



April 11, 2011

Mr. Tom Gosiorowski  
Town of Eagle  
PO Box 609  
Eagle, CO 81631  
via email [tom@townofeagle.org](mailto:tom@townofeagle.org)

**RE: Eagle River Station Box Culvert  
Alignment and Vehicle Access**

Dear Mr. Gosiorowski:

We have completed a preliminary evaluation of the box culvert running through the Eagle River Station (ERS) site. This box culvert collects the discharge from the existing 13'x14' box culvert beneath I-70. The discharge utilized in the preliminary model was taken from the December 2007 drainage report completed by J&K Inc. The discharge point is labeled B1 in the post development model and has a 100 year-24 hour peak flow of 427.1 cfs.

At this time the proposed alignment of this box culvert is the most direct path between the existing culvert and the existing bridge beneath the railroad. This alignment is shown in the attached exhibit for your reference. A 5'x6' box culvert will be necessary to accommodate the flow rate of 427 cfs, however at the time of final design junction losses will be studied more closely along with keeping the maximum velocity as close to 15 fps as possible. Both the inlet and outlet conditions will be studied in much greater detail with final design as well. During final design the size of the box culvert has the potential to change, however, we do not expect significant modifications. At the time of final design, different configurations will be evaluated to ensure the most cost effective and easily maintainable solution is provided. These configurations could include dual circular storm sewer if it proves appropriate.

Maintenance of this structure will be incorporated directly into design by taking into account proper parameters to minimize the likelihood of sediment or debris build up and to provide proper personnel access and cleaning apparatus access. An ongoing inspection procedure will also be key to the long term operation of the structure. A written procedure will be developed with final design and be implemented by the facility's maintenance staff.

During design of the ERS site it is anticipated localized storm sewers will also be connected into the box culvert. The additional flows and any associated junction losses will be taken into account during final design. Localized flows will also be subject to BMPs as previously



discussed in the 2007 J&K drainage report. The BMPs will include both mechanical and natural methods.

An exhibit showing the access of an ASHTO SU vehicle into the box culvert is also attached. At this time we are proposing to provide a route through the parking lot to the access road traveling parallel to the ramp.

In order to maintain a connection for the storm water exiting the existing box culvert to the inlet into the proposed box culvert a channel will be formed to connect them. The western side without access will be graded at a 4 to 1 slope and will likely include armoring. The eastern side will be graded at a 5% slope to allow access and will also likely include armoring. The exhibit illustrates the turning radius and routing of the vehicle into the box culvert through this area.

In conclusion, detailed hydraulic design will be necessary on the inlet and outlet of the proposed box culvert as final design proceeds, however, the schematic design illustrates the feasibility of routing the box culvert through the site and providing access for an ASHTO SU vehicle to the existing box culvert.

If you have any questions or comments please do not hesitate to contact me.

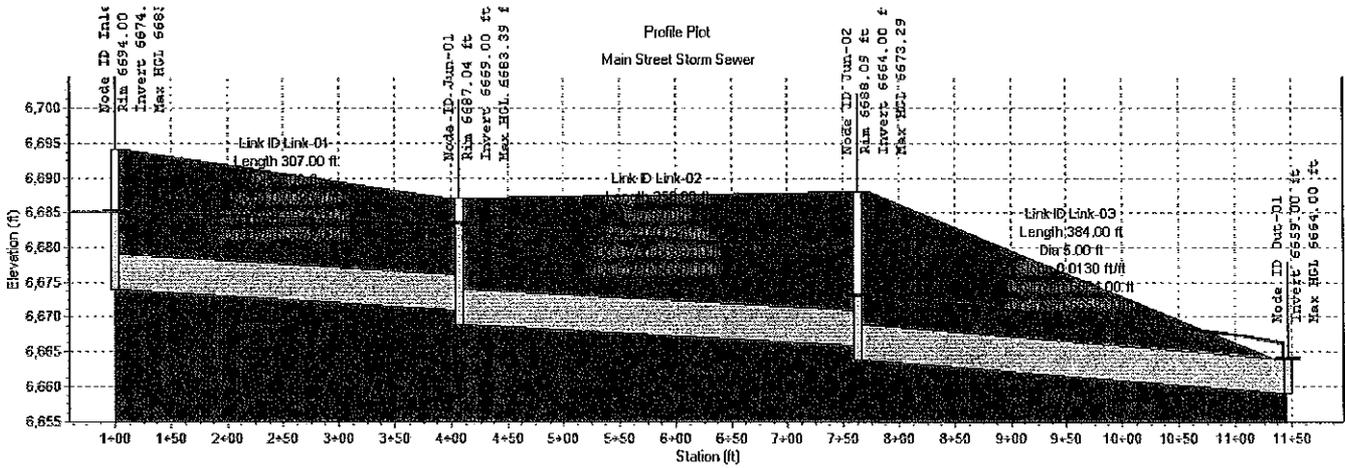
Sincerely,

Len Swartz, PE

Encl

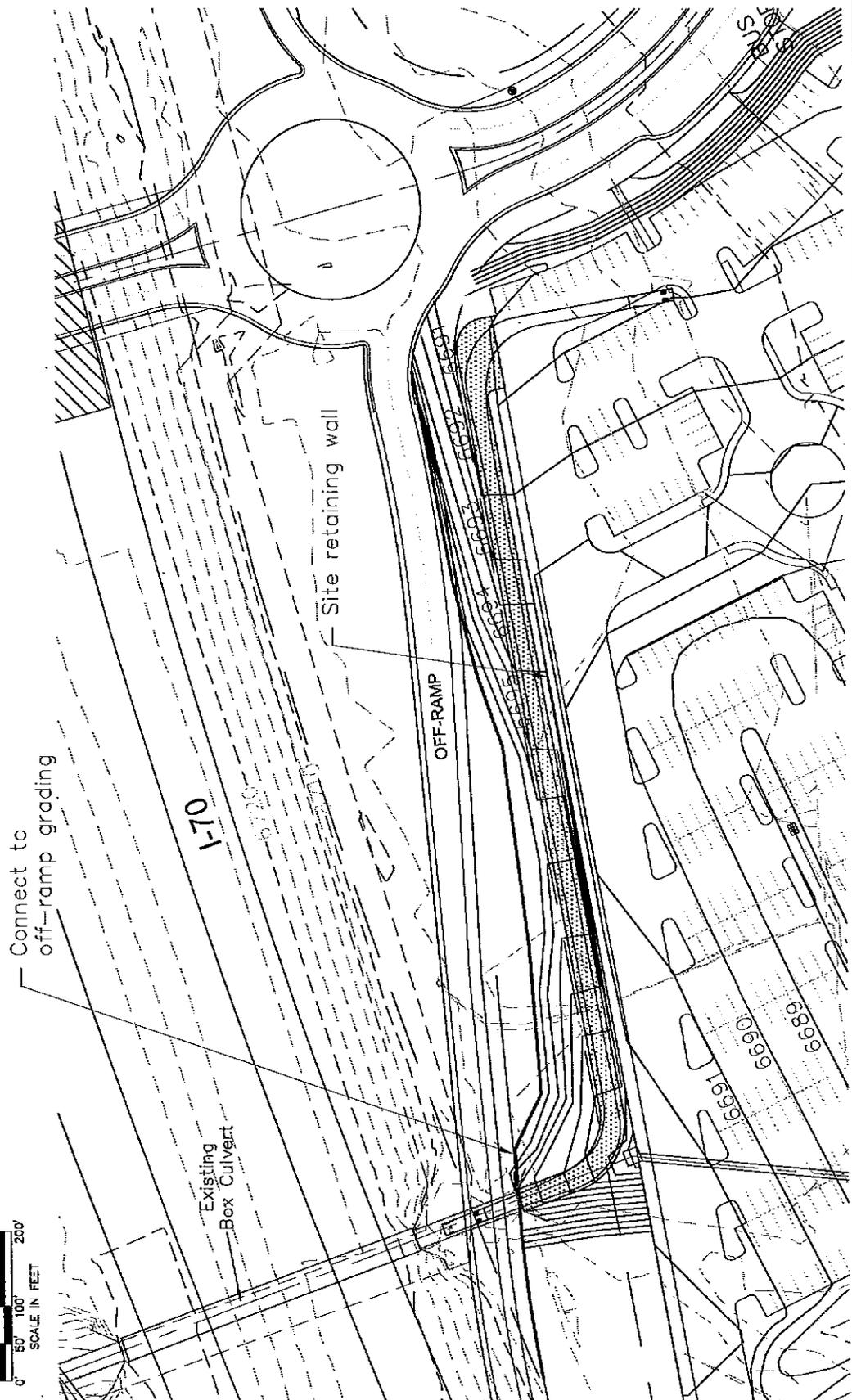
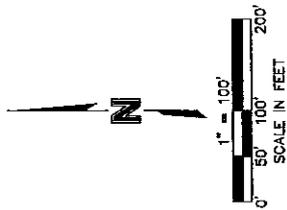
Cc file





Node ID:	Inlet-01	Jun-01	Jun-02	Out-01
Rim (ft):	6694.00	6687.04	6688.05	6659.00
Invert (ft):	6674.00	6659.00	6664.00	6654.00
Min Pipe Cover (ft):		11.04	17.09	
Max HGL (ft):	6685.03	6683.39	6673.29	6664.00
Link ID:	Link-01	Link-02	Link-03	
Length (ft):	307.00	356.00	384.00	
Dia (ft):	5.00	5.00	5.00	
Slope (ft/ft):	0.0098	0.0084	0.0130	
Up Invert (ft):	6674.00	6659.00	6664.00	
Dn Invert (ft):	6671.00	6656.00	6659.00	
Max Q (cfs):	534.75	455.13	445.53	
Max Vel (ft/s):	17.82	15.17	14.85	
Max Depth (ft):	5.00	5.00	5.00	

DWG: F:\Projects\009-0134\CMLD\Exhibits\Access Road Exhibit.dwg  
 USER: zlouterbach  
 DATE: May 05, 2011 10:04am  
 XREFS: 009-0134 Pcont 009-0134 Ebase 009-0134 Econt  
 009-0134 Pose

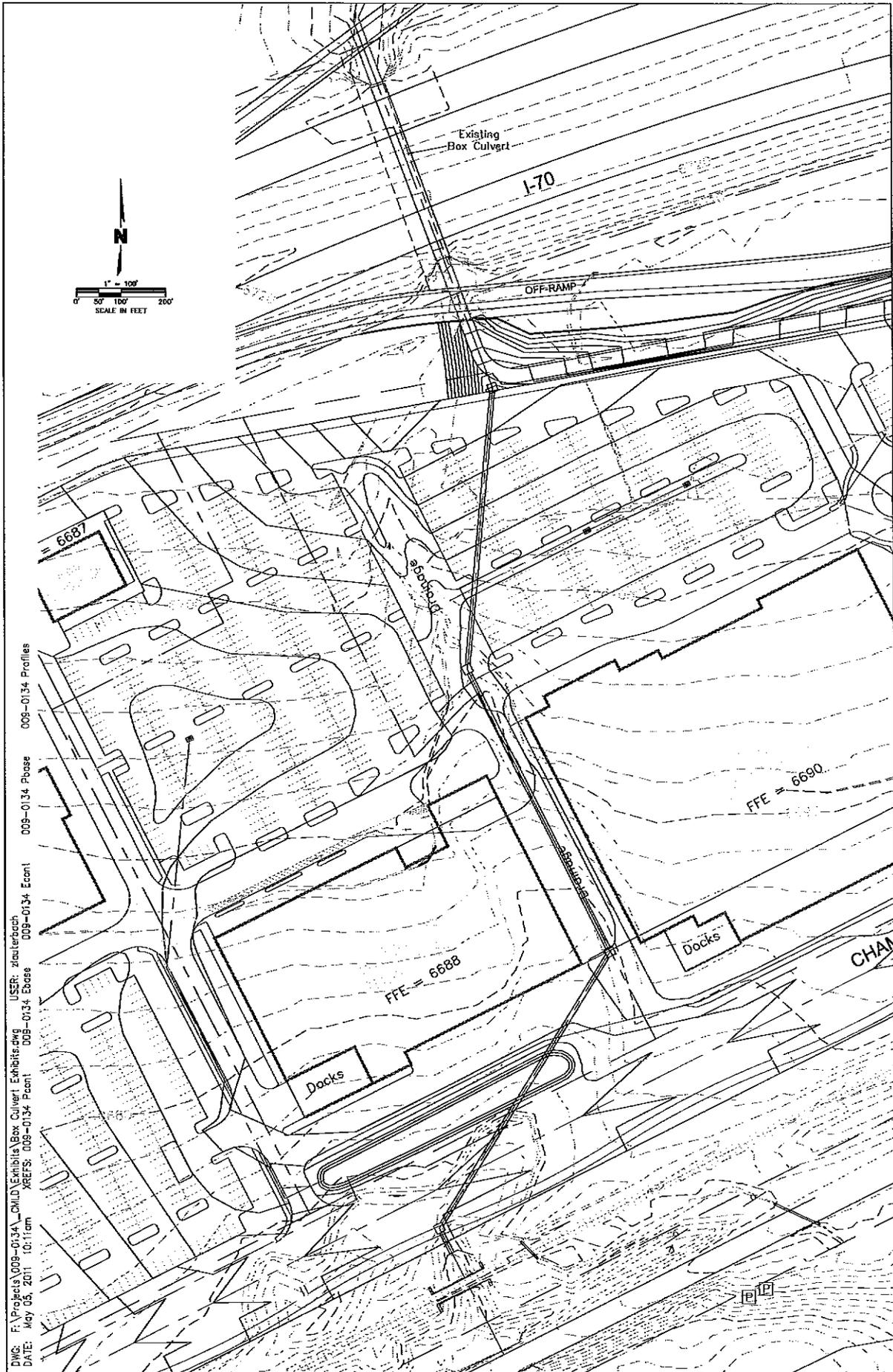


PROJECT NO: 009-0134  
 DRAWN BY: BDS  
 DATE: 05.05.11

**CULVERT TRUCK ACCESS**



7250 North 16th Street  
 Suite 210  
 Phoenix, AZ 85020-5282  
 TEL 602.748.1000  
 FAX 602.748.1001



DWG: F:\Projects\009-0134\_CMLD\Exhibits\Box Culvert Exhibit.dwg USER: zslaterbach 009-0134 Profiles  
 DATE: May 05, 2011 10:10am XREFS: 009-0134 Pccnt 009-0134 Ebase 009-0134 Ecan1 009-0134 Pbase 009-0134

PROJECT NO: 009-0134  
 DRAWN BY: BDS  
 DATE: 05.05.11

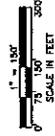
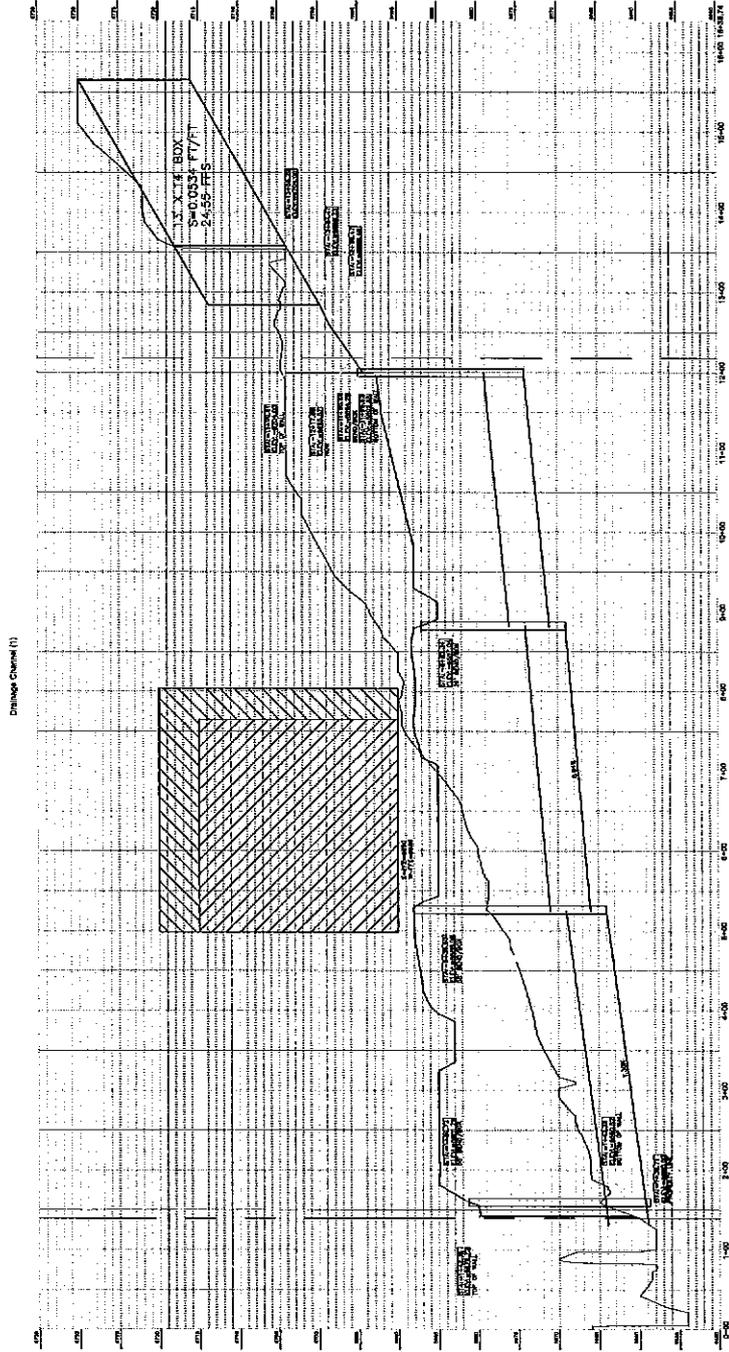
**BOX CULVERT EXHIBIT**

**MOLSSON**  
 ASSOCIATES

7250 North 16th Street  
 Suite 210  
 Phoenix, AZ 85020-5282  
 TEL: 602.748.1000  
 FAX: 602.748.1001

EXHIBIT  
 1

DWG: F:\Projects\009-0134\CMLD\Exhibits\Box Culvert Exhibits.dwg  
 DATE: May 05, 2011 10:15am  
 USER: zlouterbach  
 XREFS: 009-0134 Pcont 009-0134 Ebase 009-0134 Econ 009-0134 Phase 009-0134



PROJECT NO: 009-0134  
 DRAWN BY: BUS  
 DATE: 05.05.11

BOX CULVERT EXHIBIT

**MOLSSON**  
 ASSOCIATES

7740 North 16th Street  
 Suite 210  
 Phoenix, AZ 85020-6382  
 TEL: 602.748.1100  
 FAX: 602.748.1101

EXHIBIT

2



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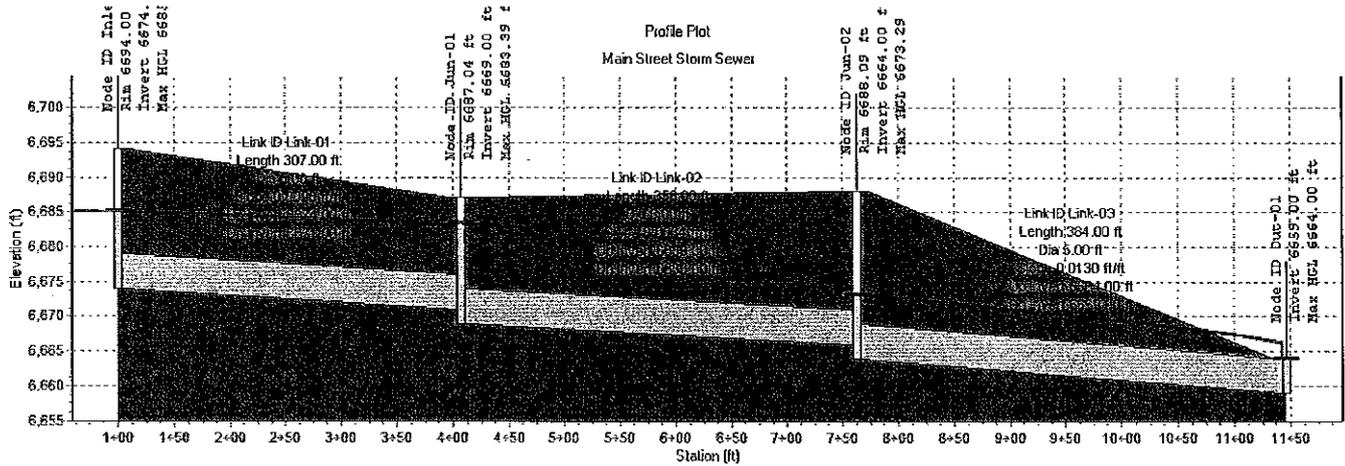
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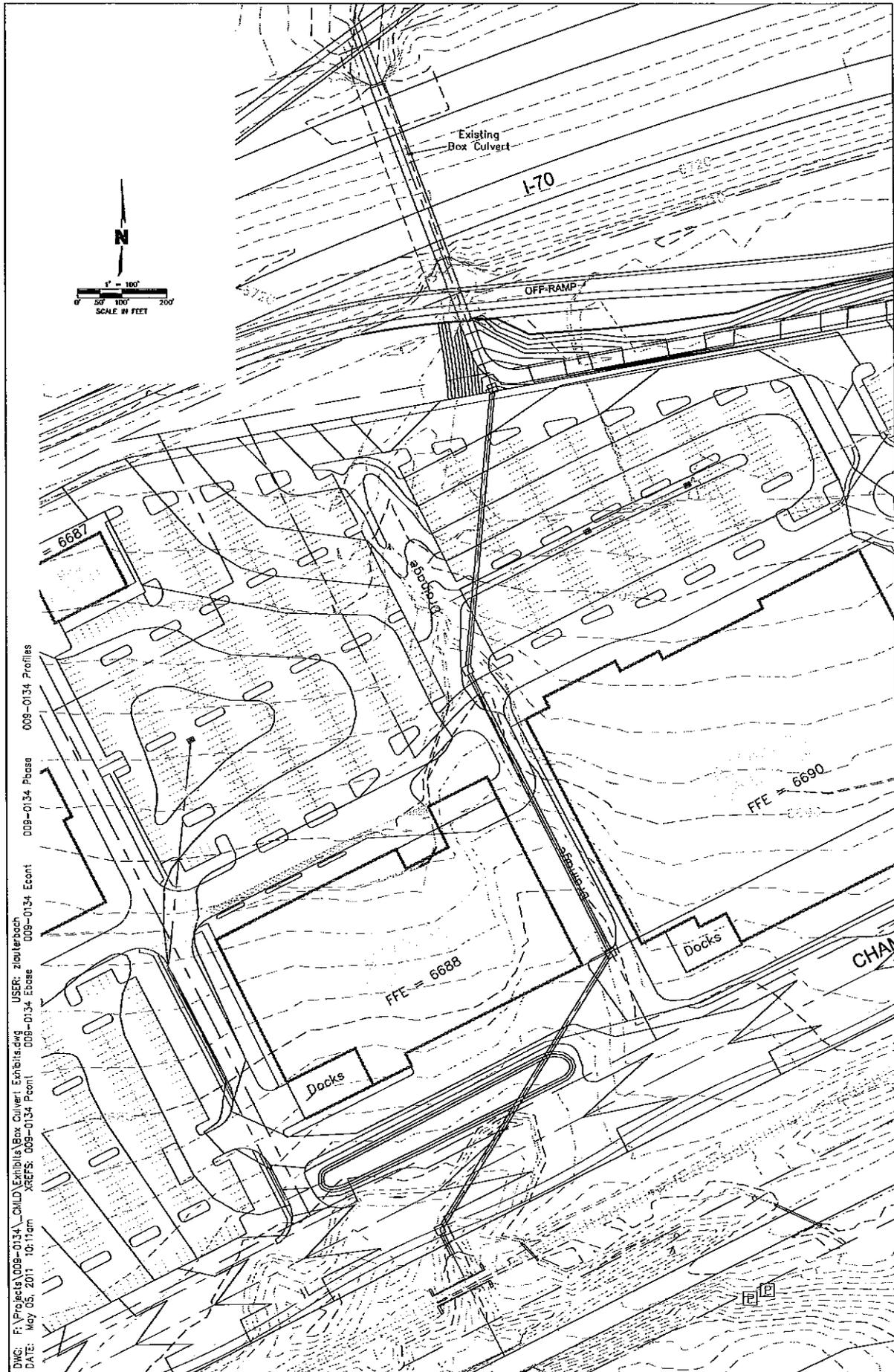
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PROJECT NO: 009-0134  
 DRAWN BY: BDS  
 DATE: 05.05.11

**BOX CULVERT EXHIBIT**

**MOLSSON**  
 ASSOCIATES

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EXHIBIT  
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 XREFS: 009-0134 Pcont 009-0134 Ebase 009-0134 Econt 009-0134 Pose 009-0134

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 ASSOCIATES

7250 North 18th Street  
 Suite 210  
 Phoenix, AZ 85020-6282  
 PHONE: 602.758.1001  
 FAX: 602.758.1001

EXHIBIT  
 2

