

SUBMITTAL



Submittal number	103.0	Date	02/19/2020
Project	TRAILS AT CROWFOOT F1 & 9	6954 N. CROWFOOT VALLEY RD. PARKER, CO 80134	
Project number	201810		
Spec section			
Subsection		Status	Open
Current action	Not yet submitted	Ball in court	
Topic	Concrete Breaks - Rose Mallow Ave North		

Submitter	
Reviewer	
Cc	

Date submitted	02/19/2020	Submission due date	02/19/2020
Released for review	02/19/2020	Review due date	02/26/2020
Date returned		Required on site date	
Date closed			

Notes
Concrete Breaks for storm structures in Rose Mallow Ave from North Pinery Parkway to Rose Mallow Way



CTL THOMPSON Compressive Strength of Concrete

INCORPORATED

Test Method: ASTM C 39

Report #: CC-000042

08/19/2019

Report Date: 9/23/2019

Sample: 61449

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

Set #:	43	Technician:	Frye, Craig	Batched:	08:04 MDT
Specimen Size:	4" X 8"	Cast By:	Frye, Craig	Sampled:	09:10 MDT
Specimens In Set:	5	Date Cast:	08/19/19	Cast:	09:25 MDT
Truck / Ticket #:	1293 / 20205037	Sampled From:	Chute	Truck Empty:	
Contractor:	JBS	Placement Method:	Chute	Placement Time:	

Location

Placement Location:	Manhole
Location Details:	Base/SDMH-21
Sample Location / Notes:	SDMH-21

Batch Log

Supplier:	Bestway Concrete	Mix Design:	45VM21B2C	Strength:	4500 (psi)
Plant:	609			Air:	5.0 - 8.0 (%)
On-Site Admixtures:	None			Slump:	1 - 3 (in)

Specifications

Field Measurements

Weather:		Slump (in):	2	Plastic Unit Weight:	144.4 (lb/ft³)
Air Temperature (F):		Concrete Temp (F):	79	Air Content:	5.5
				Load Volume:	8 (yd³)

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 (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
43-1	7 FC	08/26/19	2 / 5	4.00	12.57	52,984	4,220	5		N
43-2	28 FC	09/16/19	2 / 26	4.00	12.57	69,010	5,490	3	C4	N
43-3	28 FC	09/16/19	2 / 26	4.00	12.57	71,090	5,660	2	C4	N
43-4	28 FC	09/16/19	2 / 26	4.00	12.57	69,540	5,530	2	C4	N
43-5	28 FC	09/16/19	2 / 26	4.00	12.57	69,090	5,500	5	C4	N

Test Age Average Strengths (psi): 7 Day FC - 4220, 28 Day FC - 5540

Capping Methods

C4: Strength is greater than or equal to f'c.	N: Unbonded Caps (ASTM C1231)
Tested By: Patrick Patterson (1,2,3,4,5)	
Checked In : 08/21/2019 (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-000116

10/18/2019

Report Date: 11/20/2019

Sample: 64816

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

Set #:	118	Technician:	Anderson, Richard	Batched:	
Specimen Size:	4" X 8"	Cast By:	Anderson, Richard	Sampled:	08:55 MDT
Specimens In Set:	5	Date Cast:	10/18/19	Cast:	09:10 MDT
Truck / Ticket #:	1154 / 20219847	Sampled From:	Chute	Truck Empty:	
Contractor:	JBS	Placement Method:	Chute	Placement Time:	

Location

Placement Location:	Manhole
Location Details:	MH 124
Sample Location / Notes:	MH 124 SDMH 29, SDMH 125 poured same day

Batch Log

Supplier:	Burnco	Mix Design:	45VM21B2C
Plant:	609		
On-Site Admixtures:	None		

Specifications

Strength:	4500 (psi)
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Field Measurements

Weather:		Slump (in):	1	Plastic Unit Weight:	143.3 (lb/ft³)
Air Temperature (F):		Concrete Temp (F):	68	Air Content:	6.0
				Load Volume:	10 (yd³)

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 (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
118-1	7 FC	10/25/19	5 / 2	4.00	12.57	40,810	3,250	5		N
118-2	28 FC	11/15/19	5 / 23	4.00	12.57	67,331	5,360	3	C4	N
118-3	28 FC	11/15/19	5 / 23	4.00	12.57	64,338	5,120	3	C4	N
118-4	28 FC	11/15/19	5 / 23	4.00	12.57	62,325	4,960	3	C4	N
118-5	28 FC	11/15/19	5 / 23	4.00	12.57	61,743	4,910	2	C4	N

Test Age Average Strengths (psi): 7 Day FC - 3250, 28 Day FC - 5090

Capping Methods

C4: Strength is greater than or equal to f'c.	N: Unbonded Caps (ASTM C1231)
Tested By: Patrick Patterson (1,2,3,4,5)	
Checked In : 10/23/2019 (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-000159

12/11/2019

Report Date: 1/13/2020

Sample: 66987

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

Set #:	156	Technician:	Whitehall, Corey	Batched:	12:02 MST
Specimen Size:	4" X 8"	Cast By:	Whitehall, Corey	Sampled:	13:15 MST
Specimens In Set:	5	Date Cast:	12/11/19	Cast:	13:30 MST
Truck / Ticket #:	1154 / 20230680	Sampled From:	Chute	Truck Empty:	
Contractor:	JBS Pipeline	Placement Method:	Bucket	Placement Time:	

Location

Placement Location:	Manhole
Location Details:	Manhole base 30
Sample Location / Notes:	Manhole base 30

Batch Log

Supplier:	Bestway Concrete	Mix Design:	45VM21B2C	Strength:	4500 (psi)
Plant:	609				
On-Site Admixtures:	10.00 Gal Water (10 yd ³)				

Specifications

Field Measurements

Weather:		Slump (in):	1-1/2	Plastic Unit Weight:	139.6 (lb/ft ³)
Air Temperature (F):		Concrete Temp (F):	70	Air Content:	7.8
				Load Volume:	10 (yd ³)

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 ²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
156-1	7 FC	12/18/19	5 / 2	4.00	12.57	39,999	3,180	5		N
156-2	28 FC	01/08/20	5 / 23	4.00	12.57	55,989	4,450	2	C2	N
156-3	28 FC	01/08/20	5 / 23	4.00	12.57	56,276	4,480	5	C2	N
156-4	28 FC	01/08/20	5 / 23	4.00	12.57	57,967	4,610	5	C4	N

Test Age Average Strengths (psi): 7 Day FC - 3180, 28 Day FC - 4510

Capping Methods

C2: Strength is less than f'c. One cylinder will be held to break at 56 days.	N: Unbonded Caps (ASTM C1231)
C4: Strength is greater than or equal to f'c.	
Tested By: Patrick Patterson (1,2,3,4)	
Checked In : 12/16/2019 (1,2,3,4)	

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-000178

01/06/2020

Report Date: 2/5/2020

Sample: 67775

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

Set #:	173	Technician:	Whitehall, Corey	Batched:	11:57 MST
Specimen Size:	4" X 8"	Cast By:	Whitehall, Corey	Sampled:	13:20 MST
Specimens In Set:	5	Date Cast:	01/06/20	Cast:	13:35 MST
Truck / Ticket #:	1292 / 20235291	Sampled From:	Chute	Truck Empty:	
Contractor:	JBS Pipeline	Placement Method:	Chute	Placement Time:	

Location

Placement Location:	Manhole
Location Details:	Base, Manhole 4
Sample Location / Notes:	Manhole 4 SDMH 31 Poured Same Day

Batch Log

Supplier:	Burnco	Mix Design:	45VM218B2C	Strength:	4500 (psi)
Plant:	609				
On-Site Admixtures:	None				

Specifications

Field Measurements

Weather:		Slump (in):	1	Plastic Unit Weight:	144.0 (lb/ft³)
Air Temperature (F):		Concrete Temp (F):	70	Air Content:	5.2
				Load Volume:	8 (yd³)

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 (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method	
173-1	7 FC	01/13/20	2 / 5	4.00	12.57	53,688	4,270	2		N	
173-2	28 FC	02/03/20	2 / 26	4.00	12.57	60,450	4,810	3	C4	N	
173-3	28 FC	02/03/20	2 / 26	4.00	12.57	69,556	5,530	3	C4	N	
173-4	28 FC	02/03/20	2 / 26	4.00	12.57	68,028	5,410	5	C4	N	
173-5	28 FC	02/03/20	2 / 26	4.00	12.57	70,091	5,580	5	C4	N	

Test Age Average Strengths (psi): 7 Day FC - 4270, 28 Day FC - 5330

Capping Methods

C4: Strength is greater than or equal to f'c.	N: Unbonded Caps (ASTM C1231)
Tested By: Patrick Patterson (1,2,3,4,5)	
Checked In : 01/08/2020 (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-000176

01/03/2020

Report Date: 2/5/2020

Sample: 67674

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

Set #:	171	Technician:	Marchese, John	Batched:	10:03 MST
Specimen Size:	4" X 8"	Cast By:	Marchese, John	Sampled:	11:40 MST
Specimens In Set:	5	Date Cast:	01/03/20	Cast:	11:55 MST
Truck / Ticket #:	1288 / 20234906	Sampled From:	Chute	Truck Empty:	
Contractor:	JBS Pipeline	Placement Method:	Chute	Placement Time:	

Location

Placement Location:	Manhole
Location Details:	MH 122
Sample Location / Notes:	MH 122

Batch Log

Supplier:	Burnco	Mix Design:	45VM21B2C	Strength:	4500 (psi)
Plant:	609				
On-Site Admixtures: 10.00 Gal Water (5 yd ³), 15.00 Gal Water (9.5 yd ³)					

Specifications

Field Measurements

Weather:		Slump (in):	2	Plastic Unit Weight:	142.5 (lb/ft ³)
Air Temperature (F):		Concrete Temp (F):	65	Air Content:	5.0
				Load Volume:	10 (yd ³)

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 ²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method	
171-1	7 FC	01/10/20	3 / 4	4.00	12.57	47,576	3,790	5		N	
171-2	28 FC	01/31/20	3 / 25	4.00	12.57	61,369	4,880	5	C4	N	
171-3	28 FC	01/31/20	3 / 25	4.00	12.57	63,619	5,060	3	C4	N	
171-4	28 FC	01/31/20	3 / 25	4.00	12.57	61,255	4,870	5	C4	N	
171-5	28 FC	01/31/20	3 / 25	4.00	12.57	65,706	5,230	3	C4	N	

Test Age Average Strengths (psi): 7 Day FC - 3790, 28 Day FC - 5010

Capping Methods

C4: Strength is greater than or equal to f'c.	N: Unbonded Caps (ASTM C1231)
Tested By: Patrick Patterson (1,2,3,4,5)	
Checked In : 01/06/2020 (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-000175

12/10/2019

Report Date: 2/5/2020

Sample: 66985

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

Set #:	154	Technician:	Whitehall, Corey	Batched:	12:15 MST
Specimen Size:	4" X 8"	Cast By:	Whitehall, Corey	Sampled:	13:20 MST
Specimens In Set:	5	Date Cast:	12/10/19	Cast:	13:35 MST
Truck / Ticket #:	1187 / 20230353	Sampled From:	Chute	Truck Empty:	
Contractor:	JBS Pipeline	Placement Method:	Chute	Placement Time:	

Location

Placement Location:	Manhole
Location Details:	Manhole base 123
Sample Location / Notes:	Manhole base 123

Batch Log

Supplier:	Bestway Concrete	Mix Design:	45VM21B2C	Strength:	4500 (psi)
Plant:	609				
On-Site Admixtures:	None				

Specifications

Field Measurements

Weather:		Slump (in):	2-1/2	Plastic Unit Weight:	138.4 (lb/ft³)
Air Temperature (F):		Concrete Temp (F):	68	Air Content:	8.0
				Load Volume:	10 (yd³)

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 (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
154-1	7 FC	12/17/19	2 / 5	4.00	12.57	38,230	3,040	2	C1	N
154-2	28 FC	01/07/20	2 / 26	4.00	12.57	56,303	4,480	2	C2	N
154-3	28 FC	01/07/20	2 / 26	4.00	12.57	55,758	4,440	2	C2	N
154-4	28 FC	01/07/20	2 / 26	4.00	12.57	55,899	4,450	5	C2	N
154-5	56 FC	02/04/20	2 / 54	4.00	12.57	56,623	4,510	3	C4	N

Test Age Average Strengths (psi): 7 Day FC - 3040, 28 Day FC - 4450, 56 Day FC - 4510

Capping Methods

C1: Strength is less than 70 percent of f'c.	N: Unbonded Caps (ASTM C1231)
C2: Strength is less than f'c. One cylinder will be held to break at 56 days.	
C4: Strength is greater than or equal to f'c.	
Tested By: Patrick Patterson (1,2,3,4,5)	
Checked In : 12/12/2019 (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-000125

11/06/2019

Report Date: 12/6/2019

Sample: 65431

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

Set #:	123	Technician:	Gale, Andrew	Batched:	02:13 MST
Specimen Size:	4" X 8"	Cast By:	Gale, Andrew	Sampled:	02:56 MST
Specimens In Set:	5	Date Cast:	11/06/19	Cast:	03:11 MST
Truck / Ticket #:	9226 / 84594185	Sampled From:	Chute	Truck Empty:	
Contractor:	MLL	Placement Method:	Chute	Placement Time:	

Location

Placement Location:	Inlet Base
Location Details:	Inlets 107 and 20
Sample Location / Notes:	Inlets 107 and 20

Batch Log

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

Specifications

Field Measurements

Weather:		Slump (in):	5	Plastic Unit Weight:	137.9 (lb/ft³)
Air Temperature (F):		Concrete Temp (F):	73	Air Content:	5.9
				Load Volume:	6.5 (yd³)

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 (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
123-1	7 FC	11/13/19	2 / 5	4.00	12.57	52,706	4,190	2		N
123-2	28 FC	12/04/19	2 / 26	4.00	12.57	67,555	5,370	2	C4	N
123-3	28 FC	12/04/19	2 / 26	4.00	12.57	63,268	5,030	5	C4	N
123-4	28 FC	12/04/19	2 / 26	4.00	12.57	63,855	5,080	2	C4	N
123-5	28 FC	12/04/19	2 / 26	4.00	12.57	62,339	4,960	5	C4	N

Test Age Average Strengths (psi): 7 Day FC - 4190, 28 Day FC - 5110

Capping Methods

C4: Strength is greater than or equal to f'c.	N: Unbonded Caps (ASTM C1231)
Tested By: Patrick Patterson (1,2,3,4,5)	
Checked In : 11/08/2019 (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-000132

11/12/2019

Report Date: 12/12/2019

Sample: 66028

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

Set #:	130	Technician:	Whitehall, Corey	Batched:	14:14 MST
Specimen Size:	4" X 8"	Cast By:	Whitehall, Corey	Sampled:	15:10 MST
Specimens In Set:	5	Date Cast:	11/12/19	Cast:	15:25 MST
Truck / Ticket #:	9252 / 84594362	Sampled From:	Chute	Truck Empty:	
Contractor:	MML	Placement Method:		Placement Time:	

Location

Placement Location:	Inlet Wall
Location Details:	Inlet 15
Sample Location / Notes:	Inlet 15

Batch Log

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

Specifications

Field Measurements

Weather:		Slump (in):	4-1/4	Plastic Unit Weight:	140.0 (lb/ft³)
Air Temperature (F):		Concrete Temp (F):	72	Air Content:	7.5
				Load Volume:	8 (yd³)

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 (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
130-1	7 FC	11/19/19	1 / 6	4.00	12.57	51,503	4,100	5		N
130-2	28 FC	12/10/19	1 / 27	4.00	12.57	68,863	5,480	5	C4	N
130-3	28 FC	12/10/19	1 / 27	4.00	12.57	70,494	5,610	3	C4	N
130-4	28 FC	12/10/19	1 / 27	4.00	12.57	67,971	5,410	5	C4	N
130-5	28 FC	12/10/19	1 / 27	4.00	12.57	70,271	5,590	2	C4	N

Test Age Average Strengths (psi): 7 Day FC - 4100, 28 Day FC - 5520

Capping Methods

C4: Strength is greater than or equal to f'c.	N: Unbonded Caps (ASTM C1231)
Tested By: Patrick Patterson (1,2,3,4,5)	
Checked In : 11/13/2019 (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-000154

11/08/2019

Report Date: 1/6/2020

Sample: 65648

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

Set #:	127	Technician:	Frye, Craig	Batched:	14:27 MST
Specimen Size:	4" X 8"	Cast By:	Frye, Craig	Sampled:	15:15 MST
Specimens In Set:	5	Date Cast:	11/08/19	Cast:	15:30 MST
Truck / Ticket #:	9261 / 84594275	Sampled From:	Chute	Truck Empty:	
Contractor:	JBS Pipeline	Placement Method:	Chute	Placement Time:	

Location

Placement Location:	Inlet Wall
Location Details:	Walls for SD-Inlet 107 and Base for SD-Inlet 14
Sample Location / Notes:	NW corner of SD-Inlet 107

Batch Log

Supplier:	Aggregate Industries-Denver	Mix Design:	9456623	Strength:	4500 (psi)
Plant:	4925			Air:	5.0 - 8.0 (%)
On-Site Admixtures:	None			Slump:	3-1/2 - 5-1/2 (in)

Specifications

Field Measurements

Weather:		Slump (in):	4-1/2	Plastic Unit Weight:	139.0 (lb/ft³)
Air Temperature (F):		Concrete Temp (F):	70	Air Content:	8.0
				Load Volume:	10 (yd³)

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 (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
127-1	7 FC	11/15/19	1 / 6	4.00	12.57	42,135	3,350	2		N
127-2	28 FC	12/06/19	1 / 27	4.00	12.57	52,510	4,180	3	C2	N
127-3	28 FC	12/06/19	1 / 27	4.00	12.57	54,525	4,340	5	C2	N
127-4	28 FC	12/06/19	1 / 27	4.00	12.57	53,300	4,240	5	C2	N
127-5	56 FC	01/03/20	1 / 55	4.00	12.57	62,392	4,960	5	C4	N

Test Age Average Strengths (psi): 7 Day FC - 3350, 28 Day FC - 4250, 56 Day FC - 4960

Capping Methods

C2: Strength is less than f.c. One cylinder will be held to break at 56 days.	N: Unbonded Caps (ASTM C1231)
C4: Strength is greater than or equal to f.c.	
Tested By: Patrick Patterson (1,2,3,4,5)	
Checked In : 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-000141

11/18/2019

Report Date: 12/26/2019

Sample: 66349

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

Set #:	143	Technician:	Johnson, Mashaun	Batched:	13:45 MST
Specimen Size:	4" X 8"	Cast By:	Johnson, Mashaun	Sampled:	14:45 MST
Specimens In Set:	5	Date Cast:	11/18/19	Cast:	15:00 MST
Truck / Ticket #:	9252 / 84594598	Sampled From:	Chute	Truck Empty:	
Contractor:	MLL	Placement Method:	Chute	Placement Time:	

Location

Placement Location:	Inlet Top Slab
Location Details:	Inlet 16/17
Sample Location / Notes:	Inlet 16/17

Batch Log

Supplier:	Aggregate Industries-Denver	Mix Design:	9456623.	Strength:	4500 (psi)
Plant:	4925			Air:	5.0 - 8.0 (%)
On-Site Admixtures:	0.50 Bag AEA-Air Entraining Admixture			Slump:	3 - 5 (in)

Specifications

Field Measurements

Weather:		Slump (in):	4	Plastic Unit Weight:	141.1 (lb/ft ³)
Air Temperature (F):		Concrete Temp (F):	75	Air Content:	8.0
				Load Volume:	5.5 (yd ³)

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 ²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
143-1	7 FC	11/25/19	3 / 4	4.00	12.57	39,464	3,140	2		N
143-2	28 FC	12/16/19	3 / 25	4.00	12.57	60,296	4,800	5	C4	N
143-3	28 FC	12/16/19	3 / 25	4.00	12.57	57,820	4,600	3	C4	N
143-4	28 FC	12/16/19	3 / 25	4.00	12.57	55,211	4,390	5	C2	N

Test Age Average Strengths (psi): 7 Day FC - 3140, 28 Day FC - 4600

Capping Methods

C4: Strength is greater than or equal to f'c.	N: Unbonded Caps (ASTM C1231)
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)	
Checked In : 11/21/2019 (1,2,3,4)	

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-000143

11/19/2019

Report Date: 12/26/2019

Sample: 66176

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

Set #:	138	Technician:	Whitehall, Corey	Batched:	13:50 MST
Specimen Size:	4" X 8"	Cast By:	Whitehall, Corey	Sampled:	14:40 MST
Specimens In Set:	5	Date Cast:	11/19/19	Cast:	14:55 MST
Truck / Ticket #:	9261 / 84594647	Sampled From:	Chute	Truck Empty:	
Contractor:	ESX	Placement Method:	Chute	Placement Time:	

Location

Placement Location:	Inlet Top Slab
Location Details:	Inlet 107 and 20
Sample Location / Notes:	Inlet 107 and 20

Batch Log

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

Specifications

Field Measurements

Weather:		Slump (in):	3-1/2	Plastic Unit Weight:	140.8 (lb/ft³)
Air Temperature (F):		Concrete Temp (F):	75	Air Content:	5.5
				Load Volume:	7 (yd³)

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 (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
138-1	7 FC	11/26/19	2 / 5	4.00	12.57	57,906	4,610	5		N
138-2	28 FC	12/17/19	2 / 26	4.00	12.57	73,038	5,810	5	C4	N
138-3	28 FC	12/17/19	2 / 26	4.00	12.57	69,645	5,540	5	C4	N
138-4	28 FC	12/17/19	2 / 26	4.00	12.57	74,042	5,890	3	C4	N
138-5	28 FC	12/17/19	2 / 26	4.00	12.57	60,468	4,810	5	C4	N

Test Age Average Strengths (psi): 7 Day FC - 4610, 28 Day FC - 5510

Capping Methods

C4: Strength is greater than or equal to f'c.	N: Unbonded Caps (ASTM C1231)
Tested By: Patrick Patterson (1,2,3,4,5)	
Checked In : 11/21/2019 (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-000136

11/14/2019

Report Date: 12/17/2019

Sample: 66040

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

Set #:	133	Technician:	Whitehall, Corey	Batched:	14:28 MST
Specimen Size:	4" X 8"	Cast By:	Whitehall, Corey	Sampled:	15:20 MST
Specimens In Set:	5	Date Cast:	11/14/19	Cast:	15:35 MST
Truck / Ticket #:	9261 / 84594465	Sampled From:	Chute	Truck Empty:	
Contractor:	MML	Placement Method:	Chute	Placement Time:	

Location

Placement Location:	Inlet Base
Location Details:	Inlet 21
Sample Location / Notes:	Inlet 21

Batch Log

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

Specifications

Field Measurements

Weather:		Slump (in):	4	Plastic Unit Weight:	141.2 (lb/ft³)
Air Temperature (F):		Concrete Temp (F):	68	Air Content:	6.2
				Load Volume:	8 (yd³)

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 (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
133-1	7 FC	11/21/19	7 / 0	4.00	12.57	49,804	3,960	5		N
133-2	28 FC	12/12/19	7 / 21	4.00	12.57	64,510	5,130	3	C4	N
133-3	28 FC	12/12/19	7 / 21	4.00	12.57	59,765	4,760	5	C4	N
133-4	28 FC	12/12/19	7 / 21	4.00	12.57	63,630	5,060	5	C4	N
133-5	28 FC	12/12/19	7 / 21	4.00	12.57	62,310	4,960	5	C4	N

Test Age Average Strengths (psi): 7 Day FC - 3960, 28 Day FC - 4980

Capping Methods

C4: Strength is greater than or equal to f'c.	N: Unbonded Caps (ASTM C1231)
Tested By: Patrick Patterson (1,2,3,4,5)	
Checked In : 11/21/2019 (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-000162

12/17/2019

Report Date: 1/15/2020

Sample: 67228

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

Set #:	161	Technician:	Whitehall, Corey	Batched:	13:50 MST
Specimen Size:	4" X 8"	Cast By:	Whitehall, Corey	Sampled:	14:45 MST
Specimens In Set:	5	Date Cast:	12/17/19	Cast:	15:00 MST
Truck / Ticket #:	9252 / 84595183	Sampled From:	Chute	Truck Empty:	
Contractor:	MLL, Inc	Placement Method:	Chute	Placement Time:	

Location

Placement Location:	Inlet Wall
Location Details:	Inlet 22
Sample Location / Notes:	Inlet 22 walls

Batch Log

Supplier:	Aggregate Industries-Denver	Mix Design:	9456623	Strength:	4500 (psi)
Plant:	4925				
On-Site Admixtures:	5.00 Gal Water (7.5 yd ³)				

Specifications

Field Measurements

Weather:		Slump (in):	4	Plastic Unit Weight:	142.0 (lb/ft ³)
Air Temperature (F):		Concrete Temp (F):	65	Air Content:	6.7
				Load Volume:	7.5 (yd ³)

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 ²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
161-1	7 FC	12/24/19	1 / 6	4.00	12.57	56,845	4,520	3		N
161-2	28 FC	01/14/20	1 / 27	4.00	12.57	69,231	5,510	3	C4	N
161-3	28 FC	01/14/20	1 / 27	4.00	12.57	63,512	5,050	5	C4	N
161-4	28 FC	01/14/20	1 / 27	4.00	12.57	71,599	5,700	3	C4	N
161-5	28 FC	01/14/20	1 / 27	4.00	12.57	70,342	5,600	5	C4	N

Test Age Average Strengths (psi): 7 Day FC - 4520, 28 Day FC - 5460

Capping Methods

C4: Strength is greater than or equal to f'c.	N: Unbonded Caps (ASTM C1231)
Tested By: Patrick Patterson (1,2,3,4,5)	
Checked In : 12/18/2019 (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-000161

12/16/2019

Report Date: 1/15/2020

Sample: 67186

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

Set #:	159	Technician:	Whitehall, Corey	Batched:	14:33 MST
Specimen Size:	4" X 8"	Cast By:	Whitehall, Corey	Sampled:	15:15 MST
Specimens In Set:	5	Date Cast:	12/16/19	Cast:	15:30 MST
Truck / Ticket #:	9232 / 62293315	Sampled From:	Chute	Truck Empty:	
Contractor:	MLL	Placement Method:	Chute	Placement Time:	

Location

Placement Location:	Inlet Wall
Location Details:	Inlet 23
Sample Location / Notes:	Inlet 23

Batch Log

Supplier:	Aggregate Industries-Denver	Mix Design:	9456623	Strength:	4500 (psi)
Plant:	4912				
On-Site Admixtures:	None				

Specifications

Field Measurements

Weather:		Slump (in):	1-1/2	Plastic Unit Weight:	142.0 (lb/ft³)
Air Temperature (F):		Concrete Temp (F):	60	Air Content:	6.0
				Load Volume:	9 (yd³)

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 (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
159-1	7 FC	12/23/19	2 / 5	4.00	12.57	50,575	4,020	3		N
159-2	28 FC	01/13/20	2 / 26	4.00	12.57	69,104	5,500	3	C4	N
159-3	28 FC	01/13/20	2 / 26	4.00	12.57	67,999	5,410	5	C4	N
159-4	28 FC	01/13/20	2 / 26	4.00	12.57	67,487	5,370	5	C4	N
159-5	28 FC	01/13/20	2 / 26	4.00	12.57	70,510	5,610	3	C4	N

Test Age Average Strengths (psi): 7 Day FC - 4020, 28 Day FC - 5470

Capping Methods

C4: Strength is greater than or equal to f'c.	N: Unbonded Caps (ASTM C1231)
Tested By: Patrick Patterson (1,2,3,4,5)	
Checked In : 12/18/2019 (1,2,3,4,5)	

General Remarks

Notified contractor of physical property results. Reviewed by CB



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

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

Location

Placement Location: Inlet Wall
Location Details: Inlet 81
Sample Location / Notes: Inlet 81 **SDIN 24 Base Poured Same Day**

Batch Log

Supplier:	Aggregate Industries-Denver	Mix Design:	9456623
Plant:	4925		
On-Site Admixtures:	None		

Specifications

Strength: 4500 (psi)

Field Measurements

Weather:		Slump (in):	3	Plastic Unit Weight:	139.2 (lb/ft ³)
Air Temperature (F):		Concrete Temp (F):	69	Air Content:	7.5
				Load Volume:	6.5 (yd ³)

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 ²)	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

C4: Strength is greater than or equal to f'c.	N: Unbonded Caps (ASTM C1231)
Tested By: Danielle Kupper (1), Patrick Patterson (2,3,4,5)	
Checked In : 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-000192

01/13/2020

Report Date: 2/11/2020

Sample: 68094

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

Set #:	187	Technician:	Whitehall, Corey	Batched:	13:10 MST
Specimen Size:	4" X 8"	Cast By:	Whitehall, Corey	Sampled:	14:20 MST
Specimens In Set:	5	Date Cast:	01/13/20	Cast:	14:35 MST
Truck / Ticket #:	9253 / 84595588	Sampled From:	Chute	Truck Empty:	
Contractor:	MLL, Inc	Placement Method:	Chute	Placement Time:	

Location

Placement Location:	Inlet Wall
Location Details:	Inlet 25
Sample Location / Notes:	Inlet 25

Batch Log

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

Specifications

Field Measurements

Weather:		Slump (in):	5	Plastic Unit Weight:	139.6 (lb/ft³)
Air Temperature (F):		Concrete Temp (F):	70	Air Content:	7.5
				Load Volume:	10 (yd³)

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 (in²)	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
187-1	7 FC	01/20/20	3 / 4	4.00	12.57	50,903	4,050	5		N
187-2	28 FC	02/10/20	3 / 25	4.00	12.57	61,128	4,860	2	C4	N
187-3	28 FC	02/10/20	3 / 25	4.00	12.57	66,522	5,290	2	C4	N
187-4	28 FC	02/10/20	3 / 25	4.00	12.57	59,470	4,730	5	C4	N
187-5	28 FC	02/10/20	3 / 25	4.00	12.57	65,374	5,200	3	C4	N

Test Age Average Strengths (psi): 7 Day FC - 4050, 28 Day FC - 5020

Capping Methods

C4: Strength is greater than or equal to f'c.	N: Unbonded Caps (ASTM C1231)
Tested By: Patrick Patterson (1,2,3,4,5)	
Checked In : 01/16/2020 (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