SPRINGVILLE CITY COUNCIL
SPECIAL MEETING AGENDA
MAY 30, 2017 AT 7:00 P.M.
City Council Chambers
110 South Main Street
Springville, Utah 84663

Notice is hereby given that members of the Springville City Council will hold a Special City Council Meeting in the Council Chambers of the Springville City Civic Center on Tuesday, May 30, 2017.

CALL TO ORDER

1. Consideration of an agreement between Springville City and Oak Leaf, LLC. Regarding defective concrete curb and gutter installed in the Woodsprings Estates Development located at approximately 650 West Center Street, Springville, Utah – Brad Stapley, Public Works Director

2. **CLOSED SESSION (If Needed)**
   The Springville City Council may temporarily recess the regular meeting and convene in a closed session to discuss pending or reasonably imminent litigation, and the purchase, exchange, or lease of real property, as provided by Utah Code Annotated Section 52-4-205

ADJOURNMENT

CERTIFICATE OF POSTING

This meeting was noticed in compliance with Utah Code 52-4-202 on May 26, 2017. Agendas and minutes are accessible through the Springville City website at www.springville.org/agendasminutes. Council Meeting agendas are available through the Utah Public Meeting Notice website at http://www.utah.gov/pmn/index.html. Email subscriptions to Utah Public Meeting Notices are available through their website.

In compliance with the Americans with Disabilities Act, the City will make reasonable accommodations to ensure accessibility to this meeting. If you need special assistance to participate in this meeting, please contact the City Recorder at (801) 489-2700 at least three business days prior to the meeting.

Meetings of the Springville City Council may be conducted by electronic means pursuant to Utah Code Annotated Section 52-4-207. In such circumstances, contact will be established and maintained by telephone or other electronic means and the meeting will be conducted pursuant to Springville City Municipal Code 2-4-102(4) regarding electronic meetings.

s/s - Kim Rayburn, CMC, City Recorder

S T A F F R E P O R T

DATE: May 26, 2017

TO: Mayor and City Council

FROM: Bradley D. Stapley, Director of Public Works

SUBJECT: **AGREEMENT BETWEEN SPRINGVILLE CITY AND OAK LEAF, LLC. REGARDING DEFECTIVE CONCRETE CURB & GUTTER INSTALLED IN THE WOODSPRINGS ESTATES DEVELOPMENT LOCATED AT APPROXIMATELY 650 WEST CENTER STREET.**

RECOMMENDED ACTION

Motion to enter into an agreement with Oak Leaf, LLC (the Developer) , of the Woodsprings Estates subdivision, outlining terms and conditions to mitigate and resolve the discovery of defective concrete curb & gutter installed throughout said development, as outlined in Exhibit "A".

SUMMARY OF ISSUES/FOCUS OF ACTION

Springville City Public Works staff recently discovered that the concrete curb & gutter installed in the Woodsprings Estates subdivision does not meet Springville City (City) specifications. This agreement provides a mechanism for the City to accept the defective concrete curb & gutter through mitigating concessions by the Developer.

DISCUSSION

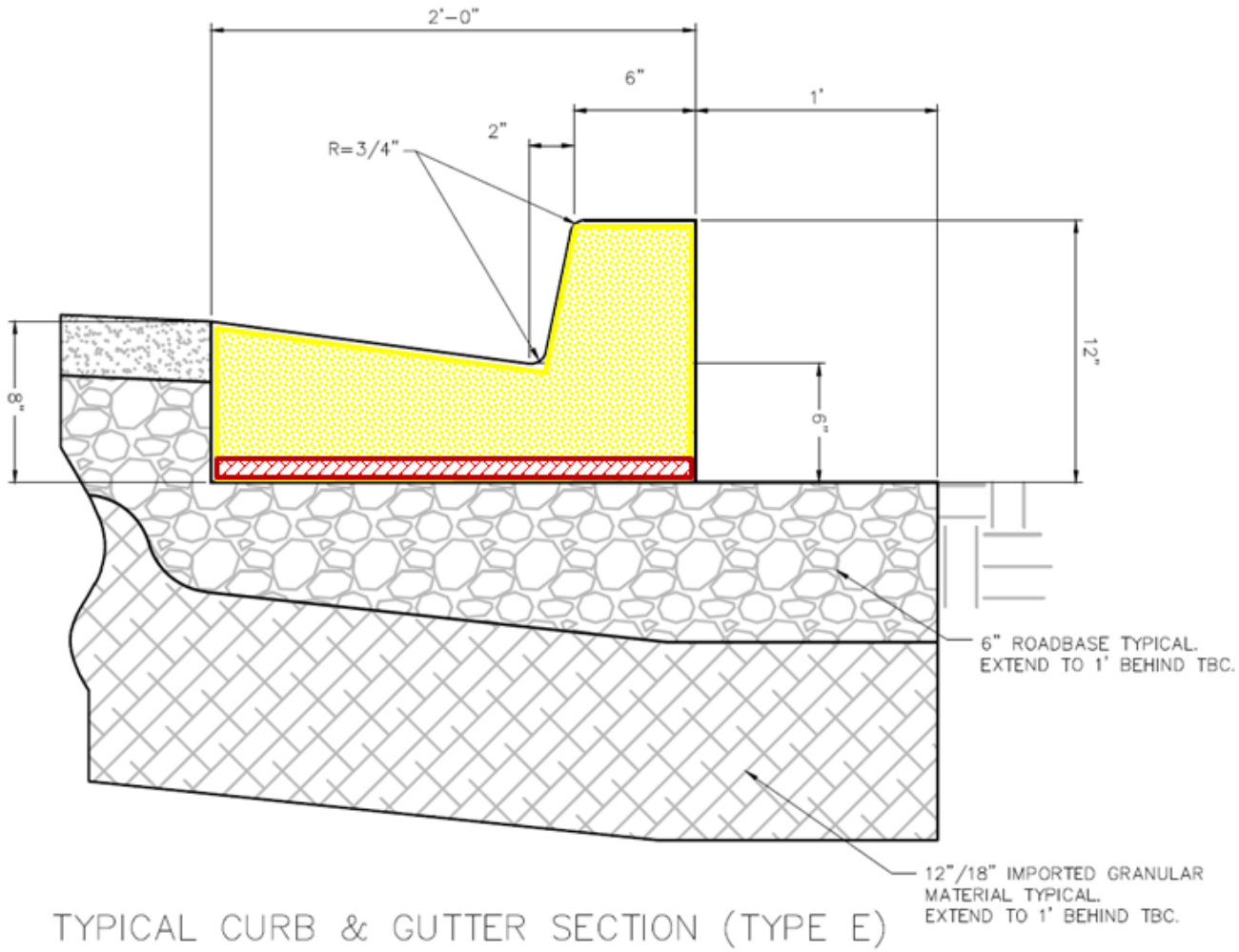
Approximately 4, 550 linear feet of concrete curb & gutter were installed by a subcontractor for the Developer in the Woodsprings Estates development.

Discovery: Springville City Public Works staff discovered that the concrete curb & gutter installed does not meet City specifications.

The City Specifications for concrete curb & gutter requires:

- 8-inches of concrete thickness at the lip of gutter
- 6-inches of concrete thickness at the gutter flow line, and
- 12-inches of concrete thickness at the top back of curb.

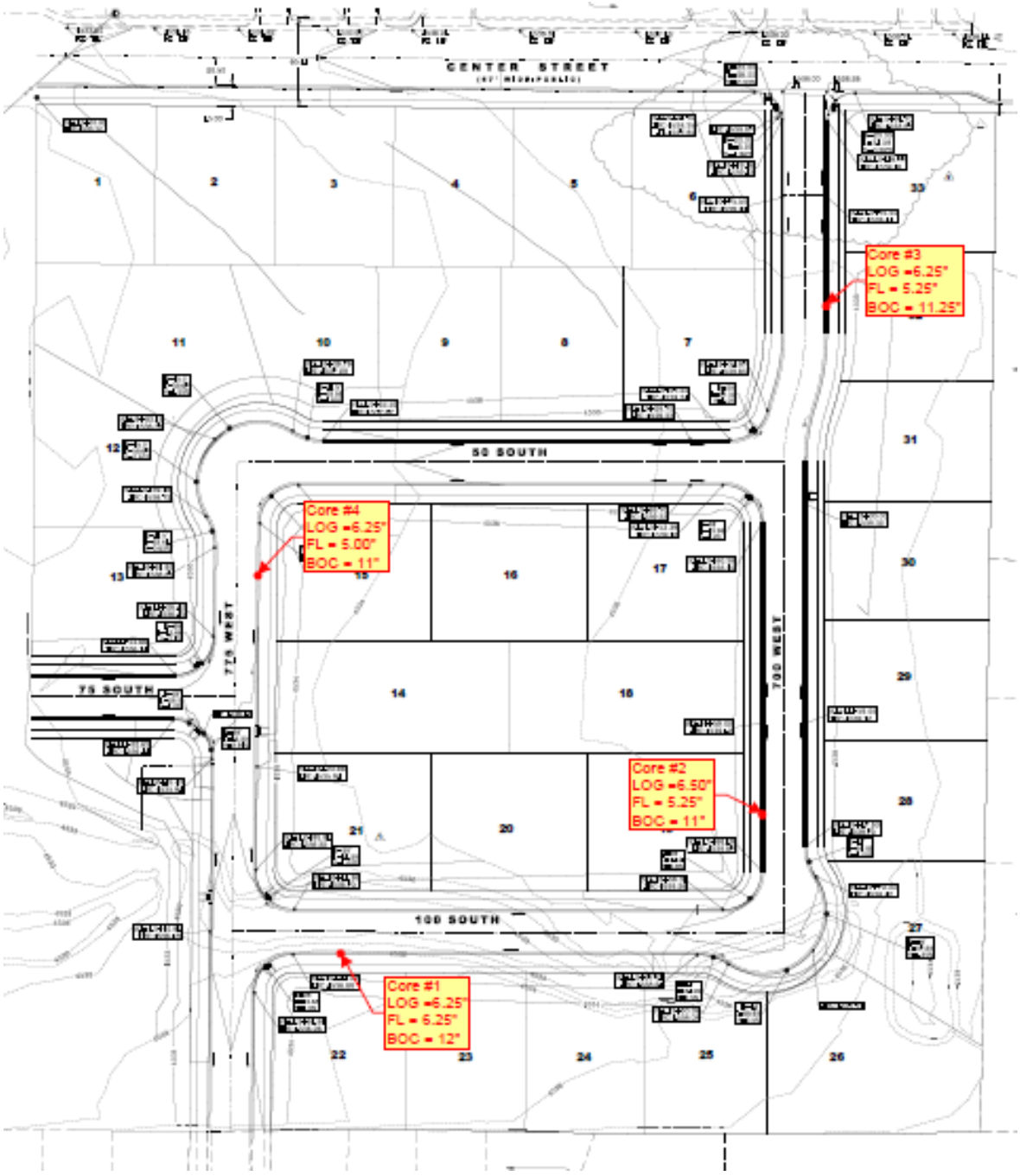
This is shown in the following figure:



TYPICAL CURB & GUTTER SECTION (TYPE E)

Standard Specifications

On-site Sampling & Measurement: Concrete core samples were taken at four (4) locations within the subdivision to accurately measure the curb & gutter thickness for the lip of gutter and the thickness for the top back of curb as shown in the following figure:



Based on the actual measurements of the concrete core samples taken (two cores at each of the four locations), and based on in-field measurements after exposing the back of curb, on average approximately:

- One and five-eights (1 5/8) of an inch of concrete thickness is missing from the lip of gutter.

- Nine-sixteenths (9/16) of an inch of concrete thickness is missing from the flow line of the gutter, and
- Five-eights (5/8) of an inch of concrete thickness is missing from the thickness of the top back of curb.

Material Investigation: The City Engineer, following protocol from the City Code endeavored to quantify the durability of, and the potential loss of service life of the defective concrete curb and gutter. The main question was whether the City could accept the defective concrete curb and gutter as installed, or should the defective concrete curb and gutter be removed and replaced with curb and gutter that meets the City specifications.

The City Engineer requested assistance from Brigham Young University Civil Engineering professor W. Spencer Guthrie, Ph. D., M.ASCE to process the field data and make recommendations to the City regarding the defective curb and gutter.

Mr. Guthrie analyzed the data and prepared a memorandum with the following comment (for full report, see attached Exhibit "B", Memorandum to Jeffery L. Anderson from W. Spencer Guthrie):

> *"Based on the results of the coring performed by Springville City, which indicate that the average thickness of the gutter section* [gutter flow line] *in question is 5.25 in. compared to the required 6.0 in. indicated in the Springville City specifications, Table 2 indicates the expected reduction in service life for the gutter section with reduced thickness.*

Table 2. Reduction in Service Life for Gutter Slab with Reduced Thickness

	Reduction in Service Life	
Method	ESAL's	Percent %
AASHTO	59,700	47
RISC	101,567	54

> *These calculations suggest that an approximately 50 percent reduction in service life is associated with reducing the thickness of the gutter slab from 6.0 to 5.25 in.*

Mr. Guthrie also indicates that based on the low volumes of traffic expected in the residential development, *". . . the reduced service life of the gutter slab with reduced thickness, as displayed in Table 1, should nonetheless be sufficient for many years."*

Possible Pay Reduction:

The City Engineer also investigated the possibility of accepting the defective curb and gutter with pay reductions (penalties) to the Developer by following national guidelines taken from the American Public Words Association (APWA) Standard Specifications.

The Springville City Standards and Specifications states:

CHAPTER 1 - GENERAL REQUIREMENTS

1.1 PURPOSE OF DOCUMENTS

The purpose of these Standard Specifications and Standard Drawings is to govern any work done or improvements installed within Public right-of-ways or public easements. Construction work shall comply with Springville City Codes, specifically Title 11 Development Code and Title 14 Subdivision Code. Developers/Contractors should thoroughly read and understand these specifications and standards before constructing public improvements.

Anything not specified in these specifications shall be governed by the most current revision of the Utah APWA specifications. If conflicts arise, the Developer/Contractor shall notify the City Engineer or his representative for final direction.

As indicated in the sentence above, the City Code directs the City Engineer to seek guidance from the APWA specifications. The APWA specifications states:

1.10 PRICE ADJUSTMENT

A. **Defective Work or Non-complying Material**: If ENGINEER determines it is not practical to remove and replace Defective Work or non-complying material, any of the following remedies may be applied:

1. Defective Work or non-complying material may remain, but the price reduced up to 50 percent.

APWA Standard Specifications, Section 01 29 00, Part 1.10 Price Adjustment

As indicated in paragraph 1, a reduction of up to 50% can be imposed.

Additionally, an APWA pay factor table is given for concrete pavement thickness as follows:

Table 2 – Thickness Pay Factor

Pay Factors	Deficiency Limits, in Inches	
	Residential street	Non-residential street
1.00	0.00 to 0.25	0 to 1/8
0.90	0.26 to 0.50	1/8 to 1/4
0.75	--	1/4 to 1/2
0.70	0.51 to 0.75	--
0.60	--	1/2 to 3/4
0.50	0.76 to 1.00	--
Reject	Greater than 1.00	Greater than 3/4

APWA Standard Specifications, Table 2, Thickness Pay Factor

Based on the core samples taken, some of the material can be fully rejected, with the majority being assigned a pay factor of 0.50.

Following the APWA guidelines, the following table represents the pay reduction which could be levied against the Developer for the defective concrete curb & gutter:

Acceptance of Defective Curb and Gutter

No.	Description	Qty	Unit	Unit Price	Cost
1	Defective Curb and Gutter (0.76-1 inch deficient)- Pay Factor Reduction = 0.50	3,465	LF	$ 10.25	$ 17,758.13
2	Full Replcaement cost of curb and gutter at drive cuts for homes (assuming a 30 wide drive way)	1050	LF	$ 10.25	$ 10,762.50
				TOTAL =	$ 28,520.63

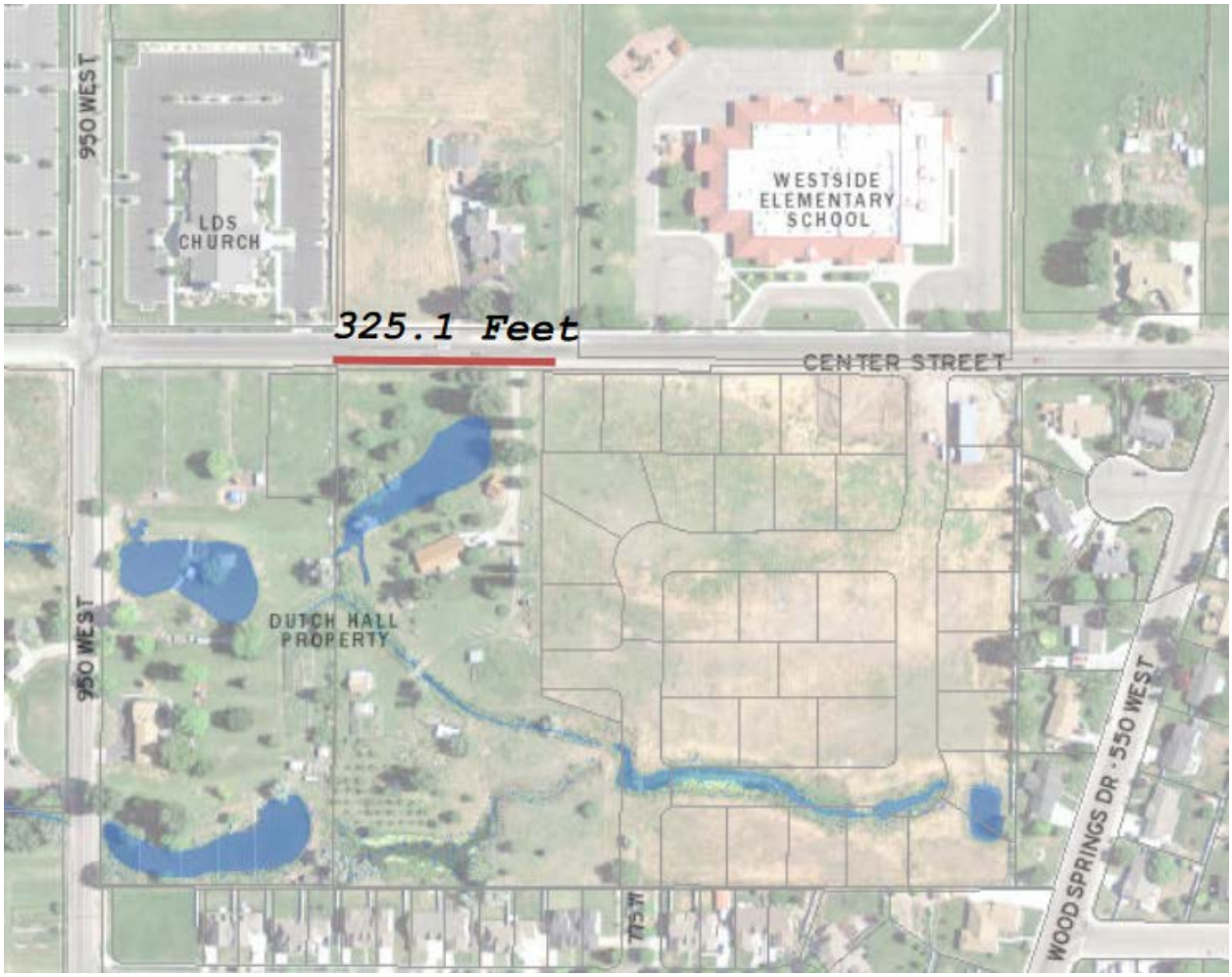
Developer Offer in Compromise:

The subcontractor to the Developer has agreed to offer the following to mitigate the defective curb and gutter:

- Install 325 additional feet of curb and gutter along the south side of Center Street at the location immediately west of the subdivision to the location where the curb and gutter is already installed (see map below). Standard 1-year warranty applies.
- Warrant the defective curb and gutter for a total of five (5) years.

The value of 325 linear feet of curb and gutter (using the unit prices given by the Developer) is approximately $3,331.25.

The value of the five (5) year warranty cannot be quantified as it is not known the actual reduction in service life of the defective concrete.



ALTERNATIVES

Option #1: Require a "Reduction Payment" to the City in the amount of $28,520.63

Option #2: Remove and replace all defective curb and gutter at a cost of approximately $301,339 as shown below:

Crub and Gutter Replacement

No.	Description	Qty	Unit	Unit Price	Cost
1	Remove and Dispose of Curb and Gutter	4,515	LF	$ 6.25	$ 28,218.75
2	Remove Asphalt	85,898	SF	$ 0.75	$ 64,423.50
3	Remove Concrete Collars	48	EA	$ 200.00	$ 9,600.00
4	Install 24" Curb and Gutter	4,515	LF	$ 15.00	$ 67,725.00
5	Install 3" AC Pavement	85,898	SF	$ 1.25	$ 107,372.50
6	Install Concrete Collars	48	EA	$ 500.00	$ 24,000.00
				TOTAL =	**$ 301,339.75**

FISCAL IMPACT

None

MEMORANDUM

TO: Jeffrey L. Anderson, P.E.

FROM: W. Spencer Guthrie, Ph.D., M.ASCE

DATE: May 16, 2017

SUBJECT: Curb and Gutter Analysis

The purpose of this memorandum is to summarize the analyses performed to evaluate a curb and gutter section with reduced thickness compared to the thickness indicated in the Springville City specifications. The analyses involved use of the 1993 American Association of State Highway and Transportation Officials (AASHTO) Pavement Design Guide (Huang 2004), as well as the RISC distress model (Mallick and El-Korchi 2009) that is based on the results of the American Association of State Highway Officials Road Test.

The following assumptions were made in the analyses:

- The curb and gutter in question is along a residential roadway with typical trafficking.
- At the locations of driveways, where the curb is cut, the gutter section behaves as a concrete pavement slab.
- The service life of the gutter slab is governed by fatigue under repeated traffic loading.
- The thickness of the gutter at the flow line governs the fatigue behavior of the gutter slab.
- The 28-day concrete compressive strength is 4000 psi.
- The concrete flexural strength is 500 psi as estimated from the concrete compressive strength (Huang 2004).
- The concrete modulus of elasticity is 3,600 ksi as estimated from the concrete compressive strength (Huang 2004).
- The design axle load is a single 18-kip axle, or equivalent single axle load (ESAL).
- The direction of trafficking across the gutter slab is perpendicular to the main directions of trafficking on the adjacent roadway.
- The maximum stress at the bottom of the gutter slab is the same as the maximum stress at the bottom of a typical pavement slab having the same thickness and material properties.
- The gutter slab is continuous along its length, so that the edge support is similar to that associated with tied concrete shoulders.
- No load transfer devices, such as dowels, are installed between the gutter slab and the adjacent asphalt pavement or concrete driveway.
- The load transfer coefficient is 3.90, which is in the middle of the range typical for concrete pavements with tied concrete shoulders and no load transfer devices (Huang 2004).
- The thickness and resilient modulus of the untreated base course beneath the gutter slab are 6 in. and 20,000 psi (Guthrie and Jackson 2015), respectively.

- The composite resilient modulus of the subgrade and the imported granular material beneath the untreated base course is 10,000 psi.
- The depth to bedrock is greater than 10 ft.
- The loss of support value is 1.0.
- The adjusted modulus of subgrade reaction is 150 psi/in., as estimated from the thickness and resilient modulus of the untreated base course, the composite resilient modulus of the subgrade and imported granular material, the depth to bedrock, and the loss of support value (Huang 2004).
- The drainage coefficient is 1.0.
- The initial and terminal serviceability values are 4.2 and 2.5, respectively.
- The reliability is 85 percent.
- The overall standard deviation is 0.35.

Based on these assumptions, the allowable numbers of ESALs were computed for a range in gutter slab thickness from 6.0 in. to 5.0 in. using the AASHTO and RISC methods as shown in Table 1. WinPAS software was utilized to compute the allowable ESALs for the AASHTO method (screen shots are provided at the end of this memorandum), while a spreadsheet was used to compute the allowable ESALs for the RISC method. In the RISC method, the maximum stress at the bottom of the gutter slab was determined from an equivalent stress table published by the Portland Cement Association (Huang 2004). Variations among the results reflect the various assumptions inherent in the methods.

Table 1. Projected Service Life for Analyzed Gutter Slab Thicknesses

Slab Thickness (in.)	Allowable ESALs by Method	
	AASHTO	RISC
6.00	127,700	187,751
5.75	104,500	144,754
5.50	84,700	113,276
5.25	68,000	86,184
5.00	53,900	66,655

Based on the results of coring performed by Springville City, which indicate that the average thickness of the gutter section in question is 5.25 in. compared to the required thickness of 6.0 in. indicated in the Springville City specifications, Table 2 indicates the expected reduction in service life for the gutter section with reduced thickness.

Table 2. Reduction in Service Life for Gutter Slab with Reduced Thickness

Method	Reduction in Service Life	
	ESALs	Percent (%)
AASHTO	59,700	47
RISC	101,567	54

These calculations suggest that an approximately 50 percent reduction in service life is associated with reducing the thickness of the gutter slab from 6.0 in. to 5.25 in. However, given

that construction of a typical two-story home with 1500 ft^2 per level involves trafficking equivalent to 520 ESALs (Guthrie 2009) and that additional trafficking across the gutter slab would occur at a projected rate of 2 to 10 ESALs per year under normal conditions in a residential neighborhood, the reduced service life of the gutter slab with reduced thickness, as displayed in Table 1, should nonetheless be sufficient for many years.

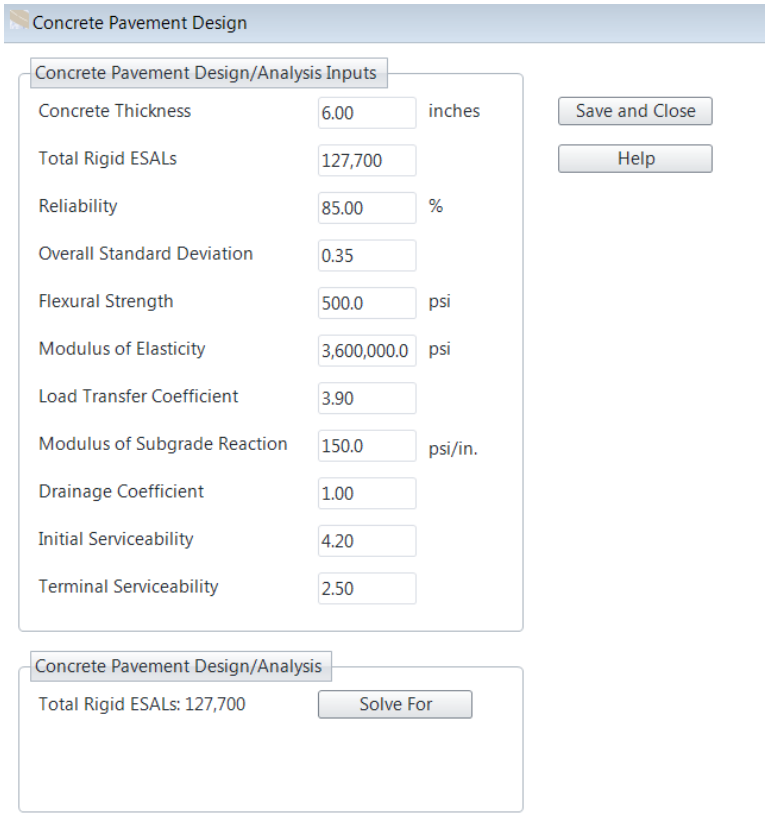
References

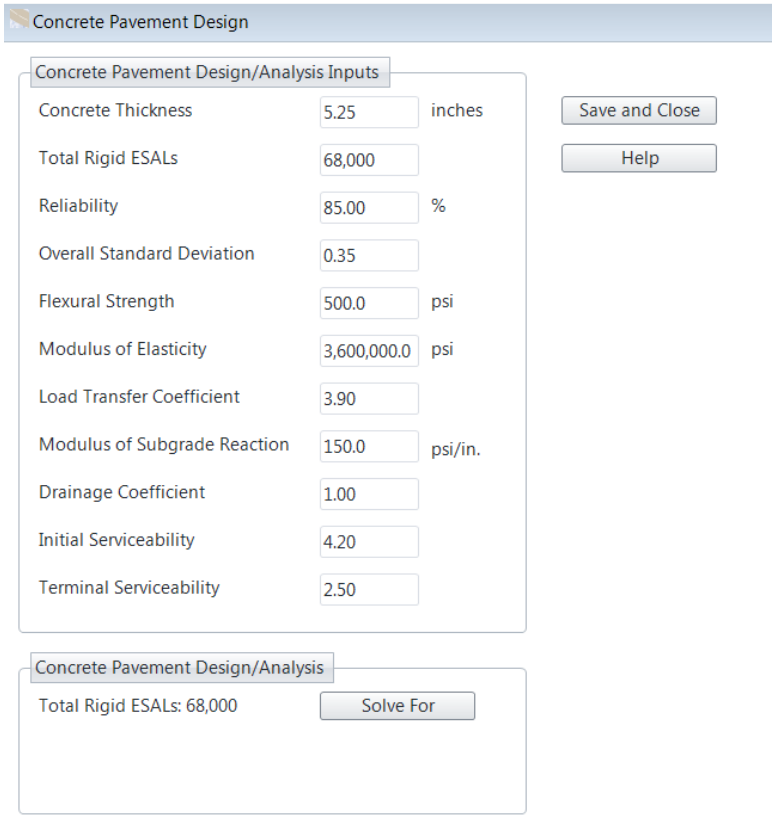
Guthrie, W. S. (2009). Heavy Loads on Local Roads. Utah Asphalt Conference, Sandy, UT.

Guthrie, W. S., and Jackson, K. D. (2015). *Laboratory Resilient Modulus Measurements of Aggregate Base Materials in Utah*. Utah Department of Transportation, Salt Lake City, UT.

Huang, Y. H. (2004). *Pavement Analysis and Design*, Second Edition. Prentice Hall, Upper Saddle River, NJ.

Mallick, R. B., and El-Korchi, T. (2009). *Pavement Engineering: Principles and Practice*. CRC Press, New York City, NY.


Concrete Pavement Design
Concrete Pavement Design/Analysis Inputs
Concrete Thickness 6.00 inches
Total Rigid ESALs 127,700
Reliability 85.00 %
Overall Standard Deviation 0.35
Flexural Strength 500.0 psi
Modulus of Elasticity 3,600,000.0 psi
Load Transfer Coefficient 3.90
Modulus of Subgrade Reaction 150.0 psi/in.
Drainage Coefficient 1.00
Initial Serviceability 4.20
Terminal Serviceability 2.50
Save and Close
Help
Concrete Pavement Design/Analysis
Total Rigid ESALs: 127,700
Solve For


Concrete Pavement Design
Concrete Pavement Design/Analysis Inputs
Concrete Thickness 5.25 inches
Total Rigid ESALs 68,000
Reliability 85.00 %
Overall Standard Deviation 0.35
Flexural Strength 500.0 psi
Modulus of Elasticity 3,600,000.0 psi
Load Transfer Coefficient 3.90
Modulus of Subgrade Reaction 150.0 psi/in.
Drainage Coefficient 1.00
Initial Serviceability 4.20
Terminal Serviceability 2.50
Save and Close
Help
Concrete Pavement Design/Analysis
Total Rigid ESALs: 68,000
Solve For

Agreement

This Agreement is entered into this ___ day of _____, 2017, by and between Springville City, a municipal corporation ("City"); Oak Leaf, LLC, a Utah limited liability corporation ("Developer"); and Overman Concrete, Inc. a Utah concrete contractor, (the "Subcontractor").

Recitals

1. Developer is the developer of the Woodsprings Estates Subdivision located at approximately 700 West Center Street in Springville, Utah (the "Subdivision").

2. As part of developing the Subdivision, Developer is responsible for installing all public improvements in accordance with Springville City ordinances, laws, regulations, standards and specifications, rules, and policies (the "Land Use Regulations").

3. Developer agrees that the curb and gutter improvements were not installed to the standards required by the Land Use Regulations.

4. City, Developer and Subcontractor desire to enter into this agreement to resolve the substandard installation of the curb and gutter improvements within the Subdivision.

Now Therefore, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and based upon the mutual promises and subject to the conditions set forth below, the parties agree as follows:

1. The parties agree that the recitals are correct, accurate, and are incorporated into this agreement.

2. Additional Curb and Gutter. Developer agrees to install, and warranty for one-year, approximately 325 additional feet of curb and gutter (the "New Curb and Gutter") along the south side of Center Street at the location immediately west of the Subdivision to the location where curb and gutter is already installed, as shown on the attached map. Developer shall install the New Curb and Gutter at Developer's sole cost and expense and in compliance with the Land Use Regulations. The installation of the New Curb and Gutter includes installation of subgrade, structural road base, and concrete curb and gutter as outlined by the Land Use Regulations. Subgrade and structural road base shall extend a minimum of one foot behind top back of curb and a minimum of one foot beyond lip of gutter. Compaction requirement for the subgrade and structural road base shall be according to the Land Use Regulations. Compaction testing shall be by an independent licensed Geotechnical firm. All costs associated with compaction testing shall be at Developer's expense. The New Curb and Gutter must be inspected and approved by the City's public works inspector before the New Curb and Gutter enters the one-year warranty period. Developer shall warranty the New Curb and Gutter for one-year in compliance with the Land Use Regulations, commencing on the date the New Curb and Gutter is approved and accepted by City's public works inspector.

3. Improvement Warranty Period. The parties acknowledge and agree that Developer and Subcontractor have performed poorly with respect to installing the curb and gutter within the Subdivision. The parties agree that all of the requirements for increasing the warranty period beyond one-year, as stated in Section 10-9a-103(21) of the Utah Code Annotated, have been met with respect to the curb and gutter improvements within the Subdivision. Specifically, the parties acknowledge and agree that it has been determined "for good cause that a one-year period would be inadequate to protect the public health, safety and welfare," and there is "substantial evidence

on the record of prior poor performance with the applicant" with respect to the curb and gutter improvements. By entering into this Agreement Developer and Subcontractor waive any and all claims concerning the one-year improvement warranty period under Section 10-9a-103(20) or any other Section of the Utah Code Annotated.

4. Five-Year Warranty. Developer and Subcontractor agree to jointly and severally provide a five-year warranty on the curb and gutter within the Subdivision, which warranty shall commence on the day that the Subdivision public improvements are accepted and approved by City and be in effect for a period of five years. Developer and Subcontractor agree to guarantee that the curb and gutter improvements shall remain in good condition, not fail in any material respect, and comply with the Land Use Regulations, as solely determined by City, during the five year warranty period. In the event City determines that the curb and gutter improvements have failed in any respect or not complied with any portion of the Land Use Regulations, Developer and Subcontractor shall replace such curb and gutter improvements at Developer and Subcontractor's sole expense within thirty (30) days of being notified by written notice provided to Developer by being mailed to Developer's address listed at the beginning of this agreement. The notice to Developer shall be considered notice to both Developer and Subcontractor. Any required replacement or repair of the curb and gutter improvements shall meet the requirements of the Land Use Regulations.

5. Personal Guarantee. Those individuals signing on behalf of Developer and Subcontractor do hereby jointly and severally personally guarantee the performance of the obligations of Developer and Subcontractor under this agreement, including without limitation, the five-year warranty.

6. Indemnity. Developer and Subcontractor jointly and severally and their successors and assigns hereby agree to indemnify, defend (with counsel acceptable to the City) and hold City, its elected officials, officers, employees and volunteers harmless from any and all liens, encumbrances, costs, demands, claims, judgments, injuries, employee claims and/or damage caused or arising out of (a) the acts and omissions of Developer and/or Subcontractor and their agents, servants, employees, and/or contractors and (b) any work performed by Developer and/or Contractor, their agents, servants, employees, consultants, contractors, and/or subcontractors. The terms and conditions of this provision shall remain effective after the expiration or termination of this Agreement, so long as the event for which the indemnification is needed occurred prior to such expiration or termination.

Miscellaneous:

Attorney's Fees: If any party is required to retain legal counsel in order to enforce this Agreement, with or without the commencement of a formal legal action, such party shall be entitled to recover its attorney's fees and costs from the breaching party or parties.

Binding Effect: This Agreement shall be binding on the parties and their respective heirs successors and assigns.

Governing Law: This Agreement shall be governed by the laws of the State of Utah.

Modifications: This Agreement shall not be amended or modified except by written document signed by the party to be charged with such amendment or modification.

No Waiver: No failure to exercise, delay in exercising or single or partial exercise of any right, power or remedy by any party hereto shall constitute a waiver thereof or shall preclude any other or

further exercise of the same or any other right, power or remedy.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, to be effective for all purposes as of the date first written above.

CITY OF SPRINGVILLE

By:_____
MAYOR WILFORD W. CLYDE

Attest:

_____
KIM RAYBURN, CITY RECORDER

DEVELOPER - _____

By:_____

Name: _____
Title:_____

SUBCONSTRACTOR - _____

By: _____

Name:_____
Title: _____