November 5, 1986

Department of Engineering
City Hall-Seventh Floor
455 North Main
Wichita, Ks 67202

Subject: Addendum to
Drainage Plan for New
Western Second Addition

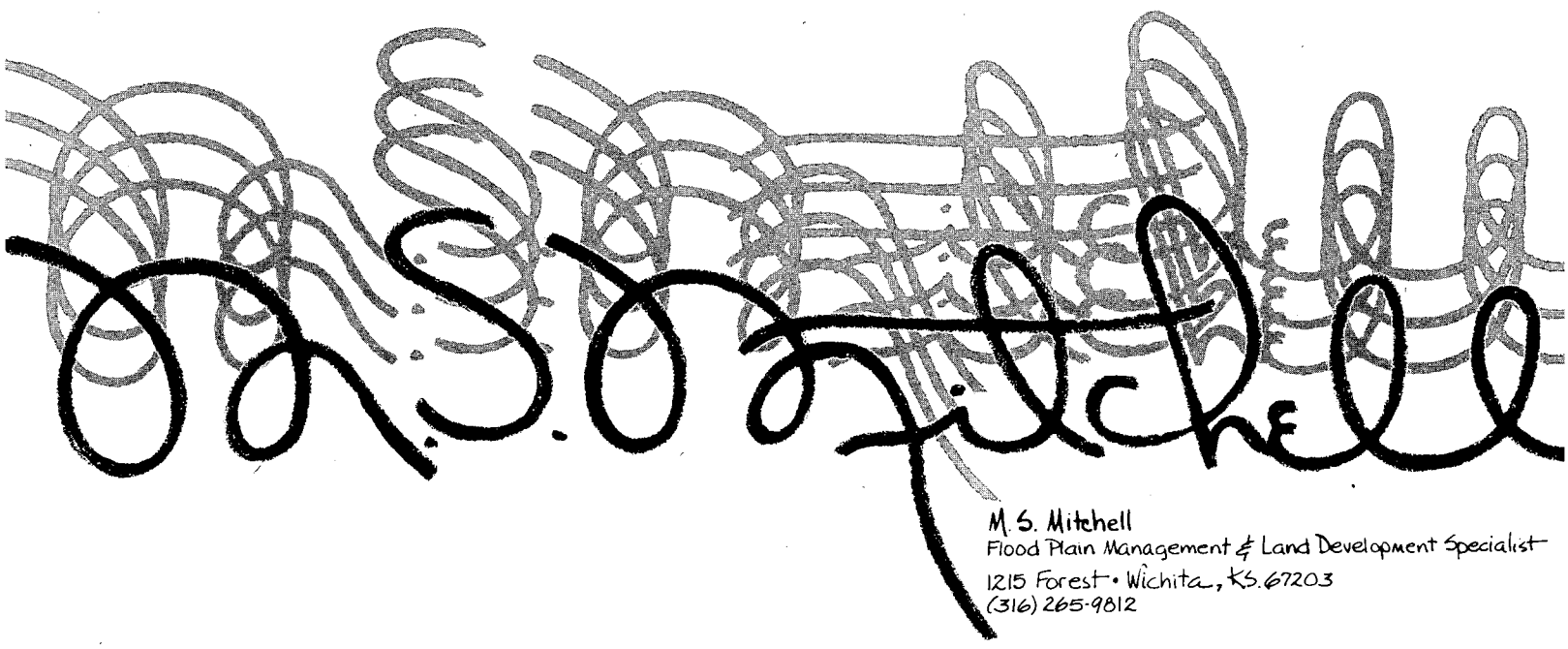
Attention: Ms. Vicky Huang

Dear Vicky:

Transmitted with this letter is an Addendum to the Drainage Plan for New Western Second Addition which addresses the on-site drainage questions you raised earlier today. A revised copy of the Plan drawing is also attached.

If you have any questions, or need further clarification, please call me.

Yours truly,



M. S. Mitchell
Flood Plain Management & Land Development Specialist
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ADDENDUM TO DRAINAGE PLAN

NEW WESTERN SECOND ADDITION

On-site surface and building drainage will be accommodated in several ways. So long as the existing building located at the intersection of Kellogg and Beverly and its parking lot west of the building remain in use, roof and surface drainage will continue to be directed to Beverly and to Kellogg via existing drives. At such time as that building is removed, a new site plan will address the drainage for that portion of the site, with the explicit requirement that drainage be taken into Dry Creek in the most expeditious route via inlets or approved flumes.

Upon removal of the existing curbs and pavement in Marvin and the curve connecting it to Sylvan, the excavated area will be filled and graded to drain to grate inlets located over the proposed storm water sewer or to the proposed triangular swale and into Dry Creek at the location of the existing flume. The flume will be reconstructed as necessary at the same location.

When the Sylvan turnaround is constructed, drainage from both sides of Sylvan will be intercepted by new inlets and piped to Dry Creek.

END ADDENDUM 11-5-86

Dry Creek - Kellogg to Orme

Q_{100} = 2550 cfs
Depth @ Kellogg = 6 feet ± @ Orme 9 feet ±
Slope from 50' ds from Kellogg to RCBC @ Orme = .004 ft/ft.

Alternate 1

Earth channel w/4 to 1 Side Slopes

$$K' = Qn / b^{8/3} S^{1/2} = \frac{2550(.030)}{.063} / b^{8/3} = 1214 / b^{8/3}$$

For b = 40 K' = .0649 D/b = .134 D = 5.4
WS = 147.0 + 5.4 = 152.4 OK, top of bank = 153+
Top of bank to top of bank width = 88 feet
Area @ D = 5.4' = 333 Sq.ft Velocity = 7.67 fps

For b = 16 K' = .745 D/b = .441 D = 7.1
WS = 144.5 + 7.1 = 151.6, OK top of bank 153+
Top of bank to top of bank width = 84 feet
Area @ D = 7.1' = 315 Sq ft Velocity = 8.09 fps

use @ Kellogg

Alternate 2

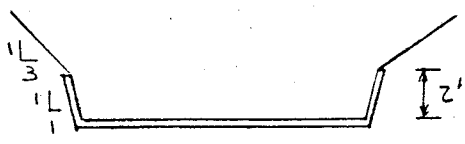
Earth channel w/ 4 to 1 Side Slopes and maximum velocity @ Q = 2550 cfs of 6 fps

For D = 5.4 feet b = 58 feet & Top = 106'

For D = 7.1 feet b = 32 feet & Top = 100'

Alternate 3

Concrete bottom channel w/ 2 foot lip on 1 to 1 slope and earth 3 to 1 slope above lip



Try 40' bottom - Concrete Section, $A_c = (40+2)2 = 84$ Sq ft, WP = 45.66' @ n = .015
At 5' flow depth Area of earth, $A_e = (44+9)3 = 159$ Sq. ft., WP = 19 @ n = .030
Equivalent $n = \frac{[(45.66)(.015)^{1.5} + (19)(.030)^{1.5}]^{2/3}}{(64.66)^{2/3}} = .020$

$A/$ 213 /

Dry Creek - Kellogg to Orme

Alternate 3 continued

$Q = \frac{1.486}{n} AR^{2/3} S^{1/2} = \frac{1.486}{.020} (243)(2.43)(.063) = 2762$ cfs which is 108% of design Q_{100}. Velocity = 2762/243 = 11.4 fps

Top Width = 68' @ Kellogg & 83' @ Orme

Alternate 4

U-Shaped Concrete Channel $n = .015$

$K' = Qn/b^{8/3} S^{1/2} = 607/b^{8/3}$

For $b = 35'$ $K' = .0463$ $D = 4.9'$ OK

CARDER CONCRETE PRODUCTS
8311 WEST CARDER COURT • LITTLETON, COLORADO 80125
PHONE: 303/794-6303

WYOMING CONCRETE PIPE
725 BRYAN STOCK TRAIL • CASPER, WYOMING 82609
PHONE: 307/265-3100

12-28-84

New Western Addn

MS Mitchell
Bill Ko-ber
Lakin
Nagel
Brigham Stearn
Lindebank

Lakin Thoughts

① Possible partial SA project

② Look at R/W for an improved section as an out right dedication

③ Intermediate design section & what level of safety and impact

④ Legal Review – cities liability for velocities

⑤ Recommended Min Pad

⑥ No Bridges

265-9812