REPORT

Pavement Evaluation Summary
SR 120/ Kimball Bridge Road
P.I. No. 0010418
Fulton County,
Johns Creek, Georgia

Project Number
2013.3807.01

July 22, 2014
Revised
August 14, 2014

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July 22, 2014
Revised August 14, 2014

Mr. Thomas Zeigler, P.E.
T.Y. Lin International
260 Peachtree Street
Suite 900
Atlanta, GA 30303

Via Email: thomas.ziegler@tylin.com

PROJECT: Report of Pavement Evaluation Summary
SR 120 / Kimball Bridge Road
GDOT P.I. No. 0010418
Johns Creek, Fulton County, Georgia
UC Project No. **2013.3807.01**

Dear Mr. Zeigler:

United Consulting is pleased to submit this report of the Pavement Evaluation Summary for the above referenced project site. This revision was performed in accordance to an email dated July 17, 2014 from Mr. Chris Haggard with the City of Johns Creek and email dated August 11, 2014 from Mr. Brian O'Connor of T.Y Lin. The format of this report is consisted with GDOT-OMT pavement evaluation format however the fieldwork was not consistent with GDOT pavement Evaluation Manual. We appreciate the opportunity to assist you with this project and look forward to working with you on future projects. If you have any questions regarding this report, or if we can of further assistance, please feel free to contact us.

Sincerely,

UNITED CONSULTING

Ray E. Halbert, P.E.
Senior Geotechnical Engineer

GEORGIA REGISTERED NO. 23121 PROFESSIONAL ENGINEER MEHDI MOGHZAMI

Mehdi Moghzami, Ph.D., P.E.
Senior Engineer

REH/MM/nj

Revised
August 14, 2014

http://ucblade10/sites/Geotechenv/11425/2013.3807.01/Geotechnical Documents/2013.3807.01 PES Revised 8-14-2014.doc

PAVEMENT EVALUATION SUMMARY

For

SR 120/ Kimball Bridge Road, Fulton County, Georgia
PI No. 0010418

1. LOCATION / DESCRIPTION

This project is for the roadway improvement, widening of SR 120 / Kimball Bridge Road from Old Milton Road to Jones Bridge Road located within the City of Johns Creek and the City of Alpharetta, Fulton County, Georgia. The proposed project limits include approximately 6,800 feet along SR 120 from State Bridge Road to Jones Bridge Road and for 100 feet in each direction from the centerline with the road lengths as follows:

For the purpose of this report, **SR 120** is considered an East-West oriented roadway. Travel lanes are designated with numbers. **Webb Bridge Way** is considered a north-south oriented roadway and **Webb Bridge Road** is considered an east-west oriented roadway. The stations for SR 120 were determined in the field by measuring from a surveyors marked distance closest to the intersection with Old Milton Parkway. Measuring from that known field marking back to the intersection of Old Milton Parkway, the starting station for SR 120 began at Station 100+10 at the crosswalk.

Station to Station	Location
100+00 to 168+00	SR 120 / Kimball Bridge Road
0+00 to 10+00	SR 120 Connection Ramp
0+00 to 8+00	Webb Bridge Way
0+00 to 10+00	Webb Bridge Road

The following types of construction are recommended along the roadway improvement for SR 120:

Road	Station to Station	Type of Construction
SR 120/Kimball Bridge Road-Westbound	100+00± to 168+00± 114+00 ± to 168+00±	Inlay/ Overlay Construction Full Depth Construction for Widening
SR 120/Kimball Bridge Road-Eastbound	100+00± to 168+00± 104+00± to 168+00±	Inlay/ Overlay Construction Full Depth Construction for Widening
Side Roads		
SR 120 Connector Ramp	0+00 to 10+00±	Inlay/ Overlay Construction
SR 120 WB Lane 4 RTL	112+04± to 120+57±	Full Depth Replacement
Webb Bridge Way	0+00 to 8+00±	Inlay/ Overlay Construction and

Road	Station to Station	Type of Construction
		Full Depth Construction for Widening
Webb Bridge Road	0+00 to 10+00±	Full Depth Construction

Notation:
Inlay/Overlay Construction = Existing roadway, overlay conditions are acceptable.
Full Depth Construction = Widening, new roadway and/or alignment.
Full Depth Replacement = Existing Roadway cannot accommodate overlay due to required overlay thickness in excess of 9.00 inches or due to new profile. Extension of the main line Full Depth Construction to the turnouts of the side roads is recommended.

For purposes of this report, SR 120/ Kimball Bridge Road and Webb Bridge Road will be considered an east-west oriented roadway. The remaining side roadways will be considered north-south oriented roadway.

2. PAVEMENT CONDITION SUMMARY

The existing pavement for SR120 is in good to fair condition based on the findings of our field observation. Full Depth Construction is recommended for widening area. Mill and overlay conditions are recommended for the existing pavement. See "**Section 10 - Assumptions and Justifications" section** for details.

3. FULL-DEPTH SECTIONS

The following full-depth pavement structures are recommended for use on this project.

SR 120 FLEXIBLE PAVEMENT DESIGN

(With Curb & Gutter)				
PAY ITEM NUMBER	**MATERIAL**	**COURSE**	**THICKNESS**	**SPREAD RATE**
402-3130	12.5 mm Superpave	Surface	1.50 inches	165 lbs/yd^2
402-3190	19 mm Superpave	Binder	2.00 inches	220 lbs/yd^2
402-3121	25 mm Superpave	Asphalt Base	9.50 inches	1045 lbs/yd^2
310-1101	Graded Aggregate Based	Base	12.00 inches	N/A

WEBB BRIDGE WAY FLEXIBLE PAVEMENT DESIGN

(With Curb & Gutter)				
PAY ITEM NUMBER	**MATERIAL**	**COURSE**	**THICKNESS**	**SPREAD RATE**
402-3130	12.5 mm Superpave	Surface	1.50 inches	165 lbs/yd^2
402-3190	19 mm Superpave	Binder	2.00 inches	220 lbs/yd^2
402-3121	25 mm Superpave	Asphalt Base	7.00 inches	770 lbs/yd^2
310-1101	Graded Aggregate Based	Base	12.00 inches	N/A

WEBB BRIDGE ROAD FLEXIBLE PAVEMENT DESIGN

(With Curb & Gutter)				
PAY ITEM NUMBER	**MATERIAL**	**COURSE**	**THICKNESS**	**SPREAD RATE**
402-3130	12.5 mm Superpave	Surface	1.50 inches	165 lbs/yd^2
402-3190	19 mm Superpave	Binder	2.00 inches	220 lbs/yd^2
402-3121	25 mm Superpave	Asphalt Base	5.00 inches	550 lbs/yd^2
310-1101	Graded Aggregate Based	Base	12.00 inches	N/A

4. OVERLAY SECTIONS

The existing asphalt pavement along SR 120 from Station 100+00 to Station 168+00 does not exceed the distress criteria as outlined in Appendix E.

We recommend that the existing pavement along the following roadways be milled and inlayed/ overlaid as follows:

- **SR 120** from **Station 100+00± to Station 104+00±** Eastbound and **Station 100+00± to Station 114+00±** Westbound be partially milled 1.50 inches to remove existing cracked asphalt. Based on the visual observation, due to recent pavement overlay, no milling is required for Station 104+00± to 168+00± Eastbound and Station 114+00± to 168+00± Westbound. Where no milling is required, we recommend applying a tack coat prior to construction of the overlay.

- See "Additional Recommendations" and "Assumptions and Justifications" section below.

After milling and immediately prior to inlaying/overlaying, we recommend that any surface cracks shall be sealed with a Type M crack sealant, as per Section 407 of the Standard Specifications. The following overlay structures are recommended for use on this project.

SR120 INLAY/ OVERLAY

Sta. 100+00± to 104+00± Eastbound and Sta. 100+00± to 114+00± Westbound (With Curb & Gutter)				
Pay Item Number	**Material**	**Course**	**Thickness**	**Spread Rate**
402-3130	12.5 mm Superpave	Surface	1.50 inches	165 lbs/yd^2
402-3190	19 mm Superpave	Binder	2.25 inches	247 lbs/yd^2
402-3121	25 mm Superpave	Asphalt Base	4.00 inches	440 lbs/yd^2

SR120 INLAY/ OVERLAY

Sta. 104+00± to 168+00± Eastbound and Sta. 114+00± to 168+00± Westbound (With Curb & Gutter)				
Pay Item Number	**Material**	**Course**	**Thickness**	**Spread Rate**
402-3130	12.5 mm Superpave	Surface	1.50 inches	165 lbs/yd^2
402-3190	19 mm Superpave	Binder	2.00 inches	220 lbs/yd^2
402-3121	25 mm Superpave	Asphalt Base	4.00 inches	440 lbs/yd^2

WEBB BRIDGE WAY INLAY/ OVERLAY

(With Curb & Gutter)				
Pay Item Number	**Material**	**Course**	**Thickness**	**Spread Rate**
402-3130	12.5 mm Superpave	Surface	1.50 inches	165 lbs/yd^2
402-3190	19 mm Superpave	Binder	4.00 inches	440 lbs/yd^2

Please refer to **Section 10 "Assumptions and Justifications"** of the report.

5. PAVEMENT CONDITION SUMMMARY

Except for the following, no other significant distresses were encountered during the field exploration of this project:

Rutting On **SR 120,** the maximum rutting observed was 1/4 of an inch within the evaluated sections.

The maximum rutting of ¼ of an inch was observed on Webb Bridge Way near Station 1+50 in the southbound, Lane 2, right turn lane.

Load Cracking On **SR 120,** predominantly Level 1 load cracking was observed within the evaluated sections. However, from Station 104+50 eastbound and 114+00 westbound to the end of the project at Station 168+00, no load distresses were visible due to newly paved surface.

Block/ Transverse Cracking On **SR 120,** predominantly Level 1 and Level 2 block/transverse cracking was observed within the evaluated sections. Note: Newly paved surface was observed from 104+50 eastbound and 114+00 westbound to the end of the project at Station 168+00.

Reflection Cracking On **SR 120,** no visible reflection cracking was observed during this field investigation.

Edge Distress On **SR 120,** no visible distresses of edge distress were observed during this field investigation.

Raveling On **SR 120,** no significant distresses of raveling were observed during this field investigation. On **Webb Bridge Way**, Level 1 raveling distress was observed within the evaluated section.

Bleeding/ Flushing On **SR 120**, no significant distresses or bleeding were observed during this field investigation.

Corrugation/ Pushing On **SR 120,** Corrugation or Pushing was not noted during this field investigation.

Loss of Section On **SR 120,** Loss of Section was not noted during this field investigation.

Patches, Potholes, and Local Base Failures On **SR 120,** patches, potholes or local base failure was not observed during this field investigation.

6. CORES

Cores were recovered from ten (10) separate locations in the travel lanes of this project to determine the thicknesses and condition of the existing pavement sections. The results of the coring operation are tabulated below:

Core/ Sample Number	Location	Station/Direction/ Location	Asphalt Core Length (inches)	Core Condition	Underlying Material
1	SR 120	**161+40 EB, Ln 1, DW, 2.5' Rt**	11.00	Good, No visible stresses	Compacted Sand
2	SR 120	**157+54 WB, Shldr, (2.0') Rt**	10.00	Good, No visible stresses	Compacted Sand
3	SR 120	**150+27 WB, Ln 1, CL**	9.00	Good, No visible stresses	GAB=6"
4	Webb Bridge Road	**5+40 CL**	5.50	Fair, Horizontal crack at 2.5"	Compacted Sand/Gravel
5	SR 120	**135+00 WB, Ln 1, DW, 3.0' Lt**	12.00	Good to fair; 8.50" sample removed, 3.50" sample cracked, unable to remove.	Unknown
6	Webb Bridge Way	**1+50 SB, Ln 1, DW, 3.0' Lt**	10.00	Good, some air voids observed at 6"	Compacted Sand
7	SR 120	**123+00 EB, Shldr, 48' Rt**	11.00	Good to fair; sample recovered in 3 parts; horizontal break at 4", 7", vertical break from 7" to 11"	Compacted Sand/Gravel
8	SR 120	**118+50 WB, Ln 4, RTL, PW, 53.0' Lt**	6.75	Good	Compacted Sand/Gravel
9	SR 120	**110+50 WB, Ln 3, RTL (2.0') Rt**	11.00	Good	Compacted Sand/Gravel
10	SR 120	**104+00 WB, Ln 1, LTL, DW, 3.0' Lt**	11.50	Good	Compacted Sand/Gravel

Notation:
CL = Centerline
DW = Driver's Wheel Path
EB = Eastbound
GAB= Graded Aggregate Base
Ln = Designated Travel Lane
Lt = Left of the existing centerline, direction of travel (lower to higher station)
NB = Northbound
PW = Passengers Wheel Path
Rt = Right of the existing centerline, direction of travel (lower to higher station)
RTL = Right Turn Lane
SB = Southbound
Shldr = Shoulder

7. OTHER INFORMATION

- The Soil Survey Summary for this project was not obtainable as of the issuance of this report. The attached pavement designs used the design values recommended in Appendix G and H of the GDOT Pavement Design Manual. Upon review by GDOT, if different design values are recommended, a revised report will be issued based on the new design values.

- The traffic information provided below is based on Mr. Brian O'Connor of **T.Y. Lin International** via email dated July 7, 2014 and July 18, 2014.

- The full-depth, mill and overlay design analyses are attached to this report. All designs are based on a computer program named GDOT Pavement Design Version 2.0 developed by Georgia Department of Transportation, Pavement Management Branch.

- **Design Considerations for SR 120**
  - Number of lanes (in one-direction): 2
  - With Curb and Gutter
  - Provided Traffic Date A.D.T. (2020): 36,240; (2040): 52,850
  - Provided Project Let Date: 2016
  - **TRAFFIC DATA**
    - A.D.T. (2020): 36,240 (Two-Way)
    - A.D.T. (2040): 52,850 (Two-Way)
    - Directional Distribution: 50/50
    - Lane Distribution: 85/15
    - % 24 Hr. Trucks: 10.2%
    - % MU: 1.4%, % SU: 8.8%
    - Function Class: Urban Principle Arterial

- Speed Design: ≤ 45 mph
- Terminal Serviceability Index: 2.50
- Soil Support: 2.0 (Appendix G)
- Regional Factor: 1.8 (Appendix H)

- **Design Considerations for Webb Bridge Way**
  - Number of lanes (in one-direction): 1
  - With Curb and Gutter
  - Provided Traffic Date A.D.T. (2020): 13,950; (2040): 20,330
  - Provided Project Let Date: 2016
  - **TRAFFIC DATA**
    - A.D.T. (2020): 13,950 (Two-Way)
    - A.D.T. (2036): 20,330 (Two-Way)
    - Directional Distribution: 50/50
    - Lane Distribution: 100
    - % 24 Hr. Trucks: 7.9%
    - % MU: 1.8%, % SU: 6.1%
    - Function Class: Light State Route
    - Speed Design: ≤ 45 mph
    - Terminal Serviceability Index: 2.50
    - Soil Support: 2.0 (Appendix G)
    - Regional Factor: 1.8 (Appendix H)

- **Design Considerations for Webb Bridge Road**
  - Number of lanes (in one-direction):1
  - With Curb and Gutter
  - Provided Traffic Date A.D.T. (2020): 4,661; (2040): 6,802
  - Provided Project Let Date: 2016
  - **TRAFFIC DATA**
    - A.D.T. (2020): 4,661 (Two-Way)
    - A.D.T. (2040): 6,802 (Two-Way)
    - Directional Distribution: 70% Westbound/ 30% Eastbound
    - Lane Distribution: 100
    - % 24 Hr. Trucks: 7.9%
    - % MU: 1.8%, % SU: 6.1%
    - Function Class: Light State Route
    - Speed Design: ≤ 45 mph
    - Terminal Serviceability Index: 2.50
    - Soil Support: 2.0 (Appendix G)
    - Regional Factor: 1.8 (Appendix H)

- **Mill and inlay the top 1.50 inches** of the existing pavement for the project at all tie-in areas. See "**Additional Recommendations Section**" for more details.

- **Testing**
  No laboratory testing of sampled flexible asphalt core samples were performed.

- **For SR 120 Eastbound**
  - From Station 100+00± to Station 104+00±, is an existing 2 lane roadway.
  - From Station 104+00± to Station 168+00± the existing roadway is newly paved.

- **For SR 120 Westbound**
  - Station 100+00± to Station 114+00, is an existing 2 lane roadway with 3 turn added as they approach the intersection.
  - Station 114+00± to Station 168+00± the existing roadway is newly paved.

8. ADDITIONAL RECOMMENDATIONS

- We recommend a minimum 200 foot tie-in transition for SR 120 at the beginning and ending of the project. In addition, we recommend a minimum 100 foot tie-in transition for the side roads. The tie-in transition will consist of milling 1.50 inches and inlay with 12.5 mm Superpave asphalt concrete mix.

- We recommend that the mainline full depth construction be extended to all side roads to the turnouts.

- New pavements should be constructed flush with all existing and/or new utility manholes or vaults.

- We recommend staggered joints for each asphaltic concrete layer to reduce the potential moisture migration from subgrade soils.

- We recommend the application of a 2 foot wide pavement reinforcement fabric, centered on joints to reduce the potential for crack migration through the new asphalt.

- We recommend milling the asphaltic concrete pavement, as per Section 432 of the Standard Specifications.

- We recommend waterproofing the joints and cracks of the asphalt concrete pavement prior to the overlaying operation, as per Section 445 of the Standard Specifications.

- After milling and immediately prior to inlaying/overlaying, we recommend that any surface cracks shall be sealed with a Type M crack sealant, as per Section 407 of the Standard Specifications.

9. ASSUMPTIONS AND JUSTIFICATIONS

- The provided pavement design is based on the traffic information provided by **T.Y. Lin International.**

- The station locations for SR 120 and all roadways associated with this project were not provided or staked in the field by a surveyor. United Consulting determined the approximate location of these stations by using a measuring wheel from the nearest identified stationary object marked on the provided plans.

10. LIMITATIONS=

This report is for the exclusive use of the **Georgia Department of Transportation (GDOT), City of Johns Creek,** its agents, and **T.Y. Lin International** the designers of the project described herein, and may only be applied to this specific project. Our conclusions and recommendations have been prepared using generally accepted standards of Pavement Engineering practice in the State of Georgia and are valid for a period of two years from the issuance of this report. Should the implementation of the recommendations presented in this report be delayed more than two years, re-evaluation of the pavement should be performed. No other warranty is expressed or implied. Our firm is not responsible for conclusions, opinions or recommendations of others. The right to rely upon this report and the data within may not be assigned without **UNITED CONSULTING'S** written permission.

Our preliminary conclusions and recommendations are based upon design information furnished to us, data obtained from the previously described exploration and testing program and our past experience. They do not reflect variations in the subsurface conditions that may be present intermediate of our coring/ borings and in unexplored areas of the site. Should such variations become apparent during construction, it will be necessary to re-evaluate our conclusions and recommendations based upon "on-site" observations of the conditions.

Our conclusions and recommendations are based on our site reconnaissance, anticipated existing pavement thickness, and our past experience.

UNITED CONSULTING

Reported By: Ray E. Halbert, P.E.

Reviewed By: Mehdi Moazzami, Ph.D., P.E.

Appendix A – Figures (5 pages)

Figure 1 thru Figure 5: Coring Location Plan – (5 pages)

Appendix B – Project Photographs (23) – (12 pages)

Appendix C – Roadway Photographs (55) – (28 pages)

Appendix D – Example Photographs (7) – (4 pages)

Appendix E – Core Photographs (10) – (5 pages)

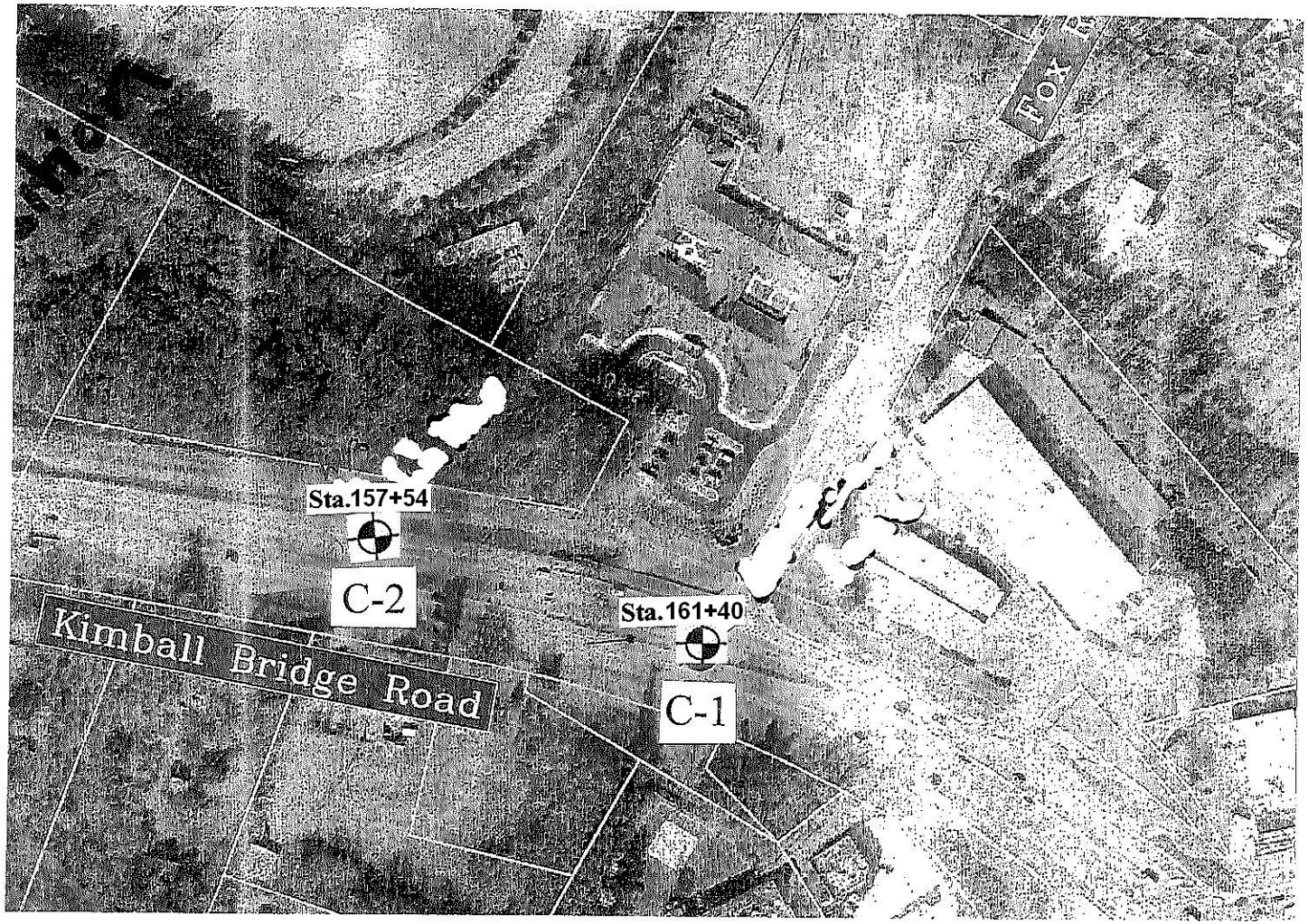
Appendix F – Recommended Pavement Section - (9 pages)

Traffic Data Provided by T.Y. Lin International (3 pages)

SR 120 – Full Depth with GAB with Curb and Gutters (1 page)
Webb Bridge Way – Full Depth with GAB with Curb and Gutters (1 page)
Webb Bridge Road – Full Depth with GAB with Curb and Gutters (1 page)
SR 120 – Inlay/Overlay from Station 100+00 to 104+00 EB and 100+00 to 114+00 WB (1 page)
SR 120 – Inlay/Overlay from Station 104+00 to 168+00 EB and 114+00 to 168+00 WB (1 page)
Webb Bridge Way – Overlay with Curb and Gutters

Appendix G – Disc

APPENDIX A
FIGURES

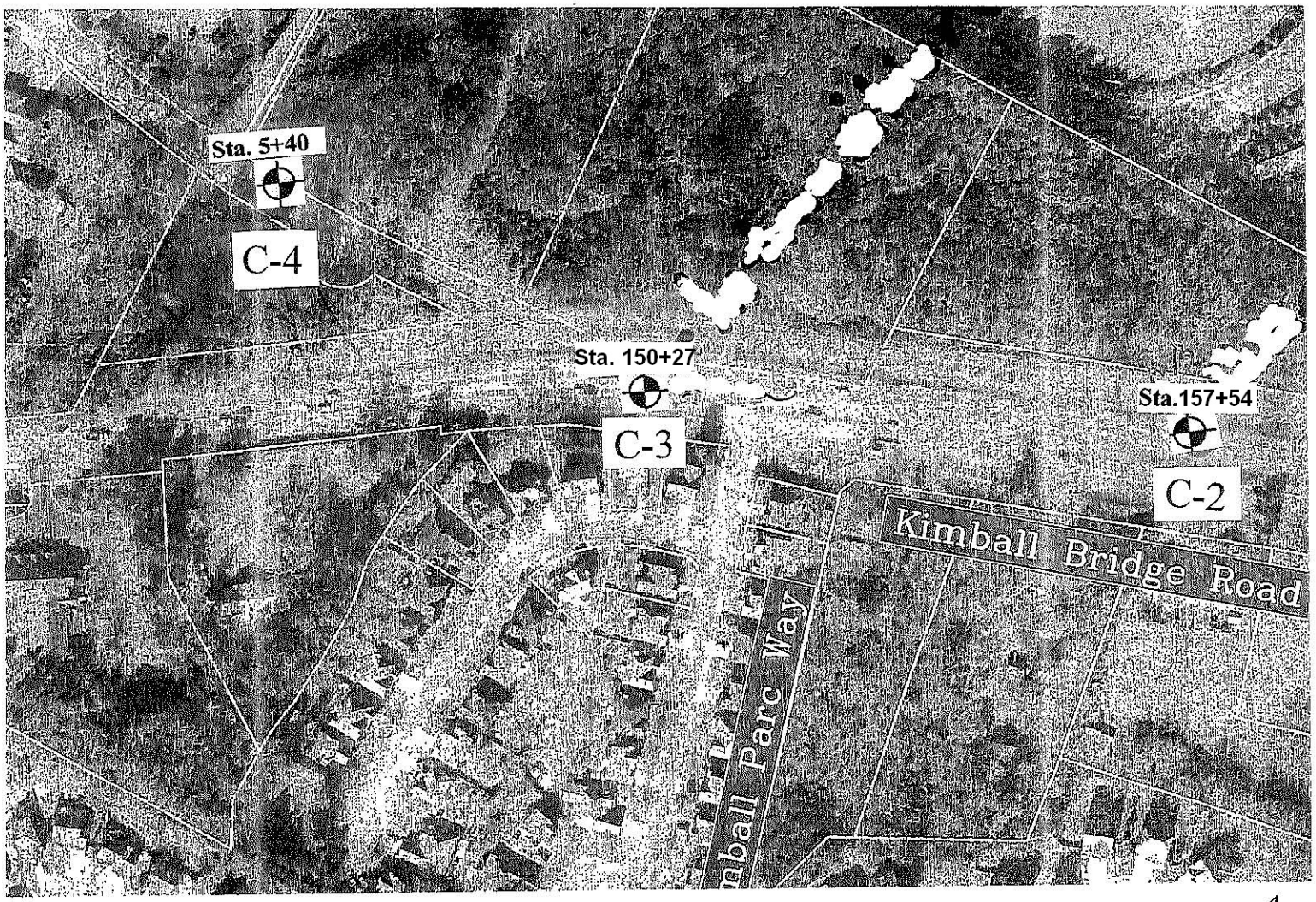


LEGEND:

Coring Locations

N

SCALE: NTS	DATE: **7/18/2014**	PROJECT NO: 2013.3807.01	TITLE: **CORING LOCATION PLAN**	**FIG. 1**
PREPARED: NP	CHECKED: **REH**	REVISIONS:	SR 120/Kimball Bridge Road	
CLIENT: TY Lin International			UNITED CONSULTING 625 Holcomb Bridge Road, Norcross, GA 30071 Tel. 770/209-0029 FAX 770/582-2900 www.unitedconsulting.com *We're here for you* UNITED CONSULTING	

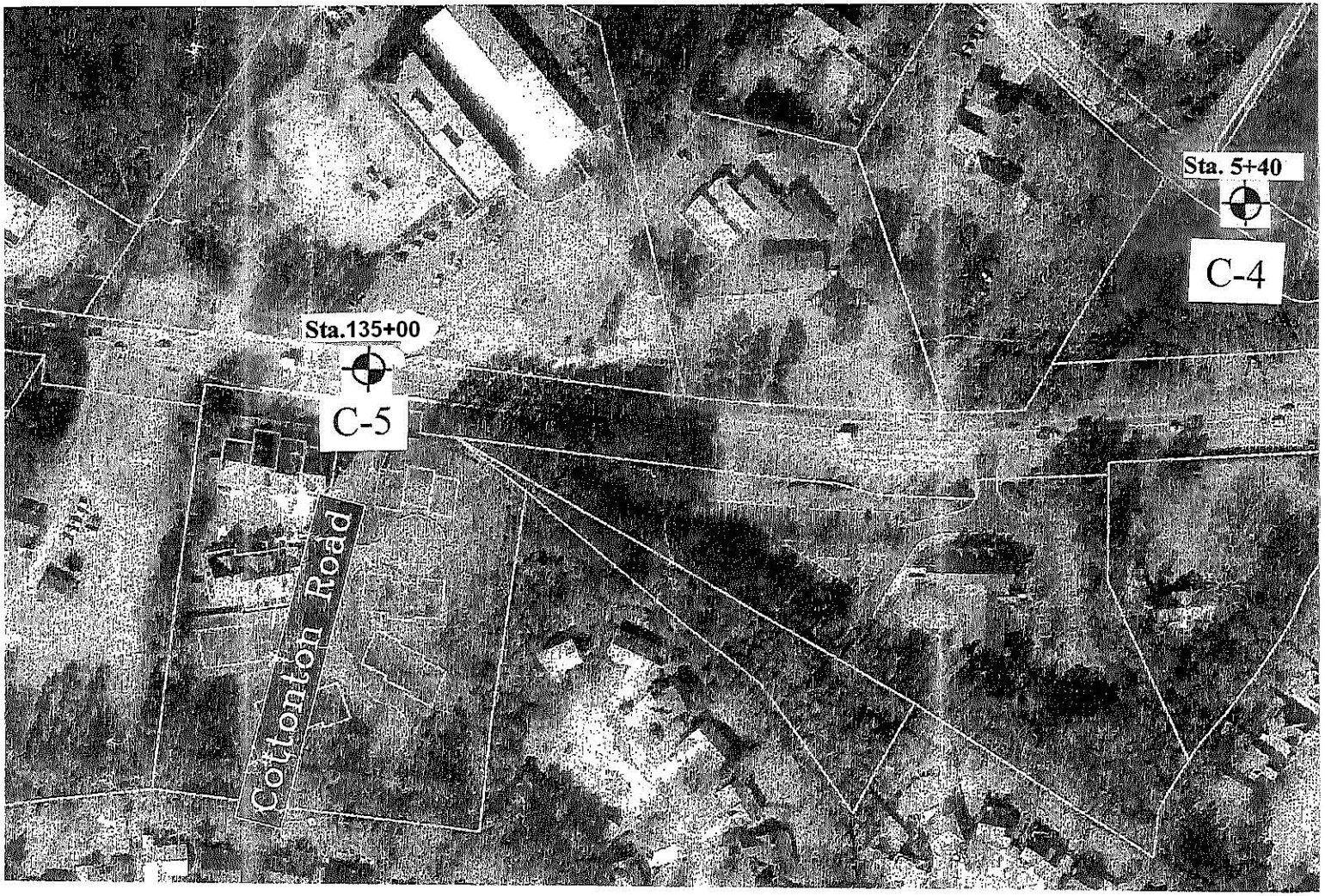


LEGEND:

Coring Locations

N

SCALE: NTS	DATE: **7/15/2014**	PROJECT NO: 2013.3807.01	TITLE: **CORING LOCATION PLAN**	**FIG. 2**
PREPARED: NP	CHECKED: **REH**	REVISIONS:	SR 120/Kimball Bridge Road	
CLIENT: TY Lin International			UNITED CONSULTING 625 Holcomb Bridge Road, Norcross, GA 30071 Tel. 770/209-0029 FAX 770/582-2900 www.unitedconsulting.com *We're here for you* UNITED CONSULTING	

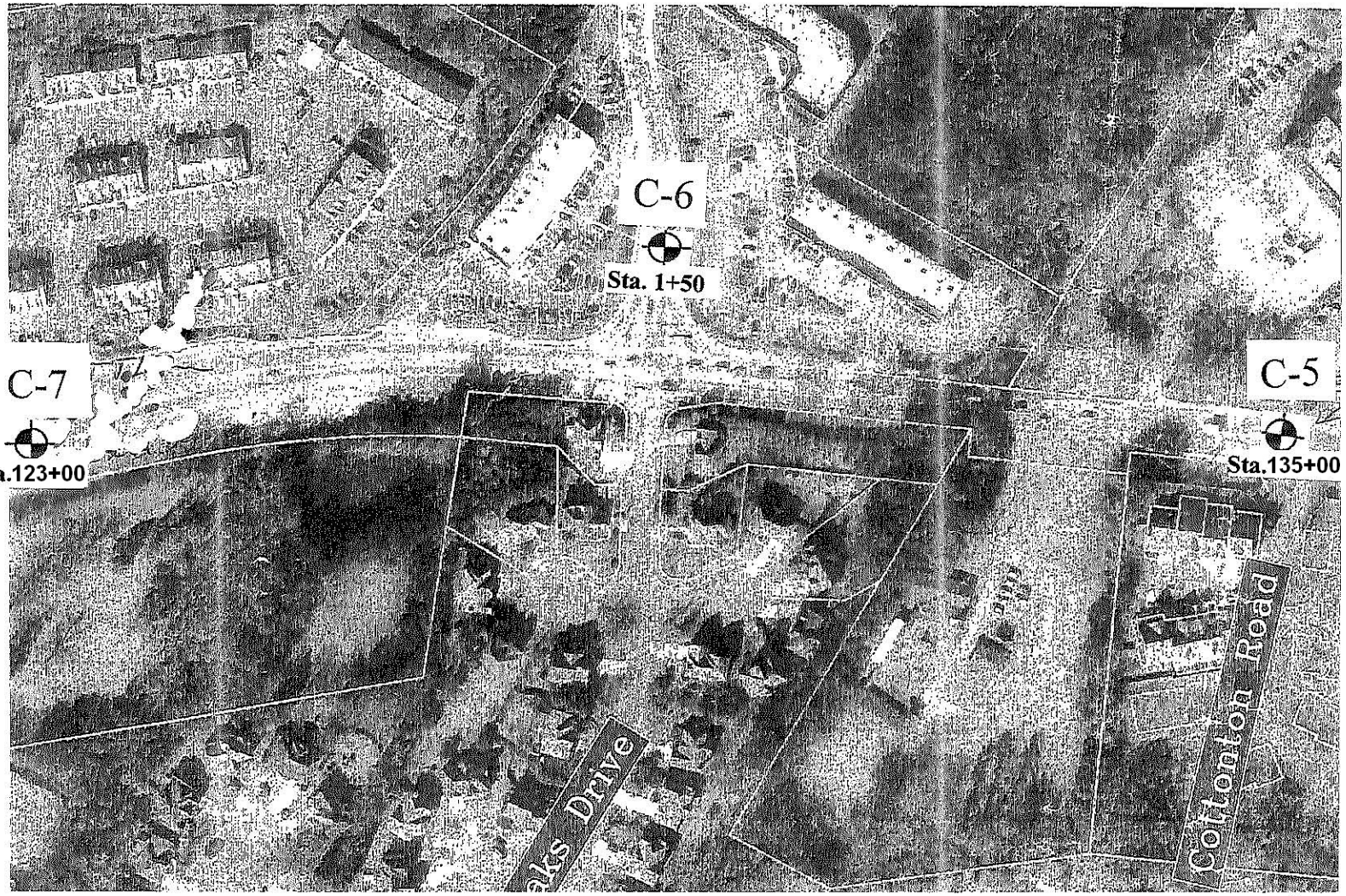


LEGEND:

Coring Locations

N

SCALE: NTS	DATE: **7/18/2014**	PROJECT NO: 2013.3807.01	TITLE: **CORING LOCATION PLAN**	**FIG. 3**
PREPARED: NP	CHECKED: **REH**	REVISIONS:	SR 120/Kimball Bridge Road	
CLIENT: TY Lin International			UNITED CONSULTING 625 Holcomb Bridge Road, Norcross, GA 30071 Tel. 770/209-0029 FAX 770/582-2900 www.unitedconsulting.com *We're here for you* UNITED CONSULTING	

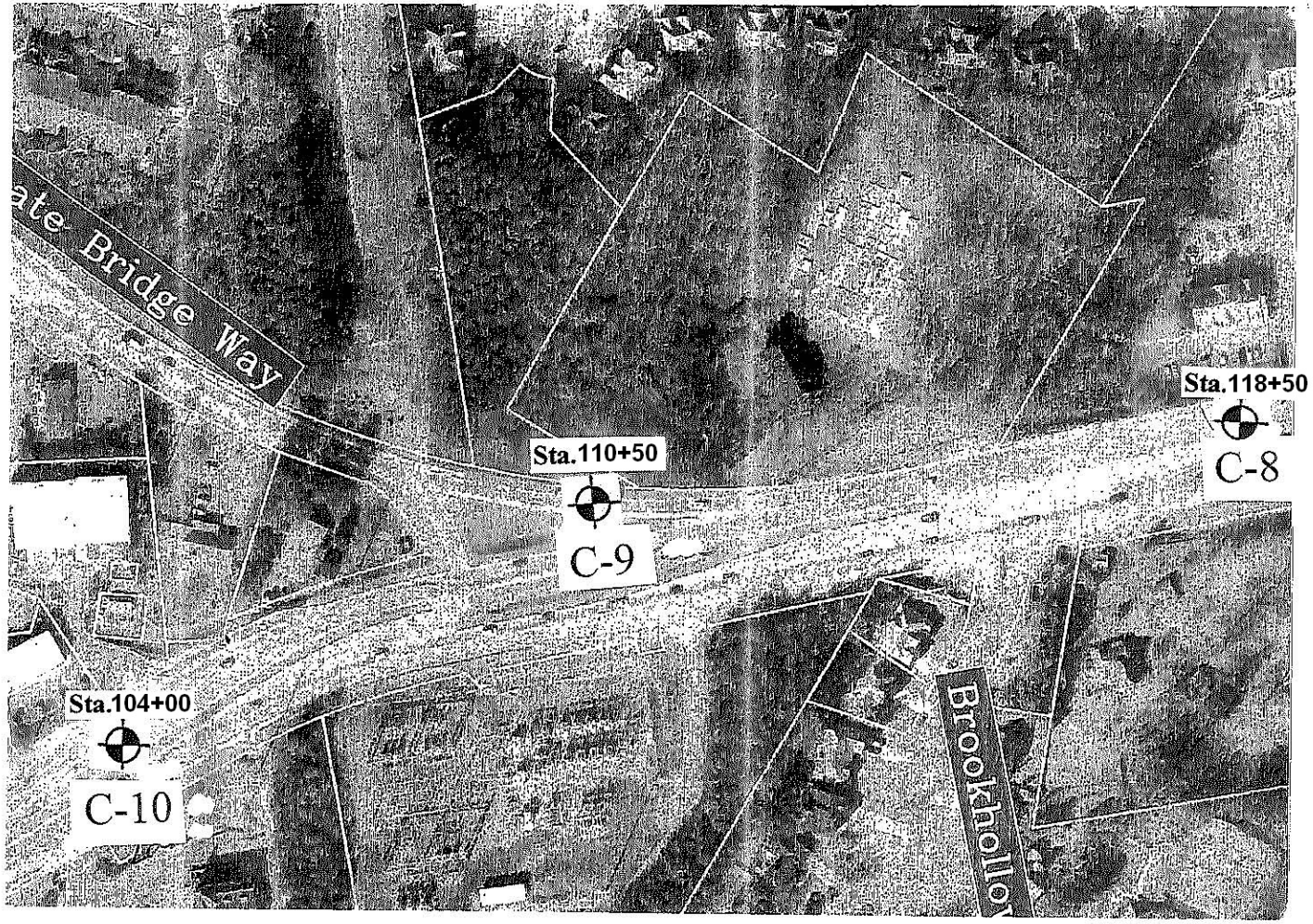


LEGEND:

Coring Locations

N

SCALE: NTS	DATE: **7/18/2014**	PROJECT NO: 2013.3807.01	TITLE: **CORING LOCATION PLAN**	**FIG. 4**
PREPARED: NP	CHECKED: **REH**	REVISIONS:	SR 120/Kimball Bridge Road	
CLIENT: TY Lin International			UNITED CONSULTING 625 Holcomb Bridge Road, Norcross, GA 30071 Tel. 770/209-0029 FAX 770/582-2900 www.unitedconsulting.com *We're here for you* UNITED CONSULTING	



LEGEND:

Coring Locations

N

SCALE: NTS	DATE: **7/18/2014**	PROJECT NO: 2013.3807.01	TITLE: **CORING LOCATION PLAN**	**FIG. 5**
PREPARED: NP	CHECKED: **REH**	REVISIONS:	SR 120/Kimball Bridge Road	
CLIENT: TY Lin International			UNITED CONSULTING 625 Holcomb Bridge Road, Norcross, GA 30071 Tel. 770/209-0029 FAX 770/582-2900 www.unitedconsulting.com *We're here for you* UNITED CONSULTING	

APPENDIX B
PROJECT PHOTOGRAPHS

PHOTOGRAPH LEGEND

Photograph Type	Label Protocol	Project Information
County Number	A three digit number	121
Route Code	State, County, or other code route	1 = State Highway or Interstate 2 = County Road 3 = City Street 6 = Ramp
Route Number	A four digit number followed by a two character suffix (i.e., SR 120 = 0120)	0120 XX 00 = SR or CR 03 = City
Direction of Travel	N or S E or W	E = Eastbound W = Westbound N = Northbound S = Southbound
With Traffic or Facing Traffic	A one-digit number	W or F

121 1 0120 00 E F AT STATION 104+00±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E W AT STATION 104+00±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W W AT STATION 104+00±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W F AT STATION 104+00±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E F AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E W AT STATION 118+50±,
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W W AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W F AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E F AT STATION 135+00±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E W AT STATION 135+00±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 E F AT STATION 150+27±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E W AT STATION 150+27±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 E F AT STATION 157+54±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E W AT STATION 157+54±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W W AT STATION 157+54±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W F AT STATION 157+54±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E F AT STATION 161+40±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E W AT STATION 161+40±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W W AT STATION 161+40±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W F AT STATION 161+40±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

On Webb Bridge Way, Southbound, At Station 1+50±,
SR 120 & Webb Bridge Way Intersection, Facing Traffic

On Webb Bridge Way, Northbound, At Station 1+50±
SR 120 & Webb Bridge Way Intersection, With Traffic

On Webb Bridge Way, Northbound, At Station 1+50±
SR 120 & Webb Bridge Way Intersection, Facing Traffic

APPENDIX C
ROADWAY PHOTOGRAPHS

PHOTOGRAPH LEGEND

Photograph Type	Label Protocol	Project Information
County Number	A three digit number	121
Route Code	State, County, or other code route	1 = State Highway or Interstate 2 = County Road 3 = City Street 6 = Ramp
Route Number	A four digit number followed by a two character suffix (i.e., SR 120 = 0120)	0120 XX 00 = SR or CR 03 = City
Direction of Travel	N or S E or W	E = Eastbound W = Westbound N = Northbound S = Southbound
With Traffic or Facing Traffic	A one-digit number	W or F
Lane Travel	A one-digit number	1-2

121 1 0120 00 E 2 F AT STATION 104+00±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 2 W AT STATION 104+00±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 E 1 F AT STATION 104+00±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 1 W AT STATION 104+00±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 1 W AT STATION 104+00±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 1 F AT STATION 104+00±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 W 2 W AT STATION 104+00±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 2 F AT STATION 104+00±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 W 3 W AT STATION 104+00±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 4 W AT STATION 104+00±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 4 F AT STATION 104+00±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 3 F AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 3 W AT STATION 118+50±,
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 E 2 F AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 2 W AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 E 1 F AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 1 W AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 1 W AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 1 F AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 W 2 W AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 2 F AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 W 3 W AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 3 F AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 W 4 W AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 4 F AT STATION 118+50±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 2 F AT STATION 135+00±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 2 W AT STATION 135+00±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 E 1 F AT STATION 135+00±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 1 W AT STATION 135+00±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

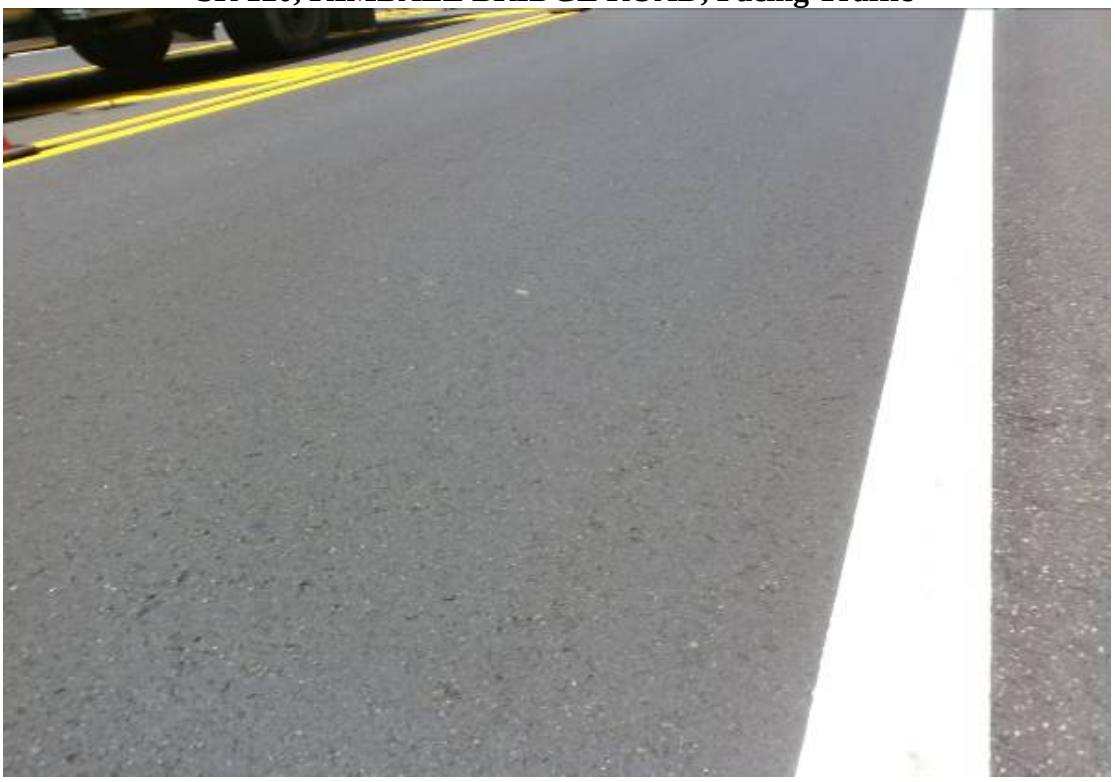
121 1 0120 00 W 1 W AT STATION 135+00±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 1 F AT STATION 135+00±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 W 2 W AT STATION 135+00±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 2 F AT STATION 135+00±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 1 F AT STATION 150+27±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic



121 1 0120 00 E 1 W AT STATION 150+27±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 E 2 F AT STATION 150+27±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 2 W AT STATION 150+27±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 1 W AT STATION 150+27±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 1 F AT STATION 150+27±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 1 F AT STATION 157+00±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 1 W AT STATION 157+00±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 1 W AT STATION 157+00±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 1 F AT STATION 157+00±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 2 F AT STATION 161+40±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 2 W AT STATION 161+40±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 E 1 F AT STATION 161+40±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

121 1 0120 00 E 1 W AT STATION 161+40±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 1 W AT STATION 161+40±
SR 120, KIMBALL BRIDGE ROAD, With Traffic

121 1 0120 00 W 1 F AT STATION 161+40±
SR 120, KIMBALL BRIDGE ROAD, Facing Traffic

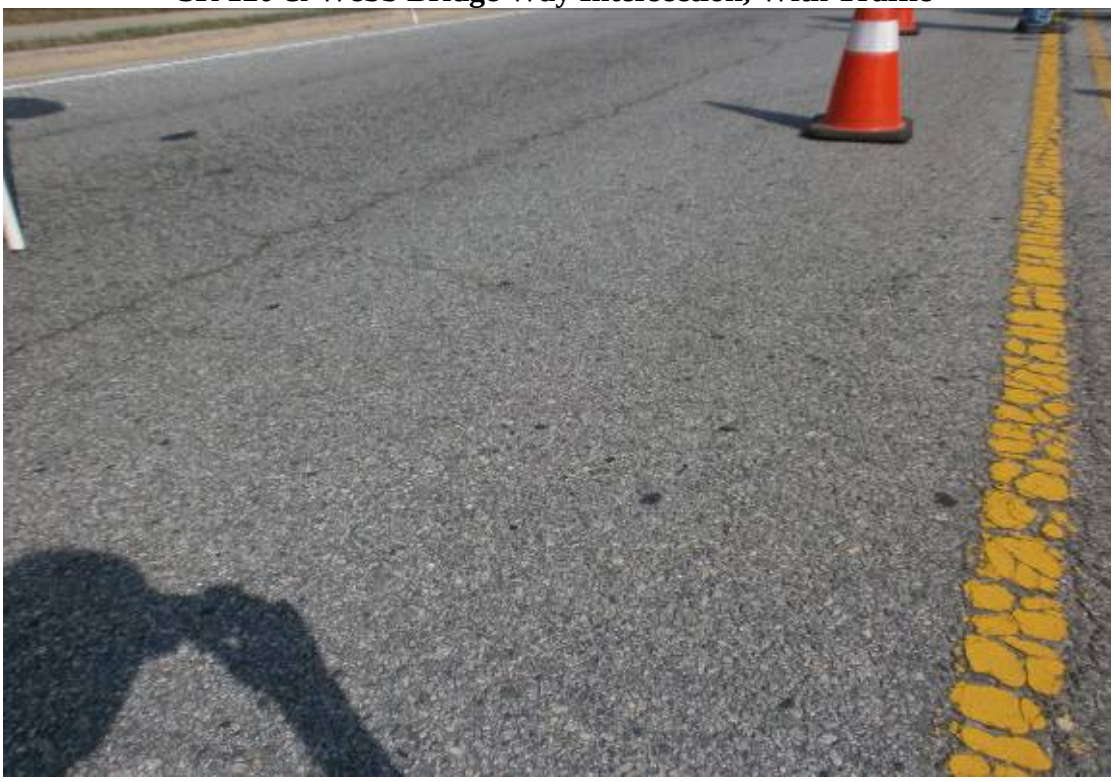
On Webb Bridge Way, Southbound, Lane #2, At Station 1+50±
SR 120 & Webb Bridge Way Intersection, Facing Traffic

On Webb Bridge Way, Southbound, Lane #2, At Station 1+50±
SR 120 & Webb Bridge Way Intersection, With Traffic

On Webb Bridge Way, Southbound, Lane #1, At Station 1+50±
SR 120 & Webb Bridge Way Intersection, Facing Traffic

On Webb Bridge Way, Southbound, Lane #1, At Station 1+50±
SR 120 & Webb Bridge Way Intersection, With Traffic

On Webb Bridge Way, Northbound, Lane #1, At Station 1+50±
SR 120 & Webb Bridge Way Intersection, With Traffic



On Webb Bridge Way, Northbound, Lane #1, At Station 1+50±
SR 120 & Webb Bridge Way Intersection, Facing Traffic

APPENDIX D
EXAMPLE PHOTOGRAPHS

Load Cracking Level 1 on SR 120±
At Station 104+00, Eastbound, Lane #2

Load Cracking Level 1 on Webb Bridge Way
At Station 1+50±, Northbound, Lane #1

Load Cracking Level 2 on Web Bridge Way
At Station 1+50±, Southbound, Lane #1

Block Cracking Level 1 on Webb Bridge Way,
At Station 1+50±, Northbound, Lane #1

**Block/Transverse Cracking Level 2 on Webb Bridge Way,
At Station 1+50±, Southbound, Lane #1**

**Joint Reflection Cracking on Webb Bridge Way,
At Station 1+50±, Southbound, Between Lane #1 and #2**

Raveling Level 1 on Webb Bridge Way
At Station 1+50±, Northbound, Lane #1

APPENDIX E
CORE PROTOGRAPHS

CORE 1, SR 120, Station 161+40±, EB, LN 1, DW, 2.5' RT

CORE 2, SR 120, Station 157+54±, WB, Shldr, 2.0' RT

CORE 3, SR 120, Station 150+27±, CL, DW, 2.5' RT

CORE 4, WEBB BRIDGE ROAD, Station 5+40±, Centerline

CORE 5, SR 120, Station 135+00±, WB, LN 1, DW, 3.0' LT

CORE 6, Webb Bridge Way, Station 1+50±, SB, LN 1, DW, 3.0' LT

CORE 7, SR 120, Station 123+00±, WB, Shldr., DW, 48' RT

CORE 8, SR 120, Station 118+50±, WB, LN 4, PW, RTL, 53' LT

CORE 9, SR 120, Station 110+50±, WB, LN 3, RTL, 2.0' RT

CORE 10, SR 120, Station 104+00±, WB, LN 1, DW, LTL, 3.0' LT

APPENDIX F
RECOMMENDED PAVEMENT SECTION

Ray Halbert

From: Mehdi Moazzami
Sent: Friday, July 18, 2014 8:10 AM
To: Ray Halbert
Subject: FW: United Consulting's Pavement Evaluation

Follow Up Flag: Follow up
Flag Status: Flagged

Ray

Please use this information for Webb Bridge Way and Webb Bridge Road

TY - Mehdi

From: Brian O'Connor [mailto:Brian.OConnor@tylin.com]
Sent: Friday, July 18, 2014 9:08 AM
To: Mehdi Moazzami
Subject: FW: United Consulting's Pavement Evaluation

Webb Bridge Way Traffic in opening year is 13,950 (2020) and design year is 20,330 (2040).

Traffic is 50/50 split. SU trucks are 6.1% and MU trucks are 1.8%.

Webb Bridge Road Traffic in opening year is 4661 (2020) and the design year is 6802 (2040)

Traffic is split 70/30 Westbound/Eastbound.

Recommend using the same pavement design for both sideroads.

Brian G. O'Connor, PE
Senior Transportation Engineer
T.Y. Lin International
678.235.3630 direct

From: Chris Haggard [mailto:Chris.Haggard@johnscreekga.gov]
Sent: Thursday, July 17, 2014 3:21 PM
To: Brian O'Connor
Cc: Thomas Black; Thomas Ziegler; Cindy Jenkins
Subject: RE: United Consulting's Pavement Evaluation

Brian,

Here are my comments on the draft pavement evaluation. Please have United address and resubmit.

- Page 2 - Location – Change to read from State Bridge Road to Jones Bridge Road
- Are we really station 0+00? I think we should start at 100+00. That way they can just add 100 to all their stationing. This document needs to match your actual design alignment as much as possible going forward.

- For the overlay section – Can we use 4" of 19 MM? We recently were denied a 1 ½" 12.5 MM and 3" 19 MM overlay of SR 120 adjacent to this project. What says they will approve this section? Please contact OMR to clarify.

- Since the existing pavement on Webb Bridge Way is much less (5") and the traffic is much less, why wouldn't we have a different pavement design for full depth and overlay on the side road. And it should probably match the section for the new Webb Bridge Road connection.

- Are we assuming curb and gutter or rural shoulders? If curb and gutter we should be 0% to 5% underdesigned. None of these designs meet that requirement.

- Also, for overlay design – We were asked to show one worst case design for overlay. Since both designs shown in the document have the same proposed pavement design, I believe we should use the worst case design and remove the other location.

Thanks,
Chris

Mehdi Moazzami

From: Brian O'Connor [Brian.OConnor@tylin.com]
Sent: Sunday, July 13, 2014 12:07 PM
To: Mehdi Moazzami
Subject: RE: Kimball Bridge Pavement Evaluation

Mehdi,

Opening year is 2020. The traffic is both directions with a 50/50 split.

Brian

Sent from my Galaxy S®III

-------- Original message --------
From: Mehdi Moazzami
Date:07/13/2014 9:15 AM (GMT-05:00)
To: Brian O'Connor
Subject: RE: Kimball Bridge Pavement Evaluation

p.s. Is the provided traffic for two-ways or one-way. If two-ways what is the directional distribution?

TY - Mehdi

From: Mehdi Moazzami
Sent: Sunday, July 13, 2014 9:11 AM
To: 'Brian O'Connor'
Subject: RE: Kimball Bridge Pavement Evaluation

Good morning Brain

Please let me know when the opening year is.

Sincerely,

Mehdi Moazzami, Ph.D., P.E., NCEES
Senior Engineer
United Consulting
Phone: (770) 582-2837
Fax: (770) 582-2800
E-mail: mmoazzami@unitedconsulting.com

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From: Brian O'Connor [mailto:Brian.OConnor@tylin.com]
Sent: Monday, July 07, 2014 8:45 AM
To: Mehdi Moazzami
Subject: RE: Kimball Bridge Pavement Evaluation

Mehdi,

Truck percentage for the design year (2040) is 10.2% with 8.8% SU and 1.4% MU.

Brian G. O'Connor, PE
Senior Transportation Engineer
T.Y. Lin International
678.235.3630 direct

From: Mehdi Moazzami [mailto:mmoazzami@unitedconsulting.com]
Sent: Wednesday, July 02, 2014 4:58 PM
To: Brian O'Connor
Subject: RE: Kimball Bridge Pavement Evaluation

Brian

Can you provide percent truck as well (SU and MU)
Also can you provide the opening year.

TY - Mehdi

From: Brian O'Connor [mailto:Brian.OConnor@tylin.com]
Sent: Wednesday, July 02, 2014 3:39 PM
To: Mehdi Moazzami
Subject: RE: Kimball Bridge Pavement Evaluation

Mehdi,

The opening year traffic volume will be 36,240 and the design year traffic volume will be 52,850.

Brian G. O'Connor, PE
Senior Transportation Engineer
T.Y. Lin International
678.235.3630 direct

From: Mehdi Moazzami [mailto:mmoazzami@unitedconsulting.com]
Sent: Wednesday, July 02, 2014 3:37 PM
To: Brian O'Connor
Subject: RE: Kimball Bridge Pavement Evaluation

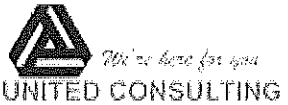
Good afternoon Brian

We are trying to design the pavement section for the propose widening. Can you tell us what traffic volume will be for the improved road.

Sincerely,

Mehdi Moazzami, Ph.D., P.E., NCEES
Senior Engineer
United Consulting

Phone: (770) 582-2837
Fax: (770) 582-2800
E-mail: mmoazzami@unitedconsulting.com



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From: Brian O'Connor [mailto:Brian.OConnor@tylin.com]
Sent: Tuesday, June 24, 2014 4:08 PM
To: Mehdi Moazzami
Subject: FW: Kimball Bridge Pavement Evaluation

Please see the comment from the City below. Do you know of any reason not to move as requested? Thank you.

Brian G. O'Connor, PE
Senior Transportation Engineer
T.Y. Lin International
678.235.3630 direct

From: Chris Haggard [mailto:Chris.Haggard@johnscreekga.gov]
Sent: Tuesday, June 24, 2014 4:10 PM
To: Brian O'Connor
Cc: Thomas Ziegler; Cindy Jenkins
Subject: RE: Kimball Bridge Pavement Evaluation

Is it possible to slide C8 closer to Webb Bridge Way into the area that cars do not currently travel where we intend to use the existing pavement. I know they have overlaid that area a lot, but would be good to core it and let C7 cover the mainline.

The rest looks good.

From: Brian O'Connor [mailto:Brian.OConnor@tylin.com]
Sent: Tuesday, June 24, 2014 10:57 AM
To: Chris Haggard
Cc: Thomas Ziegler; Cindy Jenkins
Subject: Kimball Bridge Pavement Evaluation

Chris,

Please see the attached diagram identifying the pavement evaluation boring locations for Kimball Bridge. United plans to start the fieldwork tomorrow.

Brian G. O'Connor, PE
Senior Transportation Engineer
T.Y. Lin International
678.235.3630 direct

This e-mail message has been scanned for Viruses and Content and cleared by **MailMarshal**

Flexible Pavement Design Analysis

PI Number	0010418	**County(s)**	Fulton (north)
Project Number	UC Project No. 2013.3807.01	**Design Name**	SR 120/ Kimball Bridge Road
Project Description	SR 12-/ Kimball Bridge Road		

Traffic Data (AADTs are one-way)						**Miscellaneous Data**	
Initial Design Year	2020	**Initial AADT, VPD**	18,120	**24 Hour Truck %**	10.20	**Lanes in one direction**	1
Final Design Year	2040	**Final AADT, VPD**	26,425	**SU Truck %**	8.80	**Curb & Gutter/Barrier**	Yes
		Mean AADT, VPD	22,273	**MU Truck %**	1.40		

Design Data					
Lane Distribution Factor (%)	85.00	**Soil Support Value**	2.00	**Single Unit ESAL**	0.40
Terminal Serviceability Index	2.50	**Regional Factor**	1.80	**Multiple Unit ESAL**	1.50
		User Defined 18-KIP ESAL	0.73	**Calculated 18-KIP ESAL**	0.55
Non-Standard Value Comment					

Design Loading (User Provided 18-KIP ESAL Factor)					
Mean AADT, VPD	**LDF (%)**	**Vehicle Type**	**Volume (%)**	**ESAL Factor**	**Daily ESAL**
22,273	85.00	24 Hour Truck	10.20	0.73	1,410
				Total Design Period ESALs	10,293,000

Proposed Flexible Full Depth Pavement Structure				
Course	**Material**	**Thickness (inches)**	**Structural Coefficient**	**Structural Value**
Course 1	12.5 mm Superpave	1.50	0.4400	0.66
Course 2	19 mm Superpave	2.00	0.4400	0.88
Course 3	25 mm Superpave	1.00	0.4400	0.44
		8.50	0.3000	2.55
Course 4	Graded Aggregate Base	12.00	0.1600	1.92

Required SN	6.73	**Proposed pavement is 4.20% Underdesigned**	**Proposed SN**	6.45

Design Remarks	Full Depth Flexible Pavement with GAB with Curb and Gutter

Prepared By 8/8/2014 8:59 AM

United Consulting **Date**

Recommended By

Office Head **Date**

Approved By

State Pavement Engineer **Date**

Filename: C:\Documents and Settings\XPMUser\My Documents\GDOT Pavement Design Tool v1.0.xlsm

GDOT Pavement Design Tool - Version 1.0 August 21, 2012

Flexible Pavement Design Analysis

PI Number	0010418	**County(s)**	Fulton (north)
Project Number	UC Project No. 2013.3807.01	**Design Name**	Webb Bridge Way
Project Description	SR 120/ Kimball Bridge Road		

Traffic Data (AADTs are one-way)						**Miscellaneous Data**	
Initial Design Year	2020	**Initial AADT, VPD**	6,975	**24 Hour Truck %**	7.90	**Lanes in one direction**	1
Final Design Year	2040	**Final AADT, VPD**	10,165	**SU Truck %**	6.10	**Curb & Gutter/Barrier**	Yes
		Mean AADT, VPD	8,570	**MU Truck %**	1.80		

Design Data					
Lane Distribution Factor (%)	100.00	**Soil Support Value**	2.00	**Single Unit ESAL**	0.40
Terminal Serviceability Index	2.50	**Regional Factor**	1.80	**Multiple Unit ESAL**	1.50
		User Defined 18-KIP ESAL	0.73	**Calculated 18-KIP ESAL**	0.65
Non-Standard Value Comment					

Design Loading (User Provided 18-KIP ESAL Factor)					
Mean AADT, VPD	**LDF (%)**	**Vehicle Type**	**Volume (%)**	**ESAL Factor**	**Daily ESAL**
8,570	100.00	24 Hour Truck	7.90	0.73	495
				Total Design Period ESALs	3,613,500

Proposed Flexible Full Depth Pavement Structure				
Course	**Material**	**Thickness (inches)**	**Structural Coefficient**	**Structural Value**
Course 1	12.5 mm Superpave	1.50	0.4400	0.66
Course 2	19 mm Superpave	2.00	0.4400	0.88
Course 3	25 mm Superpave	1.00	0.4400	0.44
		6.00	0.3000	1.80
Course 4	Graded Aggregate Base	12.00	0.1600	1.92

Required SN 5.87 **Proposed pavement is 2.86% Underdesigned** **Proposed SN** 5.70

Design Remarks	Full Depth Flexible Pavement with GAB with Curb and Gutter

Prepared By 8/8/2014 9:14 AM

United Consulting **Date**

Recommended By

Office Head **Date**

Approved By

State Pavement Engineer **Date**

Flexible Pavement Design Analysis

PI Number	0010418	**County(s)**	Fulton (north)
Project Number	UC Project No. 2013.3807.01	**Design Name**	Webb Bridge Road
Project Description	SR 120/ Kimball Bridge Road		

Traffic Data (AADTs are one-way)						**Miscellaneous Data**	
Initial Design Year	2020	**Initial AADT, VPD**	3,263	**24 Hour Truck %**	7.90	**Lanes in one direction**	1
Final Design Year	2040	**Final AADT, VPD**	4,761	**SU Truck %**	6.10	**Curb & Gutter/Barrier**	Yes
		Mean AADT, VPD	4,012	**MU Truck %**	1.80		

Design Data					
Lane Distribution Factor (%)	100.00	**Soil Support Value**	2.00	**Single Unit ESAL**	0.40
Terminal Serviceability Index	2.50	**Regional Factor**	1.80	**Multiple Unit ESAL**	1.50
		User Defined 18-KIP ESAL	0.73	**Calculated 18-KIP ESAL**	0.65
Non-Standard Value Comment					

Design Loading (User Provided 18-KIP ESAL Factor)

Mean AADT, VPD	**LDF (%)**	**Vehicle Type**	**Volume (%)**	**ESAL Factor**	**Daily ESAL**
4,012	100.00	24 Hour Truck	7.90	0.73	232
				Total Design Period ESALs	1,693,600

Proposed Flexible Full Depth Pavement Structure

Course	**Material**	**Thickness (inches)**	**Structural Coefficient**	**Structural Value**
Course 1	12.5 mm Superpave	1.50	0.4400	0.66
Course 2	19 mm Superpave	2.00	0.4400	0.88
Course 3	25 mm Superpave	1.00	0.4400	0.44
		4.00	0.3000	1.20
Course 4	Graded Aggregate Base	12.00	0.1600	1.92

Required SN 5.29 **Proposed pavement is 3.57% Underdesigned** **Proposed SN** 5.10

Design Remarks	Full Depth Flexible Pavement with GAB with Curb and Gutter

Prepared By 8/8/2014 9:24 AM

United Consulting **Date**

Recommended By

Office Head **Date**

Approved By

State Pavement Engineer **Date**

Flexible Pavement Design Analysis

PI Number	0010418	**County(s)**	Fulton (north)
Project Number	UC Project No. 2013.3807.01	**Design Name**	SR 120/ Kimball Bridge Road
Project Description	SR 120/ Kimball Bridge Road		

Traffic Data (AADTs are one-way)						**Miscellaneous Data**	
Initial Design Year	2020	**Initial AADT, VPD**	18,120	**24 Hour Truck %**	10.20	**Lanes in one direction**	2
Final Design Year	2040	**Final AADT, VPD**	26,425	**SU Truck %**	8.80	**Curb & Gutter/Barrier**	Yes
		Mean AADT, VPD	22,273	**MU Truck %**	1.40	**Milling Depth (inches)**	1.50

Design Data					
Lane Distribution Factor (%)	85.00	**Soil Support Value**	2.00	**Single Unit ESAL**	0.40
Terminal Serviceability Index	2.50	**Regional Factor**	1.80	**Multiple Unit ESAL**	1.50
		User Defined 18-KIP ESAL	0.73	**Calculated 18-KIP ESAL**	0.55
Non-Standard Value Comment					

Design Loading (User Provided 18-KIP ESAL Factor)					
Mean AADT, VPD	**LDF (%)**	**Vehicle Type**	**Volume (%)**	**ESAL Factor**	**Daily ESAL**
22,273	85.00	24 Hour Truck	10.20	0.73	1,410
				Total Design Period ESALs	10,293,000

Proposed Flexible Overlay Pavement Structure				
Course	**Material**	**Thickness (inches)**	**Structural Coefficient**	**Structural Value**
Overlay 1	12.5 mm Superpave	1.50	0.4400	0.66
Overlay 2	19 mm Superpave	2.25	0.4400	0.99
Overlay 3	25 mm Superpave	0.75	0.4400	0.33
		3.25	0.3000	0.98
Existing 1	Asphaltic Concrete	9.50	0.3000	2.85
Existing 2	Sand-Clay Base	6.00	0.1000	0.60

Required SN 6.73 **Proposed pavement is 4.86% Underdesigned** **Proposed SN** 6.41

Design Remarks	Overlay - SR 120/Kimball Bridge Road from Sta. 100+00 to 104+00 EB and 100+00 to 114+00 WB

Prepared By 8/15/2014 11:45 AM

United Consulting **Date**

Recommended By

Office Head **Date**

Approved By

State Pavement Engineer **Date**

Flexible Pavement Design Analysis

PI Number	0010418	**County(s)**	Fulton (north)
Project Number	UC Project No. 2013.3807.01	**Design Name**	SR 120/ Kimball Bridge Road
Project Description	SR 120/ Kimball Bridge Road		

Traffic Data (AADTs are one-way)						**Miscellaneous Data**	
Initial Design Year	2020	**Initial AADT, VPD**	18,120	**24 Hour Truck %**	10.20	**Lanes in one direction**	2
Final Design Year	2040	**Final AADT, VPD**	26,425	**SU Truck %**	8.80	**Curb & Gutter/Barrier**	Yes
		Mean AADT, VPD	22,273	**MU Truck %**	1.40	**Milling Depth (inches)**	0.00

Design Data					
Lane Distribution Factor (%)	85.00	**Soil Support Value**	2.00	**Single Unit ESAL**	0.40
Terminal Serviceability Index	2.50	**Regional Factor**	1.80	**Multiple Unit ESAL**	1.50
		User Defined 18-KIP ESAL	0.73	**Calculated 18-KIP ESAL**	0.55
Non-Standard Value Comment					

Design Loading (User Provided 18-KIP ESAL Factor)					
Mean AADT, VPD	**LDF (%)**	**Vehicle Type**	**Volume (%)**	**ESAL Factor**	**Daily ESAL**
22,273	85.00	24 Hour Truck	10.20	0.73	1,410
				Total Design Period ESALs	10,293,000

Proposed Flexible Overlay Pavement Structure				
Course	**Material**	**Thickness (inches)**	**Structural Coefficient**	**Structural Value**
Overlay 1	12.5 mm Superpave	1.50	0.4400	0.66
Overlay 2	19 mm Superpave	2.00	0.4400	0.88
Overlay 3	25 mm Superpave	1.00	0.4400	0.44
		3.00	0.3000	0.90
Existing 1	Asphaltic Concrete	10.50	0.3000	3.15
Existing 2	Sand-Clay Base	6.00	0.1000	0.60

Required SN 6.73 **Proposed pavement is 1.52% Underdesigned** **Proposed SN** 6.63

Design Remarks	Overlay - SR 120/Kimball Bridge Road from Sta. 104+00 to 168+00 EB and 114+00 to 168+00 WB

Prepared By 8/15/2014 12:42 PM

United Consulting **Date**

Recommended By

Office Head **Date**

Approved By

State Pavement Engineer **Date**

Flexible Pavement Design Analysis

PI Number	0010418	**County(s)**	Fulton (north)
Project Number	UC Project No. 2013.3807.01	**Design Name**	Webb Bridge Way
Project Description	SR 120/ Kimball Bridge Road		

Traffic Data (AADTs are one-way)						**Miscellaneous Data**	
Initial Design Year	2020	**Initial AADT, VPD**	6,975	**24 Hour Truck %**	7.90	**Lanes in one direction**	1
Final Design Year	2040	**Final AADT, VPD**	10,165	**SU Truck %**	6.10	**Curb & Gutter/Barrier**	Yes
		Mean AADT, VPD	8,570	**MU Truck %**	1.80	**Milling Depth (inches)**	1.50

Design Data					
Lane Distribution Factor (%)	100.00	**Soil Support Value**	2.00	**Single Unit ESAL**	0.40
Terminal Serviceability Index	2.50	**Regional Factor**	1.80	**Multiple Unit ESAL**	1.50
		User Defined 18-KIP ESAL	0.73	**Calculated 18-KIP ESAL**	0.65
Non-Standard Value Comment					

Design Loading (User Provided 18-KIP ESAL Factor)					
Mean AADT, VPD	**LDF (%)**	**Vehicle Type**	**Volume (%)**	**ESAL Factor**	**Daily ESAL**
8,570	100.00	24 Hour Truck	7.90	0.73	495
				Total Design Period ESALs	3,613,500

Proposed Flexible Overlay Pavement Structure				
Course	**Material**	**Thickness (inches)**	**Structural Coefficient**	**Structural Value**
Overlay 1	12.5 mm Superpave	1.50	0.4400	0.66
Overlay 2	19 mm Superpave	3.00	0.4400	1.32
		1.00	0.3000	0.30
Existing 1	Asphaltic Concrete	8.50	0.3000	2.55
Existing 2	Sand Clay Base	6.00	0.1000	0.60

Required SN	5.87	**Proposed pavement is 7.46% Underdesigned**	**Proposed SN**	5.43

Design Remarks	Overlay - Webb Bridge Way with Curb and Gutter

Prepared By 8/8/2014 10:01 AM

United Consulting **Date**

Recommended By

Office Head **Date**

Approved By

State Pavement Engineer **Date**

Filename: C:\Documents and Settings\XPMUser\My Documents\GDOT Pavement Design Tool v1.0.xlsm

GDOT Pavement Design Tool - Version 1.0 August 21, 2012

APPENDIX G
DISC