CITY OF ALBUQUERQUE
CITY WIDE-ON CALL ENGINEERING SERVICES
(TRANSPORTATION & STORM DRAINAGE)
5015.03

TASK 1
AVENIDA CESAR CHAVEZ
DRAINAGE INLET ASSESSMENT
FINAL

Prepared For:

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September 6, 2013

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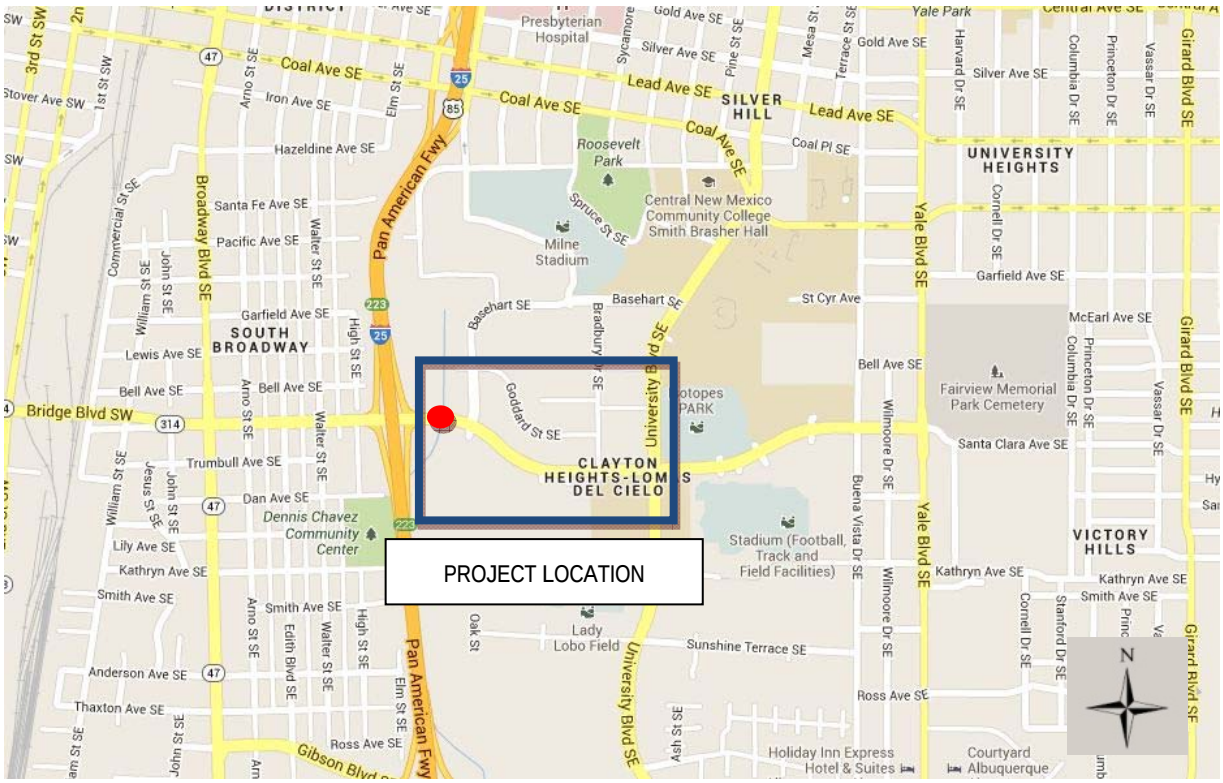
1. INTRODUCTION

The City of Albuquerque (COA) has expressed concern over the existing transverse drainage inlet located over the South Diversion Channel just east of I-25 and west of the Avenida Cesar Chavez/Langham intersection. The inlet poses both safety concerns, as well as maintenance issues due to the deficient condition of the steel deck and structure. The COA has requested that Parsons Brinckerhoff assess the structure and recommend feasible alternatives that will address the drainage structure deficiencies and verify the impacts of the drainage improvements upstream.

This report presents the findings of the feasibility assessment performed that evaluated and has identified alternatives for the drainage inlet replacement/removal. This report documents the engineering analyses conducted, alternatives considered, the evaluation of each alternative, and recommends a course of action to implement a project. The location of the project is shown in Figure 1.

Figure 1: Project Location



2. Report Review and Field Inspection

2.1 Drainage

Existing drainage reports were collected from the City of Albuquerque to determine the extent of the previously constructed Avenida Cesar Chavez storm drain improvements. In 1994, a report entitled "Stadium Boulevard Storm Drainage Improvements Engineering Analysis Report" (EAR) was prepared by Bohannan-Huston, Inc. for the City of Albuquerque and serves as a basis for this report. The EAR addressed flooding issues along Stadium Boulevard (currently known as Avenida Cesar Chavez), primarily at its intersection with University Boulevard. The report indicated that the Avenida Cesar Chavez storm drain improvements were intended to intercept flows from the planned Yale Boulevard storm drain, Buena Vista storm drain, overland and surcharged storm sewer flows from University Boulevard, overland flow from Santa Clara Avenue, and flows from Avenida Cesar Chavez east of the South Diversion channel. The report proposed the construction of an 84" diameter storm drain beginning at Yale Boulevard and extending west along Avenida Cesar Chavez increasing in size to an 108" diameter storm drain before it transitions into a trapezoidal channel at its confluence with the South Diversion Channel. The construction of this system was confirmed through as-built plans obtained from the City of Albuquerque.

Upon review of the post-project flow rates found in the EAR, a field review of the project site was performed to determine if any additional improvements had been made that would affect runoff patterns proposed in the original report. Storm drain as-built plans were also collected for the properties and storm drain networks contributing to the Avenida Cesar Chavez storm drain network to aid in developing a basin map for the project area. The following changes were noted from the EAR.

1. A total of 6 additional Type "A" inlets (3 northbound and 3 southbound) have been built as part of the Stadium Boulevard Improvements Project.
2. Improvements to the Langham storm drain network (5 inlets) have been constructed to further reduce flows reaching the existing transverse drainage inlet.

A map showing offsite and roadway basins contributing to the Avenida Cesar Chavez storm drain network can be seen in Exhibit 1 in Appendix A of this report.

2.2 Crossing Structure

2.1.1 Description

The design plans for the existing Avenida Cesar Chavez structure over the South Diversion Channel were obtained from the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA). The existing structure plans are dated 1971. The structure consists of a reinforced concrete "U" channel, with a steel grate superstructure, and reinforced concrete sidewalk. The clear span between the channel walls is 11 feet 4 inches. The width perpendicular to the roadway is 100 feet 9 inches, which includes two 7-foot, 4-inch wide sidewalks. This width provides room for pipe railings along the outside of the structure.

The superstructure has 22 steel "I" girders, type 12 WF 27. The girders are approximately 12 inches deep at 4-foot spacing. The girders support a 5-inch thick steel grate deck, which allows for through drainage. The girders are

supported on ledge seats on the channel walls. The girders rest on lead plates and are attached to the concrete seats with anchor bolts.

The channel has 90 degree wingwalls at each end. The wingwalls extend 25-feet, 9-inches from the outside of the channel walls. Steel pipe railings are located along the top of the wingwalls and across the channel on each side of the roadway.

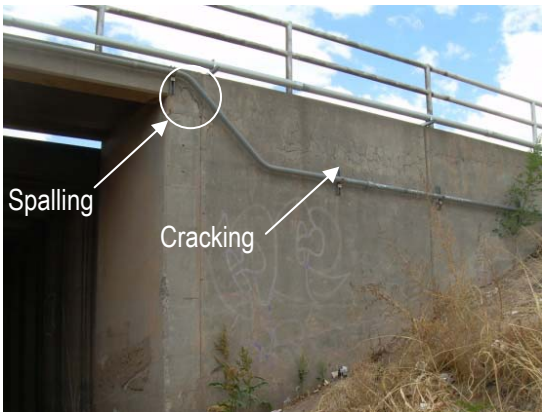
Steel plates were used to repair two girders at the west abutment

2.1.2 Field Inspection

The structure was visually inspected on May 29, 2013. The steel grate deck has numerous large gaps between the grates, and the steel clangs loudly when vehicles drive over it. Many of the steel girders have visible rust at the west ends on the bottom corners. The bottom flanges of two of the girders at the west end have been retrofitted with steel plates. Some of the concrete under the girder seats at the west end is damaged and missing. An area of spalled concrete is visible near the abutment seat in the southwest corner. On the east side opposite, the seat appears to have been patched.

The walls of the "U" channel have a number of visible hairline cracks. Most of these are short, although several vertical full-height cracks were observed on the west wall. The channel floor was covered with dirt and was not visible.

The wingwalls have significant map cracking visible on the faces and tops of the walls. This probably indicates the presence of reactive aggregate in the concrete, known as alkali-silica reactive (ASR) concrete. Spalling is visible at the south end near the top upper right (east) corner of the opening. Large cracks, approximately 1/8-inch wide or more, extend vertically along the joint between the channel walls and the wingwalls. The wall corners are chipped. The steel railing at the southeast corner of the structure is bent and damaged.



The wingwalls have map cracking and spalling, visible at the southwest corner

Several utilities in galvanized metal conduits are attached to the wingwalls at both ends of the structure. The two conduits at the south wingwall have outside diameters (O.D.) of approximately 2-1/2 inch and 1-1/4 inch. The two conduits at the north wingwall are 3-3/8 inch and 2-1/2 inch O.D.

2.1.3 Maintenance and Safety Issues

Based on discussions with City staff, the structure has had a long history of maintenance and safety issues. Repairs were made to the deck after some of the grates came loose under traffic. The roadway had to be closed, and some grates reportedly fell into the channel before they could be secured, which was a major safety concern. Evidence of

past repairs is visible, as described previously. In addition, a piece of steel plate from the past repairs was seen at the bottom of the channel.

While no immediate safety concerns were observed, the structure will require ongoing, frequent maintenance if no improvements are made. The noise from the deck indicates that significant grate movement is occurring under traffic loads, which may result in fatigue of the connections to the girders. With drainage through the deck, the girders and the concrete seats will continue to deteriorate.

3. HYDROLOGY

The design flood for this assessment is the 100-year recurrence interval storm based on the "City of Albuquerque's Development Process Manual" (DPM). ArcGIS, version 10.1 was used to prepare the drainage basin map for this assessment. Aerial photos along with City of Albuquerque 2-foot interval contours were used to delineate drainage basins contributing to the analysis area. Future developed land usage estimates are based on the current City of Albuquerque GIS Data Website. The 100-year rainfall data for the analysis area was obtained from the DPM. The Rational Method was used to perform peak flow calculation for this assessment based on the 6-hour storm duration per the DPM. Peak flow rate calculations can be found in Appendix B. The following land treatment assumptions were made:

- Areas that fell under the land use category "Vacant/Other" were analyzed as fully developed properties and were assumed to be 90% land treatment D and 10% land treatment C.
- Areas that fell under the land use category "Parks/Recreational" appeared to be paved parking areas, or sports complex buildings and were assumed to be primarily land treatment C and D. Aerial photos were used to determine percent impervious values.

See Exhibit 2 in Appendix A for a Land Use Map of the Project.

3.1 Flow Analysis

The EAR indicates that with the construction of the recommended drainage improvements, the overland flow reaching the transverse drainage inlet has decreased from 810 cfs to 40 cfs. In an effort to confirm the current amount of flow reaching the transverse drainage inlet, an analysis of the capacity of the existing inlets along Avenida Cesar Chavez from University Boulevard to Langham was performed.

According to the original EAR, inlets constructed along University Boulevard, near the University Boulevard/Avenida Cesar Chavez Intersection, as well as inlets constructed along Avenida Cesar Chavez, east of the University Boulevard/Avenida Cesar Chavez Intersection, intercept all overland flow. Therefore, analysis of the previously constructed Avenida Cesar Chavez storm drain system was limited to west of the University Boulevard/Avenida Cesar Chavez intersection. Analysis points AP1 and AP2 were defined for eastbound and westbound Avenida Cesar Chavez (see **Exhibit 1**), and flows were computed and distributed to the existing inlets. As-built plans indicated that City of Albuquerque Type "A" inlets were used on Avenida Cesar Chavez and a combination of City of Albuquerque Type "A" and Type "Double C" inlets were used on Langham. Existing roadway slopes for Avenida Cesar Chavez and Langham were taken from as-built plans or calculated based on City of Albuquerque contours. Analysis indicates that a total of 25.1 cubic feet per second (cfs) currently reaches the transverse drainage inlet (19.8 cfs along the north side at AP1 and 5.3 cfs along the south side at AP2). The decrease in flow reaching the transverse inlet can be attributed to the construction of the Langham storm drain improvements as well as to the addition of the

6 inlets to the Avenida Cesar Chavez storm drain network. Drainage inlet analysis calculations can be found in Appendix B.

The conveyance capacity of Avenida Cesar Chavez was checked based on the hydraulic design criteria found in the DPM. The DPM indicates that flow depths in the event of a 100-year design discharge may not exceed 0.2 feet above curb height and shall be contained within the right-of-way (ROW). It was determined that City of Albuquerque standards are met for the 100-year design discharge.

3.2 South Diversion Channel Analysis

The South Diversion Channel Hydrologic and Hydraulics Review (yet to be published) was completed by Easterling & Associates Inc. using the Hydrologic Engineering Center River Analysis System (HEC-RAS). A copy of the analysis was obtained from AMAFCA, and it indicated that the 100-year water surface elevation does not reach the low chord. Flows in the South Diversion Channel and the hydraulic capacity of the existing crossing structure will not be affected by replacement of the steel grate superstructure.

4. EXISTING STRUCTURE ANALYSIS

The existing crossing structure was analyzed to assess its suitability for rehabilitation and replacement of the existing steel deck. Based on the analysis, the existing structure can be modified to extend its service life and to address the current safety and maintenance issues associated with the steel deck.

The structure was analyzed per the AASHTO Standard Specifications for Highway Bridges, 17th Edition. Analysis assumptions were based on the design plans, obtained from AMAFCA, and engineering judgment. Assumptions included:

- Soils
  - Type: Medium-dense sand
  - Angle of Internal Friction: 34 degrees
  - Density: 120 pounds per cubic foot (pcf)
  - Horizontal Earth Pressure: Active case, Rankine formula
  - Allowable Bearing Pressure: 2,000 pounds per square foot (psf)
- Concrete
  - Compressive Strength (f'_c): 3,000 pounds per square inch (psi)
- Reinforcing Steel
  - Yield Strength (f_y): 40,000 psi

The structure was analyzed as a simple frame using the STAAD.Pro V8i computer program, version 20.08.07.20. Moment and shear were checked at critical locations for two cases, with and without bracing of the vertical walls by the existing deck. The results are shown in Table 1 on the following page.

Table 1: Structure Analysis Results

Capacity Check	Location	Factored Load*	Strength*	Assessment
Moment in Wall - No Bracing	Base of wall	47.1 ft-kip	57.0 ft-kip	OK
Moment in Wall - Braced by Deck	Mid-height (8.7' above the base slab)	6.9 ft-kip	7.0 ft-kip	OK
Shear in Wall	Base of wall	8.2 kips	12.8 kips (concrete only)	OK

* Note: The loads and strengths were calculated using factors that result in factors of safety in accordance with AASHTO standards.

The soil bearing pressure was also checked and was within an acceptable range.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The following general conclusions can be drawn from the assessment.

- The existing transverse drainage inlet is not required based on an assessment of the existing Avenida Cesar Chavez and Langham storm drain improvements west of University Boulevard.
- Analysis indicates that 19.8 cfs reach the South Diversion Channel from westbound Avenida Cesar Chavez and 5.3 cfs reach the South Diversion Channel from eastbound Avenida Cesar Chavez.
- The existing steel superstructure (deck) is in poor condition and should be replaced. The existing substructure appears structurally adequate and can be rehabilitated.
- Flows in the South Diversion Channel and the hydraulic capacity of the existing crossing structure will not be affected.

5.2 Alternatives and Recommendations

5.2.1 Drainage Alternatives

Based upon the results of this analysis, the existing transverse drainage inlet is not required and can be replaced with a smaller drainage structure. Several alternatives for improving the structure have been considered and are summarized in Table 2 on the following page. Alternatives for eastbound and westbound drainage improvements were considered separately, as flows remain split due to a normally crowned roadway section. A requirement was the ability to accommodate a water quality feature. This requirement has been taken into consideration in each of the following alternatives.

Table 2: Drainage Structure Replacement Alternatives

Westbound Alternatives		Potential Issues/Concerns
*1-WB	Cap the existing transverse drainage inlet and construct a new drainage ditch to capture runoff from Basin E and carry it to a new 5'x5' water quality median drop inlet at the northeast corner of the Avenida Cesar Chavez/Langham intersection. A new 24" diameter storm drain would carry the flow from the inlet to the South Diversion Channel.	▪ New ditch and inlet would require ROW acquisition or developer cooperation. ▪ New storm drain network would need to be constructed to outlet the new MDI. ▪ Coordination with the U.S. Army Corps of Engineers would be required to construct a new outlet into the South Diversion Channel.
*2-WB	Cap the existing transverse drainage inlet and construct a new curb opening inlet starting approximately 31' east of the channel and outletting within the limits of the deck.	▪ Water quality feature could be an issue. ▪ Structure would not fit within the limits of the existing crossing structure, requiring additional curb/pavement replacement.
3-WB	Cap the existing transverse drainage inlet and construct a new 22' wide transverse drop inlet over the channel.	▪ Structure would extend into Avenida Cesar Chavez lanes of traffic. ▪ Inlet grates in the driving lanes are not recommended due to maintenance concerns.
4-WB	Cap the existing transverse drainage inlet and construct a series of 10 COA standard grates along the north curb line.	▪ Structure would not fit within the limits of the existing crossing structure, requiring additional curb/pavement replacement.
5-WB	Cap the existing transverse drainage inlet and construct a new roadside rundown immediately upstream of the South Diversion Channel.	▪ Water quality feature could be an issue. ▪ Coordination with the U.S. Army Corps of Engineers would be required.
6-WB	Cap the existing transverse drainage inlet and construct a 28' long curb opening inlet along the north curb line immediately upstream of the South Diversion Channel to drain into the existing ditch/pond in the northwest quadrant of the Avenida Cesar Chavez/Langham intersection via a roadside rundown. Flow bypassing the grates/sidewalk culverts would be captured in a series of 3 COA standard grates built along the north curb line, within the limits of the deck.	▪ The existing ditch/pond would have to be modified to accommodate the additional volume of water. ▪ An easement may have to be acquired to complete modifications to the existing ditch/pond.
7-WB	Cap the existing transverse drainage inlet and construct slotted drain inlets/grates within the deck.	▪ Slotted drain inlets have limited capacity and are prone to clogging. ▪ Inlets in driving lanes are not recommended due to maintenance concerns.
8-WB	Cap the existing transverse drainage inlet and construct a large grate inlet, 10' long by 4' wide (similar to three COA Type "B" inlets in series) along the north curb line, within the limits of the existing deck.	▪ Grates are wider than the existing gutter section.
Eastbound Alternatives		Potential Issues/Concerns
1-EB	Cap the existing transverse drainage inlet and construct 3 new COA standard grates along the south curb line, within the limits of the deck.	
*2-EB	Cap the existing transverse drainage inlet and construct a new curb opening inlet starting approximately 4' east of the channel and outletting within the limits of the deck.	▪ Water quality feature could be an issue. ▪ Structure would not fit within the limits of the existing crossing structure.
3-EB	Cap the existing transverse drainage inlet and construct a new roadside rundown immediately upstream of the South Diversion Channel.	▪ No water quality feature ▪ Coordination with the U.S. Army Corps of Engineers would be required.

*Option requires existing curb opening at the existing transverse drainage inlet to remain.

5.2.2 Drainage Recommendations

The south Diversion Channel falls under the jurisdiction of the U.S Army Corps of Engineers, and AMAFCA. Any work that affects the Channel will require review and approval by AMAFCA and possibly the Corps, depending on the improvements being proposed. As described previously, the existing inlet configuration has surface flow into the channel through the grates. Based on the input provided by AMAFCA and the Corps, maintaining the existing drainage configuration would not require Corps review. A change from the existing configuration could trigger the review process. Therefore, to expedite the project schedule and reduce the review requirements, changes to the existing drainage configuration should be minimized.

Based upon a review of the proposed alternatives, alternative 8-WB (construction of a 10 foot long by 4 foot wide grate inlet, within the limits of the deck) and alternative 1-EB (construction of a series of new City of Albuquerque grate inlets along the south curb line, within the limits of the deck) are recommended. These alternatives would alleviate many of the existing maintenance issues, as grates would no longer be located within Avenida Cesar Chavez lanes of traffic.

The inlet capacity of alternative 8-WB was analyzed using two methods. First, Bentley FlowMaster V8i was used. It was determined that preferred alternative 8-WB would bypass 5.22 cfs (26% of the total) in the event of a 100-year storm under fully developed conditions. An investigation of the downstream drainage system capacity was beyond the scope of this study. However, the risk of flooding is low, because the design flows are conservative. The flows were calculated assuming full build-out of several properties that would be very difficult and expensive to develop. As a second method of analysis, preferred alternative 8-WB was re-analyzed based on the City of Albuquerque DPM inlet charts for Type "B" storm inlets. According to the inlet charts, 3-Type "B" storm inlets would capture 100% of the flow for a 100-year storm under fully developed land treatment conditions. At the City's direction, the effects of placing the inlets adjacent to each other were neglected for the analysis. The inlet hydraulics analysis for preferred alternative 8-WB can be found in Appendix B.

5.2.3 Roadway Recommendations

The existing pedestrian railings along the ends of the crossing structure are located within the roadway clear zone. A roadway clear zone is defined as the unobstructed, traversable area provided beyond the edge of the traveled way for the recovery of errant vehicles. The AASHTO "Roadside Design Guide" (2011) gives a clear zone runoff of 14 to 16 feet for this situation, assuming a design speed of 40 miles per hour (mph) or less. Although existing barrier curb exists along Avenida Cesar Chavez over the crossing structure, it is still possible for an errant vehicle to go over the curb and fall into the existing channel below. The roadway clear zone requirement cannot be met at this location by eliminating the hazard. Therefore, it is recommended that guard rail or metal barrier be installed, with end treatments. The existing railings could be removed and the holes patched, and new barrier railings could be attached to the wingwalls. Barriers would need to be designed to maintain access to the South Diversion Channel through existing access driveways along Avenida Cesar Chavez.

5.2.4 Structure Alternatives

The goal of the structure alternatives is to replace the existing deck with a structurally sound, durable and low-maintenance deck.

Materials

While replacement of the steel girders could be considered, concrete will be more economical given the short span length. Reinforced concrete offers suitable strength, good durability, minimal maintenance, economical construction, and is available locally. Reinforced concrete alternatives include precast deck panels or a cast-in-place deck.

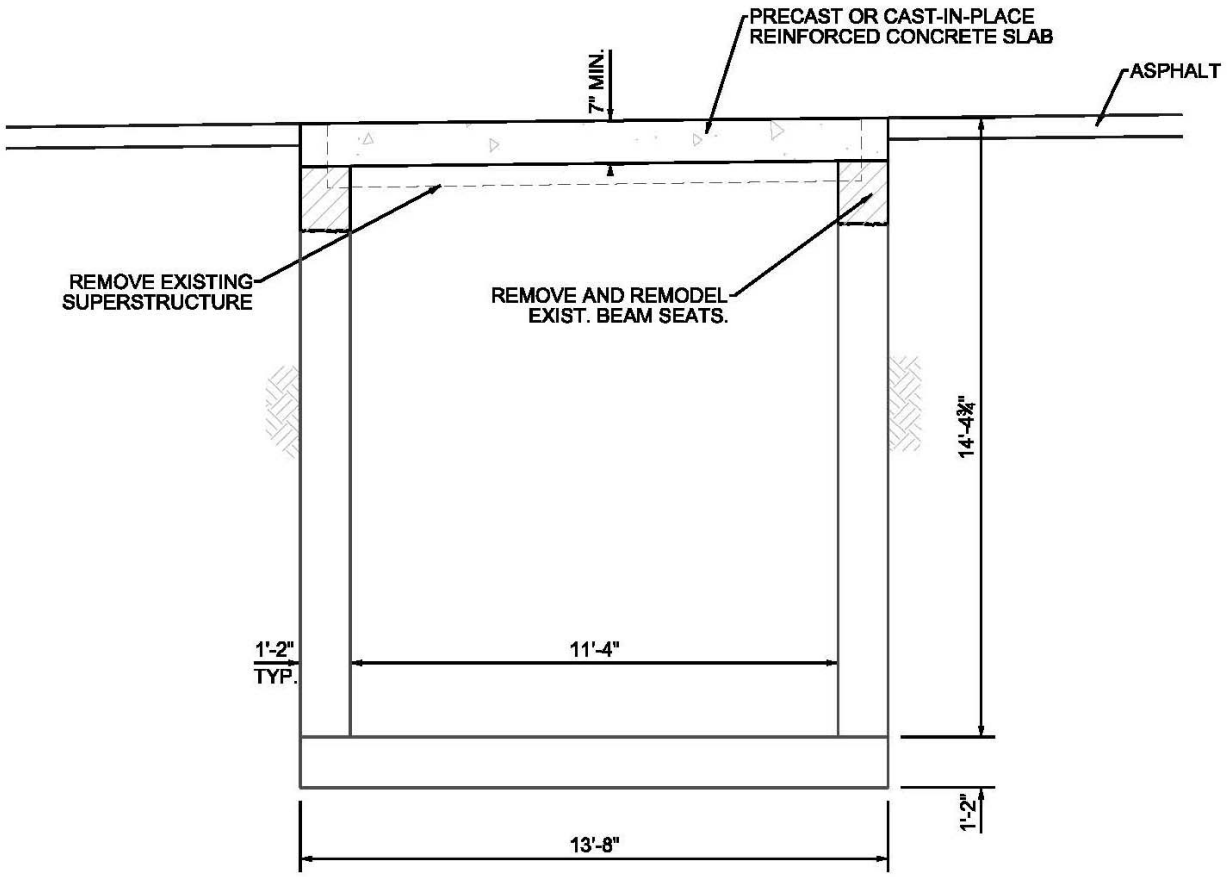
Precast deck panels can be fabricated off-site at a supplier yard and trucked to the site. The panels are usually post-tensioned together laterally, with grouted joints. An epoxy-polymer overlay is placed to seal the deck. The advantages of precast panels include rapid construction and less formwork in the channel. The disadvantages include increased cost, complexity of construction, grade control difficulty, and additional joints compared to a cast-in-place structure.

A cast-in-place deck can be constructed reliably and for lower cost than a precast deck. The structure would have fewer joints, so the potential for the associated maintenance issues is reduced. Disadvantages include increased time for forming and placing rebar and concrete, and the need to construct shoring in the channel to support the concrete forms.

5.2.5 Structure Recommendations

Because of schedule concerns with closing lanes of Avenida Cesar Chavez, construction of a precast deck is recommended. The conceptual structure profile is shown in Figure 2.

Figure 2: Conceptual Structure Profile



Inlets could be constructed in the new concrete deck, if necessary. The inlets should be located out of the wheel path, adjacent to the curb, to reduce potential maintenance issues.

Recommended work:

- Remove existing steel deck
- Remove and remodel existing abutment seats to accommodate new concrete deck
- Construct reinforced concrete or precast slab
- Replace pedestrian railing with traffic railing (NMDOT metal railing type "D" for bridges)
- Epoxy-inject cracks in existing structure and wingwalls
- Repair spalled concrete at the structure headwalls
- Apply water repellant treatment to all exposed concrete surfaces

5.2.6 Traffic Control and Schedule Recommendations

Avenida Cesar Chavez is a 6-lane urban minor arterial roadway that serves as the main access to the University of New Mexico (UNM) Sports Complexes, Albuquerque Isotopes Baseball Park, and Central New Mexico University. Avenida Cesar Chavez has an average daily traffic (ADT) volume of 26,100 vehicles per day with traffic volumes

peaking during sporting events. Due to the major roadway impacts that the construction of the recommended improvements would have, the City has indicated that the construction duration will need to be limited to a period of a few weeks to limit daily impacts in addition to impact to sporting events. Two options for traffic control have been considered and are identified in Table 3.

Table 3: Traffic Control Options

Traffic Control Options		Potential Issues/Concerns
1	Build the new deck in halves and allow 1-lane of traffic to remain open in each direction (eastbound and westbound) during construction of the recommended improvements.	▪ Project limits will extend further than they would with Option 2 due to median nose modifications to accommodate crossovers. ▪ Duration of construction may be longer than Option 2 due to restrictions caused by accomodating open traffic lanes.
2	Close Avenida Cesar Chavez to traffic for an anticipated duration of 3 weeks during construction of the recommended improvements.	▪ Traffic congestion caused by full closure of Aveinda Cesar Chavez during peak hours of travel and during local sporting events will be greater than Option 1. This can be partially mitigated by coordinating with UNM and Isotopes Baseball. ▪ Median modifications are required to allow access to the Motel 6 in the southwest quadrant of the Avenida Cesar Chavez/Langham intersection.

It is recommended that Traffic Control Option 1 (1-lane of traffic remain open in each direction) be implemented during construction. The following traffic control and project scheduling recommendations should also be considered:

- Project construction should take place outside of monsoon season (approximately June 15th through September 30th).
- Project scheduling should consider the effects of the UNM and Albuquerque Isotopes sporting event schedules.
- Construction duration should be limited to an anticipated 6-week schedule to minimize congestion caused by lane closures.

Conceptual Cost Estimate

Conceptual cost estimates for both structure replacement alternatives with both traffic control options were prepared using current City of Albuquerque and New Mexico Department of Transportation (NMDOT) average unit bid prices and Parsons Brinkerhoff's opinion of the work. A summary of the conceptual cost estimates can be found in Table 4. The cost estimates can be found in Appendix C.

Table 4: Conceptual Cost Estimate Summary

	Traffic Control Option 1	Traffic Control Option 2
Cast-In-Place	$343,011.75	$239,387.85
Precast	$386,099.38	$277,041.43

The following key assumptions were made for the conceptual estimates:

- Typical construction phasing and detours will be used. No temporary plating, bridging of the channel, or reversible lanes are included.
- The existing structure contains lead elements, including bearings and caulking. Contractors are typically equipped to dispose of these items safely. The cost of disposal is assumed to be minor and is included in the cost of removals.
- Standard bridge construction methods will be used. Except for the use of precast deck panels, Accelerated Bridge Construction (ABC) techniques are not included.
- Precast concrete deck cost was based on 2012 NMDOT bid prices for precast deck panels.
- The existing substructure reinforced concrete has adequate strength (to be investigated by further testing), and deterioration can be mitigated with the proposed rehabilitation.
- The existing median noses will have to be removed and temporarily paved to allow for 2 lanes of Avenida Cesar Chavez to remain open in both directions of travel during construction.
- A 30 percent contingency was added to account for unforeseen costs.

5.2.7 Project Implementation Recommendations

The following general recommendations should be considered for project implementation:

- A meeting in the field should be held with the City prior to design to discuss the scope of the proposed improvements.
- The level of coordination required with the U.S. Army Corps of Engineers should be investigated to determine potential impacts on the project schedule.
- Prior to design, the existing concrete walls should be cored and tests conducted to determine the strength and the extent of damage due to reactive aggregates.

Appendix A: Drainage Basin & Land Use Maps

Exhibit 1: Drainage Basin Map

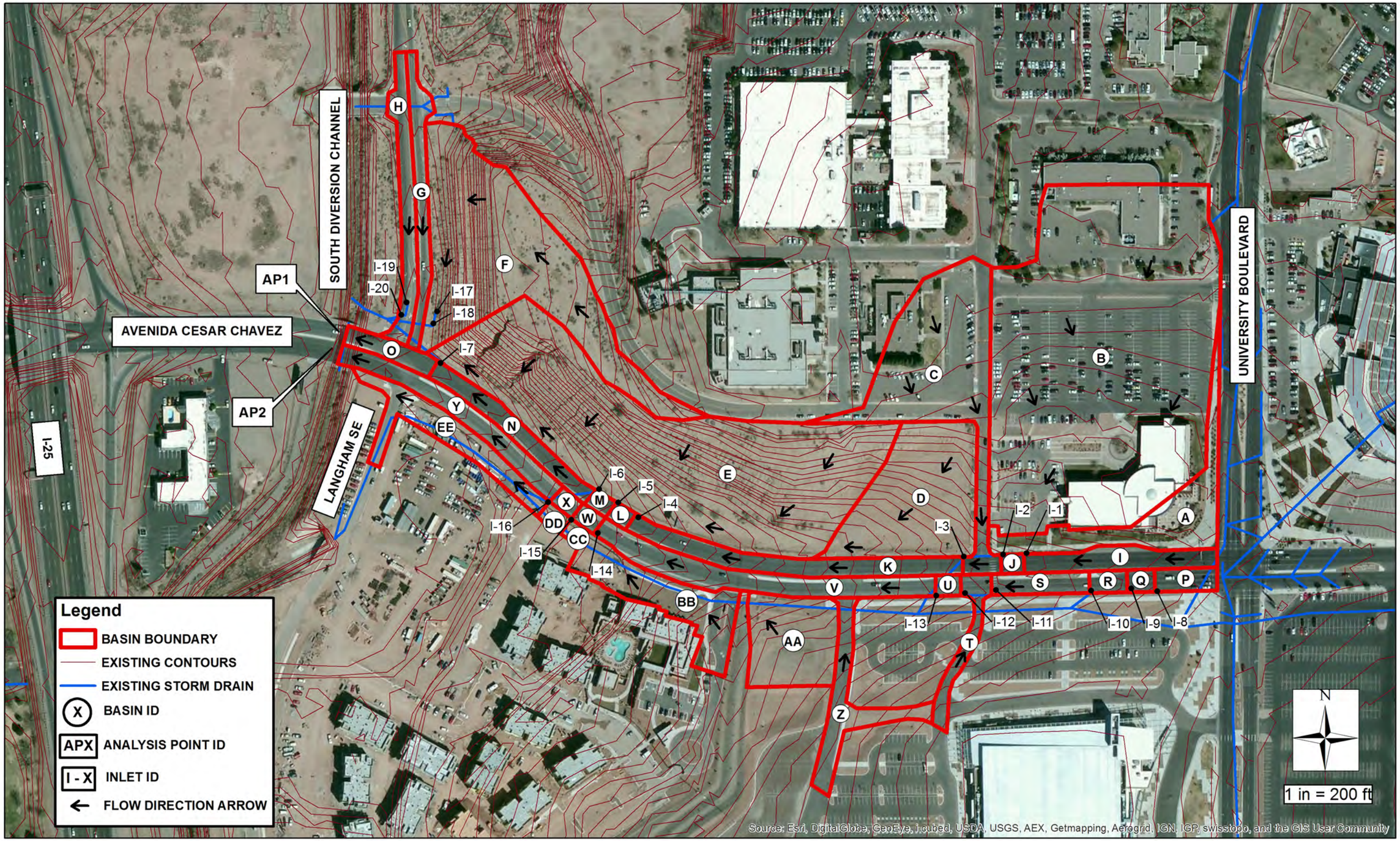
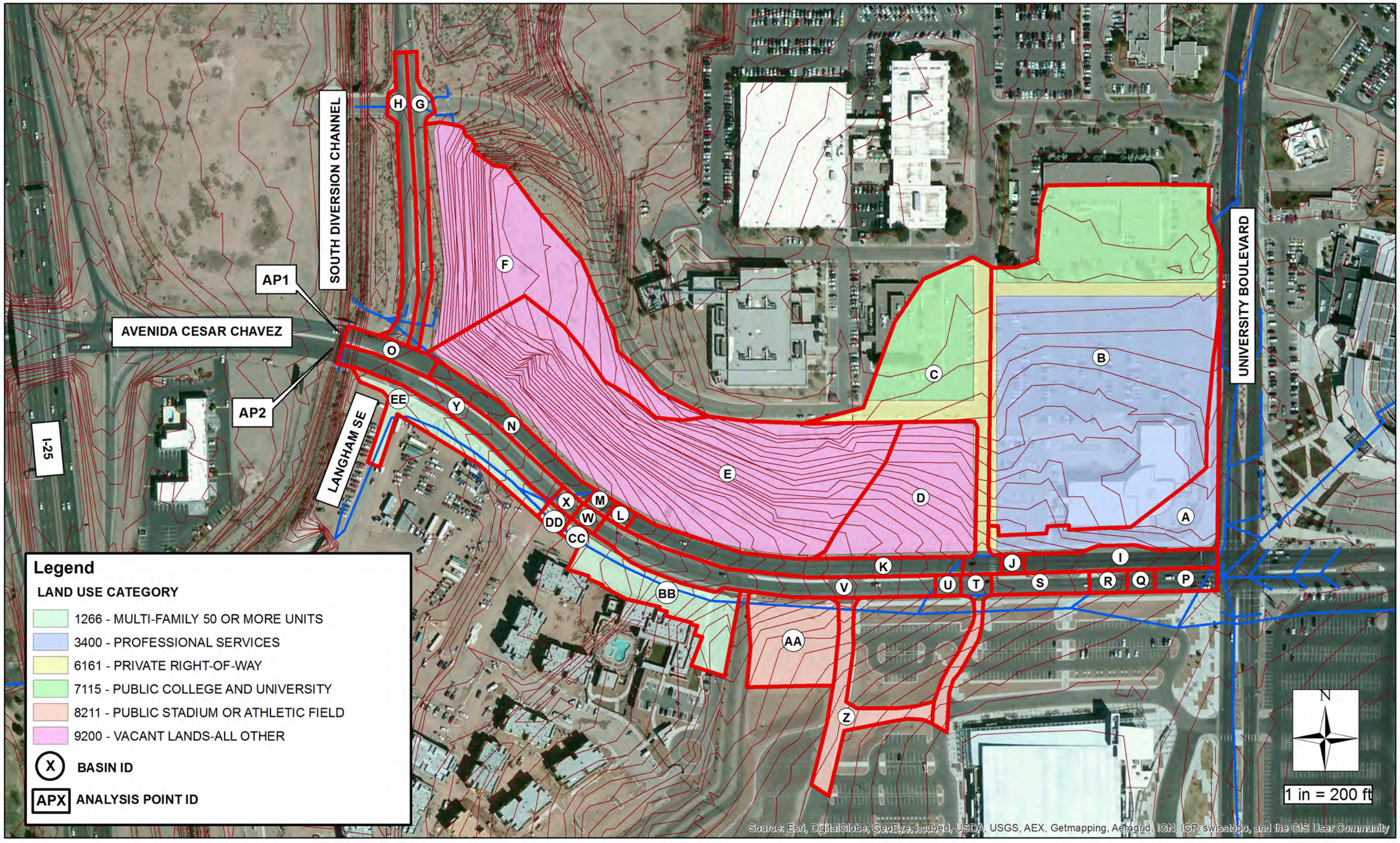


Exhibit 2: Land Use Map



Appendix B: Calculations

Worksheet for INLET1_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	6.39	ft³/s
Slope	0.02760	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	70.85	%
Intercepted Flow	4.53	ft³/s
Bypass Flow	1.86	ft³/s
Spread	11.29	ft
Depth	0.31	ft
Flow Area	1.37	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	4.67	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.12	
Grate Flow Ratio	0.50	
Equivalent Cross Slope	0.09708	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.14	
Total Interception Length	21.58	ft

Worksheet for INLET2_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	2.10	ft³/s
Slope	0.02760	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	94.47	%
Intercepted Flow	1.98	ft³/s
Bypass Flow	0.12	ft³/s
Spread	6.83	ft
Depth	0.22	ft
Flow Area	0.56	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	3.76	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.16	
Grate Flow Ratio	0.74	
Equivalent Cross Slope	0.13385	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.28	
Total Interception Length	11.15	ft

Worksheet for INLET3_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	9.32	ft³/s
Slope	0.02760	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	62.45	%
Intercepted Flow	5.82	ft³/s
Bypass Flow	3.50	ft³/s
Spread	13.20	ft
Depth	0.35	ft
Flow Area	1.83	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	5.08	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.10	
Grate Flow Ratio	0.44	
Equivalent Cross Slope	0.08685	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.12	
Total Interception Length	27.03	ft

Worksheet for INLET4_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	14.07	ft³/s
Slope	0.04000	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	54.40	%
Intercepted Flow	7.65	ft³/s
Bypass Flow	6.42	ft³/s
Spread	14.47	ft
Depth	0.38	ft
Flow Area	2.19	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	6.44	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.07	
Grate Flow Ratio	0.40	
Equivalent Cross Slope	0.08131	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.08	
Total Interception Length	37.37	ft

Worksheet for INLET6_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	2.20	ft³/s
Slope	0.04000	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	94.48	%
Intercepted Flow	2.08	ft³/s
Bypass Flow	0.12	ft³/s
Spread	6.36	ft
Depth	0.22	ft
Flow Area	0.50	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	4.43	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.13	
Grate Flow Ratio	0.77	
Equivalent Cross Slope	0.13887	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.25	
Total Interception Length	12.43	ft

Worksheet for INLET5_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	6.66	ft³/s
Slope	0.04000	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	70.63	%
Intercepted Flow	4.70	ft³/s
Bypass Flow	1.96	ft³/s
Spread	10.62	ft
Depth	0.30	ft
Flow Area	1.22	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	5.46	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.09	
Grate Flow Ratio	0.53	
Equivalent Cross Slope	0.10132	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.13	
Total Interception Length	23.92	ft

Worksheet for INLET7_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	28.27	ft³/s
Slope	0.03720	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	40.09	%
Intercepted Flow	11.33	ft³/s
Bypass Flow	16.94	ft³/s
Spread	19.35	ft
Depth	0.48	ft
Flow Area	3.84	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	7.37	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	0.93	
Side Flow Factor	0.06	
Grate Flow Ratio	0.30	
Equivalent Cross Slope	0.06615	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.06	
Total Interception Length	55.47	ft

Worksheet for INLET8_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	0.71	ft³/s
Slope	0.02680	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	100.00	%
Intercepted Flow	0.71	ft³/s
Bypass Flow	0.00	ft³/s
Spread	3.60	ft
Depth	0.16	ft
Flow Area	0.22	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	3.20	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.21	
Grate Flow Ratio	0.96	
Equivalent Cross Slope	0.16792	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.51	
Total Interception Length	6.12	ft

Worksheet for INLET9_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	0.33	ft³/s
Slope	0.02680	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	100.00	%
Intercepted Flow	0.33	ft³/s
Bypass Flow	0.00	ft³/s
Spread	1.94	ft
Depth	0.12	ft
Flow Area	0.12	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	2.79	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.25	
Grate Flow Ratio	1.00	
Equivalent Cross Slope	0.17348	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.72	
Total Interception Length	4.35	ft

Worksheet for INLET10_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	0.42	ft³/s
Slope	0.02680	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	100.00	%
Intercepted Flow	0.42	ft³/s
Bypass Flow	0.00	ft³/s
Spread	2.23	ft
Depth	0.13	ft
Flow Area	0.14	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	2.96	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.23	
Grate Flow Ratio	1.00	
Equivalent Cross Slope	0.17346	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.65	
Total Interception Length	4.81	ft

Worksheet for INLET11_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	1.03	ft³/s
Slope	0.02760	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	100.00	%
Intercepted Flow	1.03	ft³/s
Bypass Flow	0.00	ft³/s
Spread	4.60	ft
Depth	0.18	ft
Flow Area	0.30	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	3.39	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.19	
Grate Flow Ratio	0.90	
Equivalent Cross Slope	0.15851	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.42	
Total Interception Length	7.47	ft

Worksheet for INLET12_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	1.18	ft³/s
Slope	0.02760	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	99.92	%
Intercepted Flow	1.18	ft³/s
Bypass Flow	0.00	ft³/s
Spread	5.00	ft
Depth	0.19	ft
Flow Area	0.34	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	3.45	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.19	
Grate Flow Ratio	0.87	
Equivalent Cross Slope	0.15417	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.39	
Total Interception Length	8.04	ft

Worksheet for INLET13_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	0.28	ft³/s
Slope	0.02760	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	100.00	%
Intercepted Flow	0.28	ft³/s
Bypass Flow	0.00	ft³/s
Spread	1.82	ft
Depth	0.11	ft
Flow Area	0.10	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	2.71	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.26	
Grate Flow Ratio	1.00	
Equivalent Cross Slope	0.17348	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.76	
Total Interception Length	4.09	ft

Worksheet for INLET14_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	12.24	ft³/s
Slope	0.04000	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	57.24	%
Intercepted Flow	7.01	ft³/s
Bypass Flow	5.23	ft³/s
Spread	13.68	ft
Depth	0.36	ft
Flow Area	1.96	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	6.24	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.07	
Grate Flow Ratio	0.42	
Equivalent Cross Slope	0.08467	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.09	
Total Interception Length	34.40	ft

Worksheet for INLET15_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	5.68	ft³/s
Slope	0.04000	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	74.31	%
Intercepted Flow	4.22	ft³/s
Bypass Flow	1.46	ft³/s
Spread	9.92	ft
Depth	0.29	ft
Flow Area	1.08	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	5.28	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.10	
Grate Flow Ratio	0.56	
Equivalent Cross Slope	0.10620	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.14	
Total Interception Length	21.75	ft

Worksheet for INLET16_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	1.99	ft³/s
Slope	0.04000	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	96.02	%
Intercepted Flow	1.91	ft³/s
Bypass Flow	0.08	ft³/s
Spread	6.04	ft
Depth	0.21	ft
Flow Area	0.46	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	4.36	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.13	
Grate Flow Ratio	0.80	
Equivalent Cross Slope	0.14247	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.27	
Total Interception Length	11.74	ft

Worksheet for INLET17_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	15.05	ft³/s
Slope	0.01245	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	53.52	%
Intercepted Flow	8.05	ft³/s
Bypass Flow	7.00	ft³/s
Spread	18.73	ft
Depth	0.46	ft
Flow Area	3.60	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	4.18	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.14	
Grate Flow Ratio	0.31	
Equivalent Cross Slope	0.06767	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.10	
Total Interception Length	30.24	ft

Worksheet for INLET18_TYPE_DBLC

Project Description

Solve For	Efficiency

Input Data

Discharge	7.00	ft³/s
Slope	0.01245	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Grate Width	2.08	ft
Grate Length	6.67	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%

Options

Grate Flow Option	Exclude None

Results

Efficiency	72.10	%
Intercepted Flow	5.05	ft³/s
Bypass Flow	1.95	ft³/s
Spread	13.85	ft
Depth	0.36	ft
Flow Area	2.01	ft²
Gutter Depression	0.08	ft
Total Depression	0.08	ft
Velocity	3.49	ft/s
Splash Over Velocity	10.48	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.52	
Grate Flow Ratio	0.41	
Active Grate Length	6.67	ft

Messages

Messages	Grate Length should be within the defined range of HEC-22's Chart 5 (approx. 0.5-4.5 ft / 0.15-1.35 m).

Worksheet for INLET19_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	2.30	ft³/s
Slope	0.01245	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	92.42	%
Intercepted Flow	2.13	ft³/s
Bypass Flow	0.17	ft³/s
Spread	8.61	ft
Depth	0.26	ft
Flow Area	0.83	ft²
Gutter Depression	0.09	ft
Total Depression	0.32	ft
Velocity	2.76	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.25	
Grate Flow Ratio	0.63	
Equivalent Cross Slope	0.11666	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.31	
Total Interception Length	9.91	ft

Worksheet for INLET20_TYPE_DBLC

Project Description

Solve For	Efficiency

Input Data

Discharge	0.17	ft³/s
Slope	0.01245	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Grate Width	2.08	ft
Grate Length	6.67	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%

Options

Grate Flow Option	Exclude None

Results

Efficiency	100.00	%
Intercepted Flow	0.17	ft³/s
Bypass Flow	0.00	ft³/s
Spread	1.80	ft
Depth	0.11	ft
Flow Area	0.10	ft²
Gutter Depression	0.08	ft
Total Depression	0.08	ft
Velocity	1.76	ft/s
Splash Over Velocity	10.48	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.79	
Grate Flow Ratio	1.00	
Active Grate Length	6.67	ft

Messages

Messages	Grate Length should be within the defined range of HEC-22's Chart 5 (approx. 0.5-4.5 ft / 0.15-1.35 m).

Worksheet for Option 1 EB- 2-TYPE DBL D

Project Description

Solve For	Efficiency

Input Data

Discharge	5.29	ft³/s
Slope	0.00915	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.02	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Grate Width	2.08	ft
Grate Length	13.32	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	15.00	%

Options

Grate Flow Option	Exclude None

Results

Efficiency	88.93	%
Intercepted Flow	4.70	ft³/s
Bypass Flow	0.59	ft³/s
Spread	14.96	ft
Depth	0.26	ft
Flow Area	1.94	ft²
Gutter Depression	0.00	ft
Total Depression	0.00	ft
Velocity	2.72	ft/s
Splash Over Velocity	20.20	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.83	
Grate Flow Ratio	0.33	
Active Grate Length	11.32	ft

Messages

Messages	Grate Length should be within the defined range of HEC-22's Chart 5 (approx. 0.5-4.5 ft / 0.15-1.35 m).

Worksheet for Options 2 & 3 EB - Curb Opening

Project Description

Solve For	Efficiency

Input Data

Discharge	5.29	ft³/s
Slope	0.00915	ft/ft
Gutter Width	1.00	ft
Gutter Cross Slope	0.02	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Curb Opening Length	15.00	ft
Local Depression	3.00	in
Local Depression Width	0.83	ft

Results

Efficiency	96.60	%
Intercepted Flow	5.11	ft³/s
Bypass Flow	0.18	ft³/s
Spread	14.96	ft
Depth	0.26	ft
Flow Area	1.94	ft²
Gutter Depression	0.00	ft
Total Depression	0.25	ft
Velocity	2.72	ft/s
Equivalent Cross Slope	0.06810	ft/ft
Length Factor	0.85	
Total Interception Length	17.70	ft

Worksheet for Option 1 WB - Triangular Ditch

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.02670	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Discharge	26.32	ft^3/s

Results

Normal Depth	1.32	ft
Flow Area	5.19	ft^2
Wetted Perimeter	8.32	ft
Hydraulic Radius	0.62	ft
Top Width	7.89	ft
Critical Depth	1.37	ft
Critical Slope	0.02174	ft/ft
Velocity	5.07	ft/s
Velocity Head	0.40	ft
Specific Energy	1.71	ft
Froude Number	1.10	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.32	ft
Critical Depth	1.37	ft
Channel Slope	0.02670	ft/ft
Critical Slope	0.02174	ft/ft

Worksheet for Option 1 WB - 5'x5' W.Q. Inlet

Project Description

Solve For	Spread

Input Data

Discharge	26.32	ft^3/s	Basin E runoff
Left Side Slope	3.00	ft/ft (H:V)	
Right Side Slope	3.00	ft/ft (H:V)	
Bottom Width	0.00	ft	
Grate Width	5.00	ft	
Grate Length	5.00	ft	
Local Depression	0.00	in	
Local Depression Width	0.00	ft	
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")		
Clogging	50.00	%	

Results

Spread	4.20	ft
Depth	0.70	ft
Wetted Perimeter	4.42	ft
Top Width	4.20	ft
Open Grate Area	10.00	ft^2
Active Grate Weir Length	15.00	ft

Worksheet for Option 1 WB - 24" SDCP

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.02000	ft/ft
Normal Depth	2.00	ft
Diameter	2.00	ft
Discharge	31.99	ft^3/s

Results

Discharge	31.99	ft^3/s
Normal Depth	2.00	ft
Flow Area	3.14	ft^2
Wetted Perimeter	6.28	ft
Hydraulic Radius	0.50	ft
Top Width	0.00	ft
Critical Depth	1.89	ft
Percent Full	100.0	%
Critical Slope	0.01730	ft/ft
Velocity	10.18	ft/s
Velocity Head	1.61	ft
Specific Energy	3.61	ft
Froude Number	0.00	
Maximum Discharge	34.41	ft^3/s
Discharge Full	31.99	ft^3/s
Slope Full	0.02000	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%

Worksheet for Option 1 WB - 24" SDCP

GVF Output Data

Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.00	ft
Critical Depth	1.89	ft
Channel Slope	0.02000	ft/ft
Critical Slope	0.01730	ft/ft

Worksheet for Option 1 WB - INLET7_TYPEA

Project Description

Solve For	Efficiency

Input Data

Discharge	1.95	ft³/s
Slope	0.03720	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.06	ft/ft
Road Cross Slope	0.02	ft/ft
Roughness Coefficient	0.016	
Local Depression	2.77	in
Local Depression Width	2.08	ft
Grate Width	2.08	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.45	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	95.53	%
Intercepted Flow	1.86	ft³/s
Bypass Flow	0.09	ft³/s
Spread	6.17	ft
Depth	0.21	ft
Flow Area	0.47	ft²
Gutter Depression	0.08	ft
Total Depression	0.31	ft
Velocity	4.18	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.14	
Grate Flow Ratio	0.78	
Equivalent Cross Slope	0.13825	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.27	
Total Interception Length	11.59	ft

Worksheet for Option 1 WB - Curb Opening

Project Description

Solve For	Efficiency

Input Data

Discharge	2.98	ft³/s	Basin O + Langham Bypass + Inlet 7 bypass
Slope	0.00915	ft/ft	
Gutter Width	1.00	ft	
Gutter Cross Slope	0.01	ft/ft	
Road Cross Slope	0.01	ft/ft	
Roughness Coefficient	0.016		
Curb Opening Length	11.00	ft	
Local Depression	3.00	in	
Local Depression Width	1.00	ft	

Results

Efficiency	87.05	%
Intercepted Flow	2.59	ft³/s
Bypass Flow	0.39	ft³/s
Spread	15.38	ft
Depth	0.18	ft
Flow Area	1.39	ft²
Gutter Depression	0.00	ft
Total Depression	0.25	ft
Velocity	2.14	ft/s
Equivalent Cross Slope	0.05280	ft/ft
Length Factor	0.68	
Total Interception Length	16.21	ft

Worksheet for Options 2 & 5 WB - Curb Opening

Project Description

Solve For	Efficiency

Input Data

Discharge	19.82	ft³/s
Slope	0.00915	ft/ft
Gutter Width	1.00	ft
Gutter Cross Slope	0.01	ft/ft
Road Cross Slope	0.01	ft/ft
Roughness Coefficient	0.016	
Curb Opening Length	42.00	ft
Local Depression	3.00	in
Local Depression Width	1.00	ft

Results

Efficiency	97.60	%
Intercepted Flow	19.34	ft³/s
Bypass Flow	0.48	ft³/s
Spread	31.30	ft
Depth	0.37	ft
Flow Area	5.76	ft²
Gutter Depression	0.00	ft
Total Depression	0.25	ft
Velocity	3.44	ft/s
Equivalent Cross Slope	0.03250	ft/ft
Length Factor	0.87	
Total Interception Length	48.05	ft

Worksheet for Option 3 WB - COA Cattle Guard Inlet

Project Description

Solve For	Efficiency

Input Data

Discharge	19.82	ft³/s
Slope	0.00915	ft/ft
Gutter Width	22.00	ft
Gutter Cross Slope	0.01	ft/ft
Road Cross Slope	0.01	ft/ft
Roughness Coefficient	0.016	
Local Depression	0.00	in
Local Depression Width	0.00	ft
Grate Width	22.00	ft
Grate Length	3.33	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	0.00	%
Curb Opening Length	6.61	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency	97.28	%
Intercepted Flow	19.28	ft³/s
Bypass Flow	0.54	ft³/s
Spread	31.30	ft
Depth	0.37	ft
Flow Area	5.76	ft²
Gutter Depression	0.00	ft
Total Depression	0.00	ft
Velocity	3.44	ft/s
Splash Over Velocity	6.57	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.12	
Grate Flow Ratio	0.96	
Equivalent Cross Slope	0.01177	ft/ft
Active Grate Length	3.33	ft
Length Factor	0.04	
Total Interception Length	88.42	ft

Worksheet for Option 3 WB - COA Cattle Guard Inlet

Messages

Messages	Grate Length should be within the defined range of HEC-22's Chart 5 (approx. 0.5-4.5 ft / 0.15-1.35 m).

Worksheet for Option 4 WB -5-TYPE DBL D Inlets

Project Description

Solve For	Efficiency

Input Data

Discharge	19.82	ft³/s
Slope	0.00915	ft/ft
Gutter Width	2.08	ft
Gutter Cross Slope	0.01	ft/ft
Road Cross Slope	0.01	ft/ft
Roughness Coefficient	0.016	
Grate Width	2.08	ft
Grate Length	33.30	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	15.00	%

Options

Grate Flow Option	Exclude None

Results

Efficiency	95.30	%
Intercepted Flow	18.89	ft³/s
Bypass Flow	0.93	ft³/s
Spread	34.67	ft
Depth	0.35	ft
Flow Area	6.01	ft²
Gutter Depression	0.00	ft
Total Depression	0.00	ft
Velocity	3.30	ft/s
Splash Over Velocity	261.13	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.94	
Grate Flow Ratio	0.15	
Active Grate Length	28.31	ft

Messages

Messages	Grate Length should be within the defined range of HEC-22's Chart 5 (approx. 0.5-4.5 ft / 0.15-1.35 m).

PARSONS BRINCKERHOFF Computation Sheet

page 1 of

made by KCC

date 6-10-13

checked by ~~DB~~

date 6/13

subject COA On-Call ACC - DI
Culvert Loads

Load Factor Design

$$\text{Group I} = 1.3\left[\beta_D D + 1.67(L+I)_n + \sout{1.0\,CF} + \beta_E E + \sout{1.0\,B} + \sout{1.0\,SF}\right]$$

$\beta_D = 1.0$
$\beta_E = 1.5$ for lateral active earth pressure

Dead Load

Floor $(1'-2")(13'-8")(150\,pcf) = 2392$ plf
Wall $[(1'-2")(14'-4\frac{3}{4}") - (6\frac{1}{2}")(1'-5\frac{5}{8}")](150\,pcf) = 2400$ plf (each)

Grate $\frac{28,949\ lbs}{(86'\,long)(2\,supports)} = 168.5\ lb/ft$

Live Load - HS20-44

(distributed)
lane load = $640\,plf\,(13'-8") = 8746.88$ lb over 12' lane width
$\frac{8746.88\ lb}{(2\,supports)(12'\,wide\,lane)} = 364.5\ lb/ft$ on ea. culvert wall

(concentrated)
$26,000$ lb for shear $\left(\frac{1}{12'\,lane}\right) = 2166.67\ lb/ft$ on one wall

-OR-
truck load $32,000$ lb axle $\left(\frac{1}{12'\,lane}\right) = 2666.67\ lb/ft$ on one wall ← USE
No impact

Longitudinal Load

$5\%\,(2666.67\ lb/ft) = 133.33\ lb/ft$ (not used in Group I load combination)

subject CDA On-Call ACC-DF

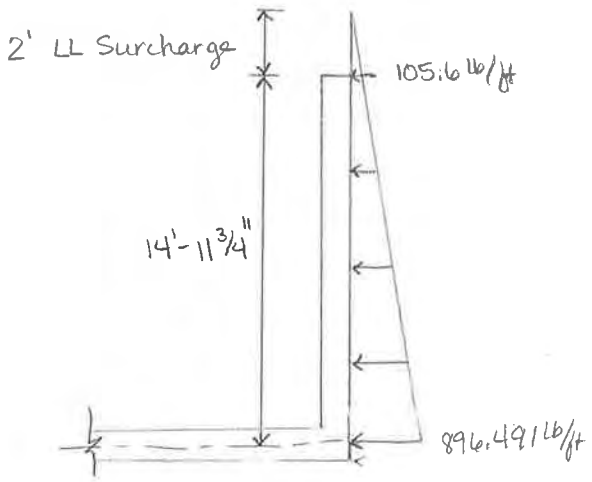
Culvert Loads

Earth Loads

Medium sand $\phi = 34°$ from as-built plans

$K_o = 1 - \sin\phi = 1 - \sin 34° = 0.44$

$p_o = k_o \gamma z = 0.44\ (120\ psf/ft)\ z = 52.8\ psf/ft\ z$



At-rest $52.8\ psf/ft\ (1'\text{wide})(16'-11\frac{3}{4}") = 896.491\ lb/ft$

$K_a = \frac{1-\sin\phi}{1+\sin\phi} = \frac{1-\sin(34°)}{1+\sin(34°)} = 0.283$

$p_a = 0.283(120\ pcf)\ z = 34\ z\ psf/ft$

Active $34\ psf/ft\ (1'\text{wide})(16'-11\frac{3}{4}") = 577.3\ lb/ft$ bottom of wall ← USE

$34\ psf/ft\ (1'\text{wide})(2') = 68\ lb/ft$ top of wall

Soil Springs – medium sand

$$k_{B\times B} = k_1\left(\frac{B+1}{2B}\right)^2 = 280\ lb/in^2\left(\frac{13.1667'+1}{2(13.1667')}\right)^2 = 80.62\ lb/in^3$$

$k_1 = 91-460\ lb/in^3$ dry or moist sand, from Principles of Found. Engr. (1999)
↳ $280\ lb/in^3$ avg.

$B = 13'-8"$

$$k_{(L\times B)} = \frac{k_{(B\times B)}\left(1+0.5\frac{B}{L}\right)}{1.5} = \frac{80.62\ lb/in^3\left(1+0.5\frac{13.1667'}{97.5'}\right)}{1.5} = 57.5\ lb/in^3$$

$L = 97'-6"$

space springs every 2' on 1' wide strip, 10" overhang at each end

$K_{ends} = 57.5\ lb/in^3\ (12in \times 22in) = 15{,}180\ lb/in$	$15.18\ k/in$	$182.16\ k/ft$
$K_{middle} = 57.5\ lb/in^3\ (12in \times 24in) = 16{,}560\ lb/in$	$16.56\ k/in$	$198.72\ k/ft$

Check spacing assumption

$$\beta = \sqrt[4]{\frac{B_1 k}{4E_F I_F}} = \sqrt[4]{\frac{(13.1667'\times 12)(0.0575\ k/in^3)}{4(3150\ k/in^2)(37{,}502.2\ in^4)}} = 0.012$$

$E = 3150\ k/in^2$

$I_F = \frac{1}{12}(13.1667'\times 12)(14in)^3 = 37{,}502.2\ in^4$

$l = 24in$

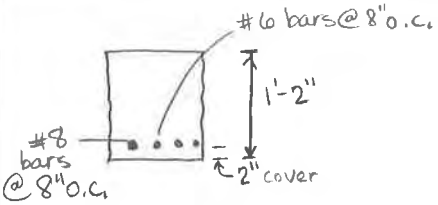
$l \le \frac{\pi}{4\beta} = \frac{\pi}{4(0.012)} = 65in$ → OK error is not excessive

$L'' = ml = 7\ springs\ (24"\ spacing) = 168in$

$L'' \ge \frac{3\pi}{2\beta} = \frac{3\pi}{2(0.012)} = 392.7$ $\quad L'' \not\ge \frac{3\pi}{2\beta}$

subject CoA On-Call ACC-DI

Moment Capacity of 1' strip of wall - bottom



$A_s = (0.44 in^2 + 0.79 in^2)(1.5 \text{ bars/ft}) = 1.845 in^2$

$d = 14 in - 2" \text{ cover} - \frac{1}{2}(1 in) = 11.5 in$

$f_y = 40 ksi$

$$a = \frac{A_s f_y}{0.85 f'_c b} = \frac{1.845 in^2 (40 ksi)}{0.85(3 ksi)(12 in)} = 2.41 in$$

$$M_n = A_s f_y (d - a/2) = 1.845 in^2 (40 ksi)(11.5 in - 2.41 in/2) = 759.77 k\text{-}in$$

$$\phi M_n = 0.9(759.77 k\text{-}in) = 683.8 k\text{-}in$$

$\phi = 0.9$ [AASHTO Std. Spec 17th 8.16.1.2]

check tension-controlled

$\varepsilon_s \geq 0.005$ - tension controlled

$$\varepsilon_s = \frac{d-c}{c}(0.003) = \frac{11.5 in - 2.84 in}{2.84 in}(0.003) = 0.009 > 0.005 \longrightarrow OK$$

$c = a/\beta_1 = a/0.85 = 2.41 in/0.85 = 2.84 in$

M_u (unbraced) = 565 k-in $\longrightarrow$ OK

M_u (braced) = 211 k-in $\longrightarrow$ OK

PARSONS BRINCKERHOFF Computation Sheet

page 4a of

made by KCC

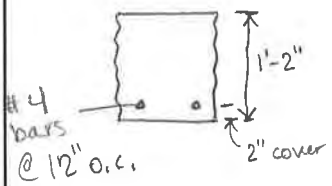
date 6-17-13

checked by JS

date 6/13

subject CoA On-Call ACC-DI

Moment capacity of 1' strip @ mid height 8.74'



$A_s = 0.2\ in^2/bar\ (1\ bar/ft) = 0.2\ in^2/ft$

$d = 14\ in - 2"\ cover - \frac{1}{2}(0.5\ in) = 11.75\ in$

$f_y = 40\ ksi$

$$a = \frac{A_s f_y}{0.85 f'_c b} = \frac{0.2\ in^2 (40\ ksi)}{0.85 (3\ ksi)(12\ in)} = 0.26\ in$$

$$M_n = A_s f_y (d - a/2) = 0.2\ in^2 (40 ksi)(11.75 - 0.26 in/2) = 92.96\ k\text{-}in$$

$$\phi M_n = 0.9 (92.96\ k\text{-}in) = 83.664\ k\text{-}in$$

check tension-controlled

$\varepsilon_s \geq 0.005$

$$\varepsilon_s = \frac{d - c}{c} (0.003) =$$

$$c = a/\beta_1 = 0.61 in/0.85 = 0.72$$

M_u (braced) = 82.7 k-in $< \phi M_n \rightarrow$ OK

$V_u = 8.17$ k at joint between wall and floor (unbraced)
$V_u = 6.33$ k (braced)

$V_u \leq \Phi V_n$ [AASHTO Std. Spec 17th ed Eq. 8-46]

Shear Friction [Article 8.16.6.4]

$V_n = A_{vf} f_y \mu = 1.845 in^2 (40{,}000 psi) = 73{,}800$ lb [Eq. 8-56]

$\mu = 1.0 \lambda = 1.0(1.0) = 1.0$ conc. placed against hardened conc, intentionally roughened [Article 8.16.6.4.4(c)]

$A_{vf} = 1.845 in^2$ (A_s from pg. 4)

check $V_n \leq 0.2 A_{cv} f'_c = 0.2(72 in^2)(3000 psi) = 43{,}200$ lb ←

$800 A_{cv} = 800(72 in^2) = 57{,}600$ lb

$A_{cv} = 6"(12") = 72 in^2$ key

$\Phi V_n = 0.85(43.2 k) = 36.72 k$ > V_u (braced or unbraced) → OK

Allowable concrete shear

$V_c = 2\sqrt{f'_c}\, b_w d = 2\sqrt{3000 psi}\,(12in)(11.5in) = 15{,}117$ lb $= 15.1$ k

↑ from M calc, prev. pg.

$\Phi V_c = 0.85(15.1 k) = 12.8 k$

Bearing Pressure

Unbraced – Node 6 $\dfrac{3.705 k\,(144 in^2/ft^2)}{(12in)(24in)} = 1.85$ ksf < $q_{all} = 2$ ksf

Braced – Node 3 $\dfrac{3.362 k\,(144 in^2/ft^2)}{(12in)(22in)} = 1.83$ ksf

Node 4 $\dfrac{3.508 k\,(144)}{(12in)(24in)} = 1.75$ ksf

< $q_{all} = 2$ ksf

Unbraced

Job Information

	Engineer	Checked	Approved
Name:	KCC		
Date:	10-Jun-13		

Structure Type	PLANE FRAME

Number of Nodes	11	Highest Node	13
Number of Elements	10	Highest Beam	12

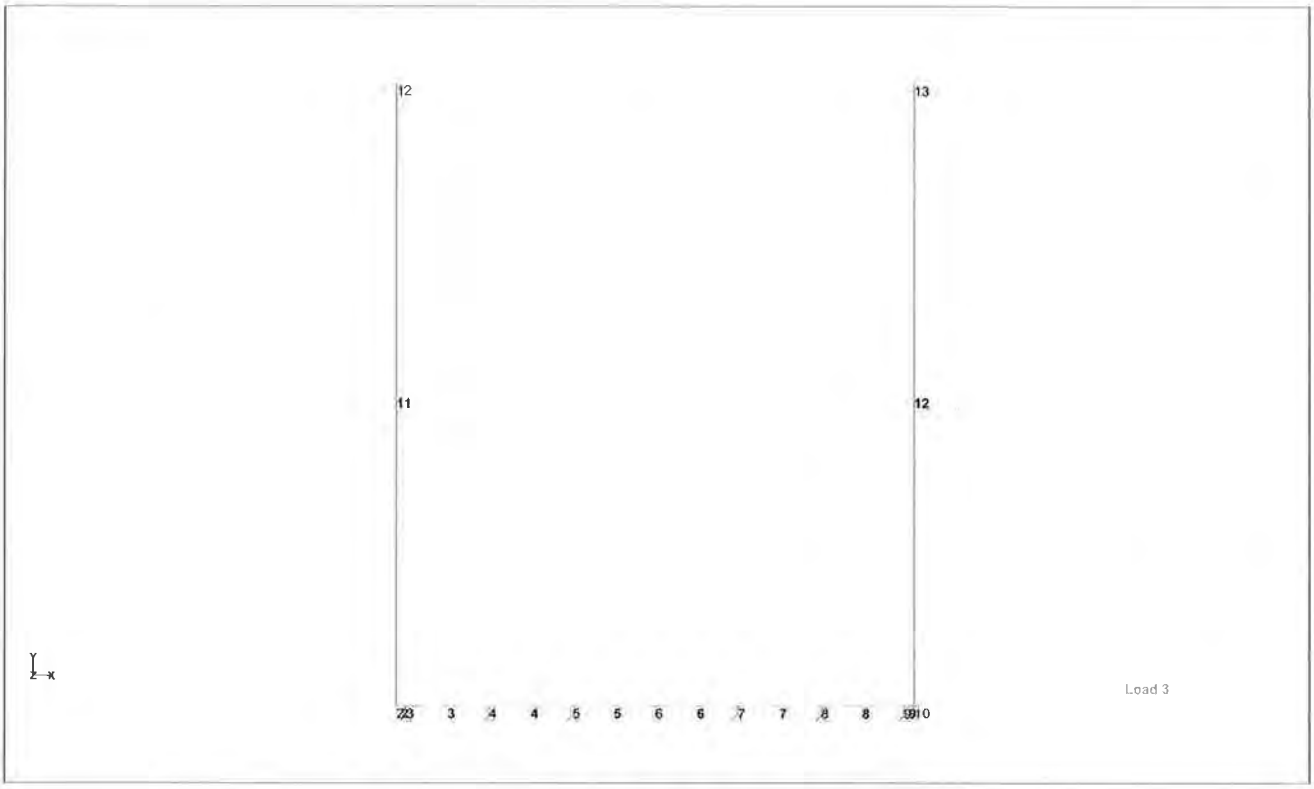
Number of Basic Load Cases	3
Number of Combination Load Cases	1

Included in this printout are data for:

All	The Whole Structure

Included in this printout are results for load cases:

Type	L/C	Name
Primary	1	DEAD LOAD
Primary	2	LIVE LOAD- TRUCK
Primary	3	EARTH
Combination	4	STRENGTH 1



Whole Structure

Section Properties

Prop	Section	Area (in^2)	I_{yy} (in^4)	I_{zz} (in^4)	J (in^4)	Material
1	Rect 14.00x12.00	168.005	2.02E+3	2.74E+3	3.91E+3	CONCRETE

Materials

Mat	Name	E (kip/in^2)	ν	Density (kip/in^3)	α (1/°F)
1	STEEL	29E+3	0.300	0.000	6.5E -6
2	STAINLESSSTEEL	28E+3	0.300	0.000	9.9E -6
3	ALUMINUM	10E+3	0.330	0.000	12.8E -6
4	CONCRETE	3.15E+3	0.170	0.000	5.5E -6

Supports

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip-ft/deg)	rY (kip-ft/deg)	rZ (kip-ft/deg)
3	Fixed	15.180	-	-	-	-
4	-	16.560	-	-	-	-
5	-	16.560	-	-	-	-
6	-	16.560	-	-	-	-
7	-	16.560	-	-	-	-
8	-	16.560	-	-	-	-
9	Fixed	15.180	-	-	-	-

Combination Load Cases

Comb.	Combination L/C Name	Primary	Primary L/C Name	Factor
4	STRENGTH 1	1	DEAD LOAD	1.30
		2	LIVE LOAD- TRUCK	2.17
		3	EARTH	1.69

Node Displacements

Node	L/C	X (in)	Y (in)	Z (in)	Resultant (in)	rX (rad)	rY (rad)	rZ (rad)
2	1:DEAD LOAD	0.000	-0.082	0.000	0.082	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	-0.058	0.000	0.058	0.000	0.000	0.000
	3:EARTH	0.000	0.057	0.000	0.057	0.000	0.000	-0.003
	4:STRENGTH	0.000	-0.137	0.000	0.137	0.000	0.000	-0.003
3	1:DEAD LOAD	0.000	-0.080	0.000	0.080	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	-0.057	0.000	0.057	0.000	0.000	0.000
	3:EARTH	0.000	0.049	0.000	0.049	0.000	0.000	-0.002
	4:STRENGTH	0.000	-0.145	0.000	0.145	0.000	0.000	-0.003
4	1:DEAD LOAD	0.000	-0.069	0.000	0.069	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	-0.048	0.000	0.048	0.000	0.000	0.000
	3:EARTH	0.000	0.001	0.000	0.001	0.000	0.000	-0.002
	4:STRENGTH	0.000	-0.193	0.000	0.193	0.000	0.000	-0.001
5	1:DEAD LOAD	0.000	-0.062	0.000	0.062	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	-0.041	0.000	0.041	0.000	0.000	0.000
	3:EARTH	0.000	-0.027	0.000	0.027	0.000	0.000	-0.001
	4:STRENGTH	0.000	-0.217	0.000	0.217	0.000	0.000	-0.001
6	1:DEAD LOAD	0.000	-0.059	0.000	0.059	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	-0.039	0.000	0.039	0.000	0.000	0.000
	3:EARTH	0.000	-0.037	0.000	0.037	0.000	0.000	0.000
	4:STRENGTH	0.000	-0.224	0.000	0.224	0.000	0.000	0.000
7	1:DEAD LOAD	0.000	-0.062	0.000	0.062	0.000	0.000	-0.000
	2:LIVE LOAD-	0.000	-0.041	0.000	0.041	0.000	0.000	-0.000
	3:EARTH	0.000	-0.027	0.000	0.027	0.000	0.000	0.001
	4:STRENGTH	0.000	-0.217	0.000	0.217	0.000	0.000	0.001

Node Displacements Cont...

Node	L/C	X (in)	Y (in)	Z (in)	Resultant (in)	rX (rad)	rY (rad)	rZ (rad)
8	1:DEAD LOAD	0.000	-0.069	0.000	0.069	0.000	0.000	-0.000
	2:LIVE LOAD-	0.000	-0.048	0.000	0.048	0.000	0.000	-0.000
	3:EARTH	0.000	0.001	0.000	0.001	0.000	0.000	0.002
	4:STRENGTH	0.000	-0.193	0.000	0.193	0.000	0.000	0.001
9	1:DEAD LOAD	0.000	-0.080	0.000	0.080	0.000	0.000	-0.000
	2:LIVE LOAD-	0.000	-0.057	0.000	0.057	0.000	0.000	-0.000
	3:EARTH	0.000	0.049	0.000	0.049	0.000	0.000	0.002
	4:STRENGTH	0.000	-0.145	0.000	0.145	0.000	0.000	0.003
10	1:DEAD LOAD	0.000	-0.082	0.000	0.082	0.000	0.000	-0.000
	2:LIVE LOAD-	-0.000	-0.058	0.000	0.058	0.000	0.000	-0.000
	3:EARTH	-0.000	0.057	0.000	0.057	0.000	0.000	0.003
	4:STRENGTH	-0.000	-0.137	0.000	0.137	0.000	0.000	0.003
12	1:DEAD LOAD	-0.083	-0.082	0.000	0.117	0.000	0.000	0.000
	2:LIVE LOAD-	-0.050	-0.059	0.000	0.077	0.000	0.000	0.000
	3:EARTH	0.719	0.057	0.000	0.722	0.000	0.000	-0.004
	4:STRENGTH	1.000	-0.139	0.000	1.010	0.000	0.000	-0.006
13	1:DEAD LOAD	0.083	-0.082	0.000	0.117	0.000	0.000	-0.000
	2:LIVE LOAD-	0.050	-0.059	0.000	0.077	0.000	0.000	-0.000
	3:EARTH	-0.719	0.057	0.000	0.722	0.000	0.000	0.004
	4:STRENGTH	-1.000	-0.139	0.000	1.010	0.000	0.000	0.006

Beam Displacement Detail

Displacements shown in italic indicate the presence of an offset

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
2	1:DEAD LOAD	0.000	0.000	-0.082	0.000	0.082
		0.025	-0.000	-0.081	0.000	0.081
		0.050	0.000	-0.081	0.000	0.081
		0.075	0.000	-0.081	0.000	0.081
		0.100	0.000	-0.081	0.000	0.081
		0.125	-0.000	-0.081	0.000	0.081
		0.150	0.000	-0.081	0.000	0.081
		0.175	0.000	-0.081	0.000	0.081
		0.200	0.000	-0.080	0.000	0.080
		0.225	-0.000	-0.080	0.000	0.080
		0.250	0.000	-0.080	0.000	0.080
	2:LIVE LOAD-	0.000	0.000	-0.058	0.000	0.058
		0.025	-0.000	-0.058	0.000	0.058
		0.050	0.000	-0.058	0.000	0.058
		0.075	0.000	-0.058	0.000	0.058
		0.100	0.000	-0.058	0.000	0.058
		0.125	-0.000	-0.058	0.000	0.058
		0.150	0.000	-0.058	0.000	0.058

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		0.175	0.000	-0.057	0.000	0.057
		0.200	0.000	-0.057	0.000	0.057
		0.225	-0.000	-0.057	0.000	0.057
		0.250	0.000	-0.057	0.000	0.057
	3:EARTH	0.000	0.000	0.057	0.000	0.057
		0.025	0.000	0.056	0.000	0.056
		0.050	0.000	0.055	0.000	0.055
		0.075	0.000	0.054	0.000	0.054
		0.100	0.000	0.054	0.000	0.054
		0.125	0.000	0.053	0.000	0.053
		0.150	0.000	0.052	0.000	0.052
		0.175	0.000	0.051	0.000	0.051
		0.200	0.000	0.051	0.000	0.051
		0.225	0.000	0.050	0.000	0.050
		0.250	0.000	0.049	0.000	0.049
	4:STRENGTH	0.000	0.000	-0.137	0.000	0.137
		0.025	0.000	-0.138	0.000	0.138
		0.050	0.000	-0.139	0.000	0.139
		0.075	0.000	-0.139	0.000	0.139
		0.100	0.000	-0.140	0.000	0.140
		0.125	0.000	-0.141	0.000	0.141
		0.150	0.000	-0.142	0.000	0.142
		0.175	0.000	-0.143	0.000	0.143
		0.200	0.000	-0.143	0.000	0.143
		0.225	0.000	-0.144	0.000	0.144
		0.250	0.000	-0.145	0.000	0.145
3	1:DEAD LOAD	0.000	0.000	-0.080	0.000	0.080
		0.200	0.000	-0.079	0.000	0.079
		0.400	0.000	-0.078	0.000	0.078
		0.600	0.000	-0.077	0.000	0.077
		0.800	0.000	-0.076	0.000	0.076
		1.000	0.000	-0.075	0.000	0.075
		1.200	0.000	-0.073	0.000	0.073
		1.400	0.000	-0.072	0.000	0.072
		1.600	0.000	-0.071	0.000	0.071
		1.800	0.000	-0.070	0.000	0.070
		2.000	0.000	-0.069	0.000	0.069
	2:LIVE LOAD-	0.000	0.000	-0.057	0.000	0.057
		0.200	0.000	-0.056	0.000	0.056
		0.400	0.000	-0.055	0.000	0.055
		0.600	0.000	-0.054	0.000	0.054
		0.800	0.000	-0.053	0.000	0.053
		1.000	0.000	-0.052	0.000	0.052
		1.200	0.000	-0.051	0.000	0.051
		1.400	0.000	-0.051	0.000	0.051

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		1.600	0.000	-0.050	0.000	0.050
		1.800	0.000	-0.049	0.000	0.049
		2.000	0.000	-0.048	0.000	0.048
	3:EARTH	0.000	0.000	0.049	0.000	0.049
		0.200	0.000	0.043	0.000	0.043
		0.400	0.000	0.038	0.000	0.038
		0.600	0.000	0.032	0.000	0.032
		0.800	0.000	0.027	0.000	0.027
		1.000	0.000	0.022	0.000	0.022
		1.200	0.000	0.018	0.000	0.018
		1.400	0.000	0.013	0.000	0.013
		1.600	0.000	0.009	0.000	0.009
		1.800	0.000	0.005	0.000	0.005
		2.000	0.000	0.001	0.000	0.001
	4:STRENGTH	0.000	0.000	-0.145	0.000	0.145
		0.200	0.000	-0.151	0.000	0.151
		0.400	0.000	-0.157	0.000	0.157
		0.600	0.000	-0.163	0.000	0.163
		0.800	0.000	-0.168	0.000	0.168
		1.000	0.000	-0.173	0.000	0.173
		1.200	0.000	-0.177	0.000	0.177
		1.400	0.000	-0.182	0.000	0.182
		1.600	0.000	-0.186	0.000	0.186
		1.800	0.000	-0.189	0.000	0.189
		2.000	0.000	-0.193	0.000	0.193
4	1:DEAD LOAD	0.000	0.000	-0.069	0.000	0.069
		0.200	-0.000	-0.069	0.000	0.069
		0.400	-0.000	-0.068	0.000	0.068
		0.600	-0.000	-0.067	0.000	0.067
		0.800	-0.000	-0.066	0.000	0.066
		1.000	-0.000	-0.065	0.000	0.065
		1.200	-0.000	-0.064	0.000	0.064
		1.400	-0.000	-0.064	0.000	0.064
		1.600	-0.000	-0.063	0.000	0.063
		1.800	-0.000	-0.063	0.000	0.063
		2.000	0.000	-0.062	0.000	0.062
	2:LIVE LOAD-	0.000	0.000	-0.048	0.000	0.048
		0.200	-0.000	-0.047	0.000	0.047
		0.400	-0.000	-0.046	0.000	0.046
		0.600	-0.000	-0.046	0.000	0.046
		0.800	-0.000	-0.045	0.000	0.045
		1.000	-0.000	-0.044	0.000	0.044
		1.200	-0.000	-0.044	0.000	0.044
		1.400	-0.000	-0.043	0.000	0.043
		1.600	-0.000	-0.042	0.000	0.042

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		1.800	-0.000	-0.042	0.000	0.042
		2.000	0.000	-0.041	0.000	0.041
	3:EARTH	0.000	0.000	0.001	0.000	0.001
		0.200	-0.000	-0.003	0.000	0.003
		0.400	-0.000	-0.006	0.000	0.006
		0.600	-0.000	-0.010	0.000	0.010
		0.800	-0.000	-0.013	0.000	0.013
		1.000	-0.000	-0.016	0.000	0.016
		1.200	-0.000	-0.018	0.000	0.018
		1.400	-0.000	-0.021	0.000	0.021
		1.600	-0.000	-0.023	0.000	0.023
		1.800	-0.000	-0.026	0.000	0.026
		2.000	0.000	-0.027	0.000	0.027
	4:STRENGTH	0.000	0.000	-0.193	0.000	0.193
		0.200	-0.000	-0.196	0.000	0.196
		0.400	-0.000	-0.199	0.000	0.199
		0.600	-0.000	-0.202	0.000	0.202
		0.800	-0.000	-0.205	0.000	0.205
		1.000	-0.000	-0.207	0.000	0.207
		1.200	-0.000	-0.210	0.000	0.210
		1.400	-0.000	-0.212	0.000	0.212
		1.600	-0.000	-0.213	0.000	0.213
		1.800	-0.000	-0.215	0.000	0.215
		2.000	0.000	-0.217	0.000	0.217
5	1:DEAD LOAD	0.000	0.000	-0.062	0.000	0.062
		0.200	-0.000	-0.061	0.000	0.061
		0.400	-0.000	-0.061	0.000	0.061
		0.600	0.000	-0.061	0.000	0.061
		0.800	0.000	-0.060	0.000	0.060
		1.000	0.000	-0.060	0.000	0.060
		1.200	0.000	-0.060	0.000	0.060
		1.400	0.000	-0.060	0.000	0.060
		1.600	0.000	-0.059	0.000	0.059
		1.800	-0.000	-0.059	0.000	0.059
		2.000	0.000	-0.059	0.000	0.059
	2:LIVE LOAD-	0.000	0.000	-0.041	0.000	0.041
		0.200	-0.000	-0.041	0.000	0.041
		0.400	-0.000	-0.040	0.000	0.040
		0.600	0.000	-0.040	0.000	0.040
		0.800	0.000	-0.040	0.000	0.040
		1.000	0.000	-0.040	0.000	0.040
		1.200	0.000	-0.039	0.000	0.039
		1.400	0.000	-0.039	0.000	0.039
		1.600	0.000	-0.039	0.000	0.039
		1.800	-0.000	-0.039	0.000	0.039

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		2.000	0.000	-0.039	0.000	0.039
	3:EARTH	0.000	0.000	-0.027	0.000	0.027
		0.200	-0.000	-0.029	0.000	0.029
		0.400	-0.000	-0.031	0.000	0.031
		0.600	0.000	-0.032	0.000	0.032
		0.800	0.000	-0.033	0.000	0.033
		1.000	0.000	-0.034	0.000	0.034
		1.200	0.000	-0.035	0.000	0.035
		1.400	0.000	-0.036	0.000	0.036
		1.600	0.000	-0.036	0.000	0.036
		1.800	-0.000	-0.037	0.000	0.037
		2.000	0.000	-0.037	0.000	0.037
	4:STRENGTH	0.000	0.000	-0.217	0.000	0.217
		0.200	-0.000	-0.218	0.000	0.218
		0.400	-0.000	-0.219	0.000	0.219
		0.600	0.000	-0.220	0.000	0.220
		0.800	0.000	-0.221	0.000	0.221
		1.000	0.000	-0.222	0.000	0.222
		1.200	0.000	-0.223	0.000	0.223
		1.400	0.000	-0.223	0.000	0.223
		1.600	0.000	-0.223	0.000	0.223
		1.800	-0.000	-0.224	0.000	0.224
		2.000	0.000	-0.224	0.000	0.224
6	1:DEAD LOAD	0.000	0.000	-0.059	0.000	0.059
		0.200	-0.000	-0.059	0.000	0.059
		0.400	-0.000	-0.059	0.000	0.059
		0.600	-0.000	-0.060	0.000	0.060
		0.800	-0.000	-0.060	0.000	0.060
		1.000	-0.000	-0.060	0.000	0.060
		1.200	-0.000	-0.060	0.000	0.060
		1.400	-0.000	-0.061	0.000	0.061
		1.600	-0.000	-0.061	0.000	0.061
		1.800	-0.000	-0.061	0.000	0.061
		2.000	0.000	-0.062	0.000	0.062
	2:LIVE LOAD-	0.000	0.000	-0.039	0.000	0.039
		0.200	-0.000	-0.039	0.000	0.039
		0.400	-0.000	-0.039	0.000	0.039
		0.600	-0.000	-0.039	0.000	0.039
		0.800	-0.000	-0.039	0.000	0.039
		1.000	-0.000	-0.040	0.000	0.040
		1.200	-0.000	-0.040	0.000	0.040
		1.400	-0.000	-0.040	0.000	0.040
		1.600	-0.000	-0.040	0.000	0.040
		1.800	-0.000	-0.041	0.000	0.041
		2.000	0.000	-0.041	0.000	0.041

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
	3:EARTH	0.000	0.000	-0.037	0.000	0.037
		0.200	-0.000	-0.037	0.000	0.037
		0.400	-0.000	-0.036	0.000	0.036
		0.600	-0.000	-0.036	0.000	0.036
		0.800	-0.000	-0.035	0.000	0.035
		1.000	-0.000	-0.034	0.000	0.034
		1.200	-0.000	-0.033	0.000	0.033
		1.400	-0.000	-0.032	0.000	0.032
		1.600	-0.000	-0.031	0.000	0.031
		1.800	-0.000	-0.029	0.000	0.029
		2.000	0.000	-0.027	0.000	0.027
	4:STRENGTH	0.000	0.000	-0.224	0.000	0.224
		0.200	-0.000	-0.224	0.000	0.224
		0.400	-0.000	-0.223	0.000	0.223
		0.600	-0.000	-0.223	0.000	0.223
		0.800	-0.000	-0.223	0.000	0.223
		1.000	-0.000	-0.222	0.000	0.222
		1.200	-0.000	-0.221	0.000	0.221
		1.400	-0.000	-0.220	0.000	0.220
		1.600	-0.000	-0.219	0.000	0.219
		1.800	-0.000	-0.218	0.000	0.218
		2.000	0.000	-0.217	0.000	0.217
7	1:DEAD LOAD	0.000	0.000	-0.062	0.000	0.062
		0.200	-0.000	-0.063	0.000	0.063
		0.400	-0.000	-0.063	0.000	0.063
		0.600	-0.000	-0.064	0.000	0.064
		0.800	-0.000	-0.064	0.000	0.064
		1.000	-0.000	-0.065	0.000	0.065
		1.200	-0.000	-0.066	0.000	0.066
		1.400	-0.000	-0.067	0.000	0.067
		1.600	-0.000	-0.068	0.000	0.068
		1.800	-0.000	-0.069	0.000	0.069
		2.000	0.000	-0.069	0.000	0.069
	2:LIVE LOAD-	0.000	0.000	-0.041	0.000	0.041
		0.200	-0.000	-0.042	0.000	0.042
		0.400	-0.000	-0.042	0.000	0.042
		0.600	-0.000	-0.043	0.000	0.043
		0.800	-0.000	-0.044	0.000	0.044
		1.000	-0.000	-0.044	0.000	0.044
		1.200	-0.000	-0.045	0.000	0.045
		1.400	-0.000	-0.046	0.000	0.046
		1.600	-0.000	-0.046	0.000	0.046
		1.800	-0.000	-0.047	0.000	0.047
		2.000	0.000	-0.048	0.000	0.048
	3:EARTH	0.000	0.000	-0.027	0.000	0.027

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		0.200	-0.000	-0.026	0.000	0.026
		0.400	-0.000	-0.023	0.000	0.023
		0.600	-0.000	-0.021	0.000	0.021
		0.800	-0.000	-0.018	0.000	0.018
		1.000	-0.000	-0.016	0.000	0.016
		1.200	-0.000	-0.013	0.000	0.013
		1.400	-0.000	-0.010	0.000	0.010
		1.600	-0.000	-0.006	0.000	0.006
		1.800	-0.000	-0.003	0.000	0.003
		2.000	0.000	0.001	0.000	0.001
	4:STRENGTH	0.000	0.000	-0.217	0.000	0.217
		0.200	-0.000	-0.215	0.000	0.215
		0.400	-0.000	-0.213	0.000	0.213
		0.600	-0.000	-0.212	0.000	0.212
		0.800	-0.000	-0.210	0.000	0.210
		1.000	-0.000	-0.207	0.000	0.207
		1.200	-0.000	-0.205	0.000	0.205
		1.400	-0.000	-0.202	0.000	0.202
		1.600	-0.000	-0.199	0.000	0.199
		1.800	-0.000	-0.196	0.000	0.196
		2.000	0.000	-0.193	0.000	0.193
8	1:DEAD LOAD	0.000	0.000	-0.069	0.000	0.069
		0.200	-0.000	-0.070	0.000	0.070
		0.400	-0.000	-0.071	0.000	0.071
		0.600	-0.000	-0.072	0.000	0.072
		0.800	-0.000	-0.073	0.000	0.073
		1.000	-0.000	-0.075	0.000	0.075
		1.200	-0.000	-0.076	0.000	0.076
		1.400	-0.000	-0.077	0.000	0.077
		1.600	-0.000	-0.078	0.000	0.078
		1.800	-0.000	-0.079	0.000	0.079
		2.000	0.000	-0.080	0.000	0.080
	2:LIVE LOAD-	0.000	0.000	-0.048	0.000	0.048
		0.200	-0.000	-0.049	0.000	0.049
		0.400	-0.000	-0.050	0.000	0.050
		0.600	-0.000	-0.051	0.000	0.051
		0.800	-0.000	-0.051	0.000	0.051
		1.000	-0.000	-0.052	0.000	0.052
		1.200	-0.000	-0.053	0.000	0.053
		1.400	-0.000	-0.054	0.000	0.054
		1.600	-0.000	-0.055	0.000	0.055
		1.800	-0.000	-0.056	0.000	0.056
		2.000	0.000	-0.057	0.000	0.057
	3:EARTH	0.000	0.000	0.001	0.000	0.001
		0.200	-0.000	0.005	0.000	0.005

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		0.400	-0.000	0.009	0.000	0.009
		0.600	-0.000	0.013	0.000	0.013
		0.800	-0.000	0.018	0.000	0.018
		1.000	-0.000	0.022	0.000	0.022
		1.200	-0.000	0.027	0.000	0.027
		1.400	-0.000	0.032	0.000	0.032
		1.600	-0.000	0.038	0.000	0.038
		1.800	-0.000	0.043	0.000	0.043
		2.000	0.000	0.049	0.000	0.049
	4:STRENGTH	0.000	0.000	-0.193	0.000	0.193
		0.200	-0.000	-0.189	0.000	0.189
		0.400	-0.000	-0.186	0.000	0.186
		0.600	-0.000	-0.182	0.000	0.182
		0.800	-0.000	-0.177	0.000	0.177
		1.000	-0.000	-0.173	0.000	0.173
		1.200	-0.000	-0.168	0.000	0.168
		1.400	-0.000	-0.163	0.000	0.163
		1.600	-0.000	-0.157	0.000	0.157
		1.800	-0.000	-0.151	0.000	0.151
		2.000	0.000	-0.145	0.000	0.145
9	1:DEAD LOAD	0.000	0.000	-0.080	0.000	0.080
		0.025	-0.000	-0.080	0.000	0.080
		0.050	-0.000	-0.080	0.000	0.080
		0.075	-0.000	-0.081	0.000	0.081
		0.100	-0.000	-0.081	0.000	0.081
		0.125	-0.000	-0.081	0.000	0.081
		0.150	-0.000	-0.081	0.000	0.081
		0.175	-0.000	-0.081	0.000	0.081
		0.200	-0.000	-0.081	0.000	0.081
		0.225	-0.000	-0.081	0.000	0.081
		0.250	0.000	-0.082	0.000	0.082
	2:LIVE LOAD-	0.000	0.000	-0.057	0.000	0.057
		0.025	-0.000	-0.057	0.000	0.057
		0.050	-0.000	-0.057	0.000	0.057
		0.075	-0.000	-0.057	0.000	0.057
		0.100	-0.000	-0.058	0.000	0.058
		0.125	-0.000	-0.058	0.000	0.058
		0.150	-0.000	-0.058	0.000	0.058
		0.175	-0.000	-0.058	0.000	0.058
		0.200	-0.000	-0.058	0.000	0.058
		0.225	-0.000	-0.058	0.000	0.058
		0.250	0.000	-0.058	0.000	0.058
	3:EARTH	0.000	0.000	0.049	0.000	0.049
		0.025	-0.000	0.050	0.000	0.050
		0.050	-0.000	0.051	0.000	0.051

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		0.075	-0.000	0.051	0.000	0.051
		0.100	-0.000	0.052	0.000	0.052
		0.125	-0.000	0.053	0.000	0.053
		0.150	-0.000	0.054	0.000	0.054
		0.175	-0.000	0.054	0.000	0.054
		0.200	-0.000	0.055	0.000	0.055
		0.225	-0.000	0.056	0.000	0.056
		0.250	-0.000	0.057	0.000	0.057
	4:STRENGTH	0.000	0.000	-0.145	0.000	0.145
		0.025	-0.000	-0.144	0.000	0.144
		0.050	-0.000	-0.143	0.000	0.143
		0.075	-0.000	-0.143	0.000	0.143
		0.100	-0.000	-0.142	0.000	0.142
		0.125	-0.000	-0.141	0.000	0.141
		0.150	-0.000	-0.140	0.000	0.140
		0.175	-0.000	-0.139	0.000	0.139
		0.200	-0.000	-0.139	0.000	0.139
		0.225	-0.000	-0.138	0.000	0.138
		0.250	-0.000	-0.137	0.000	0.137
11	1:DEAD LOAD	0.000	0.000	-0.082	0.000	0.082
		1.498	-0.008	-0.082	0.000	0.082
		2.996	-0.017	-0.082	0.000	0.083
		4.494	-0.025	-0.082	0.000	0.086
		5.992	-0.033	-0.082	0.000	0.088
		7.490	-0.042	-0.082	0.000	0.092
		8.988	-0.050	-0.082	0.000	0.096
		10.485	-0.058	-0.082	0.000	0.101
		11.983	-0.067	-0.082	0.000	0.106
		13.481	-0.075	-0.082	0.000	0.111
		14.979	-0.083	-0.082	0.000	0.117
	2:LIVE LOAD-	0.000	0.000	-0.058	0.000	0.058
		1.498	-0.007	-0.058	0.000	0.059
		2.996	-0.013	-0.058	0.000	0.060
		4.494	-0.019	-0.059	0.000	0.062
		5.992	-0.025	-0.059	0.000	0.064
		7.490	-0.030	-0.059	0.000	0.066
		8.988	-0.035	-0.059	0.000	0.068
		10.485	-0.039	-0.059	0.000	0.071
		11.983	-0.043	-0.059	0.000	0.073
		13.481	-0.046	-0.059	0.000	0.075
		14.979	-0.050	-0.059	0.000	0.077
	3:EARTH	0.000	0.000	0.057	0.000	0.057
		1.498	0.052	0.057	0.000	0.077
		2.996	0.113	0.057	0.000	0.126
		4.494	0.180	0.057	0.000	0.189

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		5.992	0.252	0.057	0.000	0.258
		7.490	0.327	0.057	0.000	0.332
		8.988	0.404	0.057	0.000	0.408
		10.485	0.482	0.057	0.000	0.486
		11.983	0.561	0.057	0.000	0.564
		13.481	0.640	0.057	0.000	0.643
		14.979	0.719	0.057	0.000	0.722
	4:STRENGTH	0.000	0.000	-0.137	0.000	0.137
		1.498	0.063	-0.137	0.000	0.151
		2.996	0.141	-0.137	0.000	0.197
		4.494	0.231	-0.138	0.000	0.268
		5.992	0.329	-0.138	0.000	0.357
		7.490	0.434	-0.138	0.000	0.455
		8.988	0.543	-0.138	0.000	0.560
		10.485	0.655	-0.139	0.000	0.670
		11.983	0.769	-0.139	0.000	0.781
		13.481	0.884	-0.139	0.000	0.895
		14.979	1.000	-0.139	0.000	1.010
12	1:DEAD LOAD	0.000	0.000	-0.082	0.000	0.082
		1.498	0.008	-0.082	0.000	0.082
		2.996	0.017	-0.082	0.000	0.083
		4.494	0.025	-0.082	0.000	0.086
		5.992	0.033	-0.082	0.000	0.088
		7.490	0.042	-0.082	0.000	0.092
		8.988	0.050	-0.082	0.000	0.096
		10.485	0.058	-0.082	0.000	0.101
		11.983	0.067	-0.082	0.000	0.106
		13.481	0.075	-0.082	0.000	0.111
		14.979	0.083	-0.082	0.000	0.117
	2:LIVE LOAD-	0.000	0.000	-0.058	0.000	0.058
		1.498	0.007	-0.058	0.000	0.059
		2.996	0.013	-0.058	0.000	0.060
		4.494	0.019	-0.059	0.000	0.062
		5.992	0.025	-0.059	0.000	0.064
		7.490	0.030	-0.059	0.000	0.066
		8.988	0.035	-0.059	0.000	0.068
		10.485	0.039	-0.059	0.000	0.071
		11.983	0.043	-0.059	0.000	0.073
		13.481	0.046	-0.059	0.000	0.075
		14.979	0.050	-0.059	0.000	0.077
	3:EARTH	0.000	-0.000	0.057	0.000	0.057
		1.498	-0.052	0.057	0.000	0.077
		2.996	-0.113	0.057	0.000	0.126
		4.494	-0.180	0.057	0.000	0.189
		5.992	-0.252	0.057	0.000	0.258

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		7.490	-0.327	0.057	0.000	0.332
		8.988	-0.404	0.057	0.000	0.408
		10.485	-0.482	0.057	0.000	0.486
		11.983	-0.561	0.057	0.000	0.564
		13.481	-0.640	0.057	0.000	0.643
		14.979	-0.719	0.057	0.000	0.722
	4:STRENGTH	0.000	-0.000	-0.137	0.000	0.137
		1.498	-0.063	-0.137	0.000	0.151
		2.996	-0.141	-0.137	0.000	0.197
		4.494	-0.231	-0.138	0.000	0.268
		5.992	-0.329	-0.138	0.000	0.357
		7.490	-0.434	-0.138	0.000	0.455
		8.988	-0.543	-0.138	0.000	0.560
		10.485	-0.655	-0.139	0.000	0.670
		11.983	-0.769	-0.139	0.000	0.781
		13.481	-0.884	-0.139	0.000	0.895
		14.979	-1.000	-0.139	0.000	1.010

Beam Force Detail

Sign convention as diagrams:- positive above line, negative below line except Fx where positive is compression. Distance d is given from beam end A.

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
2	1:DEAD LOAD	0.000	0.000	-2.790	0.000	0.000	0.000	-0.672
		0.025	0.000	-2.794	0.000	0.000	0.000	0.167
		0.050	0.000	-2.799	0.000	0.000	0.000	1.007
		0.075	0.000	-2.803	0.000	0.000	0.000	1.848
		0.100	0.000	-2.807	0.000	0.000	0.000	2.690
		0.125	0.000	-2.812	0.000	0.000	0.000	3.534
		0.150	0.000	-2.816	0.000	0.000	0.000	4.379
		0.175	0.000	-2.820	0.000	0.000	0.000	5.226
		0.200	0.000	-2.825	0.000	0.000	0.000	6.074
		0.225	0.000	-2.829	0.000	0.000	0.000	6.923
		0.250	-0.000	-2.834	-0.000	-0.000	-0.000	7.773
	2:LIVE LOAD-	0.000	0.000	-2.667	0.000	0.000	0.000	-10.668
		0.025	0.000	-2.667	0.000	0.000	0.000	-9.867
		0.050	0.000	-2.667	0.000	0.000	0.000	-9.066
		0.075	0.000	-2.667	0.000	0.000	0.000	-8.265
		0.100	0.000	-2.667	0.000	0.000	0.000	-7.464
		0.125	0.000	-2.667	0.000	0.000	0.000	-6.663
		0.150	0.000	-2.667	0.000	0.000	0.000	-5.862
		0.175	0.000	-2.667	0.000	0.000	0.000	-5.061
		0.200	0.000	-2.667	0.000	0.000	0.000	-4.260

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		0.225	0.000	-2.667	0.000	0.000	0.000	-3.458
		0.250	-0.000	-2.667	-0.000	-0.000	-0.000	-2.657
	3:EARTH	0.000	4.833	-0.000	0.000	0.000	0.000	-320.095
		0.025	4.833	-0.000	0.000	0.000	0.000	-320.095
		0.050	4.833	-0.000	0.000	0.000	0.000	-320.095
		0.075	4.833	-0.000	0.000	0.000	0.000	-320.095
		0.100	4.833	-0.000	0.000	0.000	0.000	-320.095
		0.125	4.833	-0.000	0.000	0.000	0.000	-320.095
		0.150	4.833	-0.000	0.000	0.000	0.000	-320.095
		0.175	4.833	-0.000	0.000	0.000	0.000	-320.095
		0.200	4.833	-0.000	0.000	0.000	0.000	-320.095
		0.225	4.833	-0.000	0.000	0.000	0.000	-320.095
		0.250	4.833	-0.000	-0.000	-0.000	-0.000	-320.095
	4:STRENGTH	0.000	8.168	-9.417	0.000	0.000	0.000	-564.995
		0.025	8.168	-9.422	0.000	0.000	0.000	-562.166
		0.050	8.168	-9.428	0.000	0.000	0.000	-559.335
		0.075	8.168	-9.434	0.000	0.000	0.000	-556.502
		0.100	8.168	-9.440	0.000	0.000	0.000	-553.668
		0.125	8.168	-9.445	0.000	0.000	0.000	-550.832
		0.150	8.168	-9.451	0.000	0.000	0.000	-547.994
		0.175	8.168	-9.457	0.000	0.000	0.000	-545.154
		0.200	8.168	-9.462	0.000	0.000	0.000	-542.313
		0.225	8.168	-9.468	0.000	0.000	0.000	-539.470
		0.250	8.168	-9.474	-0.000	-0.000	-0.000	-536.625
3	1:DEAD LOAD	0.000	0.000	-1.617	0.000	0.000	0.000	7.773
		0.200	0.000	-1.652	0.000	0.000	0.000	11.700
		0.400	0.000	-1.687	0.000	0.000	0.000	15.708
		0.600	0.000	-1.722	0.000	0.000	0.000	19.798
		0.800	0.000	-1.757	0.000	0.000	0.000	23.970
		1.000	0.000	-1.792	0.000	0.000	0.000	28.223
		1.200	0.000	-1.827	0.000	0.000	0.000	32.570
		1.400	0.000	-1.862	0.000	0.000	0.000	36.998
		1.600	0.000	-1.897	0.000	0.000	0.000	41.508
		1.800	0.000	-1.932	0.000	0.000	0.000	46.099
		2.000	-0.000	-1.967	-0.000	-0.000	-0.000	50.773
	2:LIVE LOAD-	0.000	0.000	-1.800	0.000	0.000	0.000	-2.657
		0.200	0.000	-1.800	0.000	0.000	0.000	1.664
		0.400	0.000	-1.800	0.000	0.000	0.000	5.984
		0.600	0.000	-1.800	0.000	0.000	0.000	10.305
		0.800	0.000	-1.800	0.000	0.000	0.000	14.626
		1.000	0.000	-1.800	0.000	0.000	0.000	18.947
		1.200	0.000	-1.800	0.000	0.000	0.000	23.268
		1.400	0.000	-1.800	0.000	0.000	0.000	27.589
		1.600	0.000	-1.800	0.000	0.000	0.000	31.910

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		1.800	0.000	-1.800	0.000	0.000	0.000	36.231
		2.000	-0.000	-1.800	-0.000	-0.000	-0.000	40.552
	3:EARTH	0.000	0.000	-0.746	0.000	0.000	0.000	-320.095
		0.200	0.000	-0.746	0.000	0.000	0.000	-318.305
		0.400	0.000	-0.746	0.000	0.000	0.000	-316.514
		0.600	0.000	-0.746	0.000	0.000	0.000	-314.723
		0.800	0.000	-0.746	0.000	0.000	0.000	-312.932
		1.000	0.000	-0.746	0.000	0.000	0.000	-311.141
		1.200	0.000	-0.746	0.000	0.000	0.000	-309.350
		1.400	0.000	-0.746	0.000	0.000	0.000	-307.559
		1.600	0.000	-0.746	0.000	0.000	0.000	-305.768
		1.800	0.000	-0.746	0.000	0.000	0.000	-303.977
		2.000	-0.000	-0.746	-0.000	-0.000	-0.000	-302.187
	4:STRENGTH	0.000	0.000	-7.271	0.000	0.000	0.000	-536.625
		0.200	0.000	-7.317	0.000	0.000	0.000	-519.113
		0.400	0.000	-7.362	0.000	0.000	0.000	-501.495
		0.600	0.000	-7.408	0.000	0.000	0.000	-483.771
		0.800	0.000	-7.453	0.000	0.000	0.000	-465.941
		1.000	0.000	-7.499	0.000	0.000	0.000	-448.004
		1.200	0.000	-7.544	0.000	0.000	0.000	-429.946
		1.400	0.000	-7.590	0.000	0.000	0.000	-411.782
		1.600	0.000	-7.635	0.000	0.000	0.000	-393.511
		1.800	0.000	-7.681	0.000	0.000	0.000	-375.135
		2.000	-0.000	-7.726	-0.000	-0.000	-0.000	-356.652
4	1:DEAD LOAD	0.000	0.000	-0.817	0.000	0.000	0.000	50.773
		0.200	0.000	-0.852	0.000	0.000	0.000	52.779
		0.400	0.000	-0.887	0.000	0.000	0.000	54.867
		0.600	0.000	-0.922	0.000	0.000	0.000	57.037
		0.800	0.000	-0.957	0.000	0.000	0.000	59.289
		1.000	0.000	-0.992	0.000	0.000	0.000	61.622
		1.200	0.000	-1.027	0.000	0.000	0.000	64.049
		1.400	0.000	-1.062	0.000	0.000	0.000	66.557
		1.600	0.000	-1.097	0.000	0.000	0.000	69.147
		1.800	0.000	-1.132	0.000	0.000	0.000	71.818
		2.000	-0.000	-1.167	-0.000	-0.000	-0.000	74.572
	2:LIVE LOAD-	0.000	0.000	-1.007	0.000	0.000	0.000	40.552
		0.200	0.000	-1.007	0.000	0.000	0.000	42.969
		0.400	0.000	-1.007	0.000	0.000	0.000	45.385
		0.600	0.000	-1.007	0.000	0.000	0.000	47.802
		0.800	0.000	-1.007	0.000	0.000	0.000	50.219
		1.000	0.000	-1.007	0.000	0.000	0.000	52.635
		1.200	0.000	-1.007	0.000	0.000	0.000	55.052
		1.400	0.000	-1.007	0.000	0.000	0.000	57.469
		1.600	0.000	-1.007	0.000	0.000	0.000	59.885

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		1.800	0.000	-1.007	0.000	0.000	0.000	62.302
		2.000	-0.000	-1.007	-0.000	-0.000	-0.000	64.718
	3:EARTH	0.000	0.000	-0.759	0.000	0.000	0.000	-302.187
		0.200	0.000	-0.759	0.000	0.000	0.000	-300.365
		0.400	0.000	-0.759	0.000	0.000	0.000	-298.543
		0.600	0.000	-0.759	0.000	0.000	0.000	-296.721
		0.800	0.000	-0.759	0.000	0.000	0.000	-294.900
		1.000	0.000	-0.759	0.000	0.000	0.000	-293.078
		1.200	0.000	-0.759	0.000	0.000	0.000	-291.256
		1.400	0.000	-0.759	0.000	0.000	0.000	-289.434
		1.600	0.000	-0.759	0.000	0.000	0.000	-287.613
		1.800	0.000	-0.759	0.000	0.000	0.000	-285.791
		2.000	-0.000	-0.759	-0.000	-0.000	-0.000	-283.969
	4:STRENGTH	0.000	0.000	-4.530	0.000	0.000	0.000	-356.652
		0.200	0.000	-4.576	0.000	0.000	0.000	-345.719
		0.400	0.000	-4.621	0.000	0.000	0.000	-334.679
		0.600	0.000	-4.667	0.000	0.000	0.000	-323.532
		0.800	0.000	-4.712	0.000	0.000	0.000	-312.280
		1.000	0.000	-4.758	0.000	0.000	0.000	-300.922
		1.200	0.000	-4.803	0.000	0.000	0.000	-289.442
		1.400	0.000	-4.849	0.000	0.000	0.000	-277.856
		1.600	0.000	-4.894	0.000	0.000	0.000	-266.164
		1.800	0.000	-4.940	0.000	0.000	0.000	-254.366
		2.000	-0.000	-4.985	-0.000	-0.000	-0.000	-242.461
5	1:DEAD LOAD	0.000	0.000	-0.141	0.000	0.000	0.000	74.572
		0.200	0.000	-0.176	0.000	0.000	0.000	74.956
		0.400	0.000	-0.211	0.000	0.000	0.000	75.422
		0.600	0.000	-0.246	0.000	0.000	0.000	75.970
		0.800	0.000	-0.281	0.000	0.000	0.000	76.599
		1.000	0.000	-0.316	0.000	0.000	0.000	77.310
		1.200	0.000	-0.351	0.000	0.000	0.000	78.115
		1.400	0.000	-0.386	0.000	0.000	0.000	79.001
		1.600	0.000	-0.421	0.000	0.000	0.000	79.969
		1.800	0.000	-0.456	0.000	0.000	0.000	81.018
		2.000	-0.000	-0.491	-0.000	-0.000	-0.000	82.149
	2:LIVE LOAD-	0.000	0.000	-0.323	0.000	0.000	0.000	64.718
		0.200	0.000	-0.323	0.000	0.000	0.000	65.492
		0.400	0.000	-0.323	0.000	0.000	0.000	66.266
		0.600	0.000	-0.323	0.000	0.000	0.000	67.040
		0.800	0.000	-0.323	0.000	0.000	0.000	67.815
		1.000	0.000	-0.323	0.000	0.000	0.000	68.589
		1.200	0.000	-0.323	0.000	0.000	0.000	69.363
		1.400	0.000	-0.323	0.000	0.000	0.000	70.137
		1.600	0.000	-0.323	0.000	0.000	0.000	70.911

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		1.800	0.000	-0.323	0.000	0.000	0.000	71.685
		2.000	-0.000	-0.323	-0.000	-0.000	-0.000	72.459
	3:EARTH	0.000	0.000	-0.304	0.000	0.000	0.000	-283.969
		0.200	0.000	-0.304	0.000	0.000	0.000	-283.239
		0.400	0.000	-0.304	0.000	0.000	0.000	-282.509
		0.600	0.000	-0.304	0.000	0.000	0.000	-281.779
		0.800	0.000	-0.304	0.000	0.000	0.000	-281.050
		1.000	0.000	-0.304	0.000	0.000	0.000	-280.320
		1.200	0.000	-0.304	0.000	0.000	0.000	-279.590
		1.400	0.000	-0.304	0.000	0.000	0.000	-278.860
		1.600	0.000	-0.304	0.000	0.000	0.000	-278.130
		1.800	0.000	-0.304	0.000	0.000	0.000	-277.400
		2.000	-0.000	-0.304	-0.000	-0.000	-0.000	-276.670
	4:STRENGTH	0.000	0.000	-1.397	0.000	0.000	0.000	-242.461
		0.200	0.000	-1.443	0.000	0.000	0.000	-239.048
		0.400	0.000	-1.488	0.000	0.000	0.000	-235.528
		0.600	0.000	-1.534	0.000	0.000	0.000	-231.901
		0.800	0.000	-1.579	0.000	0.000	0.000	-228.169
		1.000	0.000	-1.625	0.000	0.000	0.000	-224.331
		1.200	0.000	-1.670	0.000	0.000	0.000	-220.371
		1.400	0.000	-1.716	0.000	0.000	0.000	-216.305
		1.600	0.000	-1.761	0.000	0.000	0.000	-212.133
		1.800	0.000	-1.807	0.000	0.000	0.000	-207.855
		2.000	-0.000	-1.852	-0.000	-0.000	-0.000	-203.470
6	1:DEAD LOAD	0.000	0.000	0.491	0.000	0.000	0.000	82.149
		0.200	0.000	0.456	0.000	0.000	0.000	81.018
		0.400	0.000	0.421	0.000	0.000	0.000	79.968
		0.600	0.000	0.386	0.000	0.000	0.000	79.000
		0.800	0.000	0.351	0.000	0.000	0.000	78.113
		1.000	0.000	0.316	0.000	0.000	0.000	77.308
		1.200	0.000	0.281	0.000	0.000	0.000	76.597
		1.400	0.000	0.246	0.000	0.000	0.000	75.967
		1.600	0.000	0.211	0.000	0.000	0.000	75.418
		1.800	0.000	0.176	0.000	0.000	0.000	74.952
		2.000	-0.000	0.141	-0.000	-0.000	-0.000	74.567
	2:LIVE LOAD-	0.000	0.000	0.323	0.000	0.000	0.000	72.459
		0.200	0.000	0.323	0.000	0.000	0.000	71.684
		0.400	0.000	0.323	0.000	0.000	0.000	70.910
		0.600	0.000	0.323	0.000	0.000	0.000	70.135
		0.800	0.000	0.323	0.000	0.000	0.000	69.361
		1.000	0.000	0.323	0.000	0.000	0.000	68.587
		1.200	0.000	0.323	0.000	0.000	0.000	67.812
		1.400	0.000	0.323	0.000	0.000	0.000	67.038
		1.600	0.000	0.323	0.000	0.000	0.000	66.263

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		1.800	0.000	0.323	0.000	0.000	0.000	65.489
		2.000	-0.000	0.323	-0.000	-0.000	-0.000	64.714
	3:EARTH	0.000	0.000	0.304	0.000	0.000	0.000	-276.670
		0.200	0.000	0.304	0.000	0.000	0.000	-277.400
		0.400	0.000	0.304	0.000	0.000	0.000	-278.130
		0.600	0.000	0.304	0.000	0.000	0.000	-278.860
		0.800	0.000	0.304	0.000	0.000	0.000	-279.590
		1.000	0.000	0.304	0.000	0.000	0.000	-280.320
		1.200	0.000	0.304	0.000	0.000	0.000	-281.050
		1.400	0.000	0.304	0.000	0.000	0.000	-281.779
		1.600	0.000	0.304	0.000	0.000	0.000	-282.509
		1.800	0.000	0.304	0.000	0.000	0.000	-283.239
		2.000	-0.000	0.304	-0.000	-0.000	-0.000	-283.969
	4:STRENGTH	0.000	0.000	1.853	0.000	0.000	0.000	-203.470
		0.200	0.000	1.807	0.000	0.000	0.000	-207.856
		0.400	0.000	1.762	0.000	0.000	0.000	-212.136
		0.600	0.000	1.716	0.000	0.000	0.000	-216.310
		0.800	0.000	1.671	0.000	0.000	0.000	-220.377
		1.000	0.000	1.625	0.000	0.000	0.000	-224.338
		1.200	0.000	1.580	0.000	0.000	0.000	-228.178
		1.400	0.000	1.534	0.000	0.000	0.000	-231.912
		1.600	0.000	1.489	0.000	0.000	0.000	-235.540
		1.800	0.000	1.443	0.000	0.000	0.000	-239.061
		2.000	-0.000	1.398	-0.000	-0.000	-0.000	-242.476
7	1:DEAD LOAD	0.000	0.000	1.167	0.000	0.000	0.000	74.567
		0.200	0.000	1.132	0.000	0.000	0.000	71.813
		0.400	0.000	1.097	0.000	0.000	0.000	69.141
		0.600	0.000	1.062	0.000	0.000	0.000	66.551
		0.800	0.000	1.027	0.000	0.000	0.000	64.043
		1.000	0.000	0.992	0.000	0.000	0.000	61.616
		1.200	0.000	0.957	0.000	0.000	0.000	59.282
		1.400	0.000	0.922	0.000	0.000	0.000	57.030
		1.600	0.000	0.887	0.000	0.000	0.000	54.860
		1.800	0.000	0.852	0.000	0.000	0.000	52.771
		2.000	-0.000	0.817	-0.000	-0.000	-0.000	50.764
	2:LIVE LOAD-	0.000	0.000	1.007	0.000	0.000	0.000	64.714
		0.200	0.000	1.007	0.000	0.000	0.000	62.297
		0.400	0.000	1.007	0.000	0.000	0.000	59.880
		0.600	0.000	1.007	0.000	0.000	0.000	57.463
		0.800	0.000	1.007	0.000	0.000	0.000	55.046
		1.000	0.000	1.007	0.000	0.000	0.000	52.629
		1.200	0.000	1.007	0.000	0.000	0.000	50.212
		1.400	0.000	1.007	0.000	0.000	0.000	47.795
		1.600	0.000	1.007	0.000	0.000	0.000	45.379

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d	Fx	Fy	Fz	Mx	My	Mz
		(ft)	(kip)	(kip)	(kip)	(kip-in)	(kip-in)	(kip-in)
		1.800	0.000	1.007	0.000	0.000	0.000	42.962
		2.000	-0.000	1.007	-0.000	-0.000	-0.000	40.545
	3:EARTH	0.000	0.000	0.759	0.000	0.000	0.000	-283.969
		0.200	0.000	0.759	0.000	0.000	0.000	-285.791
		0.400	0.000	0.759	0.000	0.000	0.000	-287.613
		0.600	0.000	0.759	0.000	0.000	0.000	-289.434
		0.800	0.000	0.759	0.000	0.000	0.000	-291.256
		1.000	0.000	0.759	0.000	0.000	0.000	-293.078
		1.200	0.000	0.759	0.000	0.000	0.000	-294.900
		1.400	0.000	0.759	0.000	0.000	0.000	-296.721
		1.600	0.000	0.759	0.000	0.000	0.000	-298.543
		1.800	0.000	0.759	0.000	0.000	0.000	-300.365
		2.000	-0.000	0.759	-0.000	-0.000	-0.000	-302.187
	4:STRENGTH	0.000	0.000	4.986	0.000	0.000	0.000	-242.476
		0.200	0.000	4.940	0.000	0.000	0.000	-254.382
		0.400	0.000	4.895	0.000	0.000	0.000	-266.181
		0.600	0.000	4.849	0.000	0.000	0.000	-277.875
		0.800	0.000	4.804	0.000	0.000	0.000	-289.462
		1.000	0.000	4.758	0.000	0.000	0.000	-300.943
		1.200	0.000	4.713	0.000	0.000	0.000	-312.303
		1.400	0.000	4.667	0.000	0.000	0.000	-323.556
		1.600	0.000	4.622	0.000	0.000	0.000	-334.703
		1.800	0.000	4.576	0.000	0.000	0.000	-345.745
		2.000	-0.000	4.531	-0.000	-0.000	-0.000	-356.680
8	1:DEAD LOAD	0.000	0.000	1.967	0.000	0.000	0.000	50.764
		0.200	0.000	1.932	0.000	0.000	0.000	46.091
		0.400	0.000	1.897	0.000	0.000	0.000	41.499
		0.600	0.000	1.862	0.000	0.000	0.000	36.989
		0.800	0.000	1.827	0.000	0.000	0.000	32.560
		1.000	0.000	1.792	0.000	0.000	0.000	28.214
		1.200	0.000	1.757	0.000	0.000	0.000	23.960
		1.400	0.000	1.722	0.000	0.000	0.000	19.788
		1.600	0.000	1.687	0.000	0.000	0.000	15.698
		1.800	0.000	1.652	0.000	0.000	0.000	11.690
		2.000	-0.000	1.617	-0.000	-0.000	-0.000	7.763
	2:LIVE LOAD-	0.000	0.000	1.800	0.000	0.000	0.000	40.545
		0.200	0.000	1.800	0.000	0.000	0.000	36.223
		0.400	0.000	1.800	0.000	0.000	0.000	31.902
		0.600	0.000	1.800	0.000	0.000	0.000	27.581
		0.800	0.000	1.800	0.000	0.000	0.000	23.260
		1.000	0.000	1.800	0.000	0.000	0.000	18.939
		1.200	0.000	1.800	0.000	0.000	0.000	14.618
		1.400	0.000	1.800	0.000	0.000	0.000	10.296
		1.600	0.000	1.800	0.000	0.000	0.000	5.975

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		1.800	0.000	1.800	0.000	0.000	0.000	1.654
		2.000	-0.000	1.800	-0.000	-0.000	-0.000	-2.667
	3:EARTH	0.000	0.000	0.746	0.000	0.000	0.000	-302.187
		0.200	0.000	0.746	0.000	0.000	0.000	-303.977
		0.400	0.000	0.746	0.000	0.000	0.000	-305.768
		0.600	0.000	0.746	0.000	0.000	0.000	-307.559
		0.800	0.000	0.746	0.000	0.000	0.000	-309.350
		1.000	0.000	0.746	0.000	0.000	0.000	-311.141
		1.200	0.000	0.746	0.000	0.000	0.000	-312.932
		1.400	0.000	0.746	0.000	0.000	0.000	-314.723
		1.600	0.000	0.746	0.000	0.000	0.000	-316.514
		1.800	0.000	0.746	0.000	0.000	0.000	-318.305
		2.000	-0.000	0.746	-0.000	-0.000	-0.000	-320.095
	4:STRENGTH	0.000	0.000	7.727	0.000	0.000	0.000	-356.680
		0.200	0.000	7.681	0.000	0.000	0.000	-375.163
		0.400	0.000	7.636	0.000	0.000	0.000	-393.540
		0.600	0.000	7.590	0.000	0.000	0.000	-411.811
		0.800	0.000	7.545	0.000	0.000	0.000	-429.976
		1.000	0.000	7.499	0.000	0.000	0.000	-448.035
		1.200	0.000	7.454	0.000	0.000	0.000	-465.972
		1.400	0.000	7.408	0.000	0.000	0.000	-483.803
		1.600	0.000	7.363	0.000	0.000	0.000	-501.528
		1.800	0.000	7.317	0.000	0.000	0.000	-519.147
		2.000	-0.000	7.272	-0.000	-0.000	-0.000	-536.660
9	1:DEAD LOAD	0.000	0.000	2.834	0.000	0.000	0.000	7.763
		0.025	0.000	2.829	0.000	0.000	0.000	6.914
		0.050	0.000	2.825	0.000	0.000	0.000	6.066
		0.075	0.000	2.820	0.000	0.000	0.000	5.219
		0.100	0.000	2.816	0.000	0.000	0.000	4.373
		0.125	0.000	2.812	0.000	0.000	0.000	3.529
		0.150	0.000	2.807	0.000	0.000	0.000	2.686
		0.175	0.000	2.803	0.000	0.000	0.000	1.845
		0.200	0.000	2.799	0.000	0.000	0.000	1.005
		0.225	0.000	2.794	0.000	0.000	0.000	0.166
		0.250	-0.000	2.790	-0.000	-0.000	-0.000	-0.672
	2:LIVE LOAD-	0.000	0.000	2.667	0.000	0.000	0.000	-2.667
		0.025	0.000	2.667	0.000	0.000	0.000	-3.467
		0.050	0.000	2.667	0.000	0.000	0.000	-4.267
		0.075	0.000	2.667	0.000	0.000	0.000	-5.067
		0.100	0.000	2.667	0.000	0.000	0.000	-5.867
		0.125	0.000	2.667	0.000	0.000	0.000	-6.668
		0.150	0.000	2.667	0.000	0.000	0.000	-7.468
		0.175	0.000	2.667	0.000	0.000	0.000	-8.268
		0.200	0.000	2.667	0.000	0.000	0.000	-9.068

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		0.225	0.000	2.667	0.000	0.000	0.000	-9.868
		0.250	0.000	2.667	-0.000	-0.000	-0.000	-10.668
	3:EARTH	0.000	4.833	0.000	0.000	0.000	0.000	-320.095
		0.025	4.833	0.000	0.000	0.000	0.000	-320.095
		0.050	4.833	0.000	0.000	0.000	0.000	-320.095
		0.075	4.833	0.000	0.000	0.000	0.000	-320.095
		0.100	4.833	0.000	0.000	0.000	0.000	-320.095
		0.125	4.833	0.000	0.000	0.000	0.000	-320.095
		0.150	4.833	0.000	0.000	0.000	0.000	-320.095
		0.175	4.833	0.000	0.000	0.000	0.000	-320.095
		0.200	4.833	0.000	0.000	0.000	0.000	-320.095
		0.225	4.833	0.000	0.000	0.000	0.000	-320.095
		0.250	4.833	0.000	-0.000	-0.000	-0.000	-320.095
	4:STRENGTH	0.000	8.168	9.474	0.000	0.000	0.000	-536.660
		0.025	8.168	9.468	0.000	0.000	0.000	-539.501
		0.050	8.168	9.462	0.000	0.000	0.000	-542.340
		0.075	8.168	9.457	0.000	0.000	0.000	-545.178
		0.100	8.168	9.451	0.000	0.000	0.000	-548.014
		0.125	8.168	9.445	0.000	0.000	0.000	-550.849
		0.150	8.168	9.439	0.000	0.000	0.000	-553.681
		0.175	8.168	9.434	0.000	0.000	0.000	-556.512
		0.200	8.168	9.428	0.000	0.000	0.000	-559.341
		0.225	8.168	9.422	0.000	0.000	0.000	-562.169
		0.250	8.168	9.417	-0.000	-0.000	-0.000	-564.995
11	1:DEAD LOAD	0.000	2.790	0.000	0.000	0.000	0.000	0.672
		1.498	2.528	0.000	0.000	0.000	0.000	0.672
		2.996	2.266	0.000	0.000	0.000	0.000	0.672
		4.494	2.003	0.000	0.000	0.000	0.000	0.672
		5.992	1.741	0.000	0.000	0.000	0.000	0.672
		7.490	1.479	0.000	0.000	0.000	0.000	0.672
		8.988	1.217	0.000	0.000	0.000	0.000	0.672
		10.485	0.955	0.000	0.000	0.000	0.000	0.672
		11.983	0.693	0.000	0.000	0.000	0.000	0.672
		13.481	0.431	0.000	0.000	0.000	0.000	0.672
		14.979	0.169	0.000	-0.000	-0.000	-0.000	0.672
	2:LIVE LOAD-	0.000	2.667	0.000	0.000	0.000	0.000	10.668
		1.498	2.667	0.000	0.000	0.000	0.000	10.668
		2.996	2.667	0.000	0.000	0.000	0.000	10.668
		4.494	2.667	0.000	0.000	0.000	0.000	10.668
		5.992	2.667	0.000	0.000	0.000	0.000	10.668
		7.490	2.667	0.000	0.000	0.000	0.000	10.668
		8.988	2.667	0.000	0.000	0.000	0.000	10.668
		10.485	2.667	0.000	0.000	0.000	0.000	10.668
		11.983	2.667	0.000	0.000	0.000	0.000	10.668

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		13.481	2.667	0.000	0.000	0.000	0.000	10.668
		14.979	2.667	0.000	-0.000	-0.000	-0.000	10.668
	3:EARTH	0.000	0.000	4.833	0.000	0.000	0.000	320.095
		1.498	0.000	4.011	0.000	0.000	0.000	241.539
		2.996	0.000	3.262	0.000	0.000	0.000	176.667
		4.494	0.000	2.588	0.000	0.000	0.000	124.209
		5.992	0.000	1.989	0.000	0.000	0.000	82.895
		7.490	0.000	1.463	0.000	0.000	0.000	51.455
		8.988	0.000	1.022	0.000	0.000	0.000	29.668
		10.485	0.000	0.655	0.000	0.000	0.000	14.899
		11.983	0.000	0.363	0.000	0.000	0.000	5.878
		13.481	0.000	0.144	0.000	0.000	0.000	1.335
		14.979	-0.000	0.000	-0.000	-0.000	-0.000	-0.000
	4:STRENGTH	0.000	9.417	8.168	0.000	0.000	0.000	564.995
		1.498	9.076	6.778	0.000	0.000	0.000	432.235
		2.996	8.735	5.514	0.000	0.000	0.000	322.601
		4.494	8.394	4.374	0.000	0.000	0.000	233.947
		5.992	8.054	3.361	0.000	0.000	0.000	164.126
		7.490	7.713	2.472	0.000	0.000	0.000	110.993
		8.988	7.372	1.727	0.000	0.000	0.000	74.173
		10.485	7.031	1.107	0.000	0.000	0.000	49.213
		11.983	6.691	0.613	0.000	0.000	0.000	33.967
		13.481	6.350	0.244	0.000	0.000	0.000	26.289
		14.979	6.009	0.000	-0.000	-0.000	-0.000	24.034
12	1:DEAD LOAD	0.000	2.790	0.000	0.000	0.000	0.000	-0.672
		1.498	2.528	0.000	0.000	0.000	0.000	-0.672
		2.996	2.266	0.000	0.000	0.000	0.000	-0.672
		4.494	2.003	0.000	0.000	0.000	0.000	-0.672
		5.992	1.741	0.000	0.000	0.000	0.000	-0.672
		7.490	1.479	0.000	0.000	0.000	0.000	-0.672
		8.988	1.217	0.000	0.000	0.000	0.000	-0.672
		10.485	0.955	0.000	0.000	0.000	0.000	-0.672
		11.983	0.693	0.000	0.000	0.000	0.000	-0.672
		13.481	0.431	0.000	0.000	0.000	0.000	-0.672
		14.979	0.169	-0.000	-0.000	-0.000	-0.000	-0.672
	2:LIVE LOAD-	0.000	2.667	0.000	0.000	0.000	0.000	-10.668
		1.498	2.667	0.000	0.000	0.000	0.000	-10.668
		2.996	2.667	0.000	0.000	0.000	0.000	-10.668
		4.494	2.667	0.000	0.000	0.000	0.000	-10.668
		5.992	2.667	0.000	0.000	0.000	0.000	-10.668
		7.490	2.667	0.000	0.000	0.000	0.000	-10.668
		8.988	2.667	0.000	0.000	0.000	0.000	-10.668
		10.485	2.667	0.000	0.000	0.000	0.000	-10.668
		11.983	2.667	0.000	0.000	0.000	0.000	-10.668

Beam Force Detail Cont...

Beam	L/C	d	Axial	Shear		Torsion	Bending	
			Fx	Fy	Fz	Mx	My	Mz
		(ft)	(kip)	(kip)	(kip)	(kip-in)	(kip-in)	(kip-in)
		13.481	2.667	0.000	0.000	0.000	0.000	-10.668
		14.979	2.667	0.000	-0.000	-0.000	-0.000	-10.668
	3:EARTH	0.000	0.000	-4.833	0.000	0.000	0.000	-320.095
		1.498	0.000	-4.011	0.000	0.000	0.000	-241.539
		2.996	0.000	-3.262	0.000	0.000	0.000	-176.667
		4.494	0.000	-2.588	0.000	0.000	0.000	-124.209
		5.992	0.000	-1.989	0.000	0.000	0.000	-82.895
		7.490	0.000	-1.463	0.000	0.000	0.000	-51.455
		8.988	0.000	-1.022	0.000	0.000	0.000	-29.668
		10.485	0.000	-0.655	0.000	0.000	0.000	-14.899
		11.983	0.000	-0.363	0.000	0.000	0.000	-5.878
		13.481	0.000	-0.144	0.000	0.000	0.000	-1.335
		14.979	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	4:STRENGTH	0.000	9.417	-8.168	0.000	0.000	0.000	-564.995
		1.498	9.076	-6.778	0.000	0.000	0.000	-432.235
		2.996	8.735	-5.514	0.000	0.000	0.000	-322.601
		4.494	8.394	-4.374	0.000	0.000	0.000	-233.947
		5.992	8.054	-3.361	0.000	0.000	0.000	-164.126
		7.490	7.713	-2.472	0.000	0.000	0.000	-110.993
		8.988	7.372	-1.727	0.000	0.000	0.000	-74.173
		10.485	7.031	-1.107	0.000	0.000	0.000	-49.213
		11.983	6.691	-0.613	0.000	0.000	0.000	-33.967
		13.481	6.350	-0.244	0.000	0.000	0.000	-26.289
		14.979	6.009	-0.000	-0.000	-0.000	-0.000	-24.034

Reactions

Node	L/C	Horizontal	Vertical	Horizontal	Moment		
		FX	FY	FZ	MX	MY	MZ
		(kip)	(kip)	(kip)	(kip-in)	(kip-in)	(kip-in)
3	1:DEAD LOAD	0.000	1.217	0.000	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	0.867	0.000	0.000	0.000	0.000
	3:EARTH	-4.833	-0.746	0.000	0.000	0.000	0.000
	4:STRENGTH	-8.168	2.202	0.000	0.000	0.000	0.000
4	1:DEAD LOAD	0.000	1.150	0.000	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	0.793	0.000	0.000	0.000	0.000
	3:EARTH	0.000	-0.013	0.000	0.000	0.000	0.000
	4:STRENGTH	0.000	3.196	0.000	0.000	0.000	0.000
5	1:DEAD LOAD	0.000	1.026	0.000	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	0.684	0.000	0.000	0.000	0.000
	3:EARTH	0.000	0.455	0.000	0.000	0.000	0.000
	4:STRENGTH	0.000	3.588	0.000	0.000	0.000	0.000
6	1:DEAD LOAD	0.000	0.982	0.000	0.000	0.000	0.000

Reactions Cont...

Node	L/C	Horizontal FX (kip)	Vertical FY (kip)	Horizontal FZ (kip)	Moment MX (kip-in)	Moment MY (kip-in)	Moment MZ (kip-in)
	2:LIVE LOAD-	0.000	0.645	0.000	0.000	0.000	0.000
	3:EARTH	0.000	0.608	0.000	0.000	0.000	0.000
	4:STRENGTH	0.000	3.705	0.000	0.000	0.000	0.000
7	1:DEAD LOAD	0.000	1.026	0.000	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	0.684	0.000	0.000	0.000	0.000
	3:EARTH	0.000	0.455	0.000	0.000	0.000	0.000
	4:STRENGTH	0.000	3.588	0.000	0.000	0.000	0.000
8	1:DEAD LOAD	0.000	1.150	0.000	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	0.793	0.000	0.000	0.000	0.000
	3:EARTH	0.000	-0.013	0.000	0.000	0.000	0.000
	4:STRENGTH	0.000	3.196	0.000	0.000	0.000	0.000
9	1:DEAD LOAD	0.000	1.217	0.000	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	0.867	0.000	0.000	0.000	0.000
	3:EARTH	4.833	-0.746	0.000	0.000	0.000	0.000
	4:STRENGTH	8.168	2.202	0.000	0.000	0.000	0.000

Braced

Job Information

	Engineer	Checked	Approved
Name:	KCC		
Date:	10-Jun-13		

Structure Type	PLANE FRAME

Number of Nodes	11	Highest Node	13
Number of Elements	11	Highest Beam	13

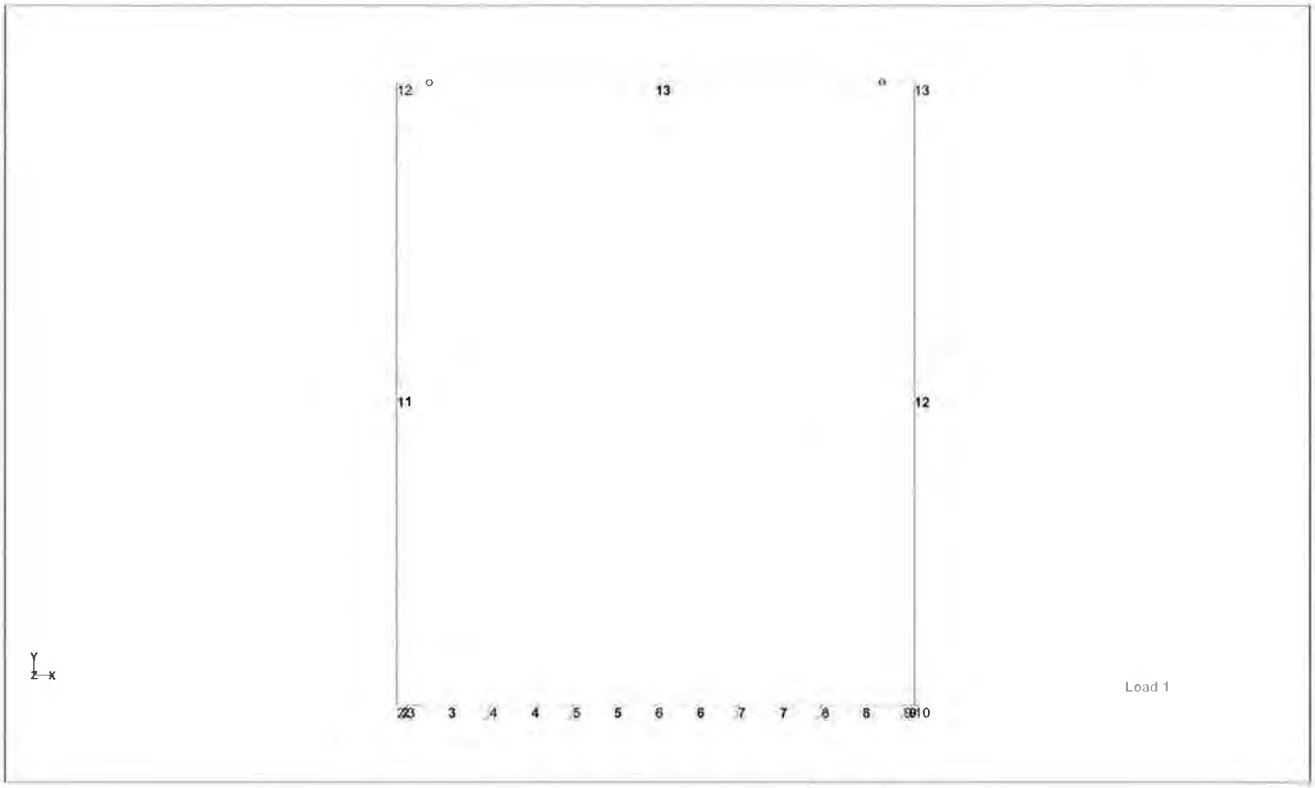
Number of Basic Load Cases	3
Number of Combination Load Cases	1

Included in this printout are data for:

All	The Whole Structure

Included in this printout are results for load cases:

Type	L/C	Name
Primary	1	DEAD LOAD
Primary	2	LIVE LOAD- TRUCK
Primary	3	EARTH
Combination	4	STRENGTH 1



Whole Structure (Input data was modified after picture taken)

Section Properties

Prop	Section	Area (in^2)	I_{yy} (in^4)	I_{zz} (in^4)	J (in^4)	Material
1	Rect 14.00x12.00	168.005	2.02E+3	2.74E+3	3.91E+3	CONCRETE
2	Rect 12.00x12.00	144.000	1.73E+3	1.73E+3	2.92E+3	CONCRETE

Materials

Mat	Name	E (kip/in^2)	ν	Density (kip/in^3)	α (1/°F)
1	STEEL	29E+3	0.300	0.000	6.5E -6
2	STAINLESSSTEEL	28E+3	0.300	0.000	9.9E -6
3	ALUMINUM	10E+3	0.330	0.000	12.8E -6
4	CONCRETE	3.15E+3	0.170	0.000	5.5E -6

Supports

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip-ft/deg)	rY (kip-ft/deg)	rZ (kip-ft/deg)
3	Fixed	15.180	-	-	-	-
4	-	16.560	-	-	-	-
5	-	16.560	-	-	-	-
6	-	16.560	-	-	-	-
7	-	16.560	-	-	-	-
8	-	16.560	-	-	-	-
9	Fixed	15.180	-	-	-	-

Combination Load Cases

Comb.	Combination L/C Name	Primary	Primary L/C Name	Factor
4	STRENGTH 1	1	DEAD LOAD	1.30
		2	LIVE LOAD- TRUCK	2.17
		3	EARTH	1.69

Node Displacements

Node	L/C	X (in)	Y (in)	Z (in)	Resultant (in)	rX (rad)	rY (rad)	rZ (rad)
2	1:DEAD LOAD	0.000	-0.092	0.000	0.092	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	-0.055	0.000	0.055	0.000	0.000	0.000
	3:EARTH	0.000	0.009	0.000	0.009	0.000	0.000	-0.000
	4:STRENGTH	0.000	-0.222	0.000	0.222	0.000	0.000	0.000
3	1:DEAD LOAD	0.000	-0.091	0.000	0.091	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	-0.054	0.000	0.054	0.000	0.000	0.000
	3:EARTH	0.000	0.008	0.000	0.008	0.000	0.000	-0.000
	4:STRENGTH	0.000	-0.221	0.000	0.221	0.000	0.000	0.000
4	1:DEAD LOAD	0.000	-0.083	0.000	0.083	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	-0.048	0.000	0.048	0.000	0.000	0.000
	3:EARTH	0.000	0.000	0.000	0.000	0.000	0.000	-0.000
	4:STRENGTH	0.000	-0.212	0.000	0.212	0.000	0.000	0.000
5	1:DEAD LOAD	0.000	-0.077	0.000	0.077	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	-0.043	0.000	0.043	0.000	0.000	0.000
	3:EARTH	0.000	-0.005	0.000	0.005	0.000	0.000	-0.000
	4:STRENGTH	0.000	-0.201	0.000	0.201	0.000	0.000	0.000
6	1:DEAD LOAD	0.000	-0.075	0.000	0.075	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	-0.041	0.000	0.041	0.000	0.000	0.000
	3:EARTH	0.000	-0.006	0.000	0.006	0.000	0.000	0.000
	4:STRENGTH	0.000	-0.197	0.000	0.197	0.000	0.000	0.000
7	1:DEAD LOAD	0.000	-0.077	0.000	0.077	0.000	0.000	-0.000
	2:LIVE LOAD-	0.000	-0.043	0.000	0.043	0.000	0.000	-0.000
	3:EARTH	0.000	-0.005	0.000	0.005	0.000	0.000	0.000
	4:STRENGTH	0.000	-0.201	0.000	0.201	0.000	0.000	-0.000

Node Displacements Cont...

Node	L/C	X (in)	Y (in)	Z (in)	Resultant (in)	rX (rad)	rY (rad)	rZ (rad)
8	1:DEAD LOAD	0.000	-0.083	0.000	0.083	0.000	0.000	-0.000
	2:LIVE LOAD-	0.000	-0.048	0.000	0.048	0.000	0.000	-0.000
	3:EARTH	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4:STRENGTH	0.000	-0.212	0.000	0.212	0.000	0.000	-0.000
9	1:DEAD LOAD	0.000	-0.091	0.000	0.091	0.000	0.000	-0.000
	2:LIVE LOAD-	0.000	-0.054	0.000	0.054	0.000	0.000	-0.000
	3:EARTH	0.000	0.008	0.000	0.008	0.000	0.000	0.000
	4:STRENGTH	0.000	-0.221	0.000	0.221	0.000	0.000	-0.000
10	1:DEAD LOAD	-0.000	-0.092	0.000	0.092	0.000	0.000	-0.000
	2:LIVE LOAD-	-0.000	-0.055	0.000	0.055	0.000	0.000	-0.000
	3:EARTH	-0.000	0.009	0.000	0.009	0.000	0.000	0.000
	4:STRENGTH	-0.000	-0.222	0.000	0.222	0.000	0.000	-0.000
12	1:DEAD LOAD	-0.000	-0.093	0.000	0.093	0.000	0.000	-0.000
	2:LIVE LOAD-	-0.000	-0.056	0.000	0.056	0.000	0.000	-0.000
	3:EARTH	0.000	0.009	0.000	0.009	0.000	0.000	0.001
	4:STRENGTH	0.000	-0.225	0.000	0.225	0.000	0.000	0.000
13	1:DEAD LOAD	0.000	-0.093	0.000	0.093	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	-0.056	0.000	0.056	0.000	0.000	0.000
	3:EARTH	-0.000	0.009	0.000	0.009	0.000	0.000	-0.001
	4:STRENGTH	-0.000	-0.225	0.000	0.225	0.000	0.000	-0.000

Beam Displacement Detail

Displacements shown in italic indicate the presence of an offset

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
2	1:DEAD LOAD	0.000	0.000	-0.092	0.000	0.092
		0.025	0.000	-0.092	0.000	0.092
		0.050	0.000	-0.092	0.000	0.092
		0.075	0.000	-0.092	0.000	0.092
		0.100	0.000	-0.092	0.000	0.092
		0.125	0.000	-0.091	0.000	0.091
		0.150	0.000	-0.091	0.000	0.091
		0.175	0.000	-0.091	0.000	0.091
		0.200	0.000	-0.091	0.000	0.091
		0.225	0.000	-0.091	0.000	0.091
		0.250	0.000	-0.091	0.000	0.091
	2:LIVE LOAD-	0.000	0.000	-0.055	0.000	0.055
		0.025	0.000	-0.055	0.000	0.055
		0.050	0.000	-0.054	0.000	0.054
		0.075	0.000	-0.054	0.000	0.054
		0.100	0.000	-0.054	0.000	0.054
		0.125	0.000	-0.054	0.000	0.054
		0.150	0.000	-0.054	0.000	0.054

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		0.175	0.000	-0.054	0.000	0.054
		0.200	0.000	-0.054	0.000	0.054
		0.225	0.000	-0.054	0.000	0.054
		0.250	0.000	-0.054	0.000	0.054
	3:EARTH	0.000	0.000	0.009	0.000	0.009
		0.025	0.000	0.009	0.000	0.009
		0.050	0.000	0.009	0.000	0.009
		0.075	0.000	0.009	0.000	0.009
		0.100	0.000	0.009	0.000	0.009
		0.125	0.000	0.009	0.000	0.009
		0.150	0.000	0.009	0.000	0.009
		0.175	0.000	0.009	0.000	0.009
		0.200	0.000	0.008	0.000	0.008
		0.225	0.000	0.008	0.000	0.008
		0.250	0.000	0.008	0.000	0.008
	4:STRENGTH	0.000	0.000	-0.222	0.000	0.222
		0.025	0.000	-0.222	0.000	0.222
		0.050	0.000	-0.222	0.000	0.222
		0.075	0.000	-0.222	0.000	0.222
		0.100	0.000	-0.222	0.000	0.222
		0.125	0.000	-0.222	0.000	0.222
		0.150	0.000	-0.222	0.000	0.222
		0.175	0.000	-0.222	0.000	0.222
		0.200	0.000	-0.222	0.000	0.222
		0.225	0.000	-0.222	0.000	0.222
		0.250	0.000	-0.221	0.000	0.221
3	1:DEAD LOAD	0.000	0.000	-0.091	0.000	0.091
		0.200	0.000	-0.090	0.000	0.090
		0.400	0.000	-0.089	0.000	0.089
		0.600	0.000	-0.089	0.000	0.089
		0.800	0.000	-0.088	0.000	0.088
		1.000	0.000	-0.087	0.000	0.087
		1.200	0.000	-0.086	0.000	0.086
		1.400	0.000	-0.085	0.000	0.085
		1.600	0.000	-0.085	0.000	0.085
		1.800	0.000	-0.084	0.000	0.084
		2.000	0.000	-0.083	0.000	0.083
	2:LIVE LOAD-	0.000	0.000	-0.054	0.000	0.054
		0.200	0.000	-0.053	0.000	0.053
		0.400	0.000	-0.053	0.000	0.053
		0.600	0.000	-0.052	0.000	0.052
		0.800	0.000	-0.051	0.000	0.051
		1.000	0.000	-0.051	0.000	0.051
		1.200	0.000	-0.050	0.000	0.050
		1.400	0.000	-0.050	0.000	0.050

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		1.600	0.000	-0.049	0.000	0.049
		1.800	0.000	-0.048	0.000	0.048
		2.000	0.000	-0.048	0.000	0.048
	3:EARTH	0.000	0.000	0.008	0.000	0.008
		0.200	0.000	0.007	0.000	0.007
		0.400	0.000	0.006	0.000	0.006
		0.600	0.000	0.005	0.000	0.005
		0.800	0.000	0.005	0.000	0.005
		1.000	0.000	0.004	0.000	0.004
		1.200	0.000	0.003	0.000	0.003
		1.400	0.000	0.002	0.000	0.002
		1.600	0.000	0.001	0.000	0.001
		1.800	0.000	0.001	0.000	0.001
		2.000	0.000	0.000	0.000	0.000
	4:STRENGTH	0.000	0.000	-0.221	0.000	0.221
		0.200	0.000	-0.221	0.000	0.221
		0.400	0.000	-0.220	0.000	0.220
		0.600	0.000	-0.219	0.000	0.219
		0.800	0.000	-0.218	0.000	0.218
		1.000	0.000	-0.217	0.000	0.217
		1.200	0.000	-0.216	0.000	0.216
		1.400	0.000	-0.215	0.000	0.215
		1.600	0.000	-0.214	0.000	0.214
		1.800	0.000	-0.213	0.000	0.213
		2.000	0.000	-0.212	0.000	0.212
4	1:DEAD LOAD	0.000	0.000	-0.083	0.000	0.083
		0.200	-0.000	-0.082	0.000	0.082
		0.400	-0.000	-0.082	0.000	0.082
		0.600	-0.000	-0.081	0.000	0.081
		0.800	-0.000	-0.080	0.000	0.080
		1.000	-0.000	-0.080	0.000	0.080
		1.200	-0.000	-0.079	0.000	0.079
		1.400	-0.000	-0.079	0.000	0.079
		1.600	-0.000	-0.078	0.000	0.078
		1.800	-0.000	-0.078	0.000	0.078
		2.000	0.000	-0.077	0.000	0.077
	2:LIVE LOAD-	0.000	0.000	-0.048	0.000	0.048
		0.200	-0.000	-0.047	0.000	0.047
		0.400	-0.000	-0.047	0.000	0.047
		0.600	-0.000	-0.046	0.000	0.046
		0.800	-0.000	-0.046	0.000	0.046
		1.000	-0.000	-0.045	0.000	0.045
		1.200	-0.000	-0.045	0.000	0.045
		1.400	-0.000	-0.044	0.000	0.044
		1.600	-0.000	-0.044	0.000	0.044

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		1.800	-0.000	-0.043	0.000	0.043
		2.000	0.000	-0.043	0.000	0.043
	3:EARTH	0.000	0.000	0.000	0.000	0.000
		0.200	-0.000	-0.000	0.000	0.000
		0.400	-0.000	-0.001	0.000	0.001
		0.600	-0.000	-0.002	0.000	0.002
		0.800	-0.000	-0.002	0.000	0.002
		1.000	-0.000	-0.003	0.000	0.003
		1.200	-0.000	-0.003	0.000	0.003
		1.400	-0.000	-0.003	0.000	0.003
		1.600	-0.000	-0.004	0.000	0.004
		1.800	-0.000	-0.004	0.000	0.004
		2.000	0.000	-0.005	0.000	0.005
	4:STRENGTH	0.000	0.000	-0.212	0.000	0.212
		0.200	-0.000	-0.211	0.000	0.211
		0.400	-0.000	-0.210	0.000	0.210
		0.600	-0.000	-0.208	0.000	0.208
		0.800	-0.000	-0.207	0.000	0.207
		1.000	-0.000	-0.206	0.000	0.206
		1.200	-0.000	-0.205	0.000	0.205
		1.400	-0.000	-0.204	0.000	0.204
		1.600	-0.000	-0.203	0.000	0.203
		1.800	-0.000	-0.202	0.000	0.202
		2.000	0.000	-0.201	0.000	0.201
5	1:DEAD LOAD	0.000	0.000	-0.077	0.000	0.077
		0.200	-0.000	-0.077	0.000	0.077
		0.400	-0.000	-0.076	0.000	0.076
		0.600	0.000	-0.076	0.000	0.076
		0.800	0.000	-0.076	0.000	0.076
		1.000	0.000	-0.075	0.000	0.075
		1.200	0.000	-0.075	0.000	0.075
		1.400	0.000	-0.075	0.000	0.075
		1.600	0.000	-0.075	0.000	0.075
		1.800	-0.000	-0.075	0.000	0.075
		2.000	0.000	-0.075	0.000	0.075
	2:LIVE LOAD-	0.000	0.000	-0.043	0.000	0.043
		0.200	-0.000	-0.043	0.000	0.043
		0.400	-0.000	-0.043	0.000	0.043
		0.600	0.000	-0.042	0.000	0.042
		0.800	0.000	-0.042	0.000	0.042
		1.000	0.000	-0.042	0.000	0.042
		1.200	0.000	-0.042	0.000	0.042
		1.400	0.000	-0.042	0.000	0.042
		1.600	0.000	-0.041	0.000	0.041
		1.800	-0.000	-0.041	0.000	0.041

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		2.000	0.000	-0.041	0.000	0.041
	3:EARTH	0.000	0.000	-0.005	0.000	0.005
		0.200	-0.000	-0.005	0.000	0.005
		0.400	-0.000	-0.005	0.000	0.005
		0.600	0.000	-0.005	0.000	0.005
		0.800	0.000	-0.006	0.000	0.006
		1.000	0.000	-0.006	0.000	0.006
		1.200	0.000	-0.006	0.000	0.006
		1.400	0.000	-0.006	0.000	0.006
		1.600	0.000	-0.006	0.000	0.006
		1.800	-0.000	-0.006	0.000	0.006
		2.000	0.000	-0.006	0.000	0.006
	4:STRENGTH	0.000	0.000	-0.201	0.000	0.201
		0.200	-0.000	-0.201	0.000	0.201
		0.400	-0.000	-0.200	0.000	0.200
		0.600	0.000	-0.199	0.000	0.199
		0.800	0.000	-0.199	0.000	0.199
		1.000	0.000	-0.198	0.000	0.198
		1.200	0.000	-0.198	0.000	0.198
		1.400	0.000	-0.198	0.000	0.198
		1.600	0.000	-0.197	0.000	0.197
		1.800	-0.000	-0.197	0.000	0.197
		2.000	0.000	-0.197	0.000	0.197
6	1:DEAD LOAD	0.000	0.000	-0.075	0.000	0.075
		0.200	-0.000	-0.075	0.000	0.075
		0.400	-0.000	-0.075	0.000	0.075
		0.600	-0.000	-0.075	0.000	0.075
		0.800	-0.000	-0.075	0.000	0.075
		1.000	-0.000	-0.075	0.000	0.075
		1.200	-0.000	-0.076	0.000	0.076
		1.400	-0.000	-0.076	0.000	0.076
		1.600	-0.000	-0.076	0.000	0.076
		1.800	-0.000	-0.077	0.000	0.077
		2.000	0.000	-0.077	0.000	0.077
	2:LIVE LOAD-	0.000	0.000	-0.041	0.000	0.041
		0.200	-0.000	-0.041	0.000	0.041
		0.400	-0.000	-0.041	0.000	0.041
		0.600	-0.000	-0.042	0.000	0.042
		0.800	-0.000	-0.042	0.000	0.042
		1.000	-0.000	-0.042	0.000	0.042
		1.200	-0.000	-0.042	0.000	0.042
		1.400	-0.000	-0.042	0.000	0.042
		1.600	-0.000	-0.043	0.000	0.043
		1.800	-0.000	-0.043	0.000	0.043
		2.000	0.000	-0.043	0.000	0.043

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
	3:EARTH	0.000	0.000	-0.006	0.000	0.006
		0.200	-0.000	-0.006	0.000	0.006
		0.400	-0.000	-0.006	0.000	0.006
		0.600	-0.000	-0.006	0.000	0.006
		0.800	-0.000	-0.006	0.000	0.006
		1.000	-0.000	-0.006	0.000	0.006
		1.200	-0.000	-0.006	0.000	0.006
		1.400	-0.000	-0.005	0.000	0.005
		1.600	-0.000	-0.005	0.000	0.005
		1.800	-0.000	-0.005	0.000	0.005
		2.000	0.000	-0.005	0.000	0.005
	4:STRENGTH	0.000	0.000	-0.197	0.000	0.197
		0.200	-0.000	-0.197	0.000	0.197
		0.400	-0.000	-0.197	0.000	0.197
		0.600	-0.000	-0.198	0.000	0.198
		0.800	-0.000	-0.198	0.000	0.198
		1.000	-0.000	-0.198	0.000	0.198
		1.200	-0.000	-0.199	0.000	0.199
		1.400	-0.000	-0.199	0.000	0.199
		1.600	-0.000	-0.200	0.000	0.200
		1.800	-0.000	-0.201	0.000	0.201
		2.000	0.000	-0.201	0.000	0.201
7	1:DEAD LOAD	0.000	0.000	-0.077	0.000	0.077
		0.200	-0.000	-0.078	0.000	0.078
		0.400	-0.000	-0.078	0.000	0.078
		0.600	-0.000	-0.079	0.000	0.079
		0.800	-0.000	-0.079	0.000	0.079
		1.000	-0.000	-0.080	0.000	0.080
		1.200	-0.000	-0.080	0.000	0.080
		1.400	-0.000	-0.081	0.000	0.081
		1.600	-0.000	-0.082	0.000	0.082
		1.800	-0.000	-0.082	0.000	0.082
		2.000	0.000	-0.083	0.000	0.083
	2:LIVE LOAD-	0.000	0.000	-0.043	0.000	0.043
		0.200	-0.000	-0.043	0.000	0.043
		0.400	-0.000	-0.044	0.000	0.044
		0.600	-0.000	-0.044	0.000	0.044
		0.800	-0.000	-0.045	0.000	0.045
		1.000	-0.000	-0.045	0.000	0.045
		1.200	-0.000	-0.046	0.000	0.046
		1.400	-0.000	-0.046	0.000	0.046
		1.600	-0.000	-0.047	0.000	0.047
		1.800	-0.000	-0.047	0.000	0.047
		2.000	0.000	-0.048	0.000	0.048
	3:EARTH	0.000	0.000	-0.005	0.000	0.005

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		0.200	-0.000	-0.004	0.000	0.004
		0.400	-0.000	-0.004	0.000	0.004
		0.600	-0.000	-0.003	0.000	0.003
		0.800	-0.000	-0.003	0.000	0.003
		1.000	-0.000	-0.003	0.000	0.003
		1.200	-0.000	-0.002	0.000	0.002
		1.400	-0.000	-0.002	0.000	0.002
		1.600	-0.000	-0.001	0.000	0.001
		1.800	-0.000	-0.000	0.000	0.000
		2.000	0.000	0.000	0.000	0.000
	4:STRENGTH	0.000	0.000	-0.201	0.000	0.201
		0.200	-0.000	-0.202	0.000	0.202
		0.400	-0.000	-0.203	0.000	0.203
		0.600	-0.000	-0.204	0.000	0.204
		0.800	-0.000	-0.205	0.000	0.205
		1.000	-0.000	-0.206	0.000	0.206
		1.200	-0.000	-0.207	0.000	0.207
		1.400	-0.000	-0.208	0.000	0.208
		1.600	-0.000	-0.210	0.000	0.210
		1.800	-0.000	-0.211	0.000	0.211
		2.000	0.000	-0.212	0.000	0.212
8	1:DEAD LOAD	0.000	0.000	-0.083	0.000	0.083
		0.200	-0.000	-0.084	0.000	0.084
		0.400	-0.000	-0.085	0.000	0.085
		0.600	-0.000	-0.085	0.000	0.085
		0.800	-0.000	-0.086	0.000	0.086
		1.000	-0.000	-0.087	0.000	0.087
		1.200	-0.000	-0.088	0.000	0.088
		1.400	-0.000	-0.089	0.000	0.089
		1.600	-0.000	-0.089	0.000	0.089
		1.800	-0.000	-0.090	0.000	0.090
		2.000	0.000	-0.091	0.000	0.091
	2:LIVE LOAD-	0.000	0.000	-0.048	0.000	0.048
		0.200	-0.000	-0.048	0.000	0.048
		0.400	-0.000	-0.049	0.000	0.049
		0.600	-0.000	-0.050	0.000	0.050
		0.800	-0.000	-0.050	0.000	0.050
		1.000	-0.000	-0.051	0.000	0.051
		1.200	-0.000	-0.051	0.000	0.051
		1.400	-0.000	-0.052	0.000	0.052
		1.600	-0.000	-0.053	0.000	0.053
		1.800	-0.000	-0.053	0.000	0.053
		2.000	0.000	-0.054	0.000	0.054
	3:EARTH	0.000	0.000	0.000	0.000	0.000
		0.200	-0.000	0.001	0.000	0.001

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		0.400	-0.000	0.001	0.000	0.001
		0.600	-0.000	0.002	0.000	0.002
		0.800	-0.000	0.003	0.000	0.003
		1.000	-0.000	0.004	0.000	0.004
		1.200	-0.000	0.005	0.000	0.005
		1.400	-0.000	0.005	0.000	0.005
		1.600	-0.000	0.006	0.000	0.006
		1.800	-0.000	0.007	0.000	0.007
		2.000	0.000	0.008	0.000	0.008
	4:STRENGTH	0.000	0.000	-0.212	0.000	0.212
		0.200	-0.000	-0.213	0.000	0.213
		0.400	-0.000	-0.214	0.000	0.214
		0.600	-0.000	-0.215	0.000	0.215
		0.800	-0.000	-0.216	0.000	0.216
		1.000	-0.000	-0.217	0.000	0.217
		1.200	-0.000	-0.218	0.000	0.218
		1.400	-0.000	-0.219	0.000	0.219
		1.600	-0.000	-0.220	0.000	0.220
		1.800	-0.000	-0.221	0.000	0.221
		2.000	0.000	-0.221	0.000	0.221
9	1:DEAD LOAD	0.000	0.000	-0.091	0.000	0.091
		0.025	-0.000	-0.091	0.000	0.091
		0.050	-0.000	-0.091	0.000	0.091
		0.075	-0.000	-0.091	0.000	0.091
		0.100	-0.000	-0.091	0.000	0.091
		0.125	-0.000	-0.091	0.000	0.091
		0.150	-0.000	-0.092	0.000	0.092
		0.175	-0.000	-0.092	0.000	0.092
		0.200	-0.000	-0.092	0.000	0.092
		0.225	-0.000	-0.092	0.000	0.092
		0.250	0.000	-0.092	0.000	0.092
	2:LIVE LOAD-	0.000	0.000	-0.054	0.000	0.054
		0.025	-0.000	-0.054	0.000	0.054
		0.050	-0.000	-0.054	0.000	0.054
		0.075	-0.000	-0.054	0.000	0.054
		0.100	-0.000	-0.054	0.000	0.054
		0.125	-0.000	-0.054	0.000	0.054
		0.150	-0.000	-0.054	0.000	0.054
		0.175	-0.000	-0.054	0.000	0.054
		0.200	-0.000	-0.054	0.000	0.054
		0.225	-0.000	-0.055	0.000	0.055
		0.250	0.000	-0.055	0.000	0.055
	3:EARTH	0.000	0.000	0.008	0.000	0.008
		0.025	-0.000	0.008	0.000	0.008
		0.050	-0.000	0.008	0.000	0.008

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		0.075	-0.000	0.009	0.000	0.009
		0.100	-0.000	0.009	0.000	0.009
		0.125	-0.000	0.009	0.000	0.009
		0.150	-0.000	0.009	0.000	0.009
		0.175	-0.000	0.009	0.000	0.009
		0.200	-0.000	0.009	0.000	0.009
		0.225	-0.000	0.009	0.000	0.009
		0.250	-0.000	0.009	0.000	0.009
	4:STRENGTH	0.000	0.000	-0.221	0.000	0.221
		0.025	-0.000	-0.222	0.000	0.222
		0.050	-0.000	-0.222	0.000	0.222
		0.075	-0.000	-0.222	0.000	0.222
		0.100	-0.000	-0.222	0.000	0.222
		0.125	-0.000	-0.222	0.000	0.222
		0.150	-0.000	-0.222	0.000	0.222
		0.175	-0.000	-0.222	0.000	0.222
		0.200	-0.000	-0.222	0.000	0.222
		0.225	-0.000	-0.222	0.000	0.222
		0.250	-0.000	-0.222	0.000	0.222
11	1:DEAD LOAD	0.000	0.000	-0.092	0.000	0.092
		1.498	-0.004	-0.092	0.000	0.092
		2.996	-0.007	-0.092	0.000	0.092
		4.494	-0.009	-0.092	0.000	0.093
		5.992	-0.010	-0.092	0.000	0.093
		7.490	-0.010	-0.092	0.000	0.093
		8.988	-0.009	-0.092	0.000	0.093
		10.485	-0.007	-0.092	0.000	0.093
		11.983	-0.005	-0.092	0.000	0.093
		13.481	-0.003	-0.093	0.000	0.093
		14.979	-0.000	-0.093	0.000	0.093
	2:LIVE LOAD-	0.000	0.000	-0.055	0.000	0.055
		1.498	-0.003	-0.055	0.000	0.055
		2.996	-0.006	-0.055	0.000	0.055
		4.494	-0.007	-0.055	0.000	0.055
		5.992	-0.008	-0.055	0.000	0.055
		7.490	-0.007	-0.055	0.000	0.056
		8.988	-0.007	-0.055	0.000	0.056
		10.485	-0.005	-0.055	0.000	0.055
		11.983	-0.004	-0.055	0.000	0.055
		13.481	-0.002	-0.055	0.000	0.055
		14.979	-0.000	-0.056	0.000	0.056
	3:EARTH	0.000	0.000	0.009	0.000	0.009
		1.498	0.008	0.009	0.000	0.012
		2.996	0.016	0.009	0.000	0.019
		4.494	0.023	0.009	0.000	0.025

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		5.992	0.028	0.009	0.000	0.029
		7.490	0.030	0.009	0.000	0.031
		8.988	0.028	0.009	0.000	0.030
		10.485	0.024	0.009	0.000	0.026
		11.983	0.018	0.009	0.000	0.020
		13.481	0.009	0.009	0.000	0.013
		14.979	0.000	0.009	0.000	0.009
	4:STRENGTH	0.000	0.000	-0.222	0.000	0.222
		1.498	0.001	-0.222	0.000	0.222
		2.996	0.006	-0.223	0.000	0.223
		4.494	0.013	-0.223	0.000	0.223
		5.992	0.018	-0.223	0.000	0.224
		7.490	0.022	-0.224	0.000	0.225
		8.988	0.023	-0.224	0.000	0.225
		10.485	0.020	-0.224	0.000	0.225
		11.983	0.015	-0.224	0.000	0.225
		13.481	0.008	-0.225	0.000	0.225
		14.979	0.000	-0.225	0.000	0.225
12	1:DEAD LOAD	0.000	0.000	-0.092	0.000	0.092
		1.498	0.004	-0.092	0.000	0.092
		2.996	0.007	-0.092	0.000	0.092
		4.494	0.009	-0.092	0.000	0.093
		5.992	0.010	-0.092	0.000	0.093
		7.490	0.010	-0.092	0.000	0.093
		8.988	0.008	-0.092	0.000	0.093
		10.485	0.007	-0.092	0.000	0.093
		11.983	0.005	-0.092	0.000	0.093
		13.481	0.003	-0.093	0.000	0.093
		14.979	0.000	-0.093	0.000	0.093
	2:LIVE LOAD-	0.000	0.000	-0.055	0.000	0.055
		1.498	0.003	-0.055	0.000	0.055
		2.996	0.006	-0.055	0.000	0.055
		4.494	0.007	-0.055	0.000	0.055
		5.992	0.008	-0.055	0.000	0.055
		7.490	0.007	-0.055	0.000	0.056
		8.988	0.007	-0.055	0.000	0.056
		10.485	0.005	-0.055	0.000	0.055
		11.983	0.004	-0.055	0.000	0.055
		13.481	0.002	-0.055	0.000	0.055
		14.979	0.000	-0.055	0.000	0.055
	3:EARTH	0.000	-0.000	0.009	0.000	0.009
		1.498	-0.008	0.009	0.000	0.012
		2.996	-0.016	0.009	0.000	0.019
		4.494	-0.023	0.009	0.000	0.025
		5.992	-0.028	0.009	0.000	0.029

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		7.490	-0.030	0.009	0.000	0.031
		8.988	-0.028	0.009	0.000	0.030
		10.485	-0.024	0.009	0.000	0.026
		11.983	-0.018	0.009	0.000	0.020
		13.481	-0.009	0.009	0.000	0.013
		14.979	-0.000	0.009	0.000	0.009
	4:STRENGTH	0.000	-0.000	-0.222	0.000	0.222
		1.498	-0.001	-0.222	0.000	0.222
		2.996	-0.006	-0.223	0.000	0.223
		4.494	-0.013	-0.223	0.000	0.223
		5.992	-0.018	-0.223	0.000	0.224
		7.490	-0.022	-0.224	0.000	0.225
		8.988	-0.023	-0.224	0.000	0.225
		10.485	-0.020	-0.224	0.000	0.225
		11.983	-0.015	-0.224	0.000	0.225
		13.481	-0.008	-0.225	0.000	0.225
		14.979	-0.000	-0.225	0.000	0.225
13	1:DEAD LOAD	0.000	-0.000	-0.093	0.000	0.093
		1.250	-0.000	-0.097	0.000	0.097
		2.500	-0.000	-0.101	0.000	0.101
		3.750	-0.000	-0.105	0.000	0.105
		5.000	-0.000	-0.107	0.000	0.107
		6.250	-0.000	-0.108	0.000	0.108
		7.500	-0.000	-0.107	0.000	0.107
		8.750	-0.000	-0.105	0.000	0.105
		10.000	0.000	-0.101	0.000	0.101
		11.250	0.000	-0.097	0.000	0.097
		12.500	0.000	-0.093	0.000	0.093
	2:LIVE LOAD-	0.000	-0.000	-0.056	0.000	0.056
		1.250	-0.000	-0.056	0.000	0.056
		2.500	-0.000	-0.056	0.000	0.056
		3.750	-0.000	-0.056	0.000	0.056
		5.000	-0.000	-0.056	0.000	0.056
		6.250	-0.000	-0.056	0.000	0.056
		7.500	-0.000	-0.056	0.000	0.056
		8.750	0.000	-0.056	0.000	0.056
		10.000	0.000	-0.056	0.000	0.056
		11.250	0.000	-0.056	0.000	0.056
		12.500	0.000	-0.055	0.000	0.055
	3:EARTH	0.000	0.000	0.009	0.000	0.009
		1.250	0.000	0.009	0.000	0.009
		2.500	0.000	0.009	0.000	0.009
		3.750	0.000	0.009	0.000	0.009
		5.000	0.000	0.009	0.000	0.009
		6.250	-0.000	0.009	0.000	0.009

Beam Displacement Detail Cont...

Beam	L/C	d (ft)	X (in)	Y (in)	Z (in)	Resultant (in)
		7.500	-0.000	0.009	0.000	0.009
		8.750	-0.000	0.009	0.000	0.009
		10.000	-0.000	0.009	0.000	0.009
		11.250	-0.000	0.009	0.000	0.009
		12.500	-0.000	0.009	0.000	0.009
	4:STRENGTH	0.000	0.000	-0.225	0.000	0.225
		1.250	0.000	-0.231	0.000	0.231
		2.500	0.000	-0.237	0.000	0.237
		3.750	0.000	-0.241	0.000	0.241
		5.000	0.000	-0.244	0.000	0.244
		6.250	-0.000	-0.245	0.000	0.245
		7.500	-0.000	-0.244	0.000	0.244
		8.750	-0.000	-0.241	0.000	0.241
		10.000	-0.000	-0.237	0.000	0.237
		11.250	-0.000	-0.231	0.000	0.231
		12.500	-0.000	-0.225	0.000	0.225

Beam Force Detail

Sign convention as diagrams:- positive above line, negative below line except Fx where positive is compression. Distance d is given from beam end A.

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
2	1:DEAD LOAD	0.000	0.226	-3.559	0.000	0.000	0.000	-40.694
		0.025	0.226	-3.563	0.000	0.000	0.000	-39.624
		0.050	0.226	-3.567	0.000	0.000	0.000	-38.553
		0.075	0.226	-3.572	0.000	0.000	0.000	-37.481
		0.100	0.226	-3.576	0.000	0.000	0.000	-36.408
		0.125	0.226	-3.581	0.000	0.000	0.000	-35.333
		0.150	0.226	-3.585	0.000	0.000	0.000	-34.257
		0.175	0.226	-3.589	0.000	0.000	0.000	-33.179
		0.200	0.226	-3.594	0.000	0.000	0.000	-32.100
		0.225	0.226	-3.598	0.000	0.000	0.000	-31.020
		0.250	0.226	-3.603	-0.000	-0.000	-0.000	-29.939
	2:LIVE LOAD-	0.000	0.175	-2.667	0.000	0.000	0.000	-31.524
		0.025	0.175	-2.667	0.000	0.000	0.000	-30.723
		0.050	0.175	-2.667	0.000	0.000	0.000	-29.922
		0.075	0.175	-2.667	0.000	0.000	0.000	-29.121
		0.100	0.175	-2.667	0.000	0.000	0.000	-28.320
		0.125	0.175	-2.667	0.000	0.000	0.000	-27.518
		0.150	0.175	-2.667	0.000	0.000	0.000	-26.717
		0.175	0.175	-2.667	0.000	0.000	0.000	-25.916
		0.200	0.175	-2.667	0.000	0.000	0.000	-25.115
		0.225	0.175	-2.667	0.000	0.000	0.000	-24.314

Beam Force Detail Cont...

Beam	L/C	d	Axial	Shear		Torsion	Bending	
			Fx	Fy	Fz	Mx	My	Mz
		(ft)	(kip)	(kip)	(kip)	(kip-in)	(kip-in)	(kip-in)
		0.250	0.175	-2.667	-0.000	-0.000	-0.000	-23.513
	3:EARTH	0.000	3.347	-0.000	0.000	0.000	0.000	-53.020
		0.025	3.347	-0.000	0.000	0.000	0.000	-53.020
		0.050	3.347	-0.000	0.000	0.000	0.000	-53.020
		0.075	3.347	-0.000	0.000	0.000	0.000	-53.020
		0.100	3.347	-0.000	0.000	0.000	0.000	-53.020
		0.125	3.347	-0.000	0.000	0.000	0.000	-53.020
		0.150	3.347	-0.000	0.000	0.000	0.000	-53.020
		0.175	3.347	-0.000	0.000	0.000	0.000	-53.020
		0.200	3.347	-0.000	0.000	0.000	0.000	-53.020
		0.225	3.347	-0.000	0.000	0.000	0.000	-53.020
		0.250	3.347	-0.000	-0.000	-0.000	-0.000	-53.020
	4:STRENGTH	0.000	6.332	-10.416	0.000	0.000	0.000	-210.943
		0.025	6.332	-10.422	0.000	0.000	0.000	-207.814
		0.050	6.332	-10.428	0.000	0.000	0.000	-204.682
		0.075	6.332	-10.433	0.000	0.000	0.000	-201.549
		0.100	6.332	-10.439	0.000	0.000	0.000	-198.415
		0.125	6.332	-10.445	0.000	0.000	0.000	-195.279
		0.150	6.332	-10.451	0.000	0.000	0.000	-192.140
		0.175	6.332	-10.456	0.000	0.000	0.000	-189.001
		0.200	6.332	-10.462	0.000	0.000	0.000	-185.859
		0.225	6.332	-10.468	0.000	0.000	0.000	-182.716
		0.250	6.332	-10.473	-0.000	-0.000	-0.000	-179.571
3	1:DEAD LOAD	0.000	0.000	-2.222	0.000	0.000	0.000	-29.939
		0.200	0.000	-2.257	0.000	0.000	0.000	-24.560
		0.400	0.000	-2.292	0.000	0.000	0.000	-19.099
		0.600	0.000	-2.327	0.000	0.000	0.000	-13.556
		0.800	0.000	-2.362	0.000	0.000	0.000	-7.932
		1.000	0.000	-2.397	0.000	0.000	0.000	-2.226
		1.200	0.000	-2.432	0.000	0.000	0.000	3.573
		1.400	0.000	-2.467	0.000	0.000	0.000	9.454
		1.600	0.000	-2.502	0.000	0.000	0.000	15.416
		1.800	0.000	-2.537	0.000	0.000	0.000	21.460
		2.000	-0.000	-2.572	-0.000	-0.000	-0.000	27.586
	2:LIVE LOAD-	0.000	0.000	-1.849	0.000	0.000	0.000	-23.513
		0.200	0.000	-1.849	0.000	0.000	0.000	-19.076
		0.400	0.000	-1.849	0.000	0.000	0.000	-14.638
		0.600	0.000	-1.849	0.000	0.000	0.000	-10.200
		0.800	0.000	-1.849	0.000	0.000	0.000	-5.763
		1.000	0.000	-1.849	0.000	0.000	0.000	-1.325
		1.200	0.000	-1.849	0.000	0.000	0.000	3.113
		1.400	0.000	-1.849	0.000	0.000	0.000	7.550
		1.600	0.000	-1.849	0.000	0.000	0.000	11.988
		1.800	0.000	-1.849	0.000	0.000	0.000	16.426

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		2.000	-0.000	-1.849	-0.000	-0.000	-0.000	20.863
	3:EARTH	0.000	0.000	-0.124	0.000	0.000	0.000	-53.020
		0.200	0.000	-0.124	0.000	0.000	0.000	-52.723
		0.400	0.000	-0.124	0.000	0.000	0.000	-52.426
		0.600	0.000	-0.124	0.000	0.000	0.000	-52.130
		0.800	0.000	-0.124	0.000	0.000	0.000	-51.833
		1.000	0.000	-0.124	0.000	0.000	0.000	-51.537
		1.200	0.000	-0.124	0.000	0.000	0.000	-51.240
		1.400	0.000	-0.124	0.000	0.000	0.000	-50.943
		1.600	0.000	-0.124	0.000	0.000	0.000	-50.647
		1.800	0.000	-0.124	0.000	0.000	0.000	-50.350
		2.000	-0.000	-0.124	-0.000	-0.000	-0.000	-50.053
	4:STRENGTH	0.000	0.000	-7.112	0.000	0.000	0.000	-179.571
		0.200	0.000	-7.157	0.000	0.000	0.000	-162.443
		0.400	0.000	-7.203	0.000	0.000	0.000	-145.208
		0.600	0.000	-7.248	0.000	0.000	0.000	-127.868
		0.800	0.000	-7.294	0.000	0.000	0.000	-110.421
		1.000	0.000	-7.339	0.000	0.000	0.000	-92.868
		1.200	0.000	-7.385	0.000	0.000	0.000	-75.193
		1.400	0.000	-7.430	0.000	0.000	0.000	-57.413
		1.600	0.000	-7.476	0.000	0.000	0.000	-39.526
		1.800	0.000	-7.521	0.000	0.000	0.000	-21.533
		2.000	-0.000	-7.567	-0.000	-0.000	-0.000	-3.434
4	1:DEAD LOAD	0.000	0.000	-1.195	0.000	0.000	0.000	27.586
		0.200	0.000	-1.230	0.000	0.000	0.000	30.500
		0.400	0.000	-1.265	0.000	0.000	0.000	33.495
		0.600	0.000	-1.300	0.000	0.000	0.000	36.572
		0.800	0.000	-1.335	0.000	0.000	0.000	39.730
		1.000	0.000	-1.370	0.000	0.000	0.000	42.971
		1.200	0.000	-1.405	0.000	0.000	0.000	46.304
		1.400	0.000	-1.440	0.000	0.000	0.000	49.720
		1.600	0.000	-1.475	0.000	0.000	0.000	53.216
		1.800	0.000	-1.510	0.000	0.000	0.000	56.795
		2.000	-0.000	-1.545	-0.000	-0.000	-0.000	60.455
	2:LIVE LOAD-	0.000	0.000	-1.056	0.000	0.000	0.000	20.863
		0.200	0.000	-1.056	0.000	0.000	0.000	23.398
		0.400	0.000	-1.056	0.000	0.000	0.000	25.934
		0.600	0.000	-1.056	0.000	0.000	0.000	28.469
		0.800	0.000	-1.056	0.000	0.000	0.000	31.004
		1.000	0.000	-1.056	0.000	0.000	0.000	33.540
		1.200	0.000	-1.056	0.000	0.000	0.000	36.075
		1.400	0.000	-1.056	0.000	0.000	0.000	38.610
		1.600	0.000	-1.056	0.000	0.000	0.000	41.146
		1.800	0.000	-1.056	0.000	0.000	0.000	43.681

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		2.000	-0.000	-1.056	-0.000	-0.000	-0.000	46.216
	3:EARTH	0.000	0.000	-0.126	0.000	0.000	0.000	-50.053
		0.200	0.000	-0.126	0.000	0.000	0.000	-49.752
		0.400	0.000	-0.126	0.000	0.000	0.000	-49.450
		0.600	0.000	-0.126	0.000	0.000	0.000	-49.148
		0.800	0.000	-0.126	0.000	0.000	0.000	-48.846
		1.000	0.000	-0.126	0.000	0.000	0.000	-48.545
		1.200	0.000	-0.126	0.000	0.000	0.000	-48.243
		1.400	0.000	-0.126	0.000	0.000	0.000	-47.941
		1.600	0.000	-0.126	0.000	0.000	0.000	-47.639
		1.800	0.000	-0.126	0.000	0.000	0.000	-47.338
		2.000	-0.000	-0.126	-0.000	-0.000	-0.000	-47.036
	4:STRENGTH	0.000	0.000	-4.059	0.000	0.000	0.000	-3.434
		0.200	0.000	-4.104	0.000	0.000	0.000	6.367
		0.400	0.000	-4.150	0.000	0.000	0.000	16.275
		0.600	0.000	-4.195	0.000	0.000	0.000	26.290
		0.800	0.000	-4.241	0.000	0.000	0.000	36.410
		1.000	0.000	-4.286	0.000	0.000	0.000	46.636
		1.200	0.000	-4.332	0.000	0.000	0.000	56.984
		1.400	0.000	-4.377	0.000	0.000	0.000	67.438
		1.600	0.000	-4.423	0.000	0.000	0.000	77.998
		1.800	0.000	-4.468	0.000	0.000	0.000	88.665
		2.000	-0.000	-4.514	-0.000	-0.000	-0.000	99.437
5	1:DEAD LOAD	0.000	0.000	-0.269	0.000	0.000	0.000	60.455
		0.200	0.000	-0.304	0.000	0.000	0.000	61.147
		0.400	0.000	-0.339	0.000	0.000	0.000	61.921
		0.600	0.000	-0.374	0.000	0.000	0.000	62.776
		0.800	0.000	-0.409	0.000	0.000	0.000	63.713
		1.000	0.000	-0.444	0.000	0.000	0.000	64.731
		1.200	0.000	-0.479	0.000	0.000	0.000	65.843
		1.400	0.000	-0.514	0.000	0.000	0.000	67.037
		1.600	0.000	-0.549	0.000	0.000	0.000	68.312
		1.800	0.000	-0.584	0.000	0.000	0.000	69.669
		2.000	-0.000	-0.619	-0.000	-0.000	-0.000	71.107
	2:LIVE LOAD-	0.000	0.000	-0.342	0.000	0.000	0.000	46.216
		0.200	0.000	-0.342	0.000	0.000	0.000	47.038
		0.400	0.000	-0.342	0.000	0.000	0.000	47.860
		0.600	0.000	-0.342	0.000	0.000	0.000	48.681
		0.800	0.000	-0.342	0.000	0.000	0.000	49.503
		1.000	0.000	-0.342	0.000	0.000	0.000	50.324
		1.200	0.000	-0.342	0.000	0.000	0.000	51.146
		1.400	0.000	-0.342	0.000	0.000	0.000	51.968
		1.600	0.000	-0.342	0.000	0.000	0.000	52.789
		1.800	0.000	-0.342	0.000	0.000	0.000	53.611

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		2.000	-0.000	-0.342	-0.000	-0.000	-0.000	54.432
	3:EARTH	0.000	0.000	-0.050	0.000	0.000	0.000	-47.036
		0.200	0.000	-0.050	0.000	0.000	0.000	-46.915
		0.400	0.000	-0.050	0.000	0.000	0.000	-46.794
		0.600	0.000	-0.050	0.000	0.000	0.000	-46.673
		0.800	0.000	-0.050	0.000	0.000	0.000	-46.552
		1.000	0.000	-0.050	0.000	0.000	0.000	-46.431
		1.200	0.000	-0.050	0.000	0.000	0.000	-46.310
		1.400	0.000	-0.050	0.000	0.000	0.000	-46.190
		1.600	0.000	-0.050	0.000	0.000	0.000	-46.069
		1.800	0.000	-0.050	0.000	0.000	0.000	-45.948
		2.000	-0.000	-0.050	-0.000	-0.000	-0.000	-45.827
	4:STRENGTH	0.000	0.000	-1.178	0.000	0.000	0.000	99.437
		0.200	0.000	-1.223	0.000	0.000	0.000	102.325
		0.400	0.000	-1.269	0.000	0.000	0.000	105.318
		0.600	0.000	-1.314	0.000	0.000	0.000	108.418
		0.800	0.000	-1.360	0.000	0.000	0.000	111.624
		1.000	0.000	-1.405	0.000	0.000	0.000	114.936
		1.200	0.000	-1.451	0.000	0.000	0.000	118.369
		1.400	0.000	-1.496	0.000	0.000	0.000	121.909
		1.600	0.000	-1.542	0.000	0.000	0.000	125.555
		1.800	0.000	-1.587	0.000	0.000	0.000	129.306
		2.000	-0.000	-1.633	-0.000	-0.000	-0.000	133.164
6	1:DEAD LOAD	0.000	0.000	0.619	0.000	0.000	0.000	71.107
		0.200	0.000	0.584	0.000	0.000	0.000	69.668
		0.400	0.000	0.549	0.000	0.000	0.000	68.311
		0.600	0.000	0.514	0.000	0.000	0.000	67.035
		0.800	0.000	0.479	0.000	0.000	0.000	65.841
		1.000	0.000	0.444	0.000	0.000	0.000	64.728
		1.200	0.000	0.409	0.000	0.000	0.000	63.709
		1.400	0.000	0.374	0.000	0.000	0.000	62.772
		1.600	0.000	0.339	0.000	0.000	0.000	61.916
		1.800	0.000	0.304	0.000	0.000	0.000	61.142
		2.000	-0.000	0.269	-0.000	-0.000	-0.000	60.449
	2:LIVE LOAD-	0.000	0.000	0.342	0.000	0.000	0.000	54.432
		0.200	0.000	0.342	0.000	0.000	0.000	53.610
		0.400	0.000	0.342	0.000	0.000	0.000	52.788
		0.600	0.000	0.342	0.000	0.000	0.000	51.966
		0.800	0.000	0.342	0.000	0.000	0.000	51.144
		1.000	0.000	0.342	0.000	0.000	0.000	50.322
		1.200	0.000	0.342	0.000	0.000	0.000	49.500
		1.400	0.000	0.342	0.000	0.000	0.000	48.678
		1.600	0.000	0.342	0.000	0.000	0.000	47.856
		1.800	0.000	0.342	0.000	0.000	0.000	47.034

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		2.000	-0.000	0.342	-0.000	-0.000	-0.000	46.212
	3:EARTH	0.000	0.000	0.050	0.000	0.000	0.000	-45.827
		0.200	0.000	0.050	0.000	0.000	0.000	-45.948
		0.400	0.000	0.050	0.000	0.000	0.000	-46.069
		0.600	0.000	0.050	0.000	0.000	0.000	-46.190
		0.800	0.000	0.050	0.000	0.000	0.000	-46.310
		1.000	0.000	0.050	0.000	0.000	0.000	-46.431
		1.200	0.000	0.050	0.000	0.000	0.000	-46.552
		1.400	0.000	0.050	0.000	0.000	0.000	-46.673
		1.600	0.000	0.050	0.000	0.000	0.000	-46.794
		1.800	0.000	0.050	0.000	0.000	0.000	-46.915
		2.000	-0.000	0.050	-0.000	-0.000	-0.000	-47.036
	4:STRENGTH	0.000	0.000	1.633	0.000	0.000	0.000	133.164
		0.200	0.000	1.588	0.000	0.000	0.000	129.305
		0.400	0.000	1.542	0.000	0.000	0.000	125.551
		0.600	0.000	1.497	0.000	0.000	0.000	121.904
		0.800	0.000	1.451	0.000	0.000	0.000	118.363
		1.000	0.000	1.406	0.000	0.000	0.000	114.928
		1.200	0.000	1.360	0.000	0.000	0.000	111.614
		1.400	0.000	1.315	0.000	0.000	0.000	108.406
		1.600	0.000	1.269	0.000	0.000	0.000	105.305
		1.800	0.000	1.224	0.000	0.000	0.000	102.310
		2.000	-0.000	1.178	-0.000	-0.000	-0.000	99.421
7	1:DEAD LOAD	0.000	0.000	1.545	0.000	0.000	0.000	60.449
		0.200	0.000	1.510	0.000	0.000	0.000	56.789
		0.400	0.000	1.475	0.000	0.000	0.000	53.210
		0.600	0.000	1.440	0.000	0.000	0.000	49.712
		0.800	0.000	1.405	0.000	0.000	0.000	46.297
		1.000	0.000	1.370	0.000	0.000	0.000	42.962
		1.200	0.000	1.335	0.000	0.000	0.000	39.722
		1.400	0.000	1.300	0.000	0.000	0.000	36.563
		1.600	0.000	1.265	0.000	0.000	0.000	33.485
		1.800	0.000	1.230	0.000	0.000	0.000	30.489
		2.000	-0.000	1.195	-0.000	-0.000	-0.000	27.575
	2:LIVE LOAD-	0.000	0.000	1.057	0.000	0.000	0.000	46.212
		0.200	0.000	1.057	0.000	0.000	0.000	43.677
		0.400	0.000	1.057	0.000	0.000	0.000	41.141
		0.600	0.000	1.057	0.000	0.000	0.000	38.605
		0.800	0.000	1.057	0.000	0.000	0.000	36.070
		1.000	0.000	1.057	0.000	0.000	0.000	33.534
		1.200	0.000	1.057	0.000	0.000	0.000	30.998
		1.400	0.000	1.057	0.000	0.000	0.000	28.463
		1.600	0.000	1.057	0.000	0.000	0.000	25.927
		1.800	0.000	1.057	0.000	0.000	0.000	23.391

Beam Force Detail Cont...

Beam	L/C	d	Axial	Shear		Torsion	Bending	
			Fx	Fy	Fz	Mx	My	Mz
		(ft)	(kip)	(kip)	(kip)	(kip-in)	(kip-in)	(kip-in)
		2.000	-0.000	1.057	-0.000	-0.000	-0.000	20.856
	3:EARTH	0.000	0.000	0.126	0.000	0.000	0.000	-47.036
		0.200	0.000	0.126	0.000	0.000	0.000	-47.338
		0.400	0.000	0.126	0.000	0.000	0.000	-47.639
		0.600	0.000	0.126	0.000	0.000	0.000	-47.941
		0.800	0.000	0.126	0.000	0.000	0.000	-48.243
		1.000	0.000	0.126	0.000	0.000	0.000	-48.545
		1.200	0.000	0.126	0.000	0.000	0.000	-48.846
		1.400	0.000	0.126	0.000	0.000	0.000	-49.148
		1.600	0.000	0.126	0.000	0.000	0.000	-49.450
		1.800	0.000	0.126	0.000	0.000	0.000	-49.752
		2.000	-0.000	0.126	-0.000	-0.000	-0.000	-50.053
	4:STRENGTH	0.000	0.000	4.514	0.000	0.000	0.000	99.421
		0.200	0.000	4.469	0.000	0.000	0.000	88.647
		0.400	0.000	4.423	0.000	0.000	0.000	77.979
		0.600	0.000	4.378	0.000	0.000	0.000	67.418
		0.800	0.000	4.332	0.000	0.000	0.000	56.962
		1.000	0.000	4.287	0.000	0.000	0.000	46.613
		1.200	0.000	4.241	0.000	0.000	0.000	36.385
		1.400	0.000	4.196	0.000	0.000	0.000	26.264
		1.600	0.000	4.150	0.000	0.000	0.000	16.248
		1.800	0.000	4.105	0.000	0.000	0.000	6.339
		2.000	-0.000	4.059	-0.000	-0.000	-0.000	-3.465
8	1:DEAD LOAD	0.000	0.000	2.572	0.000	0.000	0.000	27.575
		0.200	0.000	2.537	0.000	0.000	0.000	21.449
		0.400	0.000	2.502	0.000	0.000	0.000	15.405
		0.600	0.000	2.467	0.000	0.000	0.000	9.442
		0.800	0.000	2.432	0.000	0.000	0.000	3.561
		1.000	0.000	2.397	0.000	0.000	0.000	-2.238
		1.200	0.000	2.362	0.000	0.000	0.000	-7.944
		1.400	0.000	2.327	0.000	0.000	0.000	-13.569
		1.600	0.000	2.292	0.000	0.000	0.000	-19.111
		1.800	0.000	2.257	0.000	0.000	0.000	-24.573
		2.000	-0.000	2.222	-0.000	-0.000	-0.000	-29.952
	2:LIVE LOAD-	0.000	0.000	1.849	0.000	0.000	0.000	20.856
		0.200	0.000	1.849	0.000	0.000	0.000	16.418
		0.400	0.000	1.849	0.000	0.000	0.000	11.980
		0.600	0.000	1.849	0.000	0.000	0.000	7.542
		0.800	0.000	1.849	0.000	0.000	0.000	3.104
		1.000	0.000	1.849	0.000	0.000	0.000	-1.334
		1.200	0.000	1.849	0.000	0.000	0.000	-5.771
		1.400	0.000	1.849	0.000	0.000	0.000	-10.209
		1.600	0.000	1.849	0.000	0.000	0.000	-14.647
		1.800	0.000	1.849	0.000	0.000	0.000	-19.085

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		2.000	-0.000	1.849	-0.000	-0.000	-0.000	-23.523
	3:EARTH	0.000	0.000	0.124	0.000	0.000	0.000	-50.053
		0.200	0.000	0.124	0.000	0.000	0.000	-50.350
		0.400	0.000	0.124	0.000	0.000	0.000	-50.647
		0.600	0.000	0.124	0.000	0.000	0.000	-50.943
		0.800	0.000	0.124	0.000	0.000	0.000	-51.240
		1.000	0.000	0.124	0.000	0.000	0.000	-51.537
		1.200	0.000	0.124	0.000	0.000	0.000	-51.833
		1.400	0.000	0.124	0.000	0.000	0.000	-52.130
		1.600	0.000	0.124	0.000	0.000	0.000	-52.426
		1.800	0.000	0.124	0.000	0.000	0.000	-52.723
		2.000	-0.000	0.124	-0.000	-0.000	-0.000	-53.020
	4:STRENGTH	0.000	0.000	7.567	0.000	0.000	0.000	-3.465
		0.200	0.000	7.521	0.000	0.000	0.000	-21.564
		0.400	0.000	7.476	0.000	0.000	0.000	-39.558
		0.600	0.000	7.430	0.000	0.000	0.000	-57.445
		0.800	0.000	7.385	0.000	0.000	0.000	-75.227
		1.000	0.000	7.339	0.000	0.000	0.000	-92.902
		1.200	0.000	7.294	0.000	0.000	0.000	-110.455
		1.400	0.000	7.248	0.000	0.000	0.000	-127.903
		1.600	0.000	7.203	0.000	0.000	0.000	-145.244
		1.800	0.000	7.157	0.000	0.000	0.000	-162.480
		2.000	-0.000	7.112	-0.000	-0.000	-0.000	-179.609
9	1:DEAD LOAD	0.000	0.226	3.602	0.000	0.000	0.000	-29.952
		0.025	0.226	3.598	0.000	0.000	0.000	-31.032
		0.050	0.226	3.594	0.000	0.000	0.000	-32.111
		0.075	0.226	3.589	0.000	0.000	0.000	-33.188
		0.100	0.226	3.585	0.000	0.000	0.000	-34.264
		0.125	0.226	3.581	0.000	0.000	0.000	-35.339
		0.150	0.226	3.576	0.000	0.000	0.000	-36.413
		0.175	0.226	3.572	0.000	0.000	0.000	-37.485
		0.200	0.226	3.567	0.000	0.000	0.000	-38.556
		0.225	0.226	3.563	0.000	0.000	0.000	-39.625
		0.250	0.226	3.559	-0.000	-0.000	-0.000	-40.694
	2:LIVE LOAD-	0.000	0.175	2.667	0.000	0.000	0.000	-23.523
		0.025	0.175	2.667	0.000	0.000	0.000	-24.323
		0.050	0.175	2.667	0.000	0.000	0.000	-25.123
		0.075	0.175	2.667	0.000	0.000	0.000	-25.923
		0.100	0.175	2.667	0.000	0.000	0.000	-26.723
		0.125	0.175	2.667	0.000	0.000	0.000	-27.523
		0.150	0.175	2.667	0.000	0.000	0.000	-28.323
		0.175	0.175	2.667	0.000	0.000	0.000	-29.123
		0.200	0.175	2.667	0.000	0.000	0.000	-29.924
		0.225	0.175	2.667	0.000	0.000	0.000	-30.724

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		0.250	0.175	2.667	-0.000	-0.000	-0.000	-31.524
	3:EARTH	0.000	3.347	0.000	0.000	0.000	0.000	-53.020
		0.025	3.347	0.000	0.000	0.000	0.000	-53.020
		0.050	3.347	0.000	0.000	0.000	0.000	-53.020
		0.075	3.347	0.000	0.000	0.000	0.000	-53.020
		0.100	3.347	0.000	0.000	0.000	0.000	-53.020
		0.125	3.347	0.000	0.000	0.000	0.000	-53.020
		0.150	3.347	0.000	0.000	0.000	0.000	-53.020
		0.175	3.347	0.000	0.000	0.000	0.000	-53.020
		0.200	3.347	0.000	0.000	0.000	0.000	-53.020
		0.225	3.347	0.000	0.000	0.000	0.000	-53.020
		0.250	3.347	0.000	-0.000	-0.000	-0.000	-53.020
	4:STRENGTH	0.000	6.332	10.473	0.000	0.000	0.000	-179.609
		0.025	6.332	10.468	0.000	0.000	0.000	-182.750
		0.050	6.332	10.462	0.000	0.000	0.000	-185.889
		0.075	6.332	10.456	0.000	0.000	0.000	-189.027
		0.100	6.332	10.451	0.000	0.000	0.000	-192.163
		0.125	6.332	10.445	0.000	0.000	0.000	-195.297
		0.150	6.332	10.439	0.000	0.000	0.000	-198.430
		0.175	6.332	10.433	0.000	0.000	0.000	-201.561
		0.200	6.332	10.428	0.000	0.000	0.000	-204.690
		0.225	6.332	10.422	0.000	0.000	0.000	-207.817
		0.250	6.332	10.416	-0.000	-0.000	-0.000	-210.943
11	1:DEAD LOAD	0.000	3.559	0.226	0.000	0.000	0.000	40.694
		1.498	3.297	0.226	0.000	0.000	0.000	36.624
		2.996	3.034	0.226	0.000	0.000	0.000	32.555
		4.494	2.772	0.226	0.000	0.000	0.000	28.486
		5.992	2.510	0.226	0.000	0.000	0.000	24.416
		7.490	2.248	0.226	0.000	0.000	0.000	20.347
		8.988	1.986	0.226	0.000	0.000	0.000	16.277
		10.485	1.724	0.226	0.000	0.000	0.000	12.208
		11.983	1.462	0.226	0.000	0.000	0.000	8.139
		13.481	1.200	0.226	0.000	0.000	0.000	4.069
		14.979	0.937	0.226	-0.000	-0.000	-0.000	-0.000
	2:LIVE LOAD-	0.000	2.667	0.175	0.000	0.000	0.000	31.524
		1.498	2.667	0.175	0.000	0.000	0.000	28.371
		2.996	2.667	0.175	0.000	0.000	0.000	25.219
		4.494	2.667	0.175	0.000	0.000	0.000	22.067
		5.992	2.667	0.175	0.000	0.000	0.000	18.914
		7.490	2.667	0.175	0.000	0.000	0.000	15.762
		8.988	2.667	0.175	0.000	0.000	0.000	12.610
		10.485	2.667	0.175	0.000	0.000	0.000	9.457
		11.983	2.667	0.175	0.000	0.000	0.000	6.305
		13.481	2.667	0.175	0.000	0.000	0.000	3.152

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		14.979	2.667	0.175	-0.000	-0.000	-0.000	-0.000
	3:EARTH	0.000	0.000	3.347	0.000	0.000	0.000	53.020
		1.498	0.000	2.525	0.000	0.000	0.000	1.171
		2.996	0.000	1.777	0.000	0.000	0.000	-36.993
		4.494	0.000	1.103	0.000	0.000	0.000	-62.744
		5.992	0.000	0.503	0.000	0.000	0.000	-77.351
		7.490	0.000	-0.023	0.000	0.000	0.000	-82.083
		8.988	0.000	-0.464	0.000	0.000	0.000	-77.162
		10.485	0.000	-0.831	0.000	0.000	0.000	-65.224
		11.983	0.000	-1.123	0.000	0.000	0.000	-47.537
		13.481	0.000	-1.342	0.000	0.000	0.000	-25.373
		14.979	-0.000	-1.486	-0.000	-0.000	-0.000	0.000
	4:STRENGTH	0.000	10.416	6.332	0.000	0.000	0.000	210.943
		1.498	10.076	4.942	0.000	0.000	0.000	111.185
		2.996	9.735	3.678	0.000	0.000	0.000	34.553
		4.494	9.394	2.539	0.000	0.000	0.000	-21.100
		5.992	9.053	1.525	0.000	0.000	0.000	-57.919
		7.490	8.713	0.636	0.000	0.000	0.000	-78.050
		8.988	8.372	-0.109	0.000	0.000	0.000	-81.868
		10.485	8.031	-0.729	0.000	0.000	0.000	-73.826
		11.983	7.690	-1.223	0.000	0.000	0.000	-56.070
		13.481	7.350	-1.592	0.000	0.000	0.000	-30.746
		14.979	7.009	-1.836	-0.000	-0.000	-0.000	-0.000
12	1:DEAD LOAD	0.000	3.559	-0.226	0.000	0.000	0.000	-40.694
		1.498	3.297	-0.226	0.000	0.000	0.000	-36.624
		2.996	3.034	-0.226	0.000	0.000	0.000	-32.555
		4.494	2.772	-0.226	0.000	0.000	0.000	-28.486
		5.992	2.510	-0.226	0.000	0.000	0.000	-24.416
		7.490	2.248	-0.226	0.000	0.000	0.000	-20.347
		8.988	1.986	-0.226	0.000	0.000	0.000	-16.277
		10.485	1.724	-0.226	0.000	0.000	0.000	-12.208
		11.983	1.462	-0.226	0.000	0.000	0.000	-8.139
		13.481	1.200	-0.226	0.000	0.000	0.000	-4.069
		14.979	0.937	-0.226	-0.000	-0.000	-0.000	0.000
	2:LIVE LOAD-	0.000	2.667	-0.175	0.000	0.000	0.000	-31.524
		1.498	2.667	-0.175	0.000	0.000	0.000	-28.371
		2.996	2.667	-0.175	0.000	0.000	0.000	-25.219
		4.494	2.667	-0.175	0.000	0.000	0.000	-22.067
		5.992	2.667	-0.175	0.000	0.000	0.000	-18.914
		7.490	2.667	-0.175	0.000	0.000	0.000	-15.762
		8.988	2.667	-0.175	0.000	0.000	0.000	-12.610
		10.485	2.667	-0.175	0.000	0.000	0.000	-9.457
		11.983	2.667	-0.175	0.000	0.000	0.000	-6.305
		13.481	2.667	-0.175	0.000	0.000	0.000	-3.152

Beam Force Detail Cont...

			Axial	Shear		Torsion	Bending	
Beam	L/C	d (ft)	Fx (kip)	Fy (kip)	Fz (kip)	Mx (kip-in)	My (kip-in)	Mz (kip-in)
		14.979	2.667	-0.175	-0.000	-0.000	-0.000	0.000
	3:EARTH	0.000	0.000	-3.347	0.000	0.000	0.000	-53.020
		1.498	0.000	-2.525	0.000	0.000	0.000	-1.171
		2.996	0.000	-1.777	0.000	0.000	0.000	36.993
		4.494	0.000	-1.103	0.000	0.000	0.000	62.744
		5.992	0.000	-0.503	0.000	0.000	0.000	77.351
		7.490	0.000	0.023	0.000	0.000	0.000	82.083
		8.988	0.000	0.464	0.000	0.000	0.000	77.162
		10.485	0.000	0.831	0.000	0.000	0.000	65.224
		11.983	0.000	1.123	0.000	0.000	0.000	47.537
		13.481	0.000	1.342	0.000	0.000	0.000	25.373
		14.979	-0.000	1.486	-0.000	-0.000	-0.000	0.000
	4:STRENGTH	0.000	10.416	-6.332	0.000	0.000	0.000	-210.943
		1.498	10.076	-4.942	0.000	0.000	0.000	-111.185
		2.996	9.735	-3.678	0.000	0.000	0.000	-34.553
		4.494	9.394	-2.539	0.000	0.000	0.000	21.100
		5.992	9.053	-1.525	0.000	0.000	0.000	57.919
		7.490	8.713	-0.636	0.000	0.000	0.000	78.050
		8.988	8.372	0.109	0.000	0.000	0.000	81.868
		10.485	8.031	0.729	0.000	0.000	0.000	73.826
		11.983	7.690	1.223	0.000	0.000	0.000	56.070
		13.481	7.350	1.592	0.000	0.000	0.000	30.746
		14.979	7.009	1.836	-0.000	-0.000	-0.000	0.000
13	1:DEAD LOAD	0.000	-0.226	0.937	0.000	0.000	0.000	0.000
		1.250	-0.226	0.750	0.000	0.000	0.000	-12.500
		2.500	-0.226	0.562	0.000	0.000	0.000	-22.265
		3.750	-0.226	0.375	0.000	0.000	0.000	-29.296
		5.000	-0.226	0.187	0.000	0.000	0.000	-33.593
		6.250	-0.226	-0.000	0.000	0.000	0.000	-35.156
		7.500	-0.226	-0.187	0.000	0.000	0.000	-33.593
		8.750	-0.226	-0.375	0.000	0.000	0.000	-29.296
		10.000	-0.226	-0.562	0.000	0.000	0.000	-22.265
		11.250	-0.226	-0.750	0.000	0.000	0.000	-12.500
		12.500	-0.226	-0.937	-0.000	-0.000	-0.000	-0.000
	2:LIVE LOAD-	0.000	-0.175	0.000	0.000	0.000	0.000	0.000
		1.250	-0.175	0.000	0.000	0.000	0.000	-0.000
		2.500	-0.175	0.000	0.000	0.000	0.000	-0.000
		3.750	-0.175	0.000	0.000	0.000	0.000	-0.000
		5.000	-0.175	0.000	0.000	0.000	0.000	-0.000
		6.250	-0.175	0.000	0.000	0.000	0.000	-0.000
		7.500	-0.175	0.000	0.000	0.000	0.000	-0.000
		8.750	-0.175	0.000	0.000	0.000	0.000	-0.000
		10.000	-0.175	0.000	0.000	0.000	0.000	-0.000
		11.250	-0.175	0.000	0.000	0.000	0.000	-0.000

Beam Force Detail Cont...

Beam	L/C	d	Axial	Shear		Torsion	Bending	
			Fx	Fy	Fz	Mx	My	Mz
		(ft)	(kip)	(kip)	(kip)	(kip-in)	(kip-in)	(kip-in)
		12.500	-0.175	0.000	-0.000	-0.000	-0.000	-0.000
	3:EARTH	0.000	1.486	-0.000	0.000	0.000	0.000	0.000
		1.250	1.486	-0.000	0.000	0.000	0.000	0.000
		2.500	1.486	-0.000	0.000	0.000	0.000	0.000
		3.750	1.486	-0.000	0.000	0.000	0.000	0.000
		5.000	1.486	-0.000	0.000	0.000	0.000	0.000
		6.250	1.486	-0.000	0.000	0.000	0.000	0.000
		7.500	1.486	-0.000	0.000	0.000	0.000	0.000
		8.750	1.486	-0.000	0.000	0.000	0.000	0.000
		10.000	1.486	-0.000	0.000	0.000	0.000	0.000
		11.250	1.486	-0.000	0.000	0.000	0.000	0.000
		12.500	1.486	-0.000	-0.000	-0.000	-0.000	-0.000
	4:STRENGTH	0.000	1.836	1.219	0.000	0.000	0.000	0.000
		1.250	1.836	0.975	0.000	0.000	0.000	-16.250
		2.500	1.836	0.731	0.000	0.000	0.000	-28.945
		3.750	1.836	0.487	0.000	0.000	0.000	-38.085
		5.000	1.836	0.244	0.000	0.000	0.000	-43.671
		6.250	1.836	-0.000	0.000	0.000	0.000	-45.702
		7.500	1.836	-0.244	0.000	0.000	0.000	-43.671
		8.750	1.836	-0.487	0.000	0.000	0.000	-38.085
		10.000	1.836	-0.731	0.000	0.000	0.000	-28.945
		11.250	1.836	-0.975	0.000	0.000	0.000	-16.250
		12.500	1.836	-1.219	-0.000	-0.000	-0.000	-0.000

Reactions

Node	L/C	Horizontal	Vertical	Horizontal	Moment		
		FX	FY	FZ	MX	MY	MZ
		(kip)	(kip)	(kip)	(kip-in)	(kip-in)	(kip-in)
3	1:DEAD LOAD	-0.226	1.381	0.000	0.000	0.000	0.000
	2:LIVE LOAD-	-0.175	0.818	0.000	0.000	0.000	0.000
	3:EARTH	-3.347	-0.124	0.000	0.000	0.000	0.000
	4:STRENGTH	-6.332	3.362	0.000	0.000	0.000	0.000
4	1:DEAD LOAD	0.000	1.377	0.000	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	0.793	0.000	0.000	0.000	0.000
	3:EARTH	0.000	-0.002	0.000	0.000	0.000	0.000
	4:STRENGTH	0.000	3.508	0.000	0.000	0.000	0.000
5	1:DEAD LOAD	0.000	1.276	0.000	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	0.714	0.000	0.000	0.000	0.000
	3:EARTH	0.000	0.075	0.000	0.000	0.000	0.000
	4:STRENGTH	0.000	3.336	0.000	0.000	0.000	0.000
6	1:DEAD LOAD	0.000	1.238	0.000	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	0.685	0.000	0.000	0.000	0.000

Reactions Cont...

Node	L/C	Horizontal FX (kip)	Vertical FY (kip)	Horizontal FZ (kip)	Moment MX (kip-in)	Moment MY (kip-in)	Moment MZ (kip-in)
	3:EARTH	0.000	0.101	0.000	0.000	0.000	0.000
	4:STRENGTH	0.000	3.266	0.000	0.000	0.000	0.000
7	1:DEAD LOAD	0.000	1.276	0.000	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	0.714	0.000	0.000	0.000	0.000
	3:EARTH	0.000	0.075	0.000	0.000	0.000	0.000
	4:STRENGTH	0.000	3.336	0.000	0.000	0.000	0.000
8	1:DEAD LOAD	0.000	1.377	0.000	0.000	0.000	0.000
	2:LIVE LOAD-	0.000	0.793	0.000	0.000	0.000	0.000
	3:EARTH	0.000	-0.002	0.000	0.000	0.000	0.000
	4:STRENGTH	0.000	3.507	0.000	0.000	0.000	0.000
9	1:DEAD LOAD	0.226	1.380	0.000	0.000	0.000	0.000
	2:LIVE LOAD-	0.175	0.818	0.000	0.000	0.000	0.000
	3:EARTH	3.347	-0.124	0.000	0.000	0.000	0.000
	4:STRENGTH	6.332	3.361	0.000	0.000	0.000	0.000

PARSONS BRINCKERHOFF Computation Sheet

page 1 of 5 33677
made by KVC
date 7-10-13
checked by
date

subject Avenida Cesar Chavez Drift Assessment
Pond Volume Calculations

WB

Clear span = 11' 4" = 136"

grate length = 40" = 3 grates 19.8cfs - 11.71cfs = *8.11cfs bypass

* see attached flowmaster output.

Storm Volume

Note: assume this is the flow to the pond from A.C.C (100-year storm)

$t_D = (0.7 * t_c) + ((1.6 - (A_D / A_T)) / 12)$

$t_D = (0.7 * 0.2hr) + ((1.6 - (21.11 acres / 22.95 acres)) / 12)$

$(0.14) + (0.057) = 0.197 hrs$

$A_D = A + B + C + D + E + F + G + H + I + J + K + L + M + N + O$

$A_D = 0.88 + 6.8 + 1.9 + 1.46 + 4.73 + 2.59 + 0.42 + 0.49 + 0.42 + 0.05 + 0.68$
A B C D E F G H I J K

$+ 0.05 + 0.05 + 0.39 + 0.20 = 21.11 acres$
L M N O

$A_T = 0.97 + 7.5 + 1.98 + 1.62 + 5.25 + 2.88 + 0.42 + 0.49 + 0.42 + .05 + 0.68$
A B C D E F G H I J K

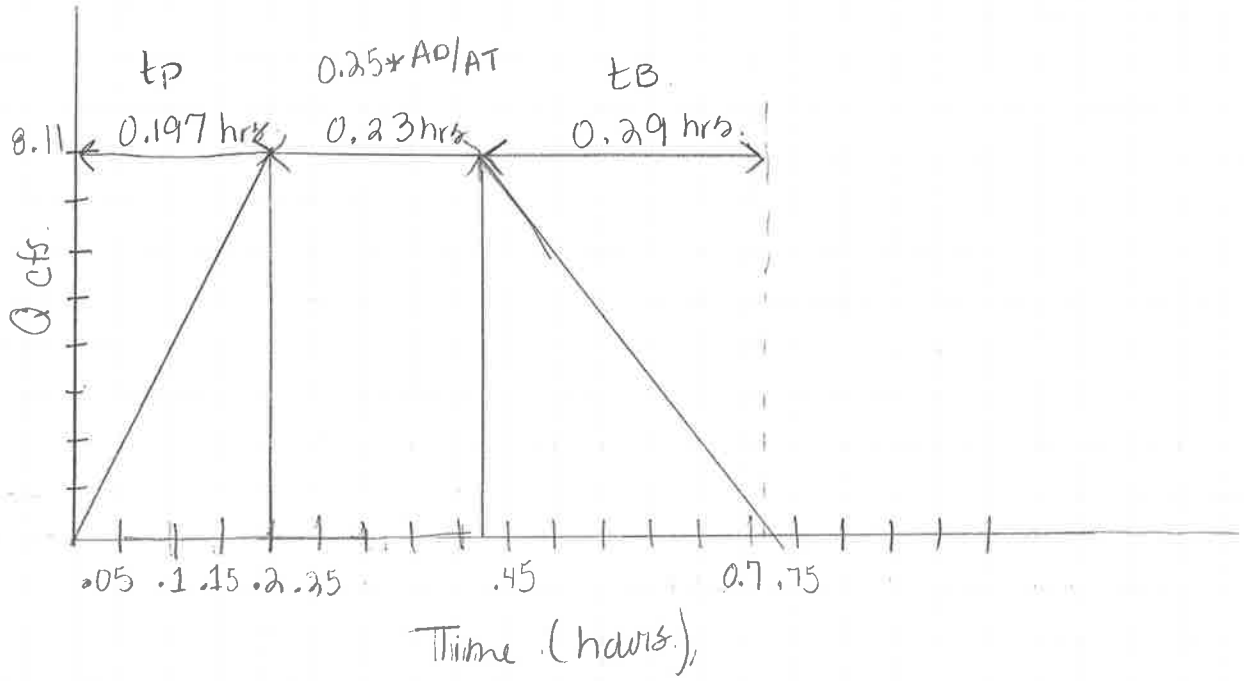
$+ 0.05 + 0.05 + 0.39 + 0.20 = 22.95 acres.$
L M N O

$t_B = (2.107 * E * A_T / Q_P) - ((0.25 * A_D / A_T))$

$t_B = \left(2.107 * 2.12 inches * \frac{22.95 acres}{107.48 cfs}\right) - \left((0.25 * \frac{21.11 acres}{22.95 acres}\right)$

$t_B = 0.72 hrs$

$Q_P = 4.42 + 34.16 + 9.2 + 7.37 + 26.32 + 13.08 + 2.3 + 1.97 + 1.97 + 0.24 + 3.2$
$+ 0.24 + 0.24 + 1.83 + 0.94 = 107.48 cfs.$



$$V_T = \frac{\left(\frac{8.11\,ft^3}{s} * 0.197\,hrs * \frac{3600\,s}{1\,hr}\right)}{2} + \left(\frac{8.11\,ft^3}{s} * 0.23\,hrs * \frac{3600\,s}{hr}\right) + \frac{\left(\frac{8.11\,ft^3}{s} * 0.29\,hrs * \frac{3600\,s}{hr}\right)}{2}$$

$2875.81\,ft^3$ $6715\,ft^3$ $4233.42\,ft^3$

$$= 13824.2\,ft^3 \left| \frac{1\,acre}{43560\,ft^2} \right. = 0.32\ acre\text{-}ft$$

A=1.56 B=2.28 C=3.14 D=4.70

Existing Pond Flow

Area=0.58 acres

* Vacant land = 0.58 acres - assumed land treatment B

$Q = 0.58(2.28) = 1.32$ cfs

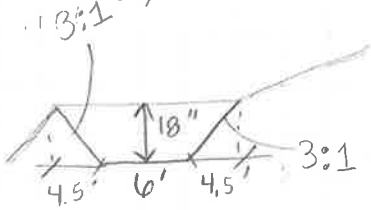
$Vol. = (0.58 \text{ acres})(0.78 \text{ in} \mid \frac{1 \text{ ft}}{12 \text{ in}}) = .038$ acre ft

Pond Volume Required = *0.26 acre-ft

* see attached sheet for pond volume calculations.

Existing Pond Volume (from record drawing)

L = 15+32 - 11+00 = 432 ft



A = 6'(1.5) + 4.5(1.5) = 15.9 ft

$V = 15.9(432) = 6868.8 \text{ ft}^3 \approx 0.16$ acre-ft

Additional Volume Required

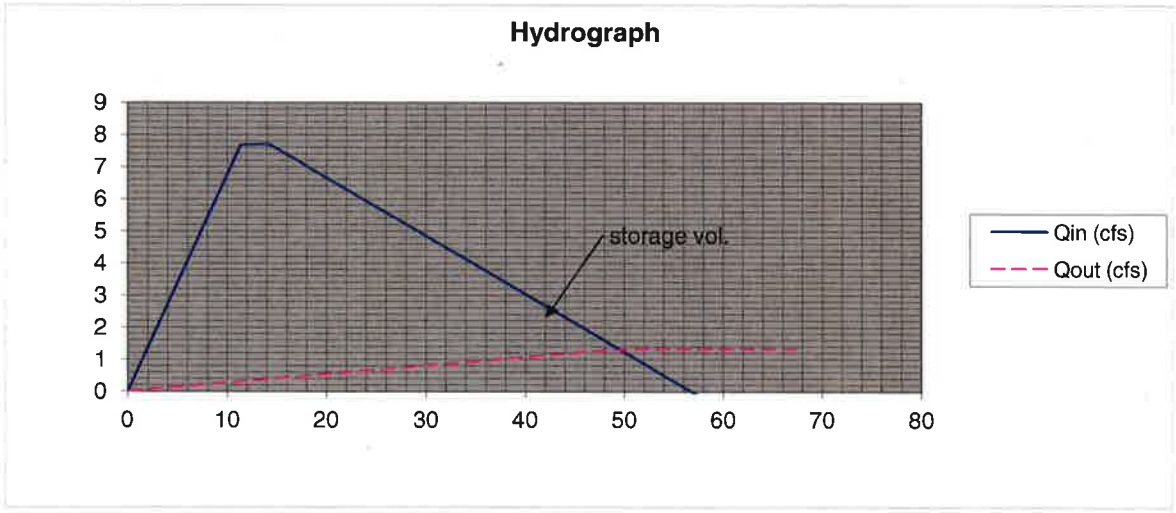
0.26 acre-ft - 0.16 acre ft = 0.10 acre-ft

DETENTION POND VOLUME USING THE RATIONAL METHOD
PROJECT: Avenida Cesar Chavez Drainage Inlet Assessment
LOCATION: Avenida Cesar Chavez/Langham Intersection
BY: KVC
DATE: 7/10/2013

INPUT PEAK FLOW:	8.11	cfs	100 YR
INPUT STORM VOLUME:	0.317361	ac-ft. – 24	
	13824.245	cu. ft.	
DURATION T (CALCULATED)=	56.8	min.	
INPUT TIME TO PEAK:	12	min.	
INPUT MAX. OUTFLOW RATE:	1.32	cfs	
INPUT TIME WHEN Qin=Qout:	49.5	min.	
MAXIMUM STORAGE VOLUME =	0.26	ac.-ft.	

TIME INCREMENT= 2.84 min
170.4592 sec

t (min)	Qin (cfs)	Qout (cfs)	Vin (cu ft)	Vout (cu ft)	Vstore (cu ft)	Vstore (ac ft)
0	0	0	0	0	0	0.00
2.8	1.92	0.08	164	6	157	0.00
5.7	3.84	0.15	655	26	629	0.01
8.5	5.76	0.23	1473	58	1415	0.03
11.4	7.68	0.30	2618	103	2515	0.06
14.2	7.71	0.38	3930	161	3769	0.09
17.0	7.20	0.45	5201	232	4968	0.11
19.9	6.68	0.53	6384	316	6067	0.14
22.7	6.17	0.61	7479	413	7066	0.16
25.6	5.65	0.68	8487	523	7964	0.18
28.4	5.14	0.76	9407	646	8761	0.20
31.3	4.63	0.83	10239	781	9458	0.22
34.1	4.11	0.91	10984	930	10054	0.23
36.9	3.60	0.98	11641	1091	10550	0.24
39.8	3.08	1.06	12211	1266	10945	0.25
42.6	2.57	1.14	12693	1453	11240	0.26
45.5	2.06	1.21	13087	1653	11434	0.26
48.3	1.54	1.29	13394	1866	11528	0.26
51.1	1.03	1.32	13613	2088	11525	0.26
54.0	0.51	1.32	13744	2313	11431	0.26
56.8	0.00	1.32	13788	2538	11250	0.26
59.7	-0.51	1.32	13744	2763	10981	0.25
62.5	-1.03	1.32	13613	2988	10625	0.24
65.3	-1.54	1.32	13394	3213	10181	0.23
68.2	-2.06	1.32	13087	3438	9649	0.22



Worksheet for Alternative 8-WB

Project Description

Solve For	Efficiency

Input Data

Discharge	19.80	ft³/s
Slope	0.00915	ft/ft
Gutter Width	4.17	ft
Gutter Cross Slope	0.063	ft/ft
Road Cross Slope	0.012	ft/ft
Roughness Coefficient	0.016	
Grate Width	4.17	ft
Grate Length	10.00	ft
Grate Type	P-50 mm x 100 mm (P-1-7/8"-4")	
Clogging	15.00	%

Options

Grate Flow Option	Exclude None

Results

Efficiency	73.70	%
Intercepted Flow	14.59	ft³/s
Bypass Flow	5.21	ft³/s
Spread	28.74	ft
Depth	0.56	ft
Flow Area	5.40	ft²
Gutter Depression	0.21	ft
Total Depression	0.21	ft
Velocity	3.67	ft/s
Splash Over Velocity	13.24	ft/s
Frontal Flow Factor	1.00	
Side Flow Factor	0.51	
Grate Flow Ratio	0.46	
Active Grate Length	8.50	ft

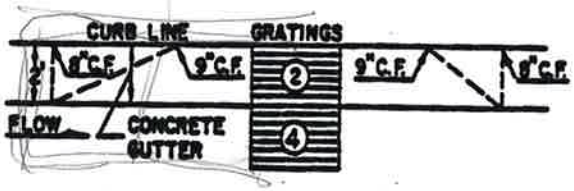
Messages

Messages	Grate Length should be within the defined range of HEC-22's Chart 5 (approx. 0.5-4.5 ft / 0.15-1.35 m).

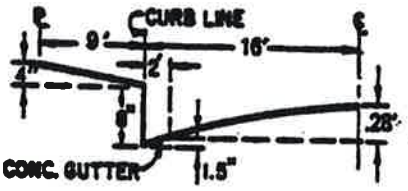
Alternative 8-WB Analysis

GRATING CAPACITIES FOR TYPE "B"

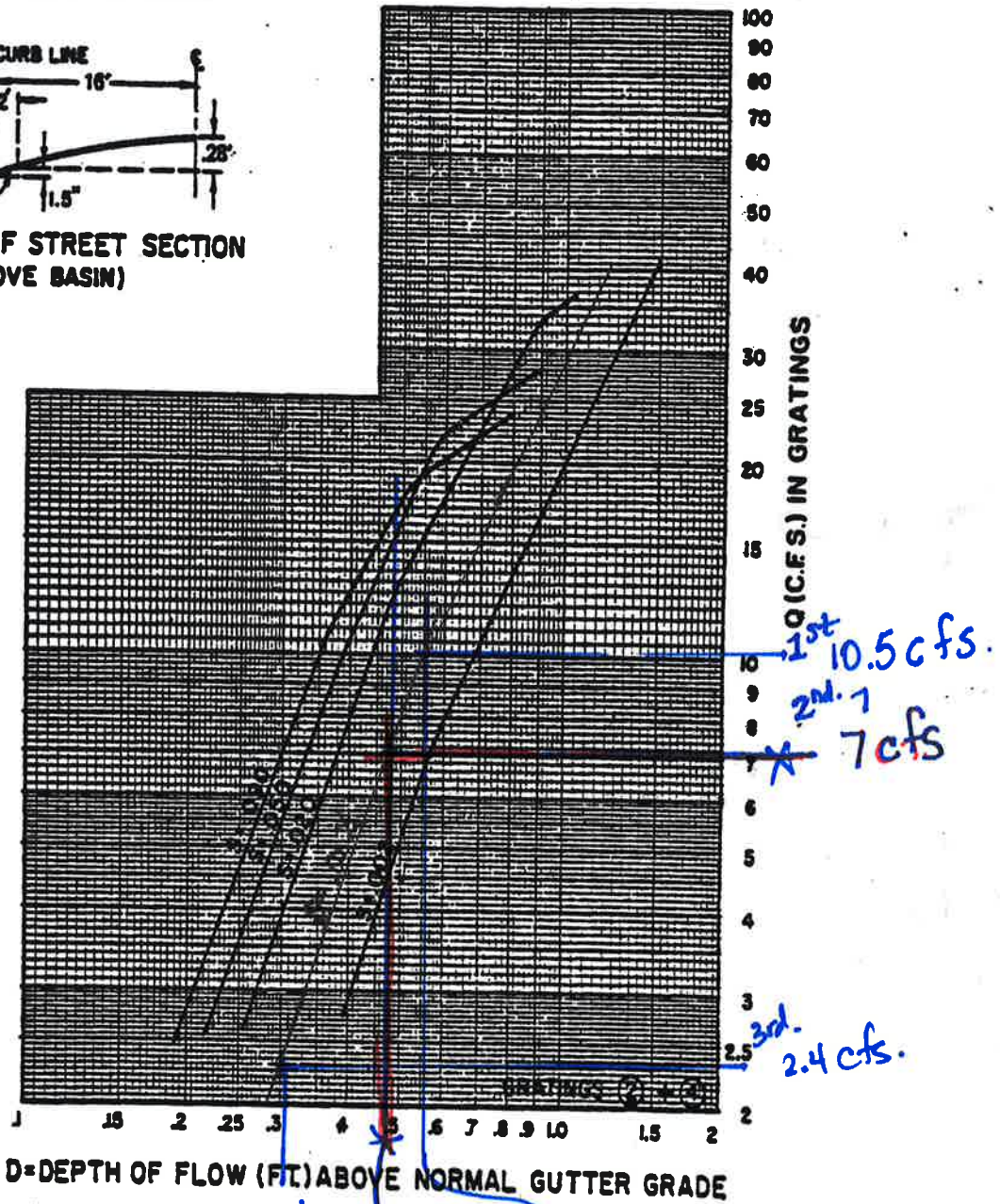
— developed.



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



D=DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

PLATE 22.3 D-7

0.31' — Depth @ 2.3 cfs.

0.47' — Depth @ 9.3 cfs

0.56' — Depth @ 19.8 cfs

Appendix C: Cost Estimates

Estimate of Probable Project Costs
Avenida Cesar Chavez Drainage Inlet Improvements
City of Albuquerque Project 5015.03
Alternative - Cast-in-Place Concrete Deck, Inlcuding Drainage Structure
Alternative(1-Lane Open Each Way)
9/6/2013

ITEM NUMBER	LONG DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	TOTAL COST
	Construction				
4.010	Construction Staking, compl.	%	1.40	1	$2,810.31
4.01x	Material Testing	%	1.50	1	$3,011.04
4.020	Construction Surveying, compl.	%	1.31	1	$2,629.64
6.050	Construction Mobilization, compl.	%	4.77	1	$9,575.11
6.060	Construction Demobilization ,compl.	%	0.30	1	$602.21
19.010	Construction Traffic Control & Barricading, compl.	%	7.00	1	$14,051.53
30.010	Flood Protection, compl.	%	1.00	1	$2,007.36
	Subtotal of Construction Items				**$34,687.20**
	Roadway				
301.020	Subgrade Prep. 12" at 95% compaction, cip.	SY	2.00	656	$1,312.00
302.01X	Aggregate Base Course, crushed. 8" at 95% compaction, cip.SD 2408	SY	8.00	656	$5,248.00
336.010	Prime Coat, emulsified asphalt, cip.	SY	0.42	656	$275.52
336.120	Tack Coat, cationic emulsified asphalt, cip.	SY	0.37	656	$242.72
336.024	Asphalt Concrete, 3 inch thick, superpave	SY	13.00	1,312	$17,056.00
340.050	Curb & Gutter, Standard, Portland Cement Concrete, incl. subgrade preparation, cip. SD 2415	LF	20.31	30	$609.30
340.060	Curb & Gutter, Median, Portland Cement Concrete, cip. SD 2408	LF	19.49	800	$15,592.00
340.300	4" Median Pavement, Portland Cement Concrete, incl. subgrade compaction. cip.	SY	40.08	250	$10,020.00
606010	Metal Barrier Thrie Beam	LF	41.38	170	$7,034.60
606010	Metal Barrier End Treatment (ANCHRG) Type B	EA	1,300.00	4	$5,200.00
	Subtotal of Roadway Items				**$62,590.14**
	Removals				
343.030	Existing Pavement, Asphalt Concrete, more than 4" thick, sawcut, remove & dispose, compl.	SY	9.51	617	$5,867.67
343.080	Existing Curb & Gutter or Valley Gutter, PC Concrete ,remove & dispose, compl.	LF	6.42	830	$5,328.60
343.085	Existing Sidewalk, 4" PC Concrete, remove & dispose	SY	9.34	250	$2,335.00
	Subtotal of Removals Items				**$13,531.27**
	Signing and Striping				
441.001	Reflectorized Plastic Pavement Markings, 4" width, cip.	LF	0.46	3,500	$1,610.00
441.007	Temporary Reflectorized Plastic Pavement Markings, 4" width, incl. remove & dispose, cip.	LF	1.17	3,500	$4,095.00
	Subtotal of Signing and Striping Items				**$5,705.00**
	Structures				
511XXX	Reinforced Concrete Deck, C.I.P.	SF	35.00	1,176	$41,160.00
532000	Penetrating Water Repellent Treatment	SY	4.00	455	$1,820.00
53300X	Remove Existing Deck and Remodel Abutments	LS	17,000.00	1	$17,000.00
534000	Epoxy Injection, Type I	GAL	975.00	20	$19,500.00
543030	Metal Railing, Type D	LF	220.00	126	$27,720.00
601XXX	Remove Existing Metal Railing	LF	34.00	126	$4,284.00
	Subtotal of Structures Items				**$111,484.00**
	Drainage				
915.050	Catch Basin, Type "D", Single Grate, cip. SD 2206	EA	2,475.23	3	$7,425.69
915.060	Catch Basin, Type "D", Double Grate, cip. SD 2206	EA	4,338.76	3	$13,016.28
	Subtotal of Drainage Items				**$7,425.69**

Subtotal of Construction Items	**$235,423.30**
Construction Management (6.6%)	$15,537.94
Contingencies (30%)	$70,626.99
NMGRT (7.0%)	$21,423.52
TOTAL Estimate of Probable Project Cost	**$343,011.75**

Estimate of Probable Project Costs
Avenida Cesar Chavez Drainage Inlet Improvements
City of Albuquerque Project 5015.03
Alternative - Cast-in-Place Concrete Deck, Inlcuding Drainage Structure
Alternative (Full Closure)
9/6/2013

ITEM NUMBER	LONG DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	TOTAL COST
	Construction				
4.010	Construction Staking, compl.	%	1.40	1	$1,978.18
4.01x	Material Testing	%	1.50	1	$2,119.48
4.020	Construction Surveying, compl.	%	1.31	1	$1,851.01
6.050	Construction Mobilization, compl.	%	4.77	1	$6,739.94
6.060	Construction Demobilization ,compl.	%	0.30	1	$423.90
19.010	Construction Traffic Control & Barricading, compl.	%	6.00	1	$8,477.91
30.010	Flood Protection, compl.	%	1.00	1	$1,412.98
	Subtotal of Construction Items				**$23,003.39**
	Roadway				
301.020	Subgrade Prep. 12" at 95% compaction, cip.	SY	2.00	201	$402.00
302.01X	Aggregate Base Course, crushed. 8" at 95% compaction, cip.SD 2408	SY	8.00	201	$1,608.00
336.010	Prime Coat, emulsified asphalt, cip.	SY	0.42	201	$84.42
336.120	Tack Coat, cationic emulsified asphalt, cip.	SY	0.37	201	$74.37
336.024	Asphalt Concrete, 3 inch thick, superpave	SY	13.00	402	$5,226.00
340.050	Curb & Gutter, Standard, Portland Cement Concrete, incl. subgrade preparation, cip. SD 2415	LF	20.31	30	$609.30
606010	Metal Barrier Thrie Beam	LF	41.38	170	$7,034.60
606010	Metal Barrier End Treatment (ANCHRG) Type B	EA	1,300.00	4	$5,200.00
	Subtotal of Roadway Items				**$20,238.69**
	Removals				
343.030	Existing Pavement, Asphalt Concrete, more than 4" thick, sawcut, remove & dispose, compl.	SY	9.51	201	$1,911.51
343.080	Existing Curb & Gutter or Valley Gutter, PC Concrete ,remove & dispose, compl.	LF	6.42	30	$192.60
	Subtotal of Removals Items				**$2,104.11**
	Signing and Striping				
441.001	Reflectorized Plastic Pavement Markings, 4" width, cip.	LF	0.46	100	$46.00
	Subtotal of Signing and Striping Items				**$46.00**
	Structures				
511XXX	Reinforced Concrete Deck, C.I.P.	SF	35.00	1,176	$41,160.00
532000	Penetrating Water Repellent Treatment	SY	4.00	455	$1,820.00
53300X	Remove Existing Deck and Remodel Abutments	LS	17,000.00	1	$17,000.00
534000	Epoxy Injection, Type I	GAL	975.00	20	$19,500.00
543030	Metal Railing, Type D	LF	220.00	126	$27,720.00
601XXX	Remove Existing Metal Railing	LF	34.00	126	$4,284.00
	Subtotal of Structures Items				**$111,484.00**
	Drainage				
915.050	Catch Basin, Type "D", Single Grate, cip. SD 2206	EA	2,475.23	3	$7,425.69
915.060	Catch Basin, Type "D", Double Grate, cip. SD 2206	EA	4,338.76	3	$13,016.28
	Subtotal of Drainage Items				**$7,425.69**

Subtotal of Construction Items	**$164,301.88**
Construction Management (6.6%)	$10,843.92
Contingencies (30%)	$49,290.57
NMGRT (7.0%)	$14,951.47
TOTAL Estimate of Probable Project Cost	**$239,387.85**

Estimate of Probable Project Costs
Avenida Cesar Chavez Drainage Inlet Improvements
City of Albuquerque Project 5015.03
Alternative - Precast Deck, Including Drainage Structure
Alternative (1-Lane Open Each Way)
9/6/2013

ITEM NUMBER	LONG DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	TOTAL COST
	Construction				
4.010	Construction Staking, compl.	%	1.40	1	$3,163.32
4.01x	Material Testing	%	1.50	1	$3,389.28
4.020	Construction Surveying, compl.	%	1.31	1	$2,959.97
6.050	Construction Mobilization, compl.	%	4.77	1	$10,777.90
6.060	Construction Demobilization ,compl.	%	0.30	1	$677.86
19.010	Construction Traffic Control & Barricading, compl.	%	7.00	1	$15,816.62
30.010	Flood Protection, compl.	%	1.00	1	$2,259.52
	Subtotal of Construction Items				**$39,044.45**
	Roadway				
301.020	Subgrade Prep. 12" at 95% compaction, cip.	SY	2.00	656	$1,312.00
302.01X	Aggregate Base Course, crushed. 8" at 95% compaction, cip.SD 2408	SY	8.00	656	$5,248.00
336.010	Prime Coat, emulsified asphalt, cip.	SY	0.42	656	$275.52
336.120	Tack Coat, cationic emulsified asphalt, cip.	SY	0.37	656	$242.72
336.024	Asphalt Concrete, 3 inch thick, superpave	SY	13.00	1,312	$17,056.00
340.050	Curb & Gutter, Standard, Portland Cement Concrete, incl. subgrade preparation, cip. SD 2415	LF	20.31	30	$609.30
340.060	Curb & Gutter, Median, Portland Cement Concrete, cip. SD 2408	LF	19.49	800	$15,592.00
340.300	4" Median Pavement, Portland Cement Concrete, incl. subgrade compaction. cip.	SY	40.08	250	$10,020.00
606010	Metal Barrier Thrie Beam	LF	41.38	170	$7,034.60
606010	Metal Barrier End Treatment (ANCHRG) Type B	EA	1,300.00	2	$2,600.00
	Subtotal of Roadway Items				**$59,990.14**
	Removals				
343.030	Existing Pavement, Asphalt Concrete, more than 4" thick, sawcut, remove & dispose, compl.	SY	9.51	617	$5,867.67
343.080	Existing Curb & Gutter or Valley Gutter, PC Concrete ,remove & dispose, compl.	LF	6.42	830	$5,328.60
343.085	Existing Sidewalk, 4" PC Concrete, remove & dispose	SY	9.34	250	$2,335.00
	Subtotal of Removals Items				**$13,531.27**
	Signing and Striping				
441.001	Reflectorized Plastic Pavement Markings, 4" width, cip.	LF	0.46	3,500	$1,610.00
441.007	Temporary Reflectorized Plastic Pavement Markings, 4" width, incl. remove & dispose, cip.	LF	1.17	3,500	$4,095.00
	Subtotal of Signing and Striping Items				**$5,705.00**
	Structures				
511XXX	Reinforced Concrete Deck, Precast	SF	50.00	1,176	$58,800.00
532000	Penetrating Water Repellent Treatment	SY	4.00	455	$1,820.00
53300X	Remove Existing Deck and Remodel Abutments	LS	17,000.00	1	$17,000.00
534000	Epoxy Injection, Type I	GAL	975.00	20	$19,500.00
536000	Epoxy Polymer Bridge Deck Overlay	SY	35.00	131	$4,585.00
543030	Metal Railing, Type D	LF	220.00	126	$27,720.00
601XXX	Remove Existing Metal Railing	LF	34.00	126	$4,284.00
	Subtotal of Structures Items				**$133,709.00**
	Drainage				
915.050	Catch Basin, Type "D", Single Grate, cip. SD 2206	EA	2,475.23	3	$7,425.69
915.060	Catch Basin, Type "D", Double Grate, cip. SD 2206	EA	4,338.76	3	$13,016.28
	Subtotal of Drainage Items				**$13,016.28**

Subtotal of Construction Items	**$264,996.14**
Construction Management (6.6%)	$17,489.75
Contingencies (30%)	$79,498.84
NMGRT (7.0%)	$24,114.65
TOTAL Estimate of Probable Project Cost	**$386,099.38**

Estimate of Probable Project Costs
Avenida Cesar Chavez Drainage Inlet Improvements
City of Albuquerque Project 5015.03
Alternative - Precast Deck, Including Drainage Structure
Alternative (Full Closure)
9/6/2013

ITEM NUMBER	LONG DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	TOTAL COST
	Construction				
4.010	Construction Staking, compl.	%	1.40	1	$2,289.33
4.01x	Material Testing	%	1.50	1	$2,452.85
4.020	Construction Surveying, compl.	%	1.31	1	$2,142.16
6.050	Construction Mobilization, compl.	%	4.77	1	$7,800.07
6.060	Construction Demobilization ,compl.	%	0.30	1	$490.57
19.010	Construction Traffic Control & Barricading, compl.	%	6.00	1	$9,811.41
30.010	Flood Protection, compl.	%	1.00	1	$1,635.23
	Subtotal of Construction Items				**$26,621.62**
	Roadway				
301.020	Subgrade Prep. 12" at 95% compaction, cip.	SY	2.00	201	$402.00
302.01X	Aggregate Base Course, crushed. 8" at 95% compaction, cip.SD 2408	SY	8.00	201	$1,608.00
336.010	Prime Coat, emulsified asphalt, cip.	SY	0.42	201	$84.42
336.120	Tack Coat, cationic emulsified asphalt, cip.	SY	0.37	201	$74.37
336.024	Asphalt Concrete, 3 inch thick, superpave	SY	13.00	402	$5,226.00
340.050	Curb & Gutter, Standard, Portland Cement Concrete, incl. subgrade preparation, cip. SD 2415	LF	20.31	30	$609.30
606010	Metal Barrier Thrie Beam	LF	41.38	170	$7,034.60
606010	Metal Barrier End Treatment (ANCHRG) Type B	EA	1,300.00	4	$5,200.00
	Subtotal of Roadway Items				**$20,238.69**
	Removals				
343.030	Existing Pavement, Asphalt Concrete, more than 4" thick, sawcut, remove & dispose, compl.	SY	9.51	201	$1,911.51
343.080	Existing Curb & Gutter or Valley Gutter, PC Concrete ,remove & dispose, compl.	LF	6.42	30	$192.60
	Subtotal of Removals Items				**$2,104.11**
	Signing and Striping				
441.001	Reflectorized Plastic Pavement Markings, 4" width, cip.	LF	0.46	100	$46.00
	Subtotal of Signing and Striping Items				**$46.00**
	Structures				
511XXX	Reinforced Concrete Deck, Precast	SF	50.00	1,176	$58,800.00
532000	Penetrating Water Repellent Treatment	SY	4.00	455	$1,820.00
53300X	Remove Existing Deck and Remodel Abutments	LS	17,000.00	1	$17,000.00
534000	Epoxy Injection, Type I	GAL	975.00	20	$19,500.00
536000	Epoxy Polymer Bridge Deck Overlay	SY	35.00	131	$4,585.00
543030	Metal Railing, Type D	LF	220.00	126	$27,720.00
601XXX	Remove Existing Metal Railing	LF	34.00	126	$4,284.00
	Subtotal of Structures Items				**$133,709.00**
	Drainage				
915.050	Catch Basin, Type "D", Single Grate, cip. SD 2206	EA	2,475.23	3	$7,425.69
915.060	Catch Basin, Type "D", Double Grate, cip. SD 2206	EA	4,338.76	3	$13,016.28
	Subtotal of Drainage Items				**$7,425.69**

Subtotal of Construction Items	**$190,145.11**
Construction Management (6.6%)	$12,549.58
Contingencies (30%)	$57,043.53
NMGRT (7.0%)	$17,303.21
TOTAL Estimate of Probable Project Cost	**$277,041.43**