CITY OF WASHINGTON

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MEMORANDUM

TO: Mayor Manier and Committee of the Whole
FROM: Jon R. Oliphant, AICP, Planning & Development Director
SUBJECT: Residential Street Standards
DATE: March 8, 2018

Summary: Staff has reviewed the City's current residential street standards to determine if modifications could be done to reduce the street width, increase the sidewalk width, and improve the longevity of the streets. An analysis has been completed to determine if there may be support to amend the construction standards and/or subdivision code.

Background: The City's construction standards and subdivision code require a minimum of a 34' wide street from curb-to-curb (face-to-face) with a minimum 4' wide sidewalk for minor residential/local streets (ADT's of less than 1,000). A minimum 3" asphalt surface is required. Staff compared our standards with those of our larger regional counterparts, which is attached as a spreadsheet with this memo. Street width standards vary from 28-34' and sidewalk widths are 4-5'. HMA surface depths vary from 3-4.5". Also attached is a list of many of the curb and gutter streets under the City's jurisdiction with their respective widths.

The spreadsheet offers the current cost of 1,000 lineal feet of road at each of the respective city's current asphalt roadway and concrete sidewalk standards to offer a comparison of general development cost. The road is completed as part of the developer's obligations while the sidewalk is completed at a later time by the builder. Washington's cost under this scenario is about 2% less than the regional average.

There are a variety of factors in considering modifications to any of the current street and/or sidewalk regulations. Among them:

- 30' is the generally-accepted minimum face-to-face street width needed to accommodate two-way traffic, one lane of parking, and emergency access. IDOT Bureau of Local Roads supports having travel lanes of 10-11' in width for urban local streets with a 30' minimum width. NACTO recommends parking lane widths of 7-9';
- Wider streets generally encourage speeds that are not as safe for residential areas;
- Studies have shown that narrower lane widths can effectively manage speeds without decreasing safety and that wider lanes do not correlate to safer streets. Wider travel lanes also increase exposure and crossing distance for pedestrians at intersections and midblock crossings;
- Decreasing street widths can improve aesthetics of the neighborhood by creating a greater sense of enclosure;
- Decreasing street widths would reduce the amount of impervious surface;
- Nearly all houses have 2-3 car garages, which can accommodate 4-6 vehicles with standard minimum 25' front setbacks. There is less need for on-street parking with off-street parking already provided;

- Increasing the pavement surface depth by even 0.5" can add up to nine years of life to the design period of the road while only adding approximately $1.10 per lineal foot to the initial cost and allowing for the City's streets budget to be stretched further;
- Many cities have started requiring sidewalks to be a minimum of 5' in width in order to better accommodate two people walking side-by-side and to encourage pedestrian activity. IDOT Bureau of Local Roads requires a minimum of 4', with 5' being the desired width. Five feet is the necessary minimum for two people to walk together and ADA considerations should be taken into account for disabled people; and
- Decreasing the street width while increasing the sidewalk width and pavement surface depth does not significantly increase development/building costs and would allow for pavement to last longer.

Staff discussed this with the Public Works Committee at its meeting on March 5 and it was recommended that this be brought to the Committee of the Whole as a discussion item. Staff explored a few options for decreasing the roadway width, increasing the pavement surface depth, and/or increasing the sidewalk width. Consideration was given to trying to balance cost, vehicular and pedestrian safety, and helping to ensure that the City receives a longer-lasting product. The change in cost for any of these options is rather negligible compared to the cost of construction at the current standards.

Our current standard for a minor residential/local street (3" HMA on an 8" aggregate base) offers a design life of 20 years. However, that is reduced to 11 years at the same standard if the ADT increases to 1,000.

This is scheduled for discussion at the March 12 Committee of the Whole meeting to see if there is support to amend the construction standards and/or the subdivision code.

Washington Residential Pavement Widths - Most C&G Streets	
Street	Width
Adams	18-30
Ash	34
Aspen	34
Austin	34
Avon	34
Bayberry	34
Belford	34
Bellaire	32
Birchwood	34
Bishops	24
Bobolink	30
Bondurant	40
Breeze	30
Briar Ct.	32
Briarcliff	32
Brief	30
Browning	34
Calvin	30
Cambridge	34
Catherine	24-30
Cedar	30
Chestnut	34
Church	34
Comfort	30
Coventry	34
Devonshire	34
Dogwood	34
Dorchester	34
Easy	30
Eldridge	30-34
Elgin	30
Elk	34
Elm	30-34
Evergreen	34
Fall	30
Fayette	30
Fieldstone	35
Firethorn	34
Flossmoor	30
Fountaindale	30
Franklin	34
Gillman	30
Grandyle	30
Greenbrier	34

Greenfield	32
Greystone	35
Hampton	30-34
Harvey	30-34
Hawthorne	32
Heather	34
High	30
Hillcrest	32
Hilldale	30
Holborn	34
Holland	30
Hunter's	34
Jefferson	30-34
Kensington	34
Kingsbury	34
Knollaire	32
Knollcrest	34
Lawndale	34
Lincoln	34
Linnhill	32
Lori	34
Lynn	36
Madison	24-34
Maple	34
Market	14-30
Meadowview	24-32
Melvin	30
Miller	34
Mitchell	34
Monroe	30
Muller	32
North	30
Northridge	34
Oak Ridge	34
Oakland	24
Oakwood	30
Parkview	32
Patricia	34
Pine	34-36
Plymouth	34
Primrose	34
Remington	34
Retriever	34
Ridge	30
Ridgecrest	34
Rockaway	31
Royal	24

Saddleridge	34					
Santa Fe	34					
Somerset	34					
Spring	30					
Spruce	24-34					
State	18-30					
Stonegate	34					
Stoneridge	35					
Stratford	30					
Streamwood	35					
Sunburst	34					
Sycamore	34					
Taft	18-34					
Terrace	31-34					
Timber Rail	34					
Tottenham	34					
Vine	30					
Wellington	34					
Westgate	31-34					
Westminster	34					
Wilshire	30-34					
Winchester	34					
Wood	18-30					
Woodcrest	30					
Woodview	34					
Yorkshire	34					
Yorktown	34					
Zinser	24-30					

PaveXpress

500 AADT

Project Information

Scenario Name	3" HMA
Scenario Description	3" of HMA on 8" AGG BSE at 500ADT Design Life = 20 Years
Estimated Completion Year	2018
State	Illinois
Roadway Classification	Local
Pavement Type	New - Asphalt

Design Parameters

Design Period (Years)	20 years
Reliability Level (R)	75 Z_R=-0.674
Combined Standard Error (S0)	0.5
Initial Serviceability Index (pi)	4.5
Terminal Serviceability Index (pt)	2
Change in Serviceability (ΔPSI)	2.5

Traffic Data

Completion Year Traffic	91,250
Load Equivalency Factor	0.0111
Completion Year ESALs	1,000
Design Period	20
Future Traffic Growth Rate (%)	1
	0

ESAL Growth Rate (%)

Total Design ESALs (W18) 22,000

Pavement Structure

Surface Lifts

Layer	Layer Coef	Drainage	Thickness
Surface	0.4	1	1.5
Binder/Intermediate	0.4	1	1.5
Base	0.44	1	?

Base Layers

Type	Layer Coef	Drainage	Thickness
Aggregate Base	0.1	1	8

Resilient Modulus (MR) 5000 psi

Design Guidance

Surface (AC)
Binder/Intermediate (AC)
Aggregate Base
Subgrade

Required minimum design SN: 2.00

Layer Thicknesses (in)

Surface (AC): 1.50

Binder/Intermediate (AC): 1.50

Base (AC): 0.00

Aggregate Base: 8.00

Total SN: 2.00

Design Notes

500 AADT w/ 98% PV
1.5% SU
0.5% MU

PaveXpress

Project Information

Scenario Name	3" HMA
Scenario Description	3" of HMA on 8" AGG BSE at 1000 ADT Design Life = 11 Years
Estimated Completion Year	2018
State	Illinois
Roadway Classification	Local
Pavement Type	New - Asphalt

Design Parameters

Design Period (Years)	11 years
Reliability Level (R)	75 Z_R=-0.674
Combined Standard Error (S0)	0.5
Initial Serviceability Index (pi)	4.5
Terminal Serviceability Index (pt)	2
Change in Serviceability (ΔPSI)	2.5

Traffic Data

Completion Year Traffic	182,500
Load Equivalency Factor	0.0111
Completion Year ESALs	2,000
Design Period	11
Future Traffic Growth Rate (%)	1

ESAL Growth Rate (%)	0
Total Design ESALs (W18)	23,000

Pavement Structure

Surface Lifts

Layer	Layer Coef	Drainage	Thickness
Surface	0.4	1	1.5
Binder/Intermediate	0.4	1	1.5
Base	0.44	1	?

Base Layers

Type	Layer Coef	Drainage	Thickness
Aggregate Base	0.1	1	8

Resilient Modulus (MR) 5000 psi

Design Guidance

Required minimum design SN: 2.00

Layer Thicknesses (in)

Surface (AC): 1.50

Binder/Intermediate (AC): 1.50

Base (AC): 0.00

Aggregate Base: 8.00

Total SN: 2.00

Design Notes

PaveXpress

Project Information

Scenario Name	Local Road
Scenario Description	3.5" of HMA on 8" AGG BSE at 1000 ADT Design Life = 20 Years
Estimated Completion Year	2018
State	Illinois
Roadway Classification	Local
Pavement Type	New - Asphalt

Design Parameters

Design Period (Years)	20 years
Reliability Level (R)	75 Z_R=-0.674
Combined Standard Error (S0)	0.5
Initial Serviceability Index (pi)	4.5
Terminal Serviceability Index (pt)	2
Change in Serviceability (ΔPSI)	2.5

Traffic Data

Completion Year Traffic	182,500
Load Equivalency Factor	0.0111
Completion Year ESALs	2,000
Design Period	20
Future Traffic Growth Rate (%)	1

ESAL Growth Rate (%)	0
Total Design ESALs (W18)	44,000

Pavement Structure

Surface Lifts

Layer	Layer Coef	Drainage	Thickness
Surface	0.4	1	1.5
Binder/Intermediate	0.4	1	2
Base	0.44	1	?

Base Layers

Type	Layer Coef	Drainage	Thickness
Aggregate Base	0.1	1	8

Resilient Modulus (MR) 5000 psi

Design Guidance

Required minimum design SN: 2.20

Layer Thicknesses (in)

Surface (AC): 1.50

Binder/Intermediate (AC): 2.00

Base (AC): 0.00

Aggregate Base: 8.00

Total SN: 2.20

Design Notes

Regional Pavement Thickness/ROW Width Standards

	Minor Residential/Local	Hypothetical Minor Residential/Local Road + Sidewalk Development Cost	Residential Collector	Minor Commercial/Industrial	Commercial/Industrial Collector	Arterials	Controlled Access	Sidewalk
East Peoria	3.5" bituminous concrete AND 9" compacted aggregate type A OR 7" stabilized granular material; ROW Width: 55'; Pavement Width: 28'	$ 146,936.67	3.5" bituminous concrete AND 9" compacted aggregate type A OR 7" stabilized granular material; ROW Width: 65'; Pavement Width: 36'	3.5" bituminous concrete AND 9" compacted aggregate type A OR 7" stabilized granular material; ROW Width: 65' Pavement Width: 36'	3.5" bituminous concrete OR 8" PCC pavement AND 12" compacted aggregate type A OR 8" stabilized granular material; ROW Width: 65'; Pavement Width: 36'	3.5" bituminous concrete OR 8" PCC pavement AND 12" compacted aggregate type A OR 8" stabilized granular material; ROW Width: 80'; Pavement Width: 48'	ROW Width: 120'; Pavement Width: 52' (includes 4' median strip)	Width: 4'
Morton	Geotech fabric, 9" Aggregate Base, 1.5" HMA Binder, and 1.5" HMA Surface OR 7" Non-Reinforced Concrete; ROW Width: 55'; Pavement Width: 34'	$ 160,105.00	Geotech fabric, 8" HMA Base, 2" HMA Binder, and 2" HMA Surface OR Geotech fabric, 13" Aggregate Base, 4" HMA Binder, and 2" HMA Surface OR 8" Non-Reinforced Concrete; ROW Width: 68'; Pavement Width: 38'	Geotech fabric, 8" HMA Base, 2" HMA Binder, and 2" HMA Surface OR Geotech fabric, 13" Aggregate Base, 4" HMA Binder, and 2" HMA Surface OR 8" Non-Reinforced Concrete; ROW Width: 55'; Pavement Width: 34'	Geotech fabric, 10" HMA Base, 2.5" HMA Binder, and 2" HMA Surface OR 10" Reinforced Concrete; ROW Width: 68'; Pavement Width: 38'			Width: 4' along minor residential and 5' along residential collector and minor commercial/industrial
Pekin	3" with 8" aggregate base OR 6" PCC Concrete; ROW Width: 54'; Pavement Width: 32'	$ 146,200.49	4" with 8" aggregate base OR 6" PCC concrete; ROW Width: 66-80'; Pavement Width: 42'			6" with 10" aggregate base OR 8" PCC concrete; ROW Width: 66-80'; Pavement Width: 48'	6" with 10" aggregate base or 10" reinforced PCC concrete; ROW Width: 120'; Pavement Width: 64'	Width: 4'
Peoria	2" HMA surface, 2.5" HMA binder AND 3" CA-6 with 7" CS-01 OR 1.5" HMA surface with 5" PCC Base AND 4" CA-6; ROW Width: 60'; Pavement Width: 28'	$ 171,672.10	ROW and Pavement Widths: Case-by-case	ROW and Pavement Widths: Case-by-case	ROW and Pavement Widths: Case-by-case	ROW and Pavement Widths: Case-by-case	ROW and Pavement Widths: Case-by-case	Width: 5'
Washington	3" HMA and 8" compacted aggregate Type B CA-6 or CA-10; ROW Width: 60'; Pvt Width: 32' (34' FF Curb)	$ 146,200.49	3" bituminus concrete AND 10" compacted aggregate Type A CA-6 or CA-10 with 4" compacted aggregate base course Type B; ROW Width: 60'; Pavement Width: 40'		4" bituminous concrete AND 8" bituminous base course			Width: 4'

Assumptions	
1,000 lf new road/sidewalk	
HMA @	$110/T
AGG BSE @	$25/T
Conc Sdwlk	$5/SF
Geofabric	$0.5/SY

Regional Average	$	154,222.95
Washington:Region		-5%
Washington:Peoria		-15%
Washington:Morton		-9%

Assorted Options	Sidewalk	Road	Cost	Varinance from Regional Avg.
A	4' wide	3.5" @30' wide (32' FF Curb)	$ 149,829.63	-3%
		4" @30' wide (32' FF Curb)	$ 160,096.30	
B	4' wide	3.5" @ 28' wide (30' FF Curb)	$ 142,507.65	-8%
		4" @ 28' wide (30' FF Curb)	$ 152,089.88	
C	5' wide	3.5" @ 28' wide (30' FF Curb)	$ 147,507.65	-4%
		4" @ 28' wide (30' FF Curb)	$ 162,089.88	
D	4' wide	3.5" @ 32' wide (34' FF Curb)	$ 157,151.60	2%
		4" @ 32' wide (34' FF Curb)	$ 168,102.72	