

**STAFF REPORT  
(PRELIMINARY PLAT)**

**CASE NUMBER:** SUB 2002-99 -- WILSON ESTATES MEDICAL PARK ADDITION

**OWNER/APPLICANT:** Barbara Waddell, 3306 Diablo Way, Castle Rock, CO 80104;  
(contract purchaser) Wilson Residential Company, L.L.C., 150 N.  
Market, Wichita, KS 67202

**SURVEYOR/ENGINEER:** PEC, Attn: Rob Hartman, 303 S. Topeka, Wichita, KS 67202

**LOCATION:** South of 21st North, West side of Webb

**SITE SIZE:** 33 acres

**NUMBER OF LOTS**

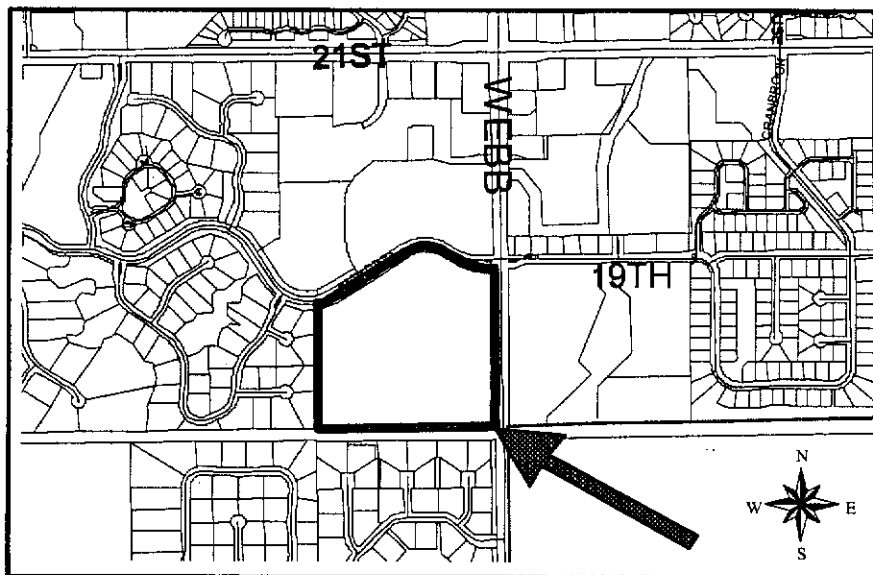
Residential:	
Office:	17
Commercial:	
Industrial:	
Total:	<u>17</u>

**MINIMUM LOT AREA:** 36,653 sq. ft.

**CURRENT ZONING:** SF-5, Single-Family Residential

**PROPOSED ZONING:** GO, General Office

**VICINITY MAP**



**NOTE:** This is a replat of Lot 1, Block 2 and Reserve B of the Legacy Park Wilson Estates Addition. The site has been approved for a zone change (ZON 2002-18) from SF-5, Single-Family Residential to GO, General Office subject to replatting. The Wilson Estates Medical Park Community Unit Plan (CUP2002-10, DP-260) was also approved for this site.

**Planning Staff recommends approval of the plat.**

**STAFF COMMENTS:**

- A. The applicant shall guarantee the extension of sanitary sewer and City water to serve the lots being platted. **City Engineering** needs to comment on the need for other guarantees or easements.
- B. If improvements are guaranteed by petition, a notarized certificate listing the petitions shall be submitted to the Planning Department for recording.
- C. **City Engineering** needs to comment on the status of the applicant's drainage concept.
- D. **Traffic Engineering** has requested that the following street improvements shall be guaranteed:
  - 1. Provide a raised median or a channelized-Y for right-in/right-out only movements onto Webb Road at the middle entrance, upon approval by Traffic Engineering.
  - 2. Extension of a left-turn lane to serve the northbound left movements at Webb Road and Wilson Estates Parkway, and construction of a northbound left-turn lane on Webb Road to serve the proposed southern driveway.
  - 3. Provide a third lane on Wilson Estates Parkway between the first entrance and Webb, said lane being designed for dual eastbound lanes onto Webb at the intersection and transitioning to dual westbound lanes (one left-turn only, one through) at the first entrance to the medical office park. A medial strip shall be designed to align the lane configurations.
  - 4. Signalize the intersection of Wilson Estates Parkway and Webb Road.
  - 5. Prohibit left-turns onto Wilson Estates Parkway from the eastern entrance by use of a directional raised medial in the private drive entrance.
- E. The plat proposes complete access control along the plat's frontage to Webb and Wilson Estates Parkway except for one opening for Lot 1, Block 1. **Traffic Engineering** has requested that the opening for Lot 1, Block 1 should be aligned with the south opening for the Church property across Webb.

The final plat shall reference the dedication of access controls in the plat's text.
- F. **Traffic Engineering** has requested additional right-of-way along Webb Road. The proposed Access Management Policy requires a 60-ft half-street right-of-way width along urban arterials. The plat's text shall note the dedication of the street to and for the use of the public.
- G. A covenant shall be submitted regarding Reserve A, platted for private drive purposes, which sets forth ownership and maintenance of the private drive, and future reversionary rights of

**SUB 2002-99 -- Preliminary Plat of WILSON ESTATES MEDICAL PARK ADDITION**  
**October 3, 2002 - Page 3**

the reserve to the lots benefiting from the reserve. The plat's text shall reference the platting of the reserve for private drive purposes and shall state which specific lots are to be accessed by the reserve.

- H. The final plat shall state in the plat's text the purposes of the proposed reserves as well as the ownership and maintenance responsibilities.
- I. Provisions shall be made for ownership and maintenance of the proposed reserves. The applicant shall either form a lot owners' association prior to recording the plat or shall submit a covenant stating when the association will be formed, when the reserves will be deeded to the association and who is to own and maintain the reserves prior to the association taking over those responsibilities.
- J. For those reserves being platted for drainage purposes, the required covenant which provides for ownership and maintenance of the reserves shall grant, to the City, the authority to maintain the drainage reserves in the event the owner(s) fail to do so. The covenant shall provide for the cost of such maintenance to be charged back to the owner(s) by the governing body.
- K. A note shall be placed on the final plat, indicating that this Addition is subject to the conditions of the Wilson Estates Medical Park Community Unit Plan (CUP2002-10, DP-260).
- L. The applicant shall submit an avigational easement covering all of the subject plat and a restrictive covenant assuring that adequate construction methods will be used to minimize the effects of noise pollution in the habitable structures constructed on subject property.
- M. A CUP Certificate shall be submitted to MAPD prior to City Council consideration, identifying the approved CUP and its special conditions for development on this property.
- N. On the final plat, the MAPC signature block needs to reference "Michael E. Lindebak, Secretary".
- O. On the final plat, the MAPC signature block needs to reference "Bernard A. Hentzen, Chair".
- P. The applicant shall submit a copy of the instrument which establishes the pipeline easements on the property, which verifies that the easements shown are sufficient and that utilities may be located adjacent to and within the easements. Any relocation, lowering or encasement of the pipeline, required by this development, will not be at the expense of the City.
- Q. The applicant's agent shall determine any setback requirements for the pipelines by researching the text of the pipeline agreements. If a setback from the pipeline easements is provided for in the pipeline easement agreements, it shall be indicated on the face of the plat.
- R. The Applicant is reminded that a platting binder is required with the final plat. Approval of this plat will be subject to submittal of this binder and any relevant conditions found by such a review.
- S. The plat's text shall include language that a drainage plan has been developed for the plat and that all drainage easements, rights-of-way, or reserves shall remain at established grades or as modified with the approval of the applicable City or County Engineer, and unobstructed to allow for the conveyance of stormwater.

- T. The applicant shall install or guarantee the installation of all utilities and facilities which are applicable and described in Article 8 of the MAPC Subdivision Regulations. (Water service and fire hydrants required by Article 8 for fire protection shall be as per the direction and approval of the Chief of the Fire Department.)
- U. The applicant's engineer is advised that the Register of Deeds is requiring the name(s) of the notary public, who acknowledges the signatures on this plat, to be printed beneath the notary's signature.
- V. To receive mail delivery without delay, and to avoid unnecessary expense, the applicant is advised of the necessity to meet with the U.S. Postal Service Growth Management Coordinator (Phone 316-946-4556) prior to development of the plat so that the type of delivery, and the tentative mailbox locations can be determined.
- W. The applicant is advised that various State and Federal requirements (specifically but not limited to the Army Corps of Engineers, Kanopolis Project Office, Rt. 1, Box 317, Valley Center, KS 67147) for the control of soil and wind erosion and the protection of wetlands may impact how this site can be developed. It is the applicant's responsibility to contact all appropriate agencies to determine any such requirements.
- X. The owner of the subdivision should be aware of the fact that the development of any subdivision greater than five (5) acres in size may require an NPDES Storm Water Discharge Permit from the Kansas Department of Health and Environment in Topeka. Further, on all construction sites, the City of Wichita requires that best management practices be used to reduce pollutant loadings in storm water runoffs.
- Y. Perimeter closure computations shall be submitted with the final plat tracing.
- Z. Recording of the plat within thirty (30) days after approval by the City Council and/or County Commission.
- AA. The representatives from the utility companies should be prepared to comment on the need for any additional utility easements to be platted on this property.
- BB. The applicant is reminded that a disk shall be submitted with the final plat tracing to the Planning Department detailing this plat in digital format in AutoCAD. This will be used by the City and County GIS Department.

**STAFF REPORT**

**(FINAL PORTION OF OVERALL PRELIMINARY PLAT, PRELIMINARY PLAT APPROVED 10/3/02)**

**CASE NUMBER:** SUB 2002-99 -- WILSON ESTATES MEDICAL PARK ADDITION

**OWNER/APPLICANT:** Wilson Residential Company, L.L.C., 150 N. Market, Wichita, KS 67202

**SURVEYOR/ENGINEER:** PEC, Attn: Rob Hartman, 303 S. Topeka, Wichita, KS 67202

**LOCATION:** South of 21st North, West side of Webb

**SITE SIZE:** 10.6 acres

**NUMBER OF LOTS**

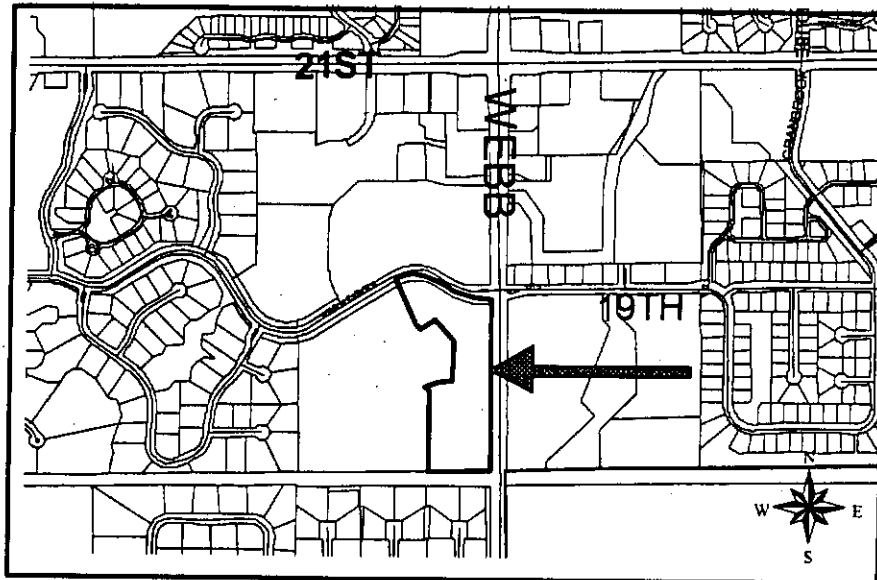
Residential:	
Office:	
Commercial:	5
Industrial:	5
Total:	5

**MINIMUM LOT AREA:** 1.25 acres

**CURRENT ZONING:** SF-5, Single-Family Residential

**PROPOSED ZONING:** GO, General Office

**VICINITY MAP**



**NOTE:** This is a replat of Lot 1, Block 2 and Reserve B of the Legacy Park Wilson Estates Addition. The site has been approved for a zone change (ZON 2002-18) from SF-5, Single-Family Residential to GO, General Office subject to replatting. The Wilson Estates Medical Park Community Unit Plan (CUP2002-10, DP-260) was also approved for this site.

This final plat consists of the eastern portion of the overall preliminary plat approved for the site and represents the first phase of development.

**Planning Staff recommends approval of the plat.**

**STAFF COMMENTS:**

- A. The applicant shall guarantee the extension of sanitary sewer and City water to serve the lots being platted. **City Engineering** needs to comment on the need for other guarantees or easements.
- B. If improvements are guaranteed by petition, a notarized certificate listing the petitions shall be submitted to the Planning Department for recording.

**C. City Engineering** needs to comment on the status of the applicant's drainage plan.

- D. **Traffic Engineering** has requested that the following street improvements shall be guaranteed:
  - 1. Extension of a left-turn lane to serve the northbound left movements at Webb Road and Wilson Estates Parkway, and construction of a contingent northbound left-turn lane on Webb Road to serve the proposed southern driveway.
  - 2. Provide a third lane on Wilson Estates Parkway between the first entrance and Webb, said lane being designed for dual eastbound lanes onto Webb at the intersection and transitioning to dual westbound lanes (one left-turn only, one through) at the first entrance to the medical office park. A medial strip shall be designed to align the lane configurations.

3. Signalize the intersection of Wilson Estates Parkway and Webb Road.

- 4. Prohibit left-turns onto Wilson Estates Parkway from the eastern entrance by use of a directional raised medial in the private drive entrance.

E. **Traffic Engineering** has requested additional right-of-way along Webb Road. The proposed Access Management Policy requires a 60-ft half-street right-of-way width along urban arterials. The plat's text shall note the dedication of the street to and for the use of the public.

The additional right-of-way has been dedicated as requested.

F. The plat shall denote the right-of-way width of Wilson Estates Parkway.

G. A covenant shall be submitted regarding Reserve A, platted for private drive purposes, which sets forth ownership and maintenance of the private drive, and future reversionary rights of the reserve to the lots benefiting from the reserve. The plat's text shall reference the platting of the reserve for private drive purposes and shall state which specific lots are to be accessed by the reserve.

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**October 31, 2002 - Page 4**

- U. The plat's text shall include language that a drainage plan has been developed for the plat and that all drainage easements, rights-of-way, or reserves shall remain at established grades or as modified with the approval of the applicable City or County Engineer, and unobstructed to allow for the conveyance of stormwater.
- V. The applicant shall install or guarantee the installation of all utilities and facilities which are applicable and described in Article 8 of the MAPC Subdivision Regulations. (Water service and fire hydrants required by Article 8 for fire protection shall be as per the direction and approval of the Chief of the Fire Department.)
- W. The applicant's engineer is advised that the Register of Deeds is requiring the name(s) of the notary public, who acknowledges the signatures on this plat, to be printed beneath the notary's signature.
- X. To receive mail delivery without delay, and to avoid unnecessary expense, the applicant is advised of the necessity to meet with the U.S. Postal Service Growth Management Coordinator (Phone 316-946-4556) prior to development of the plat so that the type of delivery, and the tentative mailbox locations can be determined.
- Y. The applicant is advised that various State and Federal requirements (specifically but not limited to the Army Corps of Engineers, Kanopolis Project Office, Rt. 1, Box 317, Valley Center, KS 67147) for the control of soil and wind erosion and the protection of wetlands may impact how this site can be developed. It is the applicant's responsibility to contact all appropriate agencies to determine any such requirements.
- Z. The owner of the subdivision should be aware of the fact that the development of any subdivision greater than five (5) acres in size may require an NPDES Storm Water Discharge Permit from the Kansas Department of Health and Environment in Topeka. Further, on all construction sites, the City of Wichita requires that best management practices be used to reduce pollutant loadings in storm water runoffs.
- AA. Perimeter closure computations shall be submitted with the final plat tracing.
- BB. Recording of the plat within thirty (30) days after approval by the City Council and/or County Commission.
- CC. The representatives from the utility companies should be prepared to comment on the need for any additional utility easements to be platted on this property.
- DD. The applicant is reminded that a disk shall be submitted with the final plat tracing to the Planning Department detailing this plat in digital format in AutoCAD. This will be used by the City and County GIS Department.

**SUB 2002-99 -- Final Plat of WILSON ESTATES MEDICAL PARK ADDITION**

**October 31, 2002 - Page 3**

- H. Provisions shall be made for ownership and maintenance of the proposed reserves. The applicant shall either form a lot owners' association prior to recording the plat or shall submit a covenant stating when the association will be formed, when the reserves will be deeded to the association and who is to own and maintain the reserves prior to the association taking over those responsibilities.
- I. For those reserves being platted for drainage purposes, the required covenant which provides for ownership and maintenance of the reserves shall grant, to the City, the authority to maintain the drainage reserves in the event the owner(s) fail to do so. The covenant shall provide for the cost of such maintenance to be charged back to the owner(s) by the governing body.
- J. A note shall be placed on the final plat, indicating that this Addition is subject to the conditions of the Wilson Estates Medical Park Community Unit Plan (CUP2002-10, DP-260).
- K. The applicant shall submit an avigational easement covering all of the subject plat and a restrictive covenant assuring that adequate construction methods will be used to minimize the effects of noise pollution in the habitable structures constructed on subject property.
- L. A CUP Certificate shall be submitted to MAPD prior to City Council consideration, identifying the approved CUP and its special conditions for development on this property.
- M. The perimeters of the proposed lots shall match the perimeters of the CUP parcel boundaries. A CUP adjustment will need to be approved prior to MAPC approval of the plat.**
- N. The final plat tracing shall include all the necessary certifications.
- O. On the final plat tracing, the MAPC signature block needs to reference "Michael E. Lindebak, Secretary".
- P. On the final plat Tracing, the MAPC signature block needs to reference "Bernard A. Hentzen, Chair".
- Q. The applicant shall submit a copy of the instrument which establishes the pipeline easements on the property, which verifies that the easements shown are sufficient and that utilities may be located adjacent to and within the easements. Any relocation, lowering or encasement of the pipeline, required by this development, will not be at the expense of the City.
- R. The applicant's agent shall determine any setback requirements for the pipelines by researching the text of the pipeline agreements. If a setback from the pipeline easements is provided for in the pipeline easement agreements, it shall be indicated on the face of the plat.
- S. The Subdivision Committee has required that the plat be in conformance with the private restrictive covenants prior to MAPC approval.**
- T. The Applicant is reminded that a platting binder is required with the final plat. Approval of this plat will be subject to submittal of this binder and any relevant conditions found by such a review.

FINAL BOUNDARY CLOSURE FOR WILSON ESTATES MEDICAL PARK

PNT #

238 North: 14521.7232 East : 18668.8075  
Line Course: S 88°58'13" W Length: 405.00'

308 North: 14514.4449 East : 18263.8729  
Line Course: N 01°01'47" W Length: 505.95'

307 North: 15020.3132 East : 18254.7805  
Line Course: N 38°24'21" W Length: 32.00'

306 North: 15045.3893 East : 18234.9012  
Line Course: N 51°35'39" E Length: 71.21'

305 North: 15089.6270 East : 18290.7035  
Curve Length: 158.74' Radius: 500.00'  
Delta: 18°11'24" Tangent: 80.04'  
Chord: 158.07' Course: N 60°41'20" E  
Course In: S 38°24'21" E Course Out: N 20°12'58" W  
RP North: 14697.8118 East : 18601.3173

333 North: 15167.0098 East : 18428.5362  
Line Course: N 00°54'41" W Length: 257.40'

334 North: 15424.3772 East : 18424.4420  
Line Course: N 50°34'21" W Length: 171.71'

335 North: 15533.4305 East : 18291.8083  
Curve Length: 96.01' Radius: 820.00'  
Delta: 6°42'30" Tangent: 48.06'  
Chord: 95.95' Course: S 44°13'07" W  
Course In: N 49°08'08" W Course Out: S 42°25'37" E  
RP North: 16069.9332 East : 17671.6754

301 North: 15464.6599 East : 18224.8880  
Line Course: N 42°25'37" W Length: 47.45'

300 North: 15499.6846 East : 18192.8759  
Line Course: N 45°30'23" W Length: 319.57'

336 North: 15723.6487 East : 17964.9175  
Line Course: N 57°24'50" E Length: 71.45'

195 North: 15762.1293 East : 18025.1200  
Curve Length: 282.02' Radius: 262.00'  
Delta: 61°40'25" Tangent: 156.41'  
Chord: 268.60' Course: N 88°15'02" E  
Course In: S 32°35'10" E Course Out: N 29°05'15" E



RP North: 15541.3726 East : 18166.2245  
 194 North: 15770.3287 East : 18293.5944  
     Line Course: S 60°54'45" E Length: 122.86'  
 197 North: 15710.6010 East : 18400.9591  
     Curve Length: 260.14' Radius: 496.85'  
     Delta: 29°59'56" Tangent: 133.12'  
     Chord: 257.18' Course: S 75°54'43" E  
     Course In: N 29°05'15" E Course Out: S 00°54'41" E  
     RP North: 16144.7874 East : 18642.5001  
 229 North: 15648.0002 East : 18650.4030  
     Line Course: N 89°05'19" E Length: 10.48'  
 198 North: 15648.1669 East : 18660.8817  
     Line Course: S 00°54'41" E Length: 984.26'  
 236 North: 14664.0315 East : 18676.5374  
     Line Course: S 88°58'13" W Length: 10.00'  
 237 North: 14663.8518 East : 18666.5390  
     Line Course: S 00°54'41" E Length: 142.14'  
 238 North: 14521.7297 East : 18668.7999

Perimeter: 3948.38' Area: 480,701 sq. ft. 11.04 acres



FINAL BOUNDARY CLOSURE FOR WILSON ESTATES MEDICAL PARK

PNT #

238 North: 14521.7232 East : 18668.8075  
Line Course: S 88°58'13" W Length: 405.00'

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Line Course: N 38°24'21" W Length: 32.00'

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Line Course: N 51°35'39" E Length: 71.21'

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Curve Length: 158.74' Radius: 500.00'  
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Course In: S 38°24'21" E Course Out: N 20°12'58" W  
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334 North: 15424.3772 East : 18424.4420  
Line Course: N 50°34'21" W Length: 171.71'

335 North: 15533.4305 East : 18291.8083  
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301 North: 15464.6599 East : 18224.8880  
Line Course: N 42°25'37" W Length: 47.45'

300 North: 15499.6846 East : 18192.8759  
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336 North: 15723.6487 East : 17964.9175  
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195 North: 15762.1293 East : 18025.1200  
Curve Length: 282.02' Radius: 262.00'  
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 194 North: 15770.3287                      East : 18293.5944  
       Line Course: S 60°54'45" E Length: 122.86'  
 197 North: 15710.6010                      East : 18400.9591  
       Curve Length: 260.14'                      Radius: 496.85'  
       Delta: 29°59'56"                      Tangent: 133.12'  
       Chord: 257.18'                      Course: S 75°54'43" E  
       Course In: N 29°05'15" E                      Course Out: S 00°54'41" E  
       RP North: 16144.7874                      East : 18642.5001  
 229 North: 15648.0002                      East : 18650.4030  
       Line Course: N 89°05'19" E Length: 10.48'  
 198 North: 15648.1669                      East : 18660.8817  
       Line Course: S 00°54'41" E Length: 984.26'  
 236 North: 14664.0315                      East : 18676.5374  
       Line Course: S 88°58'13" W Length: 10.00'  
 237 North: 14663.8518                      East : 18666.5390  
       Line Course: S 00°54'41" E Length: 142.14'  
 238 North: 14521.7297                      East : 18668.7999

Perimeter: 3948.38'    Area: 480,701 sq. ft. 11.04 acres





**Professional Engineering Consultants, PA.**

303 S. TOPEKA ■ WICHITA, KANSAS 67202 ■ 316-262-2691 ■ FAX 316-262-3003 ■ www.pec1.com ■ designers@pec1.com

# LETTER OF TRANSMITTAL

TO: Dept. of Public Works  
City Engineers office 7th floor City Hall  
455 N. Main

PROJECT NO.: 36-02080-3432  
PROJECT: Wilson Estates Medical Park Phase 1  
Drainage Plan

ATTENTION: Vicky Huang

DATE: 10/14/02

WE ARE SENDING YOU:  Attached  Under separate cover via \_\_\_\_\_ the following items:  
 Shop drawings  Prints  Plans  Samples  Specifications  
 Copy of letter  Change order  \_\_\_\_\_

COPIES	DATE	NO.	DESCRIPTION
2			Drainage plan with four-corner elevations.

THESE ARE TRANSMITTED as checked below:

- For approval  Approved as submitted  Resubmit \_\_\_\_\_ copies for approval
- For your use  Approved as noted  Submit \_\_\_\_\_ copies for distribution
- As requested  Returned for corrections  \_\_\_\_\_ corrected prints
- For review and comment  \_\_\_\_\_
- FOR BIDS DUE \_\_\_\_\_  PRINTS RETURNED AFTER LOAN TO US

REMARKS:

**RECEIVED**  
**OCT 14 2002**  
**CITY - ENGINEERING**

TO: file

SIGNED Rob Hartman

If enclosures are not as noted, kindly notify us at once.

100

10/18/02

Memorandum

2

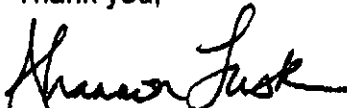
Dear Ms. Huang,

I am writing this memo in reference to your questions concerning the adequacy of the 5'x4' RCBC to drain the area platted as Wilson Estate Medical Park. The Medical Park is part of the original Bradley Fair 2<sup>nd</sup> Addition Drainage Plan and is found in Basin 6 of that plan. The 5'x4' RCBC located at the southeast corner of the Medical Park (Basin 6) was designed to handle developed conditions runoff from the 100-year storm (see attached calculations.) Since the completion of the Bradley Fair 2<sup>nd</sup> Addition drainage study, Webb Road was improved. During construction on Webb Road, the then existing 2-5'x4' RCBC (see enclosed map) was plugged and replaced with a 29"x45" HERCP, thus causing approximately 5 acres of Basin 7 to drain south along Webb Road. Therefore, the new drainage area to the 5'x4' RCBC at the southeast corner of the Medical Park includes the 23.15 acres from Medical Park originally planned for in the Bradley Fair 2<sup>nd</sup> Addition Drainage Plan (see calculations) plus the five acres north of the Medical Park site described above. The total equals approximately 28 acres. Please note that the drainage for the Medical Park was intentionally designed in accordance with the Bradley Fair 2<sup>nd</sup> Addition Drainage Plan.

Referencing the Bradley Fair 2<sup>nd</sup> calculations, the undeveloped Q for the 100-year storm is 142.3 cfs. The developed Q<sub>100</sub> adjusted for the 5 acre addition is 156.6 cfs, which is greater than the original developed Q<sub>100</sub> found in the Bradley Fair 2<sup>nd</sup> calculations. A culvert analysis was performed in order to determine the capacity of the 5'x4' RCBC. The results show that the culvert can successfully carry the 50-year storm without overtopping the culvert. The 100-year storm will cause a headwater elevation just 1 inch above the lowest point on Webb Road and 1.7 feet below the road directly above the culvert. Therefore, according to this analysis, Webb Road will be barely, if at all, overtopped during the 100-year storm.

I have enclosed calculations, a culvert analysis, and excerpts from Bradley Fair 2<sup>nd</sup> Addition Drainage Plan for your convenience.

Thank you,



Shannon Lusk





Professional Engineering Consultants, P.A.

303 S. TOPEKA • WICHITA, KANSAS 67202  
 316-262-2691 • FAX 316-262-3003  
 www.pec1.com • designers@pec1.com

Project WILSON ESTATES MEDICAL PARK Date 10/17/02  
 Item \_\_\_\_\_ By \_\_\_\_\_

\* REFERENCE BRADLEY FAIR 2<sup>ND</sup> ADDITION  
 DRAINAGE PLAN (BASIN 6)

UNDEVELOPED  $Q_{UD} = 142.3 \text{ CFS}$

DEVELOPED  $Q_D$ 'S

$C_{UD} = 0.70$

$i_{UD} = 7.36 \text{ IN/HR}$  (x ASSUMING A CONSERVATIVE  $t_L = 15 \text{ MIN.}$ )

$A = 23.15 \text{ ACRES} + 5 \text{ ACRES} = 28 \text{ ACRES}$

$Q_{UD} = 0.70(7.36)(28) = 150.6 \text{ CFS}$

FIND  $Q_{25} = Q_{50}$

$Q = K C_i A$

RETURNS INTERVAL

K

10 YRS OR LESS

1.00

25 YRS

1.10

50 YRS

1.20

10-YR STORM

$C_D = 0.62$

$i_D = 5.21 \text{ IN/HR}$  @  $t_L = 15 \text{ MIN}$

$A = 28 \text{ ACRES}$

$Q_{10} = K C_D i_D A = 0.62(5.21)(28) = 90.4 \text{ CFS}$

25-YR STORM:  $Q_{25} = 1.10(90.4 \text{ CFS}) = 99.4 \text{ CFS}$

50-YR STORM:  $Q_{50} = 1.20(90.4 \text{ CFS}) = 108.5 \text{ CFS}$





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Project WILSON ESTATES MEDICAL PARK Date 10/17/02

Item \_\_\_\_\_ By \_\_\_\_\_

CHECK ADEQUACY OF 5'x4" R/CBC

-SEE CULVERT ANALYSIS

$$FE = 187.4$$

$$TOP = 187.4 + 4' = 191.4$$

@ ELEV 191.22, 109.6 CFS IS FLOWING THROUGH THE CULVERT

THEREFORE, THE 50-YR STORM ( $Q_{50} = 108.5$  CFS) CAN BE SUCCESSFULLY CARRIED BY THE CULVERT WITHOUT OVERTOPPING.

THE 100-YEAR STORM ( $Q_{100} = 156.6$  CFS) WILL CAUSE A HEADWATER ELEVATION = 192.3 WHICH IS 1.1' ABOVE THE TOP OF THE CULVERT.

ELEV OF WEBB RD ABOVE CULVERT = 194'

$$194 - 192.3 = 1.7' \text{ BELOW RD ABOVE CULVERT}$$

LOW PT OF WEBB RD = 192.22 (\* FROM SURVEY AFTER RD IMPROVEMENTS)

$$192.3 - 192.22 = 0.08' = 1''$$

∴ DURING A 100-YR STORM, WEBB RD IS BARELY, IF AT ALL, OVERTOPPED.



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FILE DATE: 10-17-2002  
 FILE NAME: MEDPK

FHWA CULVERT ANALYSIS  
 HY-8, VERSION 6.1

C U L V E R T N O.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	187.16	187.06	140.00	1 RCB	5.00	4.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: MEDPK DATE: 10-17-2002

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
187.16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
188.31	15.7	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
188.96	31.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
189.50	47.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
189.98	62.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
190.42	78.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
190.84	94.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
191.22	109.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
191.57	125.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
191.96	140.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
192.31	156.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0
0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: MEDPK DATE: 10-17-2002

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
187.16	0.000	0.00	0.00	0.00
188.31	0.000	15.66	0.00	0.00
188.96	0.000	31.32	0.00	0.00
189.50	0.000	46.98	0.00	0.00
189.98	0.000	62.64	0.00	0.00
190.42	0.000	78.30	0.00	0.00
190.84	0.000	93.96	0.00	0.00
191.22	0.000	109.62	0.00	0.00
191.57	0.000	125.28	0.00	0.00
191.96	0.000	140.94	0.00	0.00
192.31	0.000	156.60	0.00	0.00

<1> TOLERANCE (ft) = 0.010

<2> TOLERANCE (%) = 1.000



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PERFORMANCE CURVE FOR CULVERT 1 - 1( 5.00 (ft) BY 4.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	187.16	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
15.66	188.31	1.01	1.15	2-M2c	1.12	0.67	0.67	0.00	4.64	0.00
31.32	188.96	1.60	1.80	2-M2c	1.83	1.07	1.07	0.00	5.85	0.00
46.98	189.50	2.10	2.34	2-M2c	2.47	1.40	1.40	0.00	6.70	0.00
62.64	189.98	2.57	2.82	2-M2c	3.08	1.70	1.70	0.00	7.37	0.00
78.30	190.42	3.01	3.26	2-M2c	4.00	1.97	1.97	0.00	7.94	0.00
93.96	190.84	3.43	3.68	2-M2c	4.00	2.23	2.23	0.00	8.44	0.00
109.62	191.22	3.85	4.06	2-M2c	4.00	2.47	2.47	0.00	8.89	0.00
125.28	191.57	4.26	4.41	2-M2c	4.00	2.70	2.70	0.00	9.29	0.00
140.94	191.96	4.68	4.80	2-M2c	4.00	2.92	2.92	0.00	9.66	0.00
156.60	192.31	5.12	5.15	2-M2c	4.00	3.13	3.13	0.00	10.01	0.00
El. inlet face invert					187.16 ft	El. outlet invert			187.06 ft	
El. inlet throat invert					0.00 ft	El. inlet crest			0.00 ft	

\*\*\*\*\* SITE DATA \*\*\*\*\* CULVERT INVERT \*\*\*\*\*  
 INLET STATION 0.00 ft  
 INLET ELEVATION 187.16 ft  
 OUTLET STATION 140.00 ft  
 OUTLET ELEVATION 187.06 ft  
 NUMBER OF BARRELS 1  
 SLOPE (V/H) 0.0007  
 CULVERT LENGTH ALONG SLOPE 140.00 ft

\*\*\*\*\* CULVERT DATA SUMMARY \*\*\*\*\*  
 BARREL SHAPE BOX  
 BARREL SPAN 5.00 ft  
 BARREL RISE 4.00 ft  
 BARREL MATERIAL CONCRETE  
 BARREL MANNING'S n 0.012  
 INLET TYPE CONVENTIONAL  
 INLET EDGE AND WALL 1:1 BEVEL (45 DEG. FLARE)  
 INLET DEPRESSION NONE



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TAILWATER

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CONSTANT WATER SURFACE ELEVATION  
187.06

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ROADWAY OVERTOPPING DATA

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ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	54.00 ft
CREST LENGTH	300.00 ft
OVERTOPPING CREST ELEVATION	194.00 ft

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Date \_\_\_\_\_ Page \_\_\_\_\_ of \_\_\_\_\_

Project BRADLEY FAIR II / WILSON ESTATES

Item BASIN #6

$A_{dev} = 23.15 \text{ Ac.}$

$A_{undev} = 28.85 \text{ Ac.}$

Q DEVELOPED

$C_{100} = 0.76$

$L_{100} = 7.36$

$A = 23.15$

$Q_{100} = 0.76(7.36)(23.15)$

$Q_{100} = 129.5 \text{ cfs}$

Q UNDEVELOPED

$C_{100} = 0.67$

$L_{100} = 7.36$

$A = 28.85$

$Q_{100} = 0.67(7.36)(28.85)$

$Q_{100} = 142.3 \text{ cfs}$

$Q_{100} (\text{DEV.}) \leq Q_{100} (\text{UNDEV.})$

DETENTION STORAGE NOT REQUIRED

4.5' HEAD REQ'D FOR 129.5 cfs in 5'x4' RCBC. (Proposed Part of Webb Rd. Project)

$1.0' \times 4.5' \times 186.5 \text{ ft} = \underline{122.0} \Rightarrow$  min. pad for Lots adjacent to Box.

NOTE: 100-YEAR FLOW DOES NOT TOP WEBB RD.

THEREFORE, SET MIN PAD LOTS ADJACENT TO WEBB RD.

AT ELEV.  $192.12 + 1.0' = \underline{193.12}$  or higher

Low Pt. WEBB + 1.0'









