

# SUBMITTAL



Submittal number	104.0	Date	02/21/2020
Project	TRAILS AT CROWFOOT F1 & 9	6954 N. CROWFOOT VALLEY RD. PARKER, CO 80134	
Project number	201810		
Spec section			
Subsection		Status	Open
Current action	Submitted	Ball in court	
Topic	Concrete Breaks - Shasta Daisy St.		

Submitter	MICHAEL TOMAS SNYDER
Reviewer	
Cc	

Date submitted	02/21/2020	Submission due date	02/21/2020
Released for review	02/21/2020	Review due date	02/28/2020
Date returned		Required on site date	
Date closed			

**Notes**  
Concrete Breaks for storm structures in Shasta Daisy Street from North Pinery Parkway to Bayou Gulch Road



# CTL THOMPSON Compressive Strength of Concrete

INCORPORATED

Test Method: ASTM C 39

Report #: CC-000197

01/17/2020

Report Date: 2/17/2020

Sample: 68230

### Denver

1971 West 12th Avenue  
Denver, CO 80204  
Phone: 303-825-0777  
Fax: 303-825-4252

### Client:

E5X Management  
7353 South Alton Way Suite A-100  
Englewood, CO 80112

### Project:

DN48372.000F-365  
Trails at Crowfoot, Filings 1 and 9  
NE of Pradera Parkway & North Crowfoot Valley...  
Douglas County, CO

### Sample Details

<b>Set #:</b>	193	<b>Technician:</b>	Whitehall, Corey	<b>Batched:</b>	11:59 MST
<b>Specimen Size:</b>	4" X 8"	<b>Cast By:</b>	Whitehall, Corey	<b>Sampled:</b>	13:00 MST
<b>Specimens In Set:</b>	5	<b>Date Cast:</b>	01/17/20	<b>Cast:</b>	13:15 MST
<b>Truck / Ticket #:</b>	1154 / 20238386	<b>Sampled From:</b>	Chute	<b>Truck Empty:</b>	
<b>Contractor:</b>	JBS Pipeline	<b>Placement Method:</b>	Chute	<b>Placement Time:</b>	

### Location

<b>Placement Location:</b>	Manhole
<b>Location Details:</b>	Manhole 110
<b>Sample Location / Notes:</b>	Manhole 110

### Batch Log

<b>Supplier:</b>	Burnco	<b>Mix Design:</b>	45VN21B2C	<b>Strength:</b>	4500 (psi)
<b>Plant:</b>	609				
<b>On-Site Admixtures:</b> 6.00 Gal Water (10 yd <sup>3</sup> )					

### Specifications

### Field Measurements

<b>Weather:</b>		<b>Slump (in):</b>	2	<b>Plastic Unit Weight:</b>	140.8 (lb/ft <sup>3</sup> )
<b>Air Temperature (F):</b>		<b>Concrete Temp (F):</b>	69	<b>Air Content:</b>	7.2
				<b>Load Volume:</b>	10 (yd <sup>3</sup> )

### Lab Test Results

<b>Testing Lab:</b> 22 Lipan, 22 Lipan, Denver, CO, 80223											
Specimen Number	Test Age Days	Test Date	Field / Lab Cure Days	Average Cylinder Diameter (in)	Cylinder Area (in <sup>2</sup> )	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method	
193-1	7 FC	01/24/20	3 / 4	4.00	12.57	43,900	3,490	5		N	
193-2	28 FC	02/14/20	3 / 25	4.00	12.57	61,101	4,860	2	C4	N	
193-3	28 FC	02/14/20	3 / 25	4.00	12.57	62,777	4,990	3	C4	N	
193-4	28 FC	02/14/20	3 / 25	4.00	12.57	60,414	4,810	3	C4	N	
193-5	28 FC	02/14/20	3 / 25	4.00	12.57	65,996	5,250	2	C4	N	

**Test Age Average Strengths (psi):** 7 Day FC - 3490, 28 Day FC - 4980

### Capping Methods

<b>C4:</b> Strength is greater than or equal to f'c.	<b>N:</b> Unbonded Caps (ASTM C1231)
<b>Tested By:</b> Patrick Patterson (1,2,3,4,5)	
<b>Checked In :</b> 01/20/2020 (1,2,3,4,5)	

### General Remarks

Notified contractor of physical property results. Reviewed by PE



TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6



# CTL THOMPSON Compressive Strength of Concrete

INCORPORATED

Test Method: ASTM C 39

Report #: CC-000188

01/10/2020

Report Date: 2/11/2020

Sample: 67955

### Denver

1971 West 12th Avenue  
Denver, CO 80204  
Phone: 303-825-0777  
Fax: 303-825-4252

### Client:

E5X Management  
7353 South Alton Way Suite A-100  
Englewood, CO 80112

### Project:

DN48372.000F-365  
Trails at Crowfoot, Filings 1 and 9  
NE of Pradera Parkway & North Crowfoot Valley...  
Douglas County, CO

### Sample Details

<b>Set #:</b>	183	<b>Technician:</b>	Whitehall, Corey	<b>Batched:</b>	10:40 MST
<b>Specimen Size:</b>	4" X 8"	<b>Cast By:</b>	Whitehall, Corey	<b>Sampled:</b>	11:45 MST
<b>Specimens In Set:</b>	5	<b>Date Cast:</b>	01/10/20	<b>Cast:</b>	12:00 MST
<b>Truck / Ticket #:</b>	1292 / 20236557	<b>Sampled From:</b>	Chute	<b>Truck Empty:</b>	
<b>Contractor:</b>	JBS Pipeline	<b>Placement Method:</b>	Chute	<b>Placement Time:</b>	

### Location

<b>Placement Location:</b>	Manhole
<b>Location Details:</b>	Manhole Base 112 and 113
<b>Sample Location / Notes:</b>	Manhole Base 112 and 113

### Batch Log

<b>Supplier:</b>	Burnco	<b>Mix Design:</b>	45VM21B2C	<b>Strength:</b>	4500 (psi)
<b>Plant:</b>	609				
<b>On-Site Admixtures:</b>	None				

### Specifications

### Field Measurements

<b>Weather:</b>		<b>Slump (in):</b>	1	<b>Plastic Unit Weight:</b>	143.6 (lb/ft <sup>3</sup> )
<b>Air Temperature (F):</b>		<b>Concrete Temp (F):</b>	65	<b>Air Content:</b>	6.0
				<b>Load Volume:</b>	10 (yd <sup>3</sup> )

### Lab Test Results

<b>Testing Lab:</b> 22 Lipan, 22 Lipan, Denver, CO, 80223										
Specimen Number	Test Age Days	Test Date	Field / Lab Cure Days	Average Cylinder Diameter (in)	Cylinder Area (in <sup>2</sup> )	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
183-1	7 FC	01/17/20	4 / 3	4.00	12.57	52,498	4,180	3		N
183-2	28 FC	02/07/20	4 / 24	4.00	12.57	69,186	5,500	3	C4	N
183-3	28 FC	02/07/20	4 / 24	4.00	12.57	71,081	5,660	3	C4	N
183-4	28 FC	02/07/20	4 / 24	4.00	12.57	68,205	5,430	3	C4	N
183-5	28 FC	02/07/20	4 / 24	4.00	12.57	63,207	5,030	5	C4	N

**Test Age Average Strengths (psi):** 7 Day FC - 4180, 28 Day FC - 5400

### Capping Methods

<b>C4:</b> Strength is greater than or equal to f'c.	<b>N:</b> Unbonded Caps (ASTM C1231)
<b>Tested By:</b> Patrick Patterson (1,2,3,4,5)	
<b>Checked In :</b> 01/14/2020 (1,2,3,4,5)	

### General Remarks

Notified contractor of physical property results. Reviewed by PE



TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6



# CTL THOMPSON Compressive Strength of Concrete

INCORPORATED

Test Method: ASTM C 39

Report #: CC-000155

12/06/2019

Report Date: 1/6/2020

Sample: 66748

### Denver

1971 West 12th Avenue  
Denver, CO 80204  
Phone: 303-825-0777  
Fax: 303-825-4252

### Client:

E5X Management  
7353 South Alton Way Suite A-100  
Englewood, CO 80112

### Project:

DN48372.000F-365  
Trails at Crowfoot, Filings 1 and 9  
NE of Pradera Parkway & North Crowfoot Valley...  
Douglas County, CO

### Sample Details

<b>Set #:</b>	151	<b>Technician:</b>	Hansher, Amber	<b>Batched:</b>	10:36 MST
<b>Specimen Size:</b>	4" X 8"	<b>Cast By:</b>	Hansher, Amber	<b>Sampled:</b>	11:45 MST
<b>Specimens In Set:</b>	5	<b>Date Cast:</b>	12/06/19	<b>Cast:</b>	12:00 MST
<b>Truck / Ticket #:</b>	1297 / 20229631	<b>Sampled From:</b>	Chute	<b>Truck Empty:</b>	
<b>Contractor:</b>	JBS Pipeline	<b>Placement Method:</b>	Chute	<b>Placement Time:</b>	

### Location

<b>Placement Location:</b>	Manhole
<b>Location Details:</b>	Manhole base 115
<b>Sample Location / Notes:</b>	Manhole base 115

### Batch Log

<b>Supplier:</b>	Burnco	<b>Mix Design:</b>	45VM21C4C	<b>Strength:</b>	4500 (psi)
<b>Plant:</b>	609				
<b>On-Site Admixtures:</b>	None				

### Specifications

### Field Measurements

<b>Weather:</b>		<b>Slump (in):</b>	3-1/4	<b>Plastic Unit Weight:</b>	139.6 (lb/ft³)
<b>Air Temperature (F):</b>		<b>Concrete Temp (F):</b>	62	<b>Air Content:</b>	6.2
				<b>Load Volume:</b>	5 (yd³)

### Lab Test Results

<b>Testing Lab:</b> 22 Lipan, 22 Lipan, Denver, CO, 80223											
Specimen Number	Test Age Days	Test Date	Field / Lab Cure Days	Average Cylinder Diameter (in)	Cylinder Area (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method	
151-1	7 FC	12/13/19	3 / 4	4.00	12.57	39,880	3,170	5		N	
151-2	28 FC	01/03/20	3 / 25	4.00	12.57	62,615	4,980	5	C4	N	
151-3	28 FC	01/03/20	3 / 25	4.00	12.57	61,441	4,890	5	C4	N	
151-4	28 FC	01/03/20	3 / 25	4.00	12.57	61,426	4,890	3	C4	N	
151-5	28 FC	01/03/20	3 / 25	4.00	12.57	62,172	4,950	3	C4	N	

**Test Age Average Strengths (psi):** 7 Day FC - 3170, 28 Day FC - 4930

### Capping Methods

<b>C4:</b> Strength is greater than or equal to f'c.	<b>N:</b> Unbonded Caps (ASTM C1231)
<b>Tested By:</b> Patrick Patterson (1,2,3,4,5)	
<b>Checked In :</b> 12/09/2019 (1,2,3,4,5)	

### General Remarks

Notified contractor of physical property results. Reviewed by PE



TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6



# CTL THOMPSON Compressive Strength of Concrete

INCORPORATED

Test Method: ASTM C 39

Report #: CC-000152

12/04/2019

Report Date: 1/3/2020

Sample: 66707

### Denver

1971 West 12th Avenue  
Denver, CO 80204  
Phone: 303-825-0777  
Fax: 303-825-4252

### Client:

E5X Management  
7353 South Alton Way Suite A-100  
Englewood, CO 80112

### Project:

DN48372.000F-365  
Trails at Crowfoot, Filings 1 and 9  
NE of Pradera Parkway & North Crowfoot Valley...  
Douglas County, CO

### Sample Details

<b>Set #:</b>	150	<b>Technician:</b>	DeMillion, Dennis	<b>Batched:</b>	12:35 MST
<b>Specimen Size:</b>	4" X 8"	<b>Cast By:</b>	DeMillion, Dennis	<b>Sampled:</b>	14:30 MST
<b>Specimens In Set:</b>	5	<b>Date Cast:</b>	12/04/19	<b>Cast:</b>	14:45 MST
<b>Truck / Ticket #:</b>	9627 / 62292850	<b>Sampled From:</b>	Chute	<b>Truck Empty:</b>	14:30 MST
<b>Contractor:</b>	JBS Pipeline	<b>Placement Method:</b>		<b>Placement Time:</b>	115 (min)

### Location

<b>Placement Location:</b>	Manhole
<b>Location Details:</b>	Manhole 116
<b>Sample Location / Notes:</b>	Manhole 116

### Batch Log

<b>Supplier:</b>	Aggregate Industries-Denver	<b>Mix Design:</b>	7454120	<b>Strength:</b>	4500 (psi)
<b>Plant:</b>	4912			<b>Air:</b>	5.0 - 8.0 (%)
<b>On-Site Admixtures:</b>	None			<b>Slump:</b>	3 - 5 (in)

### Specifications

### Field Measurements

<b>Weather:</b>		<b>Slump (in):</b>	4	<b>Plastic Unit Weight:</b>	138.8 (lb/ft³)
<b>Air Temperature (F):</b>		<b>Concrete Temp (F):</b>	69	<b>Air Content:</b>	6.0
				<b>Load Volume:</b>	5 (yd³)

### Lab Test Results

<b>Testing Lab:</b> 22 Lipan, 22 Lipan, Denver, CO, 80223										
Specimen Number	Test Age Days	Test Date	Field / Lab Cure Days	Average Cylinder Diameter (in)	Cylinder Area (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
150-1	7 FC	12/11/19	2 / 5	4.00	12.57	43,490	3,460	5		N
150-2	28 FC	01/01/20	2 / 26	4.00	12.57	57,739	4,590	3	C4	N
150-3	28 FC	01/01/20	2 / 26	4.00	12.57	62,728	4,990	5	C4	N
150-4	28 FC	01/01/20	2 / 26	4.00	12.57	62,626	4,980	3	C4	N
150-5	28 FC	01/01/20	2 / 26	4.00	12.57	60,902	4,850	2	C4	N

**Test Age Average Strengths (psi):** 7 Day FC - 3460, 28 Day FC - 4850

### Capping Methods

<b>C4:</b> Strength is greater than or equal to f'c.	<b>N:</b> Unbonded Caps (ASTM C1231)
<b>Tested By:</b> Patrick Patterson (1,2,3,4,5)	
<b>Checked In :</b> 12/06/2019 (1,2,3,4,5)	

### General Remarks

**Notified contractor of physical property results. Reviewed by PE**



TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6



# CTL THOMPSON Compressive Strength of Concrete

INCORPORATED

Test Method: ASTM C 39

Report #: CC-000151

12/03/2019

Report Date: 1/3/2020

Sample: 66642

### Denver

1971 West 12th Avenue  
Denver, CO 80204  
Phone: 303-825-0777  
Fax: 303-825-4252

### Client:

E5X Management  
7353 South Alton Way Suite A-100  
Englewood, CO 80112

### Project:

DN48372.000F-365  
Trails at Crowfoot, Filings 1 and 9  
NE of Pradera Parkway & North Crowfoot Valley...  
Douglas County, CO

### Sample Details

<b>Set #:</b>	148	<b>Technician:</b>	Whitehall, Corey	<b>Batched:</b>	07:16 MST
<b>Specimen Size:</b>	4" X 8"	<b>Cast By:</b>	Whitehall, Corey	<b>Sampled:</b>	08:15 MST
<b>Specimens In Set:</b>	5	<b>Date Cast:</b>	12/03/19	<b>Cast:</b>	08:30 MST
<b>Truck / Ticket #:</b>	9253 / 84594811	<b>Sampled From:</b>	Chute	<b>Truck Empty:</b>	
<b>Contractor:</b>	JBS Pipeline	<b>Placement Method:</b>	Bucket	<b>Placement Time:</b>	

### Location

<b>Placement Location:</b>	Manhole
<b>Location Details:</b>	117 and 118
<b>Sample Location / Notes:</b>	117 and 118

### Batch Log

<b>Supplier:</b>	Aggregate Industries-Denver	<b>Mix Design:</b>	7454120	<b>Strength:</b>	4500 (psi)
<b>Plant:</b>	4925				
<b>On-Site Admixtures:</b>	5.00 Gal Water (8 yd <sup>3</sup> )				

### Specifications

### Field Measurements

<b>Weather:</b>		<b>Slump (in):</b>	5	<b>Plastic Unit Weight:</b>	142.0 (lb/ft <sup>3</sup> )
<b>Air Temperature (F):</b>		<b>Concrete Temp (F):</b>	70	<b>Air Content:</b>	6.2
				<b>Load Volume:</b>	8 (yd <sup>3</sup> )

### Lab Test Results

<b>Testing Lab:</b> 22 Lipan, 22 Lipan, Denver, CO, 80223										
Specimen Number	Test Age Days	Test Date	Field / Lab Cure Days	Average Cylinder Diameter (in)	Cylinder Area (in <sup>2</sup> )	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
148-1	8 FC	12/11/19	1 / 7	4.00	12.57	55,871	4,450	3		N
148-2	28 FC	12/31/19	1 / 27	4.00	12.57	70,362	5,600	3	C4	N
148-3	28 FC	12/31/19	1 / 27	4.00	12.57	70,423	5,600	2	C4	N
148-4	28 FC	12/31/19	1 / 27	4.00	12.57	70,574	5,610	4	C4	N
148-5	28 FC	12/31/19	1 / 27	4.00	12.57	71,454	5,680	5	C4	N

**Test Age Average Strengths (psi):** 8 Day FC - 4450, 28 Day FC - 5630

### Capping Methods

<b>C4:</b> Strength is greater than or equal to f'c.	<b>N:</b> Unbonded Caps (ASTM C1231)
<b>Tested By:</b> Patrick Patterson (1,2,3,4,5)	
<b>Checked In :</b> 12/04/2019 (1,2,3,4,5)	

### General Remarks

**Notified contractor of physical property results. Reviewed by PE**



TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6



# CTL THOMPSON Compressive Strength of Concrete

INCORPORATED

Test Method: ASTM C 39

Report #: CC-000147

11/25/2019

Report Date: 12/26/2019

Sample: 66452

### Denver

1971 West 12th Avenue  
Denver, CO 80204  
Phone: 303-825-0777  
Fax: 303-825-4252

### Client:

E5X Management  
7353 South Alton Way Suite A-100  
Englewood, CO 80112

### Project:

DN48372.000F-365  
Trails at Crowfoot, Filings 1 and 9  
NE of Pradera Parkway & North Crowfoot Valley...  
Douglas County, CO

### Sample Details

<b>Set #:</b>	145	<b>Technician:</b>	Whitehall, Corey	<b>Batched:</b>	11:31 MST
<b>Specimen Size:</b>	4" X 8"	<b>Cast By:</b>	Whitehall, Corey	<b>Sampled:</b>	12:40 MST
<b>Specimens In Set:</b>	5	<b>Date Cast:</b>	11/25/19	<b>Cast:</b>	12:55 MST
<b>Truck / Ticket #:</b>	9627 / 62292703	<b>Sampled From:</b>	Chute	<b>Truck Empty:</b>	
<b>Contractor:</b>	JBS Pipeline	<b>Placement Method:</b>	Bucket	<b>Placement Time:</b>	

### Location

<b>Placement Location:</b>	Manhole
<b>Location Details:</b>	Manhole base 119
<b>Sample Location / Notes:</b>	Manhole base 119

### Batch Log

<b>Supplier:</b>	Aggregate Industries-Denver	<b>Mix Design:</b>	7454120	<b>Strength:</b>	4500 (psi)
<b>Plant:</b>	4912				
<b>On-Site Admixtures:</b>	10.00 Gal Water (9 yd <sup>3</sup> ), 0.50 Bag AEA-Air Entraining Admixture (9 yd <sup>3</sup> )				

### Specifications

### Field Measurements

<b>Weather:</b>		<b>Slump (in):</b>	2	<b>Plastic Unit Weight:</b>	142.0 (lb/ft <sup>3</sup> )
<b>Air Temperature (F):</b>		<b>Concrete Temp (F):</b>	77	<b>Air Content:</b>	5.5
				<b>Load Volume:</b>	9.5 (yd <sup>3</sup> )

### Lab Test Results

<b>Testing Lab:</b> 22 Lipan, 22 Lipan, Denver, CO, 80223										
Specimen Number	Test Age Days	Test Date	Field / Lab Cure Days	Average Cylinder Diameter (in)	Cylinder Area (in <sup>2</sup> )	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
145-1	7 FC	12/02/19	2 / 5	4.00	12.57	53,440	4,250	2		N
145-2	28 FC	12/23/19	2 / 26	4.00	12.57	68,121	5,420	5	C4	N
145-3	28 FC	12/23/19	2 / 26	4.00	12.57	67,705	5,390	5	C4	N
145-4	28 FC	12/23/19	2 / 26	4.00	12.57	68,776	5,470	5	C4	N
145-5	28 FC	12/23/19	2 / 26	4.00	12.57	71,876	5,720	5	C4	N

**Test Age Average Strengths (psi):** 7 Day FC - 4250, 28 Day FC - 5500

### Capping Methods

<b>C4:</b> Strength is greater than or equal to f'c.	<b>N:</b> Unbonded Caps (ASTM C1231)
<b>Tested By:</b> Patrick Patterson (1,2,3,4,5)	
<b>Checked In :</b> 11/27/2019 (1,2,3,4,5)	

### General Remarks

**Notified contractor of physical property results. Reviewed by PE**



TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6



# CTL THOMPSON Compressive Strength of Concrete

INCORPORATED

Test Method: ASTM C 39

Report #: CC-000124

11/05/2019

Report Date: 12/6/2019

Sample: 65551

### Denver

1971 West 12th Avenue  
Denver, CO 80204  
Phone: 303-825-0777  
Fax: 303-825-4252

### Client:

E5X Management  
7353 South Alton Way Suite A-100  
Englewood, CO 80112

### Project:

DN48372.000F-365  
Trails at Crowfoot, Filings 1 and 9  
NE of Pradera Parkway & North Crowfoot Valley...  
Douglas County, CO

### Sample Details

<b>Set #:</b>	126	<b>Technician:</b>	Graham, Jeremy	<b>Batched:</b>	14:08 MST
<b>Specimen Size:</b>	4" X 8"	<b>Cast By:</b>	Graham, Jeremy	<b>Sampled:</b>	15:10 MST
<b>Specimens In Set:</b>	5	<b>Date Cast:</b>	11/05/19	<b>Cast:</b>	15:25 MST
<b>Truck / Ticket #:</b>	9619 / 84594156	<b>Sampled From:</b>	Chute	<b>Truck Empty:</b>	
<b>Contractor:</b>		<b>Placement Method:</b>	Chute	<b>Placement Time:</b>	

### Location

<b>Placement Location:</b>	Inlet Wall <b>18</b>
<b>Location Details:</b>	6954 Crowfoot Valley Road
<b>Sample Location / Notes:</b>	SW corner of Shasta Daisy St and N Pinery Pkwy

### Batch Log

<b>Supplier:</b>	Aggregate Industries- Denver	<b>Mix Design:</b>	9456623.	<b>Strength:</b>	4500 (psi)
<b>Plant:</b>	4925			<b>Air:</b>	5.0 - 8.0 (%)
<b>On-Site Admixtures:</b>	6.00 Gal Water			<b>Slump:</b>	3 - 5 (in)

### Specifications

### Field Measurements

<b>Weather:</b>		<b>Slump (in):</b>	4	<b>Plastic Unit Weight:</b>	141.6 (lb/ft³)
<b>Air Temperature (F):</b>		<b>Concrete Temp (F):</b>	65	<b>Air Content:</b>	6.4
				<b>Load Volume:</b>	10.5 (yd³)

### Lab Test Results

<b>Testing Lab:</b> 22 Lipan, 22 Lipan, Denver, CO, 80223										
Specimen Number	Test Age Days	Test Date	Field / Lab Cure Days	Average Cylinder Diameter (in)	Cylinder Area (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
126-1	7 FC	11/12/19	4 / 3	4.00	12.57	51,905	4,130	2		N
126-2	28 FC	12/03/19	4 / 24	4.00	12.57	74,054	5,890	5	C4	N
126-3	28 FC	12/03/19	4 / 24	4.00	12.57	71,383	5,680	5	C4	N
126-4	28 FC	12/03/19	4 / 24	4.00	12.57	73,305	5,830	3	C4	N
126-5	28 FC	12/03/19	4 / 24	4.00	12.57	72,359	5,760	5	C4	N

**Test Age Average Strengths (psi):** 7 Day FC - 4130, 28 Day FC - 5790

### Capping Methods

<b>C4:</b> Strength is greater than or equal to f'c.	<b>N:</b> Unbonded Caps (ASTM C1231)
<b>Tested By:</b> Patrick Patterson (1,2,3,4,5)	
<b>Checked In :</b> 11/09/2019 (1,2,3,4,5)	

### General Remarks

**Notified contractor of physical property results. Reviewed by PE**



TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6



# CTL THOMPSON Compressive Strength of Concrete

INCORPORATED

Test Method: ASTM C 39

Report #: CC-000146

11/20/2019

Report Date: 12/26/2019

Sample: 66325

### Denver

1971 West 12th Avenue  
Denver, CO 80204  
Phone: 303-825-0777  
Fax: 303-825-4252

### Client:

E5X Management  
7353 South Alton Way Suite A-100  
Englewood, CO 80112

### Project:

DN48372.000F-365  
Trails at Crowfoot, Filings 1 and 9  
NE of Pradera Parkway & North Crowfoot Valley...  
Douglas County, CO

### Sample Details

<b>Set #:</b>	141	<b>Technician:</b>	Whitehall, Corey	<b>Batched:</b>	13:46 MST
<b>Specimen Size:</b>	4" X 8"	<b>Cast By:</b>	Whitehall, Corey	<b>Sampled:</b>	14:45 MST
<b>Specimens In Set:</b>	5	<b>Date Cast:</b>	11/20/19	<b>Cast:</b>	15:00 MST
<b>Truck / Ticket #:</b>	9261 / 84594682	<b>Sampled From:</b>	Chute	<b>Truck Empty:</b>	
<b>Contractor:</b>	Thout Brothers	<b>Placement Method:</b>	Chute	<b>Placement Time:</b>	

### Location

**Placement Location:** Inlet Wall  
**Location Details:** Inlets 27 and 28  
**Sample Location / Notes:** Inlets 27 and 28

### Batch Log

**Supplier:** Aggregate Industries-Denver  
**Plant:** 4912  
**On-Site Admixtures:** 15.00 Gal Water (8 yd<sup>3</sup>)

**Mix Design:** 9456623

### Specifications

**Strength:** 4500 (psi)

### Field Measurements

<b>Weather:</b>	<b>Slump (in):</b> 4-1/4	<b>Plastic Unit Weight:</b> 138.8 (lb/ft <sup>3</sup> )
<b>Air Temperature (F):</b>	<b>Concrete Temp (F):</b> 68	<b>Air Content:</b> 7.8
		<b>Load Volume:</b> 8 (yd <sup>3</sup> )

### Lab Test Results

Testing Lab: 22 Lipan, 22 Lipan, Denver, CO, 80223

Specimen Number	Test Age Days	Test Date	Field / Lab Cure Days	Average Cylinder Diameter (in)	Cylinder Area (in <sup>2</sup> )	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
141-1	7 FC	11/27/19	2 / 5	4.00	12.57	46,348	3,690	3		N
141-2	28 FC	12/18/19	2 / 26	4.00	12.57	59,728	4,750	2	C4	N
141-3	28 FC	12/18/19	2 / 26	4.00	12.57	64,146	5,100	3	C4	N
141-4	28 FC	12/18/19	2 / 26	4.00	12.57	54,385	4,330	5	C2	N
141-5	28 FC	12/18/19	2 / 26	4.00	12.57	56,462	4,490	5	C4	N

Test Age Average Strengths (psi): 7 Day FC - 3690, 28 Day FC - 4670

### Capping Methods

**C4:** Strength is greater than or equal to f'c.  
**C2:** Strength is less than f'c. One cylinder will be held to break at 56 days.  
**Tested By:** Patrick Patterson (1,2,3,4,5)  
**Checked In :** 11/22/2019 (1,2,3,4,5)

**N:** Unbonded Caps (ASTM C1231)

### General Remarks

Notified contractor of physical property results. Reviewed by PE



TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6



# CTL THOMPSON Compressive Strength of Concrete

INCORPORATED

Test Method: ASTM C 39

Report #: CC-000186

01/09/2020

Report Date: 2/11/2020

Sample: 67953

### Denver

1971 West 12th Avenue  
Denver, CO 80204  
Phone: 303-825-0777  
Fax: 303-825-4252

### Client:

E5X Management  
7353 South Alton Way Suite A-100  
Englewood, CO 80112

### Project:

DN48372.000F-365  
Trails at Crowfoot, Filings 1 and 9  
NE of Pradera Parkway & North Crowfoot Valley...  
Douglas County, CO

### Sample Details

<b>Set #:</b>	181	<b>Technician:</b>	Whitehall, Corey	<b>Batched:</b>	13:37 MST
<b>Specimen Size:</b>	4" X 8"	<b>Cast By:</b>	Whitehall, Corey	<b>Sampled:</b>	14:35 MST
<b>Specimens In Set:</b>	5	<b>Date Cast:</b>	01/09/20	<b>Cast:</b>	14:50 MST
<b>Truck / Ticket #:</b>	695 / 84595546	<b>Sampled From:</b>	Chute	<b>Truck Empty:</b>	
<b>Contractor:</b>	MLL, Inc	<b>Placement Method:</b>	Chute	<b>Placement Time:</b>	

### Location

<b>Placement Location:</b>	Inlet Wall
<b>Location Details:</b>	Inlet 81
<b>Sample Location / Notes:</b>	Inlet 81

### Batch Log

<b>Supplier:</b>	Aggregate Industries-Denver	<b>Mix Design:</b>	9456623	<b>Strength:</b>	4500 (psi)
<b>Plant:</b>	4925				
<b>On-Site Admixtures:</b>	None				

### Specifications

### Field Measurements

<b>Weather:</b>		<b>Slump (in):</b>	3	<b>Plastic Unit Weight:</b>	139.2 (lb/ft³)
<b>Air Temperature (F):</b>		<b>Concrete Temp (F):</b>	69	<b>Air Content:</b>	7.5
				<b>Load Volume:</b>	6.5 (yd³)

### Lab Test Results

<b>Testing Lab:</b> 22 Lipan, 22 Lipan, Denver, CO, 80223										
Specimen Number	Test Age Days	Test Date	Field / Lab Cure Days	Average Cylinder Diameter (in)	Cylinder Area (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
181-1	7 FC	01/16/20	5 / 2	4.00	12.57	55,885	4,450	2		N
181-2	28 FC	02/06/20	5 / 23	4.00	12.57	71,040	5,650	5	C4	N
181-3	28 FC	02/06/20	5 / 23	4.00	12.57	67,790	5,390	2	C4	N
181-4	28 FC	02/06/20	5 / 23	4.00	12.57	69,900	5,560	5	C4	N
181-5	28 FC	02/06/20	5 / 23	4.00	12.57	72,200	5,740	5	C4	N

**Test Age Average Strengths (psi):** 7 Day FC - 4450, 28 Day FC - 5590

### Capping Methods

<b>C4:</b> Strength is greater than or equal to f'c.	<b>N:</b> Unbonded Caps (ASTM C1231)
<b>Tested By:</b> Danielle Kupper (1), Patrick Patterson (2,3,4,5)	
<b>Checked In :</b> 01/14/2020 (1,2,3,4,5)	

### General Remarks

**Notified contractor of physical property results. Reviewed by PE**



TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6



# CTL THOMPSON Compressive Strength of Concrete

INCORPORATED

Test Method: ASTM C 39

Report #: CC-000189

01/10/2020

Report Date: 2/11/2020

Sample: 67956

### Denver

1971 West 12th Avenue  
Denver, CO 80204  
Phone: 303-825-0777  
Fax: 303-825-4252

### Client:

E5X Management  
7353 South Alton Way Suite A-100  
Englewood, CO 80112

### Project:

DN48372.000F-365  
Trails at Crowfoot, Filings 1 and 9  
NE of Pradera Parkway & North Crowfoot Valley...  
Douglas County, CO

### Sample Details

<b>Set #:</b>	184	<b>Technician:</b>	Whitehall, Corey	<b>Batched:</b>	13:21 MST
<b>Specimen Size:</b>	4" X 8"	<b>Cast By:</b>	Whitehall, Corey	<b>Sampled:</b>	14:40 MST
<b>Specimens In Set:</b>	5	<b>Date Cast:</b>	01/10/20	<b>Cast:</b>	14:55 MST
<b>Truck / Ticket #:</b>	9253 / 84595556	<b>Sampled From:</b>	Chute	<b>Truck Empty:</b>	
<b>Contractor:</b>	MLL, Inc	<b>Placement Method:</b>	Chute	<b>Placement Time:</b>	

### Location

<b>Placement Location:</b>	Inlet Wall
<b>Location Details:</b>	Inlet 82
<b>Sample Location / Notes:</b>	Inlet 82

### Batch Log

<b>Supplier:</b>	Aggregate Industries-Denver	<b>Mix Design:</b>	9456623	<b>Strength:</b>	4500 (psi)
<b>Plant:</b>	4925				
<b>On-Site Admixtures:</b>	None				

### Specifications

### Field Measurements

<b>Weather:</b>		<b>Slump (in):</b>	4	<b>Plastic Unit Weight:</b>	140.4 (lb/ft³)
<b>Air Temperature (F):</b>		<b>Concrete Temp (F):</b>	60	<b>Air Content:</b>	7.0
				<b>Load Volume:</b>	2.5 (yd³)

### Lab Test Results

<b>Testing Lab:</b> 22 Lipan, 22 Lipan, Denver, CO, 80223										
Specimen Number	Test Age Days	Test Date	Field / Lab Cure Days	Average Cylinder Diameter (in)	Cylinder Area (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
184-1	7 FC	01/17/20	4 / 3	4.00	12.57	55,647	4,430	5		N
184-2	28 FC	02/07/20	4 / 24	4.00	12.57	64,753	5,150	5	C4	N
184-3	28 FC	02/07/20	4 / 24	4.00	12.57	68,346	5,440	5	C4	N
184-4	28 FC	02/07/20	4 / 24	4.00	12.57	67,702	5,390	3	C4	N
184-5	28 FC	02/07/20	4 / 24	4.00	12.57	68,523	5,450	3	C4	N

**Test Age Average Strengths (psi):** 7 Day FC - 4430, 28 Day FC - 5360

### Capping Methods

<b>C4:</b> Strength is greater than or equal to f'c.	<b>N:</b> Unbonded Caps (ASTM C1231)
<b>Tested By:</b> Patrick Patterson (1,2,3,4,5)	
<b>Checked In :</b> 01/14/2020 (1,2,3,4,5)	

### General Remarks

**Notified contractor of physical property results. Reviewed by PE**



TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6



# CTL THOMPSON Compressive Strength of Concrete

INCORPORATED

Test Method: ASTM C 39

Report #: CC-000194

01/15/2020

Report Date: 2/17/2020

Sample: 68098

### Denver

1971 West 12th Avenue  
Denver, CO 80204  
Phone: 303-825-0777  
Fax: 303-825-4252

### Client:

E5X Management  
7353 South Alton Way Suite A-100  
Englewood, CO 80112

### Project:

DN48372.000F-365  
Trails at Crowfoot, Filings 1 and 9  
NE of Pradera Parkway & North Crowfoot Valley...  
Douglas County, CO

### Sample Details

<b>Set #:</b>	189	<b>Technician:</b>	Whitehall, Corey	<b>Batched:</b>	09:18 MST
<b>Specimen Size:</b>	4" X 8"	<b>Cast By:</b>	Whitehall, Corey	<b>Sampled:</b>	10:46 MST
<b>Specimens In Set:</b>	5	<b>Date Cast:</b>	01/15/20	<b>Cast:</b>	11:00 MST
<b>Truck / Ticket #:</b>	9627 / 62294061	<b>Sampled From:</b>	Chute	<b>Truck Empty:</b>	
<b>Contractor:</b>	MLL, Inc	<b>Placement Method:</b>	Chute	<b>Placement Time:</b>	

### Location

<b>Placement Location:</b>	Trickle Channel
<b>Location Details:</b>	Pond A approx 925' E of box culvert
<b>Sample Location / Notes:</b>	Pond A approx 925' E of box culvert <b>Poured Same Day as SDIN 83</b>

### Batch Log

<b>Supplier:</b>	Aggregate Industries-Denver	<b>Mix Design:</b>	9456623
<b>Plant:</b>	4912		
<b>On-Site Admixtures:</b>	None		

### Specifications

<b>Strength:</b>	4500 (psi)
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### Field Measurements

<b>Weather:</b>		<b>Slump (in):</b>	3-1/4	<b>Plastic Unit Weight:</b>	140.8 (lb/ft³)
<b>Air Temperature (F):</b>		<b>Concrete Temp (F):</b>	60	<b>Air Content:</b>	6.9
				<b>Load Volume:</b>	10 (yd³)

### Lab Test Results

<b>Testing Lab:</b> 22 Lipan, 22 Lipan, Denver, CO, 80223										
Specimen Number	Test Age Days	Test Date	Field / Lab Cure Days	Average Cylinder Diameter (in)	Cylinder Area (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
189-1	7 FC	01/22/20	3 / 4	4.00	12.57	45,581	3,630	2		N
189-2	28 FC	02/12/20	3 / 25	4.00	12.57	60,462	4,810	5	C4	N
189-3	28 FC	02/12/20	3 / 25	4.00	12.57	63,711	5,070	3	C4	N
189-4	28 FC	02/12/20	3 / 25	4.00	12.57	59,902	4,770	5	C4	N
189-5	28 FC	02/12/20	3 / 25	4.00	12.57	58,829	4,680	5	C4	N

**Test Age Average Strengths (psi):** 7 Day FC - 3630, 28 Day FC - 4830

### Capping Methods

<b>C4:</b> Strength is greater than or equal to f'c.	<b>N:</b> Unbonded Caps (ASTM C1231)
<b>Tested By:</b> Patrick Patterson (1,2,3,4,5)	
<b>Checked In :</b> 01/18/2020 (1,2,3,4,5)	

### General Remarks

**Notified contractor of physical property results. Reviewed by PE**



TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6