

**KANSAS GEOLOGICAL SURVEY
OPEN-FILE REPORT 2002-2**

**GEOLOGIC MAP OF BOURBON COUNTY, KANSAS:
DATA CONTROL POINTS**

by

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Introduction

The bedrock geology of Bourbon County was mapped on U.S. Geological Survey topographic quadrangle maps at a scale of 1:24,000 (Figure 1). Data points used in mapping the bedrock geology are organized by quadrangle in this report. This data may be different from that in previous Kansas Geological Survey (KGS) open-file reports for Bourbon County (West and Sawin, 1997; West and Sawin, 1998; West and Sawin, 1999), and therefore super cedes those reports. Additional measured stratigraphic sections and core descriptions in Bourbon County are available in KGS Open-File Report 94-37 (West and Sawin, 1994).

The stratigraphic names used herein are from Zeller (1968) with one exception. The Holdenville Shale has been divided into the Memorial Shale below and the Lost Branch Formation above (Heckel, 1991) (See Figure 2).

Numbering System

Control points for the Geologic Map of Bourbon County (West and Sawin, 2002) are identified as follows:

- (1) Numbers preceded by the letter **B** refer to measured sections in the Bourbon County, Kansas, Measured Sections files of the Kansas Geological Survey. Numbering began with the first measured section in the book and preceded sequentially to the last section;
- (2) Numbers preceded by the letter **L** refer to sites previously studied by West;
- (3) Numbers preceded by the letters **BB** are sites examined and evaluated specifically for this mapping project.

Sites may be identified by any one, two, or all three of these designations.

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- | | |
|-------------------------|----------------------------|
| 1 Blue Mound 1966 | 11 Moran SE 1966 |
| 2 Mapleton 1966 | 12 Uniontown 1966 |
| 3 Mantley 1958 (78 PR) | 13 Marmaton 1958 (78 PR) |
| 4 Prescott 1958 (78 PR) | 14 Fort Scott 1958 (78 PR) |
| 5 Hume 1940 | 15 Deerfield 1939 |
| 6 Bronson 1966 | 16 Porterville 1973 |
| 7 Xenia 1966 | 17 Hepler 1973 |
| 8 Devon 1958 | 18 Hiattville 1964 |
| 9 Hammond 1958 | 19 Cato 1959 (78 PR) |
| 10 Richards 1939 | 20 Garland 1948 |

PR Photorevised

Figure 1. Index Map for U.S.G.S. Topographic Quadrangles.

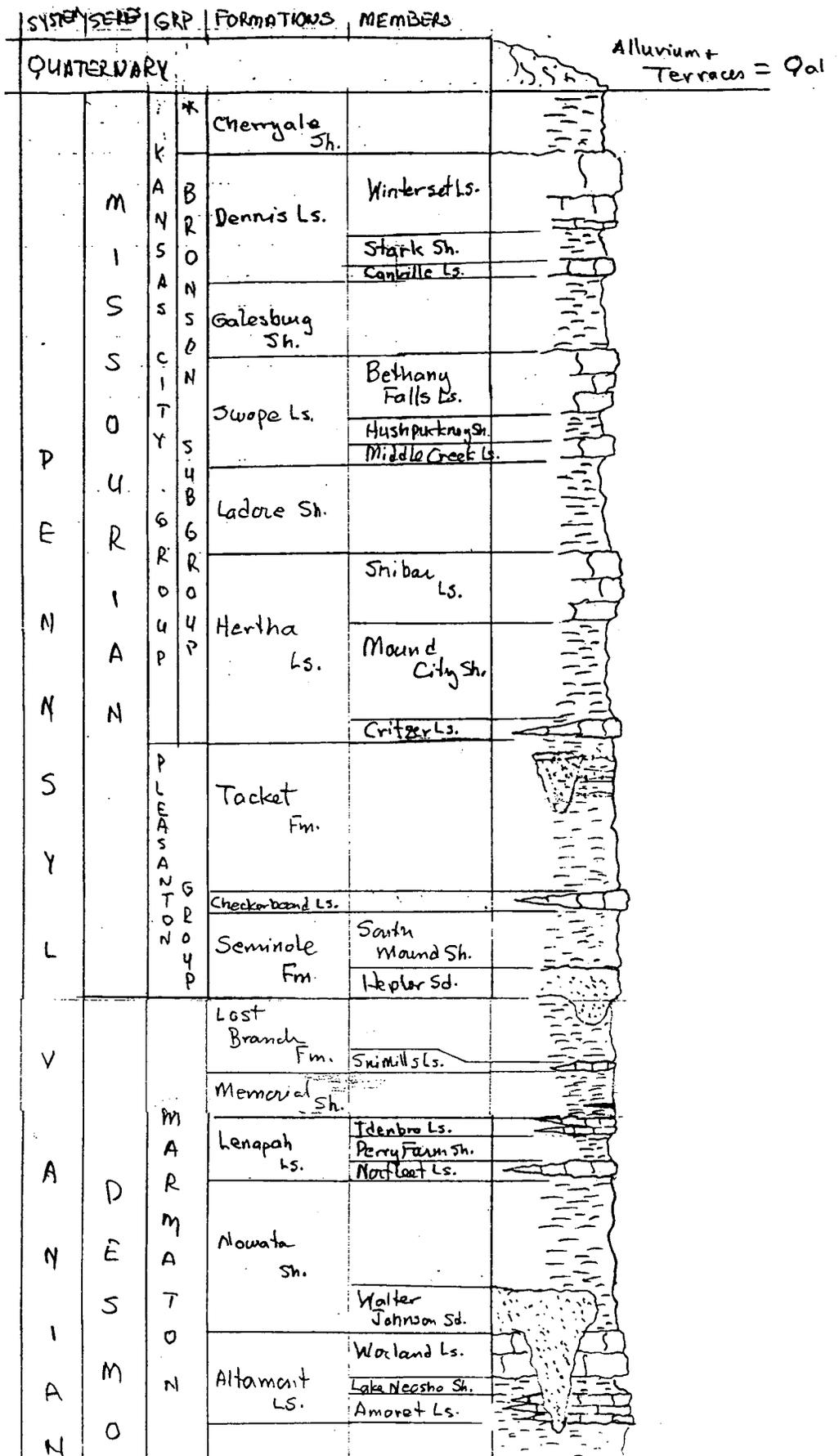


Figure 2. Stratigraphic sequence in Bourbon County.

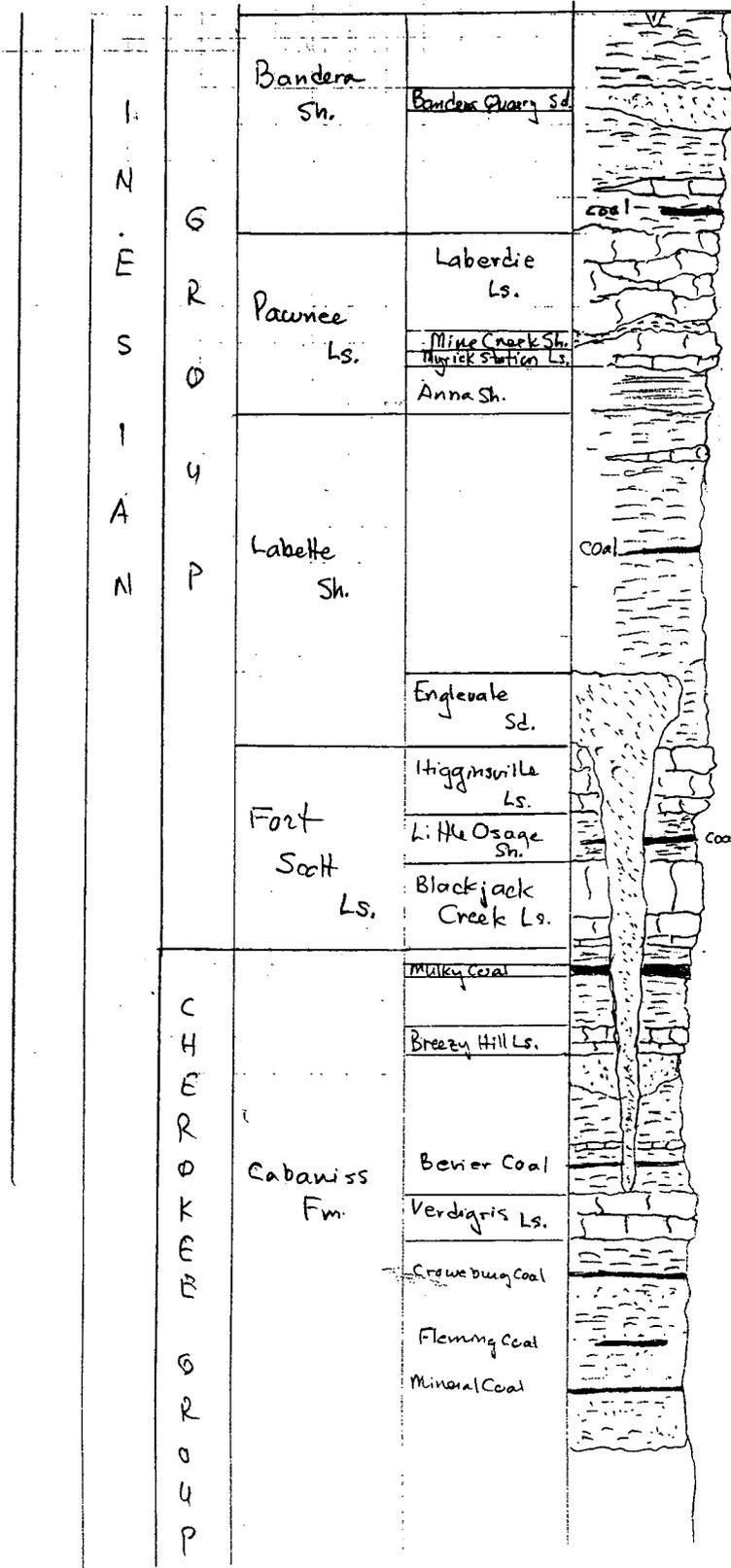


Figure 2. Continued.

BLUE MOUND QUADRANGLE

- B-180 = Hertha to Swope, same area as BB-934 and BB-935; measured and described by West in 1959; roadcut at SE cor., Sec. 20, T.23S., R.22E., Bourbon Co., Kansas.
- B-181 = Hertha to Swope, same area as BB-934 and BB-935; measured and described by Jewett, no date; Northwest of Xenia, Kansas; near Center of South line, Sec. 20, T.23S., R.22E., Bourbon Co., Kansas.
- B-182 = Hertha to Swope, same area as BB-934 and BB-935; measured and described by Jewett in 1935; near Center of East line of Sec. 20, T.23S., R.22E., Bourbon Co., Kansas.
- B-183 = Same as B-180.
- B-184 = Hertha to Swope, same area as BB-934 and BB-935; measured and described by Jewett, no date; along South line of Sec. 20, T.23S., R.22E., Bourbon Co., Kansas, B-181 is within this area.
- BB-932 = BM-1 = Exposure in creek and road cut on East side of road; thicknesses: Bethany Falls 15' (oolitic, cross-bedded), Galesburg 6', Canville 3', Stark 5', Winterset 20'+; top of Swope (Bethany Falls) Limestone @ 960', base of Dennis (Canville) Limestone @ 966'; about 200' North of Center of West line, NW1/4, Sec. 31, T.23S., R.22E., Bourbon Co., Kansas.
- BB-933 = BM-2 = Bluff and road cut on north side of Little Osage River at iron bridge, sequence and thicknesses as at BM-1; top of Swope (Bethany Falls) Limestone @ 950', base of Dennis (Canville) Limestone @ 955'; about 200' North of Center of West line, NW1/4, NW1/4, Sec. 31, T.23S., R.22E., Bourbon Co., Kansas.
- BB-934 = BM-3 = Excellent road cut from mudrock below thick, molluscan bearing Critzer limestone to the Winterset limestone; base of Critzer limestone at @ 920'; thicknesses: Critzer limestone = 12.0', mudrock = 6.0', Sniabar limestone = 5.0', mudrock = 5.0', Middle Creek limestone = 4.0', Hushpuckney shale = 3.0', Bethany Falls = 27.0' (17.0' of lower beds and 10.0' of oolitic beds separated by a sharp contact), Galesburg Shale = 5.0', with 1 to 2 feet of Canville limestone, Stark shale covered, and only a few feet of lower Winterset limestone exposed; top of Hertha (Sniabar) Limestone at @ 943', base of Swope (Middle Creek) Limestone at @ 948', top of Swope (Bethany Falls) Limestone at @ 982', and base of Dennis (Canville) Limestone at @ 987'; Stop 4A in Pabian and Diffendal, 1989, pp. 19-21; about 200' North of Center of East line, NE1/4, NE1/4, Sec. 20, T.23S., R.22E., Bourbon Co., Kansas.

- BB-935 = BM-4 = Same sequence as at BB-934 (BM-3), but poorly exposed; base of Swope (Middle Creek) Limestone @ 955' (good elev.); about 100' North of Center of East line, NE1/4, SE1/4, Sec. 20, T.23S., R.22E., Bourbon Co., Kansas.
- BB-947 = Old quarry in Winterset limestone on East side of Kansas Highway 3; NW cor., Sec. 36, T.23S., R.21E., Bourbon Co., Kansas.
- BB-948 = Top of Dennis (Winterset) Limestone, oolitic, on both sides of Kansas Highway 3 at @ 1000'; near Center of West line, SW1/4, SW1/4, NW1/4, Sec. 36, T.23S., R.21E., Bourbon Co., Kansas.
- BB-949 = Base of Dennis (Canville) Limestone at @ 950' on both sides of Kansas Highway 3; good exposure of Dennis Limestone on both sides of road from the top of the Swope (Bethany Falls) Limestone, oolitic phase to the top of the Dennis (Winterset) Limestone, oolitic phase, with 30 to 40 feet of Bethany falls exposed under bridge over the Little Osage River; Galesburg Shale = 6.0' (covered), Canville limestone = 3.0', Stark shale = 5.0', Winterset limestone = 30.0'; top of Swope (Bethany Falls) Limestone at @ 944' and top of Dennis (Winterset) Limestone at @ 988'; about 100' South of Center of West line, SW1/4, SW1/4, Sec. 25, T.23S., R.21E., Bourbon Co., Kansas.
- BB-950 = Exposure of Dennis Limestone along Kansas Highway 3 on North side of Little Osage River, from Canville limestone, Stark shale, and lower beds of Winterset limestone with the base of the Dennis (Canville) Limestone at @ 950'; about 100 feet North of Center of West line, SW1/4, Sec. 25, T.23S., R.21E., Bourbon Co., Kansas.
- BB-951 = Top of Dennis (Winterset) Limestone, oolitic phase, at @ 990'; Center of West line, SW1/4, SW1/4, Sec. 24, T.23S., R.21E., Bourbon Co., Kansas.
- BB-952 = Top of Dennis (Winterset) Limestone, oolitic phase at @ 990'; near Center of West line, SW1/4, Sec. 24, T.23S., R.21E., Bourbon Co., Kansas.
- BB-953 = Upper beds of Winterset limestone exposed in road ditch on North side of road at 970', estimated top of Dennis (Winterset) Limestone at 980' based on regional dip; near Center of South line, NW1/4, Sec. 23, T.23S., R.21E., Bourbon Co., Kansas.
- BB-954 = Top of Dennis (Winterset) Limestone, oolitic phase, in field South of road at @ 995'; near Center of South line, SE1/4, NW1/4, Sec. 24, T.23S., R.21E., Bourbon Co., Kansas.
- BB-955 = Top of Dennis (Winterset) Limestone, oolitic? phase, in field South of road at @ 1000'; about 300' East of Center of South line, SE1/4, NE1/4, Sec. 24, T.23S., R.21E., Bourbon Co., Kansas.

BB-956 = Weathered, cherty, oolitic top of Dennis (Winterset) Limestone on North side of road at @ 1010' with algal limestone beds of the middle and lower Winterset limestone in road ditch on the South side of road; near Center of South line, SW1/4, SE1/4, NE1/4, Sec. 19, T.23S., R.23E., Bourbon Co., Kansas.

BB-957 = Top of Dennis (Winterset) Limestone, oolitic phase, in road somewhere between 1010' and 1020'; about 200' North of Center of East line, NE1/4, NE1/4, Sec. 20, T.23S., R.23E., Bourbon Co., Kansas.

BRONSON QUADRANGLE

- B-5 = Dennis, not Swope, same area as BB-929; measured and described by Jewett in 1931; near Center of North line, Sec. 30, T.24S., R.22E., Bourbon Co., Kansas.
- B-62 = Winterset; new quarry (1952) on new Highway 54, now nearly full of water; measured and described by Ives in 1952 near Center of NW1/4, Sec. 7, T.25S., R.22E., Bourbon Co., Kansas.
- B-63 = Winterset; new quarry (1952) on new U. S. Highway 54, measured and Described by Ives in 1952; same area as BB-924; near Center of Sec. 7, T.25S., R.22E., Bourbon Co., Kansas.
- B-64 = Dennis (Winterset) Limestone; measured and described by Jewett in 1936; same area as BB-920 and BB-937; Center of South line of Sec. 5, T.25S., R.22E., Bourbon Co., Kansas.
- BB-869 = Algal limestone in road with top at @ 1000' and base near 970'; near Northwest corner of Sec. 11, T.24S., R.21E., Bourbon Co., Kansas.
- BB-870 = Old quarry in Bethany Falls limestone with massive, oolitic upper beds and middle and lower beds like those exposed at BB-817; Middle Creek limestone exposed in oil field road below level of quarry but above the floodplain; Canville limestone exposed in quarry wall above Bethany Falls above approx. 6.0' of Galesburg Shale; probable Stark shale above Canville based on black soil and basal parts of Winterset at the tops of the hills; base of Swope (Middle Creek Limestone at approx. 925', top of Swope (Bethany Falls) Limestone at approx. 979', and base of Dennis (Canville) Limestone at approx. 985'; SW1/4, NW1/4, SW1/4, Sec. 4, T.24S., R.22E., Bourbon Co., Kansas.
- BB-918 = BR-1 = Hunt Midwest Quarry; thicknesses handleveled, top of Hertha (Sniabar) Limestone @ 985' in creek north of quarry in Opossum Hollow, base of Swope (Middle Creek) Limestone @ 998' in road/drainage north from quarry, top of Swope (Bethany Falls, upper 8' cross-bedded oolites, lower 17 mottled gray limestone) Limestone @ 1030' below pond above quarry; thicknesses: Sniabar 2'+(covered below), Ladore 13', Middle Creek 3', Hushpuckney 3', Bethany Falls 25', Galesburg 6'+ (covered); base of sequence about 200' South of Center of West 1/2, Sec. 9, T.25S., R.22E., Bourbon Co., Kansas with top about 700' southwest of base in Sec. 9, T.25S., R.22E., Bourbon Co., Kansas.
- BB-919 = BR-2 = Base of Dennis (Canville) Limestone @1040' in road; about 200' South of Center of West line, NW1/4, Sec. 9, T.25S., R.22E., Bourbon Co., Kansas,

BB-920 = BR-3 = Top of Swope (Bethany Falls) Limestone @1006' in creek below bridge and south of road; Stark and Winterset exposed in pit silo just SE of bridge, floor of silo is probably Canville; base of Dennis (Canville) Limestone @1018; Galesburg and Canville exposed in pond spillway about 100 yards south of bridge; thicknesses: Galesburg 12', Canville 1.5'; near Center of North line, NE1/4, NW1/4, Sec. 8, T.25S., R.22E., Bourbon Co., Kansas.

BB-921 = BR-4 = Quarry in Winterset limestone (Don Pemberton, Bandera Quarry owner); thick section of upper and lower Winterset, upper 10-15'+ crossbedded, oolitic; lower 20-30' + algal, wavy-bedded; no contacts; limestone to at least 1055' toward top of hill; near Center, SW1/4, SE1/4, SE1/4, Sec. 6, T.25S., R.22E., Bourbon Co., Kansas.

BB-922 = BR-5 = Road cut on north side of U. S. Hwy 54, east of creek; top of Swope (Bethany Falls) Limestone @1002', base of Dennis (Canville) Limestone @ 1015'; thicknesses: Galesburg 13', Canville 1.5', Stark 4'; near Center, SW1/4, SW1/4, NW1/4, Sec. 8, T.25S., R.22E., Bourbon Co., Kansas.

BB-923 = BR-6 = Road cut on north side of U. S. Hwy 54, West of creek; Stark shale and base of Winterset limestone in ditch; base of Dennis (Canville) Limestone @1000'; near Center, SE1/4, NE1/4, Sec. 7, T.25S., R.22E., Bourbon Co., Kansas.

BB-924 = BR-7 = Top of Swope (Bethany Falls) Limestone @998' below spillway at south end of dam at Bronson Reservoir; base of Dennis (Canville) Limestone estimated @ 1000'; about 200' North of Center of South line, SW1/4, NE1/4, Sec. 7, T.25S., R.22E., Bourbon Co., Kansas.

BB-925 = BR-8 = Base of Dennis (Canville) Limestone @ 1042' in road ditches just west of BB-918 (BR-1); about 200' South of Center of West line, NE1/4, SE1/4, Sec. 8, T.25S., R.22E., Bourbon Co., Kansas.

BB-926 = BR-9 = Base of Dennis (Canville) Limestone @ 1000' just South of fence on South side of road; about 300' South of Center of North line, NE1/4, NE1/4, Sec. 7, T.25S., R.22E., Bourbon Co., Kansas.

BB-927 = BR-10 = Base of Dennis (Canville) Limestone @ 1000' with Stark shale in road ditch South of road; about 300' West and about 100' South of NE cor., Sec. 7, T.25S., R.22E., Bourbon Co., Kansas.

BB-928 = BR-11 = Base of Dennis (Canville) Limestone @ 1000' with Stark shale in road ditch South of road; Center of North line, NE1/4, Sec. 7, T.25S., R.22E., Bourbon Co., Kansas.

BB-929 = BR-12 = Stark shale and basal Winterset limestone exposed in creek bank South of bridge; Stark shale 6' (upper 2' yellow gray shale, lower 4'

- black, platy) thick; Canville limestone not exposed (below water level); about 200' West of Center of North line, NE1/4, NW1/4, Sec. 30, T.24S., R.22E., Bourbon Co., Kansas.
- BB-929A = Top of Dennis (Winterset) Limestone, oolitic, at @ 1030' in road and drainage South of road; near Center of South line, SE1/4, SW1/4, SE1/4, Sec. 19, T.24S., R.22E., Bourbon Co., Kansas.
- BB-929B = Top of Canville limestone at @ 968' in stream bed in field, base of Dennis (Canville) Limestone estimated at @ 965'; near Center, SW1/4, NW1/4, Sec. 19, T.24S., R.22E., Bourbon Co., Kansas.
- BB-929C = Top of Dennis (Winterset) Limestone at @ 1020' in road; near Center of West line, NW1/4, NW1/4, SW1/4, Sec. 19, T.24S., R.22E., Bourbon Co., Kansas.
- BB-930 = BR-13 = Top of Dennis (Winterset) Limestone @ 1018' in road ditch on East side of road; oolitic limestone with shale and sandstone above in road ditch on East side; limestones in Cherryvale? above; near Center of West line, SW1/4, NW1/4, SW1/4, Sec. 18, T.24S., R.22E., Bourbon Co., Kansas.
- BB-931 = BR-14 = Top of Dennis (Winterset) Limestone @ 1015' in pasture West of road; Center of West line, NW1/4, NW1/4, Sec. 18, T.24S., R.22E., Bourbon Co., Kansas.
- BB-936 = Old quarry full of water, upper beds of algal limestone of Winterset limestone, no oolitic phase observed, possibly top of Dennis (Winterset) Limestone estimated at @ 1055'; Center of West 1/2, NW1/4, NE1/4, NE1/4, Sec. 12, T.25S., R.21E., Bourbon Co., Kansas.
- BB-937 = Top of Dennis (Winterset) Limestone, not oolitic, near 1060' in the road; near Center of North line, NW1/4, NW1/4, NE1/4, Sec. 8, T.25S., R.22E., Bourbon Co., Kansas.
- BB-938 = Top of Dennis (Winterset) Limestone, not oolitic, in road near 1050'; poor exposure because of relative flat topography; near Center of South line, SE1/4, SE1/4, Sec. 36, T.24S., R.21E., Bourbon Co., Kansas.
- BB-939 = Top of Dennis (Winterset) Limestone, not oolitic, in road and field North of road near 1050'; about 200' East of Center of South line, Sec. 36, T.24S., R.21E., Bourbon Co., Kansas.
- BB-940 = Top of Dennis (Winterset) Limestone, not oolitic, near 1040' in the road; about 100' West of Center of South line, SE1/4, SW1/4, Sec. 36, T.24S., R.21E., Bourbon Co., Kansas.

- BB-941 = Top of Dennis (Winterset) Limestone, not oolitic, near 1030' in the field East of road; about 200' North of Center of West line, NW1/4, Sec. 36, T.24S., R.21E., Bourbon Co., Kansas.
- BB-942 = Top of Dennis (Winterset) Limestone, not oolitic, in the road at Section corner at 1033'; limestone well exposed along South side of drainage on the east side of road slightly North of the Section corner; NW cor., Sec. 36, T.24S., R.21E., Bourbon Co., Kansas.
- BB-943 = Good exposure of cross-bedded oolitic upper beds of Winterset limestone in field East of road with top of Dennis (Winterset) Limestone at @ 1055'; SW cor., Sec. 24, T.24S., R.21E., Bourbon Co., Kansas.
- BB-944 = Same as at BB-943 with top of Dennis (Winterset) Limestone, including oolitic phase, but not as good as at BB-943; near Center of South line, Sec. 24, T.24S., R.21E., Bourbon Co., Kansas.
- BB-945 = Top of Dennis (Winterset) Limestone at @ 1040' in field West of road; just North of Center of West line, SW1/4, SW1/4, NW1/4, Sec. 13, T.24S., R.21E., Bourbon Co., Kansas.
- BB-946 = Reddish brown sandstone of Cherryvale/Chanute interval in road ditch on West side of road; Center of West line, SW1/4, SW1/4, Sec. 1, T.24S., R.21E., Bourbon Co., Kansas.

CATO QUADRANGLE

- B-146 = Area of old strip pit; sequence from just below the Bevier Coal to soil measured and described by Howe in 1948; now reclaimed and nothing is exposed; near Center, SE1/4, NW1/4, Sec. 35, T.26S., R.25E., Bourbon Co., Kansas.
- B-147 = Bevier Coal and approximately 12 feet of overlying strata in operating strip pit; measured and described by Howe in 1949; SE1/4, SE1/4, Sec. 28, T.26S., R.25E., Bourbon Co., Kansas; see BB-172.
- B-159 = Same as B-147; measured and described again in 1956 by Diller in Pellet Coal Co. strip pit; see BB-172.
- B-164 = Gray shale in upper Labette Shale through Anna shale and Pawnee Limestone; measured and described by Jewett in 1935 and 1939; Center of East line, Sec. 2, T.27S., R.24E., Bourbon Co., Kansas; see BB-120
- B-165 = Strip pit in SW1/4, SE1/4, Sec. 18, T.27S., R.25E., Bourbon County, Kansas; Section 86 of Howe, 1956; interval from limestone below coal (Bevier according to Howe) through black, fissile, fossiliferous shale and bituminous limestones to thick (over 14 feet) of gray mud/clayrock; when measured and described by Howe in 1948 this was an operating pit of the Pellett Coal Co. which supplied coal to the immediate area; now inaccessible.
- B-166 = When measured and described by Jewett in 1939 this was an old strip pit West of the road, near Center of East line, Sec. 9 (Jewett's notes say Sec. 16, but that, we feel, is incorrect), T.27S., R.25E., Bourbon County, Kansas; over six feet of massive to thin bedded, dense, gray, fossiliferous, chaetetid-bearing in upper part limestone (Blackjack Creek) that weathers brown with over 3' of black, platy shale (Excello) containing hard, dense limestone concretions up to 1' in diameter; Section 101 of Jewett, 1945; now inaccessible.
- B-167 = Croweburg Coal and Verdigris limestone and several feet of overlying strata when measured and described by Jewett, 1940; Center of West line NW1/4, Sec. 14, T.27S., R.25E., Bourbon Co., Kansas; see BB-141.
- B-168 = Three coal beds with two discontinuous limestone between two thick sandstones in a sequence along creek bank of Drywood Creek that was 45+ feet thick when measured and described by Howe in 1949; SW cor., SW1/4, NW1/4, Sec. 14, T.27S., R.25E., Bourbon Co., Kansas; see BB-141.
- B-171 = Strip pit near Center, Sec. 5, T.27S., R.25E., Bourbon County, Kansas; over six feet of massive, dense, fossiliferous, vertically jointed, chaetetid-bearing limestone that weathers yellowish brown (Blackjack Creek) with over four feet of blocky, black shale with phosphatic nodules (Excello) below

separated from overlying limestone by a thin (several inches) of brown silty shale; measured and described by Schoewe and A. D. in 1956; now inaccessible.

- B-172 = Strip pit on hillside just West of Garland, Kansas, abandoned when measured and described by Howe in 1948; exposed units were identified as Blackjack Creek limestone (chaetetids reported from Blackjack Creek) and underlying black shale, probably Excello, down to water level; nothing exposed now; NW1/4, Sec. 1, T.27S., R.25E., Bourbon Co., Kansas.
- L-922 = Base of 5.6' of Blackjack Creek limestone at 886.4' in old strip pit South of road, near water level (4 June'94); eroded top of Higginsville limestone at 902.35'; base of Fort Scott Limestone not mappable here; tabular and low domical chaetetids associated with multithecoporoid corals in Blackjack Creek limestone; near Center of North line, NW1/4, Sec. 8, T.27S., R.25E., Bourbon Co., Kansas; see Schoewe, 1959, KGS Bull.134, pt. 5, p. 197, pl.3A; Sawin Site #31.
- L-923 = Active quarry in Pawnee Limestone (Laberdie, Mine Creek, and Myrick Station) exposed with Anna shale in quarry floor; near Center of South line of SW1/4, Sec. 29, T.26S., R.25E., Bourbon Co., Kansas; tabular chaetetids in Laberdie? limestone.
- BB-87 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 958' near top of hill, near Pleasant View Cemetery; probably top of Fort Scott (Higginsville) Limestone at water level, 900', in creek; 58' of Labette Shale; from stream just North of the Center to the top of the hill South of the Center of the West line of Sec. 13, T.27S., R.24E., Bourbon County, Kansas along both sides of the road; top of section ends across the road from the Pleasant Hill Cemetery near Center East line, SE1/4, NE1/4, Sec. 14, T.27S., R.24E., Bourbon Co., Kansas; Sawin Site #9; see measured section in West and Sawin, 1994, p. 7.
- BB-88 = Base of Fort Scott (Blackjack Creek) Limestone with chaetetids at 890'; near Center of East line, NE1/4, SE1/4, Sec. 23, T.27S., R.24E., Bourbon Co., Kansas; Sawin Site #4.
- BB-89 = Base of Fort Scott (Blackjack Creek) Limestone at 890'; ripplemarks in sandstones of the Lagonda; Breezy Hill limestone, Mulky Coal (1 dm), and Excello in road; blocks of Blackjack Creek limestone with tabular chaetetids in strip pit rubble; just East of Center of South line, NW1/4, Sec. 25, T.27S., R.24E., Crawford Co., Kansas; Sawin Site #1.
- BB-90 = Top of Verdigris Limestone in the bed of Dry Wood Creek at 822'; near Center of East line NE1/4, SE1/4, SE1/4, Sec. 25, T.27S., R. 24E., Crawford Co., Kansas; Sawin Site #12.
- BB-91 = Top of Verdigris Limestone in drainage in field at 829'; just East of Center

- of North line, NW1/4, Sec. 30, T.27S., R.25E., Crawford Co., Kansas; Sawin Site #13.
- BB-92 = Base of Fort Scott (Blackjack Creek) Limestone, inferred, at 880'; chaetetids in Blackjack Creek; near Center of East line, SE1/4, NE1/4, NE1/4, Sec. 23, T.27S., R.24E., Bourbon Co., Kansas; Sawin Site #11.
- BB-93 = Top of Fort Scott (Higginsville) Limestone at 902'; just South of the NW cor., Sec. 24, T.27S., R.24E., Bourbon Co., Kansas; Sawin Site #16.
- BB-94 = Base of Fort Scott (Blackjack Creek) Limestone at 883'; chaetetids in Blackjack Creek; Center of West line of SW1/4, NW1/4, Sec. 25., T.27S., R.24E., Crawford Co., Kansas; Sawin Site #3.
- BB-95 = Base of Fort Scott (Blackjack Creek) Limestone at 906' with Excello shale, Mulky Coal, Breezy Hill limestone, and Lagonda below; near Center of North line, NW1/4, NE1/4, Sec. 25., T.27S., R.24E., on the Bourbon Co.-Crawford Co., Kansas line; Sawin Site #15.
- BB-96 = Excello, Fort Scott (Blackjack Creek, Little Osage, and Higginsville) in road; 15.4' of Fort Scott with eroded top, base Fort Scott (Blackjack Creek) Limestone at 890'; tabular and low domical chaetetids in Blackjack Creek; near Center of East line, SE1/4, SE1/4, NE1/4, Sec. 24, T.27S., R.24E., Bourbon Co., Kansas; Sawin Site #14.
- BB-97 = Blackjack Creek limestone in creek under road and along creek bank in pasture South of road; Little Osage shale mostly covered, but upper part exposed in pasture drainage North of road as is the lower part of the Higginsville limestone, more Higginsville is exposed in pond bank South of road; low domical and tabular chaetetids in Blackjack Creek; base of Fort Scott (Blackjack Creek) Limestone covered but inferred at 866' or less, top at @ 890'; from near the Center of North line of NE1/4, NW1/4, up the hill to near the Center, NE1/4, NW1/4, NW1/4, Sec. 24, T.27S., R.24E., Bourbon County, Kansas; from creek bed across wooded area into pasture to farm pond sequence; Sawin Site #5; see measured section in West and Sawin, 1994, p. 8.
- BB-98 = Possible top of Verdigris Limestone at 835' in road ditch; near Center of North line, NE1/4, NW1/4, NW1/4, Sec. 29, T.27S., R.25E., on the Bourbon Co.-Crawford Co., Kansas line; Sawin Site #17.
- BB-99 = Mudrock and sandstone of Lagonda, traces of Mulky Coal, some underclay, Excello, and Blackjack Creek; base of Fort Scott (Blackjack Creek) Limestone at 919'; Breezy Hill limestone NOT SEEN; chaetetids in Blackjack Creek; near Center of North line, NW1/4, NE1/4, Sec. 29, T.27S., R.25E., on the Bourbon Co.-Crawford Co., Kansas line; Sawin Site #18.

- BB-100 = Breezy Hill limestone, Mulky Coal (@0.5'), Excello, and Blackjack Creek; base of Fort Scott (Blackjack Creek) Limestone at 922' in road; near NE cor., Sec. 29, T.27S., R.25E., on the Bourbon Co.- Crawford Co., Kansas line; Sawin Site #19.
- BB-101 = Top of Verdigris Limestone at 836" in road ditch on South side of road; near Center of North line , NW1/4, NW1/4, NE1/4, Sec. 27, T.27S., R.25E., on the Bourbon Co.- Crawford Co., Kansas line; Sawin Site #20.
- BB-102 = Verdigris Limestone blocks in stream at 825', not in situ; near Center of North line , NE1/4, NW1/4, Sec. 26, T.27S., R.25E., on the Bourbon Co.- Crawford Co., Kansas line; Sawin Site #21.
- BB-103 = Sandstone of Lagonda Formation in road; near Center of the North line, NE1/4, NW1/4, Sec. 32, T.27S., R.25E, Crawford Co., Kansas.
- BB-104 = Top of Verdigris Limestone at 860'; using three widely spaced points on top of Verdigris dip was determined to be 2.6 degrees East and strike N 8 degrees East; near Center of North line, NW1/4, Sec. 33, T.27S., R.25E., Crawford Co., Kansas; Sawin Site #22.
- BB-105 = Top of Verdigris Limestone at 849', based on hand leveling from intersection; near Center of North line, NE1/4, NE1/4, Sec. 22, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #23.
- BB-105A = Sequence from Breezy Hill limestone to Blackjack Creek Limestone with Excello shale and Mulky coal exposed along newly constructed U. S. Hwy 69, 1.9 miles North of the Bourbon-Crawford County line in Cato Quad; chaetetids in Blackjack Creek Limestone; near Center of West line, NW1/4, NW1/4, Sec. 14 and near Center of East line of NE1/4, NE1/4, Sec. 15, T.27S., R.25E., Bourbon Co., Kansas.
- BB-106 = Top of Verdigris Limestone at 845+' in road ditch and in old road South of County road; base of approximately 1.0' of Croweburg Coal is at 832'; large limestone concretions in road just above coal bed that appear to be in situ, such concretions are often associated with the Verdigris Limestone and underlying black mudrocks/shales; near Center of North line, Sec. 22, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site 24.
- BB-107 = Top of Verdigris Limestone at 849', good point, like at BB-105; near Center of North line, NE1/4, NW1/4, Sec. 22., T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #25.
- BB-108 = Top of Verdigris Limestone inferred to be at 849'; NW cor., Sec. 22, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #26.
- BB-109 = Approximately 1.0' of Croweburg Coal, underclay, and earthy limestone below; above coal is a black fissile shale and black, platy, fossiliferous

limestone typical of the middle Verdigris Limestone in road at 830+'; near Center of West line, SW1/4, NW1/4, Sec. 21, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #27.

BB-110 = Top of Verdigris Limestone inferred to be at 849' in road; near Center of West line, NW1/4, NW1/4, SW1/4, Sec. 21, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #28.

BB-111 = Englevale Sandstone in Labette Shale at 927' in road; appears to cut out Fort Scott Limestone down to and including Blackjack Creek??; near NW cor., Sec. 9, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #29.

BB-112 = Englevale Sandstone in Labette Shale at 905' in road, near Gish School; near Center of North line, NW1/4, NW1/4, NE1/4, Sec. 8, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #30.

BB-113 = Englevale Sandstone in Labette Shale at 927' in road; near Center of West line, NE1/4, Sec. 8, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #32.

BB-114 = Sandstone, probably Englevale, in road at 880'; just West of Center of South line, SW1/4, SE1/4, Sec. 8, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #33.

BB-115 = Top of Verdigris Limestone at 826' in road ditch on South side of road, excellent exposure; near Center of North line, Sec. 16., T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #34.

BB-116 = Sandstone, probably Englevale, in road at 900' in road; near Center of North line, NE1/4, NW1/4, Sec. 9, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #35.

BB-117 = Base of Higginsville limestone at 860'; top of Fort Scott (Higginsville) Limestone at 871'; near Center of West line, SW1/4, SW1/4, Sec. 17, T.27S., R.24E., Bourbon Co., Kansas; Sawin Site #6.

BB-118 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 930'; near Center of West line, NW1/4, Sec. 12, T.27S., R.24E., Bourbon Co., Kansas; Sawin Site #7.

BB-119 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 942'; near NW cor., Sec. 12, T.27S., R.24E., Bourbon Co., Kansas; Sawin Site #8.

BB-120 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 935'; Section 96 of Jewett, 1945; near Center of West line, SE1/4, SE1/4, NW1/4, Sec. 1, T.27S., R.24E., Bourbon Co., Kansas; Sawin Site #10.

- BB-121 = Top of Blackjack Creek limestone at 884', base of Fort Scott (Blackjack Creek) Limestone at 875'; near SE cor., SW1/4, SE1/4, Sec.7, T.27S., R.25E., Bourbon County, Kansas; in an old "strip pit" and/or quarry; chaetetids in Blackjack Creek limestone; Excello below; Sawin Site #36; see measured section in West and Sawin, 1994, p. 9.
- BB-122 = Base of Fort Scott (Blackjack Creek) Limestone at 875' or less in road; near Center of South line, SW1/4, Sec. 7, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #37.
- BB-123 = Base of Fort Scott (Blackjack Creek) Limestone at 887' in road, chaetetids in Blackjack Creek; near Center of West line, SW1/4, Sec. 18, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #38; measured section records of the KGS indicate an exposure measured by Howe, 1948 from the a five foot mudstone below a sandstone upward through a coal (Mulky) and black shale (Excello) to about a foot of limestone (Blackjack Creek Limestone Member of Fort Scott Limestone) in SW1/4, Sec. 18, T.27S., R.25E., Bourbon Co., Kansas.
- BB-124 = Base of Fort Scott (Blackjack Creek) Limestone at 875' in road; near Center of West line, SW1/4, SW1,4, Sec. 7, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #39.
- BB-125 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 953' in road; near Center of North line, NE1/4, NE1/4, NW1/4, Sec. 12, T.27S., R24E., Bourbon Co., Kansas; Sawin Site #40.
- BB-126 = Inferred top of Fort Scott (Higginsville) Limestone at 895'; @ 500' East of Center of North line, NE1/4, Sec. 12, T.27S., R.24E., Bourbon Co., Kansas; Sawin Site #41.
- BB-127 = Inferred top of Fort Scott (Higginsville) Limestone at 895'; near Center of East line, NE1/4, NE1/4, SE1/4, Sec. 12, T.27S., R.24E., Bourbon Co., Kansas; Sawin Site #42.
- BB-128 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 948' in road; excellent exposure of upper Labette Shale in road ditch on North side of road; near Center of South line, SW1/4, Sec. 1, T.27S., R.24E., Bourbon Co., Kansas; Sawin Site #43.
- BB-129 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 960' in road, good contact with Anna shale in road ditch on West side of road; near Center East line, NE1/4, Sec. 1, T. 27S., R.24E., Bourbon Co., Kansas; Sawin Site # 44.
- BB-130 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 955' in road ditch on South side of road; near Center of North line, NE1/4, Sec. 6, t.27S., R.25E., Bourbon Co., Kansas; Sawin Site #45.

- BB-131 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 955', Anna and Myrick Station exposed on East side of U.S. Hwy 69; near Center of West line, SW1/4, Sec. 32, T.26S., R.25E., Bourbon Co., Kansas; Sawin Site #46.
- BB-132 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 965' in road ditch on North side of road; near Center of South line, SE1/4, SE1/4, Sec. 29, T.26S., R.25E., Bourbon Co., Kansas; Sawin Site #47.
- BB-133 = Higginsville limestone exposed in creek bed at 885'; near Center of East line, SE1/4, NE1/4, Sec. 32, T.26S., R.25E., Bourbon Co., Kansas; Sawin Site #48.
- BB-134 = Englevale Sandstone in road at 875'; near Center of East line, SE1/4, SE1/4, Sec. 5, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #49.
- BB-135 = Lagonda, Mulky Coal, Excello, and Blackjack Creek in road ditch on West side of road; base of Fort Scott (Blackjack Creek) Limestone at 886'; tabular chaetetids in Blackjack Creek; near Center of East line, NE1/4, NE1/4, NE1/4, Sec. 5, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #50.
- BB-136 = Lagonda in creek bank on East side of road; near Center of West line, SW1/4, NW1/4, Sec. 4, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #51.
- BB-137 = Inferred base of Blackjack Creek limestone at 881'; near Center of West line, Sec. 5, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #52.
- BB-138 = Base of Fort Scott (Blackjack Creek) Limestone very near the top of the hill at @915'; Lagonda, @ 2 dm of Breezy Hill limestone, @ 1 dm of Mulky Coal, @ 2 dm of Excello, and lower part of Blackjack Creek limestone exposed on West side of road; near Center of East line, SE1/4, SE1/4, Sec. 4, T.27S., R.25E., Bourbon Co., Kansas; see Schoewe, 1959, KGS Bull. 134, pt. 5, p. 198, plate 4B; Sawin Site #53.
- BB-139 = Top of Verdigris Limestone at 825' in road and fields South of road; near Center of North line, NW1/4, NE 1/4, Sec. 10, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #54.
- BB-140 = Croweburg Coal under culvert into field on West side of road t 825'; near Center of east line of SE 1/4, SE 1/4, Sec. 16, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #55.
- BB-141 = Top of limestone above Mineral Coal at 792' in South bank of Dry Wood Creek, several feet below and 15+' of interval exposed, excellent exposure; sections B-167 and B-168, see Section 87 Center of Howe, 1956; near Center, NW1/4, NW1/4, SW1/4, Sec. 14, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #56.

BB-166 = Base of Fort Scott (Blackjack Creek) Limestone at 896' in road North of Garland, Kansas; Excello below; near Center of East line, SE1/4, SE1/4, Sec. 35, T.26S., R.25E., Bourbon Co., Kansas.

BB-167 = Base of Fort Scott (Blackjack Creek) Limestone at 896' in road South of Garland, Kansas; Excello below; near Center of East line, NE1/4, NE1/4, Sec. 2, T.27S., R.25E., Bourbon Co., Kansas.

BB-172 = Base of Fort Scott (Blackjack Creek) Limestone at 910' in road; same as B-147 and B-159; near Center of South line, SE1/4, SW1/4, SE1/4, Sec. 28, T.26S., R.25E., Bourbon Co., Kansas.

DEERFIELD QUADRANGLE

- BB-33 = Top of Verdigris Limestone at 805'; just South of the Center of the East line, Sec. 13, T.26S., R.25E., Bourbon Co., Kansas.
- BB-34 = Base of Blackjack Creek limestone at 855'; near Center of South line, SW1/4, SE1/4, Sec. 1, T.26S., R.25E., Bourbon Co., Kansas.
- BB-35 = Quarry, Morris Rock Company, exposing interval from Mulky coal to Higginsville limestone; top of Fort Scott (Higginsville) at 900', base of Fort Scott (Blackjack Creek) at 875'; exposed sequence near Center of the South line, NE1/4, NE1/4, Sec.18., T.35N., R.33W., Vernon Co., Missouri.
- BB-36 = Labette Shale with Alvis Coal, fossiliferous limestone, and mudrock above coal; Englevale Sandstone near road level and Pawnee limestone float near top of hill; just South of the center of the East line, NE1/4, NW1/4, NW1/4, Sec. 7, T.35N., R.33W., Vernon Co., Missouri; roadcut on North side of "new" U. S. Hwy 54;
- BB-37 = Base of Blackjack Creek limestone at 845'; near Center of the East line, NE1/4, NE1/4, Sec. 26, T.25S., R. 25E., Bourbon Co., Kansas.
- BB-38 = Top of Fort Scott (Higginsville) Limestone at 861'; near SE cor., NE1/4, NE1/4, Sec. 26, T.25S., R.25E., Bourbon Co., Kansas.
- BB-39 = Top of Anna shale at @900'; Myrick Station limestone with tabular chaetetids above Anna shale; near Center, NE1/4, NW1/4, SE1/4, Sec. 25, T.25S., R.25E., Bourbon Co., Kansas.
- BB-40 = Uppermost Pawnee Limestone in road; near Center of the South line, SE1/4, SE1/4, Sec. 35, T.25S., R.25E., Bourbon Co., Kansas.
- BB-50 = Active strip pit, Mary Jane Mine, Verdigris Limestone to Croweburg Coal and below; near Center, SE1/4, Sec. 31, T.35N., R.33W., Vernon Co., Missouri.
- BB-165 = Approximately 1.0' of coal, Bevier?, in road ditch on East side of road, with underclay and silty mudrock above; blocks of black, fossiliferous, calcareous mudrock to clayey limestone occurs as float in the field East of road; coal is at 843'; just East of the SE cor., Sec. 24, T. 26S., R.25E., Bourbon Co., Kansas.
- BB-287 = Top of limestone like at BB-283 at 787' in road, possibly Verdigris Limestone; near Center of the West line, SW1/4, SW1/4, Sec. 29. T.36N., R.33W., Vernon Co., Missouri.

DEVON QUADRANGLE

- B-29 = Measured and described by Jewett in 1935, probably Checkerboard/Exline interval; SW cor., Sec.14, T.24S., R.23E., Bourbon Co., Kansas; now inaccessible.
- B-33 = Sequence from upper Pleasanton through Hertha Limestone into Swope (Bethany Falls) Limestone; measured and described by Jewett in 1935; just North of Center of N1/2, Sec. 10, T.24S., R.23E., Bourbon Co., Kansas; probably the same as BB-747.
- B-37 = Bandera Shale to Altamont Limestone; measured and described by Jewett in 1939; near Center of East line, Sec.1, T.24S., R.23E., Bourbon Co., Kansas; see BB-606.
- B-39 = Bandera Shale and Altamont Limestone, measured and described by Jewett In 1938 along Kansas Hwy 7 0.4 miles from where highway turns South, 4 miles North of U. S. Hwy 54; near Center of South line, SW1/4, SE1/4, Sec. 33, T.24S., R.24E., Bourbon Co., Kansas; now inaccessible.
- B-40 = Measured and described by Jewett, no date; grown over but still visible, see BB-553
- B-41 = Top of Altamont (Worland) Limestone exposed at 870' in ditch and drainage on both sides of Kansas Highway 7; near Center, Sec. 30, T.24S., R.24E., Bourbon Co., Kansas; probably measured and described by Jewett, no date, but the overlying Nowata Shale, Lenapah Limestone and basal Missourian sandstone he describes is not now visible.
- B-42 = Fort Scott Limestone and lower part of overlying Labette Shale, measured and described by Jewett in 1939; near Center SE1/4, SE1/4, Sec. 4, T.24S., R.24E., Bourbon Co., Kansas; now inaccessible.
- B-89 = Upper Desmoinesian to Hertha Limestone as measured and described by Jewett in 1935; sited as NW cor., Sec. 12, T.25S., R.24E., Bourbon Co., Kansas, but probably in T.24S., as suggested by Heckel in 1983, rather than T.25S., as indicated; now inaccessible.
- B-92 = Upper part of Bandera Shale and Altamont Limestone, measured and described by Jewett in 1938; near Center, SE1/4, SW1/4, Sec. 2, T.25S., R.23E., Bourbon Co., Kansas; now inaccessible, compare with BB-543 and BB-544.
- B-94 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 850'; exposed top of Fort Scott (Higginsville) Limestone at 815' in stream bed; measured and described by Jewett in 1938; just East of the Center of the South line, Sec. 9, T.25S., R.24E., Bourbon Co., Kansas.

- B-98 = Upper part of Bandera Shale and Altamont Limestone, measured and described by Jewett in 1938, specific locality data within the NE1/4, Sec. 4, T.25S., R.24E., Bourbon Co., Kansas lacking; now inaccessible.
- B-99 = Upper part of Bandera Shale and Altamont Limestone, measured and described by Jewett in 1938, specific locality data within the one square mile of Sec. 3, T.25S., R.24E., Bourbon Co., Kansas lacking; now inaccessible.
- B-100 = Probably the same as BB-516 - chaetetids, float specimens from Pawnee, just South of road in creek from both Laberdie and Myrick Station limestones; measured and described by Jewett, no date; slightly South of Center, Sec. 10, T.25S., R.24E., Bourbon Co., Kansas.
- B-190 = Top of Altamont (Worland) Limestone at 880' in road, total thickness of Altamont 5 to 6 feet, thus base at 875'; measured and described by Jewett in 1939, when measured and described by Jewett the exposure began about 21 feet below the Altamont and extended, more or less continuously up to the Hertha Limestone near Center of the North line, NE1/4, Sec.2, T.24S., R.23E., and near Center of South line, SE1/4, Sec.35, T.23S., R.23E., Bourbon Co., Kansas.
- L-809 = Top of Altamont (Worland) Limestone at 869' in old quarry East of road; sheet-like chaetetids in upper part of limestone; North of Devon, Kansas on West side of Kansas Hwy 7; near Center of the North line, NW1/4, NE1/4, Sec. 30, T.24S., R.23E., Bourbon, Co., Kansas.
- BB-233 = Top of Altamont (Worland) Limestone at 875' in old quarry West of road; domical to thin sheet-like chaetetids, not very conspicuous; near Center of the South line, NE1/4, NE1/4, Sec. 17, T.24S., R.24E., Bourbon Co., Kansas.
- BB-238 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 821' based on KDOT profile; beds dip @ 1 degree to the North; chaetetids similar to those seen in the Laberdie at B-145; from East side of road North into West Plains Cemetery on Kansas Hwy 7; near SW cor., Sec. 10, T.25S., R.24E., Bourbon Co., Kansas.
- BB-408 = Top of (good, for this area) Altamont (Worland) Limestone at 915'; base at 911'; sequence in road ditch on North side of road begins with a 0.5' to 1.0' thick gray green to yellow brown, flaky mudrock with phosphatic nodules overlain by @1.5' of hard, dense, brecciated limestone with a pedogenic fabric; total thickness of Altamont here is @ 2.0' to 2.5'; @ 300' West of SE cor., Sec. 2, T.24S., R.24E., Bourbon Co., Kansas.
- BB-513 = Sandstone in place in road ditch on North side of road at @845', Bandera Shale; near Center of South line, SE1/4, NE1/4, Sec. 10, T.25S., R.24E., Bourbon Co., Kansas.

- BB-513A = Old strip pit of Mulberry Coal in Bandera Shale with blocks of black, clayey, fossiliferous limestone from lower Bandera in spoil piles and creek; near Center, NE1/4, SE1/4, Sec. 10, T.25S., R.24E., Bourbon Co., Kansas.
- BB-514 = Bandera Shale in road at approximately 845'; approximately 150' East of Center of South line, NE1/4, Sec. 10, T.25S., R.24E., Bourbon Co., Kansas.
- BB-515 = Bandera Shale in road at approximately 845'; approximately 150' East of Center of South line, SW1/4, NE1/4, Sec. 10, T.25S., R.24E., Bourbon Co., Kansas.
- BB-516 = Top of Pawnee (Laberdie) Limestone in road at about 840'; exposure in road ditch on North side of road extends from here East to creek bed; at or near measured section B-100; near Center of South line, SE1/4, NW1/4, Sec. 10, T.25S., R.24E., Bourbon Co., Kansas.
- BB-516A = Possible exposure of thin brown limestone in the lower Bandera Shale in road at @845'; North side of road near Center of South line, NW1/4, Sec.10, T.25S., R.24E., Bourbon Co., Kansas.
- BB-516B = Myrick Station Limestone Member exposed along East side of road; tabular to low cup-shaped chaetetids; just South of Center of West line, NW1/4, NW1/4, SW1/4, Sec.10, T.25S., R.24E., Bourbon Co., Kansas.
- BB-517 = Pawnee (Laberdie) Limestone in road and extending West to section corner; approximately 100' West of SE cor., Sec. 9, T.25S., R.24E., Bourbon Co., Kansas.
- BB-517A = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 820' in exposure in stream bank on East side of Kansas Highway 7 just East of bridge; same as in KDOT boring where top of Fort Scott (Higginsville) Limestone is indicated at 770'; @ 100' North of Center of West line, SW1/4, SW1/4, Sec. 10, T.25S., R.24E., Bourbon Co., Kansas.
- BB-517B = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at @850' on North side of road; @ 100' West of Center of South line, SE1/4, SW1/4, SE1/4, Sec. 10, T.25S., R.24E., Bourbon Co., Kansas.
- BB-518 = Base of Pawnee (Myrick Station) Limestone/ top of Anna shale in road at 845'; at or near measured section B-94; approximately 450' South of Center of Sec. 9, T.25S., R.24E., Bourbon Co., Kansas.
- BB-519 = Pawnee Limestone in road at approximately 859'; resembles Myrick Station limestone at BB-238; compare with exposure at measured section B-100; limestone contains tabular chaetetids with solitary horn corals; near

Center of South line, SE1/4, NE1/4, Sec. 8, T.25S., R.24E., Bourbon Co., Kansas.

BB-520 = Limestone, top? in field and road ditch on North side of road; top of Anna shale/base of Pawnee (Myrick Station) Limestone in drainage North of road and East of BB-520 at 835'; approximately 200' West of Center of South line, NE1/4, Sec. 8, T.25S., R.24E., Bourbon Co., Kansas.

BB-521 = Limestone rubble in field North of road; just North of Center of South line, SW1/4, SW1/4, NE1/4, Sec. 8, T.25S., R.24E., Bourbon Co., Kansas.

BB-521A = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at @835' in hillside on East side of road as the road turns North; @ 150' North of Center, Sec. 8, T.25S., R.24E., Bourbon Co., Kansas.

BB-522 = Bandera Shale type terrain; near Center of West line, Sec. 8, T.25S., R.24E., Bourbon Co., Kansas.

BB-523 = Thin, platy, light gray limestone exposed in drainage North of road with black shale float in stream bed; top of limestone exposed in field at the SW cor. where road turns South close to 860'; near SW cor., Sec. 5, T.25S., R.24E., Bourbon Co., Kansas.

BB-524 = Very near the top of a limestone, probably Pawnee; near Center of North line, NW1/4, NE1/4, NW1/4, Sec. 8, T.25S., R.24E., Bourbon Co., Kansas.

BB-525 = Top of Pawnee (Laberdie) Limestone in road close to 860'; approximately 250' South of NW cor., Sec. 8, T.25S., R.24E., Bourbon Co., Kansas.

BB-525A = Reddish orange brown siliciclastics in Bandera Shale in road ditch on South side of road; near Center of North line, NE1/4, Sec.7, T.25S., R.24E., Bourbon Co., Kansas.

BB-526 = Limestone exposed in creek on both sides of road with tabular to low domical chaetetids, top of the Pawnee (Laberdie) Limestone at 860' in road ditch on West side of road; @ 200' South of Center of East line, NE1/4, SE1/4, Sec. 7, T.25S., R.24E., Bourbon Co., Kansas.

BB-526A = Base of Altamont Limestone at @901' in road; @ 200' West of Center of South line, Sec. 7, T.25S., R.24E., Bourbon Co., Kansas.

BB-526B = Base of Altamont Limestone at @901' in road; @ Center of South line, SE1/4, SW1/4, Sec. 7, T.25S., R.24E., Bourbon Co., Kansas.

- BB-526C = Sandstone in Nowata Shale? in road ditch on West side of road; @ 250' South of Center of East line, SE1/4, Sec.12, T.25S., R.23E., Bourbon Co., Kansas.
- BB-526D = Base of Altamont Limestone at @892' in road and field on both sides of road; @ 150' North of Center of East line, SE1/4, Sec.12, T.25S., R.23E. and of the Center of the West line, SW1/4, Sec. 7, T.25S., R.24E., Bourbon Co., Kansas.
- BB-526E = Base of Altamont Limestone at @892' on both sides of road; near Center of East line, SE1/4, SE1/4, NE1/4, Sec.12, T.25S., R.23E. and near Center of West line, SW1/4, SW1/4, NW1/4, Sec. 7, T.25S., R.24E., Bourbon Co., Kansas.
- BB-527 = Limestone in drainage?; approximately 500' West of Center of South line, SW1/4, Sec. 12, T.25S., R.23E., Bourbon Co., Kansas.
- BB-528 = Probable top of Altamont Limestone in road at section corner at about 890'; NW cor., Sec. 12, T.25S., R.23E., Bourbon Co., Kansas.
- BB-529 = Good limestone (Worland?) on East side of road with mudrock below; approximately 300' North of SW cor., Sec. 1, T.25S., R.23E., Bourbon Co., Kansas.
- BB-530 = Top of Altamont Limestone like that at BB-529, Worland, exposed in road and along the West side of road; top of limestone at about 900'; approximately 200' South of Center of West line, Sec. 12, T.25S., R.23E., Bourbon Co., Kansas.
- BB-531 = Alluvium at low water bridge with large limestone blocks that a casual observer might consider an outcrop of limestone like that exposed at BB-530; near Center of West line, NW1/4, Sec. 12, T.25S., R.23E., Bourbon Co., Kansas.
- BB-532 = Limestone, Altamont, in road at 890'; approximately 150' North of Center of West line, SW1/4, SW1/4, Sec. 36, T. 24S., R.23E., Bourbon Co., Kansas.
- BB-533 = Limestone, Altamont, in road at about 900'; near Center of West line, NW1/4, NW1/4, SW1/4, Sec. 36, T. 24S., R.23E., Bourbon Co., Kansas.
- BB-534 = Limestone, Altamont, in road at about 900'; near Center of North line of NW1/4, NE1/4, NW1/4, Sec. 36, T. 24S., R.23E., Bourbon Co., Kansas.
- BB-535 = Limestone, Altamont, in road at about 850'; NE cor., Sec. 36, T. 24S., R.23E., Bourbon Co., Kansas.

- BB-536 = Limestone exposed on both sides of road, similar to that at BB-531, top of limestone at approximately 850'; near Center of East line, NE1/4, NE1/4, NE1/4, Sec. 36, T. 24S., R.23E., Bourbon Co., Kansas.
- BB-537 = Limestone, possibly Worland, in road at approximately 872'; Center of East line, Sec. 36, T. 24S., R.23E., Bourbon Co., Kansas.
- BB-538 = Sandstone (Bandera/Nowata) in road at 890'; near Center of South line, SW1/4, SE1/4, NW1/4, Sec. 6, T.25S., R.24E., Bourbon Co., Kansas.
- BB-539 = Limestone like at BB-530 and BB-531, Altamont, in road at 920'; near Center of West line, SW1/4, Sec. 6, T.25S., R.24E., Bourbon Co., Kansas.
- BB-540 = Limestone similar to that at BB-539, Altamont, in road and exposed in field North of road at 910'; probably the lower bed of limestone formation; near Center of South line, SW1/4, SE1/4, Sec. 1, T.25S., R.23E., Bourbon Co., Kansas.
- BB-541 = Limestone similar to that at BB-539, Altamont, in road and exposed in field North of road at 910'; probably the upper bed of limestone formation; approximately 200' West of Center of South line, SE1/4, SW1/4, Sec. 1, T.25S., R.23E., Bourbon Co., Kansas.
- BB-542 = Top of limestone as at BB-528 (Altamont) at approximately 895'; near Center of South line, SW1/4, SW1/4, Sec. 1, T.25S., R.23E., Bourbon Co., Kansas.
- BB-543 = Location of measured section B-92, Altamont and Bandera; based on B-92 the Altamont is 6.8' thick (3.0' = Worland, 2.0' = Lake Neosho, and 1.8' = Amoret); near Center of South line, SE1/4, SW1/4, Sec. 2, T.25S., R.23E., Bourbon Co., Kansas.
- BB-544 = Sequence similar to that at BB-543 in drainage on West side of road; top of limestone, Altamont, near 900'; near Center of South line, SW1/4, Sec. 2, T.25S., R.23E., Bourbon Co., Kansas.
- BB-545 = Sequence similar to that at BB-543 exposed in stream cuts on both sides of road; base of Altamont Limestone at approximately 900'; near Center of South line, SE1/4, SW1/4, SE1/4, Sec. 3, T.25S., R.23E., Bourbon Co., Kansas.
- BB-546 = Probable top of Altamont Limestone in road at 910'; upper part of Bandera Shale in drainage on North side of road; approximately 200' East of Center of South line, SE1/4, SW1/4, Sec. 3, T.25S., R.23E., Bourbon Co., Kansas.
- BB-547 = Sequence similar to that exposed at BB-545; good Bandera Shale exposed below limestone exposure in road; base of Altamont Limestone at

approximately 900'; approximately 250' South of Center of East line, NE1/4, SE1/4, Sec. 3, T.25S., R.23E., Bourbon Co., Kansas.

BB-548 = Similar to exposure at BB-547; base of Altamont Limestone near 890'; approximately 200' East of Center of South line, Sec. 3, T.25S., R.23E., Bourbon Co., Kansas.

BB-549 = Similar to exposure at BB-547 on North side of stream, base of Altamont Limestone at approximately 880'; approximately 100' North of Center of East line, SE1/4, NE1/4, Sec. 3, T.25S., R.23E., Bourbon Co., Kansas.

BB-550 = Limestone rubble in stream on South side of road; approximately 300' East of Center of North line, NW1/4, NE1/4, Sec. 2, T.25S., R.23E., Bourbon Co., Kansas.

BB-551 = Top of Altamont (Worland) Limestone at @882' in road; near Center of East line, NW1/4, SE1/4, NE1/4, Sec. 31, T.24S., R.24E., Bourbon Co., Kansas.

BB-552 = Limestone, Altamont?, in road; near Center of South line, SE1/4, NE1/4, Sec. 31, T.24S., R.24E., Bourbon Co., Kansas.

BB-553 = Location of measured section B-40, grown over but still visible; near Center of South line, SE1/4, SE1/4, Sec. 31, T.24S., R.24E., Bourbon Co., Kansas.

BB-554 = Possibly a thin limestone in hillside North of road; just NW of SE cor., Sec. 32, T.24S., R.24E., Bourbon Co., Kansas.

BB-555 = Maroon to greenish gray mudrock exposed at the base of farm building on East side of road; near Center of West line, SW1/4, SW1/4, NW1/4, Sec. 4, T.25S., R.24E., Bourbon Co., Kansas.

BB-556 = Base of limestone, probably Altamont, in road at approximately 882'; near Center of North line, NW1/4, NE1/4, NW1/4, Sec. 33, T.24S., R.24E., Bourbon Co., Kansas.

BB-557 = Base of limestone, probably Altamont, in road at approximately 880'; near Center of North line, Sec. 33, T.24S., R.24E., Bourbon Co., Kansas.

BB-558 = Top of limestone, possibly Altamont, at approximately 900'; approximately 150' West of Center of North line, NW1/4, NW1/4, Sec. 33, T.24S., R.24E., Bourbon Co., Kansas.

BB-559 = Similar to exposure at BB-558 in drainage, top of Altamont (Worland) Limestone at approximately 878' in field North of road; near Center of North line, NW1/4, Sec. 29, T.24S., R.24E., Bourbon Co., Kansas.

- BB-560 = Sandstone, probably in Nowata Shale, in road at 880'; near Center of North line, NE1/4, Sec. 30, T.24S., R.24E., Bourbon Co., Kansas.
- BB-561 = Sandstone, probably in Nowata Shale, in road at 880'; near Center of North line, NE1/4, Sec. 21, T.24S., R.24E., Bourbon Co., Kansas.
- BB-562 = Thin bedded, light gray, dense limestone with "algal blades", *Composita*, and crinoidal debris, probably Worland; top of Altamont Limestone in road, with exposures on the West side of road extending North along the road into an East-West drainage at 890' or a bit less; total thickness of Altamont approximately 10'; just North, $\pm 100'$, of Center of East line, NE1/4, SE1/4, NE1/4, Sec. 16, T.24S., R.24E., Bourbon Co., Kansas.
- BB-563 = Probably Bandera Shale exposed in creek; approximately 200' South of Center of East line, NE1/4, NE1/4, Sec. 16, T.24S., R.24E., Bourbon Co., Kansas.
- BB-564 = Limestone, Altamont, in road; NW cor., Sec. 15, T.24S., R.24E., Bourbon Co., Kansas.
- BB-565 = Top of Altamont (Worland) Limestone in road at 880'; approximately 100' West of Center of North line, NW1/4, NW1/4, Sec. 15, T.24S., R.24E., Bourbon Co., Kansas.
- BB-566 = Probable base of Altamont Limestone in road at change in road grade, at approximately 870'; approximately 250' East of Center of North line, NW1/4, Sec. 15, T.24S., R.24E., Bourbon Co., Kansas.
- BB-567 = Possibly black shale in stream North of road with a lot of limestone rubble; approximately 100' East of Center of South line of SW1/4, Sec. 10, T.24S., R.24E., Bourbon Co., Kansas.
- BB-568 = Top of Altamont (Worland) Limestone near 875' in road, base estimated at 865'; near Center of North line, NW1/4, NW1/4, NE1/4, Sec. 10, T.24S., R.24E., Bourbon Co., Kansas.
- BB-569 = Sandstone in road similar to that at BB-560 and BB-561, probably in the Bandera Shale; near Center of North line, NW1/4, NE1/4, NW1/4, Sec. 9, T.24S., R.24E., Bourbon Co., Kansas.
- BB-605 = Top of Altamont Limestone at @900', base at @890' along road and at junction with Kansas Highway 7, formation thin here; SE cor., Sec. 1, T.24S., R.23E., Bourbon Co., Kansas.

- BB-606 = Area of measured section B-37, from Kansas Highway 7 it still looks usable, but hard to access, top of Altamont estimated at @900'; near Center of South line, SE1/4, Ne1/4, Sec.1, T.24S., R.23E., Bourbon Co., Kansas.
- BB-607 = Altamont Limestone in road just West of section corner, base of measured section B-190; just West of NE cor., Sec. 2, T.24S., R.23E., Bourbon Co., Kansas.
- BB-608 = Limestone rubble in stream at site of small rapids on South side of road; near Center of North line, NE1/4, NW1/4, NE1/4, Sec. 3, T.24S., R.23E., Bourbon Co., Kansas.
- BB-609 = limestone float in stream on North side of road; just North of Center, NW1/4, Sec. 3, T.24S., R.23E., Bourbon Co., Kansas.
- BB-623 = Sandstone in road at 880', possibly in Nowata Shale; @200' North of Center of South line, Sec. 34, T.23S., R.24E., Bourbon Co., Kansas.
- BB-624 = Limestone, Altamont, in road on both sides at @860'; @.5 mi North of Center of South 1/2, Sec. 34, T.23S., R.24E., Bourbon Co., Kansas.
- BB-695 = Top of Altamont (Worland) Limestone at 860' in road, base not seen but inferred to be at @850', 10' below top; near Center of South line, SW1/4, Sec. 34, T.23S., R.24E., Bourbon Co., Kansas.
- BB-696 = Sandstone in road on both sides, well exposed in road ditch on North side of road at @835', probably Bandera Shale; near Center of South line, SE1/4, SE1/4, Sec. 33, T.23S., R.24E., Bourbon Co., Kansas.
- BB-696A = Altamont (Worland) Limestone in road; approx. 100' North of SW cor., Sec. 33, T.23S. R.24E., Bourbon Co., Kansas.
- BB-697 = Silty mudrocks in stream cut on North side of road and North side of stream at 830+'; near Center, SW1/4, SE1/4, SE1/4, Sec. 3, T.24S., R.24E., Bourbon Co., Kansas.
- BB-698 = Top of Altamont (Worland) Limestone at @905' in road and fields on both sides of road, base at 895'; near Center of West line, NW1/4, NW1/4, Sec.10, T.24S., R.24E., Bourbon Co., Kansas. Ditch on east side of road was cleaned out for new fence with Bandera Shale exposed about 0.1 mi. south of intersection.
- BB-699 = Altamont (Worland) Limestone on both sides of road and on both sides of drainage, base at @880'; near Center of West line, SW1/4, NW1/4, SW1/4, Sec. 10, T.24S., R.24E., Bourbon Co., Kansas.

- BB-700 = Top of Altamont (Worland) Limestone in drainage East of road at @875'; near Center of West line, SW1/4, SW1/4, SW1/4, Sec. 15, T.24S., R.24E., Bourbon Co., Kansas.
- BB-700A = Base of Altamont (Amoret) Limestone at 872' in stream bank North of road, top of Altamont (Worland) Limestone at @ 885' in road, phosphate nodules from the Lake Neosho Shale Member and laminar to low domical chaetetids in Amoret? in stream bed South of road; along North line, NE1/4, NW1/4, NE1/4 and 200 to 300 feet South of Center of North line, Sec. 22, T.24S., R.24E., Bourbon Co., Kansas.
- BB-700B = Limestone above Altamont Limestone (Norfleet) at 890' in road @ 350' West of Center of North line, NE1/4, NE1/4, Sec. 22, R.24S., R.24E., Bourbon Co., Kansas.
- BB-701 = Lower part of Worland limestone, @5 dm of knobby, gray limestone in two beds each 1.5 to 2+ dm thick well exposed in field West of road on the West edge of Devon, Kansas, inferred base of Altamont Limestone at 860'; near Center, SE1/4, SE1/4, SW1/4, Sec. 30, T.24S., R.24E., Bourbon Co., Kansas.
- BB-702 = Top of Altamont (Worland) Limestone at 870' in field South of Kansas Highway 7 East of Devon, Kansas, just South of BB-701; just South of Center of North line, Sec. 31, T.24S., R.24E., Bourbon Co., Kansas.
- BB-703 = Top of limestone bed near 912' in road ditch on South side of road, not like Worland limestone, perhaps Lenapah Limestone; just South of Center of North line, NE1/4, NE1/4, Sec. 35, T.24S., R.23E., Bourbon Co., Kansas.
- BB-740 = Top of Altamont (Worland) Limestone in field East of road at 890'; near Center of East line, SW1/4, Sec. 25, T.24S., R.23E., Bourbon Co., Kansas.
- BB-741 = Black shale with gray brown mudrock above and a thin limestone like at BB-703 (Lenapah??) in road ditch on east side of road at 980'; could be Checkerboard/Exline limestone equivalent, resembles biotically the Checkerboard of Oklahoma; @400' North of Center of West line, Sec. 13, T.24S., R.23E., Bourbon Co., Kansas.
- BB-742 = Base of Hertha (Critzler) Limestone at @1010' in road and road ditches on both sides of road; @550' North of Center of West line, Sec. 13, T.24S., R.23E., Bourbon Co., Kansas.
- BB-743 = Top of Swope (Bethany Falls) Limestone at 1040' at top of hill in road and in fields on both sides of road; @500' South of NW cor., Sec. 13, T.24S., R.23E., Bourbon Co., Kansas.

BB-744 = Top of Pawnee (Laberdie) Limestone in drainage at 840', forms bed of stream; near Center of East line, NE1/4, NE1/4, Sec. 1, T.24S., R.23E., Bourbon Co., Kansas.

BB-745 = Possibly Lenapah Limestone at @895', see unit 6 of measured section 190, at road ditch on South side of road, a really crumbly, clayey, yellowish-red fossiliferous (productids) limestone; near Center of North line, Sec. 2, T.24S., R.23E., Bourbon Co., Kansas.

BB-746 = Exposure from road @ 35' below the Hertha Limestone to top of hill where Bethany Falls appears to be poorly exposed; elevation at base, in road, is 915', base of Hertha (Critzer) Limestone at 950', top of Hertha (Sniabar) Limestone at 962', top of Ladora Shale/base of Swope (Middle Creek) Limestone at 986', Middle Creek Limestone easily seen above Ladora Shale, Critzer, Mound City, and Sniabar appear to represent the Hertha interval, exposure largely covered except in drainage along road to top of hill, should be dug out; along North side, NE1/4, NW1/4, NW1/4, Sec. 2, T.24S., R.23E., Bourbon Co., Kansas.

BB-747 = Possibly the base of Hertha (Critzer) Limestone at 950' in road and road bank (hillside) on east side of road, see measured section B-33; near Center of North 1/2, Sec. 10, T.24S., R.23E., Bourbon Co., Kansas.

FORT SCOTT QUADRANGLE

- B-102 = Sequence from upper Labette Shale into Pawnee Limestone as measured and described by Jewett in 1938; Sec. 24, T.25S., R.24E., Bourbon Co., Kansas; see BB-3.
- B-103 = Pawnee (Laberdie) Limestone in quarry of Colour Limestone Co. when measured and described by Ives in 1952; just North of Center of South line, SE1/4, Sec. 34, T.25S., R.25E., Bourbon Co., Kansas; see BB-24.
- B-104 = Fort Scott Limestone, upper part, along South side of Marmaton River on the South side of the bridge East of Fort Scott, Kansas; measured and described by Jewett in 1939; Center North line, Sec. 21, T.25S., R.25E., Bourbon Co., Kansas; see BB-175.
- B-105 = Exposure from Mulky Coal through the Excello Shale and Fort Scott Limestone into the Labette Shale, in large quarry just across the Marmaton River (North) of Fort Scott, Kansas, measured and described by Howe in 1948; S1/2, NW1/4, Sec. 19, T.25S., R.25E., Bourbon Co., Kansas; mostly reclaimed and now inaccessible.
- B-106 = same as B-105.
- B-107 = Exposure from Mulky Coal through Excello Shale and Fort Scott Limestone, quarry North of Fort Scott, Kansas, measured and described by Jewett in 1938; near Center of South line, NW1/4, NE1/4, Sec. 19, T.25S., R.25E., Bourbon Co., Kansas; now inaccessible.
- B-141 = Upper Labette Shale through Anna shale into limestone of the lower Pawnee Limestone; measured and described by Jewett in 1938; Sec. 90 of Jewett, 1954; near Center of South line, SW1/4, SE1/4, Sec. 12, T.26S., R.24E., Bourbon Co., Kansas; now inaccessible.
- B-148 = Same as B-149.
- B-149 = Upper Lagonda Fm. through underclay, Mulky Coal and Excello into the soil in roadcut at cross-roads; measured and described by Howe in 1948, Sec. 92 of Howe, 1956; near Center of North line, Sec. 27, T.26S., R.25E., Bourbon Co., Kansas; now inaccessible.
- B-150 = Upper part of underclay, probably Bevier Coal and overlying shale/mudrock in small private strip pit northwest of Garland, Kansas; measured and described by Howe in 1948; near the SW cor., NW1/4, SE1/4, Sec. 26, T.26S., R.25E., Bourbon Co., Kansas; reclaimed area and now inaccessible.

- B-151 = Bevier Coal and overlying shale/mudrock with fossiliferous limestone concretions, in a small stripping operation along a stream, measured and described by Howe in 1948; Sec. 95 of Howe, 1956, same as B-154; near Center of West line, NW1/4, Sec. 25, T.26S., R.25E., Bourbon Co., Kansas; reclaimed area and now inaccessible.
- B-152 = Underclay, Bevier Coal and overlying sequence up to a claystone with a limonitic zone and weathered limestone, in creek and abandoned strip pit (same as B-153); measured and described by Howe in 1948; Sec. 94 of Howe, 1956; North 1/2, NW1/4, Sec. 25, T.26S., R.25E., Bourbon Co., Kansas; same general area as B-151 and B-154; reclaimed area and now inaccessible.
- B-153 = same as B-152.
- B-154 = same as B-151.
- B-155 = Strip pit of Bevier Coal as reported by Schoewe and A.D. on an old, undated section; this study indicates that this is the Croweburg Coal with @ 11' of black shale/mudrock between top of coal and base of dark gray, dense, fossiliferous, jointed limestone that weathers a reddish brown, the Verdigris; in NE1/4, NW1/4, Sec. 22, T.26S., R.25E., Bourbon Co., Kansas.
- B-156 = Crossbedded sandstone and sandy shale/mudrock with irregular contact in the Lagonda Fm. just South of railroad tracks in road cut on East side of road, just South of Center of West line, NW1/4, Sec. 21, T.26S., R.25E., Bourbon Co., Kansas; measured and described by Schoewe in 1937?
- B-157 = Mulky Coal, Excello shale and Blackjack Creek limestone in roadcut on West side of road @ 1 mile East of Drive-In Theatre on U. S. Hwy 69; about 0.15 mile North of SE cor., NE1/4, Sec. 17, T.26S., R.25E., Bourbon Co., Kansas; measured and described by Schoewe and A.D. in 1956; our studies puts the base of Fort Scott (Blackjack Creek) Limestone at 900'.
- B-158 = Pawnee Limestone from upper 1.1' of Myrick Station limestone through thin (0.3') of Mine Creek shale and 14+' of Laberdie limestone in quarry across the road from the Country Club in Fort Scott, Kansas; measured and described by Jewett, probably in 1938; Sec. 91 of Jewett, 1945; just South of Center of West line, SE1/4, Sec. 6, T.26S., R.25E., Bourbon Co., Kansas; tabular chaetetids in lower beds of Laberdie; now full of water.
- B-201 = same as B-107.
- B-203 = Data from section measured and described by Ives in 1952 = Pawnee (Laberdie) Limestone and overlying lower part of Bandera Shale in quarry just South of plant of Fort Scott Hydraulic Cement Co.; near Center NW1/4, SW1/4, Sec. 17, T.25S., R.25E., Bourbon Co., Kansas. This is the same as L-

339 and is the Fort Scott (Higginsville) Limestone with overlying Labette Shale, the coal noted by Ives is probably the Lexington.

Sec.74 of Jewett, 1945 = underclay, Mulky Coal, Excello shale, and 13.5' of Fort Scott Limestone with only @2.0' of Higginsville limestone exposed; measured and described by R. C. Moore in area of old strip pit; near Center, NW1/4, NW1/4, Sec. 26, T. 25S., R.25E., Bourbon Co., Kansas; now inaccessible.

L-338 = Same as B-105, B-106, B-107 (Jewett, 1945, Sec. 72), and B-201; B-107 and B-201 measured and described by Jewett in 1938 in the NE1/4, Sec. 19, T.25S., R.25E., Bourbon Co., Kansas; B-105 and B-106 were measured and described by Howe in 1948 near the Center, SE1/4, NW1/4, Sec. 19, T.25S., R.25E., Bourbon Co., Kansas; the latter describe the sequence from the Mulky Coal through the Fort Scott through two coaly intervals in the Labette Shale; the Mulky Coal was mined by stripping and the Blackjack Creek was quarried for cement; abundant chaetetids were reported in the Higginsville, particularly in the upper part; total thickness of Fort Scott Limestone reported by Jewett was 27.9'; Howe reported 29'4".

L-339 = Little Osage shale and Higginsville limestone exposed in old cement plant quarry at Fort Scott, Kansas; low domical chaetetids occur in top of Higginsville limestone (reclaimed and inaccessible now); near Center of South line, NW1/4, NW1/4, SW1/4, Sec. 17, T.25S., R.25E., Bourbon Co., Kansas; same general area as L-338.

L-768 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 867'; roadcut on both sides of U. S. Hwy 69 just North of Fort Scott, Kansas; cup-shaped and tabular chaetetids in Myrick Station limestone; near Center of South line, SW1/4, SW1/4, SE1/4, Sec. 18, T.25S., R.25E., Bourbon Co., Kansas.

L-937 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 860' in roadcut on U. S. Hwy 69; tabular chaetetids in the Myrick Station limestone; first outcrop North of L-768 on East side of U. S. Hwy 69; near Center of West line, NW1/4, SW1/4, NE1/4, Sec. 18, T.25S., R.25E., Bourbon Co., Kansas.

BB-1 = Labette Shale; along old U. S. Hwy 69 about 0.5 miles North of U. S. Hwy 54; near NE cor., Sec. 24, T.25S., R.24E., Bourbon Co., Kansas.

BB-2 and BB-2a = Eroded top of Pawnee (Laberdie) Limestone in field on East side of road; along the West side of South 1/2, Sec. 13, T. 25S., R.24E., Bourbon Co., Kansas.

BB-3 = Labette Shale, due South of BB-2 at intersection with U. S. Hwy 54; measured section 71 of Jewett, 1945; probably not far from B-102 as the sequence is similar, a thin coal in ditch overlain by skeletal mudstone to

- clayey skeletal carbonate, above this carbonate is a thin bedded grayish clayey siltstone; near Center of West line, NW1/4, Sec. 24, T.25S., R.24E., Bourbon Co., Kansas.
- BB-4 = Limestone in stream bed (Higginsville?); due South of BB-3 at low water bridge; Pavay's Ford of 1889, with domical (1 to 2 dm) to tabular chaetetids,; probably the same as at BB-5; near Center of West line, NW1/4, SW1/4, Sec. 24, T.25S., R.24E., Bourbon Co., Kansas.
- BB-5 = Limestone in road ditch with domical chaetetids, probably Higginsville, becomes an algal wackestone north to drainage with alluvium in drainage; estimated top of Fort Scott (Higginsville) Limestone at 825'; due South of BB-4 at road junction; near SW cor., Sec. 24, T.25S., R.24E., Bourbon Co., Kansas.
- BB-6 = Anna shale and lowest limestone (Myrick Station) of Pawnee in road ditch on South side of road; top of Anna shale at 847'; near Center of North line, NE1/4, NE1/4, NE1/4, Sec. 23, T.25S., R.24 E. Bourbon Co., Kansas.
- BB-7 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 825' in road ditch on east side of road; near Center of West line, SW1/4, SW1/4, Sec. 14, 25S., R. 24E., Bourbon Co., Kansas.
- BB-8 = Same sequence as at BB-7 on East side of road, due South of BB-7, South of U. S. Hwy 54; top of Anna shale/base of Pawnee (Myrick Station) Limestone at 835' near Center of West line, NW1/4, NW1/4, Sec. 23, T.25S., R.24E., Bourbon Co., Kansas.
- BB-9 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 901' in road ditch on North side of road approximately 0.9 miles due south of BB-8; near Fort Scott/Marmaton Quad boundary; at SW cor., Sec. 23, T.25S., R.24E., Bourbon Co., Kansas.
- BB-10 = Limestone on both sides of road, approximately 6.0' of thin, wavy bedded, algal wackestone with black, fissile shale below, (Higginsville and Little Osage); top of Fort Scott (Higginsville) Limestone estimated at 835'; just North of the Center of the East line, Sec. 26, T.25S., R.24E., Bourbon Co., Kansas.
- BB-11 = Upper beds of Higginsville limestone at SE cor of intersection of Helyman and 2nd streets in Fort Scott, Kansas; very similar to BB-10; near Center of West line, NE1/4, SW1/4, Sec. 25, T.25S., R.24E., Bourbon Co., Kansas.
- BB-11A = Base of Fort Scott (Blackjack Creek) Limestone estimated at 805'; near Center, NE1/4, SW1/4, Sec. 25, T.25S., R.24E., Bourbon Co., Kansas.

- BB-12 = Fort Scott Limestone (Blackjack Creek, Little Osage, and Houx-Higginsville) in road ditch; base of Fort Scott Limestone (Blackjack Creek) at 830'; near Center of South line, SW1/4, SE1/4, Sec. 27, T.25S. R.25E., Bourbon Co., Kansas; road ditch along north side of road from creek westward to mailbox; see measured section in West and Sawin, 1994, p. 2.
- BB-13 = Higginsville and Little Osage, South and East of BB-12; near Center of East line, NE1/4, Sec. 34, T.25S., R.25E., Bourbon Co., Kansas.
- BB-14 = Sequence from Lagonda, Breezy Hill (thin), Mulky with underclay, Excello, Blackjack Creek, Little Osage, and Houx-Higginsville; base of Fort Scott (Blackjack Creek) at 835', top of Fort Scott (Houx-Higginsville) at 872'; in road ditch on North side of road; near Center of North line, NE1/4, NW1/4, Sec. 1, T.26S., R.24E., Bourbon Co., Kansas; EXCELLENT SECTION
- BB-15 = Blackjack Creek and Little Osage, including Summit Coal; near Center, SW1/4, SW1/4, NE1/4, Sec. 31, T.25S., R.25E., Bourbon County Kansas; stream bank on east side of Buck Run in the northwest corner of the intersection between 12th Street and U.S. Hwy 69 in Fort Scott, Kansas, behind (East) of Church of God; see measured section in West and Sawin, 1994, p. 3.
- BB-16 = Fort Scott Limestone (Blackjack Creek, Little Osage, and Higginsville); near SW cor., NE1/4, Sec. 31. T.25S., R.25E., Bourbon County, Kansas; stream bank on the west side of Buck Run in the southwest corner of the intersection between 12th Street and U.S. Hwy 69 in Fort Scott, Kansas; see measured section in West and Sawin, 1994, p. 4.
- BB-17 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 912' along the South side of 12th Street in the eastern part of Fort Scott, Kansas; near Center of West line, Sec. 32, T.25S., R.25E., Bourbon Co., Kansas.
- BB-18 = Base of Fort Scott (Blackjack Creek) Limestone at 805' in road ditch about 15' above stream bed; near Center of North line, NE1/4, NE1/4, Sec. 33, T.25S., R.25E., Bourbon Co., Kansas.
- BB-19 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 875' in road, tabular chaetetids in float, Myrick Station in place in road; near Center of North line, NW1/4, Sec. 33, T.25S., R.25E., Bourbon Co., Kansas.
- BB-20 = Upper part of Lagonda, Breezy Hill, and underclay of the Mulky Coal which was mined in this area, see Schoewe, 1959, KGS Bull.134, pt.5, p.213. Blocks of black, platy to fissile shale, probably Excello, can be seen in the west side of the creek bank upstream from where section was measured; these probably reflect collapse after the coal (Mulky) was removed; near Center of West line, NW1/4, NE1/4, Sec. 31, T.25S., R.25E., Bourbon

County, Kansas; steam bank on both sides of Buck Run just west of U.S.Hwy 69; see measured section in West and Sawin, 1994, p. 5.

- BB-21 = Pawnee Limestone, no top, no base, probably Laberdie; near Center of South line, SE1/4, SW1/4, Sec. 24, T.26S., R.24E., Bourbon Co., Kansas.
- BB-22 = Old quarries in Pawnee, probably Laberdie; near Center of East line of SE1/4, NE1/4, Sec. 25, T.26S., R.24E., Bourbon Co., Kansas.
- BB-23 = Old quarry in Pawnee, probably Laberdie; NW1/4, NE1/4, SE1/4, Sec. 19, T.26S., R.25E., Bourbon Co., Kansas.
- BB-24 = Old quarry in Pawnee, Laberdie; Section B-103; tabular chaetetids; Center, SE1/4, SE1/4, Sec. 34, T.25S., R.25E., Bourbon Co., Kansas.
- BB-25 = Top of Verdigris Limestone at 840'; near Center of East line, SW1/4, SE1/4, Sec. 15, T.26S., R.25E., Bourbon Co., Kansas.
- BB-26 = Top of Verdigris Limestone at 840' on both sides of creek; downstream a few meters is a thin coal, probably the Croweburg that pinches out against a slight palaeotopographic high; just East of Center of South line, SE1/4, SW1/4, Sec. 15, T.26S., R.25E., Bourbon Co., Kansas.
- BB-27 = Englevale sandstone at 910' in road; near Center of South line, SW1/4, SE1/4, Sec. 14, T.26S., R.25E., Bourbon Co., Kansas.
- BB-28 = Possibly Breezy Hill limestone in road ditch at intersection; SW cor., Sec. 13, T.26S., R.25E., Bourbon Co., Kansas.
- BB-29 = Base of Fort Scott (Blackjack Creek) Limestone at @900'; near Center of West line, SW1/4, SW1/4, Sec. 13, T.26S., R.25E., Bourbon Co., Kansas.
- BB-30 = Top of Verdigris Limestone at 805'; near Center of West line, NW1/4, NW1/4, Sec. 13, T.26S., R.25E., Bourbon Co., Kansas.
- BB-31 = Probably Verdigris Limestone interval (fossiliferous, clayey limestone) in creek bed; just below bridge is a monoclinial fold with a more or less North-South axis, beds dip about 1.0' per 50' horizontally to the south; SW cor., Sec. 12, T.26S., R.25E., Bourbon Co., Kansas.
- BB-32 = Mulky Coal was probably mined from this site; old strip pit near Center NE1/4, Sec. 23, T.26S., R.25E., Bourbon Co., Kansas.
- BB-41 = Base of Fort Scott (Blackjack Creek) Limestone at 855'; near Center of North line, NW1/4, NW1/4, Sec. 12, T.26S., R.25E., Bourbon Co., Kansas.
- BB-42 = Top of Fort Scott (Higginsville) Limestone at @880'; near Center of West line, Sec. 1, T.26S., R.25E., Bourbon Co., Kansas.

- BB-43 = Calcareous sandstone to sandy limestone in the upper Labette Shale; just North of Center of West line, NW1/4, Sec. 1, T.26S., R.25E., Bourbon Co., Kansas.
- BB-44 = Upper Labette Shale sequence ties into BB-185; near Center of North line, NW1/4, Sec. 1, T.26S., R.25E., Bourbon Co., Kansas.
- BB-45 = Upper Labette Shale; near Center of North line, NE1/4, Sec. 35, T.25S., R.25E., Bourbon Co., Kansas.
- BB-46 = Top of Anna shale at 900'-905' in road, Myrick Station limestone above; near Center of North line, NW1/4, Sec. 3, T.26S., R.25E., Bourbon Co., Kansas.
- BB-47 = Top of Fort Scott (Higginsville) Limestone at 850' in creek; just North of Center of South line, Sec. 33, T.25S., R.25E., Bourbon Co., Kansas.
- BB-48 = Base of Higginsville limestone with black, fissile shale, Little Osage, below; Center of West line, SW1/4, NE1/4, Sec. 33, T.25S., R.25E., Bourbon Co., Kansas.
- BB-49 = Top of Fort Scott (Higginsville) Limestone at @ 871' in road; near Center of East line, Sec. 34, T.25S., R.25E., Bourbon Co., Kansas.
- BB-146 = Top of Anna Shale/base of Pawnee (Myrick Station) Limestone at 938' in a new excavation North of the road; thin beds of limestone exposed at road intersection; just North of Center of South line, Sec. 3, T.26S., R.25E., Bourbon Co., Kansas.
- BB-147 = Eroded top of the Blackjack Creek limestone at 880' in creek bed South of road, base of Fort Scott (Blackjack Creek) Limestone estimated at 871'; near NE cor., Sec. 10, T.26S., R.25E., Bourbon Co., Kansas.
- BB-148 = Siltstone and mudrock of Lagonda in small creek just North of road; just North of Center of South line, Sec. 2, T.26S., R.25E., Bourbon Co., Kansas.
- BB-149 = Labette Shale in road; near Center of West line, NW1/4, SE1/4, Sec. 10, T.26S., R.25E., Bourbon Co., Kansas.
- BB-150 = Base of Fort Scott (Blackjack Creek) Limestone at 900' in exposure on West side of road; Section B-157; near Center of East line, SE1/4, NE1/4, Sec. 17, T.26S., R.15E., Bourbon Co., Kansas.
- BB-151 = Eroded top of Fort Scott (Higginsville) Limestone at 915' in road and field on West side of road near the middle of the section; near Center of

- East line of NE1/4, NE1/4, SE1/4, Sec. 17, T.26S., R.25E., Bourbon Co., Kansas.
- BB-152 = Upper Blackjack Creek limestone in road at intersection and lower Higginsville limestone exposed just West of road intersection; near SE cor., Sec. 20, T.26S., R.15E., Bourbon Co., Kansas.
- BB-153 = Base of Fort Scott (Blackjack Creek) Limestone at @ 912' in road; just North of Center of East line, Sec. 20, T.26S., R.25E., Bourbon Co., Kansas.
- BB-154 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at @ 945' in road, Anna is well exposed; near Center of South line, Sec. 20, T.26S., R.25E., Bourbon Co., Kansas.
- BB-155 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 935' in road; dip slope of Pawnee from BB-154 to BB-155; near Center of South line, SE1/4, SW1/4, SW1/4, Sec. 20, T.26S., R.25E., Bourbon Co., Kansas.
- BB-156 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 933' in road; hand leveled to junction with U.S. Hwy 69; SW cor., Sec. 20, T.26S., R.25E., Bourbon Co., Kansas.
- BB-157 = Base of Fort Scott (Blackjack Creek) Limestone at 930+' in road, Excello below; near Center of North line, NE1/4, NE1/4, Sec. 28, T.26S., R.25E., Bourbon Co., Kansas.
- BB-158 = Base of Fort Scott (Blackjack Creek) Limestone at 934' in road, Excello below; near Center of North line, NW1/4, NW1/4, NW1/4, Sec. 27, T.26S., R.25E., Bourbon Co., Kansas.
- BB-159 = Up to 15' of limestone in contact with sandstone, siltstone, mudrock interval below; contact between carbonate and siliciclastics is at 877', Fort Scott-Lagonda??; near Center of South line, SE1/4, Sec. 16, T.26S., R.25E., Bourbon Co., Kansas.
- BB-160 = Sandstone in road at 900'; near Center of South line, SW1/4, SW1/4, Sec. 16, T.26S., R.25E., Bourbon Co., Kansas.
- BB-161 = Exposure, in ascending order of: underclay, coal, black shale, carbonate concretions/nodules, in creek bed on East side of road; near Center of West line, SW1/4, Sec. 15, T.26S., R.25E., Bourbon Co., Kansas.
- BB-162 = Top of Verdigris Limestone at 832' in stream on West side of road, produces slight rapids in stream, possible East dip; just West of Center, Sec. 15, T.26S., R.25E., Bourbon Co., Kansas.
- BB-163 = Approximately 15' of sandstone (Englevale) in road just West of the SW cor. of Clarksburg Cemetery, underlain by @ 2 dm of black shale

- (Excello), @ 3.5 dm (1.0') of coal (Mulky), and then underclay; Breezy Hill limestone is absent here and sandstone cuts out all the Fort Scott Limestone; near SW cor., Sec. 23, T.26S., R.25E., Bourbon Co., Kansas.
- BB-164 = Sandstone (Englevale) at 885' in road; near Center of East line, Sec. 14, T.26S., R.25E., Bourbon Co., Kansas.
- BB-173 = Fort Scott Limestone; estimated 6'0' of Blackjack Creek limestone, 5.6' of Little Osage Shale, and 6.0' of Higginsville limestone; base of Fort Scott (Blackjack Creek) Limestone at @ 920' in road; top of Fort Scott (Higginsville) Limestone eroded, but based on estimated thicknesses it is at, or above 937.5'; near Center of East line, SE1/4, NE1/4, Sec. 28, T.26S., R.25E., Bourbon Co., Kansas.
- BB-174 = Base of Fort Scott (Blackjack Creek) Limestone at 800'; top of Fort Scott (Higginsville) Limestone at @ 820'; Excello, Mulky Coal, and underclay in ditch on North side of road; just West of SE cor., Sec. 21, T.25S., R.25E., Bourbon Co., Kansas.
- BB-175 = Top of Fort Scott (Higginsville) Limestone estimated at 815' to 820' across Marmaton River; according to Jewett, 1945, Sec. 73 and B-104, there is 23.0' of Fort Scott exposed here; near Center of South line, NE1/4, NW1/4, Sec. 21, T.25S., R.25E., Bourbon Co., Kansas.
- BB-176 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at @ 880'; near Center of West line, NW1/4, SE1/4, Sec. 28, T.25S., R.25E., Bourbon Co., Kansas.
- BB-177 = Base of Fort Scott (Blackjack Creek) Limestone at @ 800'; just East of Center of West line, Sec. 27, T.25S., R.25E., Bourbon Co., Kansas.
- BB-178 = Base of Fort Scott (Blackjack Creek) Limestone at 802'; just East of Center of South line, SE1/4, NW1/4, Sec. 27, T.25S., R.25E., Bourbon Co., Kansas.
- BB-179 = Top of Fort Scott (Higginsville) Limestone at 850'; near Center of West line, SW1/4, SW1/4, SE1/4, Sec. 27, T.25S., R.25E., Bourbon Co., Kansas.
- BB-180 = Base of Fort Scott (Blackjack Creek) Limestone at 825'; near Center of South line, SE1/4, SW1/4, SW1/4, Sec. 26, T.25S., R.25E., Bourbon Co., Kansas.
- BB-181 = Base of Fort Scott (Blackjack Creek) Limestone at 825'; near Center of South line, SW1/4, SE1/4, SW1/4, Sec. 26, T.25S., R.25E., Bourbon Co., Kansas.

- BB-182 = Sandstone (Englevale) in road ditch to the East and just North of the intersection near Center of South line, Sec. 26, T.25S., R.25E., Bourbon Co., Kansas.
- BB-183 = Estimated top of Fort Scott (Higginsville) Limestone at 845' to 850'; near Center of East line, SE1/4, SW1/4, Sec. 26, T.25S., R.15E., Bourbon Co., Kansas.
- BB-184 = Higginsville limestone exposed along North side of U. S. Hwy 54 just west of this site; top of Fort Scott (Higginsville) Limestone at 860'; near Center of South line, SE1/4, SE1/4, SE1/4, Sec. 26, T.25S., R.25E., Bourbon Co., Kansas.
- BB-185 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 945' in road ditch along South side of road; good section from Upper Labette Shale to Myrick Station limestone; near Center of North line, NW1/4, NE1/4, NW1/4, Sec. 1, T.26S., R.25E., Bourbon Co., Kansas.
- BB-186 = Top of Fort Scott (Higginsville) Limestone at 855'; roadcut along U. S. Hwy 54, near Center of South line, SE1/4, SW1/4, NW1/4, Sec. 26, T.25S., R.25E., Bourbon Co., Kansas.
- BB-187 = Base of Fort Scott (Blackjack Creek) Limestone at 816'; roadcut along U.S. Hwy 54, near Center of East line, Sec. 27, T.25S., R.25E., Bourbon Co., Kansas.
- BB-188 = Verdigris Limestone in Marmaton River at low water bridge; @ 1.1' thick, strikes N.57 degrees W.; dips S.-SW. at 4 degrees; top of Verdigris limestone at 760'; near Center of West line, Sec. 23, T.25S., R.25E., Bourbon Co., Kansas.
- BB-190 = Base of Fort Scott (Blackjack Creek) Limestone at 788' in roadcut along North side of road; just East of Center, Sec. 17, T.25S., R.25E., Bourbon Co., Kansas.
- BB-191 = Possibly Verdigris Limestone in Wolverine Creek; just West of Center, Sec. 17, T.25S., R.25E., Bourbon Co., Kansas.
- BB-192 = Top of Fort Scott (Higginsville) Limestone at 830'; near Center of East line, NE1/4, SE1/4, SE1/4, Sec. 18, T.25S., R.25E., Bourbon Co., Kansas.
- BB-193 = Top of Fort Scott (Higginsville) Limestone at 830'; base of Fort Scott (Blackjack Creek) Limestone at 795' based on 28.0' of Fort Scott reported by Jewett, 1945, Section 72; also checks with Bourbon County sections B-105, B-106, B-107, and B-201, and exposures in roadcut Southwest of BB-193; near Center of North line, NE1/4, NW1/4, Sec. 19, T.25S., R.25E., Bourbon Co., Kansas.

- BB-194 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 880' with Myrick Station limestone exposed on both sides of road; near Center of South line, Sec. 2, T.26S., R.24E., Bourbon Co., Kansas.
- BB-195 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 885', dip slope; near Center of South line, SW1/4, SW1/4, SW1/4, Sec. 1, T.26S., R.24E., Bourbon Co., Kansas.
- BB-196 = Base of Fort Scott (Blackjack Creek) Limestone at 846' (excellent contact); top of Fort Scott (Higginsville) Limestone at 857'; 11.3' of Fort Scott Limestone; near Center of South line, SW1/4, SW1/4, Sec. 1, T.26S., R.24E., Bourbon Co., Kansas.
- BB-197 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 954'; Myrick Station on slight rise North of road; exposed from bottom to top are: Childers School limestone (an informal name); mudrock; very thin bed of platy, fossiliferous, black limestone; Anna shale; thin clayey mudrock; and Myrick Station limestone; near Center of South line, SE1/4, SE1/4, SE1/4, Sec. 1, T.26S., R.24E., Bourbon Co., Kansas.
- BB-198 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 932'; near Center of North line, NE1/4, Sec. 1, T.26S., R.24E., Bourbon Co., Kansas.
- BB-235 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 972' in new road cut South of Fort Scott, Kansas on U. S. Hwy 69; Anna shale exposed in ditch; basal, dense, dark gray Myrick Station limestone, thin mudrock bed, upper Myrick Station limestone with typical tabular to dish-shaped chaetetids exposed above Anna; near Center of East line, Sec. 18, T.26S., R.25E., Bourbon Co., Kansas.
- NOTE: Elevation of 3' to 4' bed of calcareous sandstone in the Labette Shale just East of BB-235 drops 23' vertically in 300' horizontally in a southeasterly direction; top of this sandstone is at 966' and 300' SE the top is at 943' based on hand leveling; the base of the Anna shale is at 972' and 300' southeast it is at 949'.
- BB-369 = Old quarry and road in Gunn Park at Fort Scott, Kansas; estimated base of Fort Scott (Blackjack Creek) Limestone at 835'; estimated top of Fort Scott (Higginsville) Limestone at 875'; near Center of South line, NE1/4, SW1/4, Sec. 36, T.25S., R.24E., Bourbon Co., Kansas.
- BB-370 = Estimated top of Fort Scott (Higginsville) Limestone at 880'; near Center of South line of Sec. 1, T.26S., R.24E., Bourbon Co., Kansas.
- BB-371 = Estimated base of Fort Scott (Blackjack Creek) Limestone at between 845' and 850'; near Center of South line, SW1/4, SE1/4, SW1/4, Sec. 1, T.26S., R.24E., Bourbon Co., Kansas.

- BB-372 = Near top of Anna shale; based on weathered Myrick Station limestone with VERY black soil below weathered limestone; near Center, NW1/4, NE1/4, Sec. 18, T.26S., R.25E., Bourbon Co., Kansas.
- BB-372A = Sequence from about four feet below 8 feet of Higginsville limestone through 6 feet of Little Osage shale and 6+ feet of Blackjack Creek limestone exposed along newly constructed U. S. Hwy 69 8.1 miles North of Bourbon-Crawford County line in Fort Scott Quad; chaetetids in Blackjack Creek limestone; near Center of West line, SW1/4, SW1/4, Sec. 8 and near Center of East line, SE1/4, SE1/4, Sec. 7, T.26S., R.25E., Bourbon Co., Kansas.
- BB-373 = Thin bedded, hard, brown limestone in road ditch on East side of road, a limestone in upper Labette Shale; well weathered Anna shale and Myrick Station limestone above Labette; near Center of West line, NW1/4, NW1/4, SE1/4, Sec. 18, T.26S., R.25E., Bourbon Co., Kansas.
- BB-374 = Upper Pawnee (Laberdie) Limestone exposed in pond bank on West side of road, recognizable dip to the SW; near Center of East line, SE1/4, SW1/4, Sec. 18, T.26S., R.25E., Bourbon Co., Kansas.
- BB-375 = Top of Anna shale/base of Pawnee (Laberdie) Limestone at 885'; near Center of South line, NW1/4, SW1/4, SW1/4, Sec. 13, T.26S., R.24E., Bourbon Co., Kansas.
- BB-377 = Top of Anna shale/base of Pawnee (Laberdie) Limestone at 878' in curve on the North side of the road; sequence from below the brown limestone in the upper Labette Shale well into the Laberdie; tabular chaetetids at @ 1 m above top of Myrick Station limestone in the Laberdie; near Center, SE1/4, SE1/4, Sec. 23, T.26S., R.24E., Bourbon Co., Kansas.
- BB-378 = Top of Fort Scott (Higginsville) Limestone at @ 912'; near Center of South line, SE1/4, SE1/4, Sec. 17, T.26S., R.25E., Bourbon Co., Kansas.
- BB-379 = Top of Fort Scott (Higginsville) Limestone at @ 912'; near Center of East line of NE1/4, SE1/4, Sec. 17, T.26S., R.25E., Bourbon Co., Kansas.
- BB-380 = Top of Fort Scott (Higginsville) Limestone at @ 912'; near Center of East line, NE1/4, NE1/4, Sec. 17, T.26S., R.25E., Bourbon Co., Kansas.
- BB-422 = Probably top of Fort Scott (Higginsville) Limestone at 825'; near Center of West line, Sec. 14, T.25S., R.24E., Bourbon Co., Kansas.
- BB-428 = Base of Fort Scott (Blackjack Creek) Limestone at 809'; near Center of West line, SE1/4, NE1/4, NE1/4, Sec. 25, T.25S., R.24E., Bourbon Co., Kansas.

GARLAND QUADRANGLE

- B-169 = Sequence from below and up through Fleming Coal into overlying black shale and limestone, exposed on bank of Drywood Creek, measured and described by Howe in 1948, measured Sec. 88 of Howe, 1956; near Center of West line, SE1/4, SW1/4, Sec. 13, T.27S., R.25E., Bourbon Co., Kansas.
- BB-142 = Siltstone and mudrock exposed in stream bank at 790' just above water level in East bank of Buck Run with soil above; near Center of South line, SW1/4, SE1/4, Sec. 12, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #1.
- BB-143 = Top of limestone above Mineral Coal at 815'; @ 2 dm of Verdigris limestone (upper bed is @ 1.5 dm, lower bed is @ 0.5 dm with clayey parting between); sharp contact with underclay and coaly streak below; 0.6 mile North of SW cor., Sec. 30, T.34N., R.33W., Vernon Co., Missouri; Sawin Site #2.
- BB-144 = Top of limestone above Mineral Coal at 812' in road ditch on west side of road with black shale below; SE cor., NE1/4, Sec. 24, T.27S., R.25E., Bourbon Co., Kansas; Sawin Site #3.
- BB-145 = Sequence containing Fleming Coal, sampled 1.5 cm of calcareous bed above coal, elevation at the top of this calcareous bed is 830'; good exposure; 0.15 mile East of NW cor., Sec. 30, T.34N., R.33W., Vernon Co., Missouri; Sawin Site #4.
- BB-168 = Base of Fort Scott (Blackjack Creek) Limestone at 900' in road North of Garland, Kansas; Excello below; just South of the Center of East line, Sec. 36, T.26S., R.25E., Bourbon Co., Kansas.
- BB-169 = Top of Verdigris Limestone at 830' in road South of Garland, Kansas; Center of East line, SE1/4, SE1/4, NE1/4, Sec. 1, T.27S., R.25E., Bourbon Co., Kansas.
- BB-170 = Top of Verdigris Limestone at 830' in road; Center of East line of SE1/4, NE1/4, SE1/4, Sec. 1, T.27S., R.25E., Bourbon Co., Kansas.
- BB-171 = Top of Verdigris Limestone at 830' in road; near SE cor., Sec. 1, T.27S., R.25E., Bourbon Co., Kansas.

HAMMOND QUADRANGLE

- B-38 = Characteristic exposure of basal part of Pawnee, brown weathered limestone with some black shale below; Center of South line, Sec. 35, T.24S., R.24E., Bourbon Co., Kansas; described by Jewett in 1939, we found no exposure at this site in 1997.
- B-44 = Pawnee Limestone, @ 20' with black shale below; near Center of West line, Sec. 11, T.24S., R.25E., Bourbon Co., Kansas; measured and described by Jewett in 1939, we found no exposure at this site in 1997.
- B-97 = Pawnee Limestone to Altamont Limestone with most of Bandera Shale covered, strats in a quarry recently (probably late 1930s) worked by W.P.A. North of road and West of creek, measured and described by Jewett, no date, probably late 1930s; near Center of North line, sec. 11, T.25S., R.24E., Bourbon Co., Kansas; now inaccessible, compare to BB-229.
- B-101 = Pawnee Limestone, measured and described by Jewett in 1938; same locality as B-97, near Center of North line, sec. 11, T.25S., R.24E., Bourbon Co., Kansas; we consider this to be the same as our BB-230.
- B-200 = Upper part, over 80', of Labette Shale to near the base of the Pawnee Limestone; Sec. 32, T.23S., R.25E., Bourbon Co., Kansas; not seen, but based on our mapping the Labette Shale occurs along the South line of this section and probably could be uncovered in road ditch at this location; measured and described by Jewett in 1939. Outside chance, based on lack of exact location of this site by Jewett that it is in the North half of Sec. 23 in the Prescott Quad.
- L-914 = Top of Pawnee (Laberdie) Limestone at 855' on U. S. Hwy 69 at Bridge No. 15.23; see KDOT profile; tabular chaetetid in Laberdie; Mine Creek shale and upper part of Myrick Station limestone with tabular to dish-shaped chaetetids exposed between lanes low in the exposure; Mine Creek shale @ 4.0' thick; Pawnee Limestone best exposed on East side of U. S. Hwy 69; near Center of North line, Sec. 17, T.25S., R.25E., Bourbon Co., Kansas.
- BB-189 = Base of Fort Scott (Blackjack Creek) Limestone at @ 870', but poor exposure; Excello shale below; near NE cor., Sec. 15, T.25S., R.25E., Bourbon Co., Kansas.
- BB-199 = Area of three quarries in Pawnee Limestone; quarry southwest of intersection appears to have best exposures, others overgrown by vegetation, limestone beds with channels of coarse calcarenites; beds appear to dip between 5 and 10 degrees to the East; about 1.0' of black shale/mudrock (Mine Creek) in floor of quarry; quarries are NW, SW, and SE of NE cor., Sec. 18, T.25S., R.25E., Bourbon Co., Kansas.

BB-200 = Top of Pawnee (Laberdie) Limestone at 845'; suggests about 42' of Pawnee at this site; strong possibility of structure, possibly a fault or flexure; near Center of North line, NE1/4, Sec. 18, T.25S., R.25E., Bourbon Co., Kansas.

NOTE: Road between BB-199 and BB-201 down to Wolverine Creek is close to the dip slope of the eroded top of the Pawnee Limestone. There is a slight West (regional) dip of Laberdie limestone on the East side of Wolverine Creek, with a steeper, East dip on the West side of the creek; dip reversal appears to occur along the stream.

BB-201 = Top of Pawnee (Laberdie) Limestone at 800'; possibly Myrick Station limestone exposed in creek; near Center of North line, NW1/4, NW1/4, Sec. 17, T.25S., R.25E., Bourbon Co., Kansas.

BB-202 = Base of Fort Scott (Blackjack Creek) Limestone at 794' in road; small, low domical to tabular chaetetids in upper part; just East of Center of North line, NE1/4, NW1/4, Sec. 17, T.25S., R.25E., Bourbon Co., Kansas.

BB-203 = Top of Fort Scott (Higginsville) Limestone at @ 849'; badly weathered exposure in road ditch on both sides of road; near Center of North line, NW1/4, NE1/4, NE1/4, Sec. 17, T.25S., R.25E., Bourbon Co., Kansas.

BB-204 = Top of Fort Scott (Higginsville) Limestone at 845' in road; base of Fort Scott (Blackjack Creek) Limestone at 813' in creek bed on the North side of road; near Center of South line, SW1/4, SW1/4, SE1/4, Sec. 9, T.25S., R.25E., Bourbon Co., Kansas.

NOTE: The Higginsville limestone here contains limestone beds that are thin, hard, dense, less fossiliferous than "typical" Higginsville; top of Little Osage shale is exposed in the road; and the base of the Blackjack Creek is in the creek bed.

BB-204A = Exposure just West of BB-204; top of Fort Scott (Higginsville) Limestone is close to 840'; near Center of South line, SW1/4, Sec. 9, T.25S., R.25E., Bourbon Co., Kansas.

BB-205 = Top of thin bedded sandstone in the Labette Shale at 875' on the South side of road; possibly Englevale Sandstone; just East of Center of North line, NE1/4, NW1/4, NE1/4, Sec. 16, T.25S., R.25E., Bourbon Co., Kansas.

BB-206 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 900'; just East of Center of North line, NE1/4, Sec. 16, T.25S., R.25E., Bourbon Co., Kansas.

BB-207 = Eroded top of Fort Scott (Higginsville) Limestone at 870'; base of Fort Scott (Blackjack Creek) Limestone at 850', good point; near Center of North line, NE1/4, Sec. 15, T.25S., R.25E., Bourbon Co., Kansas.

- BB-207A = Exposure just West of BB-207 going up hill; top of Fort Scott (Higginsville) Limestone at 870' + 3 or 4 feet; good exposure of Higginsville in road ditch on North side of road going up hill from stream valley; near Center South line, SW1/4, SE1/4, Sec. 10, T.25S., R.25E., Bourbon Co., Kansas.
- BB-207B = Exposure just West of BB-207A near the top of the hill, top of Anna shale/base of Pawnee (Myrick Station) Limestone at 908' in road ditch on North side of road; near Center of South line, Sec. 10, T.25S., R.25E., Bourbon Co., Kansas.
- BB-207C = Exposure just West of BB-207B and just East of junction with road going North, sandstone in the Labette Shale in road ditch on North side of road; near Center of South line, SW1/4, SW1/4, SW1/4, Sec. 10, T.25S., R.25E., Bourbon Co., Kansas.
- BB-207D = Exposure just West of BB-207C going up hill; top of Anna shale/base of Pawnee (Myrick Station) Limestone at 900' in road ditch on North side of road; just East of Center of South line, SE1/4, SE1/4, Sec. 9, T.25S., R.25E., Bourbon Co., Kansas.
- BB-208 = Base of Fort Scott (Blackjack Creek) Limestone at 850'; coal stripped here was Mulky; Center of South line, SW1/4, SE1/4, Sec. 11, T.25S., R.25E., Bourbon Co., Kansas.
- BB-209 = Quarry in Higginsville limestone; top of Fort Scott (Higginsville) Limestone at 875' in quarry face, 15' of limestone with low, broadly domical chaetetids in upper beds like those at BB-396.; at Hammond/Richards Quad. boundary just North of Center of South line, SE1/4, Sec. 11, T.25S., R.25E., Bourbon Co., Kansas.
- BB-215 = Base of Fort Scott (Blackjack Creek) Limestone at 810' in road; Blackjack Creek, Little Osage, and lower 3.0' of Higginsville exposed; near Center of South line of SW1/4, SW1/4, Sec. 34, T.23S., R.25E., Bourbon Co., Kansas.
- BB-217 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 870' in road cut; near Center of West line, NW1/4, NW1/4, NW1/4, Sec. 5, T.24S., R.25E., Bourbon Co., Kansas.
- BB-218 = Gray mudrock and brownish sandy bed (Labette) in creek bank on East side of road; near Center of West line, Sec. 5, T.24S., R.25E., Bourbon Co., Kansas.
- BB-218A = Pawnee (Laberdie) Limestone in road; near Center of East line, SE1/4, NE1/4, SE1/4, Sec. 6, T.24S., R.25E., Bourbon Co., Kansas.

- BB-218B = Pawnee (Laberdie) Limestone in road; near Center of South line, SW1/4, SW1/4, Sec. 5, T.24S., R.25E., Bourbon Co., Kansas.
- BB-219 = Thin Myrick Station limestone (about 2.0') in road ditch on West side of road; near Center of East line, NE1/4, NE1/4, NE1/4, Sec. 7, T.24S., R.25E., Bourbon Co., Kansas.
- BB-220 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 830' in road ditch w/ Labette below on West side of road; just North of Center of West line, SE1/4, NE1/4, NE1/4, Sec. 7, T.24S., R.25E., Bourbon Co., Kansas.
- BB-220A = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 830' in road; near Center of West line, NW1/4, SW1/4, Sec. 8, T.24S., R.25E., Bourbon Co., Kansas.
- BB-220B = Pawnee (Laberdie) Limestone in field along road; near Center of West line, SW1/4, SW1/4, Sec 8, T.24S., R.25E., Bourbon Co., Kansas.
- BB-220C = Pawnee (Laberdie) Limestone in place in drainage West of road; just West of Center of East line of SE1/4, NE1/4, NE1/4, Sec. 18, T.24S., R.25E., Bourbon Co., Kansas.
- BB-220D = Top of Pawnee (Laberdie) Limestone close to 848' in road; near Center of West line, SW1/4, SW1/4, Sec. 17, T.24S., R.25E., Bourbon Co., Kansas.
- BB-220E = Pawnee (Laberdie) Limestone in drainage on South side of road; @ 200' West and 100' South of NE cor., Sec. 20, T.24S., R.25E., Bourbon Co., Kansas.
- BB-220F = Pawnee (Laberdie) Limestone in ditch on South side of road; @ 100' South of Center, NE1/4, NE1/4, NW1/4, Sec. 22, T.24S., R.25E., Bourbon Co., Kansas.
- BB-221 = Site 0.5 miles North of L-914 on U. S. Hwy 69; Anna shale in ditch on East side of road, mostly Myrick Station limestone; basal beds of Myrick Station are dense, dark gray, weathering reddish brown limestone; upper part a reefal mass of tabular to dish-shaped chaetetids; top of Anna shale/base of Pawnee (Myrick Station) Limestone at 825' to 830' based on KDOT data; top of Pawnee (Laberdie) Limestone at 845' to 850'; just North of Center, NW1/4, NW1/4, SE1/4, Sec. 6, T.25S., R.25E., Bourbon Co., Kansas.
- BB-222 = Site 0.7 miles North of BB-221 on U. S. Hwy 69, with Laberdie limestone and Mine Creek shale like at L-914; Mine Creek shale is 3.0' thick here; top of Anna shale/base of Pawnee (Myrick Station) Limestone at 825' to 830' based on KDOT data; just North and East of Center, NW1/4, SW1/4, SE1/4, Sec. 3, T.25S., R.25E., Bourbon Co., Kansas.

- BB-223 = Road cut on U. S. Hwy 69 at Bridge No. 18.26; 3.0' of Worland limestone overlain by Nowata Shale and underlain by Bandera Shale; apparent dip of Worland limestone is 3 degrees NW; base of Altamont (Worland only at this site) Limestone is at 916' based on KDOT profile; near Center of South line, SW1/4, SE1/4, SW1/4, Sec. 19, T.24S., R.25E., Bourbon Co., Kansas.
- BB-224 = Possible Nowata Shale on Bandera Shale, Altamont Limestone missing; 0.75 mile North of BB-223 on U. S. Hwy 69; just West of Center of South line, SW1/4, NE1/4, NW1/4, Sec. 19, T.24S., R.25E., Bourbon Co., Kansas.
- BB-225 = Bridge No. 21.32 on U. S. Hwy 69; near Center of South line, Sec. 6, T.24S., R.25E., Bourbon Co., Kansas.
- BB-227 = Top of Pawnee (Laberdie) Limestone at 835'; just West of Center of North line, NW1/4, NW1/4, NE1/4, Sec. 18, T.24S., R.25E., Bourbon Co., Kansas.
- BB-228 = Small, old quarry North of road, @ 8.0' of limestone, base not seen; top of Pawnee (Laberdie) Limestone at 835', KDOT top at 832'; near Center of North line, Sec. 18, T.24S., R.25E., Bourbon Co., Kansas.
- BB-229 = Base of Altamont Limestone, probably Worland, at 900'; B-97 and B-101; near Center, Sec. 11, T.25S., R.24E., Bourbon Co., Kansas.
- BB-229A = Base of Altamont Limestone at @ 870 feet in road; along Hammond/Devon quadrangle line at NW cor., Sec. 11, T.25S., R.24E., Bourbon Co., Kansas.
- BB-230 = Top of Pawnee (Laberdie) Limestone at 850+' at corner; this is the site of B-101 (B-97 is nearby but no longer accessible), upper Labette Shale, Anna shale, and Myrick Station limestone are exposed; Myrick Station type tabular and dish-shaped chaetetids; just West of Center of East line, Sec. 11, T.25S., R.24E., Bourbon Co., Kansas.
- BB-231 = Base of Altamont (a nodular limestone) Limestone at 895'; near Center, Sec. 2, T.25S., R.24E., Bourbon Co., Kansas.
- BB-232 = Possibly Walter Johnson Sandstone in the Nowata Shale in road at 915'; near Center of South line, SW1/4, SW1/4, NW1/4, Sec. 2, T.25S., R.24E., Bourbon Co., Kansas.
- BB-284 = Labette Shale in road ditch on North side of road; near Center of South line, SE1/4, SW1/4, SW1/4, Sec. 5, T.25S., R.25E., Bourbon Co., Kansas.
- BB-285 = Base of Fort Scott (Blackjack Creek) Limestone at 830' in field road; near Center of South line, SE1/4, SW1/4, Sec. 2, T.25S., R.25E., Bourbon Co., Kansas.

- BB-286 = Top of Fort Scott (Higginsville) Limestone at @ 855' in road; just South of Center of West line, NW1/4, NW1/4, Sec. 11, T.25S., R.25E., Bourbon Co., Kansas.
- BB-293 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 840' with 25' of Labette Shale exposed below Anna shale; near Center of South line, SW1/4, SE1/4, SE1/4, Sec. 33, T.23S., R.25E., Bourbon Co., Kansas.
- BB-294 = Possible top of Fort Scott (Higginsville) Limestone at 830' in road; about 6.0' of thin, wavy bedded, hard, dense, light gray algal limestone (Higginsville) exposed in field West of road; near Center of West line, SW1/4, SW1/4, Sec. 34, T.23S., R.25E., Bourbon Co., Kansas.
- BB-295 = Sandstones, siltstones, and mudrocks of the Labette Shale exposed in road ditches along roads West and North of West Liberty Church; @ 0.2 mile North and @ 1.0 mile West of SE cor., Sec. 3, T.24S., R.25E., Bourbon Co., Kansas.
- BB-296 = Top of Fort Scott (Higginsville) Limestone at 840' in field drainage East of the road, good point; irregularly shaped chaetetids masses nearly 1.0 m across; just South of Center of West line, NW1/4, SW1/4, Sec. 2, T.24S., R.25E., Bourbon Co., Kansas.
- BB-297 = Area of old strip pits with blocks of Higginsville and Blackjack Creek limestones and Little Osage shale, probably mined the Summit Coal based on the drainage because just North along the East side of the road is an outcrop of Higginsville limestone like that at BB-294; Center of West line, NW1/4, Sec. 2, T.24S., R.25E., Bourbon Co., Kansas.
- BB-298 = Top of Fort Scott (Higginsville) Limestone at @ 832'; near Center of South line of SW1/4, SE1/4, SE1/4, Sec. 34, T.23S., R.25E., Bourbon Co., Kansas.
- BB-299 = Probable top of Fort Scott (Higginsville) Limestone at 835' in road and in field West of the road; Center of East line, SE1/4, SE1/4, NE1/4, Sec. 3, T.24S., R.25E., Bourbon Co., Kansas.
- BB-300 = Top of Fort Scott (Higginsville) Limestone at 850' in road and in field South of the road; near Center of North line, NW1/4, NE1/4, Sec. 11, T.24S., R.25E., Bourbon Co., Kansas.
- BB-303 = Base of Fort Scott (Blackjack Creek) Limestone at 810' in road; possible top of Fort Scott (Higginsville) Limestone at 830' just West of BB-303, but not exposed; Labette Shale exposed near top of the hill; near Center of North line, NW1/4, NE1/4, NE1/4, Sec. 9, T.24S., R.25E., Bourbon Co., Kansas.

BB-304 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 870' in road with black, fossiliferous limestone of the upper Labette just East of Myrick Station limestone in road; North 1.0 mile (BB-293) the top of Anna shale/base of Pawnee (Myrick Station) Limestone is at 840'; 30' of North dip per mile; just East of Center of North line, Sec. 9, T.24S., R.25E., Bourbon Co., Kansas.

BB-305 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 869' in road; Myrick Station limestone, thin, 1.0' of Anna shale, and Labette Shale with thin, black, fossiliferous limestone and sandstone exposed in road; just East of Center of North line, NW1/4, NW1/4, Sec. 9, T.24S., R.25E., Bourbon Co., Kansas.

BB-307 = Top of Fort Scott (Higginsville) Limestone at @ 869' in road; poorly exposed; near Center of South line, SE1/4, SW1/4, SW1/4, Sec. 11, T.24S., R.25E., Bourbon Co., Kansas.

BB-308 = Base of Fort Scott (Blackjack Creek) Limestone at 845' in road; near Center of South line, SW1/4, SE1/4, Sec. 10, T.24S., R.25E., Bourbon Co., Kansas.

BB-309 = Thin, (5 cm), dark gray, dense limestone in creek bed with Lagonda Formation type mudrock below, possibly the Breezy hill limestone; near Center of South line, Sec. 10, T.24S., R.25E., Bourbon Co., Kansas.

BB-310 = Base of Fort Scott (Blackjack Creek) Limestone at @ 847' in road with Excello shale in road ditch on North side of road; near Center of South line, SE1/4, SE1/4, SW1/4, Sec. 10, T.24S., R.25E., Bourbon Co., Kansas.

BB-311 = Top of Fort Scott (Higginsville) Limestone at @ 870' in road and in field South of road; near Center of South line, SW1/4, Sec. 10, T.24S., R.25E., Bourbon Co., Kansas.

BB-312 = Sandstone and thin limestone in Labette Shale at 870' in road; near Center of South line, SE1/4, SE1/4, Sec. 9, T.24S., R.25E., Bourbon Co., Kansas.

BB-313 = Anna shale in road, hauled in to make field entrance; near Center of North line, NW1/4, NW1/4, Sec. 16, T.24S., R.25E., Bourbon Co., Kansas.

BB-314 = Higginsville Limestone exposed on both sides of road, upper part of Little Osage shale exposed in ditch on East side of road; a bit farther North of this site (BB-314) is the Blackjack Creek limestone, Excello shale, a black, fossiliferous limestone (probably the Breezy Hill) and a silty mudrock; estimated base of the Fort Scott (Blackjack Creek) Limestone at 835'; chaetetids in the top of the Blackjack Creek limestone; Center of East line, NE1/4, SE1/4, Sec. 9, T.24S., R.25E., Bourbon Co., Kansas.

Sequence as measured by Bob Sawin as follows:

Top covered
Higginsville limestone - 3.0' exposed
Little Osage shale - @ 3.0' covered
Blackjack Creek limestone - 3.7'
Excello shale (black) - 2.0'
Black limestone (Breezy Hill) - 0.4'
Silty mudrock (Lagonda) - 7.7'

BB-315 = Higginsville limestone exposed in road ditch on East side of road 0.1 mile South of the NW cor. of the West Liberty Cemetery; estimated top of Fort Scott (Higginsville) Limestone at 830'; estimated base of Fort Scott (Blackjack Creek) Limestone 0.13 mile South of above point at 810'; near Center of West line, NW1/4, NW1/4, Sec. 10, T.24S., R.25E., Bourbon Co., Kansas.

BB-316 = Possible top of Anna shale/base of Pawnee (Myrick Station) Limestone at 900' in road and ditch; near Center of South line, Sec. 14, T.24S., R.25E., Bourbon Co., Kansas.

BB-328 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 845' with Anna shale and Myrick Station limestone in road ditch on South side of road; good point; near Center of North line, Sec. 2, T.25S., R.25E., Bourbon Co., Kansas.

BB-329 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 840' in road; near Center of West line, Sec. 35, T.24S., R.25E., Bourbon Co., Kansas.

BB-330 = Large (3' to 4') partially silicified septarian concretions in Labette Shale 200' West of road in field drainage; just West of Center of East line, SE1/4, SE1/4, Sec. 22, T.24S., R.25E., Bourbon Co., Kansas.

BB-330A = Estimated base of Pawnee (Myrick Station) Limestone at 830' in road; near Center of North line, NE1/4, NW1/4, NW1/4, Sec. 27, T.24S., R.25E., Bourbon Co., Kansas.

BB-331 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 885' in road; just South of Center of West line, SE1/4, SE1/4, NE1/4, Sec. 22, T.24S., R.25E., Bourbon Co., Kansas.

BB-332 = Estimated top of Blackjack Creek limestone in creek bank on East side of road at 855'; near Center of West line, SW1/4, NW1/4, Sec. 14, T.24S., R.25E., Bourbon Co., Kansas.

BB-333 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at @ 850' in road; near Center of North line, NE1/4, NW1/4, NW1/4, Sec. 35, T.24S., R.25E., Bourbon Co., Kansas.

- BB-334 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 855' in road; near Center of North line of NE1/4, NE1/4, NW1/4, Sec. 35, T.24S., R.25E., Bourbon Co., Kansas.
- BB-336 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 870' (@ 5.65' below top of hill) in road cut on West side of U. S. Hwy 69 0.4 mile North of intersection of U. S. Hwy 69 and road to Fulton, Kansas; near Center of East line, NE1/4, NE1/4, SW1/4, Sec. 31, T.23S., R.25E., Bourbon Co., Kansas limestone with chaetetids in place on grassy slope near the top of the hill on the West side of U. S. Hwy 69 above thick, cherty limestone (note: chert only observed at and near the upper surface of this bed); chert patches suggests silicification of chaetetids and associated lithology; chaetetids are flat, tabular, up to @ 1 dm thick and tend to form low mounds, also dish-shaped tabular forms are present.
- BB-336A = Labette Shale in roadcuts of both sides of road; near Center of North line, NW1/4, NE1/4, NW1/4, Sec. 6, T.24S., R.25E., Bourbon Co., Kansas.
- BB-382 = Base of Fort Scott (Blackjack Creek) Limestone at 860'; good point; black shale below is Excello; near Center of North line, NW1/4, NW1/4, Sec. 14, T.25S., R.25E., Bourbon Co., Kansas.
- BB-383 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 878'; near Center of West line, Sec. 9, T.25S., R.25E., Bourbon Co., Kansas.
- BB-384 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 865'; near Center of West line, NW1/4, Sec. 9, T.25S., R.25E., Bourbon Co., Kansas.
- BB-385 = Pawnee Limestone in field to the NE; terrain typical of Pawnee Limestone; NW cor., Sec. 9, T.25S., R.25E., Bourbon Co., Kansas.
- BB-385A = Pawnee (Laberdie?) Limestone in place in road; @100' North of Center of West line, Sec. 4, T.25S., R.25E., Bourbon Co., Kansas.
- BB-386 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 830' in road; top of Myrick Station limestone at 845' in road ditch, good tabular chaetetids in ditch on South side of road; about 1.0' of Mine Creek shale (black) in road ditch on South side of road; along North side, NW1/4, NE1/4, NE1/4, Sec. 7, T.25S., R.25E., Bourbon Co., Kansas.
- BB-387 = Exposure of Pawnee Limestone in creek on East side of road; eroded top of Laberdie through Mine Creek into upper Myrick Station; Mine Creek shale is black, platy mudrock that thins from @ 2.0' to less than 0.5' in 50' laterally; upper 3.0' of Myrick Station contains typical tabular Myrick Station chaetetids @ 2.0' below top of Myrick Station; structurally complex area; Center of West line, NW1/4, NW1/4, Sec. 17, T.25S., R.25E., Bourbon Co., Kansas.

- BB-388 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 850' in railroad ditch on North side of road on the West side of the tracks; just West of Center of North line, Sec. 8, T. 25S., R.25E., Bourbon Co., Kansas.
- BB-389 = Approximately 5.0' of sandstone in the Labette Shale exposed on the West side of creek bank just South of road; near NE cor., Sec. 7, T.25S., R.25E., Bourbon Co., Kansas.
- BB-390 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 900'; good point; near Center of East line, SE1/4, SE1/4, SE1/4, Sec. 9, T.25S., R.25E., Bourbon Co., Kansas.
- BB-391 = Eroded top Myrick Station limestone at @ 820'; near Center of North line, NE1/4, NW1/4, NE1/4, Sec. 34, T.24S., R.25E., Bourbon Co., Kansas.
- BB-391A = Myrick Station limestone at @820' in road; near Center of South line, SW1/4, SE1/4, Sec. 27, T.24S., R.25E., Bourbon Co., Kansas.
- BB-391B = Pawnee (Laberdie) Limestone in road; near Center of South line, SE1/4, SW1/4, Sec. 27, T/24S., R.25E., Bourbon Co., Kansas.
- BB-392 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 820'; good point; Myrick Station limestone 6.0' thick with typical chaetetids; Strike S10E, dip 3 degrees West on Anna surface in stream bottom; Center of North line, NW1/4, NW1/4, Sec. 34, T.24S., R.25E., Bourbon Co., Kansas.
- BB-393 = Black shale in pond bank on South side of road, probably Anna shale; near Center of North line, NE1/4, NE1/4, NE1/4, Sec. 4, T.25S., R.25E., Bourbon Co., Kansas.
- BB-393A = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 850' in stream East of road; @300' East of Center of West line, SW1/4, NW1/4, Sec. 3, T.25S., R.25E., Bourbon Co., Kansas.
- BB-393B = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 885' in pond bank East of cemetery; just North of Center, SW1/4, SW1/4, SE1/4, Sec. 33, T.24S., R.25E., Bourbon Co., Kansas.
- BB-393C = Lower part of Pawnee (Myrick Station) Limestone, base possible at 845' in drainage West of road; @200' South and 100' West of Center of East line of SE1/4, Sec. 31, T.24S., R.25E., Bourbon Co., Kansas.
- BB-394 = Terrain has a Bandera "look", but probably near top of Pawnee (Laberdie) Limestone; Center of West line, SW1/4, SW1/4, Sec. 34, T.24S., R.25E., Bourbon Co., Kansas.

- BB-395 = Thin bed of brown limestone with cone-in-cone in upper Labette Shale in road ditch; just West of Center, NE1/4, Sec. 22, T.24S., R.25E., Bourbon Co., Kansas.
- BB-396 = Top of Fort Scott (Higginsville) Limestone at 867' in road ditch on West side of road 100' North of the midpoint of section line, with broadly domical chaetetids like at BB-209; near Center of East line, SE1/4, SE1/4, NE1/4, Sec. 15, T.24S., R.25E., Bourbon Co., Kansas.
- BB-397 = Laberdie limestone "in place" on East side of road; Center of West line, SW1/4, SW1/4, Sec. 20, T.24S., R.25E., Bourbon Co., Kansas.
- BB-398 = Base of Fort Scott (Blackjack Creek) Limestone at 825' in road ditch on South side of road where Lagonda, Breezy Hill limestone, and Excello shale are exposed below; Mulky coal not noted; near Center of North line, NW1/4, Sec. 2, T.24S., R.25E., Bourbon Co., Kansas.
- BB-399 = Base of Fort Scott (Blackjack Creek) Limestone at 812' in road ditch on South side of road; near BB-298; near Center of North line, NE1/4, NE1/4, NE1/4, Sec. 3, T.24S., R.25E., Bourbon Co., Kansas.
- BB-400 = Top of Blackjack Creek limestone at @810' in road ditch on East side of road; going South (up hill) poorly exposed Higginsville limestone and better exposed Labette Shale are encountered; near Center of West line, NW1/4, NW1/4, SW1/4, Sec. 4, T.24S., R.25E., Bourbon Co., Kansas.
- BB-401 = Pawnee (Laberdie) Limestone at 890' in bank of road ditch on West side of road; just North of Center, Sec. 6, T.24S., R.25E., Bourbon Co., Kansas.
- BB-402 = Top of Pawnee (Laberdie) Limestone at 860' in field on both sides of road; just east of Center of South line, SW1/4, Sec. 1, T.25S., R.24E., Bourbon Co., Kansas.
- BB-403 = Top of Pawnee (Laberdie) Limestone at 860' in field on both sides of road; no rocks seen, but changes in terrain and Bandera-type roads supports a Pawnee top; just South of Center of West line, NW1/4, SW1/4, Sec. 1, T.25S., R.24E., Bourbon Co., Kansas.
- BB-404 = Thin bedded sandstone in Bandera Shale in creek on East side of road; Center of West line, NW1/4, NW1/4, Sec. 1, T.25S., R.24E., Bourbon Co., Kansas.
- BB-405 = No limestone exposed. Reasonable base of Altamont Limestone (Lenapah?) between 905' and 910'; most of road and terrain has the Bandera "look"; near Center of North line, NE1/4, NW1/4, Sec. 1, T.25S., R.24E., Bourbon Co., Kansas.

- BB-406 = No limestone exposed. Reasonable base of Altamont Limestone (Lenapah?) between 905' and 910'; most of road and terrain has the Bandera "look"; just West of Center of South line, SE1/4, SW1/4, SE1/4, Sec. 25, T.24S., R.24E., Bourbon Co., Kansas.
- BB-407 = Top of limestone, probably Worland (Lenapah?) at 920' in road; just West of Center of South line, SW1/4, SE1/4, SW1/4, Sec. 25, T.24S., R.24E., Bourbon Co., Kansas.
- BB-407A = Limestone in road and field West of road, Altamont at 895', near Center of West line, NW1/4, NW1/4, NW1/4, Sec. 36, T.24S., R.24E., Bourbon Co., Kansas.
- BB-409 = Top of Altamont (Worland) Limestone at 920' in road and road ditch of East-West road; limestone less pedogenetic here than at BB-408; near Center of South line, SW1/4, SE1/4, SW1/4, Sec. 21, T.24S., R.24E., Bourbon Co., Kansas.
- BB-410 = Altamont, probably Worland, Limestone in pond bank on East side of road; appears to be 2' to 3' of limestone above water level of pond; along East line, SW1/4, NW1/4, SW1/4, Sec. 19, T.24S., R.25E., Bourbon Co., Kansas.
- BB-411 = Top of Altamont (Worland) Limestone at @900'; about 2.0' of limestone exposed on both sides of road with sandstone float, probably from the Nowata, above; near Center of West line, NW1/4, NW1/4, Sec. 19, T.24S., R.25E., Bourbon Co., Kansas.
- BB-412 = Old highway borrow pit on West side of old U. S. Hwy 69 with @2.0' of Worland-like limestone exposed, below limestone is a gray green to yellow brown mudrock with phosphate nodules (Lake Neosho); mapped top of Altamont at @900' and base at 893+; near Center of East line, NE1/4, SE1/4, NE1/4, Sec. 12, T.24S., R.24E., Bourbon Co., Kansas.
- BB-413 = Pawnee (Laberdie) Limestone at @826' in field (old quarry) and road ditch on East side of road; just South of Center of West line, SW1/4, SW1/4, NW1/4, Sec. 1, T.24S., R.24E., Bourbon Co., Kansas.
- BB-413A = Pawnee (Laberdie) Limestone exposed on East side of road; near Center of West line, SW1/4, NW1/4, NW1/4, Sec. 1, T.24S., R.24E., Bourbon Co., Kansas.
- BB-414 = Pawnee (Laberdie) Limestone at @835'; Center of North line, NW1/4, NW1/4, Sec. 1, T.24S., R.24E., Bourbon Co., Kansas.
- BB-415 = Thin, 2' to 3', Altamont Limestone; top at 880', base at 875'; Center of West line, SW1/4, NW1/4, Sec. 12, T.24S., R.24E., Bourbon Co., Kansas.

- BB-416 = Upper part of Altamont Limestone at 890', base near 880'; like at BB-415; Center of West line, SW1/4, NW1/4, SW1/4, Sec. 12, T.24S., R.24E., Bourbon Co., Kansas.
- BB-417 = Altamont Limestone at 880'; possibly 6.0' thick here, above is a sandstone followed by a thin (0.5') fossiliferous limestone; near Center of West line, SW1/4, SW1/4, SW1/4, Sec. 12, T.24S., R.24E., Bourbon Co., Kansas.
- BB-418 = Limestone above Altamont?, possibly Norfleet, at 915' in road ditch on both sides of road; just North of SW cor., Sec. 23, T.24S., R.24E., Bourbon Co., Kansas.
- BB-418A = Limestone above Altamont?, possibly Norfleet; near Center of West line, NW1/4, NW1/4, NW1/4, Sec. 26, T.24S., R.24E., Bourbon Co., Kansas.
- BB-419 = Near top of Altamont (Worland-like) Limestone at 889'; both sides of road in Center, NE1/4, NW1/4, Sec. 11, T.24S., R.24E., Bourbon Co., Kansas.
- BB-420 = Top of Pawnee (Laberdie) Limestone at 836' in road ditch on South side of road; near Center of North line of NW1/4, NE1/4, NW1/4, Sec. 2, T.24S., R.24E., Bourbon Co., Kansas.
- BB-421 = Top Anna shale/base of Pawnee (Myrick Station) Limestone at 810' in creek bed on South side of road; exposed Myrick Station is probably the interval below the chaetetid-bearing beds; estimated thickness of Pawnee Limestone in this area as 16+'; just East of Center of North line, NE1/4, Sec. 2, T.24S., R.24E., Bourbon Co., Kansas.

HEPLER QUADRANGLE

B-129 = Altamont and underlying mudrock; looks good, limestone at corner with sandstone North toward creek; lower part of private road North of public road; measured and described by Jewett in 1938; SW cor., Sec. 34; T.26S., R.23E., Bourbon Co., Kansas.

B-207 = Lenapah to "Hepler" sandstone; North of Hepler, Kansas on Highway 39; measured and described by Jewett in 1939; near Center, Sec. 14, T.27S., R.22E., Bourbon Co., Kansas.

B-208 = Pleasanton to Hertha; measured and described by Jewett in 1935; Center of South line, Sec. 3, T.27S., R.22E., Bourbon Co., Kansas; same as BB-570 and Heinlen-44.

BB-73 = Base of Altamont Limestone at 980'; Sawin Site #1; NW1/4, NW1/4, NE1/4, Sec 10, T27S, R23E., Bourbon Co., Kansas.

NOTE: Data points for the Bourbon County portion of the Hepler Quadrangle are from Heinlen, 1998 (points HE1 to HE66 and HE73 to HE92). Although the geographic localities are accurate, the stratigraphic interpretation may be different.

HIATTVILLE QUADRANGLE

- B-160 = Upper part of Pawnee (Laberdie) Limestone into Bandera Shale with Mulberry Coal, on Kansas Hwy 7 at section corner; measured and described by Jewett in 1939 who implies that this is a nearly complete section of the Bandera; NW cor., Sec. 19, T.27S., R.24E., Bourbon Co., Kansas.
- B-161 = Pawnee Limestone and upper part of underlying Labette Shale; measured and described by Jewett in 1939 who says it is on Kansas Hwy 7, but that is not now the case; SE cor., Sec. 18, T.27S., R.24E., Bourbon Co., Kansas.
- B-162 = Upper part of Labette Shale and Pawnee Limestone along road West of Kansas Hwy 7 0.5 miles West of Kansas Hwy 7; measured and described by Jewett in 1940 as being at the NE cor., Sec. 13, T.27S., R.24E., Bourbon Co., Kansas, it was mislocated and should be the NW cor., Sec. 18, T.27S., R.24E.; see BB-80.
- B-163 = Pawnee Limestone (Myrick Station, Mine Creek, and Laberdie) in roadcut and creek bank exposure on West side of Ks Hwy 7 near Center of East line, NE1/4, SW1/4, Sec. 7, T.27S., R.24E., Bourbon Co., Kansas; large chaetetids in lower limestone; measured and described by Jewett in 1939 and suggested as "Perhaps best as type exposure of Pawnee formation"; not a good type section now as base and top of Pawnee are not exposed, badly overgrown now but still useful; base of Anna shale near 905'.
- B-205 = Pawnee Limestone?? with some underlying mudrock, measured and described by Jewett in 1939; just West of B-162 and near BB-80; near NE cor., Sec. 13, T.27S., R.23E., Bourbon Co., Kansas.
- B-206 = Upper Bandera Shale, 43 feet, and Altamont Limestone, measured and described by Jewett in 1935; NW cor., Sec. 24, T.27S., R.23E., Bourbon Co., Kansas.
- BB-55 = Top of Anna shale at 950'; Sawin Site #3, Bennison measured 75' of Labette Shale here; Center of East line, SE1/4, SE1/4, Sec. 32, T.27S., R.24E., Crawford Co., Kansas.
- BB-56 = Top of Fort Scott (Higginsville) Limestone at 880'; in bed of West Branch of Dry Wood Creek just West of Center of North line, SW1/4, SW1/4, Sec. 33, T.27S., R.24E., Crawford Co., Kansas.
- BB-57 = Top of Anna shale at 950'; Sawin Site #21; in road just South of Center of East line of NE1/4, NE1/4, Sec. 32, T.27S., R.24E., Crawford Co., Kansas.
- BB-58 = Earthy limestone below Anna shale associated with coaly smut; near Center of North line, NE1/4, NW1/4, NE1/4, Sec. 33, T.27S., R.24E., Crawford Co., Kansas.

- BB-59 = Englevale Sandstone in creek, sandstone appears to strike North-South with a NW dip; near Center of East line, SE1/4, Sec. 28, T27S., R24E., Crawford Co., Kansas.
- BB-60 = Base of Fort Scott Limestone (Blackjack Creek) at 885'; base of Higginsville limestone at 900'; Sawin Site #1; just West of Center of South line, SE1/4, SE1/4, SW1/4, Sec. 14, T.27 S., R.24E., Bourbon County, Kansas; above stream and along north side of road; tabular chaetetids in Blackjack Creek limestone above creek bank; see measured section in West and Sawin, 1994, p. 6.
- BB-61 = Top of Pawnee Limestone at 945'; roadcut on Ks. Hwy 7 near Center of East line, SE1/4, SW1/4, Sec.7, T.27S., R.24E., Bourbon Co., Kansas.
- BB-62 = Top of Pawnee Limestone at @937' based on handleveling from Sawin's Site 39, with Bandera Shale above exposing Mulberry Coal and overlying thin limestone; revisited and revised - top of Laberdie at @945' with sandy mudrock to clayey sandstones of the Bandera in grassy pasture South of road up to about 5 dm of exposed underclay, followed by 1 dm of coal (Mulberry), and overlain by 7.5 dm of very fossiliferous limestone; roadcut on Ks. Hwy 7 and in field to the South; near Center of North line, NE1/4, NW1/4, NE1/4, Sec. 7, T.27S., R24E., Bourbon Co., Kansas.
- BB-63 = Top of Anna shale at 975' just below top of hill which is at an elevation of 981'; Center of South line, Sec. 28, T.27S., R.24E., Crawford Co., Kansas.
- BB-67 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 850'; excellent exposure; Sawin Site #52; chaetetids in Laberdie?; in creek just East of Center of West line, SE1/4, SE1/4, Sec. 30, T.26S., R.24E., Bourbon Co., Kansas.
- BB-68 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 890'; Sawin Site #54; near Center of South line, SE1/4, SE1/4, SE1/4, Sec. 25, T.26S., R.23E., Bourbon Co., Kansas.
- BB-69 = Near top of the Pawnee Limestone at @933', East along road the top of the Pawnee Limestone is near 930'; Sawin Site #56; near SW cor., Sec. 25, T.26S., R.23E., Bourbon Co., Kansas
- BB-70 = Base of Altamont Limestone estimated, because of cover, at 975', POOR POINT; Sawin Site #72; Center of East line, SW1/4, SE1/4, Sec. 27, T.27S., R.23E., Bourbon Co., Kansas.
- BB-71 = Altamont Limestone in road at 975', probably float; Sawin Site #70; Center of East line, SE1/4, NE1/4, Sec. 3, T.27S., R.23E., Bourbon Co., Kansas.

- BB-72 = Base of Altamont Limestone at 980' with Bandera Sandstone in ditch, estimate 6.0' of limestone (Amoret) with Lake Neosho (1.0') grayish to yellowish brown shale above; possibly this is the Worland limestone with the shale above being the Nowata; Sawin Site 69; just South of Center of East line, Sec. 3, T.27S., R.23E., Bourbon Co., Kansas.
- BB-74 = Base of Altamont Limestone at 980' with Bandera Shale below, QUESTIONABLE POINT; Sawin Site #67; just East of SW cor., Sec. 2, T.27S., R.23E., Bourbon Co., Kansas.
- BB-75 = Top of Pawnee Limestone at 925' with Bandera Shale above containing Mulberry Coal just below a thin fossiliferous limestone followed by sandstone above limestone, also some mudrocks exposed above the limestone and below the coal; chaetetids (low domical forms 2 to 3 dm across) in Pawnee, possibly upper Laberdie limestone of Price, 1981 dissertation: Sawin Site #64; near Center of South line, SE1/4, Sec. 2, T.27S., R.23E., Bourbon Co., Kansas.
- BB-76 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at @888'; 30 to 35' of Pawnee with earthy limestone (Childers School Limestone?, an informal name, of Price, 1981) exposed in creek bed: Sawin Site #73; near Center of South line, SW1/4, SW1/4, SE1/4, Sec. 11, T.27S., R.23E., Bourbon Co., Kansas.
- BB-77 = Pawnee Limestone at 910' in road; Sawin Site #87; Center of West line, SW1/4, NW1/4, Sec. 14, T.27S., R.23E., Bourbon Co., Kansas.
- BB-78 = Labette Shale (gray, silty mudrock) in creek at 905'; Sawin Site #85; just West of Center of North line, SW1/4, SW1/4, SW1/4, Sec. 14, T.27S., R.23E., Bourbon Co., Kansas.
- BB-79 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 908'; Sawin Site #75; just East of Center of South line, SE1/4, SW1/4, SE1/4, Sec. 12, T. 27S., R.23E., Bourbon Co., Kansas.
- BB-80 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 920'; Sawin Site #76, B-162, and Sec. 93 of Jewett, 1945; just East of SW cor., Sec. 7, T.27S., R.24E., Bourbon Co., Kansas.
- BB-81 = "Algal" buildups in Pawnee (Laberdie?) Limestone in field on North side of Ks Hwy 7, just North of Center of South line, SW1/4, SW1/4, SE1/4, Sec. 5, T.27S.,R.24E., Bourbon County, Kansas.
- BB-82 = Pawnee Limestone at top of hill at 963', near contact with Bandera Shale above which occurs between BB-62 and BB-83; Sawin Site #96; Center of West line, Sec. 8, T.27S., R.24E., Bourbon Co., Kansas.

- BB-83 = Top of Anna shale in wooded stream bed near NE cor., Sec. 7, T.27S., R.24E., Bourbon Co., Kansas; with Myrick Station limestone containing tabular chaetetids; Sawin Site #39; ties into BB-62 (top of Pawnee/base of Bandera); 15.1' of Pawnee Limestone, top of Anna shale/base of Pawnee (Myrick Station) Limestone at 922' with earthy Childers School limestone (an informal name) below, top of Pawnee Limestone at 937' near Center of West line, Sec. 8, T.27S., R.24E., Bourbon Co., Kansas.
- BB-84 = Probably Alvis Coal in road ditch North side of road, top of 0.5' of coal at @915' with sandy mudrock above and underclay below; Sawin Site #14; near Center of South line, SE1/4, SW1/4, SW 1/4, Sec. 15, T.27S., R.24E., Bourbon Co., Kansas
- BB-85 = Lagonda Shale down to water level, thin Breezy Hill limestone, @ 2dm of Mulky Coal, Excello, with base of Fort Scott (Blackjack Creek) Limestone at 892'; Sawin Site #13; near SE cor., Sec. 15, T.27S., R.24E., Bourbon Co., Kansas.
- BB-86 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 972'; Sawin Site #9; just North of Center of North line of NW1/4, NW1/4, Sec. 25, T.27S., R.24E., Bourbon-Crawford County line, Kansas.
- BB-337 = Very near top of Pawnee (Laberdie) Limestone at 927' North of road; Center of South line, SE1/4, SW1/4, SW1/4, Sec. 26, T.26S., R.23E., Bourbon Co., Kansas.

HUME QUADRANGLE

- L-337 = Using partial exposures on both sides of road the top of Fort Scott (Higginsville) Limestone at @835', base (Blackjack Creek) at @820', Little Osage shale is very thin here and Blackjack Creek limestone contains large, up to a meter across chaetetid masses; interval exposed, in hillside on South side of road, below Fort Scott, the Excello, is a sandy mudrock with thin bedded sandstones and siltstones and large black septarian concretions; on both sides of Center of South line, SW1/4, SE1/4, Sec. 31, T.38N., R.33W., and on both sides of Center of North line, NW1/4, NE1/4, Sec. 6, T.37N., R.33W., Vernon Co., Missouri.
- BB-638 = Sandstone in road ditch on North side of road, probably in the Labette Shale; near Center of South line, SE1/4, SE1/4, Sec.26, T.23S., R.25E., Bourbon Co., Kansas.
- BB-668 = Conglomeratic beds exposed along North side of road just East of intersection, beds of sandstone exposed in road going up the hill with thick beds of sandstone exposed at the top of the hill, elevation at top of hill 841', total thickness estimated at @50', possibly Englevale Sandstone within Labette Shale or a sandstone in the Lagonda Fm.; SE cor., Sec.26, T.23S., R.25E., Bourbon Co., Kansas.
- BB-669 = Hard, dense, dark gray, fossiliferous bed of limestone @2' thick, weathers reddish orange, exposed in East facing hillside on South side of road, underlain by silty mudrocks with sideritic concretions' top of limestone at an elevation of @795', could be a limestone in Fort Scott Limestone or the Verdigris Limestone; seems reasonable that the Fort Scott Limestone has been cut out by a channel that is now filled with sandstone, the Englevale; @200' East of Center of North line, NE1/4, NW1/4, NW1/4, Sec. 36, T.23S., R.25E., Bourbon Co., Kansas.
- BB-670 = Limestone as seen at BB-669 in road ditch on East side of road, top of limestone at 795'; @100' North of Center of West line, SW1/4, NE1/4, Sec. 7, T.37N., R.33W., Vernon Co., Missouri.
- BB-671 = Blackjack Creek limestone and Excello Shale in road ditch on both sides of road, base of Fort Scott (Blackjack Creek) Limestone at @820'; @300' South and 200' East of Center of North line, NE1/4, SW1/4, Sec.25, T.23S., R.25E., Bourbon Co., Kansas.
- BB-672 = Top of Fort Scott (Higginsville) Limestone in road at @835'; near Center of North line, NE1/4, NW1/4, NW1/4, Sec. 7, T.37N., R.33W., Vernon Co., Missouri.
- BB-673 = Base of Fort Scott (Blackjack Creek) Limestone in road and fields on both sides of road at 820', similar to BB-671; @600' East of NW cor., Sec. 7, T.37N., R.33W., Vernon Co., Missouri.

BB-674 = Base of Fort Scott (Blackjack Creek) Limestone at 820' on North side of road; @400' East of NW cor., Sec.7, T.37N., R.33W., Vernon Co., Missouri.

BB-675 = Top of Fort Scott (Higginsville) Limestone at @835' in road ditch on West side of road; @100' East and 100' South of Center of North line, SE1/4, NW1/4, Sec. 25, T.23S., R.25E., Bourbon Co., Kansas.

BB-676 = Sandstone in road ditch and field on East side of road at 850', probably in Labette Shale; just South of Center of West line, SW1/4, Sec. 6, T.37N., R.33W., Vernon Co., Missouri.

BB-677 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at @862' in road ditch on South side of road; near Center of North line, NE1/4, NW1/4, NW1/4, of Sec. 25, T.23S., R.25E., Bourbon Co., Kansas; GOOD POINT.

BB-678 = Myrick Station limestone in road, probably base of Pawnee (Myrick Station) Limestone at 860'; near Center of West line, SW1/4, NW1/4, Sec. 24, T.23S., R.25E., Bourbon Co., Kansas.

BB-679 = Possible top of Pawnee (Laberdie) Limestone at 880' in road and field South of road, poor exposure but possibly useful; just East of Center, NW1/4, NE1/4, NW1/4, Sec. 25, T.23S., R.25E., Bourbon Co., Kansas.

BB-681 = Possible top of Pawnee (Laberdie) Limestone at 880' in road, poor exposure but possibly useful; sandstone with septarian concretions in road above limestone exposure, possibly the lower Bandera Shale; near Center of East line, NE1/4, Sec. 26, T.23S., R.25E., Bourbon Co., Kansas.

MANTEY QUADRANGLE

- B-186 = Altamont (Worland) Limestone (3 to 6 feet thick) with chaetetids in quarry on North side of highway, 2 miles East of Mapleton, Kansas; old strip mine on South side of road was mining the Mulberry Coal; measured and described by Jewett, probably in 1938, later (1952) by Ives; near Center of West line, Sec. 25, T.23S., R.23E., Bourbon Co., Kansas; now inaccessible, compare with BB-658.
- B-192 = Good exposure of Pawnee Limestone, see Jewett in 1938, top of Pawnee (Laberdie) Limestone at 830'; near BB-659; @100' East of Center of West line, NW1/4, SW1/4, NW1/4, Sec. 31, T.23S., R.24E., Bourbon Co., Kansas.
- B-193 = Anna shale and Myrick Station limestone along the bank of Little Osage river, measured and described by Jewett in 1938; Sec. 29, T.23S., R.24E., Bourbon Co., Kansas; now inaccessible, but near BB-660.
- B-194 = Lake Neosho shale and Worland limestone with approximately 15 feet of gray to yellow shale below Lake Neosho, measured and described by Jewett in 1939; Sec. 30, T.23S., R.24E., Bourbon Co., Kansas; now inaccessible.
- B-195 = Sequence measured and described by Jewett, 8 July 1939 with Laberdie limestone in creek North of school and continuing to the lower part of the Worland limestone just North of the SW cor., Sec.19, T.23S., R.24E., Bourbon Co., Kansas; Amoret equivalent here is a laterally discontinuous nodular limestone; the Mulberry Coal and the upper 50 plus feet of Bandera Shale was exposed; compare with sequence exposed between BB-603A and BB-603.
- B-196 = Same as B-186 and BB-658.
- BB-598 = Top of Altamont (Worland) Limestone in West bank of Lost Creek on East side of road at @ 860'; thin tabular chaetetids occur near top of Worland; base of Lenapah (Norfleet) Limestone also in stream bed on East side of road in the same general area at @863'; Northeast of area of Section 7 of Greenberg, 1986 Univ. of Iowa Master's Thesis; near Center of South line, NW1/4, SW1/4, NW1/4, Sec. 14, T.23S., R.23E., Linn Co, Kansas.
- BB-598A = Base of Lenapah (Norfleet) Limestone at 863' in drainage West of road, area of Section 7 of Greenberg 1986 Univ. of Iowa Master's Thesis who records the Nowata as 3' thick at this locality; near Center, SE1/4, SE1/4, NE1/4, Sec. 15, T.23S, R.23E., Linn Co, Kansas.
- BB-599 = Silty mudrock and possibly a thin limestone in Bandera Shale in creek bank and drainage East of road in field; just NW of Center, SW1/4, NW1/4, SW1/4, Sec. 14, T.23S., R.23E., Linn Co., Kansas.

- BB-600 = Good exposure of Altamont Limestone and Bandera Shale in road cut on North side of road and West bank of Lost Creek; top of Altamont (Worland) Limestone at @870'; dug out base of Altamont (Amoret) Limestone at @860', a thin, dull brownish gray, brecciated to conglomeratic discontinuous bed with bored and other clasts including broken pieces of tabular chaetetid masses; presence of Lake Neosho Shale Member indicated by very black soil and phosphatic nodules in float; on the Linn-Bourbon Co, Kansas line; near Center of South line, SW1/4, SE1/4, SW1/4, Sec. 14, T.23S., R.23E., Linn Co., Kansas.
- BB-601 = Top of Altamont (Worland) Limestone at @870' in road and field North of road on the Linn-Bourbon Co., Kansas line; Center of South line, SE1/4, Sec. 14, T.23S., R.23E., Linn Co., Kansas.
- BB-602 = Area of old strip pits on South side of road, now heavily vegetated; possibly the Mulberry Coal in the lower Bandera; NE1/4, NW1/4, NW1/4, Sec.24, T.23S., R.23E., Bourbon Co., Kansas.
- BB-603 = Top of Altamont (Worland) Limestone at @890' in road and field West of road with about 10 feet of Altamont like that exposed at BB-600 exposed in road cut on East side of road; @ 200' South of Center of East line, SE1/4, SE1/4, of Sec. 24, T.23S., R.23E., Bourbon Co., Kansas.
- BB-603A = Top of Pawnee (Laberdie) Limestone @ 300' East of road where in crosses Lost Creek at an elevation of @830'; @ 100' North of Center of South line, SW1/4., NW1/4, SW1/4, Sec. 19, T.23S., R.23E., Linn Co., Kansas.
- BB-604 = Top of Altamont (Worland) Limestone at @890' and base at @880' in road ditch on West side of road; @ 100' South of Center of East line, SE1/4, NE1/4, Sec. 25, T.23S., R.23E., Bourbon Co., Kansas.
- BB-610 = Top of Altamont (Worland) Limestone? at @892' in road; Center of South line, SE1/4, SE1/4, Sec. 24, T.23S., R.23E., Bourbon Co., Kansas.
- BB-611 = Top of Altamont (Worland) Limestone? at @880' in road; Center of South line, SW1/4, SW1/4, Sec. 19, T.23S., R.24E., Bourbon Co., Kansas.
- BB-612 = Sandstone in Bandera Shale in road ditch on South side of road; @200' SW of Center of East line, NE1/4, NE1/4, NE1/4, Sec. 30, T.23S., R.24E., Bourbon Co., Kansas.
- BB-613 = Top of Pawnee (Laberdie) Limestone in road where it crosses drainage at @ 835'; near Center of North line, NW1/4, NW1/4, NE1/4, Sec. 10, T.23S., R.24E., Bourbon Co., Kansas.

- BB-614 = Old strip pits on North side of road, probably Mulberry Coal in lower Bandera Shale; near Center of East line, SE1/4, SW1/4, NE1/4, Sec. 20, T.23S., R.24E., Bourbon Co., Kansas.
- BB-615 = Top of Pawnee (Laberdie) Limestone on South side of road at @ 825'; just West and South of Center of East line, NE1/4, NW1/4, SW1/4, Sec. 21, T.23S., R.24E., Bourbon Co., Kansas.
- BB-616 = Sandstone in creek on South side of road @800', probably in Bandera Shale (Labette?); near Center of North line, SW1/4, NE1/4, SW1/4, Sec. 21, T.23S., R.24E., Bourbon Co., Kansas.
- BB-617 = Top of Pawnee (Laberdie) Limestone at @ 835' on North side of road; Center, Sec. 21, T.23S., R.24E., Bourbon Co., Kansas.
- BB-618 = Top of Pawnee (Laberdie) Limestone at @ 835' on South side of road; near Center of South line, SW1/4, NE1/4, Sec. 21, T.23S., R.24E., Bourbon Co., Kansas.
- BB-619 = Limestone, Pawnee, at road junction; near Center of East line, SW1/4, SW1/4, NW1/4, Sec. 22, T.23S., R.24E., Bourbon Co., Kansas.
- BB-620 = Limestone, Pawnee, where road turns East; Center of South line, SW1/4, NW1/4, Sec. 22, T.23S., R.24E., Bourbon Co., Kansas.
- BB-621 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 790', similar to exposures at B-193 and BB-660; sandstone and mudrock in creek bank on South side of road, probably in Labette Shale; near Center, NW1/4, NE1/4, NW1/4, Sec. 27, T.23S., R.24E., Bourbon Co., Kansas.
- BB-622 = Pawnee (Laberdie) Limestone on East side of road; not in place, slabs laid up for erosion control; near Center of West line, NW1/4, SW1/4, NE1/4, Sec. 34, T.23S., R.24E., Bourbon Co., Kansas.
- BB-625 = Top of Anna Shale/base of Pawnee (Myrick Station) Limestone at @840' on the South side of road; near Center of North line, NE1/4, NW1/4, SW1/4, Sec. 22, T.23S., R.24E., Bourbon Co., Kansas.
- BB-626 = Top of Anna Shale/base of Pawnee (Myrick Station) Limestone at @840' on the South side of road; @ 100' West of Center of South line, SE1/4, NW1/4, Sec. 22, T.23S., R.24E., Bourbon Co., Kansas.
- BB-627 = Top of Anna Shale/base of Pawnee (Myrick Station) Limestone at @840' on the South side of road; near Center of South line, SW1/4, SW1/4, NE1/4, Sec. 22, T.23S., R.24E., Bourbon Co., Kansas.
- BB-628 = Limestone like at BB-625, Myrick Station, in road where grade changes, @ 840'; near Center of South line, SE1/4, NE1/4, Sec. 22, T.23S.,

- R.24E., Bourbon Co., Kansas.
- BB-651 = Top of Altamont (Worland) Limestone in road at @875' in road junction; thin tabular and small domical chaetetids and colonies of multithecoporids; SE cor., Sec. 22, T.23S., R.24E., Bourbon Co., Kansas; GOOD POINT.
- BB-652 = Top of Altamont (Worland) Limestone in road at @875'; near Center of South line, SE1/4, SW1/4, Sec. 22., T.23S., R.24E., Bourbon Co., Kansas.
- BB-653 = Top of Altamont (Worland) Limestone at @875'; base of Altamont Limestone at @ 870'; both in road; near Center of South line, SW1/4, Sec. 22, T.23S., R.24E., Bourbon Co., Kansas.
- BB-654 = Old quarry North of road, top of Altamont (Worland) Limestone in road ditch at 880' on North side of Kansas Highway 31; @200' North of Center, Sec. 26, T.23S., R.23E., Bourbon Co., Kansas.
- BB-655 = Top of Altamont (Worland) Limestone at 880' on South side of Kansas Highway 31; @200' East of Center of South line, NE1/4, Sec .26, T.23S., R.23E., Bourbon Co., Kansas.
- BB-656 = Top of Altamont (Worland) Limestone in road ditch on both sides of Kansas Highway 31 at @877'; Center of South line, SW1/4, NW1/4 and Center of North line, NW1/4, SW1/4, Sec .26, T.23S., R.23E., Bourbon Co., Kansas.
- BB-657 = Top of Altamont (Worland) Limestone in field South of road at @890'; @100' East of Center of West line, Sec. 25, T.23S., R.23E., Bourbon Co., Kansas.
- BB-658 = Top of Altamont (Worland) Limestone near 890' in old quarry on North side of Kansas Highway 31; low domical, @ 2 to 3 dm in diameter and up to 5 cm high, to tabular chaetetids; probably location of both measured sections B-186 and B-196; near Center, SE1/4, SE1/4, NE1/4, Sec. 26, T.23S., R.23E., Bourbon Co., Kansas.
- BB-659 = Good exposure of Anna shale and Myrick Station limestone; top of Anna shale/base of Pawnee (Myrick Station) Limestone at 805' in South bank of Little Osage River West of Kansas Highway 7, maybe as much as 25' of Pawnee limestone between here and measured section B-192; @150' South of Center of North line, SE1/4, NE1/4, NE1/4, Sec. 36, T.23S., R.23E., Bourbon Co., Kansas.
- BB-660 = Top of Pawnee (Laberdie) Limestone at 810' in drainage on Southwest side of Little Osage River at low water bridge; in the area of measured section B-193; near SW cor., SW1/4, NE1/4, SE1/4, Sec. 29, T.23S., R.24E., Bourbon Co., Kansas.

BB-661 = Siltstone and mudrock of Bandera Shale in drainage on both sides of Kansas Highway 31; near Center of South line, SE1/4, SW1/4, Sec. 28, T.23S., R.24E., Bourbon Co., Kansas.

BB-662 = Siltstone and mudrock of Bandera Shale @ 805' in West bank of Clever Creek on North side of Kansas Highway 31; @150' East of Center, SE1/4, SW1/4, Sec. 27, T.23S., R.24E., Bourbon Co., Kansas.

BB-663 = Sandstones, siltstones and mudrock of upper Labette Shale @825' in drainage on both sides of road; just West of Center of East line, Sec. 22, T.23S., R.24E., Bourbon Co., Kansas.

MAPLETON QUADRANGLE

B-173 = Hertha to Middle Creek; measured and described by Jewett in 1931; same area as BB-958; Sec. 34, T.23S., R.22E., Bourbon Co., Kansas.

B-174 = Pleasanton to Bethany Falls; measured and described by Jewett in 1935 and in 1938; base of Critzer limestone at @963', top of Hertha (Sniabar) Limestone at @973', base of Swope (Middle Creek) Limestone at @978', and Bethany Falls (NO TOP) at 993'; 1 mile North of Xenia, Kansas; SE cor., Sec. 28, T.23S., R.22E., Bourbon Co., Kansas.

B-175 = Pleasanton (Bourbon Flags?); measured and described by Jewett in 1935; area of Hidden Valley Lake spillway, same area as BB-961; near Center of North line, NE1/4, Sec. 26, T.23S., R.22E., Bourbon Co., Kansas.

B-176 = Pleasanton to Middle Creek; measured and described by Jewett in 1935 area of Hidden Valley Lake spillway, same area as BB-961; just South of Center of North line, NE1/4, Sec. 26, T.23S., R.22E., Bourbon Co., Kansas.

B-177 = Hertha to Middle Creek; unfinished roadcut and fill Northeast of Xenia, Kansas; measured and described by Jewett, 1 July 1936; base of Critzer limestone at @950', top of Hertha (Sniabar) Limestone at @974', and base of Swope (Middle Creek) Limestone at @986'; Stop 4B of Pabian and Diffendal, 1989, pp.21-23; NW cor., NE1/4, to Center of West line, NE1/4, Sec. 26, T.23S., R.22E., Bourbon Co., Kansas.

B-178 = Middle Creek to Canville; measured and described by Jewett in 1935; same area as BB-963; SW cor., Sec. 24, T.23S., R.22E., Bourbon Co., Kansas.

B-179 = Base Hertha to Dennis?; measured and described by Jewett, no date, probably mid 1930s; just SE of Center of North line, Sec. 21, T.23S., R.22E., Bourbon Co., Kansas, inaccessible now.

B-185 = Pleasanton to Bethany Falls; measured and described by Jewett in 1935; same area as BB-974; near NW cor., Sec. 29, T.23S., R.23E., Bourbon Co., Kansas.

B-187 = Pleasanton (Bourbon Flags) to Bethany Falls; measured and described by Jewett in 1938; same area as BB-974; along South side of road, Sec. 20, T.23S., R.23E., Bourbon Co., Kansas.

B-188 = Hertha to Bethany Falls; measured and describe by Jewett in 1938, Critzer limestone missing according to Jewett; same area as BB-974; along highway North and West of Mapleton, Kansas; Sec. 20, T.23S., R.23E., Bourbon Co., Kansas.

B-189 = Checkerboard Limestone through Pleasanton (Bourbon Flags) to Bethany

- Falls; measured and described by Newell in 1934 who noted an East dip; same area as BB-974; roadcut of highway Northwest of Mapleton, Kansas; SW cor., Sec. 20, T.23S., R.23E., Bourbon Co., Kansas.
- B-191 = Bandera and lower Altamont, section in floodplain; measured and described by Jewett in 1938; Sec. 33, T.23S., R.24E., Bourbon Co., Kansas; now inaccessible.
- BB-958 = Base of Swope (Middle Creek) Limestone at @ 1020' with top of Hertha (Sniabar) Limestone at @ 1010', area of B-173; near Center, Sec. 32, T.23S., R.22E., Bourbon Co., Kansas.
- BB-959 = Typical "Bourbon Flags" exposed along road on West side of stream; about 100' North of Center of West line, SW1/4, NW1/4, Sec. 36, T.23S., R.22E., Bourbon Co., Kansas.
- BB-960 = Same as BB-959; near Center of West line, SW1/4, Sec. 25, T.23S., R.22E., Bourbon Co., Kansas.
- BB-961 = Excellent exposure of typical "Bourbon Flags" and Critzer limestone like at B-177; base of Critzer limestone at @ 940' suggesting an East dip of about 5' per quarter mile!; area of site B-176; about 100' North of South line, SE1/4, Sec. 23, T.23S., R.22E., Bourbon Co., Kansas.
- BB-962 = Top of Swope (Bethany Falls) Limestone, oolitic phase, at @ 1000'; about 500' East of SW cor., Sec. 24, T.23S., R.22E., Bourbon Co., Kansas.
- BB-963 = Quarry exposing Bethany Falls through lower Winterset limestone; top of Swope (Bethany Falls) Limestone like at BB-962 at @ 1000' with 5.0' of Galesburg Shale, 3.0' of Canville limestone, 5.0' of Stark shale, and 8 to 10 feet of lower part of Winterset limestone; base of Dennis (Canville) Limestone at @ 1005'; near Center, S1/2, SW1/4, Sec. 24, T.23S., R.22E., Bourbon Co., Kansas.
- BB-964 = Base of Swope (Middle Creek) Limestone in drainage North of road at 975'; about 200' West of Center of South line, SE1/4, SW1/4, Sec. 24, T.23S., R.22E., Bourbon Co., Kansas.
- BB-965 = Exposure along North-South road from below Critzer limestone into the Bethany Falls limestone; base of Critzer limestone at @ 961', top of Hertha (Sniabar) Limestone at @ 983', and base of Swope (Middle Creek) Limestone at @ 988'; about 300' North of Center of West line, SW1/4, Sec. 23, T.23S., R.22E., Bourbon Co., Kansas.
- BB-966 = Top of Swope (Bethany Falls, non-oolitic) Limestone at @ 1020' in road and field East of road; base of Dennis (Canville) Limestone estimated at @ 1025' in road just North (200') of BB-966; near Center of West line, Sec. 23, T.23S., R.22E., Bourbon Co., Kansas.

- BB-967 = Exposure along road from light brownish gray silty, blocky, mudrock in stream up to limestone beds in the Winterset limestone at the middle of the section at an elevation of 1031'; base of Critzer limestone at @955', top of Hertha (Sniabar) Limestone at @970', base of Swope (Middle Creek) Limestone at @990', top of Swope (Bethany Falls) Limestone at @1020', and base of Dennis (Canville) Limestone at @1025'; about 300' South of Center of East line, SE1/4, Sec. 14, T.23S., R.22E., Linn Co., Kansas.
- BB-968 = Base of Dennis (Canville) Limestone at 1020' in road with black, platy, fissile shale (Stark) above and lower beds of Winterset limestone above toward section corner to the West; about 100' West of Center of North line, NW1/4, NW1/4, Sec. 19, T.23S., R.23E., Bourbon Co., Kansas.
- BB-969 = Base of Dennis (Canville) Limestone in North-South road at @ 1030' near section corner; top of Swope (Bethany Falls) Limestone in creek North of East-West road at @ 1025'; NE cor., Sec. 25, T.23S., R.22E., Bourbon Co., Kansas.
- BB-970 = Old quarry in the Bethany Falls limestone; Center, SW1/4, SE1/4, NE1/4, Sec. 25, T.23S., R.22E., Bourbon Co., Kansas.
- BB-971 = Top of Swope (Bethany Falls) Limestone in road and field West of road at @ 1025'; based of Dennis (Canville) Limestone at @1030' in road ditch on East side of road, good exposure of Canville limestone with black, fissile shale above and lower beds of the Winterset limestone in the road to the South; Center East line, SE1/4, NE1/4, Sec. 25, T.23S., R.22E., Bourbon Co., Kansas.
- BB-972 = Base of Dennis (Canville) Limestone at @ 1025' and top of Swope (Bethany Falls) Limestone at @ 1010', both in the road; near Center of East line, NE1/4, NE1/4, NE1/4, Sec. 36, T.23S., R.22E., Bourbon Co., Kansas.
- BB-973 = Base of Critzer limestone at @ 960', top of Hertha (Sniabar) Limestone at @ 993', and base of Swope (Middle Creek) Limestone at @998', all three contacts were observed in the road; near Center of North line, NW1/4, NE1/4, Sec. 31, T.23S., R.23E., Bourbon Co., Kansas.
- BB-974 = Base of Critzer limestone in road at @ 965' and at section corner and along the South side of road; area of sites B-185, 187, 188, and 189 as well as Stop 4C of Pabian and Diffendal, 1989, pp.23-26; SE cor., Sec. 19, T.23S., R.23E., Bourbon Co., Kansas.
- BB-975 = Top of Swope (Bethany Falls) Limestone at 1025' in road and roadcut on South side of road; using the measured sections at sites B-185, 187, 188, and 189, bed contacts are as follows: top of Hertha (Sniabar) Limestone at 1000 to 1005 feet, base of Swope (Middle Creek) Limestone estimated (not

seen) at 1010', and base of Dennis (Canville) Limestone estimated (not seen) at 1030'; near Center of South line, SE1/4, SW1/4, Sec. 19, T.23S., R.23E., Bourbon Co., Kansas.

BB-976 = Top of Hertha (Sniabar) Limestone at @ 1000 to 1005 feet in road and in roadcut on South side of road, base of Swope (Middle Creek) Limestone at @ 1010', top of Swope (Bethany Falls) Limestone at @ 1030' and base of Dennis (Canville) Limestone at @ 1035'; near Center North line, NE1/4, NW1/4, NE1/4, Sec. 20, T.23S., R.23E., Bourbon Co., Kansas.

BB-977 = Base of Critzer limestone at @ 965', top of Hertha (Sniabar) Limestone at @ 1000', and base of Swope (Middle Creek) Limestone at @ 1005', all three observed in road; near Center of North line, NW1/4, NE1/4, NE1/4, Sec. 19, T.23S., R.23E., Bourbon Co., Kansas.

BB-978 = Thin bedded, hard, dense, light gray bluish, algal limestone with *Composita* in low water bridge at @ 945' (Exline/Checkerboard equivalent??); near Center of North line, NE1/4, NW1/4, NE1/4, Sec. 19, T.23S., R.23E., Bourbon Co., Kansas.

BB-979 = Exposure along East-West road from limestone at BB-978 through Critzer, Sniabar, Middle Creek, Hushpuckney (exposed in road ditch on South side of road), and Bethany Falls with intervening mudrocks; base of Critzer limestone at @ 960', top of Hertha (Sniabar) Limestone at @ 980', base of Swope (Middle Creek) Limestone at @ 985', and top of Swope (Bethany Falls) Limestone at @ 1010'; about 200' West of Center of North line, NW1/4, NE1/4, Sec. 19, T.23S., R.23E., Bourbon Co., Kansas.

BB-980 = Sequence exposed along East-West road from Winterset limestone down to flaggy beds below Critzer limestone, base of Dennis (Canville) Limestone at @ 1020' and base of Critzer limestone at @ 930', other contacts covered; about 200' East of Center of South line, SW1/4, SE1/4, Sec. 25, T.23S., R.22E., Bourbon Co., Kansas.

MARMATON QUADRANGLE

- B-88 = Base of Altamont Limestone at 901' in road; 6' to 8' of Altamont based on a section measured and described by Jewett on 4 August 1938; Center of West line, NW1/4, SW1/4, NW1/4, Sec. 13, T.25S., R.23E., Bourbon Co., Kansas.
- B-95 = Upper bed of Fort Scott? into limestone of the Pawnee according to Jewett in 1938; Sec. 15, T.25S., R.24E., Bourbon Co., Kansas; see BB-341.
- B-96 = Anna shale into Pawnee Limestone including Myrick Station limestone, Mine Creek shale, and lower part of Laberdie limestone; measured and described by Jewett in 1938 on the East side of Ks. Hwy 7 on the South side of Mill Creek in Sec. 15, T.25S., R.24E., Bourbon Co., Kansas; we were unable to locate this exposure.
- B-130 = Bandera Shale, over 59', starting near the very top of the Pawnee (Laberdie) Limestone and ending near the base of the Altamont Limestone; measured and described by Jewett, no date; along North line, NE1/4, NE1/4, Sec. 27, T.26S., R.23E., Bourbon Co., Kansas, see BB-261.
- B-132 = Measured and described by Jewett in 1941 as Lenapah, we believe it is the Pawnee (Laberdie) Limestone at 860' in road and in field West of road; @ 0.65 mile North along Center line, Sec. 13, T.26S., R.23E., Bourbon Co., Kansas.
- B-133 = Bandera Shale with channeloid sandstone, measured and described by Jewett in 1938; near NW cor., Sec. 12, T.26S., R.23E., Bourbon Co., Kansas.
- B-135 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 810' in South bank of Paint Creek; top of Pawnee (Laberdie) Limestone at 850' in road just South of bridge measured and described by Jewett in 1938 as starting in East flowing draw a short distance North of river on East side of road; Center of West line, SW1/4, SW1/4, Sec. 12, T.26S., R.23E., Bourbon Co., Kansas; tabular chaetetids, like in the Myrick Station limestone North of Fort Scott, Kansas on U. S. Hwy 69 (L-768), low in the exposure.
- B-136 = Top of Pawnee (Laberdie) Limestone at 845' with chaetetid masses in road; measured and described by Jewett in 1941; near Center of South line, SE1/4, SW1/4, SW1/4, Sec. 35, T.25S., R.23E., Bourbon Co., Kansas.
- B-137 = Base of Altamont Limestone at 895'; measured and described by Jewett in 1938 as upper Altamont (Worland) Limestone; near Center of North line, NE1/4, Sec. 3, T.26S., R.23E., Bourbon Co., Kansas.
- B-138 = Pawnee (Laberdie) Limestone in old quarry; measured and described by Ives in 1952; just South of Center of West line, Sec. 1, T.26S., R.23E., Bourbon Co., Kansas, see BB-279.

- B-139 = Pawnee (Laberdie) Limestone with lower part of Bandera shale exposed above; measured and described by Jewett in 1938; just South of Center of West line, Sec. 1, T.26S., R.23E., Bourbon Co., Kansas, same as B-138; see BB-279.
- B-140 = Measured and described as Laberdie limestone by Ives in 1952, in quarry; near Center of South line SW1/4, Sec. 16, T.26S., R.24E., Bourbon Co., Kansas, see BB-64/L-810.
- B-142 = Same as B-143 and B-144; top of Anna shale/base of Pawnee (Myrick Station) Limestone at 862' with algae and tabular chaetetid; measured and described by Jewett, 1938 and Ives in 1952; near Center of South line, SW1/4, SE1/4, SE1/4, Sec. 10, T.26S., R.24E., Bourbon Co., Kansas; same as B-143 and B-144.
- B-145 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 865'; top of Pawnee (Laberdie) Limestone not seen, but estimated at 897' based on Section 89 in Jewett in 1945 who recorded 21.5' of Pawnee excluding the Anna shale, chaetetids in Laberdie; near Center of South line, SE1/4, SE1/4, Sec. 8, T.26S., R.24E., Bourbon Co., Kansas.
- L-928 = Top of Fort Scott (Higginsville) Limestone estimated at 810'; when very dry sequence from Excello shale well into the Higginsville limestone is exposed, normally only the upper part of Blackjack Creek limestone into Higginsville are accessible; Fort Scott Limestone well developed here with Summit Coal and Howe limestone clearly recognizable; tabular chaetetids in Higginsville limestone; NE1/4, SW1/4, NW1/4, Sec. 2, T.26S., R.24E., Bourbon Co., Kansas; spillway of Rock Creek Lake; see measured section in West and Sawin, 1994, p. 10.
- BB-51/BB-376 = Top of Anna shale/base of Pawnee (Laberdie) Limestone at 885' in road cut; near Center, SW1/4, SE1/4, SW1/4, Sec. 14., T.26S., R.24E., Bourbon Co., Kansas.
- BB-52 = Core hole and log of KGS#1 Ater; surface elevation = 854.5', chaetetid float from Pawnee Limestone; Laberdie limestone; 17.5' of Pawnee Limestone with top of Anna shale at 837'; 51' of Labette Shale with top of Fort Scott (Higginsville) Limestone at 786'; 30' of Fort Scott Limestone with base (Blackjack Creek) at 756'; NW cor., Sec.33, T.25S., R.24E., Bourbon Co., Kansas; see log of core in West and Sawin, 1994, p. 12.
- BB-53 = Core hole and log of KGS#2 Ater; surface elevation = 867'; 16+' of Pawnee Limestone with top of Anna shale at 851'; 47.5' of Labette Shale with top of Fort Scott (Higginsville) Limestone at 803.5'; 31.5' of Fort Scott Limestone with base (Blackjack Creek) at 772'; Center of East line, SE1/4, SW1/4, Sec. 33, T.25S., R.24E., Bourbon Co., Kansas; see log of core in West and Sawin, 1994, p. 32.

- BB-54 = Top of Anna shale at 846' (good point), chaetetids in upper (Laberdie) Pawnee Limestone; section 32 of Price, 1981 dissertation, Union Bend School; North of Lake Fort Scott; just West of SE cor., Sec. 28, T.25S., R.24E., Bourbon Co., Kansas.
- BB-64 = Top of Anna shale/base of Pawnee Limestone at 872' along West side of creek bed; sheet-like and dish-shaped chaetetids in upper Myrick Station limestone and suspected in lower Laberdie limestone; section 34 of Price, 1981 dissertation, Jubellie Quarry; approximately 45' of Pawnee Limestone here; Bourbon County Section B-140; my site L-810; quarry in SW1/4, SE1/4, SW1/4, Sec. 16, T.26S., R.24E., Bourbon Co., Kansas.
- BB-65 = Top of Anna shale/base of Pawnee Limestone at @ 890' (contact covered); chaetetids in float; Sawin Site #4; just West of Center of South line, SE1/4, SE1/4, Sec. 23, T.26S., R.23E., Bourbon Co., Kansas.
- BB-65A = Excellent exposure of Pawnee Limestone, Anna shale, and upper dark bluish gray mudstones of the Labette Shale exposed North and East of BB-65 in the Elm Creek Lake Spillway; top of Anna shale/base of Pawnee (Myrick Station) Limestone at 890'; algal mounds in Laberdie at lake level and chaetetids in Myrick Station and Laberdie near Center of East line, SE1/4, SE1/4, Sec. 23, T.26S., R.23E., Bourbon Co., Kansas.
- BB-66 = Top of Pawnee Limestone at @ 932'; Sawin Site #5; just West of Center of South line, Sec. 23, T.26S., R.23E., Bourbon Co., Kansas.
- BB-236 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 835', distinct 1.5 degree dip to the East; resembles exposure at BB-341; chaetetids in upper part of limestone exposed by the fence on the North side of U. S. Hwy 54; near Center of South line, SE1/4, SE1/4, Sec. 15, T.25S., R.24E., Bourbon Co., Kansas.
- BB-237 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 850'; along U. S. Hwy 54, near Center of South line, SW1/4, SE1/4, Sec. 15, T.25S., R.24E., Bourbon Co., Kansas.
- BB-239 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 865' in pond bank on South side of road; just South of Center of North line, NW1/4, Sec.21, T.25S., R.24E., Bourbon Co., Kansas.
- BB-240 = Base of Altamont (Worland, like Worland in western part of Hammond Quad.) Limestone at 915' in road ditch on both sides of U. S. Hwy 54; above the Bandera Shale is @ 2.0' of thin bedded, brownish, rubbly, clayey, nodular limestone (Amoret?) overlain by @ 2.0' of massive algal limestone (Worland?); total thickness of Altamont is 3' to 4' and top is mapped at 920'; along South line, SW1/4, SE1/4, SW1/4, Sec. 17, T.25S., R.24E., Bourbon Co., Kansas.

- BB-241 = Top of Altamont (Worland) Limestone between 930' and 940' on both sides of U. S. Hwy 54; Center of South line, Sec. 18, T.25S., R.24E., Bourbon Co., Kansas, see B-130.
- BB-242 = Base of Altamont (Worland) Limestone at @ 885' on both sides of U. S. Hwy 54; Bandera Shale exposed in stream; at section corner there is just a thin bit of Nowata Shale as at BB-243; Center of South line, SW1/4, SE1/4, Sec. 15, T.25S., R.23E., Bourbon Co., Kansas.
- BB-243 = Top of Altamont (Worland) Limestone at 895' with Nowata Shale at SE cor., Sec. 15, T.25S., R.23E., Bourbon Co., Kansas.
- BB-244 = Near top of Altamont (Worland) Limestone at 880'; in road ditch near Center of South line, SE1/4, SW1/4, SW1/4, Sec. 23, T.25S., R.23E., Bourbon Co., Kansas.
- BB-245 = Top of Altamont (Worland) Limestone at 895'; sheet-like chaetetids in upper part of Worland in pond bank North of road; near Center of South line, SE1/4, SW1/4, SE1/4, Sec. 23, T.25S., R.23E., Bourbon Co., Kansas; Worland here is very much like Worland at BB-233 and L-809 North of Devon, Kansas.
- NOTE: Regional dip to the West in the vicinity of BB-244 and BB-245 is reasonable.
- BB-246 = Probably base of Altamont Limestone at 901' in road; just North of Center of East line, SE1/4, SE1/4, Sec. 26, T.25S., R.23E., Bourbon Co., Kansas.
- BB-247 = Top of Pawnee (Laberdie) Limestone at 864'; probably 15' to 20' of Pawnee Limestone in narrow canyon that drains into the Marmaton River to the southwest; near Center of West line, SW1/4, NW1/4, SW1/4, Sec. 36, T.25S., R.23E., Bourbon Co., Kansas.
- BB-248 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone estimated at 835'; 30+' of limestone exposed on both sides of road and below bridge over Marmaton River; similar to Pawnee Limestone at BB-247; probably top of Pawnee (Laberdie) Limestone at 864'; Center of South line, SE1/4, SE1/4, Sec. 35, T.25S., R.23E., Bourbon Co., Kansas.
- BB-249 = Top of Pawnee (Laberdie) Limestone at 877'; @ 0.15 mile South along Center line, Sec. 16, T.26S., R.24E., Bourbon Co., Kansas.
- BB-250 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at @ 840' in trench silo on edge of hill overlooking Marmaton River floodplain to the South; near Center, NE1/4, SE1/4, NW1/4, Sec. 6, T.26S., R.24E., Bourbon Co., Kansas.

- BB-251 = Upper part of Pawnee (Laberdie) Limestone at 920+' in road; Center of South line, SW1/4, SE1/4, Sec. 15, T.26S., R.24E., Bourbon Co., Kansas.
- BB-252 = Pawnee (Laberdie) Limestone at 908' in road and field West of road; @ 0.15 mile South along Center line, Sec. 20, T.26S., R.24E., Bourbon Co., Kansas.
- BB-253 = Upper part of Pawnee (Laberdie) Limestone at 917+' in road; near Center of South line, SW1/4, SW1/4, Sec. 16, T.26S., R.24E., Bourbon Co., Kansas.
- BB-253A = Excellent exposure of Pawnee Limestone North and East of bridge over Pawnee Creek; top of Anna shale/base of Pawnee (Myrick Station) Limestone at @ 810' about 1 meter above stream bed (22 Nov.'96) along South side of West flowing stream (Pawnee Creek); just North of Center of South line of SW1/4, SE1/4, SW1/4, Sec. 8, T.26S., R.24E., Bourbon Co., Kansas; tabular chaetetids @ 1.5 m above top of Anna shale, large, up to 1 m across, bowl-shaped forms.
- BB-254 = Pawnee (Laberdie) Limestone in creek bed and hillside to the northwest; near Center, SW1/4, SW1/4, SW1/4, Sec. 8, T.26S., R.24E., Bourbon Co., Kansas.
- BB-255 = Pawnee (Laberdie) Limestone at 870' in North-South road; near Center of South line, SE1/4, NE1/4, NE1/4, Sec. 14, T.26S., R.23E., Bourbon Co., Kansas; North dip of 20'/1700' (0.35 mile).
- BB-256 = Pawnee (Laberdie) Limestone at 875' in road; SE of Center, SE1/4, NE1/4, Sec. 14, T.26S., R.23E., Bourbon Co., Kansas.
- BB-257 = Pawnee (Laberdie) Limestone at 901' in road and in field South of road; near Center of South line, SW1/4, NE1/4, Sec. 14, T.26S., R.23E., Bourbon Co., Kansas.
- BB-258 = Pawnee (Laberdie) Limestone at 909' in road and pond bank on the East side of the road; @ 0.12 mile North along Center line, Sec. 14, T.26S., R.23E., Bourbon Co., Kansas.
- BB-259 = Top of Pawnee (Laberdie) Limestone at 916' in road and pond bank on the West side of the road; Center, Sec. 23, T.26S., R.23E., Bourbon Co., Kansas.
- BB-260 = Top of Pawnee (Laberdie) Limestone at 925' in road and pond bank on the West side of the road; @ 0.3 mile North along Center line, Sec. 23, T.26S., R.23E., Bourbon Co., Kansas.

- BB-261 = Pawnee (Laberdie) Limestone float blocks in creek bed at about 918'; near Center of South line, SE1/4, SW1/4, SE1/4, Sec. 22, T.26S., R.23E., Bourbon Co., Kansas.
- BB-271 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 865' in farm road; Center of East line, NE1/4, SE1/4, Sec. 10, T.26S., R.23E., Bourbon Co., Kansas; Myrick Station limestone with typical sheet-like chaetetids.
- BB-272 = Top of Pawnee (Laberdie) Limestone at 895' in field West of the road; near Center of East line, SE1/4, NE1/4, Sec. 10, T.26S., R.23E., Bourbon Co., Kansas.
- BB-273 = Top of Pawnee (Laberdie) Limestone at 890' in road; just South of Center of East line, NE1/4, NE1/4, Sec. 10, T.16S., R.23E., Bourbon Co., Kansas.
- BB-274 = Inferred top of Pawnee (Laberdie) Limestone at 890' in road, poorly exposed; Center of South line, SE1/4, SW1/4, Sec. 2, T.26S., R.23E., Bourbon Co., Kansas.
- BB-275 = Top of Pawnee (Laberdie) Limestone at 852' in road; near Center of East line, SE1/4, NE1/4, SE1/4, Sec. 11, T.26S., R.23E., Bourbon Co., Kansas.
- BB-276 = Pawnee (Laberdie) Limestone at 825' in drainage; near Center of East line, SE1/4, Sec. 11, T.26S., R.23E., Bourbon Co., Kansas.
- BB-277 = Top of Pawnee (Laberdie) Limestone at 852' in road; near Center of South line, SE1/4, SE1/4, NE1/4, Sec. 11, T.26S., R.23E., Bourbon Co., Kansas.
- BB-278 = Top of Pawnee (Laberdie) Limestone at 849' in road and field East of road; Center of West line, SW1/4, NW1/4, Sec. 1, T.26S., R.23E., Bourbon Co., Kansas.
- BB-279 = Old quarry in Pawnee (Laberdie) Limestone with tabular to low domical chaetetids in upper part; 0.2 mile South of road junction on East side of road; near Center, SW1/4, NW1/4, NW1/4, Sec. 1, T.26S., R.23E., Bourbon Co., Kansas; site of Bourbon County Sections B-138 and B-139.
- BB-280 = Top of Pawnee (Laberdie) Limestone at 841' in road ditch; Center of North line, NE1/4, NW1/4, NW1/4, Sec. 2, T.26S., R.23E., Bourbon Co., Kansas.
- BB-281 = Possible top of Anna shale/base of Pawnee (Myrick Station) Limestone at 815' in road cut; near Center, Sec. 1, T.26S., R.23E., Bourbon Co., Kansas.

- BB-282 = Top of Pawnee (Laberdie) Limestone at 850' in road; @ 0.25 mile North along Center line, Sec. 1, T.26S., R.23E., Bourbon Co., Kansas.
- BB-338 = Upper Pawnee terrain and limestone exposed in field on both sides of road; elevation is 908' near Center of West line, SW1/4, NW1/4, Sec. 23, T.26S., R.23E., Bourbon Co., Kansas.
- BB-339 = Labette Shale, Anna shale, Pawnee (Myrick Station, Mine Creek, and Laberdie) Limestone exposed in West bank of stream on the North side of road; just SE of Center, NW1/4, SE1/4, SE1/4, Sec. 15, T.26S., R.23E., Bourbon Co., Kansas; top of Anna shale/base of Pawnee (Myrick Station) Limestone at 862'; chaetetids in algal Laberdie, like at BB-65A);
- BB-340 = Very near the top of the Pawnee (Laberdie) Limestone at @ 890'; near Center of South line, SW1/4, SE1/4, SE1/4, Sec. 15, T.26S., R.23E., Bourbon Co., Kansas.
- BB-341 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 892'; SW cor., Sec. 15 and NW cor. Sec. 22, T.25S., R.24E., Bourbon Co., Kansas; lower Pawnee Limestone is like that at B-145 with tabular chaetetids; area of B-95 were upper Labette Shale and lowermost Pawnee was measured and described by Jewett, in 1938 in Sec. 15, T.25S., R.24E., Bourbon Co., Kansas.
- BB-341A = Pawnee (Laberdie) Limestone in ditch on both sides of road, well seen on East side of road in drainage at 917'; just South of Center of West line, SW1/4, SW1/4, NW1/4, Sec. 21, T.26S., R.25E., Bourbon Co., Kansas.
- BB-342 = Base of Altamont Limestone at 915' in road ditch on both sides of U. S. Hwy 54; SW cor., Sec. 17 and NW cor., Sec. 20, T.25S., R.25E., Bourbon Co., Kansas.
- BB-342A = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at @ 835' in East bank of Pawnee Creek in Hollister Wildlife Area; near Center of South line, SW1/4, SW1/4, Sec. 19, T.26S., R.25E., Bourbon Co., Kansas.
- BB-343 = Possibly Bandera Shale in road above 870'; @ 0.1 mile East of Center, Sec. 18, T.26S., R.24E., Bourbon Co., Kansas.
- BB-344 = Near top of Pawnee (Laberdie) Limestone at 882' in road; near Center of East line, NE1/4, NE1/4, Sec. 18, T.26S., R.24E., Bourbon Co., Kansas.
- BB-345 = Top of Pawnee (Laberdie) Limestone at 897' in field North of road just West of B-145; good point; near Center of South line, SW1/4, SE1/4, Sec. 8, T.26S., R.24E., Bourbon Co., Kansas.
- BB-346 = Upper Pawnee (Laberdie) Limestone (no top) at corner in drainage ditch to the North; near Center of South line, SE1/4, Sec. 5, T.26S., R.24E.,

Bourbon Co., Kansas.

- BB-347 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at @ 860'; near Center of North line, NE1/4, NE1/4, NE1/4, Sec. 9, T.26S., R.24E., Bourbon Co., Kansas.
- BB-348 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 867'; West end of dam at Lake Fort Scott; just West of SE cor., Sec. 15, T.26S., R.24E., Bourbon Co., Kansas; chaetetids, similar to those in Laberdie at B-142, but tabular chaetetids are thicker and conspicuous in the float.
- BB-349 = Labette Shale exposed in trench silo on North side of road; near Center, SE1/4, SE1/4, NW1/4, Sec. 3, T.26S., R.24E., Bourbon Co., Kansas.
- BB-350 = Brown limestone of upper Labette Shale exposed in road ditch on West side of road; near Center of East line, NE1/4, NE1/4, NW1/4, Sec. 3, T.26S., R.24E., Bourbon Co., Kansas.
- BB-351 = Clayey, silty sandstone beds of the Labette Shale in drainage on East side of road; near Center of West line, SW1/4, SW1/4, Sec. 34, T.25S., R.24E., Bourbon Co., Kansas.
- BB-352 = Hard, clayey sandstone bed in Labette Shale in drainage on East side of road; near Center of West line, SW1/4, NW1/4, Sec. 34, T.25S., R.24E., Bourbon Co., Kansas.
- BB-353 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 847' on West side of road; near Center of West line, NE1/4, Sec. 33, T.25S., R.24E., Bourbon Co., Kansas.
- BB-354 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 850' in road; near Center of West line, NE1/4, Sec. 4, T.26S., R.24E., Bourbon Co., Kansas.
- BB-355 = Labette Shale in road; near Center of West line, SE1/4, SE1/4, NE1/4, Sec. 4, T.26S., R.24E., Bourbon Co., Kansas.
- BB-356 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 856' in road; near Center of South line, SE1/4, SE1/4, NE1/4, Sec. 33, T.25S., R.24E., Bourbon Co., Kansas.
- BB-357 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 865' in road; near Center of East line, Sec. 6, T.26S., R.23E., Bourbon Co., Kansas; good point.
- BB-358 = Top of Pawnee (Laberdie) Limestone at 864' in road; just East of Center of North line, NE1/4, NW1/4, NE1/4, Sec. 1, T.26S., R.23E., Bourbon Co., Kansas.

- BB-359 = Estimated top of Pawnee (Laberdie) Limestone at 849' in road; near Center of South line, SW1/4, SE1/4, Sec. 1, T.26S., R.23E., Bourbon Co., Kansas.
- BB-360 = Estimated top of Pawnee (Laberdie) Limestone at 855' in road; near Center of South line, SE1/4, SE1/4, SE1/4, Sec. 1, T.26S., R.23E., Bourbon Co., Kansas.
- BB-361 = Very close to the top of Pawnee (Laberdie) Limestone at 860' at curve in road; near Center of East line, NW1/4, NE1/4, NW1/4, Sec. 7, T.26S., R.24E., Bourbon Co., Kansas.
- BB-362 = Estimated top of Pawnee (Laberdie) Limestone at 852' in road; near Center of South line, SE1/4, SE1/4, NW1/4, Sec. 12, T.26S., R.23E., Bourbon Co., Kansas.
- BB-363 = Estimated top of Pawnee (Laberdie) Limestone at 852' in road; near Center of South line, NW1/4, Sec. 12, T.26S., R.23E., Bourbon Co., Kansas.
- BB-364 = Top of Pawnee (Laberdie) Limestone at 852' in road; near Center of South line, SW1/4, SE1/4, NE1/4, Sec. 11, T.26S., R.23E., Bourbon Co., Kansas.
- BB-365 = Top of Pawnee (Laberdie) Limestone at 870' in road just West of Center of South line, SE1/4, SW1/4, NE1/4, Sec. 11, T.26S., R.23E., Bourbon Co., Kansas.
- BB-366 = Top of Pawnee (Laberdie) Limestone at 868 to 870' in road ditch; just South of Center of West line, Sec. 36, T.25S., R.23E., Bourbon Co., Kansas; domical (up to 1 dm in diameter) chaetetids on East side of road.
- BB-367 = Top of Pawnee (Laberdie) Limestone at 860' in field South of road; near Center of North line, NE1/4, Sec. 35, T.25S., R.23E., Bourbon Co., Kansas.
- BB-368 = Well weathered base of the Altamont Limestone at 897' in road cut on the East side of road; near Center of West line, Sec. 26, T.25S., R.23E., Bourbon Co., Kansas.
- BB-423 = Top of Altamont Limestone at 906'; roadcut on U. S. Hwy 54 just West of Center of South line, SW1/4, SE1/4, Sec. 14, T.25S., R.23E., Bourbon Co., Kansas.
- BB-424 = Upper part of Altamont Limestone at 895' in road; just North of Center of East line, NE1/4, Sec. 26, T.25S., R.23E., Bourbon Co., Kansas.

BB-425 = Upper part of 6' to 8' of Altamont Limestone at 893' in road; SW cor.,
Sec. 24, T.25S., R.23E., Bourbon Co., Kansas.

BB-426 = Estimated top of thin Altamont Limestone at 915'; just East of Center of
South line, SE1/4, Sec. 19, T.25S., R.24E., Bourbon Co., Kansas.

BB-427 = Estimated top of Altamont Limestone at 925'; near Center of East line,
NE1/4, SE1/4, Sec. 19, T.25S., R.24E., Bourbon Co., Kansas.

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B-46 = Bethany Falls in old quarry on South side of road; measured and describe by West in 1959; just South of Center of North line, NE1/4, NE1/4, Sec. 24, T.25S., R.21E., Bourbon Co., Kansas.

B-47 = Same as B-46.

B-48 = Hertha (Critzer) to Swope (Bethany Falls) in old quarry on South side of road; measured and described by West in 1959; Heckel calls Critzer Sniabar and Sniabar Bethany Falls; near NE cor., Sec. 24, T.25S., R.21E., Bourbon Co., Kansas.

B-49 = Same as B-48.

B-50 = Bethany Falls to Winterset; measured and described by Jewett in 1931; near Center of West line, SE1/4, NW1/4, Sec. 24, T.25S., R.21E., Bourbon Co., Kansas.

B-51 = Hertha to Bethany Falls; West of railroad on US Highway 54; measured and described by Jewett, no date; type locality of Schubert Creek (Sniabar) in NE1/4, Sec. 24, T.25S., R.21E., Bourbon Co., Kansas; Heckel, 1966 says "Schubert Creek = Hertha algal mound; near Center of South line, SE1/4, Sec. 13, T.25S., R.21E., Bourbon Co., Kansas.

B-56 = Middle Creek to Stark; measured and described by Jewett, no date; Center of North line, NW1/4, NW1/4, Sec. 19, T.25S., R.22E., Bourbon Co., Kansas..

B-57 = Hertha (very top of Schubert Creek); measured and describe by Jewett in 1938; just East of railroad on North side of Highway; SW cor., Sec. 18, T.25S., R.22E., Bourbon Co., Kansas.

NOTE: For area of sites above denoted as B-46 through B-57 the following comments apply: top of lower massive limestone, see B-48, is at an elevation of @ 960' (this limestone has been called Sniabar by Heckel, Jewett called it Critzer); the top of the massive, cross-bedded oolitic limestone is at @ 1010' (Jewett called it Bethany Falls, but Heckel suggested it might be Winterset). It appears that Heckel is correct which means that the top of the Hertha (Sniabar) Limestone is at @ 960', the interval between the top of Sniabar and base of Bethany Falls is only 2.0' thick, the top of the Swope (Bethany Falls) Limestone is at @ 968'; base of Dennis (Canville) Limestone is at @ 977', and the top of the Dennis (Winterset) Limestone is at 1010' (Dennis Limestone is 33 feet thick; not unreasonable).

B-58 = Hertha (Schubert Creek) to Bethany Falls with base of Middle Creek Limestone Member of Swope Limestone at 990', top of Hertha Limestone based on thicknesses from measured section at 979', Swope Limestone is 27' thick based on measured section and ends in the oolitic cross bedded

- facies of the Bethany Falls limestone; along U. S. Highway 54; measured and described by Jewett, no date; near Center of North line, NE1/4, Sec. 19, T.25S., R.22E., Bourbon Co., Kansas.
- B-59 = Schubert Creek (Hertha) and limestone below, measured and described by Jewett?, no date; Sec. 18, T.25S., R.22E., Bourbon Co., Kansas; now inaccessible.
- B-71 = Top of Hertha (Sniabar) Limestone at 1000' in road and fields on both sides of road, a good section; Sniabar (Schubert Creek) limestone and beds below; measured and described by Jewett in 1931; just East of Center of North line, NE1/4, Sec. 31, T.25S., R.22E., Bourbon Co., Kansas; base of Swope (Middle Creek) Limestone in road at @ 1010' with black shale (Hushpuckney) above, just West of B-71, thus the intervening mudrock (Ladore/Elm Branch) is 10 feet thick.
- B-108 = Upper Hertha through Galesburg with residual Winterset chert in soil; measured and described by Jewett in 1931; possibly similar to B-116; East side, Sec. 25, T.26S., R.21E., Bourbon Co., Kansas; now inaccessible.
- B-109 = Swope (thick Bethany Falls); measured and described by Jewett, no date; looks okay; slightly northwest of Center, SW1/4, SE1/4, Sec. 13, T.26S., R.21E., Bourbon Co., Kansas.
- B-110 = Bethany Falls to Winterset, looks okay; near SE corner of Sec. 13, T.26S., R.21E., Bourbon Co., Kansas.
- B-111 = Hertha to Bethany Falls; measured and described by Jewett, no date; same as B-112; Center of West line, Sec. 12, T.26S., R.21E., Bourbon Co., Kansas.
- B-112 = Bourbon Formation, same locality as B-111, same area as BB-856 and BB-857; in ditch near Center of West line, Sec. 12, T.26S., R.21E., Bourbon Co., Kansas
- B-113 = Bethany Falls to Canville, Winterset, oolitic limestone, in place at Section corner in road and in field North and South of road, weathered top; measured and described by Jewett, no date; just East of Center of West line, Sec. 11, T.26S., R.21E., Bourbon Co., Kansas.
- B-115 = Pleasanton to Middle Creek; measured and described by Jewett in 1935; on non-passable North-South road (July 1935); walked out the sequence as described in 1935 and it looks okay including mudrock sequences, calcareous siltstone/sandstone and limestone at the top; top of Sniabar limestone at @ 1040'; 27 February 1999; Center of West line, Sec. 28, T.26S., R.22E., Bourbon Co., Kansas.
- B-116 = Bethany Falls limestone, not Winterset as indicated on section measured and described by Ives in 1952 in new quarry; just East of Center of South

line, SW1/4, Sec. 19, T.26S., R.22E., Bourbon Co., Kansas.

- B-117 = Pleasanton to Hertha; measured and described by Jewett in 1935; same area as BB-832; just East of Center of North line, NW1/4, Sec. 16, T.26S., R.22E., Bourbon Co., Kansas.
- B-122 = Hertha to Bethany Falls in old quarry, mostly within the Bethany Falls; measured and described by Jewett in 1935; just East of Center of North line, Sec. 7, T.26S., R.22E., Bourbon Co., Kansas. QUARRY BETWEEN B-123 AND B-124, PROBABLY THIS SITE, B-122, IS IN THE LOWER BETHANY FALLS LIMESTONE.
- B-123 = Hertha to Bethany Falls, mostly Bethany Falls; measured and described by Newell in 1934; no contacts observed; roadcut in Township South of Uniontown; Center, Sec. 7, T.26S., R.22E., Bourbon Co., Kansas.
- B-124 = Hertha to Bethany Falls, top of Hertha (Sniabar) Limestone at @ 955' and base of Swope (Middle Creek) Limestone at @ 975'; measured and described by Jewett in 1931; near Center, NW1/4, NE1/4, Sec. 7, T.26S., R.22E., Bourbon Co., Kansas.
- B-125 = Pleasanton (Bourbon Flags) to Hertha (Schubert Creek); measured and described by Jewett, no date; same area as BB-840; just East of NW cor., Sec. 7, T.26S., R.22E., Bourbon Co., Kansas.
- BB-800 = Dennis? Limestone exposed in road, probably top in field West of road; near Center of West line, NE1/4, Sec. 23, T. 25S., R.21E., Bourbon Co., Kansas.
- BB-801 = Swope? Limestone exposed in drainage West of road, probably top; near Center of West line, SE1/4, NE1/4, Sec. 23, T. 25S., R. 21E., Bourbon Co., Kansas.
- BB-802 = Dennis? Limestone exposed in road and field West of road; near Center of West line, SE1/4, SE1/4, NE1/4, Sec. 23, T. 25S., R.21E., Bourbon Co., Kansas.
- BB-803 = Dennis? Limestone like at BB-800 and BB-802 exposed in road and in drainage East of road; about 500 feet South of NW cor., of Sec. 25, T. 25S., R.21E., Bourbon Co., Kansas.
- BB-804 = Small, old limestone quarry and large blocks in field North of road; near Center of South line, SE1/4, SE1/4, Sec. 23, T. 25S., R.21E., Bourbon Co., Kansas.
- BB-805 = Chert gravels in fields on both sides of road, probably indicative of Dennis limestone; near Center of West line, SW1/4, Sec. 14, T. 25S., R.21E., Bourbon Co., Kansas.

- BB-806 = Top of Dennis? Limestone and large boulders in drainage West of road near an elevation of 1060'; about 100 feet North of Center of East line of Sec. 27, T. 25S., R.21E., Bourbon Co., Kansas.
- BB-807 = Limestone (Drum?) in the Cherryvale Shale exposed in road; about 600 feet South of NE corner of Sec. 34, T. 25S., R.21E., Bourbon Co., Kansas.
- BB-808 = Limestone (Winterset) in drainage on both sides of road, stratigraphically below limestone exposed at BB-807; near Center of East line of SE1/4, NE1/4, Sec. 34, T. 25S., R.21E., Bourbon Co., Kansas.
- BB-809 = Top of limestone (bed in the Winterset) exposed at BB-808? at an elevation of 1037'; near Center of East line, Sec. 34, T. 25S., R.21E., Bourbon Co., Kansas.
- BB-810 = Limestones (Swope) in fields on both sides of road and in the road at the corner, approximately 80' of carbonate, probably the three lower carbonate formations of the traditional Missourian; SE cor., Sec. 34, T. 25S., R.21E., Bourbon Co., Kansas.
- BB-811 = Limestone (lower Swope, Middle Creek?) exposed in stream bed is at 970', limestones continue back up the hill in both directions; about 500 feet West of SE cor., Sec. 34, T. 25S., R.21E., Bourbon Co., Kansas.
- BB-812 = Chert gravels and limestone cobbles at corner; possibly the same limestone as at BB-807; near Center of South line, SE1/4, SW1/4, SE1/4, Sec. 34, T. 25S., R.21E., Bourbon Co., Kansas.
- BB-813 = Limestone bench (Winterset) in road at an elevation of 1030"; near Center of West line, SE1/4, NE1/4, NE1/4, Sec. 3, T. 26S., R.21E., Bourbon Co., Kansas.
- BB-814 = Good limestone bench, top of Swope (Bethany Falls) Limestone at an elevation of 1000'; near Center of West line, NE1/4, SE1/4, NE1/4, Sec. 3, T. 26S., R. 21E., Bourbon Co., Kansas.
- BB-815 = Limestone bench in road, lowest limestone unit, Hertha, in sequence; near Center of West line, SE1/4, SE1/4. SE1/4, Sec. 3, T. R.26S., 21E., Bourbon Co., Kansas.
- BB-816 = Bluff along drainage where there appear to be three limestone units separated by thinner mudrock intervals, probably Hertha, Swope, and Dennis; possibly owner of land for access to BB-816 is Dennis West; near Center of West line, NE1/4, NE1/4, Sec. 10, T. 26S., R.21E., Bourbon Co., Kansas.

- BB-817 = Swope Limestone (Bethany Falls exposed in roadcut on North side of road, Hushpuckney and Middle Creek exposed in the West bank of Wolfpen Creek); base of Swope (Middle Creek) Limestone inferred at 978', Bethany Falls is a massive bed of mottled, rubbly carbonate mudstone with crinoid ossicles, articulated brachiopods (*Cleiothyridina*), and fenestrate bryozoans (some are nearly vertical fronds, others are more or less parallel to bedding), GOOD EXPOSURE; about 600 feet West of SE cor., Sec. 15, T. 26S., R.21E, Allen Co., Kansas.
- BB-817A = Same limestone as exposed at BB-818A, top of Swope Limestone at 1015'; total thickness of Swope from here to BB-818 approx. 35', 6 Jan.'99; about 150 feet North of Center of West line of NW1/4, NW1/4, Sec. 23, T.26S., R.21E., Allen Co., Kansas.
- BB-818 = Limestone as at BB-848 (6 Jan.'99) along drainage in field on West side of road, base of Dennis Limestone at 1030'; along northwest to southeast diagonal across NE1/4, SE1/4, SE1/4, Sec. 22, T. 26S., R.21E., Bourbon Co., Kansas.
- BB-818A = Top of Swope Limestone and base of Galesburg Shale exposed in drainage West of road, coal smut in lower Galesburg, upper Bethany Falls is a cross-bedded oolitic carbonate grainstone (6 Jan.'99); about 150 feet NW of Center, E1/2, SE1/4, Sec. 22, T.26S., R.21E., Allen Co., Kansas.
- BB-819 = Dennis (oolitic) Limestone in road at an elevation of 1055'; SW cor., Sec. 23, T. 26S., R.21E., Bourbon Co., Kansas.
- BB-820 = Base? of Dennis (Canville) Limestone in road at an elevation of @1068'; about 200 feet East of Center of South line, SE1/4, SE1/4, Sec. 23, T. 26S., R.21E., Bourbon Co., Kansas.
- BB-821 = Swope? Limestone in road and in fields on both sides of road; near Center of East line, NE1/4, NE1/4, SE1/4, Sec. 23, T. 26S., R.21E., Bourbon Co., Kansas.
- BB-822 = Swope (Bethany Falls) Limestone in road and in field southeast of road, thick limestone exposed in drainage Northwest of road; near Center, N1/2, NW1/4, Sec. 24, T.26S., R.21E., Bourbon Co., Kansas.
- BB-822A = Top of Swope (Bethany Falls) Limestone in road at @1050'; approximately 200 feet South of NW cor., Sec. 24, T.26S., R.21E., Bourbon Co., Kansas.
- BB-823 = Exposure like that at BB-822, top of Swope (Bethany Falls) Limestone at @ 1050+'; near Center of South line, SE1/4, SE1/4, SW1/4, Sec. 13, T. 26S., R.21E., Bourbon Co., Kansas.

- BB-824 = Cross-bedded, oolitic limestone, Swope (Bethany Falls) in road, also forms a small waterfall in field South of road; about 150 feet South of Center of North line, Sec. 24, T. 26S., R.21E., Bourbon Co., Kansas.
- BB-825 = Galesburg Shale 10' thick with top of Swope (Bethany Falls) Limestone at 1065' and base of Dennis (Canville) Limestone at 1075' with Dennis (Winterset) Limestone in drainage on North side of road at an elevation of 1080'; SW cor., Sec. 18, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-826 = Galesburg Shale in drainage on West side of road with base of Dennis (Canville) Limestone at @ 1085'; near Center, S1/2, Sec. 18, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-827 = Top of Swope (Bethany Falls) Limestone, oolitic, at @ 1075' in field on West side of road; near Center, Sec. 18, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-828 = Base of Swope (Middle Creek) Limestone at @ 960' in roadcut below house and in road ditch on West side of road where road turns East; about 300 feet East of Center, Sec. 8, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-829 = Swope (Bethany Falls) Limestone exposed in old quarry with typical mottled limestone below and cross-bedded oolite above; near Center, NW1/4, NE1/4, SE1/4, Sec. 8, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-830 = Swope (upper part of Bethany Falls) Limestone caps this hill; near Center, S1/2, SE1/4, Sec. 8, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-831 = Sniabar type limestone in road; SW cor., Sec. 9, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-831A = At @ 1000' in road Sniabar limestone and flaggy limestone beds of upper Mound City Shale exposed in road, no contacts; near Center of West line, NE1/4, NE1/4, Sec. 17, T.26S., R.22E., Bourbon Co., Kansas.
- BB-831B = Critzer limestone of Heckel and Watney (in press) manuscript at 980' on both sides of hill flaggy beds of upper Mound City Shale above at top of hill; near Center of South line, SE1/4, SE1/4, Sec. 17, T.26S., R.22E., Bourbon Co., Kansas.
- BB-832 = Flaggy beds like in the upper Mound City shale of the Heckel & Watney (in press) manuscript exposed along both sides of road; near Center of North line, NE1/4, NW1/4, NW1/4, Sec. 16, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-833 = Thin limestone like that at BB-831B, Critzer of Heckel and Watney (in press) manuscript, at an elevation of @980'; mudrock above and below;

- just North of Center of South line, Sec. 9, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-834 = Yellowish brown mudrock in stream bank on South side of road, upper part of Mound City shale as identified in Heckel and Watney (in press) manuscript; just South of Center of North line, NW1/4, Sec. 29, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-834A = Bourbon Flag type beds of upper part of Mound City shale as identified in Heckel and Watney (in press) manuscript; Mason Cemetery; near Center, N 1/2, NW1/4, SE1/4, Sec. 20, T.26S., R.22E., Bourbon Co., Kansas.
- BB-835 = Limestone in road at 997', Bourbon Flag type beds of upper part of Mound City shale as identified in Heckel and Watney (in press) manuscript; SW cor., Sec. 20, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-836 = Good exposure of limestone, Sniabar with based at @ 1000' and top at @ 1020' in road; near Center of South line, SE1/4, Sec. 19, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-837 = Limestone, as in quarry at B-116, in road, Bethany Falls; Center of South line, Sec. 19, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-838 = Limestone in road, stratigraphically lower than the limestone at BB-837, a distinctive rimrock of this limestone occurs in a North-South drainage on both sides of road, Sniabar, with top at @ 1000'; about 500 feet West of Center of South line, Sec. 19, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-838A = Base of Swope (Middle Creek) Limestone at @ 1010' with Hushpuckney shale above in road ditch on South side of road; just East of Center of South line, SW1/4, Sec. 19, T.26S., R.22E., Bourbon Co., Kansas.
- BB-838B = Top of Swope (Bethany Falls) Limestone at @ 1060'; about 100 feet East of SW cor., Sec. 19, T.26S., R.22E., Bourbon Co., Kansas.
- BB-839 = Base of Swope Limestone (Middle Creek) at 980' in road ditch and exposure on East side of road with a black platy mudrock in the Ladore in the road ditch along the East side of the road where the road curves to the East; near Center of West line, NW1/4, Sec. 7, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-839A = Upper part, possibly the top of the Swope (Bethany Falls) Limestone at 1000' on East side of road; approx. 200' South of Center of West line, NW1/4, Sec. 7, T.26S., R.22E., Bourbon Co., Kansas.

- BB-840 = Top of Hertha (Sniabar) Limestone 32 feet below base of Swope (Middle Creek) Limestone at 948' in bluff on East side of road; near Center of West line, NW1/4, NW1/4, Sec. 7, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-841 = Sniabar-like limestone, no top or base, exposed in curve of road at an elevation of about 955'; like limestone at BB-840?; about 500 feet West and 100 feet South of Center, Sec. 1, T. 26S., R.21E., Bourbon Co., Kansas.
- BB-842 = Bethany Falls limestone, no top or base, in road at an elevation of 990'; near Center, Sec. 1, T. 26S., R.21E., Bourbon Co., Kansas.
- BB-843 = Critzer limestone in road ditch on North side of road at approx. 920' with a mudrock interval [Guthrie Mountain and Mound City shales of Heckel and Watney (in press) manuscript] above overlain by a series of flaggy limestone beds like at BB-876 with lower beds of the Sniabar limestone above; the thinner limestone at roads level probably correlates with bed 5 at BB-876; just North of Center, NW1/4, SW1/4, Sec. 5, T. 26S., R.22E., Bourbon Co., Kansas.
- BB-844 = Critzer Limestone Member at 968' on North side of road with base of flaggy limestone beds of upper Mound City shale at 980'; eastward along road from this site are beds like those numbered 3, 4, and 5 at BB-876, same lithologies and similar thicknesses; near Center of West line, NW1/4, NW1/4, Sec. 32, T. 25S., R.22E., Bourbon Co., Kansas.
- BB-845 = Top of Swope? Limestone at 1030', good point; near Center of North line, NE1/4, NW1/4, NW1/4, Sec. 31, T. 25S., R.22E., Bourbon Co., Kansas.
- BB-845A = Base of Dennis (Canville) Limestone in road at 1045'; approx. 400' West of Center of North line, Sec. 31, T.25S., R.22E., Bourbon Co., Kansas.
- BB-846 = Limestone in field South of road like that at BB-845 (Swope?), top is at 1020', good point; good example of low, western regional dip between BB-845 and this site; near Center of North line, NW1/4, NE1/4, Sec. 36, T. 25S., R.21E., Bourbon Co., Kansas.
- BB-846A = Base of Dennis (Canville, approx. one foot of hard, dense, gray limestone) Limestone in road ditch on North side of road at 1035' with black, fissile shale (Stark) fragments in recently graded road ditch on North side of road; approx. 200 feet East of BB-846 (see above).
- BB-847 = Base of Dennis (Canville) Limestone at 1035' in field South of road and in road with Stark shale above in road ditch; near Center of North line, Sec. 36, T. 25S., R.21E., Bourbon Co., Kansas.
- BB-848 = Algal limestone with some coated grains, Winterset, in road and along

the road to BB-819; near Center of West line, Sec. 26, T.26S., R.21E.,
Bourbon Co., Kansas.

BB-848A = Base of Dennis (Canville) Limestone at 1045', 0.1 mile East of Section corner; approx. 500 feet East of Center of West line, Sec. 11, T.26S., R.21E., Bourbon Co., Kansas.

BB-849 = Top of Swope (Bethany Falls) Limestone (oolitic) at 1030' in drainage North of road; near Center of South line, SE1/4, SW1/4, NW1/4, Sec. 11, T.26S., R.21E., Bourbon Co., Kansas.

BB-850 = Sandy mudrock and clayey sandstone (Galesburg Shale) in road; approx. 200 feet East of Center of South line, SE1/4, SW1/4, NW1/4, Sec. 11, T.26S., R.21E., Bourbon Co., Kansas.

BB-851 = Limestone as at BB-848A, base of Dennis (Canville) Limestone at 1045' in road ditch on South side of road; near Center of South line, SW1/4, SE1/4, NW1/4, Sec. 11, T.26S., R.21E., Bourbon Co., Kansas.

BB-852 = Limestone as at BB-851 in road, but base slightly higher at 1055'; Center, Sec. 11, T.26S., R.21E., Bourbon Co., Kansas.

BB-853 = Top of Swope (Bethany Falls) Limestone (oolitic) at 1040'; approx. 200 feet East of Center of South line, SW1/4, NE1/4, Sec. 11, T.26S., R.21E., Bourbon Co., Kansas.

BB-854 = Base of Swope (Middle Creek) Limestone inferred at 1010' on South side of road (questionable contact); Center of North line, SE1/4, Sec. 11, T.26S., R.21E., Bourbon Co., Kansas.

BB-855 = Exposure in spillway of Bourbon County State Park Lake, begins in the Mound City Shale (of Heckel and Watney (in press) manuscript), approx. 25' below the base of the Sniabar limestone with the entire Sniabar Limestone Member well exposed as an algal limestone, 14' thick); above the Sniabar is 22 feet of Ladore Shale with the Middle Creek, Hushpuckney interval (covered) and basal beds of Bethany Falls limestone at the top of the hillside; base of the Sniabar limestone is at lake level with the top at 950' and base of Swope (Middle Creek) Limestone at 972'; EXCELLENT SECTION; SE1/4, SW1/4, SE1/4, NW1/4, Sec. 12, T.26S., R.21E., Bourbon Co., Kansas.

BB-856 = Top of Hertha (Sniabar) Limestone in road and ditch on North side of road at 950' with the base of Hertha (Critzler) Limestone 20' below at 930'; area of B-111 and B-112; approx. 300 feet South of Center, SW1/4, NW1/4, Sec. 12, T.26S., R.21E., Bourbon Co., Kansas.

BB-857 = Base of Swope (Middle Creek) Limestone 18' (Ladore Shale) above top of Hertha (Sniabar) Limestone at 970'; area of B-111 and B-112;

approx. 100 feet West and 200 feet North of Center of South line, SW1/4, NW1/4, Sec. 12, T.26S., R.21E., Bourbon Co., Kansas.

BB-858 = Top of Hertha (Sniabar) Limestone at 950' in road with old quarry in the Swope (Bethany Falls limestone) northwest of road; near Center of North line, SW1/4, NE1/4, NE1/4, Sec. 14, T.26S., R.21E., Bourbon Co., Kansas.

BB-859 = Spillway of pond northwest of quarry noted at BB-858, top of Hertha (Sniabar) Limestone at 950', 12 feet of Ladore Shale to base of Swope (Middle Creek, a single bed 1.5' thick) Limestone, thus base of Swope Limestone is at 962', including the 1.5 foot thick bed of Middle Creek there is 12 feet of section to the base of the Bethany Falls limestone, thus the Hushpuckney here is 10.5' thick, there is 8+' of Bethany Falls limestone in the hillside above spillway; approx. 100 feet West and 400 feet South of Center of North line, NE1/4, Sec. 14, T.26S., R.21E., Bourbon Co., Kansas.

BB-860 = Complete exposure of Sniabar Limestone Member because of very low lake level, base of Sniabar is 6' above lake level here, a total of 8.5' of Sniabar is exposed here in a vertical face; NOTE: based on these data and those at BB-855 there is a dip of approx. 6 feet per mile in a NNE direction or the Sniabar Limestone Member is 6' thinner here at BB-860; near Center, SW1/4, NW1/4, SE1/4, NE1/4, Sec. 14, T.26S., R.21E., Bourbon Co., Kansas.

BB-860A = Base of Swope (Middle Creek) Limestone at @ 975' in road, large blocks of black, platy, fissile shale (Hushpuckney) in stream northwest of road; about 300' East of Center of South line, SE1/4, NE1/4, Sec. 14, T.26S., R.21E., Bourbon Co., Kansas.

BB-861 = Bethany Falls limestone in road ditch on North side of road; near Center of North line, NW1/4, NE1/4, Sec. 14, T.26S., R.21E., Bourbon Co., Kansas.

BB-862 = Oolitic Bethany Falls limestone at 1020' in road and in field South of road (not the top); near Center of North line, Sec. 14, T.26S., R.21E., Bourbon Co., Kansas.

BB-863 = Top of Swope (Bethany Falls) Limestone at 1030' in field North of road; just North of Center of South line, SW1/4, Sec. 11, T.26S., R.21E., Bourbon Co., Kansas.

BB-864 = Base of Dennis (Canville) Limestone at 1050' in road with 20' of Galesburg Shale between BB-863 and BB-864; approx. 200 feet East of Center of North line, NW1/4, NW1/4, Sec. 14, T.26S., R.21E., Bourbon Co., Kansas.

BB-865 = Winterset limestone in road at Section corner at 1076'; NW cor., Sec. 14, T.26S., R.21E., Bourbon Co., Kansas.

BB-866 = Base of Dennis (Canville) Limestone/ top of Galesburg Shale at 1045' in road; approx. 200 feet South of Center of West line, NW1/4, Sec. 14, T.26S., R.21E., Bourbon Co., Kansas.

BB-867 = Sandy soil suggests Galesburg Shale; approx. 100 feet South of Center of West line, SW1/4, NW1/4, Sec. 14, T.26S., R.21E., Bourbon Co., Kansas.

BB-868 = Top of Swope (Bethany Falls) Limestone at 1025' in road; approx. 250 feet North of Center of West line, Sec. 14, T.26S., R.21E., Bourbon Co., Kansas.

BB-876 = Sequence from about 60 feet below the base Critzer Limestone at 950' in Moran SE Quad to the upper part of the Hertha (Sniabar) Limestone at 1012' in Uniontown Quad, with 15 to 20 interbeds of hard, dense, gray limestone and gray mudrock in the upper Mound City Shale of Heckel & Watney (in press) manuscript; along North side of road beginning in the Moran SE Quad near Center of South line of SW1/4, SE1/4, SW1/4, Sec. 33 and ending in the Uniontown Quad near Center of South line of SE1/4, SW1/4, Sec. 33, T.25S., R.22E., Bourbon Co., Kansas; sequence measured and briefly described, according to Heckel and Watney (in press) manuscript unit 1 = Critzer, units 2 & 3 = Guthrie Mountain Shale, units 4 through 8 = Mound City Shale, and units 10 through 12 = Sniabar; 1 January 1999.

SEQUENCE AT BB - 876. Compares favorably with the exposure at BB-844 approx. 1.5 miles Northwest of BB-876.

Unit 1 - 0.3 m (@ one foot) of dark grayish on fresh surface, weathers reddish brown, thin bed, weathers platy, argillaceous, jointed (large joint controlled slabs weather from exposure) skeletal (crinoidal debris, chonetids, marginiferids, crurthyrids) calcilutite with covered, but probably sharp, upper and lower contacts; possibly Lenapah (Norfleet) Limestone equivalent; elevation of base of bed is 950'.

Unit 2 - 6.6 m (21.6 feet) of light brown fresh, weathering to yellow brown, blocky mudstone, base covered, contact with overlying unit sharp.

Unit 3 - 0.35 m (@1.1 feet) of orange brown very argillaceous in lower part, more calcareous in upper part, ferruginous; upper 0.5' is very hard and dense, sparsely fossiliferous (brachiopod shell fragments), upper contact is sharp.

Unit 4 - 0.67 m (@2.2 feet) of olive brown to medium, gray mudrock but dark gray to black platy mudrock just above Unit 3 below; becoming more calcareous upward grading into overlying unit (5).

Unit 5 - 0.45 m (@1.5 feet) of dark gray to blackish bed of calcareous siltstone to fine sandstone, argillaceous, with small, well sorted grains of crinoidal debris in upper part, contact with overlying unit (6) sharp, elevation of base of unit is @976'.

Unit 6 - 2.9 m (@9.8 feet) of medium to dark gray and black mudrock like Unit 4 below, contact with overlying unit (7) sharp.

Unit 7 - 0.36 m (@1.2 feet) of ferruginous concretions and boxwork in unconsolidated yellowish orange silt, contact with overlying unit (8) sharp.

Unit 8 - 2.1 m (@7.0 feet) of mudrock like Unit 6 becoming earthy in upper part where contact with overlying unit (9) is sharp.

Unit 9 - 3 m (@10 feet) of typical Bourbon Flags/Critzer limestone with 15 to 20 interbeds of thin, hard, dense, dark limestone and gray mudrock, contact with overlying unit (10) sharp, elevation of base of unit is @995'.

Unit 10 - 0.36 m (@1.2 feet) of limestone typical of the upper Critzer as seen at the Turkey Creek locality (BB-871 & 872); composed here of two beds [lower one is 0.24 m (0.8 feet) of light gray, dense, crystalline, blocky, crinoidal limestone and the upper one is 0.12 m (0.4 feet thick) of algal, crinoidal limestone, but with a distinctly rounded weathered appearance, contact with overlying unit (11) sharp.

Unit 11 - 0.15 m (@0.5 foot) of highly weathered, yellowish brown mudrock, contact with overlying unit (12) sharp.

Unit 12 - 1.8+ m (@6.0+ feet) of algal, crinoidal limestone like the upper bed in Unit 10; upper part is a whitish to light gray algal limestone typical of the Sniabar limestone, elevation of top of unit is @1013+'.

BB-877 = Flaggy limestone beds of upper Mound City Shale as seen at BB-876 and BB-843; in road ditch on North side of road at 935, no top or base, approx. 200 feet East of Center of South line, NW1/4, Sec. 6, T.26S., R.22E., Bourbon Co., Kansas.

BB-878 = Base of flaggy limestone beds in upper Mound City shale of Heckel & Watney (in press) manuscript at 970' with the Mound City and Guthrie Mountain mudrock sequence below similar to sequence at BB-876, in hillside on East side of road; looks very much like sequence at BB-844; near Center of West line, NW1/4, NE1/4, SW1/4, Sec. 20, T.25S., R.22E., Bourbon Co., Kansas.

PORTERVILLE QUADRANGLE

- B-114 = Upper Pleasanton through Hertha; measured and described by Jewett in 1935; what Jewett called Critzer we think are the "Bourbon Flags", either the Bourbon Flag facies of the Critzer as recognized in Heckel & Watney (in press) manuscript or similar beds in the upper Mound City shale, also of the Heckel & Watney (in press) manuscript; NW cor., Sec. 33, T.26S., R.22E., Bourbon Co., Kansas.
- B-170 = Quarry exposure of limestone identified as Bethany falls by Jewett in 1935, we believe it is Sniabar, NOT Bethany Falls limestone that is exposed in old quarry faces on both sides of North-South road, top of Hertha (Sniabar) Limestone inferred at an elevation of about 1005'; NE cor., Sec. 11, T.27S., R.21E., Bourbon Co., Kansas.
- B-209 = Cherty limestone (Sniabar) overlying fossiliferous mudrock; base of Critzer? Limestone at 1077' in road with Sniabar, not the top, at top of hill; Measured and described by Jewett in 1935; SW cor., Sec. 17, T.27S., R.22E., Bourbon Co., Kansas.
- B-210 = Sequence similar to that at B-209 (see site BB-796), cherty limestone identified as Schubert Creek (Sniabar); measured and described by Jewett in 1935; West of NE cor., Sec. 17, T.27S., R.22E., Bourbon Co., Kansas.
- B-211 = Pleasanton to Hertha (cherty limestone); sandstone in road and road ditch on West side of road ("Hepler type"); measured and described by Jewett in 1935; just South of the Center of East line, Sec. 24, T.27S., R.21E., Bourbon Co., Kansas.
- BB-748 = Swope Limestone in road; near Center of West line, NW1/4, SW1/4, SW1/4, Sec. 2, T.27S., R.21E., Bourbon Co., Kansas.
- BB-749 = Dennis Limestone (oolitic) in road just below elevation 1080'; near Center of West line, NW1/4, NW1/4, Sec. 2, T.27S., R.21E., Bourbon Co., Kansas.
- BB-750 = Hard, dense, oolitic limestone exposed in road ditch on West side of road, upper surface smooth with circular depressions up to a decimeter or two in diameter some of which are stained very dark reddish black, top of Dennis (Winterset) Limestone inferred at 1080', Cherryvale - Chanute interval above; near Center of East line, SE1/4, NE1/4, Sec. 34 T.26S., R.21E., Bourbon Co., Kansas.
- BB-751 = Dennis Limestone in road, looks similar to that seen at BB-750; near Center of North line, NW1/4, NE1/4, Sec. 35, T.26S., R.21E., Bourbon Co., Kansas.

- BB-752 = Limestone in road, stratigraphically, at least topographically, higher than limestones at BB-750 and BB-751, limestone (Drum?) in Cherryvale Shale; near Center of North line, NW1/4, NE1/4, NE1/4, Sec. 35, T.26S., R.21E., Bourbon Co., Kansas.
- BB-753 = Dennis Limestone in road and in pond bank of West side of road, appears similar to limestone at BB-750; near Center of East line, SE1/4, NE1/4, Sec. 35, T.26S., R.21E., Bourbon Co., Kansas.
- BB-754 = Swope Limestone in field on West side of road, looks similar to limestone at BB-750, but possibly lower stratigraphically; just South of the Center of East line, NE1/4, SE1/4, Sec. 35, T.26S., R.21E., Bourbon Co., Kansas.
- BB-755 = Swope Limestone in road like that seen at BB-754; near Center of East line, NE1/4, NE1/4, Sec. 2, T.27S., R.21E., Bourbon Co., Kansas.
- BB-756 = Swope Limestone like that at BB-755 in road and field West of road; near Center of East line, Sec. 2, T.27S., R. 21E., Bourbon Co., Kansas.
- BB-757 = Hertha (Sniabar) Limestone in road at grade change and in drainage East and South of road; near Center of East line, SE1/4, Sec. 14, T.27S., R.21E., Bourbon Co., Kansas.
- BB-758 = Near top of Hertha (Sniabar) Limestone in road at an elevation of about 1022'; near Center of East line, SE1/4, SE1/4, SE1/4, Sec. 14, T.27S., R.21E., Bourbon Co., Kansas.
- BB-759 = Black, cherty soil in road ditch on East side of road; near Center of West line, NW1/4, NW1/4, Sec. 24, T.27S., R.21E., Bourbon Co., Kansas.
- BB-760 = Limestone in road and piles of chert cobbles along edges of field on North side of road; near weathered top of limestone, probably Swope at approx. 1035'; near Center of South line, Sec. 23, T.27S., R.21E., Bourbon Co., Kansas.
- BB-761 = Hertha (Sniabar) Limestone in road, cherty soil on West side of road, possibly near the top of the limestone unit; near Center of East line, SE1/4, SE1/4, SE1/4, Sec. 22, T.27S., R.21E., Bourbon Co., Kansas.
- BB-762 = Large blocks of light colored, algal limestone on West side of road, not unlike the Sniabar limestone at the roadcut near Uniontown on Kansas Highway 3, top of two feet of Sniabar type limestone at approx. 998'; about 200 feet South of Center of East line, SE1/4, Sec. 22, T.27S., R.21E., Bourbon Co., Kansas.
- BB-763 = Possible top of Hertha (Sniabar) Limestone in road and in road ditch on the East side of road, extending back South from this site a few hundred feet; upper part of Sniabar limestone between 1000' and 1010';

about 200 feet North of Center of West line, NW1/4, SW1/4, Sec. 23, T.27S., R.21E., Bourbon Co., Kansas.

BB-764 = Same part of limestone (upper part of Sniabar) as exposed at BB-763; about 300 feet North of Center of West line, SW1/4, NW1/4, Sec. 23, T.27S., R.21E., Bourbon Co., Kansas.

BB-765 = Limestone exposed on West side of road just South of low water bridge, Hertha Limestone [lower Sniabar and upper Mound City of Heckel & Watney (in press) manuscript] at approx. 975'; slightly South of Center of East line, SE1/4, NE1/4, NE1/4, Sec. 22, T.27S., R.21E., Bourbon Co., Kansas.

BB-765A = Hertha [base of flaggy beds of upper Mound City Shale Member of Heckel & Watney (in press) manuscript Limestone at approx. 975' in road]; about 200 feet North of Center of West line, NW1/4, NW1/4, Sec. 23, T.27S., R.21E., Bourbon Co., Kansas.

BB-766 = Hertha (Sniabar) Limestone in road; about 300 feet South of NW cor., Sec. 23, T.27S., R.21E., Bourbon Co., Kansas.

BB-766A = Sniabar limestone in placed on West side of road; near Center of West line, SW1/4, SW1/4, SW1/4, Sec. 14, T.27S., R.21E., Bourbon Co., Kansas.

BB-767 = Hertha (Sniabar) Limestone rubble in fields on both sides of road; Center of North line, NE1/4, NW1/4, Sec. 23, T.27S., R.21E., Bourbon Co., Kansas.

BB-768 = Hertha (Sniabar) Limestone in drainage on both sides of road; Center of North line, Sec. 23, T.27S., R.21E., Bourbon Co., Kansas.

BB-768A = Contact of limestone at BB-769A and underlying mudrock [Mound City shale of Heckel & Watney (inpress) manuscript] at approx. 978' in stream cut on South side or road; about 100 feet East and 250 feet South of Center of North line, Sec. 23, T.27S., R.21E., Bourbon Co., Kansas.

BB-769 = Ledge of Hertha (Sniabar/upper Mound City shale) Limestone along drainage on North side of road; Center of South line, SW1/4, SE1/4, Sec. 14, T.27S., R.21E., Bourbon Co., Kansas.

BB-769A = Thin, regularly bedded, hard, dense, medium gray, fossiliferous (linoproductids conspicuous) limestone [upper Mound City Shale Member of Heckel & Watney (in press) manuscript], 10 to 15 feet thick in pond spillway on North side of road; about 100 feet West and 250 feet North of Center of South line, Sec. 14, T.27S., R.21E., Bourbon Co., Kansas.

BB-770 = Hertha (Sniabar) Limestone in road; Center of South line, SW1/4, SE1/4, SE1/4, Sec.14, T.27S., R.21E., Bourbon Co., Kansas.

- BB-771 = Chert gravels in road and in field northwest of Section corner; SE cor., Sec. 14, T.27S., R.21E., Bourbon Co., Kansas.
- BB-772 = Large blocks of Sniabar-like limestone like those at BB-762 in drainage; Center of West line, SW1/4, SW1/4, Sec. 14, T.27S., R.21E., Bourbon Co., Kansas.
- BB-773 = Hertha (Sniabar) Limestone exposed in Rock Creek on West side of road; about 250 feet South of Center of West line, SW1/4, Sec. 11, T.27S., R.21E., Bourbon Co., Kansas.
- BB-773A = Old quarry on West side of road in Sniabar limestone, massive to thin, wavy bedded, fine to medium crystalline, light gray limestone with a diverse productid brachiopod assemblage, blady algal fragments, syringoporoid and solitary corals, inferred based of Sniabar limestone at approx. 965'; about 250 feet West of Center of East line, SE1/4, Sec. 10, T.27S., R.21E., Neosho Co., Kansas.
- BB-774 = Thin to medium bedded limestone (Sniabar) exposed in road and in creek bank West of road, possibly the same limestone as at B-170; near Center of East line, SE1/4, Sec. 10, T.27S., R.21E., Bourbon Co., Kansas.
- BB-774A = Inferred top of Hertha (Sniabar) Limestone at approx. 990' in road; near Center of West line, NW1/4, NW1/4, SW1/4, Sec. 21, T.27S., R.21E., Bourbon Co., Kansas.
- BB-775 = Inferred top of Swope (Bethany Falls) Limestone at approx. 1030' in road; near Center of West line, SW1/4, NW1/4, NW1/4, Sec. 11, T.27S., R.21E., Bourbon Co., Kansas.
- BB-775A = Oolitic limestone in road ditch on East side of road, top of Swope (Bethany Falls) Limestone inferred at 1030'; near Center of West line, SW1/4, SW1/4, Sec. 2, T.27S., R.21E., Bourbon Co., Kansas.
- BB-776 = Limestone float in stream on both sides of Kansas Highway 39, stair step topography, suggestive of limestones, Sniabar at this elevation, top of Hertha Limestone inferred at @ 1000'; near Center of North line, NW1/4, NE1/4, Sec. 11, T.27S., R.21E., Bourbon Co., Kansas.
- BB-777 = Limestone, Hertha (Sniabar), in drainage on both sides of Kansas Highway 39; about 200 feet West of Center of North line, Sec. 12, T.27S., R.21E., Bourbon Co., Kansas.
- BB-778 = Limestone (Swope, Bethany Falls) cobbles in fields on both sides of road; NW cor., Sec. 18, T.27S., R.22E., Bourbon Co., Kansas.

- BB-779 = Hertha (mostly Sniabar like) Limestone and possible Swope (Middle Creek) in road at grade change, similar to that seen at site B-211; near Center of West line of Sec. 19, T.27S., R.22E., Bourbon Co., Kansas.
- BB-780 = Hertha (Sniabar) Limestone at a grade change in road, top inferred near 1085'; near Center of West line, NW1/4, NW1/4, SW1/4, Sec. 19, T.27S., R.22E., Bourbon Co., Kansas.
- BB-781 = Sandstone ("Hepler") caps this hill; near Center of South line, SW1/4, Sec. 20, T.27S., R.22E., Bourbon Co., Kansas.
- BB-782 = Near top of Hertha (Sniabar) Limestone in road and in road ditches on both sides of road at 1060'; near Center of West line, NW1/4, NW1/4, NW1/4, Sec. 8, T.27S., R.22E., Bourbon Co., Kansas.
- BB-783 = Swope (Bethany Falls) Limestone rubble in field East of road; NW cor., Sec. 5, T.27S., R.22E., Bourbon Co., Kansas.
- BB-784 = Large blocks of limestone like that at BB-783 (Bethany Falls) in road and road ditch South of road; near Center of North line, NW1/4, NE1/4, Sec. 5, T.27S., R.22E., Bourbon Co., Kansas.
- BB-785 = Swope (Bethany Falls) Limestone in field North of road; about 300 feet East of Center of North line, NW1/4, NE1/4, Sec. 5, T.27S., R.22E., Bourbon Co., Kansas.
- BB-786 = Swope (Bethany Falls) Limestone in field West of road; about 100 feet North of Center of East line, SE1/4, SE1/4, Sec. 32, T.26S., R.22E., Bourbon Co., Kansas.
- BB-787 = Hertha (Sniabar) Limestone in field West of road; about 150 feet North of Center of East line, NE1/4, SE1/4, Sec. 32, T.26S., R.22E., Bourbon Co., Kansas.
- BB-788 = Base of Critzer limestone at 1030' in drainage West of road; near Center of East line, SE1/4, NE1/4, Sec. 32, T.26S., R.22E., Bourbon Co., Kansas.
- BB-789 = Hertha (Sniabar) Limestone in drainage West of road; about 200 feet North of Center of East line, NE1/4, Sec. 32, T.26S., R.22E., Bourbon Co., Kansas.
- BB-790 = Base of Swope (Middle Creek) Limestone exposed on both sides of drainage at an elevation of about 1050'; near Center, SE1/4, NW1/4, NE1/4, Sec. 32, T.26S., R.22E., Bourbon Co., Kansas.
- BB-791 = Near, or part of that described for, site B-114; Critzer limestone "Bourbon Flag" (Hertha according to B-114); near Center of North line, NE1/4, NE1/4, NW1/4, Sec. 33, T.26S., R.22E., Bourbon Co., Kansas.

- BB-792 = Near, or part of that described for, site B-114; mostly limestone from here back to BB-791, top of Hertha (Sniabar) Limestone at @1060' and base of Critzer limestone at 1030'; near Center of North line, NE1/4, NW1/4, Sec. 33, T.26S., R.22E., Bourbon Co., Kansas.
- BB-793 = Limestone, interpreted as beds of upper Swope (Bethany Falls) Limestone; about 500 feet South of Center of West line, Sec. 4, T.27S., R.22E., Bourbon Co., Kansas.
- BB-794 = Swope (Bethany Falls) Limestone in field East of road; near Center of West line, NW1/4, NW1/4, NW1/4, Sec. 9, T.27S., R.22E., Bourbon Co., Kansas.
- BB-795 = Hertha (Sniabar) Limestone exposed in West facing gully on East side of road, top of limestone at approx. 1075', base near 1060', thus approx. 15' thick; see Heckel & Watney (in press) manuscript, figure 3; base of Swope (Middle Creek) Limestone inferred at @1085'; near Center of West line, SW1/4, NW1/4, SW1/4, Sec. 9, T.27S., R.22E., Bourbon Co., Kansas.
- BB-796 = Top of Hertha (Sniabar) Limestone at @ 1075', with medium to dark gray, highly fossiliferous mudrock below in road ditch on South side of road; Sniabar limestone in road and road ditches on both sides of road to the top of hill; about 150 feet West of NE cor., Sec. 17, T.27S., R.22E., Bourbon Co., Kansas.
- BB-797 = Base of two very thin limestone beds separated by very thin mudrock, limestone at 1072' in drainage on Southeast side of road with top of Hertha (Sniabar) Limestone in road at @ 1080'; about 500 feet North and 300 feet East of Center of South line, SE1/4, Sec. 18, T.27S., R.22E., Bourbon Co., Kansas.
- BB-798 = Sandstone (?) in road; near Center of North line, Sec. 24, T.27S., R.21E., Bourbon Co., Kansas.
- BB-799 = Sandstone (?) in road and sandy type soil from BB-798 East to Section corner in stream bank; about 500 feet West of Center of North line, Sec. 24, T.27S., R.21E., Bourbon Co., Kansas.
- BB-874 = Black, fissile shale in road ditch on North side of road at approx. 1035' equals basal bed of Mound City Shale Member of Heckel & Watney (in press) manuscript, figure 3; 0.2 mile East of SW cor., Sec. 9, T.27S., R.22E., Bourbon Co., Kansas.

PRESCOTT QUADRANGLE

- B-198 = Pawnee (Laberdie) Limestone in quarry as measured and described by Ives in 1952; it is the Higginsville limestone, the same site as L-972.
- B-199 = Labette Shale; measured and described by Gordon & Jewett in 1939; Sec. 26, T.23S., R.25E., Bourbon Co., Kansas; inaccessible now; compare with BB-640.
- B-202 = Upper Fort Scott through Labette Shale to the Pawnee (Myrick Station) Limestone, along the Linn-Bourbon county line; measured and described by Jewett, no date; NE cor., Sec. 21, T.23S., R.25E., Bourbon Co., Kansas; compare with BB-643.
- L-972 = Inactive quarry just West of Barnesville Cemetery; Higginsville limestone (17') and Little Osage shale, good Houx limestone exposed in floor of east half of quarry; tabular and small low domical chaetetids in upper Higginsville; same as Bourbon County Section B-198; near Center, NW1/4, NW1/4, NE1/4, Sec. 33, T.23S., R.25E., Bourbon Co., Kansas.
- BB-216 = Fort Scott Limestone in road cut; base of Fort Scott (Blackjack Creek) Limestone at 800'; Blackjack Creek 5' to 6' thick, Little Osage shale 7' to 8' thick, with only 3.0' of Higginsville exposed; at L-972/B-198 the Higginsville is 17' thick; near Center, NE1/4, Sec. 33, T.23S., R.25E., Bourbon Co., Kansas.
- BB-226 = Quarry in Pawnee, Laberdie, Limestone with chaetetids having growth forms like those seen in the Myrick Station (tabular to dish-shaped); tabular forms in the upper 1 dm of exposed limestone, probably Laberdie with Anna shale exposed in floor of quarry though it could be the Mine Creek shale; just West of Center of East line, Sec. 26, T.23S., R.24E., Bourbon Co., Kansas.
- BB-226A = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at @810' on both sides of road; @150' South of Center of East line, SE1/4, NE1/4, of Sec. 26, T.23S., R.24E., Bourbon Co., Kansas.
- BB-226B = Top of Pawnee (Laberdie) Limestone at @840' in just West of road; near Center of East line, NE1/4, SE1/4, Sec. 26, T.23S., R.24E., Bourbon Co., Kansas.
- BB-226C = Pawnee (Laberdie) Limestone at 790 feet in low water crossing; first observed 30 October 2001, previously underwater; near Center West 1/2, NE1/4, Sec. 26, T.23S., R.24E., Bourbon Co., Kansas
- BB-580 = Probably Anna shale through Laberdie limestone along old U. S. Highway 69; near Center of East line, SE1/4, NE1/4, SE1/4, Sec. 13, T.23S., R.24E., Linn Co., Kansas.

- BB-580A = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at @820' along West side of old U.S. Highway 69; near Center of East line, SE1/4, SE1/4, NE1/4, Sec. 13, T.23S., R.24E., Linn Co., Kansas.
- BB-580B = Top of Pawnee (Laberdie) Limestone at @850' at road junction along old U.S. Highway 69; near Center of East line, SE1/4, Sec. 13, T.23S., R.24E., Linn Co., Kansas.
- BB-581 = Position of new U. S. Highway 69; near Center of South line, NW1/4, Sec. 19, T.23S., R.25E., Bourbon Co., Kansas.
- BB-582 = Twelve to fifteen feet of Higginsville limestone in East bank of Little Osage River at bridge; near SW cor., Sec. 29, T.23S., R.24E., Bourbon Co., Kansas.
- BB-629 = Silty, sandy mudrocks exposed in drainage North of road at 840' probably Bandera Shale; just North of Center of South line, SE1/4, SW1/4, NW1/4, Sec. 23, T.23S., R.24E., Bourbon Co., Kansas.
- BB-630 = Limestone in road, basal part of Altamont (Worland) Limestone @ 868'; @100' West of Center of South line, SW1/4, SE1/4, NW1/4, Sec. 23, T.23S., R.24E., Bourbon Co., Kansas.
- BB-630A = Base of Altamont Limestone at @865' at top of hill in road; @300' East of BB-630 along South line, SW1/4, SE1/4, NW1/4, Sec. 23, T.23S., R.24E., Bourbon Co., Kansas.
- BB-631 = Hard sandstone in road at 830'; top of Pawnee (Laberdie) Limestone at @830' in road ditch on North side of road; @100' East of Center of South line, SE1/4, NE1/4, Sec.23, T.23S., R.24E., Bourbon Co., Kansas.
- BB-631A = Top of hard sandstone (Bandera) at 838' in road; @500' West of BB-631, near Center of South line, SW1/4, SE1/4, NE1/4, Sec. 23, T.23S., R.24E., Bourbon Co., Kansas.
- BB-632 = Top of Pawnee (Laberdie) Limestone near 822' at top of hill, at least 12 feet of Pawnee Limestone, but this is much thinner than it is at BB-634; @300' South of Center of East line, NE1/4, Sec. 23, T.23S., R.24E., Bourbon Co., Kansas.
- BB-632A = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 810' East of road, Myrick Station limestone is much thinner (@1 meter) here than at BB-634; @500' South of Center of East line, NE1/4, Sec. 23, T.23S., R.24E., Bourbon Co., Kansas.

- BB-633 = Limestone, probably Pawnee, near top of hill just below Fairview Cemetery; near Center, SE1/4, SE1/4, NE1/4, Sec. 24, T.23S., R.24E., Bourbon Co., Kansas.
- BB-634 = Location of new U.S. Highway 69, good exposure of Pawnee Limestone, approximately 30', each member @ 10' thick; at and near the top of the Myrick Station limestone is a thin @3cm of black chert; in the upper 10 to 15 cm of the Laberdie limestone small, cm sized, ironstone clasts are weathered in relief, in the upper Laberdie small domical and some tabular chaetetids occur in an algal, skeletal, clayey, carbonate mudstone with in situ productids and thin discontinuous layers of echinoid plates and spines, some of the skeletal debris and tabular chaetetids are partially to completely silicified; @200' North of Center, SW1/4, Sec. 18, T.23S., R.25E., Linn Co., Kansas. NOTE: new highway is not on topo sheet, thus elevations at top and base of Pawnee were not obtained.
- BB-635 = Top of sandstone exposed along road near 850', probably in the Labette Shale; near Center of South line, SW1/4, NE1/4, and Center of South line, NE1/4, Sec. 19, T.23S., R.25E., Bourbon Co., Kansas.
- BB-636 = Top of Fort Scott (Higginsville) Limestone near 810' in road ditch on North side of road; @200' West of Center of South line, SW1/4, Sec. 28, T.23S., R.25E., Bourbon Co., Kansas.
- BB-637 = Base of Fort Scott (Blackjack Creek) Limestone at @789' in road; SE cor., Sec. 27, T.23S., R.25E., Bourbon Co., Kansas.
- BB-639 = Top of Fort Scott (Higginsville) Limestone at @800' on South side of road; near Center of South line, Sec. 27, T.23S., R.25E., Bourbon Co., Kansas.
- BB-640 = Sandstone in drainage on North side of road, possibly Englevale in Labette Shale; area of measured section B-199; near Center of South line, SW1/4, SW1/4, NW1/4, Sec. 26, T.23S., R.25E., Bourbon Co., Kansas.
- BB-641 = Top of Fort Scott (Higginsville) Limestone at @790' in ditch on East side of road; near SW cor., Sec. 23, T.23S., R.25E., Bourbon Co., Kansas.
- BB-642 = Limestone exposed below water level??, probably Higginsville limestone; low water bridge @100' West of NE cor., Sec. 21, T.23S., R.24E., Bourbon Co., Kansas.
- BB-643 = Thin to thick bedded, well weathered, Myrick Station limestone with Anna shale and Labette Shale exposed below in bluff on South side of Indian Creek and Laberdie limestone exposed above into fields West of road, small domical (1-2 dm) chaetetids occur as float from the Laberdie limestone; top of Anna shale/base of Pawnee (Myrick Station) Limestone at 820' in road cut on southwest side of road; @100' West and

- @100' North of Center of East line, NE1/4, NE1/4, Sec. 21, T.23S., R.25E., Bourbon Co., Kansas.
- BB-644 = Upper Pawnee (Laberdie) Limestone, not top, at @835' in road and field West of road; near Center of East line, SE1/4, NE1/4, NE1/4, Sec. 21, T.23S., R.25E., Bourbon Co., Kansas.
- BB-645 = Limestone rubble in stream and stream on West side of road, good Myrick Station with black chert in upper part and Anna shale in stream bed, top of Anna shale/base of Pawnee (Myrick Station) Limestone at 845'; terrain between BB-643 and here is limestone; @100' North of Center of East line, SE1/4, SE1/4, Sec. 21, T.23S., R.25E., Bourbon Co., Kansas.
- BB-646 = Limestone rubble in stream South of road; @100' West of Center of North line, NE1/4, SW1/4, Sec. 28, T.23S., R.25E., Bourbon Co., Kansas.
- BB-647 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone in road ditch on South side of road at 840'; @200' East of Center of South line, NE1/4, Sec. 29, T.23S., R.25E., Bourbon Co., Kansas.
- BB-648 = Limestone in road, top at 840', looks like Myrick Station, but does not fit, probably the thin brown limestone in the Labette Shale, @100' West of Center of South line, NW1/4, Sec. 29, T.23S., R.25E., Bourbon Co., Kansas.
- BB-649 = Sandstone in road and field East of road, probably in the Labette Shale; @300' North of Center of West line, NW1/4, Sec. 29, T.23S., R.25E., Bourbon Co., Kansas.
- BB-650 = Thin bedded, platy, silty mudrock in road ditch on North side of road, probably Labette Shale; @100' West of Center of South line, SE1/4, Sec. 20, T.23S., R.25E., Bourbon Co., Kansas.
- BB-664 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone between 820' to 830' based on Myrick Station limestone and chaetetid float in fields and road ditch; near Center of South line, SW1/4, NE1/4, Sec. 24, T.23S., R.24E., Bourbon Co., Kansas.
- BB-665 = Thick, cross bedded sandstone in East bank of stream North of road at 800', probably in Labette Shale; @300' North and 200' East of Center, Sec. 24, T.23S., R.24E., Bourbon Co., Kansas.
- BB-666 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone estimated at 810' based on Myrick Station limestone float in fields on both sides of road; @200' North of Center of West line, SW1/4, Sec. 13, T.23S., R.24E., Linn Co., Kansas.

- BB-667 = Base of Altamont Limestone at 860' in road ditch and field North of road at top of hill; @200' West of Center of North line, SE1/4, Sec. 23, T.23S., R.24E., Bourbon Co., Kansas.
- BB-680 = Top of Fort Scott (Higginsville) Limestone at @810' in road, chaetetids as at L-972 in Higginsville; @100' East of Center of South line, SE1/4, Sec. 23, T.23S., R.25E., Bourbon Co., Kansas.
- BB-682 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone estimated at 840' based on Myrick Station limestone float in road; @450' East of NW cor., Sec. 23, T.23S., R.25E. on Bourbon-Linn Co. line, Kansas.
- BB-683 = Appears to be the base of Fort Scott (Blackjack Creek) Limestone at 820' with Excello shale below in road ditch on North side of road, but it does not fit with other data, it is possible the lower Higginsville limestone with the Little Osage shale below; near Center of South line, SE1/4, SE1/4, Sec. 16, T.23S., R.25E. on Bourbon-Linn Co. line in Linn Co., Kansas.
- BB-684 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at @840' in road ditch on North side of road, black chert at top of Myrick Station limestone; near Center of South line, SE1/4, SE1/4, Sec. 16, T.23S., R.25E. on Bourbon-Linn Co. line in Linn Co., Kansas.
- BB-685 = Laberdie limestone exposed in road ditch on North side of road at 857'; @150' East of Center of South line, Sec. 16, T.23S., R.25E., on Bourbon-Linn Co. line in Linn Co., Kansas.
- BB-686 = Top of Fort Scott (Higginsville) Limestone inferred at @795' in drainage South of road; near Center of North line, NW1/4, NE1/4, SE1/4, Sec. 30, T.23S., R.25E., Bourbon Co., Kansas.
- BB-687 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone in road and road ditch on South side of road at 855'; near Center of North line, NE1/4, NW1/4, NW1/4, Sec. 27, T.23S., R.25E. on Bourbon Co., Kansas.
- BB-688 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 850' in road ditch on West side of road; near Center of East line, NE1/4, NE1/4, SE1/4, Sec. 21, T.23S., R.25E. on Bourbon Co., Kansas.
- BB-689 = Top of Pawnee (Laberdie) Limestone at @875' in road ditch on North side of road, possibly an East dip here making the unit appear thicker than "normal"; near SE cor., Sec. 17, T.23S., R.25E. on Bourbon-Linn Co line in Linn Co., Kansas.
- BB-690 = Myrick Station limestone in road ditch on West side of road and in road at @870', top of Anna shale/base of Pawnee (Myrick Station) Limestone inferred to be at 860', growth forms of silicified chaetetids in float suggests Laberdie limestone is present above Myrick Station limestone; @150' South

of Center of East line, SE1/4, NE1/4, Sec. 19, T.23S., R.25E., Bourbon Co., Kansas.

BB-691 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone inferred at @850' based on blocks of Myrick Station limestone in road ditch on South side of road; near Center of North line, NW1/4, NW1/4, Sec. 29, T.23S., R.25E., Bourbon Co., Kansas.

BB-692 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone inferred at @850' based on Myrick Station limestone float in road across from house on North side of road; @250' East of Center of South line, Sec. 20, T.23S., R.25E., Bourbon Co., Kansas.

BB-693 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 845', Myrick Station limestone in road and Anna shale on South side of road; near NE cor., Sec. 29, T.23S., R.25E., Bourbon Co., Kansas.

BB-694 = Laberdie limestone in drainage on North side of road at 862', probably not the top of the Pawnee Limestone; near Center of South line, SE1/4, SE1/4, SW1/4, Sec. 21, T.23S., R.25E., Bourbon Co., Kansas.

RICHARDS QUADRANGLE

B-43 = Same as B-45; sequence from mudrock below Mulky Coal to the base of the Pawnee Limestone near the SE cor., NE1/4, SE1/4, Sec. 2., T.24S., R.25E., Bourbon County, Kansas; measured and described by Jewett in 1939, inaccessible now; based on Jewett's section the Labette Shale is over 42' thick and the Fort Scott Limestone is over 21' thick, we say "over" because in both units there are covered intervals for which no thickness is given.

BB-209 = Quarry in Higginsville limestone, 9' to 15' of limestone at Hammond/Richards Quad. boundary; just North of Center of South line, SE1/4, Sec. 11, T.25S., R.25E., Bourbon Co., Kansas; top of Fort Scott (Higginsville) Limestone at 865' in quarry face; 15' of limestone.

BB-210 = Top of Fort Scott (Higginsville) Limestone at 855', 9' to 10' of Higginsville limestone like at BB-294; near Center of South line, SE1/4, SE1/4, Sec. 2, T.24S., R.25E., Bourbon Co., Kansas.

BB-211 = Dark gray mudrock to black, platy/fissile shale just West of drainage; near Center of East line, SE1/4, SW1/4, NW1/4, Sec. 1. T.24S., R.25E., Bourbon Co., Kansas.

BB-212 = Base of Fort Scott (Blackjack Creek) Limestone at 840'; near Center of West line, Sec. 1, T.24S., R.25E., Bourbon Co., Kansas.

BB-213 = Top of Fort Scott (Higginsville) Limestone at 865'; near Center of West line, SW1/4, SW1/4, SW1/4, Sec. 1, T.24S., R.25E., Bourbon Co., Kansas.

BB-214 = Exposure from Lagonda to Mulky Coal to Excello shale to Blackjack Creek limestone, to Little Osage shale to Higginsville limestone; see sections B-43 and B-45; base of Fort Scott (Blackjack Creek) Limestone at 840'; near Center of West line, SW1/4, NW1/4, Sec. 1. T.24S., R.25E., Bourbon Co., Kansas.

BB-283 = Limestone in road ditch on West side of road @ 150' North of section corner, top at 795', possibly Verdigris Limestone; interesting joint pattern, three sets oriented as follows: N. 12 degrees W., N. 43 degrees W., and S. 45 degrees W.; see Section 49 of Jewett, 1945; near Center of west line, NW1/4, NW1/4, NW1/4, Sec. 13, T.25S., R.25E., Bourbon Co., Kansas.

BB-288 = Base of Fort Scott (Blackjack Creek) Limestone at 860' in road; just South of Center of East line, SE1/4, NE1/4, NE1/4, Sec. 19, T.36N., R.33W., Vernon Co., Missouri.

BB-289 = Higginsville limestone in road ditch on North side of road; near Center of South line, SE1/4, SW1/4, Sec. 7, T.36N., R.33W., Vernon Co., Missouri.

BB-290 = Base of Higginsville limestone at @ 820'; if Higginsville limestone is 10' thick then the top of the Fort Scott (Higginsville) Limestone is at 830'; if 15' thick then the top is at 835'; near Center of North line, NE1/4, Sec. 36, T.24S. R.25E., Bourbon Co., Kansas.

BB-291 = Attitude of the top of the Blackjack Creek limestone based on four points; (a), (b), (c) and (d); at (a) top is at 826', at (b) it is at 816'. at (c) it is at 814', and at (d) it is at 810'; thus there is a dip of 12' in 700' laterally to the SSW; if the Blackjack Creek is 5.0' thick then the base of the Fort Scott Limestone is at 821' at (a), 811' at (b), 809' at (c), and 805' at (d); the top of the Blackjack Creek limestone here is very irregular and appears pedogenic in places like at BB-15 and L-928; general location is near Center, NE1/4, NE1/4, Sec. 35, T.24S., R.25E., Bourbon Co., Kansas; location of points (a), (b), (c), and (d) are as follows: (a) = near Center of West line, NE1/4, SE1/4, SE1/4, Sec. 26, T.24S., R.25E., Bourbon Co., Kansas; (b) = near Center, SE1/4, SE1/4, Sec. 26, T.24S., R.25E., Bourbon Co., Kansas; (c) = near Center of North line, NE1/4, NE1/4, Sec. 35, T.24S., R.25E., Bourbon Co., Kansas; and (d) = near Center, NE1/4, NE1/4, NE1/4, Sec. 35, T.24S., R.25E., Bourbon Co., Kansas.

BB-292 = Top of Fort Scott (Higginsville) Limestone at 795' in the West bank of Shiloh Creek South of the road, good point; 13.5' of limestone with small, low domical chaetetids in upper part, @ 3.0' below top; near Center of North line, NW1/4, NE1/4, NE1/4, Sec. 2, T.25S., R.25E., Bourbon Co., Kansas.

BB-301 = Sandstone in Lagonda Formation along both sides of road; @ 0.375 mile North along Center line, Sec. 20, T.37N., R.33W., Vernon Co., Missouri.

BB-302 = Fort Scott (Higginsville) Limestone in field South of the road; probable top of Fort Scott (Higginsville) Limestone at 890'; along South line, SW1/4, SE1/4, SW1/4, Sec. 20, T.37N., R.33W., Vernon Co., Missouri.

BB-306 = Top of Fort Scott (Higginsville) Limestone at 868' with chaetetids; SE cor., Sec. 11, T.24S., R.25E. Bourbon Co., Kansas and along North line, NW1/4, NE1/4, NW1/4, Sec. 29, T.37N., R.33W., Vernon Co., Missouri; GOOD POINT.

BB-317 = Possible top of Anna shale/base of Pawnee (Myrick Station) Limestone at 905' in road and ditch; near Center of South line, SW1/4, Sec. 13, T.24S., R.25E., Bourbon Co., Kansas.

BB-318 = Possible top of Anna shale/base of Pawnee (Myrick Station) Limestone at 910' in road and ditch; near Center of West line, NW1/4, NW1/4, Sec. 24, T.24S., R.25E., Bourbon Co., Kansas.

BB-319 = Top of Fort Scott (Higginsville) Limestone at 852' in drainage on west side of road; just South of Center of East line, SE1/4, Sec. 23, T.24S., R.25E.,

- Bourbon Co., Kansas; top of limestone has small domical chaetetids "growing" on small topographic "highs" of algal mudstone.
- BB-320 = Black shale (@ 1 dm) with thin bed (1 dm) of "rotten" coal underlain by 2.0' of gray mudrock in drainage South of road; near Center of North line, NE1/4, NE1/4, NE1/4, Sec. 26, T.24S., R.25E., Bourbon Co., Kansas; 0.15 mi. West, Higginsville is in South road ditch and drainage to South; top of Fort Scott (Higginsville) Limestone @ 850'.
- BB-320A = Lower beds of Higginsville Limestone Member and upper beds of Little Osage Shale Member well exposed in drainage South of road; just South of North line, NW1/4, NE1/4, NE1/4, Sec. 26, T.24S., R.25E., Bourbon Co., Kansas.
- BB-321 = Sequence of gray mudrock to thin, laterally discontinuous coal and black, fissile shale below an algal limestone (Higginsville) in road ditch on both sides of road; top of Fort Scott (Higginsville) Limestone at 860'; near Center of North line, NE1/4, NW1/4, NW1/4, Sec. 25, T.24S., R.25E., Bourbon Co., Kansas.
- BB-322 = Sandstone in Labette Shale; near Center of North line, NW1/4, NE1/4, NW1/4, Sec. 25, T.24S., R.25E., Bourbon Co., Kansas.
- BB-323 = Top of Anna shale/base of Pawnee (Myrick Station) Limestone at 915' on South side of road; near Center of North line, SE1/4, SE1/4, Sec. 6, T.36N., R.33W., Vernon Co., Missouri.
- BB-324 = Limestone within Lagonda Formation at 830' in road; just West, @ 0.05 mile, of Center of South line, Sec. 18, T.36N. R.33W., Vernon Co., Missouri.
- BB-325 = Top of Fort Scott (Higginsville) Limestone at 815' in field West of road; good point; small domical chaetetid in top of limestone; near Center of East line, NE1/4, NE1/4, NE1/4, Sec. 1, T.25S., R.25E., Bourbon Co., Kansas.
- BB-326 = Top of Fort Scott (Higginsville) Limestone at 818' in field South of road; just East of Center of North line, NE1/4, NE1/4, Sec. 1, T.25S., R.25E., Bourbon Co., Kansas; good point.
- BB-327 = Top of Fort Scott (Higginsville) Limestone at 812' in road ditch on both sides of road; near Center of South line, SE1/4, Sec. 36, T.24S., R.25E., Bourbon Co., Kansas.
- BB-335 = Top of Fort Scott (Higginsville) Limestone at @ 830' in a gully in a field South of road; poorly exposed, highly weathered; near Center of North line, NW1/4, NE1/4, NE1/4, Sec. 35, T.24S., R.25E., Bourbon Co., Kansas.

BB-381 = Top of limestone (possibly Verdigris), as at BB-283, at 788' in field North of road; just North of Center of East line, SE1/4, SE1/4, Sec. 11, T.25S., R.25E., Bourbon Co., Kansas.

UNIONTOWN QUADRANGLE

- B-6 = Lenapah and beds above according to Jewett who measured and described this exposure in 1938; Sec. 23, T.24S., R.22E., Bourbon Co., Kansas, according to Heckel, 1983 this is probably in T.25S.; compare with BB-590 and BB-591.
- B-52 = Mudrock sequence on hill South of Uniontown, Kansas; measured and described by Jewett, no date; just North of Center, sec. 34, T.25S., R.22E., Bourbon Co., Kansas; compare with BB-733.
- B-53 = Hertha Limestone South of the hill South of Uniontown, Kansas; measured and described by Jewett in 1936; NE cor., Sec. 34, T.25S., R.22E., Bourbon Co., Kansas; compare with BB-733.
- B-54 = Interval from below the Hertha Limestone to the Middle Creek limestone of the Swope Limestone; measured and described by Jewett in 1931; just North of Center, Sec. 34, T.25S., R.22E., Bourbon Co., Kansas; compare with BB-733.
- B-55 = Exposure measured and described by Jewett in 1940; near Center SE1/4, SE1/4, Sec. 36, T.25S., R.22E., Bourbon Co., Kansas; now inaccessible, near BB-483 and BB-484.
- B-60 = Interval below, through, and above "Hepler" sandstone; measured and described by Jewett in 1935; near Center of South line, SE1/4, SW1/4, Sec. 15, T.25S., R.22E., Bourbon Co., Kansas; now inaccessible, near BB-592.
- B-69 = Altamont (Worland) Limestone to Lenapah Limestone; measured and described by Jewett in 1941; Sec. 36, T.25S., R.22E., Bourbon Co., Kansas; now inaccessible.
- B-70 = Lenapah Limestone and beds above; measured and described by Jewett, in 1941; near Center of South line, SW1/4, SE1/4, Sec. 23, T.25S., R.22E., Bourbon Co., Kansas; compare with BB-579.
- B-70B = Same as B-6.
- B-72 = Lenapah Limestone in Baptist pasture; measured and described by Jewett in 1941; near Center N1/2, NW1/4, Sec. 26, T.25S., R.22E., Bourbon Co., Kansas; now inaccessible.
- B-73 = Altamont Limestone; measured and described by Jewett in 1941; along railroad in NE1/4, Sec. 25, T.25S., R.22E. and NW1/4, Sec. 30, T.25S., R.23E., and in quarry in SE1/4, Sec. 24, T.25S., R.22E., Bourbon Co., Kansas; compare with BB-234 and BB-503.
- B-74 = Lenapah Limestone and beds above and below; measured and described by

Jewett in 1935; Sec. 23, T.25S., R.22E., Bourbon Co., Kansas; now inaccessible.

B-75 = same as B-6, B-70B, and BB-591.

B-76 = Same as B-70 and BB-579.

B-77 = Hertha Limestone West and South of Uniontown, Kansas; measured and described by Jewett, no date; near Center of North line NE1/4, NW1/4, Sec. 22, T.25S., R.22E., Bourbon Co., Kansas; compare with BB-738.

B-78 = Same as B-6, B-70B, B-75, and BB-591.

B-79 = Same as for B-60.

B-80 = Hertha Limestone; measured and described by Jewett in 1931; transect from northwest to southeast along S1/2, NW1/4, Sec. 21, T.25S., R.22E., Bourbon Co., Kansas; compare with BB-738.

B-81 = Hertha Limestone on hill West of Uniontown, Kansas; measured and described by Jewett in 1938; Center South line, Sec. 21, T.5S., R.23E., Bourbon Co., Kansas; compare with BB-738.

B-82 = Bandera Shale and Altamont Limestone according to Jewett who measured and described this sequence in 1938; Altamont probably present at the top of the hill, with top near 900' and base near 895' in road; near Center of South line of SW1/4, SW1/4, SW1/4, Sec. 34, T.25S., R.23E., Bourbon Co., Kansas.

B-83 = Altamont (part of Lake Neosho and Worland) Limestone with shale (3') and limestone above; measured and described by Jewett in 1940; Center SE1/4, SE1/4, Sec. 31, T.25S., R.23E., Bourbon Co., Kansas; compare with BB-468.

B-84 = Lenapah Limestone and several feet of shale and sandstone above; measured and described by Jewett in 1940; Center SW1/4, SW1/4, Sec. 31, T.25S., R.23E., Bourbon Co., Kansas; same as BB-484?

B-85 = Bandera Shale about 0.25 mile West of Bandera quarries; this sequence and those at the Bandera quarries constitute the type exposure for the Bandera according to Jewett; measured and described by Jewett in 1940; compare with BB-508 and BB-509.

B-86 = Altamont Limestone with thick shale section above approximately 0.5 mile West of this site; measured and describe by Jewett in 1938; NE cor., Sec. 20, T.25S., R.23E., Bourbon Co., Kansas; compare with BB-497.

B-87 = Upper beds of Bandera Shale and Altamont Limestone just East of where

Marmaton River and railroad swing North close to the highway; measured and described by Jewett in 1938; SE cor., (we think it is at SW cor.) Sec. 19, T.25S., R.23E., Bourbon Co., Kansas; see BB-504 one mile West of supposed location of B-87.

- B-93 = Approximately 23 feet of Bandera sandstone, 20 feet or more below the Altamont Limestone; measured and described by Jewett in 1940; near Center of W1/2, Sec. 29, T.25S., R.23E., Bourbon Co., Kansas; area of BB-493.
- B-118 = Top of Altamont (Worland) Limestone at 890' where it forms bed of stream East of road, base of Altamont not exposed, Jewett's measured and described section, no date, but probably in the 1930's is still exposed and accurate; near SE cor., Sec. 14, T.26S., R.22E., Bourbon Co., Kansas.
- B-119 = Sandstone, probably Hepler, in road from road intersection to top of hill to the East, like that exposed at BB-725, East from here to BB-726 this sandstone is exposed in road; measured and described by Jewett in 1935; NW cor., Sec. 12, T.26S., R.22E., Bourbon Co., Kansas.
- B-120 = Lenapah Limestone and Memorial Shale; measured and described by Jewett, no date; from West of the Center of Sec. 11 to the Center of the West line, Sec. 11, T.26S., R.22E., Bourbon Co., Kansas; now inaccessible.
- B-121 = Lenapah (sandy Idenbro) Limestone and overlying Memorial Shale with Hepler Sandstone; measured and described by Jewett, no date; near Center, NW1/4, Sec. 11, T.26S., R.22E., Bourbon Co., Kansas; now inaccessible.
- B-126 = Base of Hertha (Critzler limestone) interval at 1010'; top of thin limestone, possibly Lenapah, at 990'; roadcut at corner where road turns South on West side and in road ditch on both sides at the turn; measured and described by Jewett in 1935; SE cor., Sec. 4, T.26S., R.22E., Bourbon Co., Kansas.
- B-127 = Lenapah Limestone and basal Missourian sandstone, Hepler; measured and describe by Jewett in 1935; NW cor., Sec. 1, T.26S., R.22E., Bourbon Co., Kansas; compare with BB-478 and BB-479.
- B-128 = Hertha (Schubert Creek) to Swope (Bethany Falls) Limestone; measured and describe by Jewett, no date; transect from West edge of SW1/4, NE1/4 across Center of section to near Center of NE1/4, SW1/4, Sec. 1, T.26S., R.22E., Bourbon Co., Kansas; now inaccessible.
- B-131 = Altamont Limestone to a sandstone unit 32+ feet above top of Altamont; measured and described by Jewett, no date; just North of Center of S1/2, Sec. 19, T.26S., R.22E., Bourbon Co., Kansas; compare with BB-439 and BB-440.

- B-134 = Approximately 8 feet composed of two limestones with a shale between; measured and describe by Jewett in 1935; near SW cor., Sec. 9, T.26S., R.23E., Bourbon Co., Kansas; compare with BB-443.
- B-204 = Altamont and Lenapah limestones with thin, @ 2.5 feet, of shale between; measured and described by Jewett in 1941; Center South line, Sec. 36, T.25S., R.22E., Bourbon Co., Kansas; compare with BB-480.
- BB-234 = Top of Altamont (Worland) Limestone at 870'; near Center of South line, SE1/4, SE1/4, Sec. 24, T.25S., R.22E., Bourbon Co., Kansas.
- BB-262 = Sandstone in Bandera Shale at 949' in road; near Center of South line, SW1/4, Sec. 22, T.26S., R.23E., Bourbon Co., Kansas.
- BB-263 = Sandstone in Bandera Shale at 949' in road; near Center of West line, SW1/4, Sec. 22, T.26S., R.23E., Bourbon Co., Kansas; better outcrop than at BB-262;
- BB-264 = Possibly top of Pawnee (Laberdie) Limestone at 892' in road; just South of Center of West line, Sec. 15, T.26S., R.23E., Bourbon Co., Kansas.
- BB-265 = Top of Pawnee (Laberdie) Limestone at 890' in road; @ 0.05 mile North of Center of West line, Sec. 15, T.26S., R.23E., Bourbon Co., Kansas; appear to be moving down the dip slope of the Pawnee to the North from BB-264 to BB-265 and on to old quarry at BB-266.
- BB-266 = Old quarry in upper Pawnee (Laberdie) Limestone; limestone also exposed on both sides of North-South road; near Center of West line, NW1/4, NW1/4, Sec. 15, T.26S., R.23E., Bourbon Co., Kansas; what appears to be typical Myrick Station limestone (hard, dense, gray, blocky and weathering reddish brown) is exposed low in the road ditch on the West side of the road; possible top of Anna shale; base of Pawnee (Myrick Station) Limestone at 850'.
- BB-267 = Pawnee (Laberdie) Limestone in road cut on both sides of road; near Center of West line, NW1/4, SW1/4, SW1/4, Sec. 10, T.26S., R.23E., Bourbon Co., Kansas.
- BB-268 = Old quarry in Pawnee (Laberdie) Limestone on West side of road; algal and chaetetid (tabular to low domical) reefal carbonates in upper part of Laberdie; possibly another quarry on the East side of the road; just West of Center of East line, NE1/4, SE1/4, Sec. 9, T.26S., R.25E., Bourbon Co., Kansas.
- BB-269 = Sandstone in Bandera Shale exposed at corner; near SW cor., Sec. 3, T.26S., R.23E., Bourbon Co., Kansas.

- BB-270 = Possibly top of Pawnee (Laberdie) Limestone at 879' in road; near Center of East line, Sec. 9, T.26S., R.23E., Bourbon Co., Kansas.
- BB-429 = Sandstone in Bandera Shale at 950' in road; near center of West line, SW1/4, NW1/4, NW1/4, Sec. 27, T.26S., R.23E., Bourbon Co., Kansas.
- BB-430 = Sandstone float and possible in situ mudstone in stream close to 910'; near Center of West line, Sec. 27, T.26S., R.23E., Bourbon Co., Kansas.
- BB-431 = Sandstone in Bandera Shale in road at approx. 955'; near Center of West line, SW1/4, Sec. 27, T.26S., R.23E., Bourbon Co., Kansas.
- BB-432 = Sandstone in Bandera Shale in road at 950' and extending back to section corner toward BB-262; near Center of South line, SE1/4, Sec. 21, T.26S., R.23E., Bourbon Co., Kansas.
- BB-433 = Top of Pawnee (Laberdie) Limestone along South side of road at 880'; in the upper part of the Laberdie are large domical chaetetids from 3.5 to 4.0 dm. in diameter; some chaetetid heads are encrusted by multithecoporoid corals which were then overgrown by chaetetids; GOOD POINT; near Center of North line, NW1/4, Sec. 28, T.26S., R.23E., Bourbon Co., Kansas.
- BB-434 = Inferred top of Pawnee (Laberdie) Limestone in road at about 880'; no exposure, but an abrupt change in the slope of the road; near NW cor., Sec. 28, T.26S., R.23E., Bourbon Co., Kansas.
- BB-435 = Sandstone in Bandera Shale in road at 921' based on a change in the slope of the road; near Center of South line, SE 1/4, Sec. 20, T.26S., R. 23E., Bourbon Co., Kansas.
- BB-436 = Altamont Limestone, approximately 1 dm of dense, bluish gray limestone, pieces of chert in the road, possibly Worland; base of limestone at approximately 933', either this is just a very thin part of the base of the limestone or this is a very thin bed of limestone; just East of Center of South line, Sec. 20., T.26S., R.23E., Bourbon Co., Kansas.
- BB-437 = Altamont Limestone float in the road and sandstone in the Bandera Shale at 930' in road; just West of Center of South line, SW1/4, Sec. 20, T.26S., R.23E., Bourbon Co., Kansas.
- BB-438 = Altamont Limestone float in road between 930' and 940'; SW cor., Sec. 20, T. 26S., R.23E., Bourbon Co., Kansas.
- BB-439 = Top of Altamont Limestone at approximately 950'; Altamont about 16 feet thick here; near Center of West line, NW1/4, SE1/4, Sec. 19, T.26S., R.23E., Bourbon Co., Kansas; see B-131.

- BB-440 = Base of Altamont Limestone at approximately 934'; near Center of West line, NW1/4, SE1/4, Sec. 19, T.26S., R.23E., Bourbon Co., Kansas; see B-131.
- BB-441 = Base of Altamont Limestone at approximately 934' in road; near Center of West line, NE1/4, Sec. 19, T.26S., R.23E., Bourbon Co., Kansas.
- BB-442 = Black, platy, dense limestone with *Cleiothyridina* exposed in stream on both sides of road, similar to limestone encountered in the lower part of the Bandera Shale just above the Mulberry Coal in the Hiattville Quad., BB-62; top of this limestone is at 860'; just South and West of Center of North line, NW1/4, SE1/4, SE1/4, Sec. 19, T.26S., R.23E., Bourbon Co., Kansas.
- BB-443 = Limestone as at BB-442, over 1 dm thick, hard, dense, dark gray to black, weathers brownish yellow; top of limestone is at 870' and compared to the elevation at BB-442 this is compatible with the regional dip; near Center, Sec. 9, T.26S., R.23E., Bourbon Co., Kansas.
- BB-444 = Sandstone in Bandera Shale in road at about 905'; just East of Center, NW1/4, NE1/4, Sec. 9, T.26S., R.23E., Bourbon Co., Kansas.
- BB-445 = Top of Pawnee (Laberdie) Limestone in stream on both sides (North and South) of road at about 870'; just West of Center of North line, Sec. 21, T.26S., R.23E., Bourbon Co., Kansas.
- BB-446 = Top of Pawnee (Laberdie) Limestone in road at approximately 865'; just West of Center, NW1/4, NE1/4, NW1/4, Sec. 21, T.26S., R.23E., Bourbon Co., Kansas.
- BB-447 = Lower Bandera Shale exposed at the northwest corner of road junction; SE cor., Sec. 17, T.26S., R.23E., Bourbon Co., Kansas.
- BB-448 = Black limestone in lower Bandera Shale in creek bed on East side of road; same unit as exposed at BB-442 and BB-443; top of limestone at approximately 870'; near Center of East line, SW1/4, SW1/4, Sec. 16, T.26S., R.23E., Bourbon Co., Kansas.
- BB-449 = Top of Pawnee (Laberdie) Limestone in road at approximately 865'; GOOD POINT; just South of Center of East line, Sec. 16, T.26S., R.23E., Bourbon Co., Kansas.
- BB-450 = Cherty residue and Altamont float similar to that seen at BB-440; Altamont Limestone caps hills; base of Altamont Limestone at approximately 930'; near Center of South line, SE1/4, SW1/4, SE1/4, Sec. 17, T.26S., R.23E., Bourbon Co., Kansas.
- BB-451 = Sandstone in Bandera Shale in road for approximately 0.1 mile; near Center of South line, Sec. 17, T.26S., R.23E., Bourbon Co., Kansas.

- BB-452 = Sandstone in Bandera Shale in creek on North side of road; near Center of South line, SW1/4, Sec. 17, T.26S., R.23E., Bourbon Co., Kansas.
- BB-453 = Base of Altamont Limestone in road at approximately 934'; near Center of South line, SE1/4, SE1/4, Sec. 18, T.26S., R.23E., Bourbon Co., Kansas.
- BB-454 = Blocks of limestone, Altamont, in pond bank on South side of road; base of Altamont Limestone in road between 934' and 935'; near Center of South line, SE1/4, SE1/4, SW1/4, Sec. 18, T.26S., R.23E., Bourbon Co., Kansas.
- BB-455 = Top of Pawnee (Laberdie) Limestone in road and field West of road at approximately 868'; GOOD POINT; near Center of North line, NW1/4, Sec. 16, T.26S., R.23E., Bourbon Co., Kansas.
- BB-456 = Pawnee Limestone forms low water bridge at this point; near Center of North line, SW1/4, NW1/4, Sec. 16, T.26S., R.23E., Bourbon Co., Kansas.
- BB-457 = Float of black, fissile shale and phosphate nodules in the low lying topographic area between two algal limestones, probably Mine Creek Shale; near Center of East line, NE1/4, NW1/4, Sec. 16, T.26S., R.23E., Bourbon Co., Kansas.
- BB-458 = Top of Pawnee (Laberdie) Limestone in field North of road along drainage at approximately 875'; chaetetids in limestone; near Center of West line, SE1/4, SW1/4, SW1/4, Sec. 33, T.25S., R.23E., Bourbon Co., Kansas.
- BB-459 = Black limestone in creek under road bridge, like that at BB-442/443 top of limestone at 868'; near Center of South line, SW1/4, SE1/4, Sec. 32, T.25S., R.23E., Bourbon Co., Kansas.
- BB-460 = Pawnee Limestone exposed in creek bank on South side of road at 850'; could be near the Myrick Station limestone-Anna shale contact, thus the base of Pawnee Limestone; near Center of North line, NW1/4, NE1/4, SW1/4, Sec. 33, T.25S., R.23E., Bourbon Co., Kansas.
- BB-461 = Myrick Station limestone of Pawnee Limestone exposed in low water crossing at 850'; near Center, Sec. 32, T.25S., R.23E., Bourbon Co., Kansas.
- BB-462 = Myrick Station limestone of Pawnee Limestone exposed in Marmaton River at 840', creating rapids; near Center of West line, NE1/4, NE1/4, Sec. 32, T.25S., R.23E., Bourbon Co., Kansas.

- BB-463 = Sandstone exposed in road, probably in the Bandera Shale; near Center of West line, SW1/4, NE1/4, Sec. 4, T.26S., R.23E., Bourbon Co., Kansas.
- BB-464 = Sandstone exposed in road, probably in the Bandera Shale; near Center of West line, SW1/4, SE1/4, Sec. 4, T.26S., R.23E., Bourbon Co., Kansas.
- BB-465 = Sandstone exposed in road, probably in the Bandera Shale; near Center of South line, SW1/4, SE1/4, SW1/4, Sec. 4, T.26S., R.23E., Bourbon Co., Kansas.
- BB-466 = Altamont Limestone exposed in road, similar to exposure at B-82, probably top at 940'; just South of Center of East line, NW1/4, SE1/4, Sec. 5, T.26S., R.23E., Bourbon Co., Kansas.
- BB-467 = Altamont Limestone exposed in road, similar to exposure at B-82, probably top at 940'; just North of Center of East line, NW1/4, NW1/4, SE1/4, Sec. 5, T.26S., R.23E., Bourbon Co., Kansas.
- BB-468 = Sandstone, probably in Bandera Shale, in road close to 890'; near Center of North line, NW1/4, NE1/4, NW1/4, Sec. 5, T.26S., R.23E., Bourbon Co., Kansas.
- BB-469 = Altamont Limestone in road at 900+'; near Center of North line, NW1/4, Sec. 5, T.26S., R.23E., Bourbon Co., Kansas.
- BB-470 = Altamont (Worland) Limestone in place in road, top of formation is near 915'; NW cor., Sec. 5, T.26S., R.23E., Bourbon Co., Kansas.
- BB-471 = Limestone in road; near Center of West line, NW1/4, SE1/4, Sec. 31, T.25S., R.23E., Bourbon Co., Kansas.
- BB-472 = Sandstone, probably in Bandera Shale, in road ditch; near Center of West line, SW1/4, NE1/4, Sec. 31, T.25S., R.23E., Bourbon Co., Kansas.
- BB-473 = Good exposure of sandstone, probably in Bandera Shale, in North creek bank East of road; near Center of West line, NE1/4, Sec. 31, T.25S., R.23E., Bourbon Co., Kansas.
- BB-474 = Altamont Limestone exposed on West side of road at approximately 880'; approximately 200' South of Center of West line, NW1/4, NE1/4, Sec. 31, T.25S., R.23E., Bourbon Co., Kansas.
- BB-475 = Sandstone/mudstone, probably in Bandera Shale, in place in road ditches, limestone float in road; near NW cor., Sec. 31, T.25S., R.23E., Bourbon Co., Kansas.

- BB-476 = Top of Altamont (Worland) Limestone in fields on both sides of road at approximately 881'; approximately 100' West of Center of North line, NW1/4, Sec. 36, T.25S., R.22E., Bourbon Co., Kansas.
- BB-477 = Top of Altamont (Worland) Limestone in road ditch on East side of road at approximately 881'; approximately 200' South of Center of West line, NW1/4, SW1/4, Sec. 25, T.25S., R.22E., Bourbon Co., Kansas.
- BB-478 = Approximately 1.0' of light gray, fine grained to crystalline limestone, upper surface with large bioturbation features, weathers a dark orange brown to dark gray which a light brown sandy siltstone to mudstone above limestone; top of bed at about 910', possibly Lenapah Limestone, see measured section B-127; near SW cor., Sec. 36, T.25S., R.22E., Bourbon Co., Kansas.
- BB-479 = Exposed sequence essentially identical to that at BB-478; see also limestone described at the base of section documented at B-127; top of limestone is at approximately 900', possibly Lenapah Limestone; near Center of South line, SE1/4, Sec. 35, T.25S., R.22E., Bourbon Co., Kansas.
- BB-480 = Limestone, as at BB-478 and BB-479, in pond bank on North side of road; top estimated at 900'; Worland limestone according to KDOT report on the construction materials in Bourbon County; near SW cor., SE1/4, SW1/4, Sec.36, T.25S., R.22E., Bourbon Co., Kansas.
- BB-481 = Up to 3 feet of thin bedded, earthy, medium gray limestone in road, blocky in upper part; resembles Worland limestone; top of limestone at approximately 892'; near Center of South line, SW1/4, SE1/4, Sec. 36, T.25S., R.22E., Bourbon Co., Kansas.
- BB-482 = Limestone like at BB-481 in road ditch on South side of road at approximately 895'; approximately 200' West of Center of North line, NW1/4, Sec. 36, T.25S., R.22E., Bourbon Co., Kansas.
- BB-483 = Limestone rubble in field on North side of road and in road, similar to limestone at BB-481; near SE cor., Sec. 36, T.25S., R.22E., Bourbon Co., Kansas.
- BB-484 = Limestone in road and in road ditch on North side of road, similar to limestone at BB-481, top of limestone at about 905'; near Center of South line, SW1/4, SW1/4, Sec. 31, T.25S., R.23E., Bourbon Co., Kansas.
- BB-485 = Limestone like at BB-470, Altamont, top of Altamont Limestone at approximately 940'; approximately 200' South of Center of West line, Sec. 5, T.26S., R.23E., Bourbon Co., Kansas.

- BB-486 = Limestone like at BB-485, top of Altamont Limestone at 925'; near Center of West line, SW1/4, SW1/4, Sec. 5, T.26S., R.23E., Bourbon Co., Kansas.
- BB-487 = Altamont Limestone in road with top near 925', appears to be two beds of limestone much like at BB-441 and B-131; near Center of West line, SW1/4, NW1/4, NW1/4, Sec. 8, T.26S., R.23E., Bourbon Co., Kansas.
- BB-488 = Sandstone, probably in Bandera Shale, in road ditch at 910' on West side of road at Marion Cemetery; near Center of East line, NE1/4, NE1/4, SE1/4, Sec. 7, T.26S., R.23E., Bourbon Co., Kansas.
- BB-489 = Approximately 2.0' of limestone like at BB-442 in road ditch on both sides of road creating a small waterfalls; top of limestone at approximately 860'; approximately 250' South of Center of East line, SE1/4, Sec. 7, T.26S., R.23E., Bourbon Co., Kansas.
- BB-490 = Thin bedded, sandy, silty mudrock in creek bed on South side of road; near Center of North line, NW1/4, NE1/4, Sec. 8, T.26S., R.23E., Bourbon Co., Kansas.
- BB-491 = Pawnee Limestone float in stream bed; compare lithologically to BB-433 and BB-462; domical chaetetids as in the upper Laberdie limestone at BB-433 occur as float in stream on both sides of bridge; near SW cor., SW1/4, NW1/4, NE1/4, Sec. 28, T.25S., R.23E., Bourbon Co., Kansas.
- BB-492 = Bandera Quarry Sandstone on both sides of road at 860'; near Center of South line, SW1/4, NW1/4, NE1/4, Sec. 29, T.25S., R.23E., Bourbon Co., Kansas.
- BB-493 = Bandera Quarry Sandstone exposed in active quarry, excellent exposure of thin bedded sandstone with many sedimentary structures and trace fossils; area of sections B-83 and B-95; near Center, Sec. 29, T.25S., R.23E., Bourbon Co., Kansas.
- BB-494 = Base of Altamont Limestone at $900 \pm 5'$; GOOD POINT; near Center of East line, NE1/4, SE1/4, NE1/4, Sec. 28, T.25S., R.23E., Bourbon Co., Kansas.
- BB-495 = Quarry in Worland limestone according to KDOT report on construction materials in Bourbon County; near Center of East line, SE1/4, NE1/4, Sec. 20, T.25S., R.23E., Bourbon Co., Kansas.
- BB-496 = Base of Altamont Limestone at approximately 910'; near Center of East line, SE1/4, NE1/4, NE1/4, Sec. 20, T.25S., R.23E., Bourbon Co., Kansas.

- BB-497 = Top of Altamont Limestone at approximately 920'; near Center of East line, NE1/4, NE1/4, NE1/4, Sec. 20, T.25S., R.23E., Bourbon Co., Kansas.
- BB-498 = Base of Altamont Limestone at 885' in stream bed on West side of road; near Center of East line, SE1/4, NE1/4, Sec. 17, T.25S., R.23E., Bourbon Co., Kansas.
- BB-503 = Top of Altamont Limestone at 870' in creek bed on East side of road where approximately 3.0' of limestone is exposed; near Center of East line, NW1/4, SW1/4, SW1/4, Sec. 19, T.25S., R.23E., Bourbon Co., Kansas.
- BB-504 = Base of Altamont Limestone near 895'; near SW cor., Sec. 19, T.25S., R.23E., Bourbon Co., Kansas.
- BB-505 = Base of Altamont Limestone near 880' and top near 890'; near Center of South line, SW1/4, SE1/4, SW1/4, Sec. 19, T.25S., R.23E., Bourbon Co., Kansas.
- BB-506 = Top of Altamont Limestone at 890'; near Center of South line, SW1/4, SE1/4, Sec. 19, T.25S., R.23E., Bourbon Co., Kansas.
- BB-507 = Top of Altamont Limestone near 900'; near Center of South line, SE1/4, SE1/4, Sec. 19, T.25S., R.23E., Bourbon Co., Kansas.
- BB-508 = Top of Altamont Limestone near 905'; near Center of East line, Sec. 30, T.25S., R.23E., Bourbon Co., Kansas.
- BB-509 = Base of Altamont Limestone at approximately 895'; near Center of East line, NE1/4, SE1/4, Sec. 30, T.25S., R.23E., Bourbon Co., Kansas.
- BB-510 = Base of Altamont Limestone in pond bank at approximately 890'; just North of Center of South line, SW1/4, SW1/4, SW1/4, Sec. 20, T.25S., R.23E., Bourbon Co., Kansas.
- BB-511 = Exposures of Bandera Quarry Sandstone along North side of road; near Center of South line, SE1/4, SW1/4, Sec. 20, T.25S., R.23E., Bourbon Co., Kansas.
- BB-512 = Exposures of Bandera Quarry Sandstone along North side of road; near Center of South line, Sec. 20, T.25S., R.23E., Bourbon Co., Kansas.
- BB-578 = Base of Hertha (Critzler) Limestone near 950', base near 1000'; along East side of Kansas Highway 3 @ 250' South and 100' East of Center, NE1/4, NW1/4, Sec. 34, T.25S., R.22E., Bourbon Co., Kansas; outcrop 15 of Heckel, 1991, Kansas Geological Survey Geology series 4, p.40-41; [30 January 1999, possibly the Exline Limestone Member with the Critzer Limestone Member about 16 feet above - see Heckel & Watney (in press) manuscript,

total thickness from base of Critzer to top of Sniabar is approx. 73 feet;
manuscript, figure 2]

- BB-578A = Exline Limestone Member at approx. 940' in roadcut on West side of Kansas Highway 3 South of Uniontown; near Center, NE1/4, NW1/4, Sec. 34, T.25S., R.22E., Bourbon Co., Kansas (31 January 1999).
- BB-579 = Base of Lenapah Limestone (Norfleet) near 880', top (Idenbro) near 898'; thick sandstone in Perry Farms Shale Member; in old field road going North into field on the North side of road; near Center of South line, Sec. 23, T.25S., R.22E., Bourbon Co., Kansas; outcrop 14 of Heckel, 1991, Kansas Geological Survey Geology Series 4, p.40; location of measured sections B-70 and B-76.
- BB-583 = Base of Altamont Limestone at @895' in road ditch on East side of road; near Center of West line, NW1/4, NW1/4, NW1/4, Sec. 22, T.25S., R.23E., Bourbon Co., Kansas.
- BB-584 = Base of Altamont Limestone at @895' in road ditch on North side of road; near Center of South line, SW1/4, SE1/4, SE1/4, Sec. 16, T.25S., R.23E., Bourbon Co., Kansas.
- BB-585 = Estimated base of Altamont Limestone at @890' in field on South side of road, no rock seen; near Center of North line, NW1/4, NW1/4, NW1/4, Sec. 21, T.25S., R.23E., Bourbon Co., Kansas.
- BB-586 = Top of Altamont Limestone at @915' in field on South side of road; near Center of North line, NW1/4, Sec. 21, T.25S., R.23E., Bourbon Co., Kansas.
- BB-587 = Base of Altamont Limestone at @910' in road ditch on North side of road; near Center of South line, SE1/4, SW1/4, SE1/4, Sec. 17, T.25S., R.23E., Bourbon Co., Kansas.
- BB-588 = Base of Altamont Limestone at @905' on both sides of road; good exposures of dense, light gray, algal limestone with *Composita* sp., like limestone at BB-498, on both sides of road; Center of South line, Sec. 17, and Center of North line of Sec.20, T.25S., R.23E., Bourbon Co., Kansas.
- BB-589 = Base of Altamont Limestone at @905'; near Center of South line, SW1/4, SE1/4, SW1/4, Sec. 17, T.25S., R.23E., Bourbon Co., Kansas.
- BB-590 = Sandstones and mudrocks of Nowata Shale in drainage on both sides of U. S. Highway 54; see also KDOT highway profile; compare to measured section B-6; @150' West and 200' South of NE cor., NW1/4, NW1/4, NW1/4, Sec. 24, T.25S., R.24E., Bourbon Co., Kansas.

- BB-591 = Greenish yellow sandstone with reddish brown mottling in places on both sides of U. S. Highway 54; compare to measured section B-6; @ 250' South of NW cor., Sec. 24, T.25S., R.24E., Bourbon Co., Kansas.
- BB-592 = Base of Critzer Limestone Member at @972' along U. S. Highway 54, based on KDOT highway profile; just North of Center of South line, SW1/4, SE1/4, SW1/4, Sec. 15, T.25S., R.24E., Bourbon Co., Kansas. Note added 31 January 1999 - Critzer probably approx. 20 feet lower at 952'.
- BB-593 = Top of Hertha Limestone at @1010' along U. S. Highway 54, based on KDOT highway profile; @200' North and 200' West of SE cor., SW1/4, SW1/4, SW1/4, Sec. 15, T.25S., R.24E., Bourbon Co., Kansas.
- BB-594 = Base of Swope Limestone at @ 1020' along U. S. Highway 54, based on KDOT highway profile; near Center of West line, SW1/4, SW1/4, SW1/4, Sec. 15, T.25S., R.24E., Bourbon Co., Kansas.
- BB-595 = Top of Swope Limestone at @1070' along U. S. Highway 54, based on KDOT highway profile; @100' NW of Center of South line, NW1/4, SE1/4, Sec. 16, T.25S., R.24E., Bourbon Co., Kansas.
- BB-596 = Top of Swope Limestone at @1072' along U. S. Highway 54, based on KDOT highway profile; @250' North and 100' East of Center, NE1/4, SW1/4, Sec. 16, T.25S., R.24E., Bourbon Co., Kansas.
- BB-597 = Base of Altamont Limestone at @870' in field North of U. S. Highway 54; @ 400' North and 200' East of SW cor., Sec. 17, T.25S., R.23E., Bourbon Co., Kansas.
- BB-704 = Top of Altamont (Worland) Limestone at 900' in road and road ditch on South side of road and in field on North side of road; sandstone and mudrock in Nowata Shale at top of hill just West of Altamont exposure; Altamont estimated as 10' thick, thus base at @890'; @450' East of Center of North line, Sec. 23, T.26S., R.22E., Bourbon Co., Kansas.
- BB-705 = Altamont Limestone in road just East of intersection near measured section B-118; top of Altamont (Worland) Limestone at @890', base at @875'; essentially the site of measured section B-118; @100' East of NW cor., Sec. 24., T.26S., R.22E., Bourbon Co., Kansas.
- BB-706 = Base of Altamont Limestone at 875'/880' in road and wooded area North of road; near Center of South line, SW1/4, SW1/4, Sec. 13, T.26S., R.22E., Bourbon Co., Kansas.
- BB-707 = Sandstone and mudrock, probably in Bandera Shale, in roads and hillside South of road at 900+'; @200' East of Center of North line, NE1/4, NE1/4, Sec. 24, T.26S., R.22E., Bourbon Co., Kansas.

- BB-708 = Top of Altamont (Worland) Limestone at 890' in road and field West of road, good exposure in road ditch on West side of road; near Center of East line, NE1/4, NE1/4, Sec. 23, T.26S., R.22E., Bourbon Co., Kansas.
- BB-709 = Thin, cross bedded, ripple marked sandstone in creek, South bank, on East side of road, probably in Bandera Shale; near Center of West line, SW1/4, NW1/4, Sec. 24, T.26S., R.22E., Bourbon Co., Kansas.
- BB-710 = Top of Altamont (Worland) Limestone at 890' in road and field on West side of road, hillside exposure; near Center of East line, SE1/4, SE1/4, NE1/4, Sec. 23, T.26S., R.22E., Bourbon Co., Kansas.
- BB-711 = Base of Altamont (Amoret) Limestone at @903' in road; near Center of South line, SE1/4, SE1/4, Sec. 23, T.26S., R.22E., Bourbon Co., Kansas.
- BB-712 = Sandstone, probably in Bandera Shale, with chert gravels at 900'; a thin, very thin Norfleet limestone? is exposed on top of hill; near Center of South line, SW1/4, SE1/4, SW1/4, Sec. 23, T.26S., R.22E., Bourbon Co., Kansas.
- BB-713 = Two low water bridges both West and North of section corner where a lot of thin, platy sandstone float and some Worland limestone (with *Composita* and large crinoid stems) float, also small pieces of black shale float; probably near top of Altamont Limestone; near Center of South line and Center of East line, SE1/4, SE1/4, SE1/4, Sec .21, T.26S., R.22E., Bourbon Co., Kansas.
- BB-714 = Thin, wavy, cross bedded, ripple marked sandstone of upper Bandera Shale in creek East and West of road, good exposure East of road on North side of stream; float from Worland limestone and Lake Neosho shale and chert gravels, only uppermost part of Bandera Shale exposed, near base of Altamont, but not seen; Center of East line, Sec. 21, T.26S., R.22E., Bourbon Co., Kansas.
- BB-715 = Thin bedded, reddish brown sandstone in road ditch on East side of Kansas Highway 3 just South of bridge over Hinton Creek; near Center of West line, SW1/4, NW1/4, NW1/4, Sec. 23., T.26S., R.22E., Bourbon Co., Kansas.
- BB-715A = Bluff along South bank of Hinton Creek, probably Bandera Shale; along North 1/2, SE1/4, NW1/4, SW1/4, Sec. 23., T.26S., R.22E., Bourbon Co., Kansas.
- BB-716 = Thin bedded, ripple marked sandstone over 15cm thick in drainage South of road at 910', probably in Nowata Shale or higher interval; near Center, NE1/4, SE1/4, Sec. 14, T.26S., R.22E., Bourbon Co., Kansas.

- BB-717 = Top of Altamont (Worland) Limestone at 920' in road and road ditch South of road; @100' East of Center of North line, NW1/4, NE1/4, SW1/4, Sec. 13, T.26S., R.22E., Bourbon Co., Kansas.
- BB-718 = Base of Altamont (Amoret) Limestone in road ditch at 900', @20' of Altamont Limestone, thus top at 920'; near Center of South line, SW1/4, NE1/4, Sec. 13, T.26S., R.22E., Bourbon Co., Kansas.
- BB-719 = Sandstone in road and road ditch and field East of road at 880', probably in Bandera Shale; Center, SE1/4, SW1/4, NE1/4, Sec. 13, T.26S., R.22E., Bourbon Co., Kansas.
- BB-720 = Lower part of Altamont (Amoret) Limestone caps hill at 900'; along South line, SE1/4, SW1/4, NE1/4, Sec. 13, T.26S., R.22E., Bourbon Co., Kansas.
- BB-721 = Sandstone in road ditch on West side of road at corner, probably in Nowata Shale; near NE cor., Sec. 14, T.26S., R.22E., Bourbon Co., Kansas.
- BB-722 = Top of Altamont (Worland) Limestone at 900' in road ditch on West side of road, just under 6dm of limestone exposed with about the same thickness of overlying Nowata Shale exposed; near Center of East line, SE1/4, SE1/4, SE1/4, Sec. 11, T.26S., R.22E., Bourbon Co., Kansas.
- BB-723 = Amoret limestone exposed in drainage on both sides of road, base of Altamont (Amoret) Limestone at 880', top of Amoret limestone well exposed @ 20' of Altamont Limestone; GOOD POINT; near Center of East line, SE1/4, SE1/4, Sec. 11, T.26S., R.22E., Bourbon Co., Kansas.
- BB-724 = Good sandstone exposure in road and on both sides at 893', probably in Nowata Shale; @200' North of Center of East line, NE1/4, SE1/4, Sec. 11, T.26S., R.22E., Bourbon Co., Kansas.
- BB-725 = Sandstone in road, top of unit at 900', @3dm exposed in road ditch on West side of road just below 900', probably in Nowata Shale; near Center of East line, NE1/4, SE1/4, NE1/4, Sec. 11, T.26S., R.22E., Bourbon Co., Kansas.
- BB-726 = Thin bedded, silty mudrock above sandstone like that exposed at BB-725; NE cor., Sec. 12, T.26S., R.22E., Bourbon Co., Kansas.
- BB-727 = Top of Altamont (Worland) Limestone in road and fields on both sides of road at 902'; near Center of East line, SE1/4, NE1/4, Sec. 12, T.26S., R.22E., Bourbon Co., Kansas.
- BB-728 = Upper beds of Altamont (Worland) Limestone in road and fields on both sides of road at 902' as at BB-727; @100' North of Center of East line, NE1/4, NE1/4, SE1/4, Sec. 12, T.26S., R.22E., Bourbon Co., Kansas.

- BB-729 = Base of Altamont (Amoret) Limestone at 890', contact with underlying Bandera Shale is gradational, good exposure in road and on both sides of road in North bank of East-West drainage; near Center of East line, NE1/4, SE1/4, Sec. 12, T.26S., R.22E., Bourbon Co., Kansas.
- BB-730 = Base of Altamont (Amoret) Limestone at 890', contact with underlying Bandera Shale is gradational, similar to exposure at BB-729 but not as well exposed, exposure is along a road with a low gradient; @100' North of Center of East line, SE1/4, Sec. 12, T.26S., R.22E., Bourbon Co., Kansas.
- BB-731 = Near top of Altamont (Worland) Limestone at 910'; near Center of East line, NE1/4, SE1/4, SE1/4, Sec. 12, T.26S., R.22E., Bourbon Co., Kansas.
- BB-732 = Thick bedded sandstone exposed in drainage on both sides of road, top of sandstone at 870', probably the Bandera Quarry Sandstone in Bandera Shale; near Center, SW1/4, SW1/4, Sec. 7, T.26S., R.23E., Bourbon Co., Kansas.
- BB-733 = Hard, dense limestone below Sniabar limestone as at measured section B-126, top of limestone bed at 995'; near Center, NE1/4, SE1/4, NW1/4, Sec. 34, T.25S., R.22E., Bourbon Co., Kansas.
- BB-734 = Base of Hertha (Critzler) Limestone at 980' in road and road ditch on South side of road; near Center of North line, NE1/4, NE1/4, NE1/4, Sec. 3, T.26S., R.22E., Bourbon Co., Kansas.
- BB-735 = Top of Hertha (Sniabar) Limestone at @1018' in road; @150' West of Center of North line, NE1/4, NE1/4, Sec. 3, T.26S., R.22E., Bourbon Co., Kansas.
- BB-736 = Base of Swope (Middle Creek) Limestone at @1025' in road and field North of road; @200' East of Center of North line, NE1/4, Sec. 3, T.26S., R. 22E., Bourbon Co., Kansas.
- BB-737 = Base of Swope (Middle Creek) Limestone at @1020' in road; NW cor., Sec. 3, T.26S., R.22E., Bourbon Co., Kansas.
- BB-738 = Sniabar limestone in road cut, poor top and base, area of measured sections B-77, B-90, and B-81, none of which were found; @100' West of Center of South line, SW1/4, SE1/4, Sec. 21, T.25S., R.22E., Bourbon Co., Kansas.
- BB-739 = Pleasanton sequence, possibly upper part in East facing slope on hillside; near Center, SE1/4, NW1/4, SE1/4, Sec. 15, T.25S., R.22E., Bourbon Co., Kansas.

BB-875 = Possible Lenapah Limestone in road ditch on North side of road; near Center of South line, SW1/4, Sec. 35, T.25S., R.22E., Bourbon Co., Kansas (31 January 1999).

XENIA QUADRANGLE

- B-1 = Pleasanton and Hertha Limestone along roadcut, measured and described by West in 1959; area of BB-982; Center of North 1/2, Sec. 35, T.24S., R.22E., Bourbon Co., Kansas.
- B-2 = Sequence from below Hertha Limestone to Swope (Middle Creek) Limestone in quarry West of road; as measured and describe by Jewett in 1938?; at a later date? The sequence below was added but the location within Sec. 35 is not given, legal description given below is for the quarry; area of BB-982; near Center, NW1/4, NW1/4, Sec. 35, T.24S., R.22E., Bourbon Co., Kansas.
- B-3 = Pleasanton and lower Hertha Limestone; measured and described by Jewett, no date; area of BB-982; Sec. 35., T.24S., R.22E., Bourbon Co., Kansas.
- B-4 = Same as B-2.
- B-7 = Pleasanton to Swope Limestone; measured and described by West in 1959; base of Swope (Middle Creek) Limestone at @ 1013'; top of Hertha (Sniabar) Limestone? at @ 1000' or base of Critzer limestone at @ 990'; Center of North line, Sec. 14, T.24S., R.22E., Bourbon Co., Kansas.
- B-8 = From a limestone, 21 feet below base of Hertha Limestone in the Pleasanton to Swope (Bethany Falls) Limestone; measured and described by West in 1959; base of Swope (Middle Creek) Limestone estimated at @ 1020'; top of Hertha (Sniabar) Limestone at @ 1010'; base of Critzer limestone at @ 993'; near SE cor., Sec. 14, T.24S., R.22E., Bourbon Co., Kansas.
- B-9 = From about 75 feet of Pleasanton through the Hertha Limestone into the Swope (Bethany Falls) Limestone; measured and described by Jewett, no date; probably the same as B-8; area of BB-891; near SE cor., Sec. 13, T.24S., R.22E., Bourbon Co., Kansas.
- B-10 = Lower Hertha Limestone to Swope (Bethany Falls) Limestone; measured and described by Jewett in 1931; very old and grown over, but based on what is exposed at B-7 this site is probably correct and accurate; Center of South line, Sec. 11, T.24S., R.22E., Bourbon Co., Kansas.
- B-11 = Upper Pleasanton through Hertha Limestone to Stark shale in Dennis Limestone; measured and described by Jewett in 1931 & 1938; area of BB-912, BB-913, and BB-914; Center, Sec. 3., T.24S., R.22E., Bourbon Co., Kansas.
- B-12 = Upper Pleasanton through Hertha Limestone to Swope (Middle Creek) Limestone; measured and described by Jewett in 1938; we recognized upper Hertha Limestone to top of Swope (Bethany Falls) Limestone at @ 1020+'; Center, Sec. 9, T.24S., R.22E., Bourbon Co., Kansas.

- B-13 = Pleasanton, 65 feet, to Swope (Middle Creek) Limestone measured and described by Jewett in 1938; same area as BB-916 and BB-917; SW cor., Sec. 3, T.24S., R.22E., Bourbon Co., Kansas.
- B-14 = Shale and flaggy beds in Pleasanton through Hertha Limestone to Swope (Bethany Falls) Limestone; measured and described by Newell in 1934; same area as BB-916 and BB-917; long road cut South of Xenia, Kansas; SW cor., Sec. 3, T.24S., R.22E., Bourbon Co., Kansas.
- B-15 = Swope (Bethany Falls) Limestone to Dennis (Winterset) Limestone with a thin (2?) Galesburg Shale between; measured and described by Jewett in 1931; base of Dennis (Canville) Limestone at @ 1010' in road; fourth of a mile South of Xenia, Kansas; near Center of West line, NW1/4, Sec. 3, T.24S., R.22E., Bourbon Co., Kansas.
- B-16 = Pleasanton (Bourbon Flags) and lower Hertha; measured and described by Jewett, no date; Sec. 1, T.24S., R.22E., Bourbon Co., Kansas; now inaccessible.
- B-17 = Altamont Limestone, thin limestone in Lake Neosho shale, no Amoret; measured and described by Jewett in 1938; area of BB-906; 0.1 mile North of SW cor., Sec. 34, T.24S., R.23E., Bourbon Co., Kansas.
- B-18 = Upper 20+ feet of Pleasanton through the Hertha Limestone into the Swope (Hushpuckney shale) Limestone; "Billy Goat Quarry"; measured and described by Jewett in 1935; same area as BB-884 and BB-885; just West of Center of North line, NE1/4, Sec. 31, T.24S., R.23E., Bourbon Co., Kansas.
- B-19 = Same as B-18.
- B-20 = Same as B-18, additional notes by Jewett in 1938.
- B-21 = Same as B-18.
- B-22 = Pleasanton (Bourbon Flags?); measured and described by Jewett, no date; same area as BB-884 and BB-885; Center of North line, NW1/4, NE1/4, Sec. 31, T.24S., R.23E., Bourbon Co., Kansas.
- B-23 = Swope (Bethany Falls) Limestone in old quarry; measured and described by Ives in 1952; same area as BB-900 and BB-901; near Center of East line, SE1/4, NE1/4, Sec. 21, T.24S., R.23E., Bourbon Co., Kansas.
- B-24 = Upper Pleasanton through Hertha Limestone to Swope (Bethany Falls) Limestone; measured and described by Jewett in 1931 and 1935; same area as BB-900 and BB-901; Center of East line, Sec. 21, T.24S., R.23E., Bourbon Co., Kansas.
- B-25 = A nine foot section measured and described by Jewett, no date, who

Identified the sequence as lower Dennis (Canville limestone and Stark shale with the basal beds of the Winterset limestone) Limestone, he said this sequence was about 20 feet above the Swope (Bethany Falls) Limestone; we interpret what is now exposed as follows: base of Swope (Middle Creek) Limestone in road at @ 1050' with black, fissile shale float above in road ditch and Bethany Falls type limestone above in road, top of Swope (Bethany Falls) Limestone as high as the top of hill to the West at 1090+'; North of Berlin School; just South of Center of West line, Sec. 21, T.24S., R.23E., Bourbon Co., Kansas.

B-26 = Swope (Bethany Falls) Limestone in a quarry; measured and described by Jewett in 1938; same locality as B-24.

B-27 = Dennis (Canville limestone, Stark shale, and lower beds of Winterset limestone) Limestone; measured and described by Jewett?, no date; exposed in road ditch on East side of road and in an old trench silo; base of Dennis (Canville) Limestone at @ 1072'; Center of West line of Sec. 19, T.24S., R.23E., Bourbon Co., Kansas.

B-28 = Probably Pleasanton through Hertha Limestone, Ladore Shale, Swope Limestone, Galesburg Shale into Dennis (Winterset) Limestone as measured and described by Jewett in 1931; (possibly Hertha (Sniabar) Limestone to Swope (Bethany Falls) Limestone; compare with B-9 and BB-891; Sec. 18, T.24S., R.23E., Bourbon Co., Kansas; inaccessible now.

B-30 = Pleasanton through Hertha Limestone to Swope (Hushpuckney shale) Limestone; measured and described by Jewett in 1938, Jewett noted that this section was studied by Greene, Moore, and Newell who missed the Sniabar limestone; same area as BB-894; 3 miles South of Mapleton; Center of West line, Sec. 10, T.24S., R.23E., Bourbon Co., Kansas.

B-31 = Same as B-30; roadcut on scarp 3 miles due South of Mapleton, Kansas; measured by Newell in 1934, section studied by Greene, Moore, and Newell.

B-32 = Same as B-30.

B-34 = Pleasanton through Hertha Limestone into Swope (Hushpuckney shale) Limestone; measured and described by Jewett?, no dates; same area as BB-888; high bluff South of Mapleton, Kansas; near Center, NW1/4, Sec. 8, T.24S., R.23E., Bourbon Co., Kansas.

B-35 = Pleasanton (Bourbon Flags ?) through Hertha Limestone? And Ladora Shale into Swope (Middle Creek) Limestone; measured and described by Jewett, no date; near Center of North line, NW1/4, NW1/4, Sec. 8, T.24S., R.23E., Bourbon Co., Kansas; now inaccessible.

B-36 = Lenap Limestone through 25 + feet of section to the Swope (Middle

Creek) Limestone as measured and described by Jewett in 1938; same area as BB-890; near the Center, SW1/4, NE1/4, Sec. 8, T.24S., R.23W., Bourbon Co., Kansas.

B-61 = Swope (Bethany Falls) Limestone through Galesburg Shale into Dennis (Winterset) Limestone; measured and described by Jewett, no date; Sec. 9, T.25S., R.22E., Bourbon Co., Kansas; now inaccessible.

B-65 = Dennis (Winterset) Limestone in old quarry; measured and described by Ives in 1952; same area as BB-987; near Center, Sec., 4, T.25S., R.22E., Bourbon Co., Kansas.

B-66 = Uppermost Pleasanton into Hertha (Schubert Creek/Sniabar) Limestone, Jewett notes that Critzer limestone pinching out; measured and described by Jewett in 1938; same area as BB-983 and BB-984; just South of Center, SE1/4, Sec. 3, T.25S., R.22E., Bourbon Co., Kansas.

B-67 = Upper most Pleasanton through Hertha Limestone into Ladora Shale; measured and described by Jewett in 1935 and 1938; SE cor., Sec. 3, T.25S., R.22E., Bourbon Co., Kansas; now inaccessible.

B-68 = Pleasanton through Hertha Limestone and Ladora Shale into possibly the Swope (Middle Creek) Limestone; measured and described by Jewett in 1935; 8 miles East and 1 mile North of Bronson; 4 miles North and 2 miles East of Uniontown; NW cor., Sec. 1, T.25S., R.22E., Bourbon Co., Kansas; now inaccessible.

B-90 = Uppermost Galeburg Shale into Dennis (Winterset) Limestone; measured and described by Jewett, no date; just South of Center, SW1/4, Sec. 5, T.25S., R.23E., Bourbon Co., Kansas; now inaccessible.

B-91 = Lenapah Limestone through Memorial Shale to "Hepler" sandstone; measured and described by Jewett in 1935; same area as BB-902; SE cor., Sec.7, T.25S., R.23E., Bourbon Co., Kansas.

BB-499 = Top of Altamont (Worland) Limestone at approximately 895' in road West of low water bridge; near Center of North line, NW1/4, NW1/4, NE1/4, Sec. 17, T.25S., R.23E., Bourbon Co., Kansas.

BB-500 = Approximately 1.0' of thin bedded, dense, crystalline limestone with iron oxide claystone clasts and crinoid debris, similar to limestone exposed at BB-478, Uniontown Quad., top of limestone at approximately 900', base at @ 899' probably Lenapah Limestone, most likely the Norfleet; approximately 7.0' of blocky, olive gray green mudrock below limestone, well exposed in drainage ditch at the middle of the section on North side of road; Altamont Limestone exposed below mudrock; near Center of North line, Sec. 17, T.25S., R.23E., Bourbon Co., Kansas.

- BB-501 = Sandstone in road, possibly Hepler, but more probably sandstone in Perry Farm shale; near Center of North line, NE1/4, NW1/4, Sec. 17, T.25S., R.23E., Bourbon Co., Kansas.
- BB-502 = Limestone as at BB-500 with well developed joint sets, one strikes NW-SE and the other NE-SW, possibly a slight East dip, upper surface of limestone well exposed at 889', assuming a thickness of 1.0' the base is at @ 888', most likely the Norfleet limestone; 7 to 8 feet of mudrock exposed above limestone; near measured section B-91; approximately 100' East of NW cor., Sec. 17, T.25S., R.23E., Bourbon Co., Kansas.
- BB-871 = Limestone, thin, platy bedded, argillaceous, crinoidal approx. one foot thick, overlain by approx. 2 feet of mudrock which is overlain by approx. 0.5 foot of a thin, dense, gray to reddish brown weathered limestone with *Crurithyris*, marginiferids, lophophyllid corals, *Worthenia* and *Glabrocingulum* in road ditch on North side of road, lower limestone at 950' = Exline of Heckel & Watney (in press) manuscript (figures 9 & 10); upper limestone = Critzer of Heckel & Watney (in press) manuscript (figures 9 & 10), thus base of Critzer is at 953 feet; just West of Center, NW1/4, NW1/4, NW1/4, Sec. 12, T.25S., R.22E., Bourbon Co., Kansas.
- BB-872 = Black fissile shale with phosphate nodules in lower part and nodules of dense, gray limestone in upper part, base at approx. 985', total thickness approx. 2.5 feet = basal bed of Mound City Shale Member of Heckel & Watney (in press) manuscript (figures 9 & 10); same bed occurs approx. 28.5 feet above top of limestone identified as Exline by Heckel & Watney (in press) manuscript at the sequence south of Uniontown along Kansas Highway 3 (see Site BB-578); approx. 0.1 mile East of BB-871 in the North 1/2, NW1/4, NW1/4, Sec. 12, T.25S., R.22E., Bourbon Co., Kansas.
- BB-873 = Whitish, crystalline, algal thin to medium bedded limestone, base at approx. 1020' in field on North side of road = base of Sniabar Limestone Member according to Heckel & Watney (in press) manuscript (figures 9 & 10); near Center of North line, NW1/4, Sec. 12, T.25S., R.22E., Bourbon Co., Kansas.
- BB-879 = Exline limestone and Critzer limestone in road ditch on North side of road like these units at BB-871, with Exline limestone at @ 975' and Critzer limestone at @ 978'; near Center of South line, SE1/4, SW1/4, Sec. 6, T.25S., R.23E., Bourbon Co., Kansas.
- BB-880 = Black, platy to fissile shale exposed on North side of road at @ 1000' with dense, nodular, gray limestone @ 1.0' thick above, basal part of Mound City shale as defined in Heckel & Watney (in press) manuscript; about 150 feet East and 100 feet South of Center of North line, Sec. 7, T.25S., R.23E., Bourbon Co., Kansas.

- BB-881 = Limestone, Norfleet?, in stream bed on both sides of road, top at 905', assuming a thickness of 1.0' as at BB-500, the base is at 904'; near Center of West line, SW1/4, Sec. 9, T.25S., R.23E., Bourbon Co., Kansas.
- BB-882 = Top of limestone (Sniabar) at @1070' with mudrock and flaggy beds of upper Mound City shale as defined by Heckel & Watney (in press) manuscript exposed below along west side of road Southward from this point, Critzer and Exline were not found although they probably occur here farther South along road; chert gravels in field on East side of road North of this point between 1080' and 1090' probably reflect presence of Swope (Bethany Falls) Limestone, suggested base of Swope (Middle Creek) Limestone at @ 1085'; about 200 feet South of Center of East line, SE1/4, SE1/4, Sec. 36, T.24S., R.23E., Bourbon Co., Kansas.
- BB-883 = Large blocks of lower (mottled) Bethany Falls limestone in field East of road, probably outcrops in road; about 300 feet South of Center of West line, Sec. 31, T.24S., R.23E., Bourbon Co., Kansas.
- BB-884 = Quarry in Swope (Bethany Falls) Limestone with top at @ 1080'; near Center of South line, SW1/4, Sec. 30, T.24S., R.23E., Bourbon Co., Kansas.
- BB-885 = Base of Swope (Middle Creek) Limestone at @1040' in pond bank and along stream with the top of Sniabar limestone at @1020' along North side of stream; base of Swope near Center, SE1/4, SW1/4, Sec. 30, T.24S., R.23E., Bourbon Co., Kansas; top of Sniabar near Center, NE1/4, SE1/4, SW1/4, Sec. 30, T.24S., R.23E., Bourbon Co., Kansas.
- BB-886 = Base of Swope (Middle Creek) Limestone at @1040' in road, many float blocks of this unit occur in field on South side of road; top of Sniabar limestone in old quarry (full of water) at @ 1020' on South side of road and also exposed in road and road ditches on both sides of road; near Center of South line, SW1/4, SE1/4, Sec. 30 T.24S., R.23E., Bourbon Co., Kansas.
- BB-887 = Black, platy, fissile shale in drainage on South side of road at @990' with beds of flaggy limestone above and below, basal part of Mound City shale as defined in Heckel & Watney (in press) manuscript; near Center of South line, SE1/4, Sec. 30, T.24S., R.23E., Bourbon Co., Kansas.
- BB-888 = Top of Bourbon Flags facies of Critzer limestone at 890' of Heckel & Watney (in press) manuscript, fig. 12, type section of Guthrie Mountain Shale Member; Exline Limestone Member approx. 10 feet below Critzer at 880'; Exline near Center of South line, SW1/4, NW1/4, NW1/4, Sec. 8, T.24S., R.23E., Bourbon Co., Kansas; Critzer about 200 feet East and about 100 feet South of Center of South line, SW1/4, NW1/4, NW1/4, Sec. 8, T.24S., R.23E., Bourbon Co., Kansas.

BB-889 = Base of Sniabar Limestone Member at 1000' of Heckel & Watney (in press) manuscript, fig. 12; type section of Guthrie Mountain Shale Member; probably Sniabar limestone to top of hill at 1030'; same as L-166; about 200 feet South of Center of North line, SE1/4, NW1/4, Sec. 8, T.24S., R.23E., Bourbon Co., Kansas.

BB-890 = Base of Sniabar limestone at @ 1000' with basal bed exposed in road and road ditch on South side of road; black, platy to fissile black shale with dense, nodular limestone bed below, the basal beds of the Mound City shale, exposed along the South side of road at an elevation of 950' as shown in Heckel & Watney (in press) manuscript; see also B-36; near Center, NW1/4, SW1/4, Sec. 8, T.24S., R.23E., Bourbon Co., Kansas.

BB-891 = Probably position of Critzer limestone at 890' as at BB-888; near Center of South line, NE1/4, NE1/4, Sec. 8, T.24S., R.23E., Bourbon Co., Kansas.

BB-892 = Thin, platy, bedded, crystalline, fossiliferous, 2.0' thick, dark reddish to maroon limestone in drainage on both sides of road; appears pedogenetic, upper surface very irregular, top of limestone at 880', probably Exline; about 200 feet West of Center of East line, NE1/4, Sec. 8, T.24S., R.23E., Bourbon Co., Kansas.

BB-893 = Sandstone and silty mudrock in drainage on both sides of road, probably Hepler Fm.; near Center, SW1/4, NW1/4, SE1/4, Sec. 4, T.24S., R.23E., Bourbon Co., Kansas.

BB-894 = Excellent exposure of interval from the lower part of the Guthrie Mountain shale to the lower beds of the Bethany Falls limestone along West side of road; sequence measured and briefly described by Sawin; base of black shale at base of Mound City shale is at @ 952'; base of Sniabar limestone at @ 970'; top of Sniabar limestone at @ 989'; base of Swope (Middle Creek) limestone is at @ 995'; base of sequence near Center of East line, Sec. 9, T.24S., R.23E.; top near Center of East line, NE1/4, SE1/4, Sec. 9, T.24S., R.23E., Bourbon Co., Kansas.

SEQUENCE AT BB-894 (measured and describe by Sawin)

Unit 1 - 17+ feet of mudrock, yellowish brown to gray; top at an elevation of 952 feet.

Unit 2 - 1.0 foot of black, platy to fissile shale; basal unit of Mound City Shale of Heckel & Watney (in press) manuscript.

Unit 3 - 3.0 feet of grayish brown mudrock.

Unit 4 - 0.8 feet of pedogenic limestone (looks like Breezy Hill).

Unit 5 - 4.0 feet of grayish mudrock.

Unit 6 - 1.0 foot of gray, dense, limestone (flaggy bed).

Unit 7 - 8.0 feet of mudrock, upper unit of Mound City Shale of Heckel & Watney (in press) manuscript.

Unit 8 - 2.0 feet of crystalline (old "Critzler) limestone, basal bed of Sniabar of Heckel & Watney (in press) manuscript, base at an elevation of 970 feet.

Unit 9 - 2.0 feet of dark gray mudrock.

Unit 10 - 7.0 feet of "rotten" limestone, Sniabar.

Unit 11 - 3.0 feet of dense, massive limestone.

Unit 12 - 3.0 feet mudrock.

Unit 13 - 2.0 feet of limestone, upper bed of Sniabar at elevation 989 feet.

Unit 14 - 6.0 feet of mudrock.

Unit 15 - 2.0 feet of dense, gray, sparsely fossiliferous limestone, Middle Creek Limestone Member, elevation at base of bed (base of Swope Limestone) is 994 feet.

Unit 16 - 8.0 feet of mudrock, lower 4.0 feet is a black, platy to fissile shale and the upper 4.0 feet is a yellowish brown mudrock, Hushpuckney Shale Member.

Unit 17 - 3.0+ feet of thin, slightly wavy bedded, gray, fossiliferous limestone, basal beds of Bethany Fall Limestone Member.

BB- 895 = Close to the top of the Bethany Falls limestone in road at @ 1075'; about 150 feet North of Center of East line, SE1/4, SE1/4, Sec. 10, T.24S., R.23E., Bourbon Co., Kansas.

BB-896 = Bethany Falls limestone exposed in old quarry on South side of road and in roadcut on North side of road; NW cor., NE1/4, NE1/4, NW1/4, Sec. 21, T.24S., R.23E., Bourbon Co., Kansas.

BB-897 = Bethany Falls limestone exposed in old quarry, lowest area in quarry is at 1030' with black, fissile shale; based on thicknesses of the Middle Creek limestone and Hushpuckney shale at BB-894, the base of the Swope Limestone is at 1010'; approx. 30 feet of Bethany Falls limestone but no top; N 1/2, SE1/4, SE1/4, Sec. 17, T.24S., R.23E., Bourbon Co., Kansas.

BB-898 = Estimated top of Swope (Bethany Falls) Limestone at 1075'; about 200 feet North of Center of South line, SE1/4, SE1/4, Sec. 17, T.24S., R.23E., Bourbon Co., Kansas.

BB-899 = Estimated top of Swope (Bethany Falls) Limestone at 1075'; Center of East line, NE1/4, NE1/4, Sec. 21, T.24S., R.23E., Bourbon Co., Kansas.

BB-900 = Bethany Falls limestone exposed in old quarry on West side of road; just West of Center of East line, SE1/4, NE1/4, Sec. 21, T.24S., R.23E., Bourbon Co., Kansas.

BB-901 = Top of Sniabar limestone at 1010' in road ditch on West side of road; about 100 feet South of Center of East line, Sec. 21, T.24S., R.23E., Bourbon Co., Kansas.

BB-902 = Base of Swope (Middle Creek) Limestone at 1015' in road with black, fissile shale in road ditch on South side of road; below Swope is @ 5' of

- Ladore/Elm Branch Shale; near Center of South line, SE1/4, NE1/4, Sec. 21, T.24S., R.23E., Bourbon Co., Kansas.
- BB-903 = Exposure of Sniabar limestone on West side of road; about 250 feet North of Center of East line, SE1/4, Sec. 21, T.24S., R.23E., Bourbon Co., Kansas.
- BB-904 = Possible Critzer/Bourbon Flags in field at 950' (estimated, not seen); about 200 feet North of Center of East line, NE1/4, NE1/4, Sec. 28, T.24S., R.23E., Bourbon Co., Kansas.
- BB-905 = Gray to dark gray and black mudrock sequence exposed in bed of stream; about 150 feet East and 200 feet South of Center of North line, NW1/4, NW1/4, Sec. 34, T.24S., R.23E., Bourbon Co., Kansas.
- BB-906 = Good exposure of Worland, top of Altamont Limestone, exposed on the West side of road at bridge over Mill Creek, top of Worland at 890'; about 250 feet South of NE cor., Sec. 4, T.25S., R.23E., Bourbon Co., Kansas
- BB-907 = Top of limestone (Norfleet) in road ditch on East side of road at 947', assuming a thickness of 1.0' as at BB-500, the base is at 946'; about 250 feet North of Center of East line, SE1/4, Sec. 9, T.25S., R.23E., Bourbon Co., Kansas.
- BB-908 = Mudrock in drainage and road ditch on West side of road; about 100 feet West of Center of East line, NE1/4, NE1/4, Sec. 5, T.25S., R.23E., Bourbon Co., Kansas.
- BB-909 = Float from flaggy beds typical of the upper Mound City shale along hillside West of road; Center of East line, NE1/4, SE1/4, NE1/4, Sec. 32, T.24S., R.23E., Bourbon Co., Kansas.
- BB-910 = Ferruginous bed in upper part of Mound City shale at 998' at section corner; base of Sniabar limestone at @1010'; top of Sniabar limestone at @ 1030'; base of Swope (Middle Creek) Limestone at @ 1036'; base near Center of East line, SE1/4, SE1/4, SE1/4, Sec. 20, T.24S., R.23E., and top near Center of East line, NE1/4, SE1/4, SE1/4, Sec. 20, T.24S., R.23E., Bourbon Co., Kansas.
- BB-911 = Sniabar limestone exposed in old quarry with base near 885', no top?; SW cor., SW1/4, SE1/4, SW1/4, Sec. 36, T.24S., R.22E., Bourbon Co., Kansas.
- BB-912 = Bethany Falls limestone in road at 1010', lots of residual chert; about 150 feet South and 300 feet East of Center of East line, SE1/4, NW1/4, Sec. 3, T.24S., R.22E., Bourbon Co., Kansas.

- BB-913 = Base of Swope (Middle Creek) Limestone at @960' in road; just East of Center of South line, SW1/4, NE1/4, Sec. 3, T.24S., R.22E., Bourbon Co., Kansas.
- BB-914 = Top of Sniabar limestone at @945' in road with flaggy beds exposed along road to junction East of site; near Center, SE1/4, SW1/4, NE1/4, Sec. 3, T.24S., R.22E., Bourbon Co., Kansas.
- BB-915 = Interred Pleasanton Shale and Hertha Limestone?; along very old road where it crosses Limestone Creek; near SW cor., Sec. 2, T.24S., R.22E., Bourbon Co., Kansas; not accessible.
- BB-916 = Possible base of Swope (Middle Creek) Limestone at 960', and possible top of Sniabar limestone at 945'; about 200 feet North of Center of East line, SE1/4, Sec. 4, T.24S., R.22E., Bourbon Co., Kansas.
- BB-917 = Good exposure of flaggy beds in upper part of Mound City shale at 900' on East side of road; basal bed of Sniabar limestone above flaggy beds probably exposed on East side of road; just East of Center of West line, SE1/4, NE1/4, NE1/4, Sec. 9, T.24S., R.22E., Bourbon Co., Kansas.
- BB-981 = Same as B-9, base of Swope (Middle Creek) Limestone at @1033', top of Swope (Bethany Falls) Limestone at @1065'; based on the measured section at B-9 the Ladore/Elm Branch is apparently thin here (thickness not recorded) and what was called the Critzer (probably Sniabar) limestone is about 25 feet thick here with a thick (75+ feet) of Mound City shale; near SE cor., Sec. 13, T.24S., R.22E., Bourbon Co., Kansas.
- BB-982 = Top of Hertha (Sniabar) Limestone in roadcuts on both sides of road at @1020'; near Center of South line, Sec. 26, T.24S., R.22E., Bourbon Co., Kansas.
- BB-983 = Same unit as at BB-982 with top of Hertha (Sniabar) Limestone at 970'; near Center of West line, NW1/4, SW1/4, SW1/4, Sec. 3, T.25S., R.22E., Bourbon Co., Kansas.
- BB-984 = Base of Swope (Middle Creek) Limestone estimated at @990' in road; about 200' West of Center, SE1/4, Sec. 3, T.25S., R.22E., Bourbon Co., Kansas.
- BB-985 = Top of Swope (Bethany Falls) Limestone at @1030' in field on both sides of road; near Center of South line, SE1/4, SW1/4, NW1/4, Sec. 3, T.25S., R.22E., Bourbon Co., Kansas.
- BB-986 = Base of Dennis (Canville) Limestone in road at @1045'; near Center of South line, SW1/4, NW1/4, Sec. 3, T.25S., R.22E., Bourbon Co., Kansas.

BB-987 = Dennis (Winterset) Limestone in old quarry on North side of road with oolitic top at @ 1070' in road, base of Dennis (Canville) Limestone at 1040' in road; near center of South line, SE1/4, NW1/4, Sec. 4, T.25S., R.22E., Bourbon Co., Kansas.

BB-988 = Base of Swope (Middle Creek) Limestone in road at @ 985', just North and East of B-12; about 100' East of Center of West line, SW1/4, SE1/4, NE1/4, Sec. 9, T.24S., R.22E., Bourbon Co., Kansas.

BB-989 = Oolitic limestone in road at an elevation of 1067', Winterset; near Center, Sec. 21, T. 24S., R.22E., Bourbon Co., Kansas.

BB-990 = Top of Dennis (Winterset) Limestone at @ 1090' in road; just South of Center, NW1/4, SW1/4, SE1/4, Sec. 21, T.24S., R.22E., Bourbon Co., Kansas.

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