

# City of Columbia

701 East Broadway, Columbia, Missouri 65201



**Agenda Item Number:** B 124-15

**Department Source:** Public Works

**To:** City Council

**From:** City Manager & Staff

**Council Meeting Date:** 5/18/2015

**Re:** Broadway Pavement Improvements Project Bid Call

## Documents Included With This Agenda Item

Council memo, Resolution/Ordinance

**Supporting documentation includes:** Maps, Diagrams (construction, route, etc.)

## Executive Summary

Authorizing the call for bids through the Purchasing Division for milling and overlay on Broadway from Providence Road to Hitt Street, and bringing curb ramps into compliance with federal standards. Council authorized a Surface Transportation Program (STP) Agreement with the Missouri Highways and Transportation Commission (MHTC) for this project on December 3, 2013, and a public hearing was held on March 16, 2015.

## Discussion

At the March 16, 2015 public hearing, Council directed staff to proceed with plans and specifications for the Broadway Pavement Improvements project. A location diagram and plan sheets are attached. The final design includes milling and overlay on Broadway, from Providence Road to Hitt Street, as well as bringing curb ramps into compliance with federal standards.

A professional engineering services agreement was authorized by Council in November of 2014 for the design of this project. The resolution cost estimate for the total project is \$417,000, with 80% reimbursement from MHTC. It's anticipated that the resurfacing work will begin late summer/early fall, and will be completed during night-time hours to limit disruption. No additional easements will be needed for the project.

## Fiscal Impact

**Short-Term Impact:** The total project is estimated to cost \$417,000 with 80% reimbursement from MHTC, and 20% local match. Funds were appropriated to the project when Council authorized the STP agreement with MHTC.

**Long-Term Impact:** Regular maintenance as needed.

## Vision, Strategic & Comprehensive Plan Impact

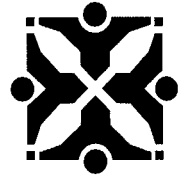
Vision Impact: Transportation

Strategic Plan Impact: Infrastructure

Comprehensive Plan Impact: Infrastructure, Mobility, Connectivity, and Accessibility

# City of Columbia

701 East Broadway, Columbia, Missouri 65201



## Suggested Council Action

Authorize the call for bids through the Purchasing Division for milling and overlay on Broadway from Providence Road to Hitt Street and bringing curb ramps into compliance with federal standards.


## Legislative History

**2/16/15** (R28-15) Setting a Public Hearing for March 16, 2015.

**11/3/14** (R208-14) Authorizing a Professional Engineering Services agreement with Engineering Surveys & Services, LLC for the design of the Broadway pavement improvement project.

**12/2/13** (Ord 21912) Authorizing an STP-Urban Program agreement with MHTC for the Broadway pavement improvement project from Providence Road to Hitt Street; appropriating funds.

  
\_\_\_\_\_  
Department Approved

  
\_\_\_\_\_  
City Manager Approved

Introduced by \_\_\_\_\_

First Reading \_\_\_\_\_

Second Reading \_\_\_\_\_

Ordinance No. \_\_\_\_\_

Council Bill No. B 124-15

### **AN ORDINANCE**

determining it is in the public interest to construct pavement improvements along Broadway, between Providence Road and Hitt Street, including the reconstruction of some curb ramps to meet ADA requirements; approving and adopting plans and specifications; determining that the work shall be done by contract; calling for bids through the Purchasing Division; providing for payment for the improvement; authorizing the City Manager to obtain, execute and record all documents necessary for the improvement; providing for compliance with the prevailing wage law and state-mandated construction safety training; and fixing the time when this ordinance shall become effective.

WHEREAS, the City Council adopted a resolution declaring the necessity of constructing pavement improvements along Broadway, between Providence Road and Hitt Street, including the reconstruction of some curb ramps to meet ADA requirements; and

WHEREAS, the notice of a public hearing on this project was published in a daily newspaper of general circulation in the city; and

WHEREAS, the City Council has held a public hearing on construction of the improvement.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF COLUMBIA, MISSOURI, AS FOLLOWS:

SECTION 1. The Council finds that the milling and overlay along Broadway, between Providence Road and Hitt Street, including the reconstruction of some curb ramps to meet ADA requirements and other miscellaneous work, all in accordance with City of Columbia Street and Storm Sewer Specifications and Standards, in the City of Columbia, Missouri, is necessary for the welfare and improvement of the city and that it is in the public interest that such improvements be made.

SECTION 2. The plans and specifications for this improvement, as prepared by the Director of Public Works, are hereby approved and made a part of this ordinance by reference.

SECTION 3. The construction of the improvement shall be done by contract in accordance with the plans and specifications, the laws of the State of Missouri, and the Charter and Ordinances of the City of Columbia, Missouri.

SECTION 4. The Purchasing Agent is hereby authorized to call for bids and execute a contract for the improvement.

SECTION 5. Payment for this improvement shall be made from Missouri Highways and Transportation Commission STP funding, annual sidewalk capital improvement sales tax funds and such other funds as may be lawfully appropriated. Per the terms of an STP-Urban Program agreement, the Missouri Highways and Transportation Commission shall reimburse the City 80%, or \$333,600.00, of the project costs, and the City's local match is \$83,400.00.

SECTION 6. The City Manager is authorized to obtain, execute and have recorded all licenses, easements, deeds and any other conveyances or instruments necessary for the City to complete this improvement.

SECTION 7. The contract for the improvement shall provide that not less than the prevailing hourly rate of wages, as found by the Department of Labor and Industrial Relations of Missouri, shall be paid to all workers performing work under the contract. The contractor's bond shall guarantee the faithful performance of the prevailing hourly wage clause in the contract.

SECTION 8. The bid specifications and contract for the improvement shall provide that the contractor and any subcontractor shall provide a ten-hour Occupational Safety and Health Administration construction safety program (or a similar program approved by the Missouri Department of Labor and Industrial Relations) for all employees working on-site. All employees working on the site of the improvement are required to complete the safety program within 60 days of beginning work on the improvement project.

SECTION 9. This ordinance shall be in full force and effect from and after its passage.

PASSED this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

ATTEST:

\_\_\_\_\_  
City Clerk

\_\_\_\_\_  
Mayor and Presiding Officer

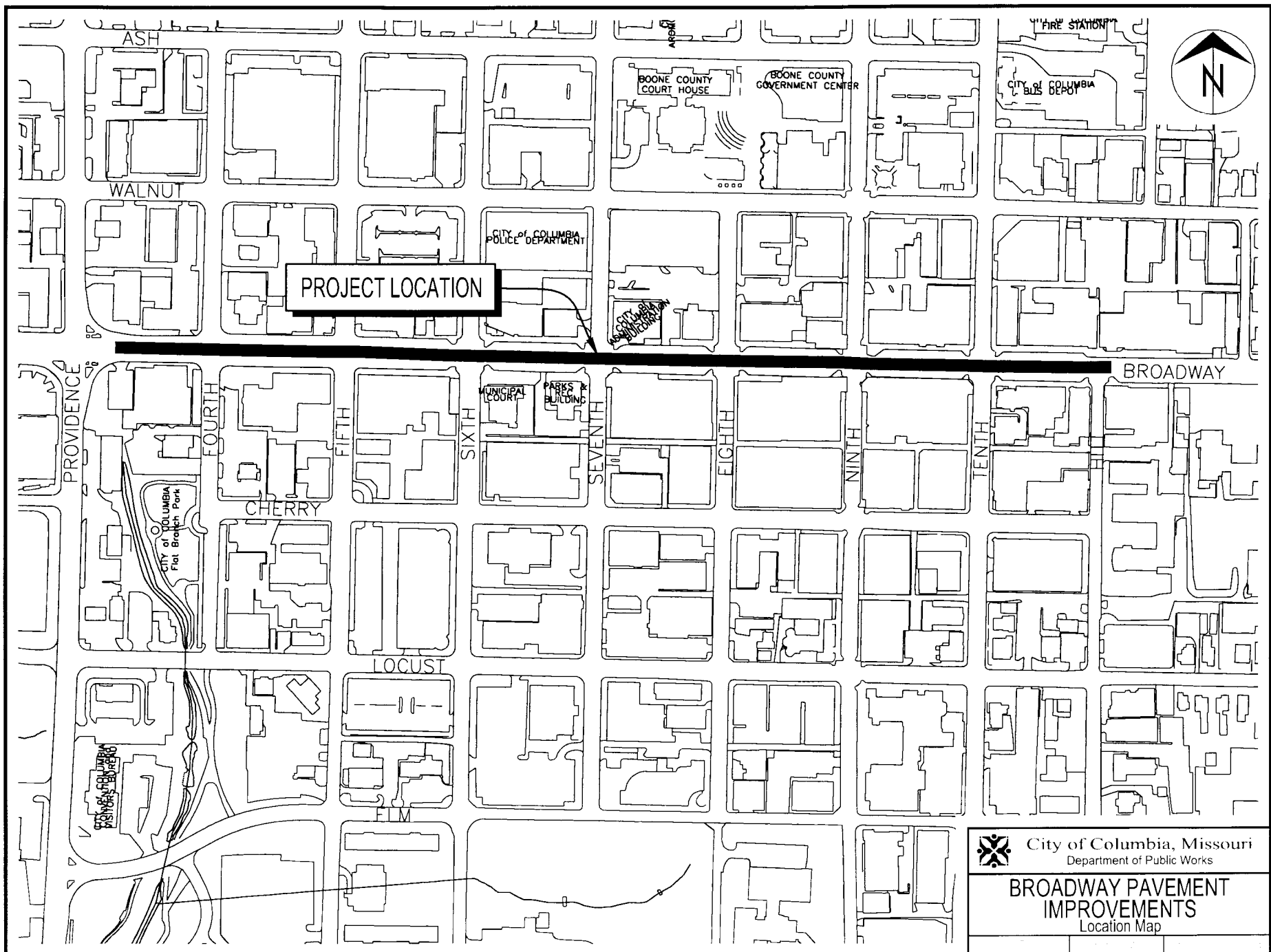
APPROVED AS TO FORM:

\_\_\_\_\_  
City Counselor



## SUPPORTING DOCUMENTS INCLUDED WITH THIS AGENDA ITEM ARE AS FOLLOWS:

Maps, Diagrams (construction, route, etc.)



	City of Columbia, Missouri
	Department of Public Works
	<b>BROADWAY PAVEMENT IMPROVEMENTS</b> Location Map

# City of Columbia, Missouri

## Department of Public Works



### GENERAL NOTES

1. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH THE CITY OF COLUMBIA'S 2012 STREET, STORM SEWER, AND SANITARY SEWER SPECIFICATIONS AND STANDARDS, OR MOST CURRENT EDITION.
2. KNOWN UNDERGROUND UTILITIES ARE SHOWN IN THEIR APPROXIMATE LOCATIONS. STREET UTILITIES MAY EXIST. A UTILITY LOCATE MUST BE COMPLETED BEFORE ANY EXCAVATION.
3. ALL SEGMENT OF DRIVEWAY PAVEMENTS SHOULD BE VERIFIED BY FIELD ENGINEER.
4. ALL EXCAVATION TO BE IN ACCORDANCE WITH SECTIONS 316.010-316.060 REVISED STATUTES OF THE STATE OF MISSOURI. SUCH COMPLIANCE SHALL NOT, HOWEVER, EXCUSE ANY PERSON MAKING ANY EXCAVATION FROM DOING SO IN A CAREFUL AND PRUDENT MANNER. NOB SHALL IT EXCUSE SUCH PERSON FROM LIABILITY FOR ANY DAMAGE OR INJURY TO UNDERGROUND UTILITIES RESULTING FROM THE EXCAVATION.
5. ALL DISTURBED EARTH AREAS SHALL BE RESTORED AS PER 715-12 SEEDING AND T2-3 EROSION CONTROL.

### LEGEND

	EXISTING CONTOUR
	SPOT ELEVATION
	CONTROL POINT
	FIRE HYDRANT
	FLOW LINE
	LIGHT STANDARD
	NOT IN CONTACT
	TOP OF WALL
	BOTTOM POLE ELEVATION
	TOP CONCRETE BASE ELEVATION
	BOTTOM OF FIRE HYDRANT FLANGE ELEVATION
	TOP OF CURB ELEVATION
	TOP OF PAVEMENT ELEVATION
	FINISH GRADE ELEVATION
	EXISTING ELEVATION
	REMOVE & REPLACE PAVEMENT
	DETECTABLE WARNING

NOTES: NO UTILITY LOCATE WAS PERFORMED FOR THIS SURVEY.

### SURVEY CONTROL POINTS

POINT #	NORTH	EAST	ELEVATION	DESCRIPTION
CP1	1133333.83	1887072.74	705.65	BM LT
CP4	1132481.61	1888271.72	724.15	IRON
CP7	1133333.83	1888594.77	732.76	DRILL HOLE
CP10	1133337.87	1888677.10	745.18	DRILL HOLE
CP12	1133440.35	1889095.87	751.76	DRILL HOLE
CP13	1133244.95	1889122.72	745.27	DRILL HOLE
CP15	1133205.01	1889424.08	751.67	NAIL
CP17	1133333.83	1889490.96	745.86	DRILL HOLE
CP19	1133415.21	1888712.06	754.11	DRILL HOLE
CP21	1133401.81	1889043.12	758.88	DRILL HOLE
CP25	1133440.72	1888894.48	742.84	DRILL HOLE
CP30	1133335.88	1888795.06	753.84	NAIL NAIL
CP31	1133319.90	1889021.22	758.33	DRILL HOLE

## BROADWAY PAVEMENT IMPROVEMENTS

FEDERAL I.D. NO. STP 2104(505)  
BROADWAY FROM  
PROVIDENCE ROAD TO HITT STREET  
COLUMBIA, MISSOURI



### BENCH MARK

- BM - NOB BRASS PLATE STAMPED "UNIVERSITY OF MISSOURI RECENT 2005" IN A CONCRETE HEADWALL FOR A SPOTLIGHT LOCATED 30 FEET SOUTHWEST OF THE WEST COLUMN IN THE FRANKS GYMNASIUM.  
ELEVATION = 743.80
- BM 1 - CHISELED SQUARE IN THE SOUTHWEST CORNER OF CONCRETE SIGN BASE LOCATED AT THE SOUTHWEST CORNER OF FOURTH STREET AND BROADWAY.  
ELEVATION = 752.79
- BM 2 - CHISELED SQUARE IN THE SOUTHWEST CORNER OF CURB INLET LOCATED AT THE NORTHEAST CORNER OF FIFTH STREET AND BROADWAY.  
ELEVATION = 753.25
- BM 3 - CHISELED SQUARE IN THE NORTHWEST CORNER OF CURB INLET LOCATED AT THE NORTHWEST CORNER OF SIXTH STREET AND BROADWAY.  
ELEVATION = 751.69
- BM 4 - CHISELED "I" ON THE NORTH BOLT OF FIRE HYDRANT LOCATED AT THE NORTHWEST CORNER OF SEVENTH STREET AND BROADWAY.  
ELEVATION = 747.56
- BM 5 - CHISELED SQUARE IN THE SOUTHWEST CORNER OF TRAFFIC SIGNAL BASE LOCATED AT THE NORTHWEST CORNER OF SEVENTH STREET AND BROADWAY.  
ELEVATION = 751.17
- BM 6 - CHISELED SQUARE ON THE SOUTH EDGE OF TRAFFIC SIGNAL BASE LOCATED AT THE NORTHEAST CORNER OF NINTH STREET AND BROADWAY.  
ELEVATION = 753.17
- BM 7 - CHISELED SQUARE IN THE WEST SIDE OF TRAFFIC SIGNAL BASE LOCATED IN THE SOUTHWEST CORNER OF TOWNS STREET AND BROADWAY.  
ELEVATION = 753.12
- BM 8 - CHISELED SQUARE IN THE EAST SIDE OF TRAFFIC SIGNAL BASE LOCATED IN THE NORTHEAST CORNER OF HITT STREET AND BROADWAY.  
ELEVATION = 758.28

### SHEET INDEX

CS-01	CONTRACT
CS-02	QUANTITIES
CS-03	WATER PLAN
CS-04	WATER PLAN
CS-05	WATER PLAN
CS-06	WATER PLAN
CS-07	WATER PLAN
CS-08	WATER PLAN
CS-09	WATER PLAN
CS-10	WATER PLAN
CS-11	WATER PLAN
CS-12	WATER PLAN
CS-13	WATER PLAN
CS-14	WATER PLAN
CS-15	WATER PLAN
CS-16	WATER PLAN
CS-17	WATER PLAN
CS-18	WATER PLAN
CS-19	WATER PLAN
CS-20	WATER PLAN
CS-21	WATER PLAN
CS-22	WATER PLAN
CS-23	WATER PLAN
CS-24	WATER PLAN
CS-25	WATER PLAN
CS-26	WATER PLAN
CS-27	WATER PLAN
CS-28	WATER PLAN
CS-29	WATER PLAN
CS-30	WATER PLAN
CS-31	WATER PLAN
CS-32	WATER PLAN
CS-33	WATER PLAN
CS-34	WATER PLAN
CS-35	WATER PLAN
CS-36	WATER PLAN
CS-37	WATER PLAN
CS-38	WATER PLAN
CS-39	WATER PLAN
CS-40	WATER PLAN
CS-41	WATER PLAN
CS-42	WATER PLAN
CS-43	WATER PLAN
CS-44	WATER PLAN
CS-45	WATER PLAN
CS-46	WATER PLAN
CS-47	WATER PLAN
CS-48	WATER PLAN
CS-49	WATER PLAN
CS-50	WATER PLAN
CS-51	WATER PLAN
CS-52	WATER PLAN
CS-53	WATER PLAN
CS-54	WATER PLAN
CS-55	WATER PLAN
CS-56	WATER PLAN
CS-57	WATER PLAN
CS-58	WATER PLAN
CS-59	WATER PLAN
CS-60	WATER PLAN
CS-61	WATER PLAN
CS-62	WATER PLAN
CS-63	WATER PLAN
CS-64	WATER PLAN
CS-65	WATER PLAN
CS-66	WATER PLAN
CS-67	WATER PLAN
CS-68	WATER PLAN
CS-69	WATER PLAN
CS-70	WATER PLAN
CS-71	WATER PLAN
CS-72	WATER PLAN
CS-73	WATER PLAN
CS-74	WATER PLAN
CS-75	WATER PLAN
CS-76	WATER PLAN
CS-77	WATER PLAN
CS-78	WATER PLAN
CS-79	WATER PLAN
CS-80	WATER PLAN
CS-81	WATER PLAN
CS-82	WATER PLAN
CS-83	WATER PLAN
CS-84	WATER PLAN
CS-85	WATER PLAN
CS-86	WATER PLAN
CS-87	WATER PLAN
CS-88	WATER PLAN
CS-89	WATER PLAN
CS-90	WATER PLAN
CS-91	WATER PLAN
CS-92	WATER PLAN
CS-93	WATER PLAN
CS-94	WATER PLAN
CS-95	WATER PLAN
CS-96	WATER PLAN
CS-97	WATER PLAN
CS-98	WATER PLAN
CS-99	WATER PLAN
CS-100	WATER PLAN

### 90% PLANS

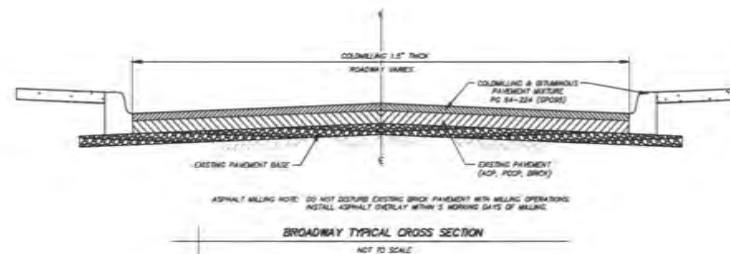
<b>City of Columbia, Missouri</b> Department of Public Works			
No.	Date	By	Revision
File No.	STP-2104(505)	Des.	DPS
Scale:	Name	Drawn	DR
Date:	4/8/15	Check	BAR
THIS WORK SHALL NOT BE CONSIDERED A CERTIFIED DOCUMENT <b>PRELIMINARY</b> NOT FOR CONSTRUCTION, BIDDING, RECORDING, OR PERMIT DESIGN PURPOSES		SHEET <b>C0.01</b>	
<b>BROADWAY PAVEMENT IMPROVEMENTS</b>			
Approved By: _____ Director of Public Works			
Date: _____			



Engineering Surveys and Services  
 1111 Fay Street, Columbia, Missouri 65201  
 571-441-2444 • www.ESS-So.com  
 Missouri Engineering Certificate # 200400000

BROADWAY PAVEMENT IMPROVEMENTS ES&S PROJECT NO. 12847

CURB RAMP ALTERATION ITEMS															
No.	Cross Street- Ramp Corner	Removal of Pavement	Downsized 4" Thick Reinforced PCC	6" Thick Reinforced PCC	Concrete Curb Type-S Variable Height	Cast-in-Place Detachable Wearing	Surface-Applied Detachable Wearing	Erosion Controls Inlet Protection	Gutter Bulbby	Adjust Water Valve	Adjust Pull Boxes	Grading Trip Hazard	Resurface and Replace Brick	Detachable Warning Pavement	Concrete Ribbon
1	Fourth - NW	SF	SF	SF	LF	SF	SF	EA	EA	EA	EA	LF	SF	SF	SF
2	Fourth - SW	223.4	223.4			9.7			1						
3	Fourth - NE	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC
4	Fourth - SE	216.9	216.9			10.5			2						
5	Fifth - NW	433.5	433.5			16.7			1		1				
6	Fifth - SW	235.6	206.3	29.3		13.4			1		1				
7	Fifth - SW	188.6	188.6			19.3									
8	Fifth - NE	211	211			17.6			1			11.2			
9	Fifth - SE	348.7	348.7			19									
10	Sixth - NW	175	175			20.3			1						
11	Sixth - SW						17.8				1				
12	Sixth - NE	274.7	274.7			19.1			2						
13	Sixth - SE								2						
14	Seventh - NW	322.7	322.7			25.1									
15	Seventh - SE														
16	Eighth - NW				17.7				1						
17	Eighth - NW								2				247.6	60.7	23
18	Ninth - SW													67.8	24.7
19	Ninth - NE								2				171.6	59.3	22.3
20	Ninth - SE								1				181.1	63.9	23.7
21	Tenth - NW	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC
22	Tenth - SW	245.4	245.4			22									
23	Tenth - NE	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC	NIC
24	Tenth - SE	236	236			24.1			1		1				
25	Eleventh - NW							11.6							
26	Eleventh - SW	222.5	222.5			21.4									
27	Eleventh - NE	132.7	132.7			11.9			1						
28	Eleventh - SE						27.8								
Project Totals:		3467.7	3438.4	29.3	17.7	250.1	57.2	0	19	0	4	11.2	600.3	251.7	93.7



**Engineering Surveys and Services**  
1117 Fox Street, Columbia, Missouri 65201  
(314) 447-2246 • www.ess-mo.com  
Missouri Engineering Corporation # 200403018

KSAS PROJECT NO. 1247

No.	Date	By	Revision

**BROADWAY PAVEMENT  
IMPROVEMENTS  
STP-2104(505)**  
QUANTITIES

**City of Columbia, Missouri**  
Department of Public Works  
**Landmarks Studio**  
1117 Fox Street, Columbia, Missouri 65201  
(314) 447-2246 • www.ess-mo.com  
Missouri Engineering Corporation # 200403018

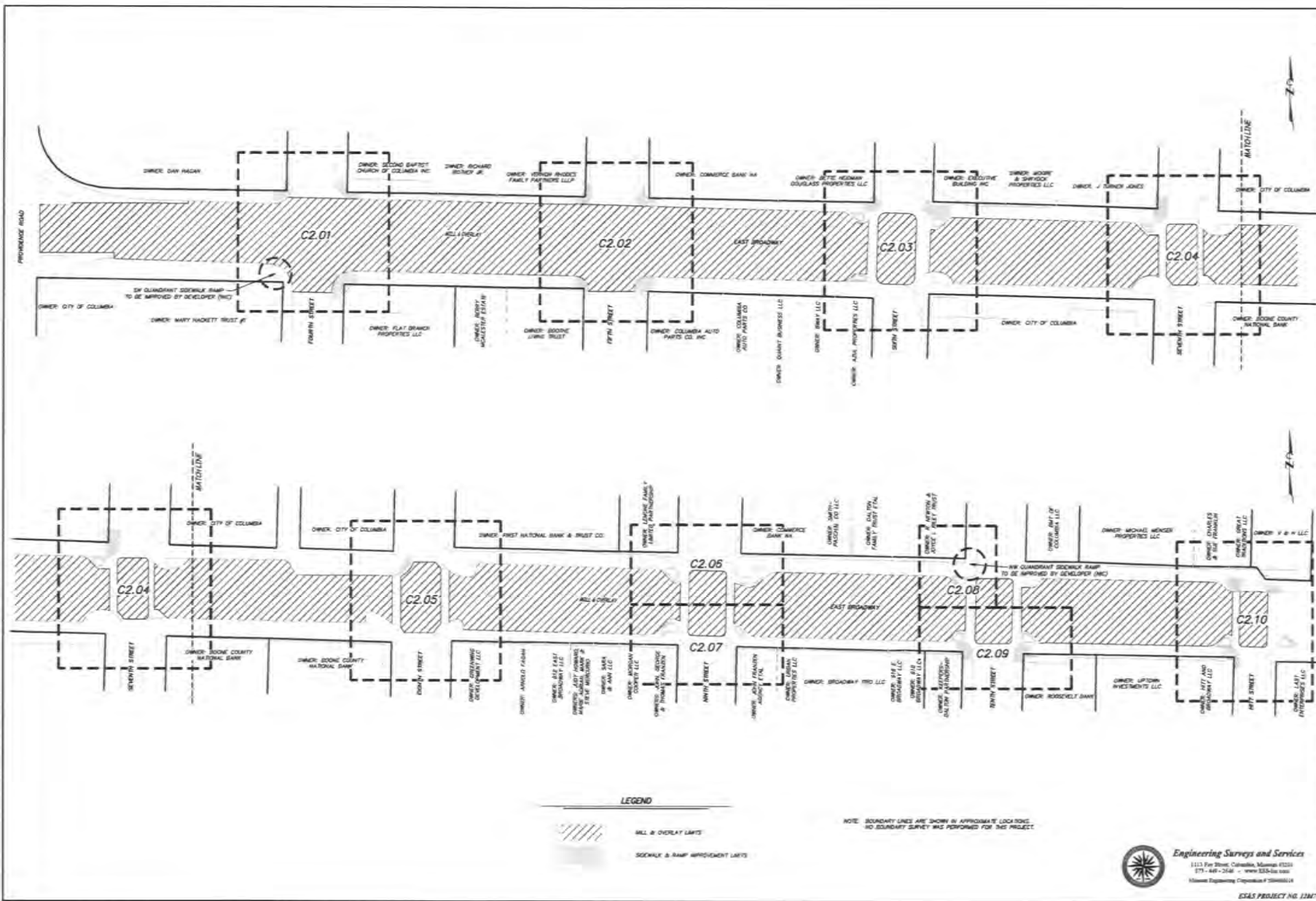


THIS WORK SHOULD NOT BE  
CONSIDERED A CERTIFIED  
PROJECT  
**PRELIMINARY**  
NOT FOR CONSTRUCTION,  
BIDDING, RECORDING, OR FINANCIAL  
ACTION PURPOSES

BENJAMIN A. ROSS  
REGISTERED PROFESSIONAL  
ENGINEER - E-30504

File No. STP-2104(505)  
Scale: NONE  
Date: 4/8/2015  
Des: DRS  
Dwn: DRS  
Chk: BDR  
Sheet  
**C0.02**

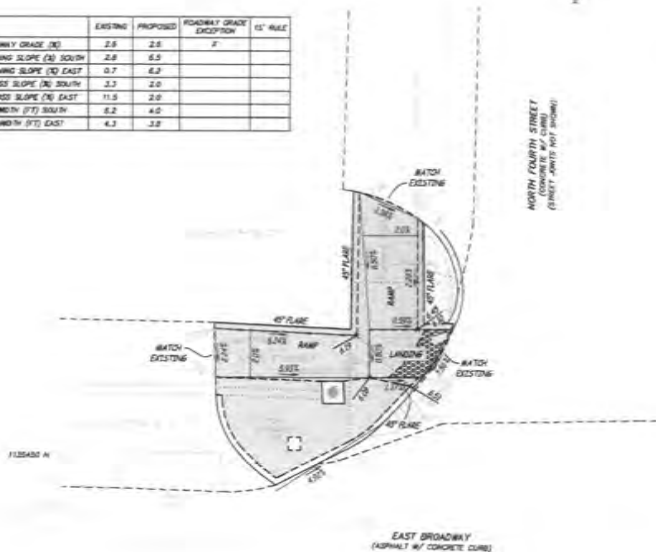




<b>BROADWAY PAVEMENT IMPROVEMENTS</b> <b>STP-2104(505)</b>	
City of Columbia, Missouri Department of Public Works	Landmarks Studio 1115 S. Grand Blvd. St. Louis, MO 63104
<b>PRELIMINARY</b> NOT FOR CONSTRUCTION. ANYTHING RECONSTRUCTED OR PERMANENTLY ALTERED WITHOUT THE CITY OF COLUMBIA'S APPROVAL.	
SCOTT A. ROSE REGISTERED PROFESSIONAL ENGINEER - E-30594	
File No. STP-2104(505)	Scale: NONE
Date: 4/6/2015	Drawn: DPS
Check: BR	Date: 04/06/15
Sheet <b>C1.01</b>	Total Sheets: 10


**Engineering Surveys and Services**  
 1115 S. Grand Blvd., Columbia, Missouri 65201  
 314-441-2100 • www.ess-mo.com  
 Missouri Engineering Corporation # 056665218

EXAS PROJECT NO. 1284

[illegible]

NORTH FOURTH STREET  
(STREET JUNCTS WEST SHAWNEE)

HIGHWAY E

MATCH EXISTING

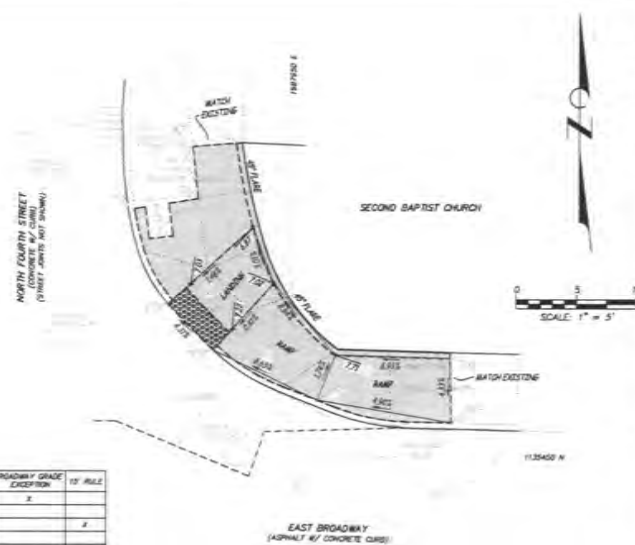
SECOND BAPTIST CHURCH

SCALE: 1" = 5'

11.35459 N

ROADWAY GRADE EXCEPTION	'15 RULE
X	

EAST BROADWAY  
(ASPHALT W/ CONCRETE CURBS)

[illegible]

**BROADWAY PAVEMENT  
IMPROVEMENTS  
STP-2104(505)  
SITE PLAN**

City of Columbia, Missouri  
Department of Public Works

*Landworks Studio*  
and S. Thompson, Chicago, Kansas (artist)

**Engineering Surveys and Services**  
1111 Pp. approx. 776x254mm, 400 pages 0520  
\$75 + \$45 + \$20 (d) + \$10 (p) 2020-01-01  
Reference Engineering. Copyright © 2020 Pearson Education Inc.



THIS MEETING SHOULD NOT BE  
CONSIDERED A CERTIFIED  
DOCUMENT  
**PRELIMINARY**  
NOT FOR CONSTRUCTION,  
BIDDING, RECORDING, OR FILING  
ANY OTHER PURPOSES

BENJAMIN A. ROSS  
REGISTERED PROFESSIONAL  
ENGINEER E-30064

File No. STP-2104(505)

Scale: 1"=8'

Date: 4/2/2015

Conc.	DPS
0	0

Gen.	BR
Chk.	DA

Street

3.3.3.4

#### Engineering Surveys and Services

1113 Fay Street, Columbia, Missouri 65201  
573-449-2444 • [www.EES-Int.com](http://www.EES-Int.com)  
Skinner Engineering Corporation # 21000001

PROPOSED	ROADWAY / GRADE	15' RULE
5.8		
6.3		
7.2		
8.0		
1.4		
5.0		
2.8		

[illegible][illegible]

**NORTH 97TH STREET**  
(ASPHALT &/ CONCRETE CURB)

**EAST BROADWAY**  
(ASPHALT &/ CONCRETE CURB)

**DUNGAREES**

EXISTING	PROPOSED
ROADWAY GRADE (%)	2
RAMP ROLLING SLOPE (%) NORTH	1
RAMP ROLLING SLOPE (%) WEST	6
RAMP CROSS SLOPE (%) NORTH	6
RAMP CROSS SLOPE (%) WEST	1
RAMP WIDTH (FT) NORTH	7
RAMP WIDTH (FT) WEST	8

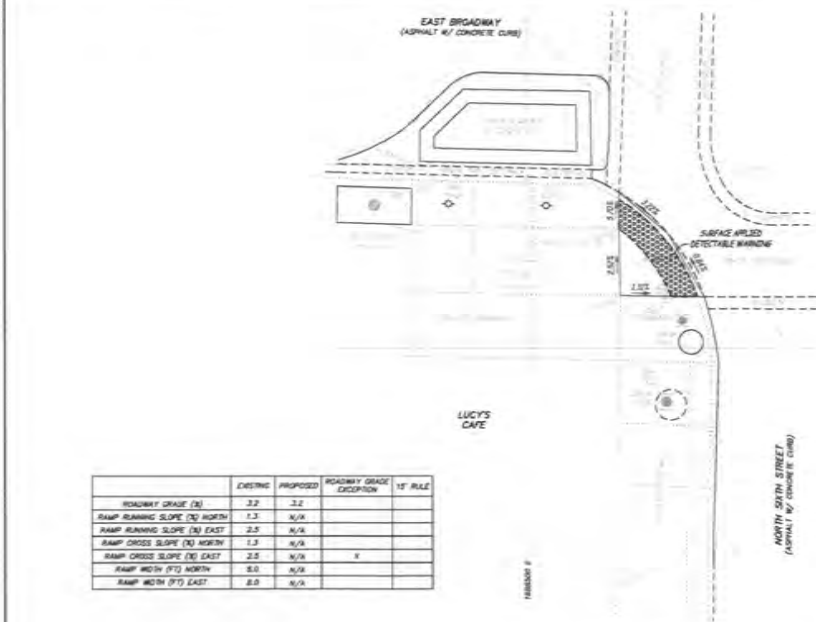
11-3050-A



	EXISTING	PROPOSED	ROADWAY GRADE EXCEPTION	15' RULE
ROADWAY GRADE (N)	2.7	2.7		
RAMP RUNNING SLOPE (N) SOUTH	5.7	7.7		
RAMP RUNNING SLOPE (N) EAST	0.2	2.4		
RAMP CROSS SLOPE (N) SOUTH	0.2	1.7		
RAMP CROSS SLOPE (N) EAST	5.7	1.9		
RAMP WIDTH (FT) SOUTH	5.0	4.8		
RAMP WIDTH (FT) EAST	5.0	5.8		



	EXISTING	PROPOSED	ROADWAY GRADE EXCEPTION	15' RULE
ROADWAY GRADE (N)	2.55	2.55		
RAMP RUNNING SLOPE (N) SOUTH	2.5	7.2		
RAMP RUNNING SLOPE (N) WEST	4.5	8.1		
RAMP CROSS SLOPE (N) SOUTH	4.5	2.5		
RAMP CROSS SLOPE (N) WEST	2.5	1.5		
RAMP WIDTH (FT) SOUTH	7.7	4.5		
RAMP WIDTH (FT) WEST	5.2	6.3		



	EXISTING	PROPOSED	ROADWAY GRADE EXCEPTION	15' RULE
ROADWAY GRADE (N)	2.2	3.2		
RAMP RUNNING SLOPE (N) NORTH	1.2	N/A		
RAMP RUNNING SLOPE (N) EAST	2.5	N/A		
RAMP CROSS SLOPE (N) NORTH	1.3	N/A		
RAMP CROSS SLOPE (N) EAST	2.5	N/A		
RAMP WIDTH (FT) NORTH	5.0	N/A		
RAMP WIDTH (FT) EAST	5.0	N/A		



Engineering Surveys and Services  
1111 First Street, Columbia, Missouri 65201  
314-441-2448 • www.ES&S-inc.com  
Surveying Engineering Corporation # 000000014

ES&S PROJECT NO. 12047

BROADWAY PAVEMENT IMPROVEMENTS STP-2104(505) SITE PLAN	
City of Columbia, Missouri Department of Public Works	Landmarks Studio 1111 First Street, Columbia, Missouri 65201 314-441-2448 • www.ES&S-inc.com Surveying Engineering Corporation # 000000014
THIS WORK DEVELOPED NOT BE CONSIDERED A PRELIMINARY PRELIMINARY NOT FOR CONSTRUCTION, BIDDING, OR ANY OTHER PURPOSES	
BENJAMIN A. POSE REGISTERED PROFESSIONAL ENGINEER E-30054	
File No. STP-2104(505)	Scale: 1"=5'
Date: 4/8/2015	Des: DPS
Draw: BR	Chk: DAN
Sheet C2.03	



SCALE: 1" = 5'

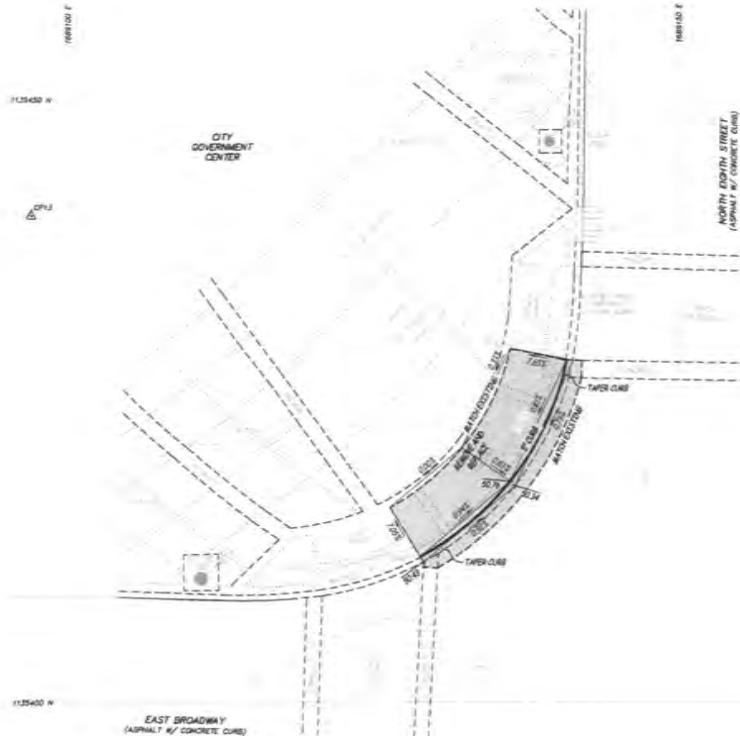
	EXISTING	PROPOSED	ROADWAY GRADE EXCEPTION	1ST RULE
ROADWAY GRADE (ft)	3.4	3.4		
RAMP RAMPING SLOPE (ft) SOUTH	3.7	0.5		
RAMP RAMPING SLOPE (ft) EAST	0.7	0.5		
RAMP CROSS SLOPE (ft) SOUTH	0.1	0.3		
RAMP CROSS SLOPE (ft) EAST	3.4	3.2	X	
RAMP WIDTH (ft) SOUTH	---	0.5		
RAMP WIDTH (ft) EAST	---	---		



**Engineering Surveys and Services**  
 1131 Fair Street, Columbia, Missouri 65201  
 573-440-2048 • www.ESS-Geo.com  
 Missouri Engineering Corporation # 000000010

KS&S PROJECT NO. 12947

<b>BROADWAY PAVEMENT IMPROVEMENTS</b> <b>STP-2104(505)</b> SITE PLAN	
City of Columbia, Missouri Department of Public Works	Landmarks Studio 1131 S. College Street, Suite 200 Columbia, MO 65201 573-440-2048
Engineering Surveys and Services 1131 Fair Street, Suite 200 Columbia, MO 65201 Missouri Engineering Corporation # 000000010	
THIS WORK SHOULD NOT BE EXPANDED & CERTIFIED UNLESS INDICATED <b>PRELIMINARY</b> NOT FOR CONSTRUCTION, BIDDING, RECORDING, OR PERMIT REVIEW PURPOSES	
BENJAMIN A. ROSS REGISTERED PROFESSIONAL ENGINEER E-33054	
File No. STP-2104(505) Scale: 1"=5' Date: 4/6/2015 Des: DPS Draw: BR Check: BR	
Sheet <b>C2.04</b>	



**Engineering Surveys and Services**  
 1121 East Street, Columbia, Missouri 65201  
 571-681-2648 • www.ess-inc.com  
 Missouri Engineering Corporation # 204003018

ESS PROJECT NO. 12647

No.	Date	By	Revision

**BROADWAY PAVEMENT IMPROVEMENTS**  
**STP-2104(505)**  
**SITE PLAN**

**City of Columbia, Missouri**  
 Department of Public Works

**Landmarks Studio**  
 1118 A. D. Smith Blvd., Suite 100  
 Columbia, MO 65201  
 571-781-1234 • www.landmarksstudio.com

**Engineering Surveys and Services**  
 1121 East Street, Suite 100  
 Columbia, MO 65201  
 571-681-2648 • www.ess-inc.com  
 Missouri Engineering Corporation # 204003018



THIS DESIGN SHOULD NOT BE  
 CONSIDERED A CERTIFIED  
**PRELIMINARY**  
 NOT FOR CONSTRUCTION  
 ANYTHING, INCLUDING, BUT NOT LIMITED TO,  
 ANY NEW PROJECT

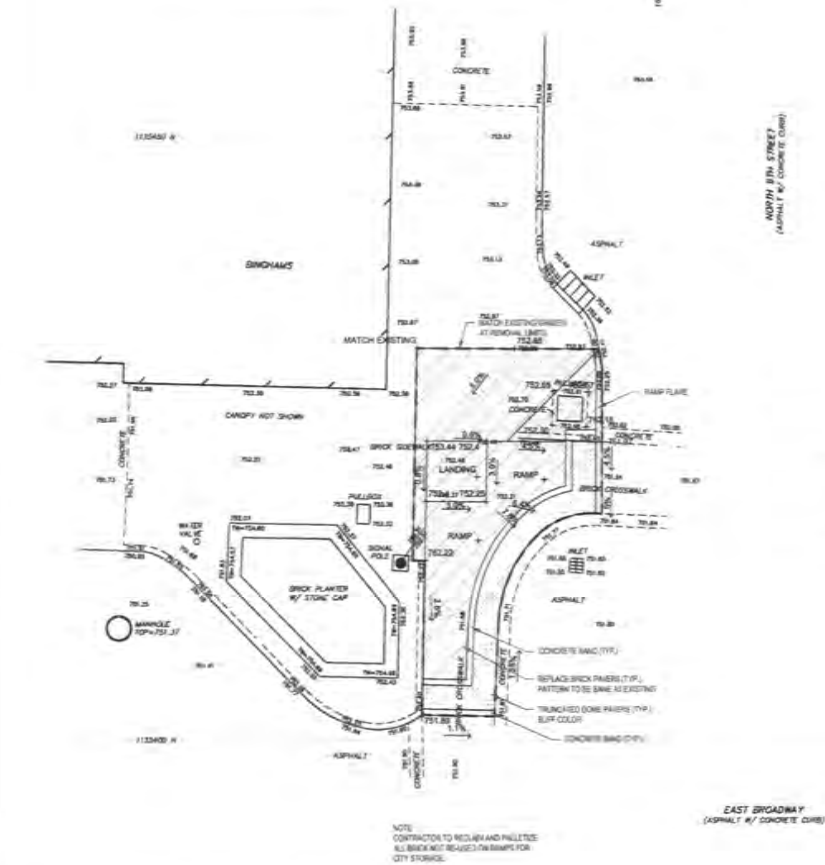
**BENJAMIN A. ROSS**  
 REGISTERED PROFESSIONAL  
 ENGINEER E-30504

File No.	STP-2104(505)
Scale	1"=5'
Date	4/8/2015
Des.	DPS
Chk.	BR
Chk.	BAR

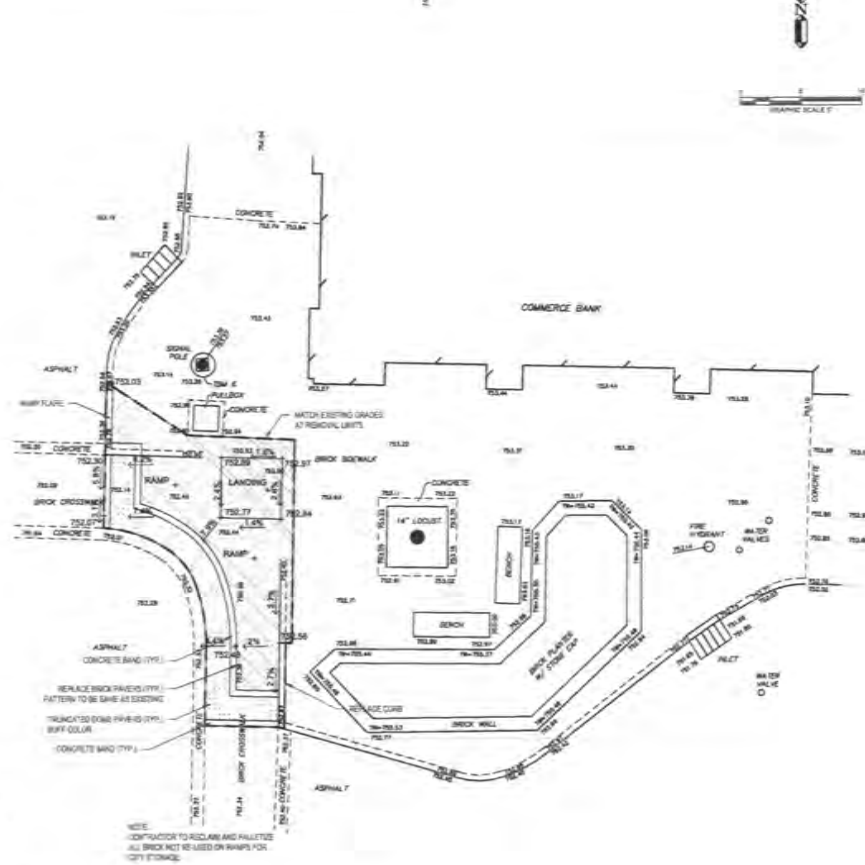
Sheet  
**C2.05**

ROADWAY GRADE (%)	EXISTING	PROPOSED	ROADWAY GRADE EXCEPTION	12" RULE
ROADWAY GRADE (%)	4.0	4.2	X	
RAMP RUNNING SLOPE (%) SOUTH	2.0	2.0		
RAMP RUNNING SLOPE (%) EAST	4.0	7.0		
RAMP CROSS SLOPE (%) SOUTH	3.2	3.0	X	
RAMP CROSS SLOPE (%) EAST	4.0	3.0	X	
RAMP WIDTH (FT) SOUTH	7.0	7.0		
RAMP WIDTH (FT) EAST	7.0	7.0		

ROADWAY GRADE (%)	EXISTING	PROPOSED	ROADWAY GRADE EXCEPTION	12" RULE
ROADWAY GRADE (%)	4.7	4.2	X	
RAMP RUNNING SLOPE (%) SOUTH	0.4	2.0		
RAMP RUNNING SLOPE (%) WEST	0.0	2.0		
RAMP CROSS SLOPE (%) SOUTH	0.0	2.0		
RAMP CROSS SLOPE (%) WEST	2.0	2.4	X	
RAMP WIDTH (FT) SOUTH	7.0	7.0		
RAMP WIDTH (FT) WEST	7.0	7.0		



01 9TH AND BROADWAY - NORTHWEST CORNER  
SCALE: 1" = 3' - 0"



02 9TH AND BROADWAY - NORTHEAST CORNER  
SCALE: 1" = 3' - 0"

Revised	By	Date	No.

**BROADWAY PAYEMENT IMPROVEMENTS**  
**STP-2104(505)**

**City of Columbia, Missouri**  
Department of Public Works

**Engineering Services and Services**  
1111 N. 1st St., Suite 100  
Columbia, MO 65203  
Phone: 620-2104

**Landmarks Studio**  
1111 N. 1st St., Suite 100  
Columbia, MO 65203  
Phone: 620-2104

**PRELIMINARY**  
THIS DOCUMENT IS NOT FOR CONSTRUCTION.  
IT IS FOR INFORMATION ONLY.  
IT IS NOT TO BE USED FOR ANY PURPOSES.

**SENIOR A. BOSS**  
REGISTERED PROFESSIONAL ENGINEER  
E-30004

THIS DOCUMENT WAS PREPARED BY THE CITY OF COLUMBIA, MISSOURI, AND WAS REVIEWED BY THE CITY OF COLUMBIA, MISSOURI, AND WAS REVIEWED BY THE CITY OF COLUMBIA, MISSOURI.

File No. STP-2104(505)

Scale: 1"=5'

Date: 4/15/2015

Des: MRZ

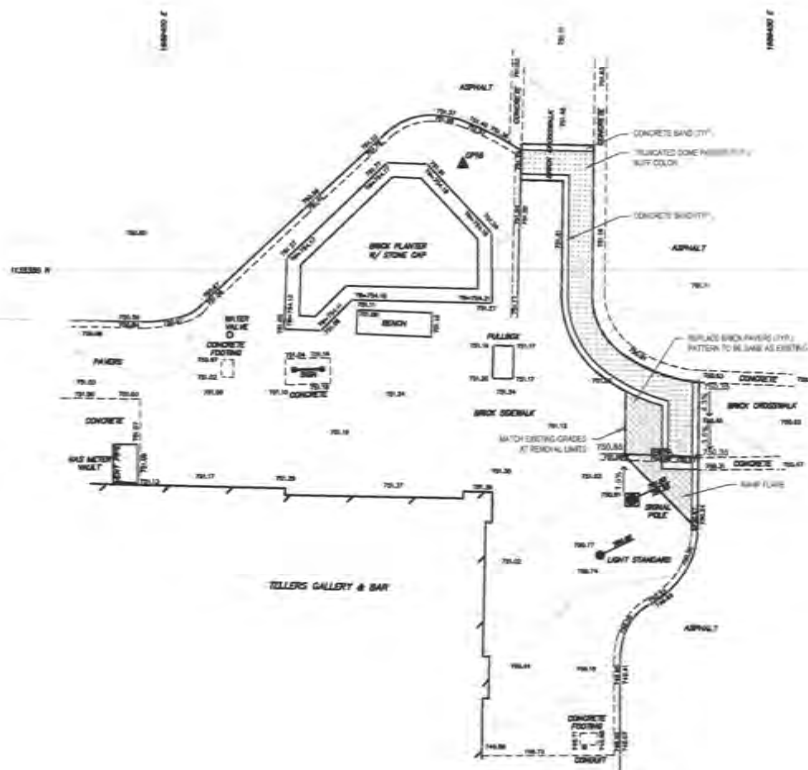
Draw: MRZ

Check: MRZ

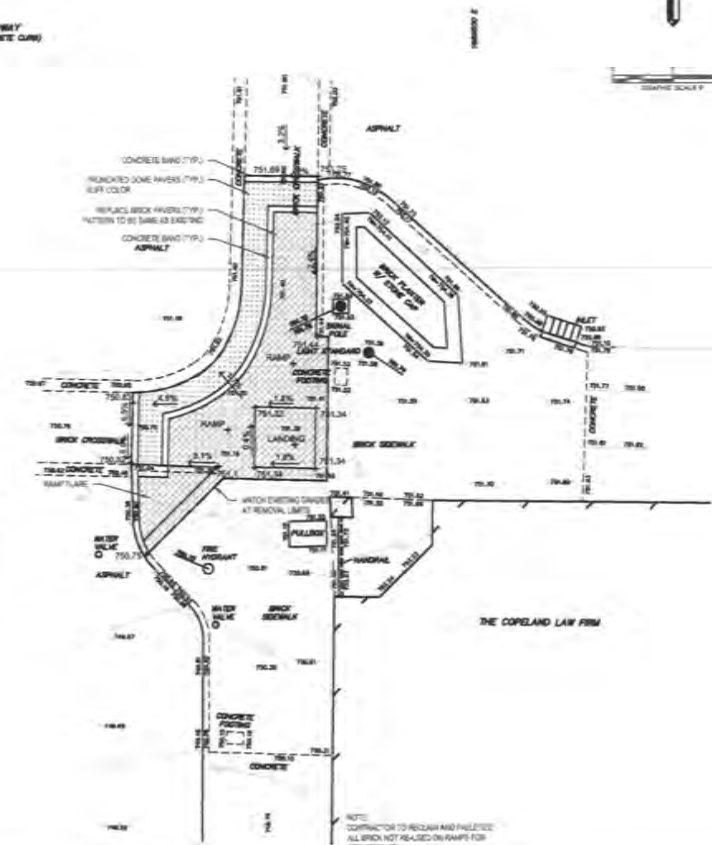
Sheet  
C2.06

	EXISTING	PROPOSED	ROADWAY GRADE EXCEPTION	1" HALE
ROADWAY GRADE (G)	4.2	4.2	X	
RAMP RUNNING SLOPE (G) NORTH	0.8	0.8		
RAMP RUNNING SLOPE (G) EAST	0.2	0.2		
RAMP CROSS SLOPE (G) NORTH	0.8	0.8		
RAMP CROSS SLOPE (G) EAST	0.8	0.8		
RAMP WIDTH (F) NORTH	7.0	7.0		
RAMP WIDTH (F) EAST	7.0	7.0		

	EXISTING	PROPOSED	ROADWAY GRADE EXCEPTION	1" HALE
ROADWAY GRADE (G)	0.2	0.2	X	
RAMP RUNNING SLOPE (G) NORTH	0.2	0.2		
RAMP RUNNING SLOPE (G) WEST	0.2	0.2		
RAMP CROSS SLOPE (G) NORTH	0.2	0.2		
RAMP CROSS SLOPE (G) WEST	0.2	0.2		
RAMP WIDTH (F) NORTH	7.0	7.0		
RAMP WIDTH (F) WEST	7.0	7.0		



NOTE:  
CONTRACTOR TO RECLAIM AND PALETTE  
ALL BRICK NOT REUSED ON RAMP FOR  
CITY STORAGE.



NOTE:  
CONTRACTOR TO RECLAIM AND PALETTE  
ALL BRICK NOT REUSED ON RAMP FOR  
CITY STORAGE.

01 9TH AND BROADWAY - SOUTHWEST CORNER  
SCALE: 1" = 10' - 0"

02 9TH AND BROADWAY - SOUTHEAST CORNER  
SCALE: 1" = 10' - 0"

No.	Date	By	Revision

**BROADWAY PAVEMENT  
IMPROVEMENTS**  
STP-2104(505)

City of Columbia, Missouri  
Department of Public Works



THIS DESIGN SHOULD NOT BE  
CONSIDERED A CONTRACT  
**PRELIMINARY**  
NOT FOR CONSTRUCTION  
ISSUING RECORDS OR PERMIT  
WITHOUT REVISION

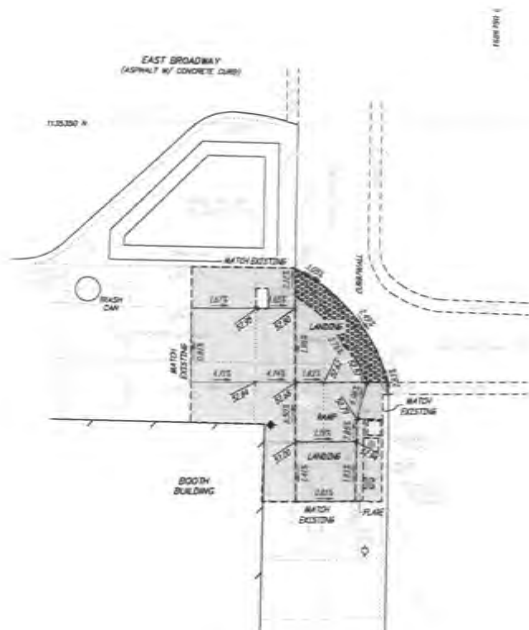
RENEE A. RYAN  
REGISTERED PROFESSIONAL  
ENGINEER - E-30004

THIS DOCUMENT HAS BEEN PREPARED BY  
AN INDEPENDENT ENGINEER OF RECORD  
AND SHALL BE USED ONLY FOR THE  
PROJECT AND LOCATION SPECIFIED  
HEREON.

File No. STP-2104(505)  
Scale: 1" = 10'  
Date: 4/8/2013  
Des: MRE  
CNA: MRE

Sheet  
C2.07





	EXISTING	PROPOSED	ROADWAY GRADE EXCEPTION	15' RULE
ROADWAY GRADE (N)	3.05	2.85		
RAMP RUNNING SLOPE (N) NORTH	2.1	7.8		
RAMP RUNNING SLOPE (N) EAST	4.7	4.7		
RAMP CROSS SLOPE (N) NORTH	4.7	1.8		
RAMP CROSS SLOPE (N) EAST	2.2	1.85		
RAMP WIDTH (FT) NORTH	7.5	8.5		
RAMP WIDTH (FT) EAST	8.5	8.5		

NORTH NINTH STREET  
(ASPHALT W/ CONCRETE CURB)



	EXISTING	PROPOSED	ROADWAY GRADE EXCEPTION	15' RULE
ROADWAY GRADE (N)	3.8	2.8		
RAMP RUNNING SLOPE (N) NORTH	0.7	6.6		
RAMP RUNNING SLOPE (N) WEST	6.6	5.0		
RAMP CROSS SLOPE (N) NORTH	6.6	3.5		
RAMP CROSS SLOPE (N) WEST	0.7	1.35		
RAMP WIDTH (FT) NORTH	7	8		
RAMP WIDTH (FT) WEST	8	8		



**Engineering Surveys and Services**  
1115 Pine Street, Columbia, Missouri 65201  
314-481-2346 • www.ES&S.com  
Mooney Engineering Corporation # 2004050819

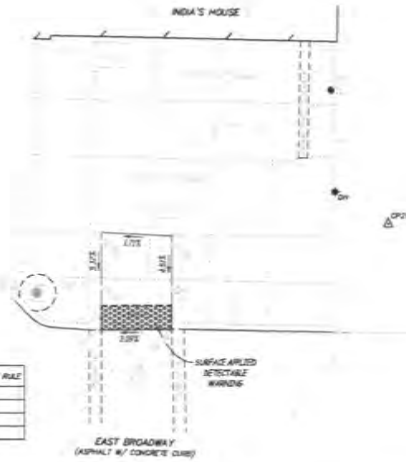
KSAS PROJECT NO. 12347

<b>BROADWAY PAVEMENT IMPROVEMENTS</b> <b>STP-2104(505)</b> SITE PLAN	
City of Columbia, Missouri Department of Public Works	Landmarks Studio 1115 Oak Street, Suite 200 Columbia, MO 65201 314-799-1234 • www.landmarks.com
THIS WORK SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT <b>PRELIMINARY</b> NOT FOR CONSTRUCTION RECORDING, RECORDING, OR PERMIT WITHOUT PURCHASE	
JENNIFER A. ROSE REGISTERED PROFESSIONAL ENGINEER E-35054	
File No. STP-2104(505) Scale: 1"=5' Date: 4/8/2015 Drawn: DRS Check: DAR Sheet <b>C2.08</b>	

FIGURE 2

FIGURE 4

	EXISTING	PROPOSED	ROADWAY GRADE EXCEPT	12" RULE
ROADWAY GRADE (IN)	3.68	3.08		
RAMP RUNNING SLOPE (IN)	8.2	8.2		
RAMP CROSS SLOPE (IN)	3.0	2.0	X	
RAMP WIDTH (FT)	8.8	8.8		



EAST BROADWAY  
(ASPHALT W/ CONCRETE CURB)

FIGURE 5

EAST BROADWAY  
(ASPHALT W/ CONCRETE CURB)

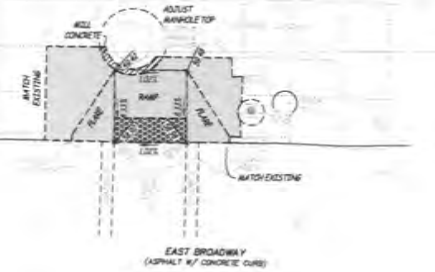
	EXISTING	PROPOSED	ROADWAY GRADE EXCEPT	12" RULE
ROADWAY GRADE (IN)	5.80	5.80		
RAMP RUNNING SLOPE (IN) NORTH	11.2	8.2		
RAMP RUNNING SLOPE (IN) EAST	2.0	3.3		
RAMP CROSS SLOPE (IN) NORTH	2.0	2.7	X	
RAMP CROSS SLOPE (IN) EAST	11.2	4.0	X	
RAMP WIDTH (FT) NORTH	3.8	4.2		
RAMP WIDTH (FT) EAST	8.0	4.2		



NORTH MT. STREET  
(ASPHALT W/ CONCRETE CURB)

FIGURE 6

FIGURE 8



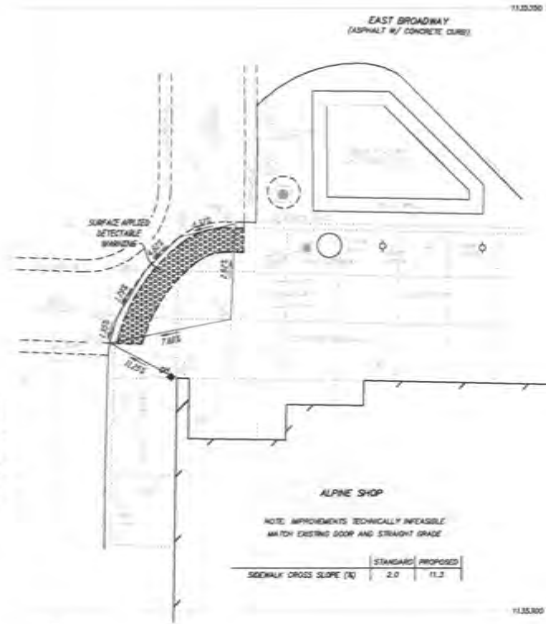
EAST BROADWAY  
(ASPHALT W/ CONCRETE CURB)

	EXISTING	PROPOSED	ROADWAY GRADE EXCEPT	12" RULE
ROADWAY GRADE (IN)	1.0	1.0		
RAMP RUNNING SLOPE (IN)	12.2	8.2		
RAMP CROSS SLOPE (IN)	1.2	1.0		
RAMP WIDTH (FT)	5.8	5.8		

FIGURE 9

EAST BROADWAY  
(ASPHALT W/ CONCRETE CURB)

NORTH MT. STREET  
(ASPHALT W/ CONCRETE CURB)



	STANDARD	PROPOSED
ROADWAY CROSS SLOPE (IN)	2.0	11.2

FIGURE 10



Engineering Surveys and Services  
1113 Van Street, Columbia, Missouri 65201  
373-6401 • 354-1101 • www.ess-jac.com  
Kansas Engineering Corporation # 204493201

No.	Date	By	Revision

BROADWAY PAVEMENT  
IMPROVEMENTS  
STP-2104(505)  
SITE PLAN

City of Columbia, Missouri  
Department of Public Works  
Engineering Surveys and Services  
1113 Van Street, Columbia, Missouri 65201  
373-6401 • 354-1101 • www.ess-jac.com  
Kansas Engineering Corporation # 204493201



THIS DESIGN DEVELOPMENT HAS BEEN  
CONSIDERED A CERTIFIED  
PRELIMINARY  
NOT FOR CONSTRUCTION  
BIDDING, RECORDING, OR PERMIT  
PURPOSES

SETHUAM A. ROSS  
REGISTERED PROFESSIONAL  
ENGINEER E-30054

File No.	STP-2104(505)
Scale	1"=5'
Date	4/8/2015
Drawn	DPS
Check	BR
Check	BR
Sheet	C2.09

ES&S PROJECT NO. 12847

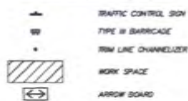
# TEMPORARY TRAFFIC CONTROL GENERAL NOTES

1. ALL TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL PLANS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SITE, WORKER, AND TRAFFIC SAFETY.
3. CONTRACTOR MAY MODIFY THE TEMPORARY TRAFFIC CONTROL PLAN TO ACCOMMODATE THEIR CONSTRUCTION MEANS, METHODS, SEQUENCE, AND TECHNIQUES OR PROCEDURES. CONTRACTOR SHALL SUBMIT ALL PROPOSED MODIFICATIONS TO THE TEMPORARY TRAFFIC CONTROL PLAN TO THE CITY OF COLUMBIA FOR APPROVAL, IN WRITING, PRIOR TO IMPLEMENTATION.
4. CONTRACTOR SHALL DESIGNATE A TRAINED PERSON AT THE PROJECT LEVEL WHO HAS THE PRIMARY RESPONSIBILITY WITH SUFFICIENT AUTHORITY FOR IMPLEMENTING THE TEMPORARY TRAFFIC CONTROL PLAN AND OTHER SAFETY AND MOBILITY ASPECTS OF THE PROJECT. CONTRACTOR SHALL SUBMIT PROOF THAT THEIR TRAINED PERSON HAS SUCCESSFULLY PASSED MCDOT'S ADVANCED WORK ZONE COURSE OR APPROVED EQUIVALENT TRAINING.
5. CONTRACTOR SHALL MONITOR PEDESTRIAN AND VEHICLE TRAFFIC FLOW THROUGH THE WORK ZONE AND MAKE ADJUSTMENTS TO THE TRAFFIC CONTROL PLAN WITH THE APPROVAL OF THE CITY OF COLUMBIA, AS REQUIRED.
6. CONTRACTOR SHALL PROVIDE FLAGGERS WITH VALID FLAGGER CERTIFICATION CARDS AT START UP AND SHUT DOWN OF TEMPORARY TRAFFIC CONTROL ZONES AND AS REQUIRED TO FACILITATE TRAFFIC MOVEMENT THROUGH AND AROUND THE TEMPORARY TRAFFIC CONTROL ZONES. ALL FLAGGER OPERATIONS SHALL BE IN ACCORDANCE WITH THE MUTCD.

## SIDEWALK RAMP CONSTRUCTION SEQUENCING REQUIREMENTS

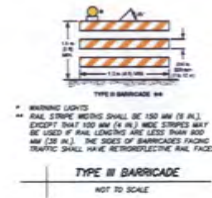
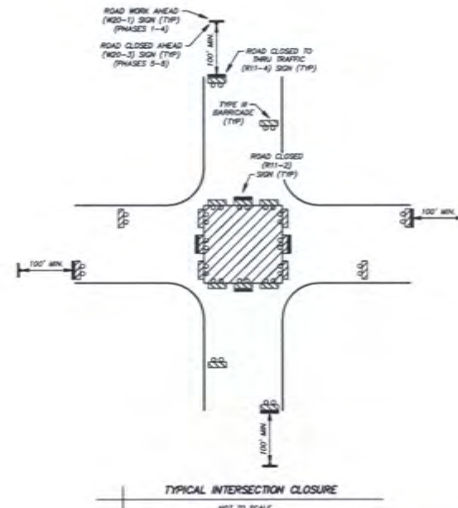
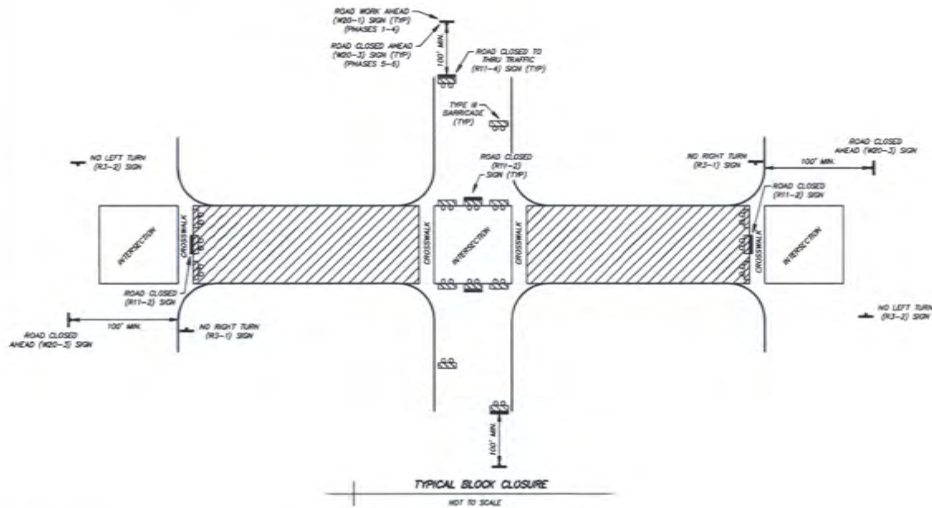
1. SIDEWALK RAMP SHALL BE CONSTRUCTED IN A SEQUENCE THAT DOES NOT REQUIRE A PEDESTRIAN TO DETOUR AROUND THE BLOCK.
  2. PEDESTRIANS CAN BE REQUIRED TO CROSS THE STREET MULTIPLE TIMES.
  3. PROVIDE ADVANCE SIDEWALK CLOSED AHEAD - CROSS HERE SIGNS UPSTREAM OF ALL SIDEWALK CLOSURES.
- ASPHALT MILL AND OVERLAY SEQUENCE REQUIREMENTS
1. ALL TRAVEL LANES SHALL BE OPEN FROM 7 AM TO 7 PM.
  2. CONTRACTOR MAY CLOSE TWO BLOCKS AND ONE INTERSECTION AT A TIME FROM 7 PM TO 7 AM. A BLOCK IS DEFINED AS THE NEAR SIDE CROSSWALK TO NEAR SIDE CROSSWALK OF THE INTERSECTING SIDE STREETS.
  3. CONTRACTOR MAY CLOSE ONE INTERSECTION AT A TIME FROM 7 PM TO 7 AM.
  4. CONTRACTOR TO INSTALL TEMPORARY CENTERLINE TABS. CITY SHALL PAINT ALL FINAL PAVEMENT MARKINGS.

## LEGEND



## DESIGN DATA

DESIGN SPEED:  
BROADWAY (EAST OF PROVIDENCE ROAD) = 25 MPH  
BROADWAY (WEST OF PROVIDENCE ROAD) = 35 MPH



Engineering Surveys and Services  
1111 1/2 First Street, Columbia, Missouri 65201  
314-734-2448 • www.ESS-Geo.com  
Missouri Engineering Corporation # 204055113

KSAS PROJECT NO. 1247

No.	Date	By	Revision

BROADWAY PAVEMENT IMPROVEMENTS  
STP-2104(505)  
TEMPORARY TRAFFIC CONTROL PLAN

City of Columbia, Missouri  
Department of Public Works  
Engineering Surveys and Services  
1111 1/2 First Street, Columbia, Missouri 65201  
314-734-2448 • www.ESS-Geo.com  
Missouri Engineering Corporation # 204055113



THIS DESIGN SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT  
**PRELIMINARY**  
NOT FOR CONSTRUCTION, BIDDING, OR PERMIT REVIEW PURPOSES

BENJAMIN A. ROSS  
REGISTERED PROFESSIONAL ENGINEER E-30584

File No. STP-2104(505)  
Scale: AS SHOWN  
Date: 4/8/2015  
Drawn: SH  
Check: BR  
Sheet  
C3.01





**Engineering Surveys and Services**  
1113 Fay Street, Columbia, Missouri 65201  
573-449-2646 • [www.ESS-inc.com](http://www.ESS-inc.com)  
Missouri Engineering Corporation # 204005018

ESAS PROJECT NO. 12847



THIS DESIGN SHOULD NOT BE  
CONSIDERED A CERTIFIED  
DOCUMENT  
**PRELIMINARY**  
NOT FOR CONSTRUCTION,  
BIDDING, RECORDING, OR PERMIT  
REVIEW PURPOSES

BENJAMIN A. ROSS  
REGISTERED PROFESSIONAL  
ENGINEER E-30054

File No. S7P-2104(505)  
Scale: 1"=50'

Date:	4/8/2015
Des.	SH
Dev.	BR
Chk.	DAR

Sheet  
C3.02

**BROADWAY PAVEMENT  
IMPROVEMENTS  
STP-2104(505)  
TEMPORARY TRAFFIC CONTROL PLAN**

**City of Columbia, Missouri**  
Department of Public Works

**Landworks Studio**  
161 S. Channing, Chicago, Illinois 60601  
913 • 740 • 6767

**Engineering Surveys and Services**  
1113 Fay Street, Columbia, Missouri 65208  
373-449-1666 • [www.ESSS-inc.com](http://www.ESSS-inc.com)  
Missouri Engineering & Construction • 3030200110













**Engineering Surveys and Services**  
1113 Per Street, Columbia, Missouri 65201  
373-440-3545 • www.esss-mo.com  
Missouri Engineering Corporation # 2004000108

ES&S PROJECT NO. 12047

No.	Date	By	Revision

**BROADWAY PAVEMENT  
IMPROVEMENTS  
STP-2104(505)  
TEMPORARY TRAFFIC CONTROL PLAN  
PHASE 3**

**City of Columbia, Missouri**  
Department of Public Works

**Landmarks Studio**  
1015 Chestnut Street  
Columbia, Missouri 65203  
373-581-1200 • www.landmarksstudio.com  
Missouri Registered Professional Engineer # 000000000



THIS DESIGN SHOULD NOT BE  
CONSIDERED A CERTIFIED  
DOCUMENT  
**PRELIMINARY**  
NOT FOR CONSTRUCTION,  
ADVERTISING, RECORDING, OR PERMIT  
REVIEW PURPOSES

BENJAMIN A. ROSS  
REGISTERED PROFESSIONAL  
ENGINEER E-30054

File No.	STP-2104(505)
Scale:	1"=50'
Date:	4/8/2015
Des.	SH
Dwn.	BR
Ck'd.	BAR

Sheet  
**C3.05**





- NOTES:
1. SHD PARKING METERS AS REQUIRED
  2. CONSTRUCTION ACTIVITIES ASSOCIATED WITH SIDEWALK REMOVAL SHALL BE LIMITED TO TWO ADJACENT INTERSECTIONS AT A TIME
  3. PROVIDE CONSTRUCTION FENCE AROUND ALL WORK SPACES



**Engineering Surveys and Services**  
 1113 Elm Street, Columbia, Missouri 65201  
 375-640-2546 • www.ess3d.com  
 Missouri Engineering Corporation # 204005218

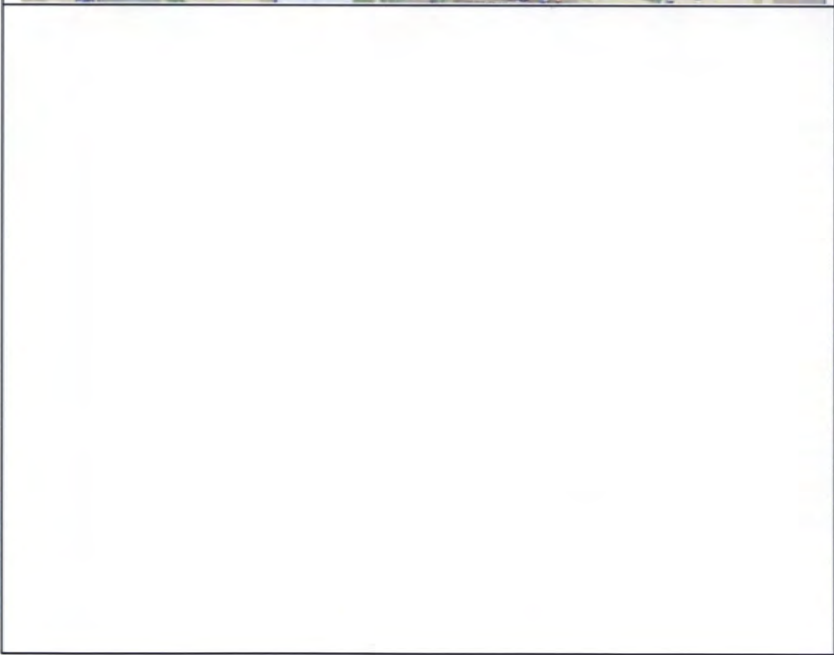
ESS PROJECT NO. 12847

<b>BROADWAY PAVEMENT IMPROVEMENTS</b> <b>STP-2104(505)</b> <b>TEMPORARY TRAFFIC CONTROL PLAN</b> <b>PHASE 4</b>	
City of Columbia, Missouri Department of Public Works Engineering Surveys and Services 1113 Elm Street • www.ess3d.com Missouri Engineering Corporation # 204005218	Landmarks Studio 1115 S. College Ave. Columbia, MO 65202 573-753-1234 • www.landmarksstudio.com
THIS DESIGN SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT <b>PRELIMINARY</b> NOT FOR CONSTRUCTION BIDDING REQUIREMENTS ARE POSTED REVIEW PURPOSES	
BENJAMIN A. ROSS REGISTERED PROFESSIONAL ENGINEER E-30054	
File No. STP-2104(505) Scale: 1"=50' Date: 4/6/2015 Des: SH Draw: BR Chk: DAR	Sheet <b>C3.06</b>

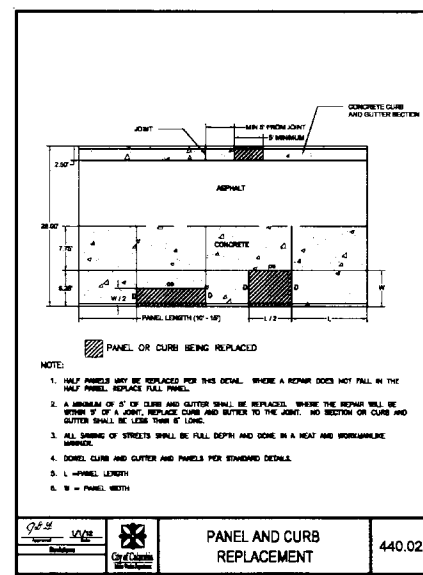
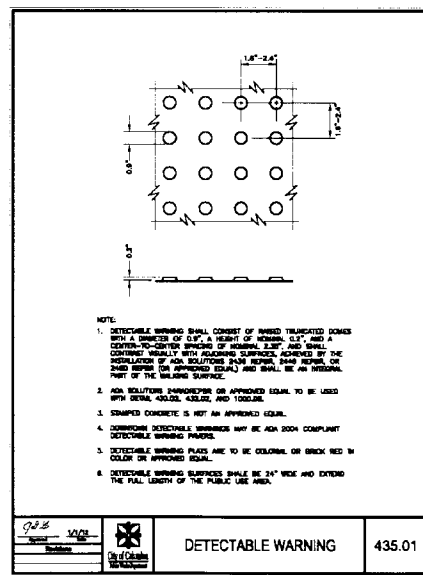
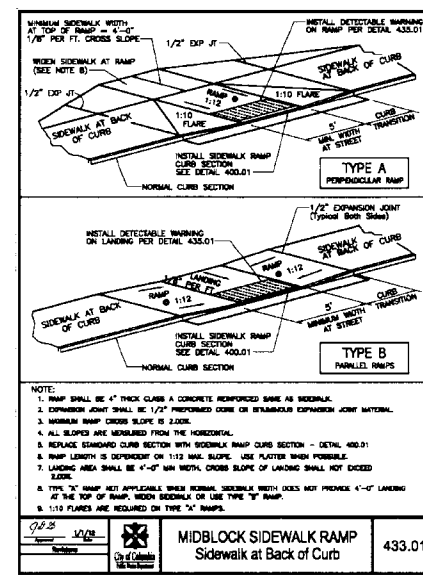
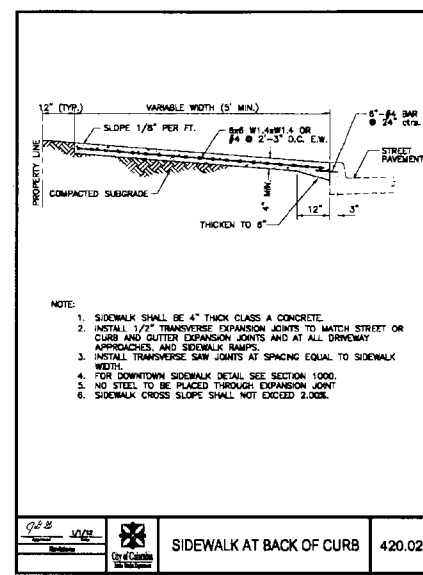
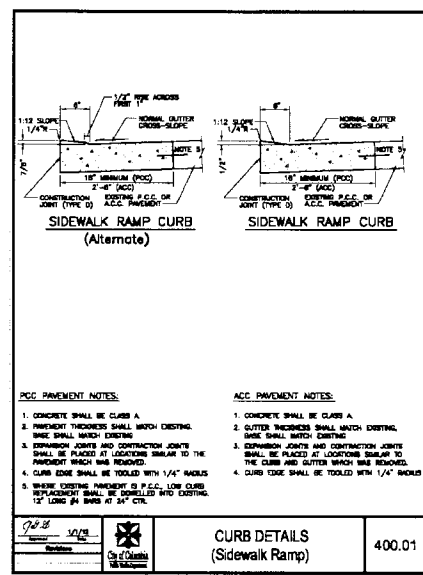
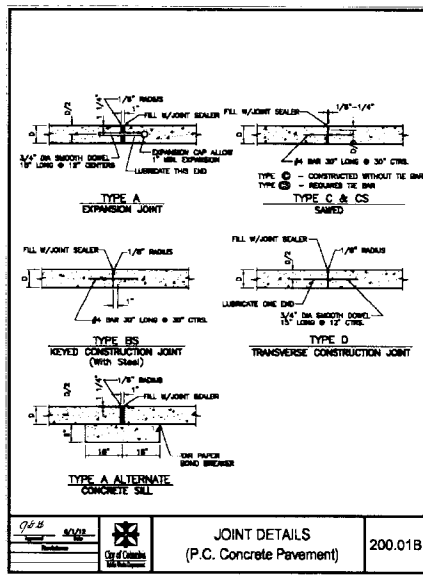




No.	Date	By	Revision



<b>BROADWAY PAVEMENT IMPROVEMENTS</b> <b>STP-2104(505)</b> <b>TEMPORARY TRAFFIC CONTROL PLAN</b> <b>PHASE 5</b>	
City of Columbia, Missouri Department of Public Works	Landmarks Studio 1115 E. Chestnut Street St. Louis, MO 63103 314.778.4200
Engineering Surveys and Services 1115 E. Chestnut Street St. Louis, MO 63103 314.778.4200	Missouri Engineering Corporation # 2004005118
THIS DRAWING SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT <b>PRELIMINARY</b> NOT FOR CONSTRUCTION, ADVERTISING, RECORDING, OR PERMIT REVIEW PURPOSES	
BENJAMIN A. ROSS REGISTERED PROFESSIONAL ENGINEER E-33054	
File No. STP-2104(505) Scale: 1"=50' Date: 4/8/2015 Des: SR Draw: BR Check: DAB Sheet <b>C3.07</b>	



**Engineering Surveys and Services**  
113 E. 4th Street, Columbia, Missouri 65202  
573-445-2148 • www.ESS-LLC.com  
Missouri Engineering Corporation # 058405018

<b>BROADWAY PAVEMENT IMPROVEMENTS</b> <b>STP-2104(505)</b> DETAILS	
No. _____ Date _____ By _____	Revision No. _____ Date _____ By _____
City of Columbia, Missouri Department of Public Works	
Landmarks Studio 1115 S. Grand Blvd., Suite 200 St. Louis, MO 63104 (314) 435-2540 • www.landmarksstudio.com	
THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT <b>PRELIMINARY</b> NOT FOR CONSTRUCTION BIDDING, RECORDING, OR PERMIT REVIEW PURPOSES	
File No. STP-2104(505) Scale: AS SHOWN Date: 4/15/2015 Des: UPS Drawn: BR Check: DAR	
Sheet <b>C4.01</b>	

## DOWNTOWN SIDEWALK SPECIFICATIONS

### SCOPE

The following Downtown Specifications and Standards are to be used for sidewalk, driveway and curb construction or replacement in the Downtown Area as defined on drawing 1000.01A. All work within the Right of Way shall be in conformance with the City of Columbia Street and Storm Sewer Specifications and Standards, and these Downtown Sidewalk Specifications and Standards. If a conflict occurs the Downtown Sidewalk Specifications and Standards will govern.

### CURBS

The curbs will be placed monolithically with the sidewalk and a saw joint will be provided 6-inches behind the face of the curb for the length of the curb. The curb shall extend a minimum of 6-inches above the existing pavement and 12-inches below the surface of the pavement. Drawing 1000.02 shows curb and sidewalk. Any variations from this standard must have the prior approval of the Director of Public Works.

### CONCRETE

All concrete shall be Class A.

### SIDEWALK REMOVAL AND REPLACEMENT

Whenever sidewalk is removed and replaced, removals must be made along existing saw joints. Diagonal saw cuts and partial panel replacements are not allowed.

### TEXTURE

The sidewalk surface texture required shall be that achieved by brooming with a stiff or medium-stiff broom. The direction of brooming shall be transverse to the long axis of the sidewalk. All edges except sawed construction joints shall be worked with an edging tool to a 1/4-inch radius.

### FINISHING OPERATIONS

Concrete finishing operations on downtown sidewalks is extremely critical. The contractor must assume the highest level of diligence in performing finishing operations to produce a high quality, durable surface.

Once the concrete has been placed, it shall be immediately struck off using a uniform strike off device free from any defects. During the strike off operation, a minimum of one inch surcharge must be maintained in front of the strike off wheel. The strike off wheel should be used in most instances, used the surface. Immediately following the strike off operation, a magnesium or aluminum bull float should be used to complete the sealing and consolidation of the surface.

This bull floating must be done prior to bleed water coming to the surface. If needed, in the Engineer's judgement, the Engineer will require a ten foot straight edge to be used immediately following the bull floating operation.

Following the imposition of the bleed water and when the fresh concrete will support normal foot pressure with a maximum 118 inch indentation, the wood floating operations should be commenced, followed by the magnesium float, and brooming with a medium stiff, high quality concrete finishing broom.

The acceptable tolerance for the surface of the sidewalk area is 1/8 inch in ten feet as determined by a ten foot straight edge checking the concrete sidewalk or other area in any direction.

### CONTROL JOINTS

Control joints are to be sawed to a minimum depth of 1-inch. Joints shall be sawed as soon as the concrete can withstand traveling. Joints shall be cleaned and sealed immediately following sawing. Proper care must be taken to ensure that these saw joints are uniform and straight. The following guidelines will control the size of the sidewalk pads to govern the sawing.

From 0 to 5 feet wide - no longitudinal joint is required and the transverse joint will be at even intervals equal to the width of the sidewalk.

From 6' to 10' - a centerline longitudinal joint is required. A transverse saw joint is required at the same distance as one-half the width of the sidewalk.

From 10' to 15' and up - the longitudinal joints will be sawed to provide a minimum of 45-inches and a maximum of 5-feet between longitudinal saw joints. The transverse saw joint will be provided to form square sidewalk pads. In addition, whenever poles, fire hydrants, meters, tree grates or other obstacles are encountered, the sawing may need to be altered to control cracking at these obstacles.

### EXPANSION JOINT

Expansion joint shall be 1/2-inch preformed fiber conforming to ASTM D2828 or D1751 of the perforated type so that the upper 1/2-inch can be removed and joint sealant can be placed over the expansion joint for a uniform seal. Expansion joints shall be installed along buildings, at driveways, at ramps, or structures and at intervals not to exceed 75 feet.

### JOINT SEALANT

Joint sealant is required in all control, expansion and construction joints. Joint sealant shall be light gray in color. Joint sealant shall be a one or two component polyurethane polymer sealant or a one or two component polyurethane polypropylene sealant. Hom Densaseal-V or Vulkan Sealant or approved equal. Joint sealant shall be installed in accordance with manufacturer's specifications. A resilient closed cell foam backing rod, either Foam or approved equal, shall be used in all saw joints and placed to a depth equal to the width of the joint.

### SIDEWALK ACCESSIBILITY

Accessible Sidewalk Ramps shall be provided at all intersections. Cross slopes of sidewalks shall not exceed 1:50. The preferred minimum downtown sidewalk width is 10 ft.

### BLOCK OUT FOR TREES

Block outs for tree grates shall be provided in conformance with the approved downtown plan. The configuration of the block out is shown on drawing 1000.09. Tree grates and soil backfill will be provided by the City.

### TREES

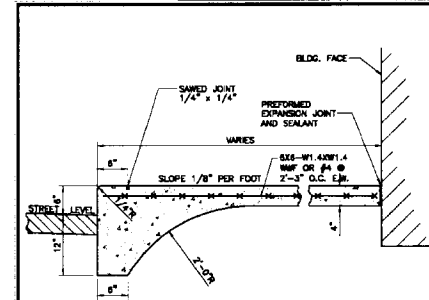
Tree selection shall be in accordance with City Staff recommendations which are based on proven desirable growth characteristics for urban use areas. All tree selections must be approved by the City prior to installation.

### VAULTS

When a sidewalk is constructed over a basement vault, the structural stability of the vault and sidewalk shall be analyzed by an Engineer or Architect.

### AUTHORITY

The Director of Public Works shall have the authority in the interest of safety and maintenance to make technical amendments and modifications to these construction standards and methods during the time these standards are in effect.



### NOTES:

1. SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2.00%.
2. SAW AND PATCH STREET PAVEMENT AS NECESSARY FOR CONSTRUCTION OF NEW CURB.
3. SEE JOINT DETAILS - 1000.03.
4. SEE SPECIFICATIONS - 1000.01B THRU 1000.01D.
5. NO STEEL TO BE PLACED THROUGH EXPANSION JOINT.

DESIGN	DATE	1000.01B
Revisions		
1	10/1/2015	
2	10/1/2015	
3	10/1/2015	
4	10/1/2015	
5	10/1/2015	
6	10/1/2015	
7	10/1/2015	
8	10/1/2015	
9	10/1/2015	
10	10/1/2015	
11	10/1/2015	
12	10/1/2015	
13	10/1/2015	
14	10/1/2015	
15	10/1/2015	
16	10/1/2015	
17	10/1/2015	
18	10/1/2015	
19	10/1/2015	
20	10/1/2015	
21	10/1/2015	
22	10/1/2015	
23	10/1/2015	
24	10/1/2015	
25	10/1/2015	
26	10/1/2015	
27	10/1/2015	
28	10/1/2015	
29	10/1/2015	
30	10/1/2015	
31	10/1/2015	
32	10/1/2015	
33	10/1/2015	
34	10/1/2015	
35	10/1/2015	
36	10/1/2015	
37	10/1/2015	
38	10/1/2015	
39	10/1/2015	
40	10/1/2015	
41	10/1/2015	
42	10/1/2015	
43	10/1/2015	
44	10/1/2015	
45	10/1/2015	
46	10/1/2015	
47	10/1/2015	
48	10/1/2015	
49	10/1/2015	
50	10/1/2015	
51	10/1/2015	
52	10/1/2015	
53	10/1/2015	
54	10/1/2015	
55	10/1/2015	
56	10/1/2015	
57	10/1/2015	
58	10/1/2015	
59	10/1/2015	
60	10/1/2015	
61	10/1/2015	
62	10/1/2015	
63	10/1/2015	
64	10/1/2015	
65	10/1/2015	
66	10/1/2015	
67	10/1/2015	
68	10/1/2015	
69	10/1/2015	
70	10/1/2015	
71	10/1/2015	
72	10/1/2015	
73	10/1/2015	
74	10/1/2015	
75	10/1/2015	
76	10/1/2015	
77	10/1/2015	
78	10/1/2015	
79	10/1/2015	
80	10/1/2015	
81	10/1/2015	
82	10/1/2015	
83	10/1/2015	
84	10/1/2015	
85	10/1/2015	
86	10/1/2015	
87	10/1/2015	
88	10/1/2015	
89	10/1/2015	
90	10/1/2015	
91	10/1/2015	
92	10/1/2015	
93	10/1/2015	
94	10/1/2015	
95	10/1/2015	
96	10/1/2015	
97	10/1/2015	
98	10/1/2015	
99	10/1/2015	
100	10/1/2015	

DESIGN	DATE	1000.03
Revisions		
1	10/1/2015	
2	10/1/2015	
3	10/1/2015	
4	10/1/2015	
5	10/1/2015	
6	10/1/2015	
7	10/1/2015	
8	10/1/2015	
9	10/1/2015	
10	10/1/2015	
11	10/1/2015	
12	10/1/2015	
13	10/1/2015	
14	10/1/2015	
15	10/1/2015	
16	10/1/2015	
17	10/1/2015	
18	10/1/2015	
19	10/1/2015	
20	10/1/2015	
21	10/1/2015	
22	10/1/2015	
23	10/1/2015	
24	10/1/2015	
25	10/1/2015	
26	10/1/2015	
27	10/1/2015	
28	10/1/2015	
29	10/1/2015	
30	10/1/2015	
31	10/1/2015	
32	10/1/2015	
33	10/1/2015	
34	10/1/2015	
35	10/1/2015	
36	10/1/2015	
37	10/1/2015	
38	10/1/2015	
39	10/1/2015	
40	10/1/2015	
41	10/1/2015	
42	10/1/2015	
43	10/1/2015	
44	10/1/2015	
45	10/1/2015	
46	10/1/2015	
47	10/1/2015	
48	10/1/2015	
49	10/1/2015	
50	10/1/2015	
51	10/1/2015	
52	10/1/2015	
53	10/1/2015	
54	10/1/2015	
55	10/1/2015	
56	10/1/2015	
57	10/1/2015	
58	10/1/2015	
59	10/1/2015	
60	10/1/2015	
61	10/1/2015	
62	10/1/2015	
63	10/1/2015	
64	10/1/2015	
65	10/1/2015	
66	10/1/2015	
67	10/1/2015	
68	10/1/2015	
69	10/1/2015	
70	10/1/2015	
71	10/1/2015	
72	10/1/2015	
73	10/1/2015	
74	10/1/2015	
75	10/1/2015	
76	10/1/2015	
77	10/1/2015	
78	10/1/2015	
79	10/1/2015	
80	10/1/2015	
81	10/1/2015	
82	10/1/2015	
83	10/1/2015	
84	10/1/2015	
85	10/1/2015	
86	10/1/2015	
87	10/1/2015	
88	10/1/2015	
89	10/1/2015	
90	10/1/2015	
91	10/1/2015	
92	10/1/2015	
93	10/1/2015	
94	10/1/2015	
95	10/1/2015	
96	10/1/2015	
97	10/1/2015	
98	10/1/2015	
99	10/1/2015	
100	10/1/2015	

**NOTE:**

1. RAMP, LANDINGS AND AREA BETWEEN RAMP'S SHALL BE 4\"/>

**SIDEWALK RAMP**  
**Sidewalk at Back of Curb**  
 (Type A)

1000.06