
CITY OF JONESBORO

**3911 South Caraway Road
Rezoning Request**

Prepared by:



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The Purpose of Zoning, § 117-4

“The zoning regulations set forth in this chapter are enacted to aid in the implementation of the land use portion of the comprehensive plan for the city and to promote, in accordance with present and future needs, the safety, order, convenience, prosperity, and general welfare of the citizens of the city. The regulations are intended to provide for orderly growth and development; for protection of the character and stability of residential, commercial, industrial, recreational, and environmentally sensitive areas of the city; for protection of property from blight and undue depreciation; for efficiency and economy in the process of development for the appropriate and best use of land; for the use and occupancy of buildings; for healthful and convenient distribution of population; for good civic design and arrangement; and for adequate public utilities and facilities.”

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§ 117-34 Factors (Traditional Approval Criteria)

1. Consistency of the proposal with the comprehensive plan;
2. Consistency of the proposal with the purpose of this chapter;
3. Compatibility of the proposal with the zoning, uses and character of the surrounding area including adjacent neighbors that have a direct impact to the property;;
4. Suitability of the subject property for the uses to which it has been restricted without the proposed zoning map amendment;
5. Extent to which approval of the proposed rezoning will detrimentally affect nearby property including, but not limited to, any impact on property value, traffic, drainage, visual, odor, noise, light, vibration, hours of use/operation and any restriction to the normal and customary use of the affected property; and
6. Impact of the proposed development on community facilities and services, including those related to utilities, streets, drainage, parks, open space, fire, police, emergency medical services, and schools.

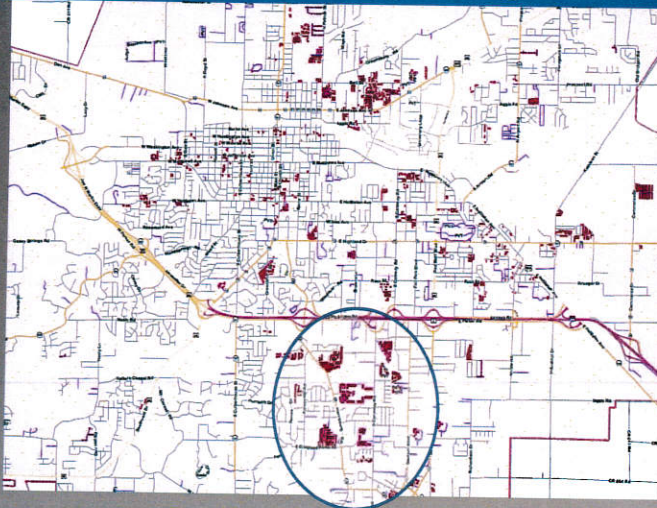
§ 117-175 Factors (PD Approval Criteria)

1. The PD district and preliminary development plan is consistent with the adopted city land use plan and comprehensive plan;
2. The proposed uses will have a beneficial effect on the community;
3. The internal streets and primary and secondary roads that are proposed properly interconnect with the surrounding existing road network;
4. The site will be accessible from public roads that are generally adequate to carry the traffic that will be imposed upon them by the proposed development and the streets and driveways on the site will be adequate to serve the residents or occupants of the proposed development;
5. The minimum common open space areas have been designated and shall be duly transferred to a legally established homeowners association, where applicable, or have been dedicated to city or another public or quasi-public agency as provided in section 117-171.
6. The preliminary development plan is consistent with the intent and purpose of this division.
7. The preliminary development plan has been transmitted to all other agencies and departments charged with responsibility of review.

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City of Jonesboro 3911 South Caraway Road Rezoning Request

- 15,000 vehicles travel on South Caraway each day
- 50% increase in vehicles using South Caraway since 2003
- No major road or infrastructure improvements on Caraway Road south of Latourette Drive since 1993
- Over 300 accidents have occurred on South Caraway during the last 5 years
- Property damage resulting from accidents is estimated to total \$1,471,785
- Current infrastructure is not adequate for existing community

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Dr. Zahid Hossain

Arkansas State University

Assistant Professor of Civil Engineering

Education:

- Doctor of Philosophy Civil Engineering The University of Oklahoma, Norman
- Master of Science Computer Science The University of Oklahoma, Norman
- Master of Science Civil Engineering The University of Oklahoma, Norman
- Bachelor of Science Civil Engineering Khulna University of Eng. and Tech., Bangladesh

Research Interests:

Asphalt Chemistry, Spectroscopy Analysis, Surface Chemistry, Superpave, Warm Mix Asphalt, Asphalt Recycling, Nanotechnology, Bioasphalt, Asphalt Emulsion, Mechanistic Empirical Pavement Design Guide (MEPDG), Enhanced Integrated Climate Modeling (EICM), Resilient Modulus, Constitutive Modeling, Neural Network Modeling, Data Mining, and Lean Construction.

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- **Problems with Braxton Development Traffic Study**
 - Design of study does not comply with AHTD Traffic Handbook standards or follow Best Practices for Traffic Impact Studies
 - Conducted over 14 hour period instead of the minimum requirement of 24 hours
 - No Annual Average Daily Traffic estimates
 - Does not account the seasonal factor
 - Does not evaluate impact on other modes of transportation
 - Best practices requires additional analysis to be given for 5 years beyond build out

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- Level of Service Analysis
 - P.M. eastbound Glenn Place
 - LOS will drop from "E" to "F"
 - A.M. westbound on Glenn Place
 - LOS will drop from "C" to "D"
 - A.M. eastbound Glenn Place
 - LOS will remain "E"
 - P.M. westbound Glenn Place
 - LOS will remain "C"
 - P.M. eastbound Main entrance
 - LOS shown as "E"

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- No Level of Service Analysis between I-555 and proposed development
 - 90% of traffic from the proposed site is estimated to travel between proposed site and I-555

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"The South Caraway area has been too highly trafficked for a long time now. I can't imagine what putting more multi-family housing will do when it's already VERY dangerous. We need to add the infrastructure of increased lanes before anyone allowed to build. If the City Council votes for this housing they are putting the interest of a few builders ahead of the safety of the entire city of Jonesboro."

- Allison McArthur, May 27 2017

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"Traffic on S. Caraway is an absolute nightmare. The road needs to be widened, there needs to be a turning lane, and there needs to be sidewalks for the numerous pedestrians who walk this road daily and who have worn a path in the grass from all of their foot traffic."

- Briley Schoolfield, June 2, 2017

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“During high traffic hours this two lane stretch is incredibly packed and dangerous already. Another 300 plus people driving on it would be terrible.”

- Cory Vaughn, June 3, 2017

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“South Caraway simply cannot handle a higher volume of traffic than it currently does. The road must be widened with sidewalks added before any more apartments are built.”

- Jenniver McCampbell, June 5, 2017

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- South Caraway Residents Take on Proposed Rezoning and Planned Development

Fact No. 1: The City of Jonesboro is approximately the 5th largest city in Arkansas based on population; however, it is the 2nd largest city in the state based on its geographic footprint. Fayetteville and Springdale are the 3rd and 4th most populous cities in Arkansas— Fayetteville's and Springdale's geographic footprint combined is not much larger than Jonesboro's footprint yet those cities together have approximately 87,000 more people living there.¹ Additionally, Jonesboro's geographic footprint is larger than St. Louis, Cincinnati, and Cleveland.

Fact No. 2: There are approximately 1,266 existing apartment units within 1,500 feet of the proposed development.²

Fact No. 3: It is estimated that approximately 15,000 vehicles travel on South Caraway Road each day. This is a 50% increase since 2003.³

Fact No. 4: Over the last 5 years, there have been over 300 accidents on South Caraway, which is more than both South Stadium and South Harrisburg Road. The property damage resulting from these accidents is believed to total approximately \$1,471,785.⁴

Fact No. 5: There have been no major road and infrastructure improvements on Caraway south of Latourette Drive since 1993.⁵

Fact No. 6: The City of Jonesboro has no plans for immediate road improvements on South Caraway.⁶

Fact No. 7: Despite the high number of existing apartments and the poor infrastructure in that area, the City of Jonesboro is considering adding approximately 300 new apartment units on South Caraway.

¹ United States Census, 2015, Northwest Arkansas Regional Planning Commission Information Request on May 10, 2017; City of Jonesboro Information Request on May 11, 2017; https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2010_place_list_39.txt; and https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2010_place_list_29.txt.

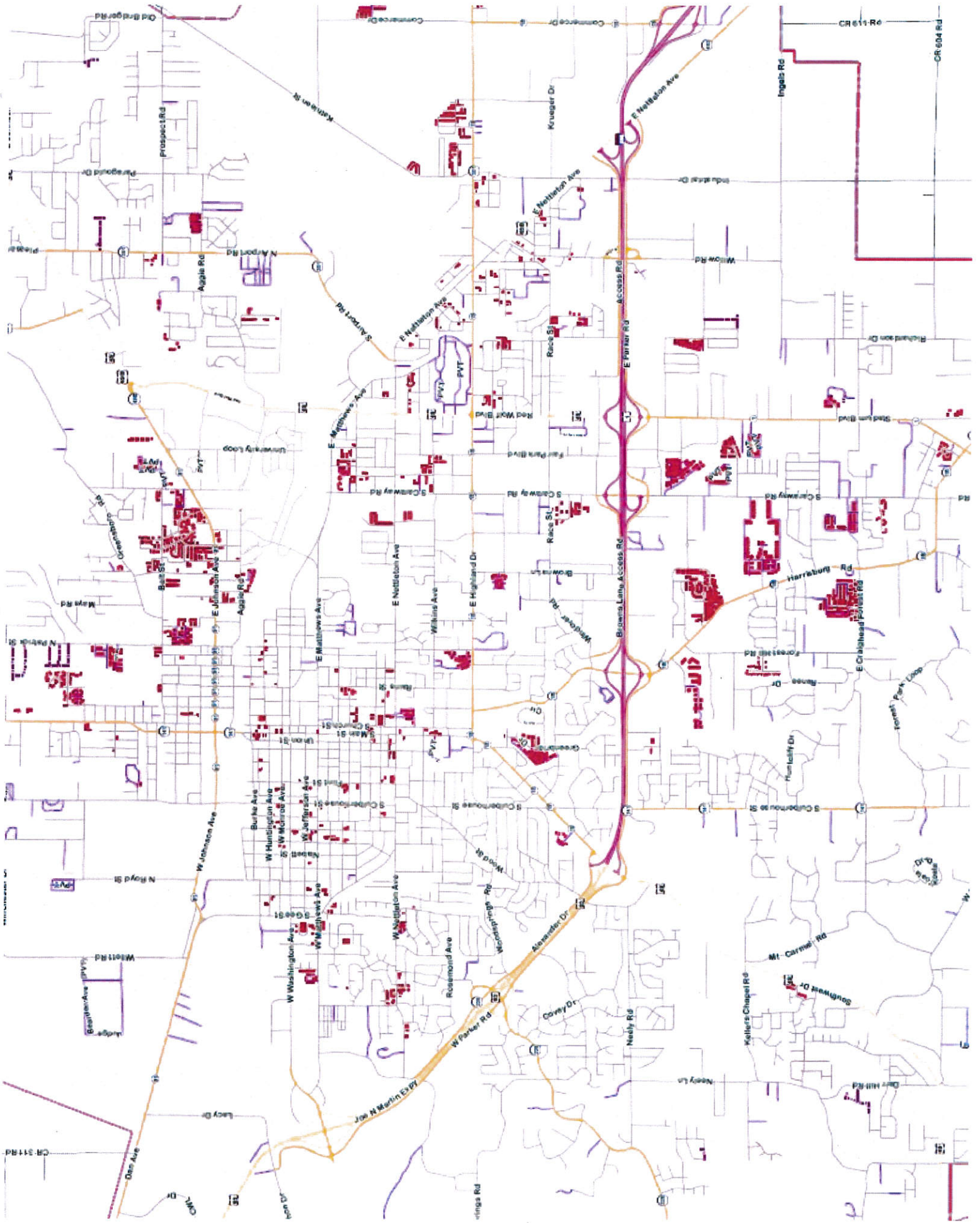
² Metropolitan Area Planning Commission Meeting, April 25, 2017 http://jonesboro.granicus.com/MediaPlayer.php?view_id=1&clip_id=1024; and City of Jonesboro Information Request on April 25, 2017.

³ Arkansas Highway Department

⁴ City of Jonesboro Data, Request compares the number of accidents occurring from 2013 to present on South Caraway Road from I-555 to Fox Meadow, on South Stadium from I-555 to Fox Meadow, and on South Harrisburg Road from I-555 to Medallion Circle.

⁵ City of Jonesboro Information Request on May 9, 2017. In 1996, the widening occurred along only the frontage of the Links Apartment Complex. In 2015, Parker Drive to Latourette Drive was widened as well as the bridge near Higgonbotham Creek.

⁶ Metropolitan Area Planning Commission Meeting, April 25, 2017 http://jonesboro.granicus.com/MediaPlayer.php?view_id=1&clip_id=1024



Old Bridger Rd

Prospect St

Paragon Dr

Apple Rd

University Loop

Apple Rd

Mays Rd

Apple Rd

N Royd St

W Jackson Ave

W Washington Ave

W Jackson Ave

W Jackson Ave

W Jackson Ave

W Jackson Ave

W Jackson Ave

Commerce Dr

Karlman Dr

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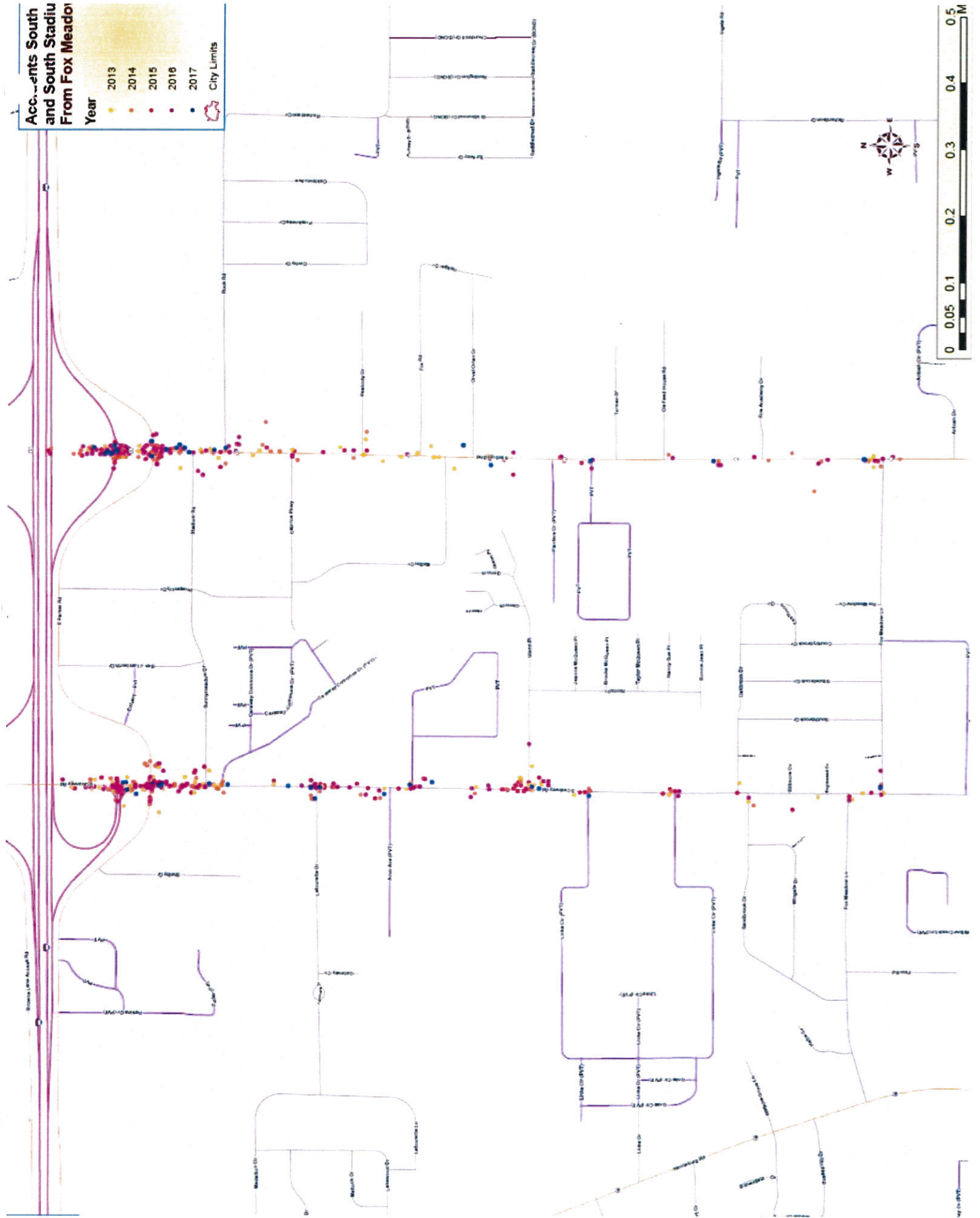
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Accidents South and South Stadium From Fox Meadow

Year

- 2013
- 2014
- 2015
- 2016
- 2017

City Limits



General:

Dr. Zahid Hossain is an Assistant Professor in the School of Civil Engineering at Arkansas State University (ASU). He has about ten years experience in research and scholastic activities, with an emphasis in the development and characterization of sustainable materials for engineering applications. Dr. Hossain has made significant contributions to the characterization of unmodified and polymer-modified asphalt binders through mechanistic, surface science and spectroscopy techniques. Further, he has conducted applied research in developing sustainable and advanced pavement materials using warm mix asphalt, asphalt recycling and nano-science technologies. Prior to joining ASU, Dr. Hossain worked as a Post-doctoral Research Associate at the University of Oklahoma (OU). Recently, Dr. Hossain received a prestigious 2014 Ralph E. Powe Jr. Faculty Enhancement Award from Oak Ridge Associated Universities (ORAU) and 2013 Arkansas State University Faculty Award for Scholarship for his outstanding research commitments and achievements to paving materials and construction. Further, he won the 2012 University Transportation Center (UTC) Award from the US Department of Transportation (USDOT) for his outstanding contributions in transportation research, professional service and academic excellence. Dr. Hossain has authored 55 peer-reviewed journal articles, and 50 referred conference papers, and served as a member/reviewer/editor of several professional journals, academies, scientific boards, and technical publications. Dr. Hossain is Professional Engineering in the state of Arkansas.

Education:

The University of Oklahoma, Norman	Civil Engineering	Ph. D. 2011
The University of Oklahoma, Norman	Computer Science	M. Sc. 2000
The University of Oklahoma, Norman	Civil Engineering	M. Sc. 1998
Khulna Univ. of Eng. & Tech, Bangladesh	Civil Engineering	B. Sc. 1994

Teaching/Research Positions:

Assistant Professor of Civil Engineering, Arkansas State University	2012-Present
Adjunct Faculty of Civil Engineering, Univ. of Arkansas, Fayetteville	2015-Present
Adjunct Faculty of Civil Engineering, Univ. of Oklahoma, Norman	2014-Present
Post-doctoral Research Associate, Univ. of Oklahoma, Norman	2011 - 2012
Graduate Research/Teaching Assistant, Univ. of Oklahoma, Norman	2008 - 2011
Graduate Research/Teaching Assistant, Univ. of Oklahoma, Norman	1997 - 2000
Lecturer, Khulna University of Eng. & Technology, Bangladesh	1995 - 1996

Professional private industry positions:

Senior Application Developer, Fidelity Info. Services, Tulsa, OK	2005 - 2011
Application Developer-II, Fidelity Information Services, Tulsa, OK	2002 - 2005
Application Developer-I, Alltel Corporation, Atlanta, GA	2000 - 2002
Materials Engineer, Consultancy Research & Testing, Bangladesh	1995 - 1996

Teaching Specialties and Interests:

Transportation Engineering, Construction Materials, Sustainable Engineering, Pavement Analysis and Design, Advanced Civil Engineering Materials, Geotechnical Engineering, and Foundation Engineering.

Research Specialties and Interests:

Construction Materials, Material Sustainability, Sustainable Design and Construction, Asphalt and Concrete Technology, Traffic Safety and Simulation, Molecular Dynamics Simulation, Recycling Technology, Lean Construction, and Nano-technology.

Major Research Sponsors:

Arkansas State Highway and Transportation Department (AHTD)
Transportation Consortium of South-Central States (Tran-SET)
Sothern Plains Transportation Center (SPTC)
National Science Foundation (NASA)
Arkansas Department of Environmental Quality (ADEQ)
Oak Ridge Associated National Universities (ORAU)
National Aeronautics and Space Administration (NASA)

Synergistic Activities:

- Introduced concepts of sustainability in undergraduate level Transportation Engineering and Civil Engineering Material courses at Arkansas State University.
- Introduced two new graduate level courses (Pavement Analysis and Design and Sustainable Engineering) at Arkansas State University.
- Served as members of three Transportation Research Board Scientific Committees (AFK30: Nonaspahl Components of Asphalt Mixes, AFP70: Characteristics of Mineral Aggregates, and AFK40: Characteristics of Asphalt-Aggregate Combinations to Meet Surface Requirements) of the National Academy of Sciences, 2013-present.
- Served as an editor for ASCE Geotechnical Special Publication, on Sustainable Civil Infrastructures: Innovative Technologies and Materials Conference to be held in Hubei, China in July 2014.
- Served as a host and judge at Create@ASTATE and Science Fair contests at ASU, 2012-present
- Served as member of Pre-Engineering and STEM Academy at Jonesboro High School, Arkansas; 2013-present.
- Served as a technical committee member of 2013 International Road Federation Conference in Riyadh, Saudi Arabia, November, 2013.

Professional Service and Activities:

- Editor, Geotechnical Special Publication (GSP) on Design, Analysis and Asphalt Material Characterization for Road and Airfield Pavements, 2016
- Reviewer, Journal of Materials in Civil Engineering, 2012- present
- Reviewer, Journal Construction and Building Materials, 2013-present
- Reviewer, Transportation Research Board (TRB), 2010-present
- Reviewer, International Journal of Pavement Engineering (IJPE), 2009-present
- Reviewer, Journal of Performance of Constructed Facilities (JPCF), 2009-present
- Reviewer, International Journal of Testing and Evaluation (JTE), 2010-present
- Reviewer, International Journal of Pavement Research and Technology (IJPRT), 2008-present
- Reviewer, Int. Conf. on Civil Engineering and Sustainable Development (ICCESD), Bangladesh, 2012
- Reviewer, Geo-Frontiers Conference on Advances in Geotechnical Eng., 2011, Dallas, TX.
- Reviewer, GeoHunan International Conference II: 2011, Hunan Province, China.

- Reviewer, Inaugural Int. Conf. of the Eng. Mechanics Institute, 2008. Minneapolis, MN.
- Reviewer, Geotech. Special Pub. (GSP), No. 184, Pav. & Mat.: Modeling, Testing, and Performance, 2008.

Selected Journal Publications:

- Rashid, F., **Hossain, Z.**, and Bhasin, A. (2017). "Investigation of Nanomechanistic Properties of Reclaimed Asphalt Pavement Modified Asphalt Binders by Using an Atomic Force Microscope," *Transportation Research Board (TRB)*, Compendium of Papers, Volume: 96, January 8-12, 2017, Washington D.C.
- Rahaman, M., **Hossain, Z.**, and Zaman, M. (2017). "Non-recoverable Compliance and Recovery Behavior of Polymer-modified and Reclaimed Asphalt Pavement-blended Binders in Arkansas," *Transportation Research Board (TRB)*, Compendium of Papers, Volume: 96, January 8-12, 2017, Washington D.C.
- Rashid, F., and **Hossain, Z.** (2016). "Morphological and Nanomechanical Analyses of Ground Tire Rubber Modified Asphalts," ASCE Geo-China 2016 on Innovative Technologies for Severe Weather and Climate Change, July 25-27, 2016, Shandong, China. pp. 1-8. doi: 10.1061/9780784480113.001
- **Hossain, Z.**, Rashid, F., Mahmud, I., and Rahaman, M. Z. (2016). "Morphological and Nanomechanical Characterization of Industrial and Agricultural Waste Modified Asphalt Binders," In Production, *International J. of Geomechanics*, August, 2016.
- **Hossain, Z.**, Bairgi, B., Zaman, M., Bulut, R., and Sumpter, B. (2016) "Evaluation of Static Contact Angles and Moisture Resistance of Organoclay-modified Asphalt Binders," the Transportation Research Board 95th Annual Meeting, Washington D.C., 22 pgs. January 10-14, 2016
- **Hossain, Z.**, Zaman, M., Hawa, T., Saha, M. (2015). "Evaluation of Moisture Susceptibility of Nanoclay-Modified Asphalt Binders through the Surface Science Approach," *Journal of Materials in Civil Engineering*, Volume 27, Issue 10. pp. 10-18.
- Ghabchi, R., Singh, D., Zaman, M., and **Hossain, Z.** (2015). "Micro-Structural Analysis of Moisture-Induced Damage Potential of Asphalt Mixes Containing RAP, *ASTM J. of Testing and Evaluation*, 44 (1), January 2015.
- Diab, A., You, Z., **Hossain, Z.**, and Zaman, M. (2014). "Moisture Susceptibility Evaluation of Nanosize Hydrated Lime-Modified Asphalt-Aggregate Systems Based on Surface Free Energy Concept." *J. of Transportation Research Record*, No. 2446, pp. 52-59.
- **Hossain, Z.**, Ghosh, D., and Zaman, M. "Implementation of the Multiple Stress Creep Recovery (MSCR) Test Method to Characterize Polymer-Modified Asphalt Binders for Oklahoma Conditions," Under Review, *ASTM Journal of Testing and Evaluation (JTE)*, Submitted in February 2014, Revised and Resubmitted in August, 2014.
- **Hossain, Z.**, Zaman, M., Hawa, T., Saha, M. "Evaluation of Moisture Susceptibility and Healing Properties of Nanoclay Modified Asphalt Binders Through Surface Science Approach," in Review, *Journal of Materials in Civil Engineering*, Submitted in November 2013, Revised and Resubmitted in July 2014.
- **Hossain, Z.**, Zaman, M., and Doiron, C. "Evaluation of Resilient Response of Unbound Aggregates Toward Implementation of the Mechanistic-Empirical Pavement Design in Oklahoma," in Press, in the *Journal of Marine Science and Technology (JMST)*, 2014.
- Solanki, P., Zaman, M., Adje, D., and **Hossain, Z.** (2013). "Field Construction and Mechanistic Performance of Hot Mix Asphalt Containing Reclaimed Asphalt Pavement," *International Journal of Pavement Research and Technology (IJPRT)*, 6(4), pp. 403-413.
- Diab, A., You, Z., **Hossain, Z.**, and Zaman, M. "Moisture Susceptibility Evaluation of Nano-sized Hydrated Lime-Modified Asphalt-Aggregate Systems Based on Surface Free

Energy Concept,” In the 93rd Transportation Research Board Annual Meeting, held from January 12-16, 2014.

- Solanki, P., Zaman, M., Adje, D., and **Hossain, Z.** “Effect of Recycled Asphalt Pavement on Thermal Cracking Resistance of Hot Mix Asphalt,” Accepted, *Int. Jour. of Geomechanics*, December, 2013.
- **Hossain, Z.**, Lewis, S., Zaman, M., Buddhala, A., and O’Rear, E. “Evaluation for warm mix additive-modified asphalt binders using spectroscopy techniques,” *Journal of Materials in Civil Engineering*, Vol. 25, No. 2, February 2013, pp. 149-159.
- **Hossain, Z.**, and Zaman, M., “Sensitivity of Oklahoma Binders on Dynamic Modulus of Asphalt Mixes and Distress Functions,” in the *Journal of Materials in Civil Engineering*, Volume 24, No. 8, August, 2012.
- **Hossain, Z.**, and Zaman, M., “Evaluation of High Temperature Viscoelastic Characteristics of Warm Mix Additive Modified Binders and Prediction of Dynamic Modulus of Mixes,” **Published**, in the 91st Annual Meeting DVD-ROM Compendium Paper, Transportation Research Board (TRB), 2012.
- **Hossain, Z.**, Zaman, M., and Doiron, C. “Evaluation of Resilient Response of Unbound Aggregates Toward Implementation of the Mechanistic-Empirical Pavement Design in Oklahoma,” in the 91st Annual Meeting DVD-ROM Compendium Paper, Transportation Research Board (TRB), 2012.
- **Hossain, Z.**, Solanki, P., Zaman, M., Lewis, S., and Hobson, K. “Influence of Recovery Processes on Properties of Binders and Aggregates Recovered from Recycled Asphalt Pavement,” in the *Journal of ASTM International (JAI)*, Vol. 9, Issue 2, February 2012.
- Buddhala, A., **Hossain, Z.**, Wasiuddin, N. M., Zaman, M., and O’Rear, E. A. “Susceptibility of Asphalt Binder with Warm Mix Additives to Moisture Induced Damage by Surface Free Energy Analysis,” in the *ASTM Journal of Testing and Evaluation (JTE)*, Volume 40, Issue 1, January 2012.
- **Hossain, Z.**, Zaman, M., Wasiuddin, N., Sneed, J., and O’Rear, E., “Rheological Evaluation of warm mix and Anti-stripping Additives Modified Superpave Binders,” submitted (in review), in the *International Journal of Road Materials and Pavement Design (IJRMPD)*, Vol. 12, No. 4, 2011,
- **Hossain, Z.**, Zaman, M., O’Rear, E., and Chen, D. “Effectiveness of Water-bearing and Anti-stripping Additives in Warm Mix Asphalt Technology,” in the *International Journal of Pavement Engineering (IJPE)*, <http://www.tandfonline.com/doi/abs/10.1080/10298436.2011.616588>, December 2011, pp. 1-9.
- **Hossain, Z.**, Zaman, M., Doiron, C., and Solanki, P. “Evaluation of Mechanistic-Empirical Design Guide Input Parameters for Resilient Modulus of Subgrade Soils in Oklahoma,” in the *ASTM International Journal of Testing and Evaluation (JTE)*, Vol. 39, No. 5, Sept. 2011.
- **Hossain, Z.**, M. Zaman, E. O’Rear, and Chen, D. “Laboratory Evaluation of Water-bearing Additive for Warm Mix Asphalt,” in the 90th Transportation Research Board Annual Meeting DVD-ROM Compendium Paper, Transportation Research Board (TRB), Washington, DC, 2011.
- **Hossain, Z.**, Zaman, M., and Hobson, K. “Effects of Liquid Anti-Strips on Rheological Properties of Performance Grade Binders,” in the *International Journal of Pavement Research and Technology (IJPRT)*, Volume 3, Number 4, July, 2010. pp. 160-170.
- Ali, A., de Souza, R., and **Hossain, Z.** “Intelligent Product Mix and Material Match in Electronics Manufacturing”, in the *International Journal Neural, Parallel and Scientific Computations*, vol.11, 2003, pp. 97-118.

Selected Conference Papers

- **Hossain, Z.,** Zaman, M., Saha, M. C., and Hawa, T. “Evaluation of Viscosity and Rutting Properties of Nanoclay-modified Asphalt Binders,” in the 2014 Geo-Congress on Geo-Characterization and Modeling for Geo-sustainability Proceedings, Feb 23-26, 2014, Atlanta, GA
- **Hossain, Z.,** Zaman, M., and Polanki, P. “Viscoelastic Properties of Asphalt Binders Recovered from Reclaimed Asphalt Pavement,” in the 17th IRF World Meeting & Exhibition Proceedings, November, Riyadh, Saudi Arabia, November 10-14, 2013.
- **Hossain, Z.,** Zaman, M., and Saha, M. “Evaluation of Rutting and Moisture Susceptibility of Nanoclay-Modified Asphalt Binders,” in the 17th IRF World Meeting & Exhibition Proceedings, November, Riyadh, Saudi Arabia, November 10-14, 2013.
- **Hossain, Z.,** Zaman, M., and Solanki, P. “Prediction of Dynamic Modulus of Asphalt Mixes with Reclaimed Asphalt Pavement,” in the 2013 Conference of the ASCE Engineering Mechanics Institute, August 4 – 7, 2013, Northwestern University, Evanston, IL.
- **Hossain, Z.,** Zaman, M., and Polanki, P., “State-of-the-Practice and Mechanistic Evaluation of New Asphalt Mixes with High Reclaimed Asphalt in Oklahoma,” at the 2013 Summer Workshop TRB Committee ADC60 Committee for Waste Management and Resource Efficiency in Transportation, July 14-17, 2013, Pittsburgh, PA.
- **Hossain, Z.,** Zaman, M., and Doiron, C. “Mechanistic Empirical Pavement Design Guide Input Parameters for Unbound Aggregates in Oklahoma,” 2nd IACGE International Conference on Geotechnical and Earthquake Engineering (IACGE 2013), to be held on October 25-27, 2013.
- **Hossain, Z.,** Zaman, M., Doiron, C., and Solanki, P. “Evaluation of Mechanistic-Empirical Design Guide Input Parameters for Resilient Modulus of Stabilized Subgrade Soils,” ICSDEC 2012/ASCE Texas Section Conference/CI Summit, November 7-9, 2012.
- Pranshoo, S., P., **Hossain, Z.,** Adje, D., and Zaman, M. “Effect of Recycled Asphalt Pavement on Thermal Cracking Resistance of Hot Mix Asphalt,” 2nd International Symposium on Constitutive Modeling of Geomaterials: Advances and New Applications, Beijing, China, October 15-16, 2012.
- **Hossain, Z.,** Buddhalla, A., O’Rear, A. O., Zaman, M., Laguros, J. L., and Lewis, S., “Recycled Asphalt Pavement in new Asphalt Mixtures: State of the Practice,” in the 2nd International symposium on Asphalt Pavement and Environment, October 1-3, 2012, Fortaleza, Brazil.
- Pranshoo, S., P., **Hossain, Z.,** Adje, D., Ghabchi, R., Singh, D., and Zaman, M. “Effect of Recycled Asphalt Pavement on Mechanistic Properties of Hot Mix Asphalt,” OkTC-ODOT Research Day, October 4, 2012.
- **Hossain, Z.,** Buddhalla, A., O’Rear, A. O., Zaman, M., Laguros, J. L., and Lewis, S., “Recycled Asphalt Pavement in new Asphalt Mixtures: State of the Practice,” in the 2nd International symposium on Asphalt Pavement and Environment, to be held on October 1-3, 2012, Fortaleza, Brazil.
- **Hossain, Z.,** Solanki, P., Zaman, M., “Mechanistic Evaluation of Recovered Materials from Recycled Asphalt Pavement,” in Proc. of GeoCongress 2012, March 25-29, 2012.
- Solanki, P., **Hossain, Z.,** Zaman, M., and Adje, D., “Volumetric and Mechanistic Characteristics of Asphalt Mixes Containing Recycled Asphalt Pavement,” in Proc. of GeoCongress 2012, March 25-29, 2012 and Geotechnical Special Publication, Issue 225 GSP, 2012, Pages 3709-3718.

- **Hossain, Z.**, Zaman, M., O'Rear E. A. and Chen, D. H. "Effectiveness of Liquid Anti-stripping Agent on Performance Grade Binder Modified with Warm Mix Additive," in *ASCE Geotechnical Special Publication* (GSP), No. 218, Emerging Technologies for Material, Design, Rehabilitation, and Inspection of Roadway Pavements, pp. 9-16.
- **Hossain, Z.**, Zaman, M., Doiron, C., and Solanki, P. "Characterization of Subgrade Resilient Modulus for Oklahoma Soils for Pavement Design," in *GeoFrontiers 2011*, 13-16 March, Dallas.
- **Hossain, Z.**, and M. Zaman, "Energy Efficient Paving: Prospects and Concerns," *US-China Workshop on Energy and Environment in the Development of Sustainable Asphalt Pavements*, Chang'an University, Xian, China, June 6 to June 8, 2010.
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Professional Associations

- Member, American Society of Civil Engineers (ASCE)
- Member, Geo-Institute (GI)
- Member, National Dean List
- Trustee, Chi-Epsilon Honor Society
- Member, Association for Computing Machinery (ACM)
- Member, University of Oklahoma Database Group
- Member, Institute of Engineers, Bangladesh

Honors and Awards

- ORAU: Ralph E. Powe Jr. Faculty Enhancement Awards, 2014
- Arkansas State University Faculty Award for Scholarship, 2013
- University Transportation Center (UTC) Student of the Year, 2012
- President's Gold Medalist, Bangladesh Institute of Technology

MEMORANDUM

DATE: May 14, 2017
TO: Mr. Nate Looney
FROM: Zahid Hossain, Ph.D., P.E.
SUBJECT: Review of Traffic Impact Analysis

PURPOSE

This report summarizes concerns and shortcomings of the traffic impact analysis (TIS) of proposed Braxton Development Apartments on the west side of S. Caraway Road across from the Glenn Place intersection. This report emphasizes the importance of sustainable construction and development as the American Society of Civil Engineers (ASCE) defines sustainability as *a set of economic, environmental and social conditions in which all of society has the capacity and opportunity to maintain and improve its quality of life indefinitely without degrading the quantity, quality or the availability of economic, environmental and social resources.*

MAJOR FINDINGS

Some major concerns exist due to the proposed development. These are related to level of service (LOS) and limited traffic data. According to the Highway Capacity Manual, LOS is a qualitative measure used to relate the quality of traffic using letters "A" through "F", with "A" being the best and "F" being the worst. These concerns and shortcomings are listed below:

1. The proposed development will drop LOS in multiple movements:
 - a. *P.M. eastbound Glenn Place* – LOS will drop from "E" to "F." LOS "F" is the worst level indicating" forced or breakdown flow." It means every vehicle moves in lockstep with the vehicle in front of it, with frequent slowing required. Travel time cannot be predicted, with generally more demand than capacity. A road in a constant traffic jam is at this LOS, because LOS is an average or typical service rather than a constant state. It can be noted that LOS ratings of "A," "B", and "C" mean free flow, reasonably free flow, and stable flow, respectively.
 - b. *A.M. westbound Glenn Place* – LOS will drop from "C" to "D." This indicates the level will drop from a "stable flow" to an "approaching unstable flow." It means that freedom to maneuver within the traffic stream is much more limited and driver comfort levels decrease. Vehicles are spaced about 8 car lengths. Minor incidents are expected to create delays.
 - c. *A.M eastbound Glenn Place:* LOS will remain "E," with an average delay of 48 sec/veh, which is a close proximity of LOS "F" (delay is 50 sec/veh or above)

- d. *P.M. westbound Glenn Place* – LOS will remain “C,” with an average delay of 21.5 sec/veh, which is a close proximity of LOS “D” (delay greater than 25 sec/veh but less than or equal to 35 sec/veh)
- e. *P.M. eastbound Main entrance* - LOS is shown as “E” with an average delay of 49.6 sec/veh, which is at the border line LOS “F” (delay is 50 sec/veh or above)

2. The report states that 90% of projected traffic generated from the proposed site will travel between the site and I-555. Thus, LOS of the segments between I-555 and the proposed site will have to be estimated as the Caraway segments and movements between *I-555 and Aron Ave* are the most congested ones during peak hours. LOS of these segments/movements may drop significantly if the additional generated traffic is considered in the LOS analysis.

3. Traffic analysis is based on only 14-hr count on March 29, 2017 (Wednesday). It does not represent either Annual Average Daily Traffic (AADT) or Average Daily Traffic (ADT) as defined by AHTD Traffic Handbook¹.

- The AADT is the estimate of typical daily traffic on a segment of road for all days of the week, Sunday through Saturday, over the period of one year.

- The ADT is typically a 48-hour traffic count collected between Monday and Thursday and averaged to reflect one day. However, the ADT can be based on any short-term traffic count during a minimum 24 hour period¹.

- Since AADT is not estimated, the K-Factor (the 30th highest hour volume as a percent AADT) is unknown.

-The seasonal factor (Factor used to adjust short term counts for monthly fluctuations) has not been considered. The Arkansas State Highway and Transportation Department (AHTD) Traffic Handbook states, “All short-term counts must be adjusted to reflect the seasonal changes in traffic volumes.”

- Only automobile counts are presented in the traffic study. Any traffic classification (e.g., truck) is shown in the current traffic and 2020 projected traffic.

4. Since this is a multiphase development, and peak hour trips are between 100 and 299, according to Best Practices for TIS², the traffic analysis should be done for year of each phase opening and 5 years beyond buildout². However, only 2020 analysis is performed in the current study.

5. Best Practices for TIS warrants evaluation of other modes². In particular, pedestrian and bicyclist analyses should be done.

a) Pedestrians and bicyclist Analysis: the proposed multi-family housing project is expected to generate significant amount of pedestrian and bike traffic due to the

presences of gas station, car wash, JET stop, and school in nearby premises. In particular, safety of pedestrians and bicyclist should be assessed in the traffic study by answering the following questions²:

- *Are pedestrian and bicycle needs safely accommodated?*
- *Will the proposed development maintain or improve safety for pedestrians and bicyclists?*
- *Will the proposed development's access points increase potential conflicts with pedestrians and bicycles?*
- *Will site-generated traffic adversely affect pedestrians and bicycles?*
- *Will site-generated traffic adversely affect existing and planned pedestrian and bicycle facilities?*
- *How will proposed mitigation affect pedestrians and bicyclists?*

As mentioned in the TIS Best Practice, at a minimum, it should indicate that the proposed project will maintain or improve existing conditions for pedestrians and bicyclists. Further, it states that consultation with state and city transportation official and other relevant parties during TIS preparation will be useful in assessing adverse effect. Other relevant parties could include the local school district, local bicycle or pedestrian coordinator, local transportation planner, or bicycle and pedestrian committees.

- b. Transit Analysis: There will be some foot traffic for existing transit (i.e., JET Service).
- c. Truck Trip Generation: Some truck traffic is expected to generate due to move in/out of residents of the proposed multi-family housing. Since trucks can affect safety, queuing, circulation, and access, the impacts of trucks should be evaluated.

The aforementioned additional assessments and appropriate mitigation plans, if needed, will help to build a sustainable transportation system. Such initiative will help us meet the first Fundamental Canons of ASCE's Code of Ethics, "*Engineers shall hold paramount the safety, health, and welfare of the public and shall strive to comply with the principles of sustainable development in the performance of their professional duties.*"

CONCLUSIONS

The proposed development will degrade the LOS in multiple movements, indicating the average delay for vehicles will increase. Since the traffic data is limited to 14-hour count of a day of a small section of Caraway Road, meaningful conclusions cannot be drawn as traffic analysis of nearby segments and movements should be analyzed thoroughly. Further, the traffic study does not include any pedestrian and bicyclist data, which are

required component of Best Practice guide of any traffic impact analysis. Therefore, additional traffic analysis is recommended to reduce the current shortcomings and achieve the goal of sustainable construction.

REFERENCES

1. AHTD (2013). "Arkansas State Highway And Transportation Department Traffic Handbook," Prepared by the Traffic Information Systems Section System Information and Research Division in cooperation with Federal Highway Administration.
2. CH2MHILL (2006). "Best Practices for Traffic Impact Studies," Prepared for Oregon Department of Transportation and Federal Highway Administration, Report No. FHWA-OR-RD-06-15.

MEMORANDUM

DATE: May 29, 2017
TO: Mr. Nate Looney
FROM: Zahid Hossain, Ph.D., P.E.
SUBJECT: Review of Additional Traffic Impact Analysis Report

ADDENDUM (BASED ON ADDITIONAL IMPACT ANALYSIS)

Additional analysis of the previously collected traffic data was presented.

Considering ingress/egress to/from the Commercial Property

- As mentioned earlier, according to the Best Practice, the traffic analysis should be done for Year of each phase opening and 5 years beyond build out.

Considering Right In/Right Out (RIRO) at the proposed Main Entrance

- LOS will improve at the proposed main entrance, but it will degrade significantly at Eastbound Glenn Place. The LOS will be "F" both at AM and PM peak hours with delays of 239.2 sec/veh and 207.2 sec/veh, respectively. **This will end up with serious congestions and long queue.**
- A RIRO configuration may improve safety and operations at the Main Entrance while consequently worsening them at upstream or downstream intersection. In the present case, the intersection of Fox Meadow LN and Caraway is the next major intersection for RIRO traffic to travel to Stadium Blvd./Harrisburg Rd and ultimate go north. So, this intersection will have to be analyzed.
- In the Traffic Impact Analysis report, it is mentioned that the **queue lengths will greatly increase.** However, the queue lengths have not been estimated.

DIVISION 2. - PLANNED DEVELOPMENT DISTRICT (PD)

Sec. 117-164. - Generally.

- (a) *General description.* It is the intent of this division to encourage development with superior living environments brought about through unified development, and to provide for the application of design ingenuity in such developments, while protecting existing and future surrounding areas in achieving the goals of the comprehensive plan for development of the city. The PD provisions herein established, are intended to provide for greater flexibility in the design of buildings, yards, courts, circulation and open space than would otherwise be possible through the strict application of other district regulations and to produce:
- (1) A maximum choice in the type of environment and living units available to the public;
 - (2) Open space and recreation areas, active and passive;
 - (3) A pattern of development which preserves natural features, prevents soil erosion, and protects water quality;
 - (4) A creative approach to the use of land and related physical development;
 - (5) An efficient use of land resulting in smaller networks of utilities and streets, and thereby lowering costs; and
 - (6) An environment of stable character. The PD regulations are designed to provide for small- and large-scale developments incorporating a single type or a variety of residential, commercial, and related uses which are planned and developed as a unit. Such development may consist of individual lots or it may have common building sites. Private or public common land and open space should be an essential and major element of the plan which is related to and affects the longterm value of the homes and other development. A planned unit shall be a separate entity with a distinct character.
- (b) *Standards of development.*
- (1) *Ownership control.* The land in a planned unit development district shall be owned, leased, or otherwise controlled by a person, firm, group of individuals, partnership, corporation, or trust, provided assurances are given through the procedures contained herein that the project can be successfully completed.
 - (2) *Minimum district area.* The minimum area for a PD district shall be three acres. In calculating the minimum area for a PD district, the measurements shall include the area of all dedicated streets entirely within the boundary of the proposed PD, and one-half of the area of all boundary or perimeter streets.
 - (3) *Uses permitted.*
 - a. In order to increase creativity and flexibility in the development of areas suitable for a planned unit development, there are no specifically prescribed uses which are permitted within the boundaries of a planned development. The developer shall be responsible for preparation of a list of permitted uses within the specific planned development requested. The development list shall take into account the nature and purpose of the PD area, and such uses and locations shall be appropriate with the surrounding development.
 - b. At the time of the preapplication plan and conference, the applicant shall generally describe the nature and types of land uses to be located within the boundaries of the PD district. At the time of zoning application and consideration of the preliminary plat, a specific written list of uses to be permitted by right shall be submitted for review by the planning commission. Following approval by the planning commission and city council, the

list of specific uses permitted by right shall serve as the control list in issuance of building permits and certificates of occupancy.

- c. In addition to the permitted uses in subsections (b)(3)a and (b)(3)b of this section that are established by right, certain other uses may be prescribed by the developer in accordance with the restrictions included herein and said uses are designated as conditional uses. These uses more intensely dominate the area in which they are located than do other uses which might be permitted in the PD district and, as such, they require special considerations and restrictions. If the developer and/or planning commission agree that certain conditional uses should be included within the PD district, the applicant shall precisely indicate the specific use, its location, area to be included, maximum building square footage, and such other information as required by the planning commission to properly and comprehensively evaluate the nature and impact of such conditional uses. When such conditional uses are approved at the time of rezoning, they shall not be subsequently changed to any other use until and unless they are changed to another use that is permitted by right, or the new proposed use if not permitted by right in a PD district, is resubmitted for rezoning approval.
- (4) *Parking and off-street loading.* All uses established with a planned development district shall comply with the off-street parking and loading requirements as established in this chapter. However, the requirements for individual structures or lots may be met through either provision of adequate parking on the lot on which such structure is so located, or upon adjacent property which is under the control of a property owners association, to which said lot is an automatic participant. In no case, however, shall the cumulative requirements of all parking and off-street loading requirements be less than if said uses were individually established and located in any other zoning district within the city.
- (5) *Perimeter requirements.* In order to assure compatibility with surrounding development, the developer shall submit specific information as to the setbacks, building height, coverage factors and other elements necessary for all perimeter lots that are adjacent to the boundary of the PD district or adjacent to any boundary or perimeter street right-of-way. While no specific setback requirements are herein established, the planning commission shall consider the nature, extent and character of the adjacent development and shall take into consideration the types of area regulations applicable to adjacent properties.
- (6) *Residential density standards.* The maximum number of dwelling units permitted within a PD district is dependent upon both the type and number of each type of residential units intended to be included in the PD district. Densities within certain areas of the PD may be beyond the overall limits through a transfer of density. However, overall project densities shall not be exceeded in accordance with the following schedule:
 - a. Eight dwelling units per net residential acre for single-family attached and detached houses and duplexes.
 - b. Fifteen dwelling units per net residential acre for triplexes, fourplexes, and row or terrace housing.
 - c. Eighteen dwelling units per net residential acre for two story, and 27 units per net residential acre for three-story apartments.
 - d. Forty dwelling units per net residential acre for high-rise, four stories or more, apartments.
- (7) *Common open space.* For purposes of calculating densities, net residential acres are defined as gross acres of the PD site minus all public rights-of-way, and less the area of all parcels or lots devoted to commercial, industrial, or institutional uses not of a residential nature. Common open space that is owned and maintained by a property owners' association shall be included in calculating the net residential acres available for all dwelling units that automatically belong to such an association. Where more than one property owners' association is to be created, then each common open space can only be attributed to the lot or dwellings which have automatic membership for that specific common open area.

(Zoning Ord., § 14.20.04; Ord. No. 07-13, § 1, 5-1-2007)

Sec. 117-165. - Purpose.

The purpose of the PD planned development district is to:

- (1) Allow for flexibility in the zoning requirements where the result will be a higher quality development;
- (2) Provide for and locate suitable recreational facilities, open space, and other common facilities, while preserving the existing landscape to the greatest extent possible;
- (3) Encourage sound planning principles in the arrangement of buildings, the preservation of open space, the utilization of topography and other site features;
- (4) Obtain creative and coordinated designs and allow procedures supplemental to those applicable in other use districts to establish under which development plans particularly designed to meet the objectives of this section; and
- (5) Allow for creative development that conforms to the goals and objectives set for in the city comprehensive plan.

(Zoning Ord., § 14.20.04.1; Ord. No. 07-13, § 1, 5-1-2007)

Sec. 117-166. - PDs and planned districts approved.

Any plan unit developments (PUDs) or limited use overlay districts (LUP) approved prior to the effective date of the resolution from which this section is derived shall continue in accordance with the approved preliminary development plan and final development plans. Modifications, amendments, and expansion of existing planned developments shall be in accordance with section 117-174 planned development district review.

(Zoning Ord., § 14.20.04.2; Ord. No. 07-13, § 1, 5-1-2007)

Sec. 117-167. - Types of planned developments.

The following are the five types of planned developments permitted within city, pending approval by the Metropolitan Area Planning Commission and the city council:

- (1) PD-RS—Residential planned development.
- (2) PD-RM—Multifamily residential planned development.
- (3) PD-C—Commercial business planned development.
- (4) PD-I—Industrial planned development.
- (5) PD-M—Mixed use planned development.

(Zoning Ord., § 14.20.04.3; Ord. No. 07-13, § 1, 5-1-2007)

Sec. 117-168. - Compliance with plans.

All planned developments approved after the effective date of the resolution from which this section is derived shall comply with the city comprehensive plan and city land use plan including compliance with the permitted uses, densities, intensities and other recommendations of the plans.

(Zoning Ord., § 14.20.04.4)

Sec. 117-169. - Permitted uses.

- (a) All uses in a PD district are subject to approval during the review of the preliminary development plan by the Metropolitan Area Planning Commission and the city council pursuant to section 117-174.
- (b) The following table illustrates the permitted uses within each PD district:

Planned Development Use Table

Use	Planned Development Districts				
	<i>PD-R</i>	<i>PD-RM</i>	<i>PD-C</i>	<i>PD-I</i>	<i>PD-M</i>
Uses permitted in the RS-1, RS-2, RS-3, RS-4, RS-5, RS-6, RS-7, RS-8,	P				P
RM-4, RM-6, RM-12, RM-16 districts	P	P			P
Uses permitted in the C-1, C-2, C-3 or C-4 districts			P		P
Uses permitted in the I-1 or I-2 district				P	P

- (c) Uses not specifically listed as permitted by these districts may be permitted if the Metropolitan Area Planning Commission and/or city council determine the uses to be of the same general character as the permitted uses set forth in subsection (b) of this section.

(Zoning Ord., § 14.20.04.5; Ord. No. 07-13, § 1, 5-1-2007)

Sec. 117-170. - Design standards.

- (a) Design standards for area, lot coverage, density, yard requirements, parking, landscaping and screening for a proposed PD district shall be established in the PD preliminary development plan by the Metropolitan Area Planning Commission and city council.
- (b) Exceptions and variations from the standards provided by the base zoning districts of this section (e.g., RS-1, RS-2, C-1, etc.) may, and should be granted by the Metropolitan Area Planning Commission and the city council when it is determined that due to certain design elements, natural features and public amenities, the exceptions are warranted.
- (c) Standards for public infrastructure improvements shall be governed by the applicable regulations of the agency with jurisdiction that is charged with the responsibility for review and approval.

(Zoning Ord., § 14.20.04.6; Ord. No. 07-13, § 1, 5-1-2007)

Sec. 117-171. - Common open space.

There shall be reserved, within the tract to be developed, a minimum percentage of land area of the entire tract for use as common open space. The Metropolitan Area Planning Commission and city council may require additional common open space as warranted by the individual development plan. This minimum percentage of land shall be as follows:

Planned Development Common Open Space Requirements

PD district	Common open space requirement
PD-R/RM	20% common open space for planned developments with all residential dwelling units.
PD-C	15% common open space for all planned developments
PD-I	15% common open space for all planned developments
PD-M	20% common open space for all planned developments

- (1) Required common open space shall not consist of isolated or fragmented pieces of land that will serve no useful purpose or which will present maintenance difficulties if maintenance is required.
- (2) Required common open space may include pedestrian walkways, parkland, open areas, bridle paths, drainageways and detention basins, swimming pools, clubhouses, tennis courts, golf courses, parking areas for any of these, and other lands of essentially open or undisturbed or improved character, exclusive of off-street parking areas and street rights-of-way.
- (3) Ownership of common open space.
 - a. Ownership of common open space in a PD-R and PD-RM shall be transferred by the developer to a legally established homeowner's association, or if accepted, to the city council, or other public or quasi-public agency.
 - b. Common open space that includes a clubhouse, golf course or other recreational facilities may remain in private ownership, subject to size and special conditions applied by the Metropolitan Area Planning Commission and city council.
 - c. Common open space in a PD-C, PD-I, or PD-M may also be dedicated to the city or other public or quasi-public agency pursuant to the requirements of this section or remain in private ownership, provided that a public easement, as determined necessary by the Metropolitan Area Planning Commission and city council, is granted and officially recorded on the plat.

(Zoning Ord., § 14.20.04.7; Ord. No. 07-13, § 1, 5-1-2007)

Sec. 117-172. - Planned developments require a district change.

- (a) Planned development district review establishes the development review procedure for a planned development district which will result in a zoning map amendment. Therefore, in addition to all of the specific review procedures and provisions of section 117-34, all proposed PD districts are also subject to the approval criteria set forth in section 117-34(2)e.
- (b) The preliminary development plan shall be submitted at the time a zoning map amendment is requested from the original zoning district to the new planned development district.

(Zoning Ord., § 14.20.04.8; Ord. No. 07-13, § 1, 5-1-2007)

Sec. 117-173. - Planned development (PD) initiation.

- (a) Planned developments may be initiated by the property owner or an agent of the property owner.
- (b) In cases where there are multiple property owners involved in the planned development, the application shall include a consent to rezone letter from all property owners. Additionally, there shall be a single contact or agent for the property owners who will be responsible for contact with the city.

(Zoning Ord., § 14.20.04.9; Ord. No. 07-13, § 1, 5-1-2007)

Sec. 117-174. - Review procedure.

(a) *Preapplication conference.*

- (1) The applicant shall meet with the city planning department to discuss the initial concepts of the planned development and general compliance with applicable provisions of this division prior to the submission of the application.
- (2) During this time, an applicant may also request a preliminary, informal meeting with the Metropolitan Area Planning Commission to discuss the initial concepts.
- (3) Discussions that occur during a preapplication conference or a preliminary meeting with staff or the Metropolitan Area Planning Commission are not binding on the city and do not constitute official assurances or representations by the city its officials regarding any aspects of the plan or application discussed.

(b) *Application.*

- (1) After the preapplication conference with the city planning department, the applicant may submit an application for a zoning map amendment to the city zoning office.
- (2) The application shall include all such forms, maps, and information, as may be prescribed for that purpose by the Metropolitan Area Planning Commission to assure the fullest practicable presentation of the facts for the permanent record. A list of minimum requirements may be adopted by the city council.
- (3) Each such application shall be signed by at least one of the owners or the owner's authorized agent, of the property within the area proposed to be reclassified, attesting to the truth and correctness of all facts and information presented with the applications.
- (4) Any person desiring a change in the zoning classification of property shall file with the application for such change a statement giving the names and addresses of the owners of all properties lying within 200 feet of any part of the property the zoning classification of which is proposed to be changed.
- (5) All applications shall be submitted with the required fees as established in the city fee schedule.

- (6) The applicant shall submit the preliminary development plan simultaneously with the application for a zoning map amendment.
- (c) *Submission of the preliminary development plan.*
- (1) The preliminary development plan submission shall be in a form and in quantities as prescribed by the Metropolitan Area Planning Commission. A list of minimum submittal requirements may be adopted by the city council.
 - (2) Preliminary development plans should generally include the following:
 - a. Approximate areas and arrangement of the proposed uses and the relationship of abutting land uses and zone districts;
 - b. The proposed general location of vehicular circulation;
 - c. The proposed treatment of existing topography, drainageways and tree cover;
 - d. The location of schools, parks, community amenities or facilities, if any;
 - e. Anticipated time schedule of projected development, if the total landholding is to be developed in stages, or if construction is to extend beyond a two-year timeperiod;
 - f. In the case of a PD-R, PD-RM district, the preliminary development plan shall also include the proposed type of unit, density level, and proposed area setbacks of each residential area, and the type, general location and approximate acreage of the common open space. All other miscellaneous and accessory uses shall also be included;
 - g. In the case of a PD-C, PD-I, or PD-M, the preliminary development plan shall identify the principal and accessory types of uses that are to be included in the proposed development, including their approximate location, size, and intensity. The proposed type, general location and approximate acreage of common open space shall also be included; and
 - h. Any other information required by the Metropolitan Area Planning Commission.
 - (3) Within 25 days after the application and submission of the preliminary development plan, the planning administrator shall transmit a copy thereto to the Metropolitan Area Planning Commission.
 - (4) The Metropolitan Area Planning Commission shall recommend the approval, approval with modifications, or denial of the proposed map amendment and preliminary development plan, and shall submit such recommendation to the city council.
 - (5) Such recommendation shall be considered at the public hearing held by the city council on such proposed amendment and preliminary development plan.
- (d) *Public hearing with the Metropolitan Area Planning Commission.*
- (1) Upon the filing of an application and preliminary development plan for an PD district amendment, the Metropolitan Area Planning Commission shall set a date for a public hearing regarding the proposed amendment and preliminary development plan.
 - (2) The public hearing shall not be less than 20 or more than 40 days after the date the application was submitted.
 - (3) Notification shall be given in accordance with Arkansas State Code requirements for advertisement.
- (e) *Recommendation by the Metropolitan Area Planning Commission.* Within 30 days after the Metropolitan Area Planning Commission's public hearing, the Metropolitan Area Planning Commission shall recommend the approval, approval with modifications, or denial of the proposed amendment and preliminary development plan, and submit such recommendation together with such application, preliminary development plan, to the city council.
- (f) *Public hearing with the city council.*

- (1) Upon receipt of the recommendation from the Metropolitan Area Planning Commission, the city council shall set a time for a public hearing on such proposed amendment and preliminary development plan.
 - (2) The date of the public hearing shall not be more than 30 days after the date of the receipt of such recommendation from the Metropolitan Area Planning Commission.
 - (3) Notification shall be given in accordance with Arkansas State Code.
- (g) *Decision on map amendment and preliminary development plan.*
- (1) Within 20 days after its public hearing, the city council shall either adopt or deny the recommendations of the Metropolitan Area Planning Commission, or adopt some modification thereof. In the event the city council denies or modifies the recommendation of the Metropolitan Area Planning Commission, the simple majority of the members present vote of the city council shall be required.
 - (2) If the amendment is denied, the applicant may appeal the decision to the circuit court system.
 - (3) Approval of the preliminary development plan shall include density, intensities, land uses and their interrelationship, design standards, and building location. Location of buildings, if applicable, and uses may be altered slightly due to engineering feasibility which is to be determined in the subsequent preparation of the detailed final development plans.
 - (4) The decision by the city council is subject to appeal by means of the court system. After approval of the PD district map amendment and preliminary development plan, the official zoning map shall be changed to reflect this amendment.
- (h) *Submission of a final development plan.*
- (1) Once the PD district and preliminary development plan has been approved by the city council, the applicant shall proceed with the preparation of the detailed final development plan in whole or in phases.
 - (2) The final development plan submission shall be in a form and in quantities as prescribed by the Metropolitan Area Planning Commission. A list of minimum submittal requirements may be adopted by the city council.
 - (3) The detailed final development plan shall be consistent with the contents of the approved preliminary development plan, and be prepared by a professional urban planner, engineer, architect or landscape architect.
 - (4) A final development plan shall include all necessary legal documentation relating to the incorporation of a homeowner's association for the purpose of maintaining the specified common open space within all residential planned developments.
- (i) *Public meeting with the Metropolitan Area Planning Commission.*
- (1) The city planning department shall study the final development plan and confer with other agencies having jurisdiction as appropriate in the case, to determine general acceptability of the proposal submitted. Staff shall submit written recommendations to the Metropolitan Area Planning Commission and the applicant prior to the public meeting held by the Metropolitan Area Planning Commission.
 - (2) Upon receipt of the detailed final development plan and recommendations of staff, the Metropolitan Area Planning Commission shall, at a public meeting of the Metropolitan Area Planning Commission, study and review the detailed final development plan on the basis that all requirements have been satisfied, and the conditions specified in section 117-34 have been met.
- (j) *Decision by the Metropolitan Area Planning Commission.*

- (1) Within 30 days of the Metropolitan Area Planning Commission's public meeting, the Metropolitan Area Planning Commission shall decide to approve, approve with modifications or deny the final development plan.
- (2) If the final development plan is denied, the applicant may appeal the decision to the city council.

(Zoning Ord., § 14.20.04.10; Ord. No. 07-13, § 1, 5-1-2007)

Sec. 117-175. - Approval criteria.

- (a) *Preliminary development plan.* The following criteria shall serve as conditions that should generally be satisfied before the approval of the preliminary development plan:
 - (1) The PD district and preliminary development plan is consistent with the adopted city land use plan and comprehensive plan;
 - (2) The proposed uses will have a beneficial effect on the community;
 - (3) The internal streets and primary and secondary roads that are proposed properly interconnect with the surrounding existing road network;
 - (4) The site will be accessible from public roads that are generally adequate to carry the traffic that will be imposed upon them by the proposed development and the streets and driveways on the site will be adequate to serve the residents or occupants of the proposed development;
 - (5) The minimum common open space areas have been designated and shall be duly transferred to a legally established homeowners association, where applicable, or have been dedicated to city or another public or quasi-public agency as provided in section 117-171.
 - (6) The preliminary development plan is consistent with the intent and purpose of this division.
 - (7) The preliminary development plan has been transmitted to all other agencies and departments charged with responsibility of review.
- (b) *Final development plan.* The following criteria shall serve as conditions that should generally be satisfied before the approval of the final development plan:
 - (1) Appropriate arrangements with the applicant have been made to ensure the accomplishment of the public improvements and reservation of common open space as indicated on the preliminary development plan and final development plan. If deemed necessary by the MAPC or city council during the preliminary development plan process, this assurance may require that the MAPC or city council hold a performance bond to ensure the successful and proper completion of all public improvements.
 - (2) The proposed detailed final development plan for the individual sections of the overall PD district is consistent in contents, building location, as applicable, land uses, densities and intensities, yard requirements, and area and frontage requirements, with the approved preliminary development plan, the city land use plan, and the comprehensive plan.
 - (3) Each individual phase of the development can exist as an independent unit that is capable of creating an environment of sustained desirability and stability, or that adequate assurance will be provided that such objective can be obtained.
 - (4) That any part of the planned development not used for structures, parking and loading areas, or streets, shall be landscaped or otherwise improved; or if approved by the planning commission, left in its natural state.
 - (5) That any exception from the design standards provided in the PD district is warranted by the design and amenities incorporated in the detailed final development plan.
 - (6) That the internal streets and thoroughfares proposed are suitable and adequate to accommodate the anticipated traffic within and through the development.

- (7) That the detailed final development plan is consistent with the intent and purpose of this chapter.
- (8) The final development plan has been transmitted to all other agencies and departments charged with responsibility of review.

(Zoning Ord., § 14.20.04.11; Ord. No. 07-13, § 1, 5-1-2007)

Sec. 117-176. - Time limits.

- (a) The final development plan shall be submitted within two years after approval of the preliminary development plan, or the approval of the preliminary development plan will expire and the plan will be deemed null and void.
- (b) Upon expiration of the preliminary development plan, the property shall still be zoned as a planned development with a voided preliminary development plan. The property owner or authorized agent may submit an application and new preliminary development plan for consideration pursuant to section 117-174 or an application for a zoning map amendment.
- (c) Upon the expiration of the preliminary development plan, the city council or the Metropolitan Area Planning Commission may initiate a zoning map amendment.
- (d) If the applicant has not received building permits within two-year of the approval of the final development plan, the final development plan shall be deemed null and void. Upon expiration of the final development plan, the applicant shall have one-year to reapply for a final development plan in accordance with the section or the preliminary development plan will be deemed null and void in accordance with subsection (a) of this section.
- (e) The Metropolitan Area Planning Commission may authorize an extension of these time limits if good cause is shown for the delay of the final development plan submission.
- (f) For phased developments, the Metropolitan Area Planning Commission and city council may approve a phased final development plan schedule as part of the preliminary development plan approval. In such case, the approved time frames shall establish when the approved preliminary plan shall expire.

(Zoning Ord., § 14.20.04.12; Ord. No. 07-13, § 1, 5-1-2007)

Sec. 117-177. - Effect of a final development plan.

- (a) The approved final development plan shall be kept on record in the city planning department together with all resolutions, applications, plats, plans, and other information regarding the development.
- (b) The resolutions prepared by the Metropolitan Area Planning Commission and city council serve as the official record for the permitted uses and activities which are approved for the planned development landholding.
- (c) The use of the planned development landholding or the location, erection, construction, reconstruction, enlargement, or change of any building or structure in a manner which is not consistent with the final development plan shall be considered a violation of this division and subject to the procedures and penalties specified in section 117-3.

(Zoning Ord., § 14.20.04.1; Ord. No. 07-13, § 1, 5-1-2007)

Sec. 117-178. - Required conditions for the issuance of a zoning certificate.

No zoning certificate shall be issued for any property in a PD district and no construction, except preliminary excavation, shall begin until a valid final development plan is in effect for that phase or property. The final development plan becomes valid upon approval by the Metropolitan Area Planning Commission.

(Zoning Ord., § 14.20.04.14; Ord. No. 07-13, § 1, 5-1-2007)

Sec. 117-179. - Modifications to approved preliminary or final development plans.

- (a) If an applicant proposes to modify an approved preliminary development plan or final development plan, the applicant shall submit the proposed modifications to the planning and zoning administrator for transmittal to the appropriate authority.
- (b) The proposed modifications shall be classified as a minor or major modification based on the following:
 - (1) *Minor modifications.* Minor modifications shall include changes that do not involve:
 - a. Major changes to the approved plan including, but not limited to, a change of use or density to a more intense use or density than permitted by the district or changes to the location or amount of land designated for a specific land use or open space;
 - b. A change of the permitted uses to a use not otherwise permitted in the proposed planned development district;
 - c. Any change that will impact on-site or off-site infrastructure; or
 - d. An expansion of a building footprint that affects the specified setbacks of the approved plan.
 - (2) *Major modifications.* Major modifications shall include:
 - a. An increase in density or intensity;
 - b. Changes to the property or project boundaries of the entire PD district;
 - c. Modifications in the internal street and thoroughfare locations or alignments which significantly impact traffic patterns or safety considerations; or
 - d. Anything not classified as a minor modification by subsection (b)(1) of this section.
- (c) *Review of minor modifications.*
 - (1) The Metropolitan Area Planning Commission shall be responsible for reviewing and making a decision on minor modifications to an approved preliminary development plan or final development plan.
 - (2) Such review and decision shall take place at a public meeting of the Metropolitan Area Planning Commission and shall not require any additional notice beyond what is required by the Arkansas State Code for public meetings.
 - (3) The decision of the Metropolitan Area Planning Commission on minor modifications shall be deemed administrative and may be appealed to the city council.
- (d) *Review of major modifications.* Major modifications to an approved preliminary development plan or final development plans shall require a public hearing with the Metropolitan Area Planning Commission and city council pursuant to the review procedure of this section.

(Zoning Ord., § 14.20.04.15; Ord. No. 07-13, § 1, 5-1-2007)

Secs. 117-180—117-196. - Reserved.

NETTLETON SCHOOL DISTRICT

Office of the Superintendent
3300 One Place · Jonesboro, AR 72404
Telephone: 870-910-7800
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June 6, 2017

To Whom It May Concern:

Nettleton Public Schools did not initially oppose the proposed rezoning of 3911 South Caraway Road from C-3 to PD-RM. However, after discussing this project with the board and other stakeholders, it is the official position of Nettleton Public Schools to specifically oppose the proposed rezoning of 3911 South Caraway Road for this purpose as well as any new apartment units to be developed within in the district moving forward.

Sincerely,



James Dunivan
Superintendent

JD/jfp