building, 4 ft NW. of W. edge of scale, set in sidewalk, a standard cap stamped "13 WEK 1972"	1156.146
34		11.6	UE 13 A, T. 93 N., R. 27 W., near W. sixteenth cor. sec. 36 and 25, just W. of junction of asphalt and gravel rds. centerline of rd. at RR. crossing; copper nail and washer	1137.3
35		12.1	UE 13 B, T. 93 N., R. 27 W., near quarter cor. secs. 25 and 26; centerline of gravel rd. at E.-W. fence; top of RR. spike	1130.2
36		12.6	UE 13 C, T. 93 N., R. 27 W., about 450 ft S. of cor. secs. 23, 24, 25 and 26; 13 ft W. of centerline of rd. at drain; 6.0 ft above water level of drain and 0.6 ft higher than centerline of rd. at drain; on top and center of W. headwall of culvert; chiseled cross	1119.13
38		13.0	UE 13 D, T. 93 N., R. 27 W., about 600 ft S. of quarter cor. secs. 23 and 24, on center of W. wooden wheel rail of bridge and 0.2 ft higher than center of bridge floor and 12.6 ft above water level (06-26-72); copper nail and washer	1116.09
40		13.7	Renwick, 2.5 mi N. and 0.5 mi W. from along county rd. P6, 4.5 mi E. and 3.5 mi S. from Luverne; T. 93 N., R. 27 W., near cor. secs. 13, 14, 23 and 24, on SW. wing of bridge over creek, a standard cap stamped "14 WEK 1972"	1116.843
41		13.8	RM 14 WEK, T. 93 N., R. 27 W., near cor. secs. 13, 14, 23 and 24; center of floor of bridge over Creek, and 15.0 ft above water level (06-20-72); chiseled cross	1115.95
43		14.4	UE, T. 93 N., R. 27 W., in E. central portion sec. 14; center floor of bridge over creek; chiseled square 10 ft above water level (06-26-72)	1115.83
44		14.9	UE, T. 93 N., R. 27 W., near cor. secs. 11, 12, 13 and 14, centerline of T-rd. W., top of RR. spike in gravel T-rd.	1122.7
45		15.4	UE, T. 93 N., R. 27 W., near quarter cor. secs. 11 and 12; centerline of rd. at E.-W. fence; top of RR. spike in gravel rd.	1121.5

CORWITH QUAD. - 223

FEET

LINE 2 (Cont'd)

3	46	15.9	UE, T. 93 N., R. 27 W., near cor. secs. 1, 2, 11 and 12; centerline of crossroads; RR. spike in gravel rd.	1125.5
47	16.4		UE, T. 93 N., R. 27 W., near quarter cor. secs. 1 and 2, centerline of rd. at fence E., RR. spike in gravel road	1155.4
48	16.8		BM 15 WEK, Luverne, 4.5 mi E. and 0.5 mi S. from along county roads C 12 and P76, T. 93 N., R. 27 W., about 1250 ft S. of county line between N $\frac{1}{4}$ secs. 1 and 2; 15 ft W. of centerline of rd.; on top of W. headwall of culvert; a standard tablet stamped "15 WEK 1972"	1135.813
49	16.8		RM 15 WEK, T. 93 N., R. 27 W., about 1250 ft S. of county line; between N $\frac{1}{4}$ secs. 1 and 2, 15 ft E. of centerline of rd. on top of E. headwall of culvert; chiseled square	1135.83
50	17.0		UE 15 A, T. 93 and 94 N., R. 27 W., near cor. secs. 1, 2, 35 and 36, center of crossroads, top monel metal nail	1146.5
51	17.5		UE 15 B, T. 94 N., R. 27 W., near quarter cor. secs. 35 and 36, centerline of rd. at E.-W. fence; top of RR. spike in center of gravel rd.	1144.8
52	18.0		UE 15 C, T. 94 N., R. 27 W., near cor. secs. 25, 26, 35 and 36; center of gravel crossroads; top of RR. spike	1167.66
53	18.5		UE 15 D, T. 94 N., R. 27 W., near quarter cor. secs. 25 and 26; center of gravel rd. at E.-W. fence; top of RR. spike	1162.1
54	19.0		UE 15 E, T. 94 N., R. 27 W., near cor. secs. 23, 24, 25 and 26; 63 ft S. and 23 ft W. of crossroads; on top of W. end of concrete pipe culvert; a chiseled square	1165.08
56	19.5		UE 15 F, T. 94 N., R. 27 W., near quarter cor. secs. 23 and 24, center of gravel road at E.-W. fence, top of solid piece of gravel	1180.6
57	19.8		RM 16 WEK, T. 94 N., R. 27 W., about 0.2 mi S. of cor. secs. 13, 14, 23 and 24, 22 ft E. of centerline of rd. at culvert; on top of E. end of concrete pipe culvert; a chiseled cross	1168.23
58	19.9		BM 16 WEK, Luverne; 2.5 mi N. and 4.5 mi E. from along county rds. C. 12 and dirt rd. 9.3 mi S. of Wesley, T. 94 N., R. 27 W., about 0.2 mi S. of cor. secs. 13, 14, 23 and 24; 22 ft W. of centerline of rd. at culvert, on top of W. end of large concrete pipe culvert; a standard cap stamped "16 WEK 1972"	1168.712
60	21.0		UE 16 B, T. 94 N., R. 27 W., near cor. secs. 11, 12, 13 and 14, centerline of crossroads; top of RR. spike, in gravel crossroad	1172.6
61	21.4		UE 16 C, T. 94 N., R. 27 W., about 0.3 mi N. of cor. secs. 11, 12, 13 and 14; center of RR. crossing; copper nail and washer	1175.0
62	21.5		UE 16 D, T. 94 N., R. 27 W., near quarter cor. secs. 11 and 12, centerline of rd. at fence W., top of RR. spike (rd. is gravel) (PP a Rd. at fence line Flt. 1- Photo)	1176.1
63	22.0		UE 16 E, T. 94 N., R. 27 W., near cor. secs. 1, 2, 11 and 12; centerline of T-rd. W., top of RR. spike (rd. gravel)	1178.2
64	22.5		UE 16 F, T. 94 N., R. 27 W. near quarter cor. secs. 1 and 2; centerline of gravel rd. at E.-W. fence; top of RR. spike	1174.4

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42-094-11
LIVERMORE QUADRANGLE
224 - IOWA

LINE 2 (Cont'd)

CORWITH QUAD. - 223

FEET

- 3 65 22.9 BM 17 WEK, T. 94 and 95 N., R. 27 W., about 300 ft S. of cor. secs. 1, 2, 35 and 36; on top of E. end of large concrete pipe culvert and 21 ft E. of centerline of culvert; a chiseled cross 1173.69
- 66 22.9 BM 17 WEK, Wesley; 6.3 mi S. from; along county rd. R. 14, 1.5 mi W. from Corwith, T. 94 and 95 N., R. 27 W. near cor. secs. 1, 2, 35 and 36; about 300 ft S. of the crossroads, 22 ft W. of centerline of rd. at culvert; on top of W. end of large concrete pipe culvert; a standard cap stamped "17 WEK 1972" 1173.839

BRITT QUAD. - 246

- 68 23.5 UE 17^B T. 95 N., R. 27 W., near quarter cor. secs. 35 and 36; centerline of rd. at E.-W. fence; copper nail and washer 1177.8
- 69 24.0 UE 17^C T. 95 N., R. 27 W., near cor. secs. 25, 26, 35 and 36; centerline of crossroads, copper nail and washer 1173.8

LINE 3

C.D. Lien, 1976; Book CV-3330

OTTOSEN QUAD. - 225

- 6 1 11.7 BM, West Bend, 0.5 mi N., 9 mi E. of; T. 94 N., R. 29 W., near the quarter cor. between secs. 9 and 10, 0.16 mi N. of crossroads, 9 ft N., 9 ft E. and 0.8 ft higher than centerline of bridge and 81 ft S., 9 ft E. of centerline of road at drive E., cemented in the NE. cor. of a bridge, a standard tablet stamped "33 CDL 1976" 1129.959
- 3 12.2 UE 33 A, 0.5 mi N. along road from tablet, T. 94 N., R. 29 W. near the S. sixteenth cor. between secs. 3 and 4, 33 ft S., 29 ft E. of and 2.3 ft lower than T-rd. E. on top of a 0.5-in. steel rod which projects 0.2 ft and sets at the outside of a fence corner 1147.18

LIVERMORE QUAD. - 224

- 5 13.3 UE 33 B, 0.5 mi N., 1.1 mi E. along road from tablet, T. 94 N., R. 29 W., near sec. cors. 2, 3, 10 and 11, 69 ft N., 28 ft W. of; and 7.5 ft lower than centerline of road projecting a T-rd. E., a punched hole in metal culvert 1124.29
- 11 16.0 BM, St. Joseph, 3 mi N. from along U.S. Hwy. 169, 6.5 mi S. of Algona; T. 94 N., R. 29 W., about 400 ft S. of quarter cor. secs. 13 and 14, 21 ft E. of center of U.S. Hwy. 169 at culvert; on N. end of E. headwall of concrete culvert; a standard cap stamped "3 WEK 1972" 1099.658