# SR 37 MOBILITY STUDY



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## SR 37 AND SR 32/38

Presented to:











Presented by:







### SR 37 Mobility Study SR 32 / SR 38 at SR 37

### **Description of Proposed Project**

#### I. GENERAL

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The Indiana Department of Transportation, the Indianapolis Metropolitan Planning Organization, Hamilton County, Town of Fishers, and City of Noblesville have identified the need to significantly improve the SR 37 corridor from 126<sup>th</sup> Street to SR 32 / SR 38. The Study area also extends along 146<sup>th</sup> Street from Allisonville Road to Cumberland Road. The Study was funded 80% by the Federal Highway Administration through the MPO with the remainder provided by Hamilton County.

#### II. PURPOSE

The purpose of the Study was to evaluate whether grade separation of the existing intersections would improve the traffic capacity, efficiency, and safety for the project corridors without the need to add additional travel lanes along this segment of the SR 37 corridor. This includes the basic concept of reconstructing each of the existing and anticipated signalized intersections through this segment of SR 37 to interchanges; thus eliminating the need for added travel lanes along the corridor. If this was shown to be an improvement, then the Study was to further identify a preferred design solution for future improvements along the SR 37 corridor and to identify potential environmental concerns that may be present, and to establish a reliable budget to construct these improvements.

The preferred design solution was defined to a level which will allow officials with the INDOT, MPO, Hamilton County, Town of Fishers, and the City of Noblesville to begin making necessary amendments to their requisite Planning Documents.

#### III. EXISTING FACILITY

The subject corridor is located in south central Hamilton County in Delaware and Noblesville Townships, and in the Town of Fishers and City of Noblesville. SR 37 runs south to north through Hamilton County; including the Study area. Additionally, SR 37 is intersected by I-69 immediately south of the Study area. SR 37 is designated as a state highway in central Indiana. Near the Study area SR 37 begins at I-69 and proceeds in a northerly direction before terminating in the City of Marion, Grant County. The items identified in bold below show the existing roadway system at SR 37 and SR 32 / SR 38:

Table 1 – Existing Roadway System							
Facility	Traffic Control	Travel Lanes	Functional Classification	Speed Limit (MPH)			
SR 37	-	4	Expressway	55			
SR 32/ SR 38	Signal	4	Primary Arterial	35 (West of SR 37)			
			-	45 (East of SR 37)			

The following paragraphs give additional details for existing SR 32 / SR 38 within the Study area:

#### SR 32 / SR 38

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SR 32 / SR 38 crosses SR 37 at an approximate 20 degree skew to form a four way at-grade intersection. SR 37 is classified as an Expressway through the limits of this intersection and has limited access right of way. Through the limits of this intersection, SR 37 is a four lane roadway with two 12-foot travel lanes, a four foot paved inside shoulder and ten foot paved outside shoulder. The northbound and southbound travel lanes are separated by a 50 foot open grass median. The existing pavement is full depth HMA and is in good condition. Next to all SR 37 turn lanes at the intersection, the shoulders are four feet wide.

SR 32 / SR 38 is classified as a Primary Arterial through the limits of this intersection and is not access controlled. On the west side of the existing intersection, outside the intersection limits, SR 32 / SR 38 is a four lane roadway with four 12-foot travel lanes, and outside curb and gutter on each side. The existing pavement on the west side of the intersection is full depth HMA and is in good condition. Within the intersection limits, each side of the roadway is bordered by curb and gutter.

One the east side of the existing intersection, outside the intersection limits, SR 32 / SR 38 is a two lane roadway with two 12-foot travel lanes in each direction bordered by a two foot shoulder on each side. The existing pavement within the intersection limits on the east side is full depth HMA and is in good condition. Near the intersection on the east side, the north side of the roadway is bordered by an eight foot shoulder, while the south side of the roadway is bordered by a six foot curb.

The intersection of SR 32 / SR 38 and SR 37 is a signalized intersection, operating as an 8 phase signal with protected left turns in each direction. Approaching the intersection, SR 37 has one left turn lane, two through lanes, and one right turn lane on each approach. On the eastbound approach, SR 32 / SR 38 has one left turn lane, one through lane, and one right turn lane. On the westbound approach, SR 32 / SR 38 has one left turn lane and one through lane, and one shared right/through lane.

The intersection is bordered by businesses in the southwest, northwest, and northeast quadrants, and a vacant field in the southeast quadrant. Each business facility is set back according to the current Hamilton County Thoroughfare Plan for SR 37, with corners cuts preserved in each corner of the intersection. For a listing of each business adjacent to the intersection, see the aerial displays.

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#### IV. EVALUATED BUILD ALTERNATIVES

The Study evaluated two primary build alternatives: upgrading the existing SR 37 corridor with either teardrop roundabout interchanges (Alternative 1) or tight diamond interchanges (Alternative 2). Both alternatives will significantly improve traffic operations at the Study intersections.

#### V. TRAFFIC OPERATION ANALYSIS

Table 2 shows the results of the Capacity Analysis for the proposed improvements at SR 37 and SR 32 / SR 38 for the study year of 2036. A teardrop roundabout interchange is proposed, with a 6-lane bridge crossing SR 37.

Table 2 – Alternative 1 (2036) Capacity Analysis												
	Traffic	affic Peak		est Leg	Ea	ast Leg	So	uth Leg	No	rth Leg	(	Overall
Intersection	Control		1.05	Delay								
			L03	(sec)	L03	(sec)	L03	(sec)	L00	(sec)	L03	(sec)
SP 37 NB Ramps and SP 32 / SP 38	Roundabout	AM	Α	1.8	Α	2.4	Α	1.8			Α	2.1
		PM	Α	2.4	Α	4.2	Α	9.0			Α	6.6
SP 37 SB Ramos and SP 32 / SP 38	Poundahout	AM	Α	2.4	Α	5.4			Α	8.4	Α	5.1
	Roundabout	PM	Α	3.0	Α	4.2			Α	6.6	Α	4.1

Please see the Traffic Operation Analysis (binder labeled Traffic Operation Analysis) to review the Study area results in their entirety.

#### VI. GEOTECHNICAL EVALUATION

The corridor is located in a glaciated area. With the exception of the area near Stony Creek, the alignment is within a typical Central Indiana profile that consists of softer and moderate-plasticity clays overlying hard and low-plasticity clays, and bedrock is over 100 feet deep. The harder clays are usually within 20 feet of the surface. In addition, frequent seams and layers of granular soils can be encountered. This profile typically includes seasonal perched groundwater conditions within a few feet of the surface. From a design and construction perspective, CBR values are commonly in the range of 3 to 4, and subsurface drainage is typically required for pavement and below-grade structures (e.g., cut walls). Because of the perched groundwater and the clayey soils, improvement of the subgrade for support of pavement and construction activities is usually required, particularly in areas of cut. Support of bridges on driven piling and/or spread foundations is anticipated to be viable. In addition, support of MSE walls in these conditions typically includes preparation of the subgrade for the leveling pad and structure fill.

Cut walls over about 12 feet in height are anticipated to required tie-backs in order to control deflections, and the length of tie-backs is typically in the range of 25 to 50 ft.

An exception to the profiles discussed above is anticipated to be encountered at the SR 32 / SR 38 interchange. On the east side of SR 37 at that interchange, we anticipate that marly soils may be exposed and/or may create special design and construction considerations, such as remove and replace or ground improvement. An additional construction cost of \$500,000 is

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anticipated at the Pleasant Street intersection and \$1,000,000 at the SR 32 / SR 38 intersection to mitigate this condition.

A Geotechnical Evaluation will be required to evaluate the subsurface conditions and to provide the necessary information for a pavement design. This will include soil borings and a formal Geotechnical Report with recommendations that will be approved by INDOT.

#### VII. ENVIRONMENTAL INVESTIGATION

Improvements to this intersection will require the completion of an environmental document to qualify for federal funding. A Categorical Exclusion as falling within the guidelines of the National List of Categorical Exclusions will be required for this project. The Categorical Exclusion will need to be prepared in a manner consistent with the latest version of the "Indiana Categorical Exclusion Manual". The paragraphs below highlight the key environmental issues associated with the proposed project.

#### Wetland and Stream Impacts

The National Wetland Inventory Map shows no wetlands or streams within the project limits. A "Waters of the U.S." report (wetland determination/delineation) will be required to confirm and identify wetland boundaries and streams throughout the project limits.

#### **Historic and Cultural Resources**

<u>Archeological:</u> The proposed project will result in the acquisition of undisturbed right-of-way. As a result, an Archaeological Records Review and Phase Ia Archaeological Survey will be required to identify potentially significant cultural resources within the project limits.

<u>Historical:</u> The land use in close proximity and within the project area consists of recreational and residential properties. The *Hamilton County Interim Report* shows no historic properties within the probable Area of Potential Effects. However, properties may have become 50 years of age since the publication of the interim report.

At a minimum, this project will require the completion of the following Section 106 documents: Phase Ia Archaeological Survey, Historic Properties Report and a Section 106 Findings and Determinations (36 CFR 800.11).

#### **Hazardous Materials**

A search of the red flag indicators revealed underground storage tank sites and leaking underground storage tanks sites in the project vicinity. As a result, further investigation will be required to determine if the project would be impacted by hazardous materials.

#### **Regulatory Permits**

<u>IDEM Rule 5 Permit:</u> Since the project will disturb greater than one acre, Rule 5 administered through the Indiana Department of Environmental Management will apply to this project. The



designer shall coordinate all erosion and sediment control measures with the Hamilton County Soil and Water Conservation District.

#### VIII. DRAINAGE

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The existing drainage on SR 32 / SR 38 is conveyed on the west leg of the intersection by sheet draining the pavement to outside curb and gutters. Curb and gutter turnouts are utilized to capture the storm water which flow toward SR 37 and drain into the ditches along SR 37. The drainage is conveyed on the east leg by sheet draining the pavement into a small swale which flows into the ditch along SR 37. On mainline SR 37, the existing drainage is conveyed by an open grass median and outside ditches flowing south to a stream about 1290 feet south of the intersection.

The proposed drainage on SR 32 / SR 38 will utilize an enclosed storm sewer system consisting of curb and gutter inlets spaced appropriately which will connect to manholes. These manholes will then convey the water to an outside ditch along SR 37 where there is positive drainage from the ditch to the stream approximately 1290 feet south of the intersection. The drainage on SR 37 will be handled similarly. Inlets will be spaced along both sides of the median barrier as well as on the outsides against the walls. The inlets that are within the limits of the depressed profile will be conveyed by manholes to a lift station.

The lift station will be located in the southwest quadrant between the ramp and the wall on SR 37. A 20-inch forcemain is proposed between the wet well and the discharge location approximately 800 feet south of the intersection out to the side ditch where it will maintain positive drainage to the outlet stream. The proposed lift station will include two centrifugal submersible pumps for stormwater runoff installed within a precast concrete wet-well. An additional precast concrete valve vault will be installed adjacent to the wet well. An above grade control panel will be mounted on a pedestal at a discrete location near the lift station and a generator will be included for emergency backup power. The lift station will have a firm pumping capacity (one pump out of service) of 6,400 gpm.

#### IX. UTILITY COORDINATION

The following paragraphs give details pertaining to the presence of utilities at SR 32 / SR 38 and SR 37. This is followed by a discussion of potential impacts resulting from the project.

#### **Existing Facilities**

UNITED conducted a site visit to identify existing utilities. Based on observations of above ground facilities (ie, manholes, valve boxes, pedestals, utility markers), we identified likely underground facilities. If more accurate information is required, "Holey Moley" or the individual utilities can be contacted.

Electric: Overhead electric distribution runs along the north side of SR 32 / SR 38. Overhead electrical transmission runs along the east side of Cumberland Road. Electrical service to property owners is underground.



Gas: A gas marker is located on the south side of SR 32 / SR 38, west of SR 37, near the gas station. Without additional markers, this facility cannot be located.

Telecommunication: Various telecommunications facilities are located on the overhead electrical, with underground service to properties on both sides of the street.

Water: The water main is on the south side of SR 32 / SR 38, west of SR 37, and on the north side of SR 32 / SR 38, east of SR 37. Laterals provide service to properties on both sides of the street.

Sanitary: There is no evidence of a sanitary sewer system.

Street Lighting: Decorative globe-style street lights are located on both sides of SR 32 / SR 38, west of SR 37. The spacing is approximately 150 feet. Cobra-style street lights are located on the south side of SR 32 / SR 38, east of SR 37. The spacing varies from 260 to 300 feet.

#### Impacts

With SR 32 / SR 38 going over SR 37, existing underground facilities along SR 32 / SR 38 can either relocate lower (under SR 37) or attach their facilities to the bridge. Existing overhead facilities can remain if they do not conflict with the SR 32 bridge, offset their facilities north or south of the SR 32 / SR 38 Street bridge, or relocate underground. Service connections will also need to be adjusted.

The preferred alternative ties into the existing profile of SR 32 / SR 38 just east of Cumberland Road. Ending the proposed profile east of Cumberland Road will avoid impacting the overhead electrical transmission on the east side of Cumberland Road and the associated reimbursable relocation costs.

All other existing utilities appear to be in the existing right-of-way and are not eligible for reimbursement of relocation costs.

#### X. PROPOSED INTERSECTION FACILITY

#### <u>SR 37</u>

Existing SR 37 is a four lane expressway with four 12-foot travel lanes, four foot inside shoulders, and ten foot outside shoulders. The northbound and southbound travel lanes are separated by a 50 foot open grass median (inside travel lane to inside travel lane). The existing right-of-way along SR 37 varies from mostly 85 feet to 95 feet from centerline on both sides. Many businesses line each side of the SR 37 right-of-way throughout the Study limits. The interchanges proposed in this Study require auxiliary lanes, ramp junctions, and ramp lanes adjacent to SR 37 travel lanes approaching each interchange from each side. Additional right-of-way will be required in many locations adjacent to ramp lanes and junctions. In an effort to minimize the amount of right-of-way required and the impacts to existing businesses, it is proposed that the SR 37 median be enclosed with a center median barrier and the SR 37 travel lanes be shifted in to narrow the width of the roadway through the interchange limits.



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A 14.5 foot median is proposed, consisting of six foot inside shoulders and a 2.5 foot median barrier wall. Six foot is the desirable inside shoulder width required using Table 53-6 from the Indiana Design Manual (IDM). See the typical cross sections in this Study for full roadway dimensions. If any, one isolated interchange is constructed, the SR 37 travel lanes would shift back out on the north and south sides of the interchange to match the existing travel lanes and median width. As consecutive interchanges are constructed, it will not be feasible to shift lanes out to the existing median width and back in between most interchanges. If all interchanges were built concurrently, the median would remain enclosed from the south side of 126<sup>th</sup> Street to the north side of 146<sup>th</sup> Street, and from the south side of Town & Country Boulevard to the north side of SR 32 / SR 38. As there is sufficient distance between 146<sup>th</sup> Street and Greenfield Avenue, the travel lanes north of 146<sup>th</sup> Street could shift out the existing median width even if the 146<sup>th</sup> Street and Greenfield Avenue interchanges were constructed at the same time or consecutively. Furthermore, because of the layout and surrounding parcels at Greenfield Avenue, it is feasible to maintain the existing open median width through this location even when the proposed interchange is constructed. Where this is cost prohibitive at other locations due to right-of-way and business impacts associated with the wider roadway, it is economically feasible at the Greenfield Avenue Interchange. The travel lanes would shift back into an enclosed median south of Town and Country Boulevard and remain enclosed to north of SR 32 / SR 38, where the lanes would shift back out to meet the existing pavement.

This Study focuses on the interchanges; however the treatment of SR 37 proper, between the interchanges will be affected by each interchange's traffic and proximity to each other. The geometrics developed for this Study are unique to each area between interchanges according the findings of the Traffic Operations Analysis (TOA) conducted as part of this Study. In each segment between interchanges, in both directions, there will be an entrance ramp junction from one interchange followed by an exit ramp junction to the next interchange. This creates weaving areas between the interchanges, which were analyzed in the TOA. Some weaving areas were acceptable and are recommended. Other weaving areas are not acceptable and have been removed by interconnecting consecutive interchanges with collector distributor lanes. See the TOA for the discussion and results of the weaving analysis conducted between interchanges. Below is a summary of the proposed configuration of SR 37 near SR 32 / SR 38:

#### SR 32 / SR 38

The preferred alternate for this intersection is to construct a "teardrop" roundabout interchange on SR 32 / SR 38 consisting of two closely spaced roundabouts on either side of SR 37, which are tied together through the middle to function as one unit. SR 32 / SR 38 will overpass SR 37. SR 37 will be free-flow through this interchange and traffic traveling through on SR 32 / SR 38 will drive through the roundabouts with a yield condition on the roundabout approach.

The layout of the ramps will closely resemble a tight diamond interchange with directional entrance and exit ramps in each quadrant. Beyond the back of the gore area, all four ramps will remain directly adjacent to SR 37 maintaining an approximate 22 foot offset from outside edge of the SR 37 travel lane to the inside edge of the ramp lane(s). This offset allows for the minimum outside mainline shoulder, minimum inside ramp shoulder and the wall in between the

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mainline and the ramps. This wall is necessary to maintain the elevation difference between the mainline and the ramps as they approach SR 32 / SR 38. Exterior walls will also be necessary in the southwest, northwest, and northeast quadrants to minimize impacts to businesses in these quadrants (See aerial sheets for estimated wall limits).

SR 32 / SR 38 will have two lanes in each direction through the east/west portion of the roundabouts. On both approaches there will be one shared left/through lane, one through lane, and one right turn lane. The northbound exit ramp will exit as one lane and develop into three lanes at the roundabout approach, consisting of one left turn lane, one shared left/through lane, and one shared through/right lane. The southbound exit ramp will exit as one lane and develop into two lanes at the roundabout approach, consisting of one shared left/through lane, and one shared through/right lane. The southbound exit ramp will exit as one lane and develop into two lanes at the roundabout approach, consisting of one shared left/through lane, and one shared through/right lane. Both entrance ramps will depart from the roundabout as two lanes and merge to one lane before merging into SR 37.

One current drive accesses off SR 32 / SR 38 will need to be removed due to the close proximity to the interchange and the vertical difference of proposed SR 32 / SR 38 in the area of the drive. This drive is the easternmost drive accessing the Valero gas station in the southwest quadrant. This business has another drive off SR 32 / SR 38 approximately 90 feet west or the easternmost drive. This drive can remain, but should be changed to a right-in, right-out access to avoid queuing of westbound SR 32 / SR 38 traffic wishing to turn left into this drive. This business also has a third existing drive off of Cumberland Road. The existing drive off SR 32 / SR 38 accessing the retail plaza in the northwest quadrant can remain, but should be changed to a right-in only drive. This will avoid conflicts between vehicles exiting the west roundabout and vehicles entering SR 32 / SR 38 from this business. This business has a second existing full access drive off of Cumberland Road.

#### XI. PROPOSED BRIDGE FACILITY

The bridge will be designed to meet or exceed the current "AASHTO LRFD Bridge Design Specifications" as supplemented by INDOT design standards. The minimum vertical clearance for roadways crossing over SR 37 is 16'-6".

The proposed bridge over SR 37 at SR 32 is anticipated to be a two span, 124'-10" long, prestressed reinforced concrete I beam structure built with a 20 degree skew to the roadway. The bridge will be a four lane roundabout facility with a clear roadway width of 181'-10" and an out to out coping of 185'-4". The bridge will be designed to span the four lane SR 37 divided highway with the interior pier placed in the median of SR 37. It is anticipated that the proposed structure will be constructed with integral end bents on piles and a concrete interior wall pier on piles. The structure will also have reinforced concrete approach slabs to provide a smooth transition from the approach roadway to the bridge and to protect the ends of the bridge from settlement and erosion. The proposed bridge will include common height concrete bridge rail with transitions, approach guardrail and end treatments to meet current minimum standards.

#### XII. MAINTENANCE OF TRAFFIC

The following is a logical basic MOT plan for the construction of the SR 32 / SR 38 interchange:



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**Phase 1** – The southbound SR 37 travel lanes will be widened to the inside with temporary widening. Temporary cross-overs will be constructed in the median to the north and south of the interchange.

**Phase 2** – All SR 37 traffic will run on the southbound side with two travel lanes in each direction. The southbound travel lanes will be shifted west to run on the existing outside shoulder. The northbound traffic will be switched over to the southbound side to run on the temporary widening constructed in phase 1.

The northbound half of mainline SR 37 will be constructed. A temporary cut wall will be constructed "top down" between the existing southbound lanes and the proposed northbound lanes through the interchange area where SR 37 will be depressed.

The northbound exit and entrance ramps will be constructed up to the proposed roundabout. A temporary connection will be constructed across the proposed roundabout area connecting the top of the northbound exit ramp and the top of the northbound entrance ramp.

The east end bent for the proposed bridge will also be constructed in this phase.

The east segment of SR 32 / SR 38 will be closed, with no access to SR 37. The east segment of SR 32 / SR 38 and roundabout approaches will be constructed.

The west segment of the SR 32 / SR 38 will maintain access to SR 37. This could be set up as right-in/right-out access to and from SR 32 / SR 38 with SR 37 traffic remaining free-flow through the intersection. Alternatively, a temporary signal could be utilized to allow the west SR 32 / SR 38 protected access to and from both directions of SR 37.

**Phase 3** – All SR 37 traffic will run on the proposed northbound lanes and shoulders constructed in phase 2, with two lanes in each direction. The southbound lanes will be switched over to the northbound side to run on the proposed northbound lanes constructed in phase 2. The northbound lanes will run up the proposed northbound exit ramp, across the temporary connection, and back down the proposed northbound entrance ramp all constructed in phase 2.

The southbound half of mainline SR 37 will be constructed, as well as the west segment of SR 32 / SR 38 and the west roundabout. Both sides of SR 32 / SR 38 will have no access to or from SR 37 in this phase. However, temporary connections could be constructed on the east side between the portion of the east SR 32 / SR 38 segment constructed in phase 2 and the northbound SR 37 travel lanes. If desired, this could be done to keep access to and from northbound SR 37 and the east side of SR 32 / SR 38 in this phase.

#### XIII. LAND ACQUISITION

Approximately 22 parcels would be impacted by the construction of the teardrop roundabout interchange at the intersection of SR 37 and SR 32 / SR 38. Total permanent right of way acquisition required for construction of these improvements would be approximately 3.0 acres.



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Because the project would likely utilize federal aid, future land acquisition would need to adhere to the *Uniform Relocation Assistance and Real Property Acquisition Policies for Federal and Federally Assisted Programs Act*. This process includes title research, right-of-way engineering, appraisal problem analysis (APA), an appraisal, a review appraisal and negotiations/buying with the property owner.

All existing right-of-way would be verified during the land acquisition process, which may reveal the need for additional parcels. If recorded documents do not exist, it may be necessary to reacquire portions of the apparent existing right-of-way, which could also increase the anticipated number of parcels and costs affiliated with those additional parcels.

#### XIV. PROJECT PRIORITIES

Table 3 below indicates the priority for construction of the proposed improvements. The ranking as shown generally flows south to north but can be revised without affecting the integrity of constructing methodologies.

Table 3 – Construction Priorities						
Priority Rank	Binder Number	Intersection				
1.	5	SR 37 at 146 <sup>th</sup> Street				
2.	10	146 <sup>th</sup> Street at Allisonville Road				
3.	1	SR 37 at 126 <sup>th</sup> Street				
4.	2	SR 37 at 131 <sup>st</sup> Street				
5.	3	SR 37 at 135 <sup>th</sup> Street				
6.	4	SR 37 at 141 <sup>st</sup> Street				
7.	6	SR 37 at Greenfield Avenue				
8.	7	SR 37 at Town and Country				
		Boulevard				
9.	8	SR 37 at Pleasant Street				
10.	9	SR 37 at SR 32 / SR 38				

#### XV. PROJECT BUDGET

At the intersection of SR 37 and SR 32 / SR 38, a teardrop roundabout interchange is proposed, with a 6-lane bridge crossing SR 37. In order to construct these improvements, it is anticipated that construction cost will be \$27,725,110 in year 2027.



### TYPICAL SECTIONS S.R. 32/38 and S.R. 37





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# PROPOSED TEARDROP ROUNDABOUT INTERCHANGE SR 37 & SR 38

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# PROPOSED TEARDROP ROUNDABOUT INTERCHANGE SR 37 & SR 32

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### SR 32 Project Development Cost Summary

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Hamilton County, Town of Fishers and City of Noblesville S.R. 37 from South of 126th Street to North of SR 38/32

#### **PROJECT ITEMS:**

#### PROJECT COST (IN YEAR OF EXPENDITURE)

SR 32		
Engineering Costs	\$ 4,194,809	
Construction Costs	\$ 27,725,110	
Construction Cost Contingencies	\$ 2,772,511	
Construction Inspection Costs	\$ 4,158,766	
Utility Relocation Cost	\$ -	
Land Cost	\$ 1,620,637	
Subtotal SR 32 Interchange		\$36,277,024

\* The SR 32/SR 38 Street Interchange is projected to be constructed in 2027. An inflation factor of 1.605 has been applied to obtain the construction cost shown in this table

TOTAL INTERCHANGE COST:

\$36,277,024



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### SR 32 Construction Cost Summary SR 37 MOBILITY STUDY

Hamilton County, Town of Fishers and City of Noblesville S.R. 37 from South of 126th Street to North of SR 38/32

MAJOR ELEMENT	BASE YEAR CONSTRUCTION COST (2012)			
ROADWAY	\$	12,409,212		
GEOTECHNICAL MITIGATION	\$	1,000,000		
BRIDGE (S.R. 32 Over S.R. 37)	\$	2,750,000		
LIFT STATION	\$	1,115,000		
TOTAL CONSTRUCTION COST:	\$	17,274,212		

## **ROAD ESTIMATE**

#### Time: 14:31:50 Project: SR 37 Mobility Study - SR 32/SR 38 Project ID:10-703 (9) Location: SR 32/SR 38 Interchange Bid Date: // State: IN County: HAMILTON Route: SR 37 District: Greenfield Bid Price Extension Alt Sect Pay Item Description Quantity Unit 332,389.61 100 105-06845 1.000 L.S. 332,389.61 construction engineering 100 110-01001 mobilization and demobilization 1.000 L.S. 553,982.68 553,982.68 GENERAL PROVISIONS SUBTOTALS 886,372.29 7.1% 200 201-52370 179.170.80 179,170.80 clearing right of way 1.000 L.S. 200 202-02279 curb and gutter, remove 226.000 L.F. 4.62 1,044.12 7.88 200 202-52710 sidewalk, concrete, remove 94.000 SYS 740.72 200 202-93999 signal pole, remove 4.000 EACH 495.00 1.980.00 200 203-02000 excavation, common 80,574.000 C.Y. 7.88 634,923.12 200 205-06931 temporary check dam, revetment riprap 338.000 TON 38.84 13,127.92 1.74 200 205-06937 temporary silt fence 500.000 L.F. 870.00 200 207-08263 62,025.000 SYS 6.24 387,036.00 subgrade treatment, type ia 200 207-08267 subgrade treatment, type iiia 60.000 SYS 9.42 565.20 200 211-09194 b borrow 31.698.000 TON 34.00 1.077.732.00 200 211-09264 structural backfill, type 1 829.000 C.Y. 23.88 19,796.52 200 211-09266 structural backfill, type 3 25,098.000 C.Y. 21.27 533,834.46 **EARTHWORK SUBTOTALS** 2,850,820.86 23.0% 300 301-07448 compacted aggregate, no. 53, base 5.084.000 TON 15.66 79.615.44 300 302-06464 subbase for pccp 15,507.000 C.Y. 28.39 440,243.73 17.20 300 303-01180 compacted aggregate, no. 53 2,079.000 TON 35,758.80 AGGREGATE PAVEMENT AND BASES SUBTOTALS 555,617.97 4.5% 226,200.00 400 402-10084 hma for temporary pavement, b 4,524.000 TON 50.00 ASPHALT PAVEMENT SUBTOTALS 226.200.00 1.8% 500 501-06266 profilograph, pccp 1.000 L.S. 15,000.00 15,000.00 500 501-06323 52,210.000 SYS 70.00 3,654,700.00 qc/qa-pccp, 12 in 500 503-05240 d-1 contraction joint 26.105.000 L.F. 9.19 239.904.95 CONCRETE PAVEMENT SUBTOTALS 3.909.604.95 31.5% 600 601-01522 guardrail, transition type tgb 2.000 EACH 1.978.24 3,956.48 600 601-94689 guardrail end treatment, os 2.000 EACH 2.530.55 5,061.10 600 601-99105 guardrail, w-beam, 6 ft 3 in spacing 805.000 L.F. 17.42 14,023.10 barrier delineator 66.000 EACH 12.49 824.34 600 602-06729 600 602-08603 concrete barrier, 45 in 2.612.000 L.F. 91.00 237.692.00 600 603-06040 fence, farm field, 47 in 5.738.000 L.F. 5.50 31.559.00 600 604-07569 pavers {pavers} 491.000 SYS 827.77 406,435.07 600 605-06120 619.000 L.F. 14,596.02 curb, concrete 23.58 14.29 600 605-06140 curb and gutter, concrete 3,037.000 L.F. 43.398.73 600 605-06145 curb and gutter, b, concrete 846.000 L.F. 14.17 11,987.82 600 605-06255 center curb, d, concrete 346.000 SYS 48.55 16,798.30 600 610-08516 pccp for approaches, 12 in 1.303.000 SYS 108.57 141.466.71 600 610-09108 pccp for approaches, 9 in 60.000 SYS 57.06 3,423.60 600 615-06510 5.000 EACH 419.32 2,096.60 monument, c

PRICING REPORT

Date: 12/19/2012

### **PRICING REPORT**

Project: SR 37 Mobility Study - SR 32/SR 38 Location: SR 32/SR 38 Interchange				Project ID: Bid Date:	10-703 (9) / /	State: IN
Cou Disti	nty: <b>HAMIL</b> rict: <b>Green</b>	_ I ON field		Route:	SR 37	
Soot	Pov Itom	Description	Quantity Unit	Did Drio	- Extensio	n Alt
Seci	гау цеш	Description				
600	615-06515	monument, d	25.000 EACH	141.25	5 3,531.2	25
600	621-01004	mobilization and demobilization for seeding	4.000 EACH	382.61	l 1,530.4	4
600	621-06545	fertilizer	5.000 TON	327.69	9 1,638.4	5
600	621-06554	seed mixture, u	1,144.000 LBS	5.62	2 6,429.2	28
600	621-06557	seed mixture, t	505.000 LBS	2.15	5 1,085.7	'5
600	621-06565	mulching material	21.000 TON	305.97	6,425.3	37
600	621-06567	water	12.000 M.G.	3.74	44.8	8
600	621-06574	sodding	2,878.000 SYS	3.12	2 8,979.3	86
600	628-09403	field office, c	18.000 MONTH	1 2,082.44	4 37,483.9	2
600	628-11068	cellular telephone/radio	2.000 EACH	150.38	3 300.7	6
600	628-11069	cellular telephone/radio service, anytime minutes {cell phone}	36.000 MONTH	112.11	4,035.9	6
	INC	CIDENTAL CONSTRUCTION SUBTOTALS			1,004,804.2	29
					8.1	%
700	701-90386	temporary sheet piling	1.000 L.S.	308,925.00	308.925.0	0
700	706-08496	reinforced concrete moment slab, 12 in	2,234.000 SYS	87.86	5 196,279.2	24
700	706-09545	coarse aggregate, no 8	559.000 C.Y.	61.00	) 34,099.0	00
700	706-09959	railing, concrete, ft	6,361.000 L.F.	60.00	) 381,660.0	0
700	715-05048	pipe, type 4 circular 6 in	14,354.000 L.F.	3.24	46,506.9	96
700	715-05053	pipe, underdrain, outlet 6 in	324.000 L.F.	11.77	7 3,813.4	8
700	715-05149	pipe, type 2 circular 12 in	5,593.000 L.F.	29.00	) 162,197.0	0
700	715-09064	video inspection for pipe	5,593.000 L.F.	1.48	8,277.6	64
700	718-06528	outlet protector, 1	12.000 EACH	519.56	6,234.7	2
700	718-06532	video inspection for underdrains	3,000.000 L.F.	0.94	4 2,820.0	00
700	718-52610	aggregate for underdrains	1,292.000 C.Y.	32.72	2 42,274.2	24
700	718-99153	geotextiles for underdrain	9,836.000 SYS	0.98	9,639.2	28
700	720-07300	inlet, type h, with slotted drain	12.000 EACH	4,502.79	9 54,033.4	8
700	720-07302	inlet, type ha, with slotted drain	12.000 EACH	1,757.88	3 21,094.5	6
700	720-45410	manhole, c4	12.000 EACH	2.000.00	24.000.0	00
700	720-98174	inlet, b15	12.000 EACH	2,189.87	7 26,278.4	4
700	720-98555	inlet, c15	12.000 EACH	2,161.7	7 25,941.2	24
700	731-93945	face panels, concrete	57,288.000 S.F.	11.99	9 686,883.1	2
700	731-93946	wall erection	57,288.000 S.F.	5.56	318,521.2	.8
700	731-93947	leveling pad, concrete	3,995.000 L.F.	22.00	87,890.0	00
	ST	RUCTURES SUBTOTALS			2,447,368.0 19.7	68 '%
800	801-01093	temporary worksite speed limit sign assembly	4.000 EACH	723.00	2,892.0	00
800	801-03290	construction sign, c	2.000 EACH	199.19	398.3	8
800	801-04308	road closure sign assembly	4.000 EACH	308.61	1,234.4	4
800	801-06625	detour route marker assembly	18.000 EACH	98.84	1,779.1	2
800	801-06640	construction sign. a	24.000 EACH	160.87	7 3.860 8	88
800	801-06645	construction sign, b	4.000 EACH	58.33	3 233.3	2
800	801-06710	flashing arrow sign	510.000 DAY	8.52	2 4,345.2	20
800	801-06775	maintaining traffic	1.000 L.S.	221,593.07	7 221,593.0	7

### **PRICING REPORT**

Project: <b>SR 37 M</b> Location: <b>SR 32/S</b> County: <b>HAMIL</b> District: <b>Greenfi</b>	<i>Nobility Study - SR 32/SR 38 SR 38 Interchange FON eld</i>		Project ID: <b>1</b> Bid Date: Route: <b>S</b>	0-703 (9) / / State: II SR 37
Sect Pay Item	Description	Quantity Unit	Bid Price	Extension Alt
800 801-07024	energy absorbing terminal, cz, tl-3	1.000 EACH	7,316.67	7,316.67
800 801-07118	barricade, iii-a	228.000 L.F.	13.17	3,002.76
800 801-07119	barricade, iii-b	48.000 L.F.	14.08	675.84
800 801-08400	temporary traffic barrier, type 1	3,300.000 L.F.	16.86	55,638.00
800 801-08507	temporary traffic barrier, type 1, anchored	296.000 L.F.	34.09	10,090.64
800 801-08508	temporary traffic barrier, type 2, anchored	3,300.000 L.F.	25.00	82,500.00
800 801-09133	temporary changeable message sign	2.000 EACH	6,193.01	12,386.02
800 801-52817	temporary crossover, b	2.000 EACH	25,000.00	50,000.00
800 802-05701	sign post, square, type 1, reinforced anchor base	340.000 L.F.	12.95	4,403.00
800 802-07057	sign, panel, with legend	429.000 S.F.	14.81	6,353.49
800 802-07138	wide flange sign post support foundation, ix	2.000 EACH	242.00	484.00
800 802-07159	cantilever sign support foundation, ii	2.000 EACH	3,349.33	6,698.66
800 802-09840	sign, sheet, with legend 0.100 in thickness	115.000 S.F.	17.27	1,986.05
800 802-76095	structural steel, breakawav	681.000 LBS	2.68	1.825.08
800 802-76135	overhead sign structure, cantilever single arm	1.000 EACH	20,672.00	20,672.00
800 804-06770	delineator post	12.000 EACH	43.14	517.68
800 808-10031	line, multi-component, broken, white, 4 in	2,513.000 L.F.	0.43	1,080.59
800 808-10033	line, multi-component, solid, white, 4 in	10,410.000 L.F.	0.46	4,788.60
800 808-10034	line, multi-component, solid, yellow, 4 in	9,366.000 L.F.	0.46	4,308.36
800 808-10037	line, multi-component, solid, white, 8 in	4,348.000 L.F.	1.04	4,521.92
800 808-75071	pavement message marking, preformed plastic, lane indication arrow	11.000 EACH	187.00	2,057.00
800 808-75510	transverse markings, preformed plastic, crosshatch line, white, 24 in	549.000 L.F.	12.09	6,637.41
800 808-75998	snowplowable raised pavement marker	213.000 EACH	19.45	4,142.85
TRA	FFICE CONTROL DEVICES AND LIGHTING S	UBTOTALS		528,423.03 4.3%
тот	ALS			12,409,212.07 100.0%

## BRIDGE ESTIMATE

#### PRICING REPORT

Project:	SR32 over SR 37 - Concrete Bridge Option
Location:	Hamilton County
County:	HAMILTON
District:	Greenfield

Date: 11/26/2012 Time: 15:23:36

Project ID: **10-703-SR32 OVER SR3** Bid Date: / / State: **IN** Route:

Pay Item	Description	Quantity Unit	Bid Price	Extension_Alt	
105-06845	construction engineering	1.000 L.S.	75,700.00	75,700.00	
110-01001	mobilization and demobilization	1.000 L.S.	126,168.00	126,168.00	
203-02020	excavation, unclassified	533.000 C.Y.	20.83	11,102.39	
211-02050	b borrow	533.000 C.Y.	27.42	14,614.86	
302-07455	dense graded subbase	256.000 C.Y.	62.94	16,112.64	
609-06259	reinforced concrete bridge approach 12 in	1,539.000 SYS	83.33	128,244.87	
701-06011	dynamic pile load test	3.000 EACH	1,651.34	4,954.02	
701-08122	pile, steel pipe, 0.375", 14	5,460.000 L.F.	42.87	234,070.20	
701-09559	test pile, dynamic, restrike	3.000 EACH	1,317.82	3,953.46	
701-09690	test pile, dynamic, 14 in non-production	210.000 L.F.	42.87	9,002.70	
702-51005	concrete, a, substructure	287.000 C.Y.	584.17	167,656.79	
702-51015	concrete, b, footings	197.000 C.Y.	307.53	60,583.41	
703-06028	reinforcing bars	58,980.000 LBS	0.91	53,671.80	
703-06029	reinforcing bars, epoxy coated	439,486.000 LBS	0.95	417,511.70	
704-51002	concrete, c, superstructure	1,683.000 C.Y.	560.34	943,052.22	
706-09959	railing, concrete, ft	250.000 L.F.	64.42	16,105.00	
707-05983	structural member, concrete i-beam, 36 in x 12 in	2,590.000 L.F.	160.01	414,425.90	
709-51821	surface seal	1.000 L.S.	28,288.00	28,288.00	
	TOTALS			2,725,217.96	

## LIFT STATION ESTIMATE

## S.R. 32/38 Lift Station Cost Summary

#### **GENERAL INFORMATION**

Intersection	S.R. 32/38 and S.R. 37
Station (of Lift Station)	305+49.19

#### **DESIGN INFORMATION**

Storm Sewer Inflow Elev	758.7
Length to Outfall (ft)	1290.0
Outfall Elevation	760.00
High Point Station	297+46.63
High Point Elevation	775.47
Revised Outfall Elevation	771.47
Revised Distance to Outfall	803.0
Drainage Area (ac)	2.44
10-Year Flow $Q_{10}$ (cfs)	10.50
50-Year Flow Q <sub>50</sub> (cfs)	13.04
100-Year Flow $Q_{100}$ (cfs)	14.12

#### **CONSTRUCTION COST**

Estimated Lift Station Construction Cost	\$ 950,000.00
Estimated Force Main Construction Cost	\$ 165,000.00
Total Estimated Construction Cost	\$ 1,115,000.00

#### **OPERATION & MAINTENANCE COST**

Operation	\$ 10,000.00
Maintenance	\$ 15,000.00
Equipment Replacement	\$ 15,000.00
Total Annual OM&R Cost	\$ 40,000.00

## **ROAD QUANTITIES**

				10	-703	
				SR 37 MOB	ILITY STUL	)Y
				SR 32	2/SR 38	
D	DUZ	2/27/12			A /TTX X /	11/04/10
By:	BWS	3/2//12		Checked By:	ATW	11/24/12
105-06845	CO	NSTRUCTION	FNGINFFRIN	C		1
	0			U U		LS
						LS
ENTIRE PROJEC	T					1.0
	Assume 3% of Total	l Project Cost				
		l	<u> </u>	<u> </u>		l

				10	-703	
				SR 37 MOB	ILITY STUL	DY
				SR 32	2/SR 38	
By:	BWS	3/27/12		Checked By:	ATW	11/24/12
			•	2		
110-01001	MOBII	ΙΖΑΤΙΟΝ ΑΝΒ	DEMORII 17A	TION		1
	WIODIL		DEMODILIZA			LS
						LS
ENTIRE PROJEC	I Assume 5% of Total	Project Cost				1.0
	1155une 570 0j 1010					
				<u> </u>		
				<u> </u>		

		10-703					
				SR 37 MOB	LITY STUL	DY	
				SR 32	2/SR 38		
By:	BWS	3/27/12		Checked By:	ATW	11/24/12	
			•				
201-52370						1	
	·	CLEAKING KI	JHI UF WAY			LS	
						LS	
						Lb	
ENTIRE PROJEC	T					1.0	
	Assume a Lump Sur	n amount of \$15k		<u> </u>			
				<u> </u>			
	L	1	1	1		I	

	10-703					
				SR 37 MOB	ILITY STUL	DY
				SR 32	2/SR 38	
By:	srs	11/19/12	-	Checked By:	BWS	11/24/12
202-02279	C	URB AND GUT	TER. REMOVE	C		226
	-		,			LFT
						Length (ft)
						Length (ft)
West of SR 37						116.0
•						110.0
			ļ			

				10-2	703	
				CD 27 MODU		<b>V</b> 7
SR 37 MOBILITY STU SP 22/SP 28						Y
				SK 52/	SK JO	
By:	Srs	11/19/12		Checked By:	BWS	11/24/12
202-52710						04
202-32710	SID	EWALK, CONC	CRETE, REMOV	VE		SYS
				T		Araa (sys)
						Aleu (sys)
South of SR 37						94.0
		<u> </u>				
			•		TOTAL =	94.0

				10	-703	
				SR 37 MOB	LITY STUL	)Y
				SD 31	)/SD 28	
				SK 52	JSK JO	
By	srs	4/17/12		Checked By:	BWS	11/24/12
Dy.	575	//1//12	-	Checked Dy.	Dirb	11/21/12
202-93999		SIGNAL POL	E REMOVE			4
						EACH
<u> </u>						
Description						Each
1						
Line "S-2-A"						
1 at each corner						40
1 ui cuch corner	+					7.0

#### SR 37 MOBILITY STUDY SR 32/SR 38

By: BWS

203-02000

#### **EXCAVATION, COMMON**

10/30/12

80,574 CYS

11/26/12

FILL VOLUME CUM. CUT VOLUME CUM. FILL VOLUME **STATION** CUT AREA FILL AREA CUT VOLUME (sft) (cys) (sft) (cys) (cys) (cys) Line "A" 293+28.79 247.16 58.02 299+25.39 245.19 5439.56 58.02 1282.03 5439.56 1282.03 302+48.52 1744.01 11903.15 894.04 5697.02 17342.71 6979.05 25777.92 308+68.74 1748.38 40112.04 742.70 18798.87 57454.75 311+72.77 209.53 11023.40 31.47 4358.72 68478.14 30136.64 316+93.73 218.25 4126.97 0.00 303.60 72605.11 30440.24 321+47.61 196.39 3485.13 38.87 326.71 76090.24 30766.95 324+47.59 196.90 2184.80 2.56 230.15 78275.04 30997.10 Earthwork Balance = 47277.93 Line ''S-4-A'' 10+99.00 169.24 0.00 12+24.93 51.09 513.82 119.92 279.66 513.82 279.66 55.26 798.50 13+69.48 284.68 1041.56 3109.11 3388.77 14+34.08 63.80 142.43 457.52 1793.34 940.93 5182.11 14+34.08 0.00 0.00 0.00 0.00 940.93 5182.11 15+64.90 0.00 0.00 0.00 0.00 940.93 5182.11 457.52 15+64.90 63.80 0.00 0.00 940.93 5182.11 16+29.00 55.26 1779.46 141.33 1041.56 1082.26 6961.58 18+68.45 51.09 471.58 119.92 5150.30 1553.84 12111.88 20+08.45 51.09 264.91 119.92 621.81 1818.76 12733.69 21 + 26.00169.24 479.63 0.00 261.05 2298.38 12994.73 Earthwork Balance = -10696.35 Total Earthwork Balance = 36581.58 The Earthwork Balance indicates this is a WASTE job and no BORROW will be required. Common Excavation = Cumulative Cut Volume = 80573.42 TOTAL = 80574.0

Checked By: srp

10-703

-

	10-703							
	SR 37 MOBILITY STUDY SR 32/SR 38							
By:	МАС	5/29/12	_	Checked By:	JPS	11/21/12		
205-06931	TEMPORAL	RY CHECK DA	M, REVETMEN	T RIPRAP		338 TON		
Begin Sta.	End Sta.	Spacing	Number of Dams	Weight		TON		
				Tons/Dam				
Line ''A''	Northbound							
293+28.79	303+00.00	100.0	10.0	6.5		65.0		
308+28.22	324+47.59	100.0	17.0	6.5		110.5		
Line "A"	Southbound	100.0						
293+28.79	299+75.00	100.0	7.0	6.5		45.5		
307+00.00	324+47.59	100.0	18.0	6.5		117.0		
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		10-703					
				SR 37 MOB	LITY STUL	<b>D</b> Y	
				SR 32	2/SR 38		
		1/10/10			100	11/01/10	
By:	МАС	4/10/12		Checked By:	JPS	11/21/12	
						-	
205-06937		TEMPORARY	SILT FENCE			500	
						LFT	
Use as areas fall av	way from jobsite.					500.0	
	ļ						

			10-7	703		
			SR 37 MOBIL SR 32/S	7		
<i>By:</i>	SRS	5/15/12	Checked By:	ATW	11/25/12	
53	SUBGRADE TREATMENT, TYPE IA					

207-08263

Begin Station	End Station	Side	Begin Width	End Width	Area (sft)	Area (sys)
Pavement Area coj	pied from 501-06323:	J		1	1	52210.0
Outside Area (2' o	n either side):			1	1 1	
Line "A"				1	1	
293+28.79	299+25.38	Rt	2.00	2.00	1193.18	132.6
299+25.38	312+60.85	Rt	2.00	2.00	2670.94	296.8
312+60.85	315+57.89	Rt	2.00	2.00	594.08	66.0
315+57.89	316+29.21	Rt	2.00	2.00	142.64	15.8
316+29.21	319+40.40	Rt	2.00	2.00	622.38	69.2
319+40.40	321+47.60	Rt	2.00	2.00	414.40	46.0
321+47.60	324+47.59	Rt	2.00	2.00	599.98	66.7
293+28.79	295+39.90	Lt	2.00	2.00	422.22	46.9
295+39.90	296+36.81	Lt	2.00	2.00	193.82	21.5
296+36.81	296+81.62	Lt	2.00	2.00	89.62	10.0
296+81.62	297+43.79	Lt	2.00	2.00	124.34	13.8
297+43.79	298+37.20	Lt	2.00	2.00	186.82	20.8
298+37.20	311+72.77	Lt	2.00	2.00	2671.14	296.8
311+72.77	317+10.51	Lt	2.00	2.00	1075.48	119.5
317+10.51	317+76.96	Lt	2.00	2.00	132.90	14.8
317+76.96	321+72.34	Lt	2.00	2.00	790.76	87.9
321+72.34	322+72.77	Lt	2.00	2.00	200.86	22.3
Ramp ''SR32_SE''	,					
10+00.00	12+80.52	Rt	2.00	2.00	561.04	62.3
12+80.52	13+80.52	Rt	2.00	2.00	200.00	22.2
13+80.52	14+08.55	Rt	2.00	2.00	56.06	6.2
14+08.55	16+04.04	Rt	2.00	2.00	390.98	43.4
Add Extra 2' where	e there is curb on ramp	)		T		
14+08.55	14+85.32		2.00	2.00	153.54	17.1
14+85.32	16+04.04		4.00	4.00	474.88	52.8
Ramp ''SR32_SW'	"					
20+00.00	21+54.06	Lt	2.00	2.00	308.12	34.2
21+54.06	21+96.09	Lt	2.00	2.00	84.06	9.3
21+96.09	26+10.90	Lt	2.00	2.00	829.62	92.2
Add Extra 2' where	there is curb on ramp	,				
20+00.00	21+54.06		4.00	4.00	616.24	68.5
21+54.06	21+96.09		2.00	2.00	84.06	9.3
Ramp ''SR32_NW	<del>'''</del>				<u> </u>	
40+00.00	43+39.17	Lt	2.00	2.00	678.34	75.4
43+39.17	44+38.69	Lt	2.00	2.00	199.04	22.1
44+38.69	44+59.33	Lt	2.00	2.00	41.28	4.6
44+59.33	44+89.87	Lt	2.00	2.00	61.08	6.8
44+89.87	46+07.08	Lt	2.00	2.00	234.42	26.0
Add Extra 2' where	e there is curb on ramp	,				
44+59.33	44+89.78		2.00	2.00	60.90	6.8
44+89.78	46+07.08		4.00	4.00	469.20	52.1

SUBTOTAL (THIS PAGE) =

54168.7
10-703

## SR 37 MOBILITY STUDY SR 32/SR 38

*By: SRS* 5/15/12

Checked By: <u>ATW</u>

11/25/12

207-08263

## SUBGRADE TREATMENT, TYPE IA

SYS

Begin Station	End Station	Begin Width	End Width	End Width	Area (sft)	Area (sys)
Ramp "SR32_NE"	ļ ļ				───┼	
$\frac{1}{30+000}$	31+79 72	Rt	2.00	2.00	359 44	30.0
31+79 72	32+21.47	Rt	2.00	2.00	83.50	93
32+21.47	33+13.58	Rt	2.00	2.00	184.22	20.5
33+13.58	36+13.58	Rt	2.00	2.00	600.00	66.7
Add Extra 2' where	there is curb on ran	10 10	2.00	2.00	000.00	00.7
30+00.00	31+76.46		4.00	4.00	705.84	78.4
31+76.46	32+21.47		2.00	2.00	90.02	10.0
Cumberland Road/	SR 32 Intersection				1 2000	10.0
NW Ouadrant	45.6	lft	2.00		91.20	10.1
NE Ouadrant	40.0	lft	2.00		80.00	8.9
SE Ouadrant	32.0	lft	2.00		64.00	7.1
SW Ouadrant	61.0	lft	2.00		122.00	13.6
Roundabout					+	
outside area (4' offs	set of roundabout are	ea)	subtract inside area		+ +	
100576.42			15540.33		83272.68	9252.5
			1763.41			
Subtract from brids	ge area:				+ +	
Sweet weegs and a second	,0 4. 54.	İ	1		6046,99	-671.9
			1			
Subtract pavement	from moment slab		1 1		+	
			1 1		+	
NE Wall		İ	1		7901.96	-878.0
					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0,010
SE Wall	No Wall		+		+	
SL Wan	110 11411				+	
SW Wall					8040 83	-893 4
Sti tiun		 	+		0070.05	-075.1
NW Wall	l				1156.85	_161.0
1999 मधा	ll				4150.05	-401.7
	l	l			╂────╂	
Add Annroachos at	Cumberland Road	Intersection			╂────╂─	
Adu Approuches ai	Climberiana Koaa	Intersection			1555	172 8
North Approach	ll				1555	1/2.0
Soun Approach	ll				1050	101.0
207±25 "A" It	l				8004	880 3
297 + 25 A , Li.					0004	009.5

SUBTOTAL (THIS PAGE) =

.....

7855.7

*TOTAL* = 62024.4

				10	-703	
				SR 37 MOBI SR 32	ILITY STUD 2/SR 38	ру
By:	SRS	5/7/12		Checked By:	BWS	11/24/12
207-08267	SUBO	GRADE TREAT	MENT, TYPE I	ПА		60 SYS
Alignment				Area (sft)		SYS
Line ''S-1-A''						
Driveway @ Sta. 12	2+24.37	Lt		531.16		59.0
L						
				1	1	

*TOTAL* = 59.0

					10-703	
				SR 37 M SI	OBILITY STUDY R 32/SR 38	
By:	SRS	11/16/12		Checked By:	srp	11/26/12
211-09194		B BOI	ROW			31,698 TON
Station from	Station to		Area		VOLUME	VOLUME
			(sft)		(cft)	(cys)
Borrow f	or behind both insi	de and outside wal	ls. Area calculated	in AutoCAD in "T	ypicals3.dwg''. Areas fo	or two scenarios.
Area between both	h walls at tallest po	int: 278.23 sft				
Area behind inside	e wall, no outside w	all present: 336.29	sft			
NB Wall						
200 + 25 20	205 + 15 20		226.20		100540 00	7252.67
299+25.39	305+15.80		336.29		<u> </u>	/355.0/
305+13.80	300+09.90		278.23		45012.05	1919.34
300+09.90 308+31.68	300+31.00 312+60.85		336.20		43012.03	5345 30
500+51.00	512+00.85		550.29		144525.56	3343.37
SB Wall						
208+37.20	200+68.86		336.20		11275 01	1630.85
290+57.20	299+08.80 304+29.35		278.23		128122-13	1039.85
304+29.35	305+80.17		336.29		50719.26	1878.49
305+80.17	306+88.25		278.23		30071.10	1113.74
306+88.25	311+72.77		336.29		162939.23	6034.79
		l				
					TOTAL =	31697.7

				10-703	
				SR 37 MOBILITY SR 32/SR 3	STUDY 8
By:	BWS	11/19/12		Checked By: <u>B</u>	WC 11/25/12
211-09264	STR	UCTURAL BA	CKFILL, TYPF	21	829 CYS
		Depth		Width	Volume
Sum from Item 72	0-05149	Assume 2'			(cys)
	5593.00	2.0	5593.0	2.0 Assume 2'	828.59
				TO	TAL = 828.6

			10-7	03	
			SR 37 MOBIL SR 32/S	ITY STUD SR 38	Y
By:	SRS	10/22/12	Checked By:	srp	11/26/12
211-09266	ST	RUCTURAL BACKFI	LL, TYPE 3		25,099

Length Begin Height End Height Structure Backfill Volume Segment (ft) (ft) (*ft*) Width Volume (cys) (ft) (cft) Since the wall is curved and extends between two alignments (mainline and ramp), all lengths measured in AutoCAD for better accuracy. Segments measured in the direction of travel. Not every wall has all 3 segments. Assumptions made on lengths depending on what the wall looks like. \* = measured directly in AutoCAD. Segment 1 = Transition from 4 ft to 7 ft Segment 2 = 7 ft (around curve) Segment 3 = Transition from 7 ft to 4 ft NE Wall 488.73 244.37 5.25 9621.87 356 Segment 1 4 11 7.70 Segment 2 244.37 11 11 20697.72 Segment 3 ------SE Wall No wall SW Wall 594.29

Segment 1	74.29	4	11	5.25	2925.02	108
Segment 2	222.86	11	11	7.70	18876.14	699
Segment 3*	297.15	11	4	5.25	11700.08	433
NW Wall	240.01					
Segment 1						
Segment 2	240.01	11	11	7.70	20328.85	753
Segment 3						
				1		
	1	1				

TOTAL this page =

3116.7

CYS

767

			10-7	03	
			SR 37 MOBIL SR 32/S	ITY STUD SR 38	ŊΥ
<i>By</i> :	SRS	10/22/12	Checked By:	srp	11/22/12
211-09266	ST	RUCTURAL BACKFI	LL, TYPE 3		CVS

Station From	Station To	Begin Height	End Height	Structure Backfill		Volume
		( <i>ft</i> )	( <i>ft</i> )	Width	Volume	(cys)
Inside Wall			-	( <i>ft</i> )	(cft)	
Wall along SR 37, i roundabout. Third	in three segments. segment transition	First segment transit 1s from 27 ft back to	ion from 3.98 ft to 2 3.98 ft. Heights in A	27 ft. Second se AutoCAD in ''T	gment stays 27 ft ypicals3.dwg''	all the way through
NB Wall						
299+25.39	305+15.80	4	27	10.84	99164.12	3673
305+15.80	306+69.90	27	27	18.90	78637.23	2912
306+69.90	312+60.85	27	4	10.84	99254.82	3676
SB Wall						
298+37.20	304+29.35	4	27	10.85	99,584,83	3688
304+29.35	305+80.17	27	27	18.90	76963.45	2850
305+80.17	311+72.77	27	4	10.84	99531.95	3686
Additional Area for	r cut (2 ft out and 1	:1 slope out under ro	pad)			
Area by AutoCAD i	in "Typicals3.awg"	r = 15.12  sft	T	4	V. Luni	
ND Wall			Lengin	(aft)	(oft)	
200+25 30	312+60.85		()1)	$(s_{jl})$	20192-16	748
299+23.39	512+00.05		1555	15.12	20192.10	740
SB Wall						
298+37.20	311+72.77		1336	15.12	20193.82	748
					+ +	
		1		ΤΟΤ	AL this page -	21982 3

TOTAL = 25099.0

CYS

			10-7	703		
			SR 37 MOBILITY STUDY SR 32/SR 38			
<i>By</i> :	BWS	4/26/12	Checked By:	BWC	11/24/12	

301-07448

## COMPACTED AGGREGATE, NO. 53, BASE

5,084 TON

Description		Length (ft)	Width (ft)	Depth (ft)	Factor	Weight (Tons)
					(tons/cys)	
Assumptions: Used	MOT Plan for 126	th and Keystone as e	xample MOT Plan	•		
Use 165#/sys of Sur	face and 825#/sys o	of Base)				
MOT Phase I : Rep	lace Existing Outsi	de Shoulders				
Line "A"	NB Outside					
From Begin to End		3300.00	10.00	0.50	2	1222
Line ''A''	SB Outside					
From Begin to End		3300.00	10.00	0.50	2	1222
MOT Phase II: Rep	place Existing Insid	le Shoulders and inst	tall crossovers			
Line "A"	NB Inside					
At Beginning		300.00	19.00	0.50	2	211
At End	~~	570.00	19.00	0.50	2	401
Line "A"	SB Inside					
From Beginning to	Cherry Street	415.00	20.00	0.50	2	307
From Cherry Street	to SR 32	709.00	2.00	0.50	2	53
North of S-Line (exi	sting turn lanes)	631.00	2.00	0.50	2	47
North of ex. Turn la	nes	965.00	20.00	0.50	2	715
Line "A"						
Median crossover a	t end project	400.00	22.00	0.50	2	326
Median crossover a	t begin project	400.00	22.00	0.50	2	326
				<u> </u>		
MOT Phase III: In	stall Temporary Pa	vement across S-Lin	e for NB Ph IV tra	ffic.		
Line "A"		260.00	10.00	0.50	2	252
At S-tine for traffic	on ramp Pn Iv	300.00	19.00	0.50	2	233
					+	
					+	
					+	
					+ +	
					+ +	
					+ +	
		1			+ +	
		1			+ +	
		1			<del>   </del>	
					TOTAL =	5083.3

			10-2	703		
			SR 37 MOBII SR 32/	LITY STUD SR 38	Y	
<i>By:</i>	SRS	5/16/12	Checked By:	ATW	11/25/12	
302-06464		SUBBASE FOR PCCP			15,507	

CYS

Begin Station	End Station	Begin Width	End Width	Area (sft)	Depth (ft)	Volume (cys)
D		2		460880.08	0.75	12052 5
Pavement Area cop	<i>iea jrom 501-0632</i>	5 muilipliea by 9:		409889.08	0.75	13032.3
Outside Area (2° of	n euner side):				┥───┤	
Line "A"						
293+28.79	299+25.38	2.00	2.00	1193.18	0.75	33.1
299+25.38	312+60.85	2.00	2.00	2670.94	0.75	74.2
312+60.85	315+57.89	2.00	2.00	594.08	0.75	16.5
315+57.89	316+29.21	2.00	2.00	142.64	0.75	4.0
316+29.21	319+40.40	2.00	2.00	622.38	0.75	17.3
319+40.40	321+47.60	2.00	2.00	414.40	0.75	11.5
321+47.60	324+47.59	2.00	2.00	599.98	0.75	16.7
293+28.79	295+39.90	2.00	2.00	422.22	0.75	11.7
295+39.90	296+36.81	2.00	2.00	193.82	0.75	5.4
296+36.81	296+81.62	2.00	2.00	89.62	0.75	2.5
296+81.62	297+43.79	2.00	2.00	124.34	0.75	3.5
297+43.79	298+37.20	2.00	2.00	186.82	0.75	5.2
298+37.20	311+72.77	2.00	2.00	2671.14	0.75	74.2
311+72.77	317+10.51	2.00	2.00	1075.48	0.75	29.9
317+10.51	317+76.96	2.00	2.00	132.90	0.75	3.7
317+76.96	321+72.34	2.00	2.00	790.76	0.75	22.0
321+72.34	322+72.77	2.00	2.00	200.86	0.75	5.6
Ramp "SR32 SE"						
10+00.00	12+80.52	Rt	2.00	561.04	0.75	15.6
12+80.52	13+80.52	Rt	2.00	200.00	0.75	5.6
13+80.52	14+08.55	Rt	2.00	56.06	0.75	1.6
14+08.55	16+04.04	Rt	2.00	390.98	0.75	10.9
Add Extra 2' where	there is curb on rai	mp	2.00	0,00,0	0.70	1017
14+08 55	14+85 32	lip	2.00	153 54	0.75	43
14+85.32	16+04.04		4.00	474.88	0.75	13.2
Ramp ''SR32_SW'	10101.01		4.00	171.00	0.75	10.2
$20 \pm 00.00$	21+54.06	I +	2.00	308.12	0.75	86
20+00.00	21+34.00 21+06.00		2.00	84.06	0.75	2.3
21+94.00	21+90.09 26+10.00		2.00	820.62	0.75	23.0
Add Extra 2' where	there is outh on re-		2.00	029.02	0.75	25.0
$20 \pm 00.00$	$\frac{1}{21} + 54.06$		4.00	616.24	0.75	17.1
20+00.00	$21 \pm 34.00$ $21 \pm 06.00$		2.00	010.24 84.06	0.75	2 2
21+34.00 Damp "SD22 MW	21+90.09 ''		2.00	04.00	0.75	2.3
$\frac{1}{40+00.00}$	12 + 20 17	I.	2.00	670.24	0.75	10 0
40+00.00	43+39.17		2.00	0/8.34	0.75	10.0
43+39.17	44+58.09	Lt	2.00	199.04	0.75	3.3
44+38.09	44+59.55	Lt	2.00	41.28	0.75	1.1
44+59.33	44+89.87	Lt	2.00	01.08	0.75	1.7
44+89.87	46+07.08	Lt	2.00	234.42	0.75	6.5
Add Extra 2' where	there is curb on rai	пр	• • • •	60.00	0.77	
44+59.33	44+89.78		2.00	60.90	0.75	1.7
44+89.78	46+07.08		4.00	469.20	0.75	13.0
				SUBTOTAL (1	FHIS PAGE) =	13542.2

			10-2	703	
			SR 37 MOBII SR 32/	LITY STUD SR 38	Y
<i>By:</i>	SRS	5/16/12	Checked By:	ATW	11/25/12
302-06464					

SUBBASE FOR PCCP

CYS

Begin Station	End Station	Begin Width	End Width	Area (sft)	Depth (ft)	Volume (cys)
Damp "SD22 NE"	,					
20+00.00	21 + 70 72	D4	2.00	250 11	0.75	10.0
30+00.00	31+79.72	Rl D4	2.00	\$39.44 \$2.50	0.75	10.0
31+79.72	32+21.47	RI D4	2.00	83.30	0.75	2.3
32+21.47	26+12.50	Rl D4	2.00	104.22	0.75	J.1 16.7
55+15.56	30+13.38	Kl	2.00	000.00	0.75	10.7
Add Exird 2 where $20\pm00.00$	$\frac{21}{76} \frac{76}{46}$	ιp	4.00	705.84	0.75	10.6
30+00.00	31+70.40		4.00	705.84	0.75	2.5
SI+70.40 Cumberland Poad	SP 32 Intersection		2.00	90.02	0.75	2.3
NW Quadrant	<b>5K 52 Intersection</b>	14	2.00		0.75	2.5
NW Quadrani	43.0	151 154	2.00		0.75	2.3
NE Quadrant	40.0	151 154	2.00		0.75	2.2
SE Quadrani	52.0	<i>lji</i> 14	2.00		0.75	1.0
Sw Quaarani	01.0	ijĭ	2.00		0.75	5.4
Roundabout						
outside area (4' offs	set of roundabout are	ea)	subtract inside area			
100576.42			15540.33		0.75	2313.1
			1763.41			
Subtract from brid	ge area:					
				6046.99	0.75	-168.0
Subtract pavement	from moment slab					
1						
NE Wall				7901.96	0.75	-219.5
SE Wall	No Wall					
~					1 1	
SW Wall				8040.83	0.75	-223.4
~						
NW Wall				4156.85	0.75	-115.5
				1100100	0.7.0	11010
					1 1	
Add Approaches at	t Cumberland Road	Intersection			1 1	
North Approach			1	1555	0.75	43.2
South Approach				1636	0.75	45.4
297+25 "A", Lt.				8004	0.75	222.3
, , , , , , , , , , , , , , , , , , , ,						
l						

SUBTOTAL (THIS PAGE) = 1963.9

*TOTAL* = 15506.1

				10-	703	
				SR 37 MOBL SR 32	LITY STUDY /SR 38	7
By:	BWS	4/17/12	_	Checked By:	ATW	11/25/12
303-01180	COM	IPACTED AG	GREGATE, NO	. 53		2,079 TON
Begin Station	End Station		Area (sft)	Volume	Factor	Tons
				(cys)	(T/cys)	
Line "A"		Ļ	<u> </u>			220.54
293+28.79	299+25.38	Rt	5.4	119.32	2.000	238.64
312+60.85	315+57.89	Rt	5.4	50.41	2.000	118 82
315+57.89	321+47.59	Rt Rt	5.4	117.94	2.000	235.88
321+47.59	324+47.59	Rt	5.4	60.00	2.000	120.00
			†	†		
293+28.79	295+39.90	Lt	5.4	42.22	2.000	84.44
295+39.90	298+37.19	Lt	5.4	59.46	2.000	118.92
311+72.77	317+10.51	Lt	5.4	107.55	2.000	215.10
317+10.51	321+72.34	Lt	5.4	92.37	2.000	184.73
321+72.34	322+72.77	Lt	5.4	20.09	2.000	40.17
Ramn "S-4-A SE"	ļ		+	++	<u> </u>	
10+00.00	12+80.52	Rt	5.4	56.10	2.000	112.21
12+80.52	13+80.52	Rt	5.4	20.00	2.000	40.00
	<u> </u>	J				
Ramp ''S-4-A_SW'	<mark>.</mark>	J	┥	╉─────╂	+	
12:14.82	16 - 10.02	I.t.	5.4	70.22	2.000	150 11
12+14.02	10+10.92	Li	J.4	19.22	2.000	138.44
Ramn ''S-4-A NW			+	++	<del> </del>	
10+00.00	13+39.17	Lt	5.4	67.83	2.000	135.67
13+39.17	14+39.17	Lt	5.4	20.00	2.000	40.00
			<u> </u>			
			<u> </u>	<b>I</b>		
Ramp "S-4-A_NE"	<mark></mark>	J	<b></b>	┥───┤	<del> </del>	
12:40.46	12 : 12 50	D+	5.4	14.62	2.000	20.25
12+40.40 13+13.50	15+15.59	Kl Rt	5.4	14.05 60.00	2.000	120.00
13+13.37	10+13.37			00.00	2.000	120.00
	†		+	1 1	†	
Ramp ''S-3-A_NW			1	1 1		
10+00.00	12+14.71	Lt	5.4	42.94	2.000	85.88
			<u> </u>			
<u> </u>		<u> </u>		∤		
<u> </u>		j	<b></b>	┥────┤		
<b> </b> '	┨─────┤	j		╉─────╋	<del> </del>	
1	1	1				

TOTAL =

			10-7	703	
			SR 37 MOBIL SR 32/	LITY STUDY SR 38	7
<i>By</i> :	BWS	4/26/12	Checked By:	BWC	11/24/12
402-10084	HMA	FOR TEMPORARY P	PAVEMENT, B		4,524

TON

Description		Length (ft)	Width (ft)	Area (sys)	Factor	Weight (Tons)
					(#/SYS)	
Assumptions: Used	MOT Plan for 126	th and Keystone as e	xample MOT Plan	•		
Use 165#/sys of Sur	face and 825#/sys o	f Base)				
MOT Phase I : Rest	urface Existing Ou	tside Shoulders				
Line "A"	NB Outside					
From Begin to End		3300.00	10.00	3666.67	165	303
Line "A"	SB Outside					
From Begin to End		3300.00	10.00	3666.67	165	303
MOT Phase II: Rep	lace Existing Insid	le Shoulders and inst	all crossovers			
Line "A"	NB Inside					
At Beginning		300.00	19.00	633.33	990	314
At End		570.00	19.00	1203.33	990	596
Line ''A''	SB Inside					
From Beginning to	Cherry Street	415.00	20.00	922.22	990	457
From Cherry Street	to SR 32	709.00	2.00	157.56	990	78
North of S-Line (exis	sting turn lanes)	631.00	2.00	140.22	990	69
North of ex. Turn la	nes	965.00	20.00	2144.44	990	1062
Line "A"						
Median crossover a	t end project	400.00	22.00	977.78	990	484
Median crossover a	t begin project	400.00	22.00	977.78	990	484
MOT Phase III: Ins	stall Temporary Pa	vement across S-Lin	e for NB Ph IV tra	ffic.		
Line ''A''						
At S-line for traffic	on ramp Ph IV	360.00	19.00	760.00	990	376
				SUBTOTAL (T	(HIS PAGE) =	4523.8

SUBTOTAL (THIS PAGE) =

				10-	703	
				SR 37 MOBL SR 32	LITY STUDY /SR 38	7
By:	srs	4/17/12		Checked By:	BWS	11/24/12
501-06266		PROFILOGR	АРН, РССР			1 LS
Description						LS
Assume 1 lump Su	m for entire project	at \$15k				1.0
					TOTAL	

TOTAL =

				10-7	03	
				SR 37 MOBIL SR 32/S	ITY STUDY SR 38	
By	:SRS	5/15/12		Checked By:	ATW	11/25/12
501-06323		QC/QA	-PCCP, 12 IN			52,210 SYS
Begin Station	End Station	Side	Begin Width	End Width	Area (sft)	Area (sys)
I ine ''A''						
203+28 70	200+25 38	Rt	85.50	85.50	51008.45	5667.6
299+25 38	312+60.85	Rt	45 50	45 50	60763.88	6751 5
312+60.85	315+57.80	Rt	71 50	52.00	18342 22	2038.0
315+57.80	316+29.21	Rt	52.00	52.00	3708 64	<u> </u>
316+20.21	310+29.21	Rt	52.00	52.00	16181.88	1798.0
310+29.21	321+47.60	Rt	50.00	50.00	10360.00	11511
321+47.60	324+47 50	Rt	50.00	38.00	13100.00	1466.6
521 + 77.00	527 + 77.57	111	50.00	50.00	15177.30	1700.0
293+28 70	295+39.00	Lt	57 50	57 50	12138.83	1348 8
295+30.00	296+36.81		83 50	83.50	8091.98	800 1
296+36.81	296+81.62	I t	83 50	77 50	3607.20	400.8
290+30.01	290+01.02 207±13 70		77 50	83 50	5007.20	556 1
290+81.02 $207\pm 43.70$	297+43.79 208+37.20		83.50	83.50	7700 73	866.6
297 + 43.79 $208 \pm 37.20$	311+72.77		45.50	45.50	60768 11	6752.0
$\frac{290+37.20}{311+72.77}$	$317 \pm 10.51$		71.50	55.03	34262.10	3806.0
317+10.51	317+76.06		55.03	58.04	3786.65	<i>420.7</i>
217+76.06	31/+70.90		50.00	50.04	10760.00	420.7
31/+70.90	321+72.34		50.00	28.05	19709.00	401.2
321+72.34 Ramn "SR27 SE	<i>JZZ+/Z.//</i>	Ll	50.00	30.03	4421.43	491.3
$\frac{10 \pm 00.00}{10 \pm 00.00}$	12 + 80 52	D≁	10.00	40.00	11220.80	1216 0
10+00.00	12+00.32		40.00	40.00 50.00	4500.00	500.0
12+80.52	13+80.32	RI Di	40.00	30.00	4300.00	300.0
13+80.52	14+08.55	Rt D(	50.00	49.53	1394.91	155.0
14+08.33 Damp "SD22 SU	10+04.04	Kt	43.33	43.03	8/14.94	908.3
<u>20+00-00</u>	21,54.06	1.	21.60	26.76	4405 47	400.5
20+00.00	21+34.00	Lt	31.00	20.70	4495.47	499.5
21+34.00	21+90.09	Lt	20.70	32.00	1234.84	15/.2
21+90.09	20+10.90	Lt	38.00	38.00	13/02./8	1/51.4
$\frac{100000}{10000}$	1 12 - 20 17	T 4	26.00	26.00	0010 17	070.9
40+00.00	43+39.17		20.00	20.00	0010.42	9/9.8
43+39.1/	44+38.09	Lt	20.00	38.00	3184.04	555.8
44+38.09	44+39.33	Lt	38.00	38.00	/84.32	δ/.1
44+39.33	44+89.8/	Lt	32.00	21.22	907.80	100.9
44+89.8/	40+07.08	Lt	27.43	51.52	3444.22	382.7
Ramn "SR27 NE						
$\frac{1}{30\pm00.00}$	31+70 72	D+	20 52	26.80	515167	572 1
30+00.00 $31\pm70.72$	31+79.72 $32\pm21.47$	Dt	26.25	32.00	1227 15	126 /
31+/9./2	32+21.4/	Kl D₄	20.00	32.00	2500.19	130.4
32+21.4/	33+13.38	Kt D	38.00	38.00	3300.18	388.9
33+13.38	30+13.38	KI	38.00	20.01	9001.30	1000.8
Roundahout						
nounaaboul	aubtra at inside					
ouisiae area	subtract inside area				7251200	0171 5
90840.82	13340.33				/3343.08	81/1.3
	1/03.41					1

SUBTOTAL (THIS PAGE) = 545

				10-	703	
				SR 37 MOBI SR 32	LITY STUDY /SR 38	
By:	SRS	5/15/12		Checked By:	ATW	11/25/12
501-06323		QC/QA-	PCCP, 12 IN			SYS
Begin Station	End Station	Begin Width	End Width		Area (sft)	Area (sys)
Intersection Area a	t SR 32 and Cumb	erland Road			5333.99	592.7
Subtract pavement	from moment slab					
NE Wall					7901.96	-878.0
SE Wall	No Wall					
SW Wall					8040.83	-893.4
NW Wall					4156.85	-461.9
Subtract from bridg	ge area:				6046.99	-671.9

SUBTOTAL (THIS PAGE) = -2312.5

*TOTAL* = 52209.9

SR 37 MOBILITY STUDY SR 32/SR 38	1/25/12
	1/25/12
By:     srs     11/19/12     Checked By:     ATW     11	1/23/12
503-05240 D-1 CONTRACTION JOINT	6,105 LFT
Description Pavement Area Spacing Lea	ngth (ft)
Total Areas taken from 501-06323 (sft) (ft)	8 0./
Line ''S-2-A''	
52,210 469890.00 18.00	26105

SUBTOTAL (THIS PAGE) = 26105.0

*TOTAL* = 26105.0

				10	-703	
				SR 37 MOR	ILITY STUL	)Y
					NGD 28	
				SK 32	/ <b>JK J</b> 0	
By:	SRS	11/24/12		Checked By:	BWS	11/25/12
			-			
601-01522	CILAD			тар		2
	GUAR	ADRAIL, I KAN	SITION TYPE	IGD		EACH
						EACH
						1.0
NE Quadrant						1.0
NW Quadrant						1.0
						1.0
		1				
		}				
					I	

				10	-703	
				SR 37 MOR	LITY STUL	)Y
				SR 37	)/SR 38	
				5K 52	/ <b>SK 3</b> 0	
By:	SRS	11/24/12	_	Checked By:	BWS	11/25/12
601-94689	CUA	DDDAIL END		05		2
	GUA	NDRAIL END	I KEA I WIEN I,	05		EACH
						EACH
NE Quadrant						1.0
ne Quadant						1.0
NW Quadrant						1.0
~						
			ļ	ļ		
		1				
		1				

				10	-703	
				SR 37 MOB	ILITY STUL	DY
				SR 32	2/SR 38	
By:	SRS	11/24/12		Checked By:	BWS	11/25/12
-			•			
601-99105	GUARD	RAIL W-RFAN	/ 6 FT 3 IN SP/	ACING		805
	Genin	<b>RAIL</b> , <b>W</b> - <b>DL</b> AI	<b>1,0115</b> 1(51)	lente		LFT
						LFT
NE Quadrant						490.0
NW Ouadrant						315.0

				10-7	703	
				SR 37 MOBIL SR 32/	LITY STUD SR 38	DY
By:	STS	11/19/12	_	Checked By:	BWS	11/24/12
602-06729		BARRIER DE	ELINEATOR			66 EACH
Begin Station	End Station	Length (ft)	Spacing			Each
Line "A"						
293+28.79	319+40.79	2612.00	40.00			66
				++		
		 		+ +		
				1 1		
				┨────┤		
				+ +		
		 		+ +		
		1	1	+ +		
				┨────┤		
				+ +		

SUBTOTAL (THIS PAGE) = 66.0

TOTAL =

				10-	-703	
				SR 37 MOBI SR 32	LITY STUD 2/SR 38	ЭY
By:	SrS	11/19/12		Checked By:	BWS	11/24/12
602-08603		CONCRETE BA	ARRIER, 45 IN			2,612 LFT
Begin Station	End Station					Length (ft)
<i>Line "A"</i> 293+28.79	319+40.79					2612

SUBTOTAL (THIS PAGE) = 2612.0

*TOTAL* = 2612.0

				10	-703	
				SR 37 MOBI SR 32	ILITY STUL 2/SR 38	ΟY
By:	BWS	11/20/12	-	Checked By:	BWC	11/24/12
603-06040		FENCE, FARM	FIELD, 47 IN			5,738 LFT
Begin Station	End Station			# of Sides		Length (ft)
Line "A"						
293+28.79	304+00.00			2.00		2142
306+50.00	324+47.59			2.00		3595
	ļ					
				<b> </b>		

SUBTOTAL (THIS PAGE) = 5737.6

*TOTAL* = 5737.6

				10-	703	
				SR 37 MOBL SR 32	LITY STUD /SR 38	Y
By:	JPS	11/21/12		Checked By:	BWS	11/24/12
604-07569		PAVI	ERS			491 SYS
Begin Station	End Station					SYS
<i>Line ''S-4-A''</i>						490.8
				SUBTOTAL (TH	HIS PAGE) =	490.8

*TOTAL* = 490.8

				10	-703	
				SR 37 MOBI SR 32	LITY STUD 2/SR 38	θY
By:	JPS	11/21/12		Checked By:	BWS	11/24/12
605-06120		CURB, CO	NCRETE			619 LFT
Begin Station	End Station					LFT
Line ''S-4-A''						
West Side						310
East Side						310
				<u> </u>		

SUBTOTAL (THIS PAGE) = 619.0

				10-7	703	
				SR 37 MOBII SR 32/	LITY STUDY SR 38	
By:	STS	11/19/12		Checked By:	BWS	11/24/12
605-06140	CUR	RB AND GUTT	ER, CONCRETE	E		3,037 LFT
Begin Station	End Station			# of Sides		Length (ft)
Line "S-2-A"				1.00		750
Length of right side	measurea in CAD			1.00		/39
Length of left side n	neasured in CAD			1.00		772
SW Ramp						
20+00.00	21+54.06			2.00		308
21+54.06	21+96.09			1.00		42
NW Ramp						
44+59.33	44+89.78			1.00		30
44+89.78	46+07.08			2.00		235
NE Ramp						
30+00.00	31+76.46			2.00		353
31+76.46	32+21.47			1.00		45
SE Ramp						
14+08.55	14+85.32			1.00		77
14+85.32	16+04.04			2.00		237
Cumberland Road/	SR 32 Intersection					
NW Quadrant						46
NE Quadrant						40
SE Quadrant	<u>                                     </u>					32
Sw Quaarant						01
			<b>├</b> ────┤			
			ļ			
			<u>├</u> ────┤			
	+		<u> </u>			
				SUBTOTAL (TH	$\overline{ISPAGE} =$	3036.9

SUBTOTAL (THIS PAGE) = 

TOTAL =

				10-703	
				SR 37 MOBILITY SR 32/SR 3	STUDY 8
By:	JPS	11/21/12	-	Checked By:BV	VS 11/24/12
605-06145	CUR	B AND GUTTE	CR, B, CONCRET	ſE	846 LFT
Begin Station	End Station				LFT
Line ''S-4-A''					845.7
		1	1	SUBTOTAL (THIS PA	GE = 845.7

				10	-703	
				SR 37 MOBI SR 32	LITY STUD 2/SR 38	θY
By:	srs	11/19/12		Checked By:	JPS	11/21/12
605-06255	Cl	ENTER CURB,	D, CONCRETE			346 SYS
Begin Station	End Station			Area (sft)		Area (sys)
Line ''S-4-A''						
Area of Center curb	o approaching round	about		1526.83		170
Area of Center curb	departing roundabo	out		1581.30		176

SUBTOTAL (THIS PAGE) = 345.3

*TOTAL* = 345.3

				10-	-703	
				SR 37 MOBI SR 32	LITY STUD 2/SR 38	Y
By:	BWS	11/24/12		Checked By:	BWC	11/25/12
610-08516	PC	CCP FOR APPR	OACHES, 12 IN			1,303 SYS
Station				Area (sft)		SYS
Cumberland Road/	SR 32 Intersection					
North Approach				1555		172.8
South Approach				1030		181.8
29725 "A",LT				8004		889.3
1224 "S-4-A", Lt				531		59.0

TOTAL =

				10	-703	
				SR 37 MOBI SR 32	ILITY STUD 2/SR 38	θY
By:	SRS	4/4/12		Checked By:	BWS	11/24/12
610-09108	P	CCP FOR APPR	ROACHES, 9 IN			60 SYS
Station				Area (sft)		SYS
				· · ·		
Line ''S-1-A''						
Driveway @ Sta. 12	2+24.37	Lt		531.16		59.0
			ļ			

TOTAL =

			10-703	
			SR 37 MOBILITY STU SR 32/SR 38	DY
By:	BWS	11/20/12	Checked By: <u>BWC</u>	11/24/12
615-06510		MONUMEN	Т, С	5 EACH
Alignment	Station	Description	Inside Pavement?	Each
Line ''S-4-A''				

<i>Line ''S-4-A''</i>				
	10+98.00	Begin Project	Yes	
	15+72.04	PC	Yes	
	16+24.16	PI	Yes	
	16+76.27	PT	Yes	
	21+25.98	End Project	Yes	
Line "A"				
	293+28.79	Begin Project	Yes	
	300+61.42	PT	Yes	
	305+49.19	Int	Yes	
	315+00.00	Between Int and EP	Yes	
	324+47.59	End Project	No	1
SW Ramp				
	20+00.00	Begin Project, PC	Yes	
	21+09.69	PI	No	1
	21+96.09	PT	Yes	
	23+83.56	PC	Yes	
	24+97.26	PI	Yes	
	26+10.90	End Project	Yes	
NW Ramp	40+00.00	Begin Project	Yes	
	44+59.33	PC	Yes	
	45+36.76	PI	No	1
	46+07.08	End Project, PT	Yes	
NE Ramp	30+00.00	Begin Project, PC	Yes	
	31+16.06	PI	No	1
	32+21.47	PT	Yes	
	36+13.58	End Project	Yes	
SE Ramp	10+00.00	Begin Project	Yes	
	10+67.08	PI	Yes	
	11+34.14	PT	Yes	
	14+08.55	PC	Yes	
	15+09.91	PI	No	1
	16+04.04	End Project, PT	Yes	
			artismont i (mitia	

SUBTOTAL (THIS PAGE) = 5.0

TOTAL = 5.0

			10-	703		
			SR 37 MOBI SR 32/	SR 37 MOBILITY STUDY SR 32/SR 38		
<i>By</i> :	BWS	11/20/12	Checked By:	BWC	11/24/12	
615-06515	MONUMENT, D					
Alignment	Station	Description	Inside Pavement?		Each	
Line ''S-4-A''		· ·				
	10+98.00	Begin Project	Yes		1	
	15+72.04	PC	Yes		1	
	16+24.16	PI	Yes		1	
	16+76.27	PT	Yes		1	
	21+25.98	End Project	Yes		1	
Line "A"						
	293+28.79	Begin Project	Yes		1	
	300+61.42	PT	Yes		1	
	305+49.19	Int	Yes		1	
	315+00.00	Between Int and EP	Yes		1	
	324+47.59	End Project	No			
SW Ramp						
	20+00.00	Begin Project, PC	Yes		1	
	21+09.69	PI	No			
	21+96.09	PT	Yes		1	
	23+83.56	PC	Yes		1	
	24+97.26	PI	Yes		1	
	26+10.90	End Project	Yes		1	
NW Ramp	40+00.00	Begin Project	Yes		1	

44+59.33

45+36.76

46+07.08

30+00.00

31+16.06

32+21.47

36+13.58

10+00.00

10+67.08

11+34.14

14+08.55

15+09.91

16+04.04

NE Ramp

SE Ramp

PC

PI

End Project, PT

Begin Project, PC

PI

PT

End Project

Begin Project

PI

PT

PC

PI

End Project, PT

TOTAL =

Yes

No

Yes

Yes

No

Yes

Yes

Yes

Yes

Yes

Yes

No

Yes

25.0

1

1

1

1

1

1

1

1

1

1

	10-703					
				SR 37 MOB	LITY STUL	ОY
				SR 32	2/SR 38	
n	D 17	4/05/10			DUVC	11/04/10
By:	DJZ	4/25/12		Checked By:	BWS	11/24/12
621 01004	MORII 17		FMORII 17ATI	ON FOR		4
021-01004		SEED	ING	ONFOR		4 54 <i>C</i> H
		0LLD	nto			LACII
<u> </u>						
Station						EACH
Use a Tetal of A fee	Entire Ducient					4.0
Use a 10tal of 4 foi	r Enure Frojeci					4.0

		10-703				
				~~		
				SR 37 MOBIL	LITY STUDY	, ,
				SR 32/	SR 38	
By:	DJZ	4/25/12	_	Checked By:	BWS	11/24/12
621-06545		FERTI	LIZER			4
						TON
Description		Area		Application		Ton
				Rate		
				(10/40)		
Area of Permanent	Seeding =	6.72	ac	800		2.7
Area of Temporary	Seeding =	3 36	ac	800		13
		5.50		000		1.5
				_		
				+ +		
				_		
				+ +		
				+		
				+ +		
		<u> </u>		++		
				+ +		
		ļ		+		
				+ +		
				1		
					TOTAI -	10

			10-703				
				SR 37 MOBIL SR 32/S	ITY STUDY SR 38		
Ву	DJZ	4/25/12	-	Checked By:	BWS	11/24/12	
621-06554		SEED MIX	TURE, U			1,144 LBS	
Description			Area	Units		LBS	
NE	Area from AutoCAD		98360.8	sft			
NW	Area from AutoCAD		88415.17	sft			
SE	Area from AutoCAD		73910.87	sft			
SW	Area from AutoCAD		58135.34	sft			
	Total Seeding		35424.69 <b>7.32</b>	sys ac			
	Total Sodding		2878.00 <b>0.59</b>	sys ac			
	Total Seed Area     Application Rate		6.72 170	ac #/ac		1143.2	
					TOTAL -	11/3 2	

			10-703			
				SR 37 MOB SR 32	ILITY STUL 2/SR 38	)Y
By:	DJZ	4/25/12	_	Checked By:	BWS	11/24/12
621-06557		SEED MIX	TURE, T			505 LBS
Description		Area		Application Rate		LBS
Entire Project		3.36	ac	150	#/ac	504.3
					TOTAL =	504.3

				10-703			
				SR 37 MOBI SR 32	LITY STUL /SR 38	θY	
<i>By</i> :	DJZ	4/25/12		Checked By:	BWS	11/24/12	
621-06565		MULCHING N	MATERIAL			21 TON	
Description			Area	Application Rate		LBS	
Entire Project							
Seed Mixture, T			3.36				
Seed Mixture, U			6.72				
			10.09	2.00	Tons/ac	20.2	
					TOTAL =	20.2	

		10-703					
				SR 37 MOBI SR 32	LITY STUD /SR 38	Y	
By:	DJZ	4/25/12		Checked By:	BWS	11/24/12	
621-06567		WAT	ER			12 kGAL	
Description					Rate (kGAL/sys)	kGAL	
Area of Sodding =		2878.00	sys		0.004	11.5	
					TOTAL	11.5	
			10-703				
---------------------	-------------	---------	--------	-----------------------	---------	-------------	--
				SR 37 MORI		V	
				SK 37 MOBII SR 32/	/SR 38	L	
Bur	דות	1/25/12		Chackad By:	BWS	11/24/12	
By.	DJL	4/23/12	-	Checkeu By.	DWS	11/24/12	
621-06574		SODD	ING			2,878	
					SYS		
Begin Station	End Station		Width	Factor		Area SYS	
						515	
NB							
293+29	324+49		2.67			925.8	
SB							
293+29	322+73		2.67			873.3	
<u>NB</u> 293+29	324+49		16	0.1		554.8	
	021117		10	0.1			
$\frac{SB}{293+29}$	322+73		16	0.1		523 3	
	522 175		10	0.1		525.5	
				+			
				+ +			
				+ +			
					TOTAL -	2877 2	

	10-703					
			S	SR 37 MOBIL SR 32/	LITY STUD SR 38	Y
By:	DJZ	4/17/12		Checked By:	BWS	11/24/12
628-08520	628-08520 CELLULAR TELEPHONE/RADIO					2 EACH
Description						Each
Assume 2 for the e	ntire project.					2.0
						2.0

SUBTOTAL (THIS PAGE) = 2.0

*TOTAL* = 2.0

	10-703				
				SR 37 MOBILITY STUI SR 32/SR 38	DY
By:	DJZ	4/17/12		Checked By: <u>BWS</u>	11/24/12
628-08521 CELLULAR TELEPHONE/RADIO SERVICE					36 MOS
Description					Months
Assume 2 phones f	or the entire project	with a project durat	tion of 18 months		36.0
I 0					
	1	l	I	SUBTOTAL (THIS PAGE) =	36.0

TOTAL =

36.0

				10-	703	
				SR 37 MOBI SR 32/	LITY STUDY /SR 38	7
By:	DJZ	4/17/12		Checked By:	BWS	11/24/12
628-09403		FIELD OF	FICE, C			18 MOS
Description				<u> </u>		Months
Assume a project d	uration of 18 month	s.				18.0
				SUBTOTAL (TH	HS PAGE) =	18.0

SUBTOTAL (THIS PAGE) =

*TOTAL* = 18.0

		10-703				
		SR 37 MOBILITY STUDY SR 32/SR 38				
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
701-90386	Т	EMPORARY S	HEET PILING			1 LS
Description						Area (sft)
Assumptions: Used	MOT Plan for 126t	h and Keystone as e	xample MOT Plan.	Will need wall fo	or Phase III.	
For the Under ontic	on, assume 14.5 feet	of elevation change	e for SR 37 and rem	aining grade by S	S-line.	
Assume 485' at 3%	to get back to grade	on either side of th	e bridge, and 200' o	f 14.5' wall.		
			Total =	12357.00	sft	
SR 37 will go UND.	ER SR 32					
Use 12375 sft at \$2.	5/sft for a lump sum	unit cost of \$308.9	25			1.0

			10-703				
			SR 37 MOBILITY STUDY SR 32/SR 38				
By:	STS	11/19/12	-	Checked By:	BWS	11/24/12	
706-08496	REINFORG	CED CONCRET	E MOMENT SL	AB, 12 IN		2,234 SYS	
Description	Area						
	(sft)						
All areas measure	d in AutoCAD, ''SR	S Working.dwg'' on	layer ''Moment Slab	"			
NE Wall	7901.96					878	
SE Wall	No wall					0	
SW Wall	8040.83					893	
NW Wall	4156.85					462	
						l	

SUBTOTAL (THIS PAGE) = 2233.3

*TOTAL* = 2233.3

	10-703						
				SR 37 MOBILITY STUDY SR 32/SR 38			
By:	srs	11/19/12		Checked By:	BWS	11/24/12	
706-09545	(	COARSE AGGR	REGATE, NO 8			559 CYS	
Description				Area (sft)	Depth(ft)	Volume (cys)	
All areas measured	l in AutoCAD, ''SRS	Working.dwg'' on l	layer ''Moment Slab	"			
NF Wall				7901.96	0.75	219	
NE Wat				7901.90	0.75	219	
SE Wall				No wall			
SW Wall				8040.83	0.75	223	
NW Wall				1156.85	0.75	115	
IV VV VVall				4150.05	0.75	115	
					<b></b>		
	1	1					

SUBTOTAL (THIS PAGE) = 558.3

*TOTAL* = 558.3

				10-703	
	SR 37 MOBILITY ST SR 32/SR 38				Y
By:	STS	11/24/12		Checked By: <u>BWS</u>	11/25/12
706-09959		RAILING, COM	NCRETE, FT		6,361 LFT
Description	Length				
RAMP TOP RIGH	(ft) T RAILING				
NE Wall	488.73				489
SE Wall	no wall				0
SW Wall	594.29				594
NW Wall	240.01				240
RAMP TOP LEFT NB Wall	TRAILING				
299+25.39	305+15.80				590.4
306+69.90	312+60.85				590.9
SB Wall					
298+37.20	304+29.35				592.1
305+80.17	311+72.77				592.6
INSIDE WALL BO	DTTOM RAILING				
NB Wall					
299+25.39	312+60.85				1335.5
SB Wall					
298+37.20	311+72.77				1335.6
				SUBTOTAL (THIS PAGE) =	6360.2

*TOTAL* = 6360.2

		10-703					
						7	
				SR 37 MOBIL	ITY STUDI		
				SR 32/3	SR 38		
Dave	<b>6</b> 110	11/10/12		Cheeked Dry	DWC	11/24/12	
Ву:	STS	11/19/12		Checked By:	BWS	11/24/12	
715-05048	I	PIPE, TYPE 4 C	IRCULAR 6 IN			14,354	
		,				LFT	
Begin Sta.	End Sta.					LFT	
T * II A II				1.			
Line "A"	224 - 47 50	Assu	me both sides and m	eulan		0256 4	
293+28.79	524+47.59					9336.4	
Line ''S-4-C''		Assume	hoth sides outside on	d median			
10+00.00	22+49 36	Assuille				4997 4	
10100.00	22 T7.30	1		<u> </u>		r7711T	
	1	1		<u> </u>			
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	1						
	l				TOTAL -	1/252 0	

<section-header>     Prime   rs   11/102   Checked Brie   BW   11/24/2     715-0503   PDF, UNDERDRAIN, OUTLET 6 IN   32 ft   32 ft     100000   224:47.59   400   27/0   20.60     1000000   224:49.36   400   27/0   108/0     1000000   224:49.36   400   27/0   108/0     1000000   224:49.36   400   27/0   108/0     1000000   224:49.36   400   27/0   108/0     1000000   224:49.36   400   27/0   108/0     1000000   224:49.36   400   27/0   108/0     1000000   224:49.36   400   27/0   108/0     1000000   224:49.36   400   27/0   108/0     1000000   224:49.36   400   27/0   108/0     1000000   100000   10000   10000   10000     1000000   10000   10000   10000   10000     1000000   10000   10000   10000   10000     10000000   100000   100000   100000   <t< th=""><th></th><th></th><th></th><th></th><th>10-</th><th>703</th><th></th></t<></section-header>					10-	703	
By:     srs     11/19/12     Checked By:     BWS     11/24/12       715-05053     PIPE, UNDERDRAIN, OUTLET 6 IN     324 LFT       Begin Station     Interval     Outlet Length     LFT       Une "A"     203-28.79     324+47.59     400     27.00     216.0       Line "S4.C"     10100.00     22149.36     400     27.00     108.0       10100.00     22149.36     400     27.00     108.0       10100.00     22149.36     400     27.00     108.0       10100.00     22149.36     400     27.00     108.0       10100.00     22149.36     400     27.00     108.0       10100.00     22149.36     400     27.00     108.0       10100.00     22149.36     400     27.00     108.0       10100.00     22149.36     400     27.00     108.0       10100.00     108.0     108.0     108.0     108.0       10100.00     108.0     108.0     108.0     108.0       10100.00     100.0					SR 37 MOBI SR 32	LITY STUD /SR 38	θY
715-0503 PIPE, UNDERDRAIN, OUTLET 6 IN 324 LFT   Begin Station End Station Interval Outlet Length IFT   1000.00 22149.36 400 27.00 216.0   Line "S-4C" Interval Interval Interval   10.00.00 22149.36 400 27.00 Interval   Interval Interval Interval Interval   Interval Interval Interval Interval   Interval Interval Interval Interval   Interval Interval Interval Interval   Interval Interval Interval Interval   Interval Interval Interval Interval   Interval Interval Interval Interval   Interval Interval Interval Interval   Interval Interval Interval Interval   Interval Interval Interval Interval   Interval Interval Interval Interval   Interval Interval Interval Interval   Interval Interval Interval Interval   Interval Interval Interval Interval   Interval	By:	srs	11/19/12	-	Checked By:	BWS	11/24/12
Begin Station     End Station     Interval     Outlet Length     I.FT       293+28.79     324+47.59     400     27.00     216.0       Line "S4.C"	715-05053	PIP	E, UNDERDRA	IN, OUTLET 6	IN		324 LFT
Line "A" 293+28.79 324+47.59 400 27.00 21.00 216.0 Line "S-4-C" 22+49.36 400 27.00 108.0 Line "S-4-C" 108.0 10+00.00 22+49.36 400 27.00 108.0 10+00.00 22+49.36 400 27.00 108.0 10+00.00 22+49.36 400 27.00 108.0 10+00.00 22+49.36 400 27.00 100 108.0 10+00.00 20-49.36 400 27.00 100 108.0 10+00.00 Begin Station	End Station	Interval	Outlet Length			LFT	
	Line "A" 293+28.79	324+47.59	400	27.00			216.0
	Line ''S-4-C''						
	10+00.00	22+49.36	400	27.00			108.0
Image: Constraint of the second se							
						TOTAL -	324.0

				10-703	
				SR 37 MOBILITY STUD SR 32/SR 38	Y
By:	BWS	11/19/12		Checked By: <u>BWC</u>	11/24/12
715-05149	PI	PE, TYPE 2 CI	RCULAR 12 IN		5,593 LFT
Station					Lft
Use 300' inlet snav	ina				
Line "A"	Median Inlets				
Line 11	median miers				80
					92
					38
				†	296
					296
					296
					246
					246
					296
					296
					296
					38
Line "A"	Outside Wall Inlets				
	Rt				54
	Lt				54
	Rt				66
	Lt				54
	Rt				38
	Lt				38
	Rt				38
	Lt				38
	Rt				66
	Lt				66
	Rt				54
	Lt				66
Line ''S-4-A''	ļ				1.55
10+50.00					157
11+50.00	ļ				182
12+70.00			├		151
13+50.00				ł	1/3
14+30.00					JJU 651
18+30.00			<u> </u>		001
19+30.00					1/2
20+30.00			├		10/
21+30.00 22+50.00			├		10/
22+30.00			}		07
<u>k</u>	1		I	SUBTOTAL (THIS PAGE) =	5592.4

*TOTAL* = 5592.4

	10-703					
				SR 37 MOBII SR 32/	LITY STUD (SR 38	Y
By:	BWS	11/19/12		Checked By:	BWC	11/24/12
715-09064	V	IDEO INSPECT	TION FOR PIPE			5,593 LFT
Station						Lft
Total Length of Pi	pe Item # 715-05149	-				
						5593
				SUBTOTAL (TH	IIS PAGE) =	5593.0

*TOTAL* = 5593.0

				10-	703	
				SR 37 MOBI SR 32	LITY STUD /SR 38	Y
By:	STS	11/19/12		Checked By:	BWS	11/24/12
718-06528		OUTLET PRO	DTECTOR, 1			12 EACH
Begin Station	End Station	Interval				EACH
Line "A"						
293+28.79	324+47.59	400				8
Line "S-4-C"						
10+00.00	22+49.36	400				4
				ļ		
	•		•		TOTAL -	12.0

				10-	-703	
				SR 37 MOBI	LITY STUL	)Y
				SR 32	2/SR 38	
By:	srs	11/19/12		Checked By:	BWS	11/24/12
718-06532	VIDEO	INSPECTION I	FOR UNDERD	RAINS		3,000
						LFT
Dogin Station	End Station	Intomal				IET
begin Station	Ena Station	Intervat				LF I
Total length of und	erdrain from 715-0	5048	14354.00			
		-				
Refe	er to IDM Figure 52	-10B Ler	ngth>3000 and <30,	000		3000
	l		l			
					TOTAL =	3000.0

				10-	703	
				CD 27 MODI		V
				SK 37 MOBL		Y
				SR 32	/SR 38	
By:	STS	11/19/12		Checked By:	BWS	11/24/12
Dy.	515	11/1//12		checked by.	<i>DW</i> 5	11/24/12
718 52610						1 202
/10-52010	AGO	GREGATE FOR	R UNDERDRAI	NS		1,292 CMC
						CYS
		Tota	al Length of Undera	lrain	Factor	Volume (cvs)
			(ft)	IDM Fig 17-4A	(cvs/lft)	
Total length of und	lerdrain from 715-03	5048	14354.00		0.090	1291.9
	<u> </u>			† †		
				1		
				1		
				1		
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				<u>                                     </u>		
					TOTAL	1201.0

				10-	703	
				SR 37 MORL	LITY STUD	Y
				SR 37 MODI	/SP 38	1
				SK 52	<b>SK 30</b>	
By:	srs	11/19/12		Checked By:	BWS	11/24/12
				_		
718-99153	CEC	TEVTH ES EO		TNI		9,836
	GEU	JIEATILES FU	OR UNDERDRA			SYS
<b>K</b>						
		Tota	al Length of Under	lrain	Factor	Area (sys)
			( <i>ft</i> )	IDM Fig 17-4A	(sft/lft)	00051
Total length of und	lerdrain from 715-0:	5048	14354.00		6.17	9835.1
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				+ +		
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					TOTAL	0025 1

				10-703		
				SR 37 MOBILITY SR 32/SR .	7 STUDY 38	
B	y: <u>BWS</u>	5/11/12		Checked By:B	WC 11/24	//12
720-07300	INLET,	TYPE H, WIT	H SLOTTED DI	RAIN	12 EA(	2 CH
Station					Eac	h
Use 300' inlet sn	acino					
Line "A"	Median Inlets					
					1	
					1	
	Sag				1	
	Sag				1	
					1	
Line "A"	Outside Wall Inlats					
Line A	Rt				1	
	Lt				1	
	Rt I t				1	
	Li				1	
				SUBTOTAL (THIS P	AGE = 12.	0

*TOTAL* = 12.0

				10	-703	
				SR 37 MOBI SR 32	ILITY STUD 2/SR 38	ΟY
By	y: <u>BWS</u>	5/11/12		Checked By:	BWC	11/24/12
720-07302	INLET,	TYPE HA, WII	TH SLOTTED D	PRAIN		12 EACH
Station						Each
Use 300' inlat sn	noina					
Line "A"	Outside Wall Inlets					
	Lt Outside Wall		L			1
	Lt Inside Wall					1
	Rt Outside Wall					1
	Rt Inside Wall					1
	T. T. 1 TT. 11					1
	Lt Inside Wall					<u> </u>
	It Inside Wall					1
	Rt Inside Wall					1
	Lt Outside Wall					1
	Lt Inside Wall					1
	Rt Outside Wall					1
	Rt Inslae Wall					1
l			l			

SUBTOTAL (THIS PAGE) = 12.0

*TOTAL* = 12.0

				10-7	703	
				SR 37 MOBIL SR 32/	LITY STUDY SR 38	7
By:	BWS	11/19/12	_	Checked By:	BWC	11/24/12
720-45410		MANHO	DLE, C4			12 EACH
Station						Each
Use 100' inlet spacie	na					
Line "S-4-A"	<b>0</b> utside Curh and C	utter Inlets				
10+50	Lt		1	+ +		1
11+50	Lt		1			1
12+70	Lt		1			1
13+50	Lt		1			1
14+50	Lt		1		İ	1
15+24	Lt					1
17+23	I +					1
$\frac{17+23}{18+50}$						1
10+50						1
$\frac{19+50}{20+50}$	Li I t					1
20+50 21+50	Lt					1
21+50	$\frac{Lt}{Lt}$					1
22.00	20					•
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				SUBTOTAL (TH	IS PAGE) =	12.0

SUBTOTAL (THIS PAGE) =

TOTAL = 12.0

				10-2	703	
				SR 37 MOBII SR 32/	LITY STUDY SR 38	
By:	BWS	11/19/12		Checked By:	BWC	11/24/12
720-98174		INLET,	, B15			12 EACH
Station						Each
Use 100' inlet spaci	na					
$I in \rho "S_{-} A_{-} A"$	<u>"8</u> Outside Curb and O	Sutter Inlets		+ +		
$\frac{10\pm50}{10\pm50}$	Rt	uner miers		+ +		1
10+50 11+50						1
12+70	Rt			+ +		1
13+50	Rt Rt					1
14+50	Lt			+ +		1
14+50	Rt			1 1		1
18+50	I t			++		1
18+50	Rt					1
19+50	Rt			+ +		1
20+50	Rt					1
2.1+50	Rt			+ +		1
22+50	Rt			+ +		1
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				SUBTOTAL (TH	US PAGE) =	12.0

SUBTOTAL (THIS PAGE) =	
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*TOTAL* = 12.0

				10	-703	
				SR 37 MOBI SR 32	ILITY STUD 2/SR 38	ΟY
By:	BWS	11/19/12		Checked By:	BWC	11/24/12
720-98555		INLET	, C15			12 EACH
Station						Each
Use 100' inlet spac	ing					
Line "S-4-A"	Outside Curb and C	Gutter Inlets				
10+50	Lt					1
11+50	Lt					1
12+70	Lt					1
13+50	Lt					1
14+50	Rt			L		1
17150	<u> </u>					1
18+50	Lt					1
18+50	Rt					1
19+50	Lt					1
20+50	Lt					1
21+50	Lt					1
22+50	Lt					1
L						
				GIVE BOBIN		10.0

SUBTOTAL (THIS PAGE) = 12.0

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*TOTAL* = 12.0

			10-703						
				SR 37 MOBI SR 32	LITY STUI /SR 38	DY			
By:	SRS	11/24/12		Checked By:	srp	11/26/12			
731-93945	FACE PANELS, CONCRE				57,288 SFT				
Segment	Length	Begin Height	End Height						
-									
	( <i>ft</i> )	<i>(ft)</i>	(ft)						
Since the wall is cu	(ft) rved and extends bet	( <b>ft</b> ) ween two alignments	<b>(ft)</b> s (mainline and ram	p), all lengths mea	sured in Auto	CAD for better accuracy.			
Since the wall is cu Segments measure	(ft) rved and extends bet 2d in the direction of	(ft) ween two alignments `travel. Not every wa wall looks like. *	(ft) s (mainline and ram ill has all 3 segment = measured directl	p), all lengths mea ts. Assumptions mo y in AutoCAD.	sured in Auto ade on lengths	CAD for better accuracy. depending on what the			
Since the wall is cu Segments measure Segment 1 = Transa	(ft) rved and extends bet ed in the direction of tion from 4 ft to 7 ft	(ft) ween two alignments 'travel. Not every wa wall looks like. *	(ft) s (mainline and ram Ill has all 3 segment = measured directl	p), all lengths mea ts. Assumptions ma y in AutoCAD.	sured in Auto ade on lengths	CAD for better accuracy. c depending on what the			
Since the wall is cu Segments measure Segment 1 = Transe Segment 2 = 7 ft (a	(ft) rved and extends bet ed in the direction of ition from 4 ft to 7 ft round curve)	(ft) ween two alignments `travel. Not every wa wall looks like. *	(ft) s (mainline and ram Ill has all 3 segment = measured directl	p), all lengths mea ts. Assumptions ma y in AutoCAD.	sured in Auto ade on lengths	CAD for better accuracy. depending on what the			
Since the wall is cu Segments measure Segment 1 = Transu Segment 2 = 7 ft (a Segment 3 = Transu	(ft) rved and extends bet ed in the direction of ition from 4 ft to 7 ft round curve) tion from 7 ft to 4 ft	(ft) ween two alignments `travel. Not every wa wall looks like. *	(ft) s (mainline and ram ill has all 3 segment = measured directl	p), all lengths mea ts. Assumptions ma y in AutoCAD.	sured in Auto ade on lengths	CAD for better accuracy. depending on what the			
Since the wall is cu Segments measurd Segment 1 = Transt Segment 2 = 7 ft (a Segment 3 = Transt	(ft) rved and extends bet ed in the direction of ition from 4 ft to 7 ft round curve) ition from 7 ft to 4 ft	(ft) ween two alignments 'travel. Not every wa wall looks like. *	(ft) s (mainline and ram ill has all 3 segment = measured directl	p), all lengths mea ts. Assumptions ma y in AutoCAD.	sured in Auto ade on lengths	CAD for better accuracy. c depending on what the			

	00	09	00			
Since the wall is cu	urved and extends betw	een two alignmen	ts (mainline and rai	mp), all lengths me	easured in AutoCA	AD for better accuracy.
Segments measur	ed in the direction of t	ravel. Not every w wall looks like 3	all has all 3 segmei * – measured direc	nts. Assumptions i the in AutoCAD	nade on lengths d	lepending on what the
Segment 1 = Trans	ition from 4 ft to 7 ft	wall looks like.	- meusureu alleci		T T	
Segment $2 = 7$ ft (a)	round curve)					
Segment $3 = Trans$	ition from 7 ft to 4 ft					
~ - 0						
NE Wall	488.73					
Sagmont 1	244.37	Λ	11			1833
Segment 2	244.37	4	11			2688
Segment 2	244.37	11	11		+ +	2000
Segment S						
SE Wall						
No wall				-		
SW Wall	504 20				+ +	
SW Wan	574.27					
Segment 1	74.29	4	11			557
Segment 2	222.86	11	11			2451
Segment 3*	297.15	11	4			2229
NW Wall	240.01					
Segment 1						
Segment 2	240.01	11	11			2640
Segment 3						
				<u>S (211 00226)</u>		
INSIDE WALL AI	KEAS COPIED FROM	M SIRUCIURE I	SACKFILL AKEAS	5 (211-09226)		
INB Wall					+ +	
299+25.39	305+15.80	4	27			9145
305+15.80	306+69.90	27	27			4161
306+69.90	312+60.85	27	4			9154
SB Wall						
200 27.20	204, 20, 25	4	27			0170
298+37.20	304+29.35	4	27		+	9178
304+29.35	305+80.17	27	27		+ +	4072
305+80.17	311+72.77	27	4		+	9179
	+ +				+	
	+ +				+ +	

TOTAL =

57287.8

	10-703						
				SR 37 MOBIL SR 32/	LITY STUD SR 38	Y	
By:	SRS	11/24/12		Checked By:	srp	11/26/12	
731-93946		WALL ER	ECTION			57,288 SFT	
Segment	Length	Begin Height	End Height				
	(ft)	(ft)	(ft)				
Segment 1 = Transi Segment 2 = 7 ft (an	tion from 4 ft to 7 ft round curve)	wall looks like. *	= measured direct	ly in AutoCAD.			
Segment 3 = Transi	tion from 7 ft to 4 ft						
NE Wall	488.73						
Segment 1	244.37	4	11			1833	
Segment 2	244.37	11	11			2688	
Segment 3				+ +			
SE Wall							
No wall							
SW Wall	594.29						
Segment 1	74.29	4	11			557	
Segment 2	222.86	11	11			2451	
Segment 3*	297.15	11	4			2229	
NW Wall	240.01						
Segment 1							
Segment 2	240.01	11	11			2640	
Seoment 3							

Segment 3					
INSIDE WALL AF	REAS COPIED FROM	M STRUCTURE B	ACKFILL AREAS	S (211-09226)	
NB Wall					
299+25.39	305+15.80	4	27		9145
305+15.80	306+69.90	27	27		4161
306+69.90	312+60.85	27	4		9154
SB Wall					
298+37.20	304+29.35	4	27		9178
304+29.35	305+80.17	27	27		4072
305+80.17	311+72.77	27	4		9179
					OTAL = 57287.8

57287.8

				10	-703	
				SR 37 MOBI SR 32	ILITY STUD 2/SR 38	Y
By:	SRS	11/24/12		Checked By:	srp	11/26/12
731-93947 LEVELING PAD, CONCRETE						3,995 LFT
Description	Length					
	( <i>ft</i> )					
NE Wall	488.73					489
SE Wall	no wall					0
SW Wall	594.29					594
NW Wall	240.01					240
INSIDE WALL AI	L REAS COPIED FRO	 DM STRUCTURE B	ACKFILL AREAS (	(211-09226)		
NB Wall						
200 + 25 30	305 + 15 80					500
305+15.80	306+69.90					154
306+69.90	312+60.85					591
SB Wall						
298+37.20	304+29.35					592
304+29.35	305+80.17					151
305+80.17	311+/2.//					593
	+					
	<u> </u>					
	1					

SUBTOTAL (THIS PAGE) = 3994.1

*TOTAL* = 3994.1

				10-	703	
				SR 37 MOBI SR 32	LITY STUDY /SR 38	
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-01093	TEMPOR	ARY WORKSI ASSEN	FE SPEED LIM IBLY	IT SIGN		4 EACH
Description						Each
Assumptions · Used	MOT Plan for 1261	h and Kovstone as e	wample MOT Plan			
Assumptions. Osea		n unu Keysione us e				
Use 2 at each end o	of SR 37 for every pl	ase of MOT				4
		<u> </u>				
				SURTOTAL (TI	HS PAGE) -	40

*TOTAL* = 4.0

				10-	703	
				SR 37 MOBL SR 32	LITY STUD /SR 38	Y
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-03290		CONSTRUCT	ION SIGN, C			2 EACH
Description						Each
Assumptions: Used	MOT Plan for 126	th and Keystone as e	xample MOT Plan.			
Ilso 1 at each and a	of SR 37 for every pl	hase of MOT				2
	j SK 57 joi every pi					2
				SUBTOTAL (TH	HSPAGE) =	2.0

TOTAL =	2.

.0

				10-	-703	
				SR 37 MOBI SR 32	LITY STUD) 2/SR 38	7
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-04308	ROA	AD CLOSURE S	SIGN ASSEMBL	Ŋ		4 EACH
Description						Each
Assumptions: Used	MOT Plan for 126	th and Keystone as e	example MOT Plan.			
MOT Phase III						
Use one at each en	d of the S-Line					2
MOT Phase IV Use one at each en	d of the S-Line					2
MOT Phase V						
Use one at each en	d of the S-Line					4
				77	ichest T-t-1	4
				H	ignest Total =	4
				SUBTOTAL (T	HIS PAGE) =	40

*TOTAL* = 4.0

	10-703				
			SR 37 MOBI SR 32	LITY STUL 2/SR 38	ΟY
By:BV	WS 4/26/12		Checked By:	BWC	11/24/12
801-06625	DETOUR ROUTE	MARKER ASSEN	IBLY		18 EACH
Description					Each
Assumptions: Used MOT Pla	n for 126th and Keystone	e as example MOT Plan.			
MOT Phase III					
MOT Phase IV				Total =	18
MOT Phase V				Total =	18
				Total =	18
			H	ighest Total =	18

SUBTOTAL (THIS PAGE) = 18.0

*TOTAL* = 18.0

				10	-703	
				SR 37 MOBI SR 32	LITY STUD 2/SR 38	PΥ
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-06640		CONSTRUCT	ION SIGN, A			24 EACH
Description						Each
Assumptions: Used	MOT Plan for 126	th and Keystone as e	example MOT Plan.			
MOT Phase I Begin Project						8
Midde of project						4
End Project						8
MOT Phase II					Total =	20
Begin Project						8
Midde of project						2
End Project					Total –	8
MOT Phase III					10101 -	10
Begin Project						8
Midde of project						1
End Project					Total =	8
MOT Phase IV						
Begin Project						8
Midde of project						8
Ena Project					Total =	<u> </u>
MOT Phase V						
Begin Project						8
Midde of project						2
End I Tojeci					Total =	18
				Н	ighest Total =	24

SUBTOTAL (THIS PAGE) = 24.0

*TOTAL* = 24.0

				10	-703	
				SR 37 MOBI SR 32	LITY STUD 2/SR 38	ÞΥ
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-06645		CONSTRUCT	ION SIGN, B			4 EACH
Description						Each
Assumptions: Used	MOT Plan for 126	th and Keystone as e	xample MOT Plan.			
MOT Phase I						
Begin Project Midde of project						2
End Project					<i>m</i> 1	2
MOT Phase II					Total =	4
Begin Project						2
Midde of project						0
					Total =	4
MOT Phase III						2
Begin Project Midde of project						3
End Project						0
MOT Dhase IV					Total =	4
MOI Phase IV Regin Project						2
Midde of project						0
End Project						0
MOT Phase V					Total =	2
Begin Project						0
Midde of project						0
End Project						0
					Total =	0
				71	ichest Tatal	Α
				Н	ignesi 10tal =	4

SUBTOTAL (THIS PAGE) = 4.0

*TOTAL* = 4.0

SR 37 MOBILITY STUDY SR 32/SR 38     By:   BWS   4/26/12   Checked By:   BWC   11/24/12     801-06710   FLASHING ARROW SIGN   510 DAY     Description   A   A     Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.   Horizon   S10 DAY     MOT Phase I   Horizon   455 Molide of project   0     Regin Project   0   0   0     MOID Phase II   B   0   0     Begin Project   0   0   0     Midde of project   0   0   0     Model project   0   0   0     Midde of project   0   0   0     Midde of project   0   0   0     Midde of project   0   0   0     Midde of project   0   0   0     Midde of project   0   0   0   0     Midde of project   0   0   0   0     Midde of project   0   0   0   0   0     Midde of project   0   0					10-	-703	
BY:     BWS     426/2     Checked By:     BWC     11/24/2       801-06710     FLASHING ARROW SIGN     510 DAY       Description     500     500       Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.					SR 37 MOBI SR 32	LITY STUD VSR 38	PΥ
801-06710     FLASHING ARROW SIGN     510 DAY       Description     0     0       Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.     0       MOT Phase I     0     0       Begin Project     0     0       Mole of project     0     0       Begin Project     0     0       MOT Phase II     0     0       Begin Project     0     0       MOT Phase II     0     0       Begin Project     0     0       MOT Phase II     0     0       Begin Project     0     0       MOT Phase II     0     0       Begin Project     0     0       MOT Phase II     0     0       Begin Project     0     0       Midde of project     0     0       Begin Project     0     0       Midde of project     0     0       Begin Project     0     0       Begin Project     0     0       Begin Project <td< th=""><th>By:</th><th>BWS</th><th>4/26/12</th><th></th><th>Checked By:</th><th>BWC</th><th>11/24/12</th></td<>	By:	BWS	4/26/12		Checked By:	BWC	11/24/12
Description     Day       Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.	801-06710		FLASHING AI	RROW SIGN			510 DAY
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.     Image: Constraint of the second	Description						Day
MOT Phase I     Adv     Adv     Adv       Mot Project     0     45       Midde of project     0     0       End Project     0     0       MOT Phase II     0     0       Begin Project     0     0       Midde of project     0     0       Begin Project     0     0       Mot Phase II     0     0       Begin Project     0     0       Mot Project     0     0       Begin Project     0     0       Mot Phase III     0     0       Begin Project     105     0       Mot Phase IV     0     0       Begin Project     105     0       Mot Phase IV     0     0       Begin Project     105     0       Mot Phase V     0     0       End Project     0     0       Mot Phase V     0     0       End Project     0     0       Mot Phase V     0     0	Assumptions: Used	MOT Plan for 126	th and Keystone as e	example MOT Plan			
MOT Phase I     45       Begin Project     0       End Project     0       MOT Phase II     0       Begin Project     0       MOT Phase II     0       Begin Project     0       MOT Phase II     0       Begin Project     0       MOT Phase III     0       Begin Project     0       MOT Phase III     0       Begin Project     0       MOT Phase III     0       Begin Project     0       Mide of project     0       Mide of project     0       Mide of project     0       Mide of project     0       Mide of project     0       MOT Phase V     0       Begin Project     0       MOT Phase V     0       MOT Phase V     0       Begin Project     0       Mot Phase V     0       Begin Project     0       MOT Phase V     0       MOT Phase V     0       Mot Phoject     0		110111anjoi 120					
degn Project     0       End Project     7otal =       MOT Phase II     0       Begin Project     0       MOT Phase II     0       Begin Project     0       MOT Phase II     0       Begin Project     0       MOT Phase III     0       Begin Project     0       MOT Phase III     0       Begin Project     0       MOT Phase III     0       Begin Project     0       MOT Phase IV     0       Begin Project     0       MOT Phase IV     0       Begin Project     105       Midde of project     0       MOT Phase IV     0       Begin Project     0       Midde of project     0       Midde of project     0       MOT Phase V     0       Begin Project     0       MOT Phase V     0       MOT Phase V     0       MOT Phase V     0       MOT Phase V     0       Midde of project	MOT Phase I						
Indice of project     0       End Project     Total =     90       MOT Phase II     0     0       Begin Project     0     0       Midde of project     0     0       MOT Phase II     0     0       Begin Project     0     0       MOT Phase III     0     0       MOT Phase III     0     0       Begin Project     0     0       Midde of project     0     0       Mot Phase IV     0     0       End Project     105     0       Midde of project     105     0       MOT Phase IV     0     0       End Project     0     0       MOT Phase IV     0     0       End Project     0     0       Mot Project     0     0       Mot Phase V     0     0       Begin Project     0     0       Mot Phase V     0     0       End Project     0     0       Intervision <td>Begin Project Midda of project</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>45</td>	Begin Project Midda of project						45
MOT Phase II     Total =     90       Begin Project     0     0       End Project     0     0       MOT Phase III     0     0       Begin Project     0     0       MOT Phase III     0     0       Begin Project     105     0       Midde of project     0     0       End Project     105     0       Midde of project     105     0       Begin Project     105     0       MOT Phase IV     0     0       Begin Project     105     0       Midde of project     105     0       Midde of project     0     0       Begin Project     0     0       MOT Phase V     0     0       Begin Project     0     0       Midde of project     0     0       Mot Phase V     0     0       Begin Project     0     0       Mot Phase V     0     0       Imidde of project     0     0	End Project						45
MOT Phase II   0     Begin Project   0     End Project   0     MOT Phase III   0     Begin Project   0     MOT Phase III   0     Begin Project   0     Midde of project   0     Begin Project   0     Begin Project   0     Begin Project   105     MOT Phase IV   0     Begin Project   105     MOT Phase V   105     Begin Project   105     MOT Phase V   0     Begin Project   105     MOT Phase V   105     Begin Project   0     More Project   0     More Project   0     MOT Phase V   0     Begin Project   0     More Phase V   0     Begin Project   0     MOT Phase V   0     Begin Project   0     MOT Phase V   0     Begin Project   0     MOT Phase V   0     Begin Project   0     MOT Ph	J. T. T. J. T. J.					Total =	90
Begin Project     0       Midde of project     0       End Project     0       Midde of project     0       Begin Project     105       Midde of project     0       Midde of project     0       Midde of project     0       Begin Project     0       Midde of project     0       MOT Phase IV     0       Begin Project     0       Midde of project     0       Midde of project     0       Begin Project     0       MOT Phase IV     0       Begin Project     0       MOT Phase V     0       Begin Project     0       MOT Phase V     0       Begin Project     0       Midde of project     0       Midde of project     0       Midde of project     0       Midde of project     0       Midde of project     0       Midde of project     0       Midde of project     0       Midde of project     0	MOT Phase II						-
India of project   0     End Project   0     Begin Project   0     Midde of project   0     Midde of project   0     Begin Project   0     MOT Phase IV   0     Begin Project   0     Mode of project   0     Begin Project   0     MOT Phase IV   0     Begin Project   0     Midde of project   0     Begin Project   0     Begin Project   0     Midde of project   0     Midde of project   0     Begin Project   0     MOT Phase V   0     Begin Project   0     MOT Phase V   0     Begin Project   0     Midde of project   0     Motified of project   0     Midde of project   0     Image: Deve   0     Image: Deve   0     Image: Deve   0     Image: Deve   0     Image: Deve   0     Image: Deve   0 <tr< td=""><td>Begin Project Midda of project</td><td></td><td></td><td></td><td></td><td></td><td>0</td></tr<>	Begin Project Midda of project						0
MOT Phase III   Image: Constraint of the second s	End Project						0
MOT Phase III   Image: Constraint of the second s						Total =	0
Begin Project     105       Midde of project     0       End Project     105       MOT Phase IV     70tal =       Begin Project     105       Midde of project     105       Begin Project     105       MOT Phase IV     105       Begin Project     0       End Project     105       MOT Phase V     105       Begin Project     0       MOT Phase V     105       Begin Project     0       MOT Phase V     0       Begin Project     0       Midde of project     0       Midde of project     0       Midde of project     0       Midde of project     0       Midde of project     0       Midde of project     0       Midde of project     0       Midde of project     0       Midde of project     0       Midde of project     0       Midde of project     0       Midde of project     0       Midde of project     0 </td <td>MOT Phase III</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	MOT Phase III						
Midde of project   0   105     End Project   105     MOT Phase IV   105     Begin Project   105     End Project   0     End Project   0     End Project   105     Motified of project   0     End Project   0     End Project   0     Mot Phase V   0     Begin Project   0     Mot Phase V   0     Begin Project   0     Midde of project   0     Midde of project   0     Midde of project   0     Image: Description   0     Mot Phase V   0     Begin Project   0     Mot Project   0     Image: Description   0     Image: Description   0     Image: Description   0     Image: Description   0     Image: Description   0     Image: Description   0     Image: Description   0     Image: Description   0     Image: Description   0	Begin Project						105
MOT Phase IV   Total =   210     Begin Project   105     Midde of project   0     End Project   105     MOT Phase V   105     Begin Project   0     Midde of project   0     MOT Phase V   0     Begin Project   0     Mide of project   0     Mide of project   0     Mide of project   0     Begin Project   0     Mide of project   0     Image: Construction of the second seco	End Project						105
MOT Phase IV   Image: Constraint of the second se						Total =	210
Begin Project   105     Midde of project   0     End Project   105     MOT Phase V   105     Begin Project   0     Midde of project   0     Begin Project   0     Midde of project   0     Midde of project   0     Midde of project   0     Midde of project   0     Image: Constraint of the second of	MOT Phase IV						
Midae of project   0   0 $End Project$ 105 $MOT Phase V$ 0 $Begin Project$ 0 $Midae of project$ 0 <td>Begin Project</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>105</td>	Begin Project						105
Image: Constraint of the second se	Miaae of project End Project						105
MOT Phase VImage: Segin ProjectImage: Segin ProjectImage: Segin ProjectImage: Segin ProjectBegin ProjectImage: Segin ProjectImage: Segin ProjectImage: Segin ProjectImage: Segin ProjectEnd ProjectImage: Segin ProjectImage: Segin ProjectImage: Segin ProjectImage: Segin ProjectEnd ProjectImage: Segin ProjectImage: Segin ProjectImage: Segin ProjectImage: Segin ProjectEnd ProjectImage: Segin Project ProjectImage: Segin ProjectImage: Segin ProjectImage: Segin ProjectImage: Segin ProjectImage: Segin Project Proje						Total =	210
Begin Project $0$ Midde of project $0$ End Project $0$ End Project $0$ Image: Constraint of the second	MOT Phase V						
Midde of project   0     End Project   0     Image: Second s	Begin Project						0
Link HoleImage: constraint of the second secon	Midde of project						0
Image: constraint of the system of the sy	Lhu i rojeci					Total =	0
Image: set of the set of th							
Image: state of the state o							
Image: constraint of the system of the sy							
Image: state of the state							
Image: state of the state o							
Image: state of the state							
Image: Constraint of the second se							
						Total =	510
							-
			+				

SUBTOTAL (THIS PAGE) = 510.0

*TOTAL* = 510.0

		10-703				
				SR 37 MOBL SR 32	LITY STUD /SR 38	Y
By:	BWS	4/26/12		Checked By:	BWC	11/25/12
801-06775		MAINTAININ	G TRAFFIC			1 LS
Description						LS
Assumptions: Used	   MOT Plan for 1261	th and Keystone as e	example MOT Plan.			
ENTIRE PROJEC	T		-			1
	Assume 2% of Tota	l Project Cost				1
				SUBTOTAL (TH	HSPAGE =	10

*TOTAL* = 1.0

		10-703				
	SR 37 MOBILITY STUDY SR 32/SR 38					
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-07024 ENERGY ABSORBING TERMINAL, CZ, TL-3					1 EACH	
Description						Each
Assumptions: Used	MOT Plan for 126t	h and Keystone as e	example MOT Plan.			
Use at begin projec	t for MOT Phase III	(north end of cross-	over)			1
				Н	ighest Total =	1
						_
			•	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		<b>Z A</b>

SUBTOTAL (THIS PAGE) = 1.0

*TOTAL* = 1.0

			10-703				
				SR 37 MOBILITY STUDY SR 32/SR 38			
By:	BWS	4/26/12		Checked By:	BWC	11/24/12	
801-07118		BARRICA	DE, III-A			228 LFT	
Description						Length (ft)	
Assumptions: Used N	10T Plan for 126t	h and Keystone as e	xample MOT Plan.				
MOT Phase I							
Begin Project Midde of project End Project						0 0 0	
MOT Phase II					Total =	0	
Begin Project Midde of project						0 0	
End Project					Total =	0 0	
MOT Phase III					1000	36	
Midde of project						156 36	
MOT Phase IV					Total =	228	
Begin Project							
Midde of project End Project					Terri	72 96	
MOT Phase V					10101 =	108	
Begin Project Midde of project						12 132	
End Project					Total =	12 156	
				H	ighest Total =	228	

SUBTOTAL (THIS PAGE) = 228.0

*TOTAL* = 228.0

	10-703						
			SR 37 MOBILITY STUDY SR 32/SR 38				
By:	BWS	4/26/12		Checked By:	BWC	11/24/12	
801-07119		BARRICA	DE, III-B			48 LFT	
Description						Length (ft)	
Assumptions: Used	MOT Plan for 126	th and Keystone as e	xample MOT Plan				
MOT Phase I							
Begin Project						0	
Midde of project						0	
End Project				-	Total =	0	
MOT Phase II					10101 -	0	
Begin Project						0	
Midde of project						0	
End Project				-	Tatal	0	
MOT Phase III				-	Total =	0	
Begin Project						24	
Midde of project						0	
End Project						24	
					Total =	48	
MOI Phase IV						24	
Midde of project						0	
End Project						24	
					Total =	48	
MOT Phase V							
Begin Project						0	
Find Project						0	
2					Total =	0	
				71	ligh agt Tat -1	10	
				H	ignest 1 otal =	48	

SUBTOTAL (THIS PAGE) = 48.0

*TOTAL* = 48.0

	10-703					
	SR 37 MOBILITY STUDY SR 32/SR 38					
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-08400 TEMPORARY TRAFFIC BARRIER, TYPE 1					3,300 LFT	
Description						Length (ft)
Assumptions, Used	MOT Plan for 126	th and Koystone as a	rample MOT Plan			
Assumptions: Used	<i>MOT Fun jor 120</i>	in ana Keysione as e	xample MOT Flan.			
Use length of SR 37	for MOT Phase III					3300
This phase requires Phase III has temp	s more that Phase IV traffic barrier, type	, therefore will use F 1 between NB and SI	Phase III quantity B traffic. all traffic or	sB lanes and wi	dening.	
				H	ighest Total =	3300
		<u> </u>				
		I				

SUBTOTAL (THIS PAGE) = 3300.0

*TOTAL* = 3300.0
	10-703					
	SR 37 MOBILITY STUDY SR 32/SR 38					
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-08507 TEMPORARY TRAFFIC BARRIER, TYPE 1, ANCHORED						296 LFT
Description						Length (ft)
Assumptions: Used	MOT Plan for 126t	h and Keystone as e	xample MOT Plan.			
-			-			1/0
Will need at the end Will need at the end	t of the project for M t of the project for M	OT Phase III OT Phase IV				168 296
,, in nood in the chu		<u> </u>				270
					:- 1	207
				H	ignest I otal =	290

SUBTOTAL (THIS PAGE) = 296.0

*TOTAL* = 296.0

		10-703					
		SR 37 MOBILITY STUDY SR 32/SR 38					
By:	BWS	4/26/12		Checked By:	BWC	11/24/12	
801-08508 TEMPORARY TRAFFIC BARRIER, TYPE 2, ANCHORED						3,300 LFT	
Description						Length (ft)	
Assumptions, Used	MOT Plan for 1261	h and Koystone as a	rample MOT Plan				
Assumptions. Osea	101 1 lun joi 1201	n unu Keysione us e	xumple MOTTun.				
Will need for the len	ngth of the project fo	r MOT Phase III				3300	
will need at the end Used to protect dro	t of the project for M poff next to NB outsi	01 Phase IV de lane when constru	ucting depressed sec	tion of NB SR 37.		333	
<u> </u>	<u> </u>		<u> </u>				
				Н	ighest Total =	3300	

SUBTOTAL (THIS PAGE) = 3300.0

*TOTAL* = 3300.0

	10-703					
	SR 37 MOBILITY STUDY SR 32/SR 38					
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-09133	TEMPOR	ARY CHANGE	ABLE MESSAG	GE SIGN		2 EACH
Description						Each
Assumptions: Used	MOT Plan for 126t	h and Keystone as e	example MOT Plan.			
Assume one at each	h end of the project	on SR 37 for the du	ration of the project			2
		SK 57 Jor ine uur	anon of the project.			2
	l		<u> </u>	SUBTOTAL (THI	S PAGE =	2.0

*TOTAL* = 2.0

				10-	703	
				SR 37 MOBI SR 32	LITY STUD /SR 38	Y
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-52817	Т	EMPORARY C	ROSSOVER, B			2 EACH
Description						Each
1 at each end of SR	37 for MOT Phase					2.0
	1	1		SUBTOTAL (TH	HIS PAGE =	2.0

TOTAL = 2.0

				10-703				
				7				
<i>By</i> :	JPS	11/28/12	_	Checked By:	BWC	12/19/12		
802-05701	SIGN POS	ST, SQUARE, 1 ANCHOI	TYPE 1, REINF R BASE	ORCED		340 LFT		
Description		Post Length	Posts per Sign	No. of Signs				
One-way Sign		10.0	1	4		40.0		
RAB Ahead Sign		10.0	1	4		40.0		
Yield Sign		10.0	1	4		40.0		
Street Name Sign		10.0	2	4		80.0		
Speed Limit Sign		15.0	2	2		60.0		
State Route Marker		10.0	1	8		80.0		
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				↓				
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<b>├</b> ───┼──				+ +				
				† †				
				SUDTOTAL /TE		2 10 0		

SUBTOTAL (THIS PAGE) =

TOTAL = 340.0

				10-7	703	
				SR 37 MOBIL SR 32/	LITY STUDY SR 38	
By:	JPS	11/28/12	-	Checked By:	BWC	12/19/12
802-07057	s	IGN, PANEL, V	VITH LEGEND	)		429 SFT
Description		Height (in)	Width (in)	No. of Signs		
1/2 Mile Ahead		150	132	2		275.0
Exit Street Name		132	84	2		154.0
				+		
				+ +		
				++		
				+ +		
		<u> </u>		1		
				+ +		
				+ +		
				SUBTOTAL (TH	IS PAGE) =	429.0

BTOTAL (THIS PAGE)

TOTAL = 429.0

				10-	-703	
				SR 37 MOBI SR 32	LITY STUD 2/SR 38	Ÿ
By:	JPS	11/28/12	_	Checked By:	BWC	12/19/12
802-07138	WIDE FLANC	GE SIGN POST IX	SUPPORT FOU	UNDATION,		2 EACH
Description						
Exit Street Name						2.0
						2.0

	10-703						
	SR 37 MOBILITY STUDY SR 32/SR 38						
By:	JPS	11/28/12	_	Checked By:	BWC	12/19/12	
802-07159	CANTILE	2 EACH					
Description							
1/2 Mile Ahead						2.0	
			<u> </u>				
			<b>├</b> ─── <b>│</b>				
			<u>↓</u>				
			<u> </u>				
			┤───┤				
			ļŢ				
				URTOTAL (TH	IS PACE) -	2.0	

			10-703				
			SR 37 MOBILITY STUDY SR 32/SR 38				
By:	JPS	11/28/12		Checked By: BW	C 12/19/12		
802-09840	SIGN, SHEE	T, WITH LEGH	END 0.100 IN T	HICKNESS	115 SFT		
Description		Width (in)	Height (in)	No. of Signs			
One-way Sign		36	12	4	12.0		
RAB Ahead Sign		30	30	4	25.0		
Yield Sign		36	36	4	18.0		
Street Name Sign		36	12	4	12.0		
Speed Limit Sign		36	48	2	24.0		
State Route Marker	Danie Cian	24	24		16.0		
	Direction	24 24	12	4 4	8.0		
		1					
				┥───┤───			
				+			
		1		+ + + - + - + - + - + - + - + - + - + -			
				SUBTOTAL (THIS PA	(GE) = 115.0		

TOTAL =

115.0

	10-703						
				SR 37 MOBII SR 32/	LITY STUDY /SR 38	7	
By:	JPS	11/28/12	_	Checked By:	BWC	12/19/12	
802-76095	681 LBS						
Description	LI	L2	W1	W2			
Exit w/ Street Nam	e						
W8x13	20.00	25.00	307.58	372.58		680.2	
				+			
				+ +			
				+ +			
				-			
				╡────┤			
				+ +			
				╡────┤			
				+ +			
				+ +			
				SURTOTAL (TH	US PAGE) –	680.2	

TOTAL =

680.2

				10-703					
	SR 37 MOBILITY STUDY SR 32/SR 38								
By:	JPS	11/28/12	<u>.</u>	Checked By:	BWC	12/19/12			
802-76135	OVERHEA	OVERHEAD SIGN STRUCTURE, CANTILEVER1SINGLE ARMEACH							
Description									
1/2 Mile Ahead						1.0			
				SUBTOTAL (TH	IS PACE) -	1.0			

			10-703				
				SR 37 MOBI SR 32	LITY STUDY /SR 38		
By:	BWS	4/17/12		Checked By:	BWS	11/24/12	
804-06770		DELINEAT	OR POST			12 EACH	
						Each	
Total # of Outlets f	rom 715-05053					12.0	
	l			SUBTOTAL (T	HIS PAGE) =	12.0	

*TOTAL* = 12.0

			10-7	03	
			SR 37 MOBIL SR 32/2	ITY STUDY SR 38	7
By:	DJZ	5/9/12	Checked By:	BWS	11/24/12
808-10031	LINE, MULT	TI-COMPONENT, BI	ROKEN, WHITE, 4 IN		2,513 LFT

Begin Station	End Station	Begin Offset	End Offset	Factor	Length (ft)
Line ''A''	NB				
293+28.79	316+29.65	19.25	19.25	0.25	575
316+29.65	321+47.37	19.25	38.08	0.25	130
321+47.37	324+47.59	38.08	38.07	0.25	75
293+28.79	294+40.26	31.25	31.25	0.25	28
298+69.63	299+24.72	62.75	64.73	0.25	14
315+29.87	321+48.03	31.25	50.11	0.25	155
	SB				
293+28.79	317+77.40	-19.25	-19.25	0.25	612
317+77.40	322+72.33	-19.25	-37.25	0.25	124
293+28.79	295+67.95	-31.25	-31.25	0.25	60
316+10.27	317+77.18	-31.25	-31.25	0.25	42
317+77.18	321+72.34	-31.25	-45.62	0.25	99
297+81.53	298+37.20	-64.75	-64.75	0.25	14
<i>Line</i> ''S-4-A''					
11+01.20	11+62.10	12.00	16.00	0.25	15
11+00.60	11+62.10	24.00	28.00	0.25	15
18+54.10	21+28.04	14.41	12.00	0.25	68
18+38.26	19+26.08	27.86	24.00	0.25	22
18+17.59	21+28.04	-16.00	-12.00	0.25	78
18+17.59	18+69.91	-28.00	-28.00	0.25	13
Round-A-Bout					
Lengths by AutoCA	D		609.20	0.25	152
RAMPS	SE				
10+00.00	13+99.19	12.00	12.00	0.25	100
	NE				
12+30.99	13+13.59	12.00	12.00	0.25	21
	SW				
16+10.91	12+05.47	12.00	12.00	0.25	101
				mom i r	

TOTAL = 2512.2

				10-703	
				SR 37 MOBILITY SR 32/SR 38	STUDY 8
By:	DJZ	5/9/12		Checked By: BW	VS 11/24/12
808-10033	LINE, MUL	TI-COMPONE	NT, SOLID, W	HITE, 4 IN	10,410 LFT
Begin Station	End Station	Begin Offset	End Offset		Length (ft)
Line !!!!	ND				
$203 \pm 28.70$	200+24 27	76 75	76 75		505
299+25 30	312+60.85	31.25	31.25		1335
312+61.28	315+.57.89	64.75	43.25		297
315+57.89	321+47.59	43.25	62.10		590
321+47.59	324+47.59	62.10	50.07		300
	SB				
293+28.79	295+39.90	-43.25	-43.25		211
293+28.79	296+81.62	-76.75	-76.75		353
297+27.66	298+37.20	-76.75	-76.75		110
298+37.20	311+72.77	-31.25	-31.25		1336
311+73.01	317+10.51	-64.75	-43.25		538
31/+10.51	321+72.34	-43.25	-57.63		462
521+72.54	322+72.77	-37.03	-49.20		101
Line "S-4-A"					
11+62.10	12+96.91	16.00	18.94		135
11+62.10	13+08.55	28.00	45.71		148
16+54.33	18+54.10	55.29	14.41		204
16+24.54	18+38.26	86.79	27.86		222
Round-A-Bout					
Length by AutoCAD			586.00		586
DAMOG	<u>an</u>				
RAMPS	<u>SE</u>	24.00	24.00		
10+00.00	12+80.50	24.00	24.00	┼───┼───	281
12+00.30 $13\pm 80.50$	13+00.30	24.00	30.00 12 17	┨───┤───	101
13+80.50	16+04.05	24.00	24.00		224
13+99.19	16+04.05	12.00	12.00		205
	NE				
10+00.00	12+30.99	16.00	12.00		231
11+76.35	12+40.46	26.96	24.00		64
12+40.46	13+13.59	24.00	24.00	<b>↓ ↓</b>	73
13+13.59	16+13.59	24.00	12.00	<b>↓ ↓ ↓</b>	300
	CII/			<u>↓                                      </u>	0
10+00.00	3W 12±05.47	16.00	12.00	┼───┼──	206
$11\pm53.02$	12+03.47	26.77	24.00	┨───┤───	61
12+14.82	16+10.01	24.00	24.00		306
12 111.02	10 1 10.71	21.00	27.00		
				SUBTOTAL (THIS PA	GE = 9768.3

10-703

## SR 37 MOBILITY STUDY SR 32/SR 38

By: DJZ 5/9/12

Checked By:

808-10033

## LINE, MULTI-COMPONENT, SOLID, WHITE, 4 IN

LFT

Begin Station	End Station	Begin Offset	End Offset		Length (ft)
RAMPS (cont'd)	NW				
10+00.00	13+39.17	12.00	12.00		339
13+39.17	14+39.17	12.00	24.00		101
14+39.17	14+90.03	12.00	27.46		53
14+59.33	16+07.08	12.26	12.00		148

SUBTOTAL (THIS PAGE) = 640.8

				10-703	
				SR 37 MOBILITY STU SR 32/SR 38	DY
By:	DJZ	5/9/12		Checked By: <u>BWS</u>	11/24/12
808-10034	LINE, MULI	[I-COMPONEN	T, SOLID, YE	LLOW, 4 IN	9,366 LFT
Begin Station	End Station	Begin Offset	End Offset	1	Length (ft)
		1			
Line "A"	NB				
293+28.79	316+29.87	7.25	7.25		2301
316+29.87	321+47.59	7.25	26.08		518
321+47.59	324+47.59	26.08	26.07		300
	SB				- / /0
293+28.79	317+77.62	-7.25	-7.25		2449
31/+//.02	322+72.77	-7.25	-25.20		495
1 ino "S-4-4"		<b></b>			
$10\pm 98.97$	$11 \pm 41.80$	0.00	1.00	+ +	43
11+41.80	17+9450	1.81	1.81	+	153
10+98.97	12+97.00 12+98.04	0.00	-22.84	+	200
17+19.11	19+55.04	18.44	0.00	+ +	237
17+21.02	19+55.04	0.78	0.00	1 1	234
				1	
RAMPS	SE	1		1 1	
10+00.00	14+08.56	0.00	0.00		409
14+08.56	16+04.05	0.00	0.00		195
	NE				
10+00.00	12+21.48	0.00	0.00		221
12+21.48	16+13.59	0.00	0.00		392
	CIII	ļ			
10.00.00	SW	0.00	0.00		100
10+00.00	11+90.10	0.00	0.00		190
11+90.10	10+10.91	0.00	0.00		413
	NW	++		+	
10+00.00	14+59.33	0.00	0.00	1 1	459
14+59.33	16+07.09	0.00	0.00	1 1	148
		1		1 1	

TOTAL =

9365.9

				10-703	
				SR 37 MOBILITY STUI SR 32/SR 38	DY
By:	DJZ	5/9/12		Checked By: <u>BWS</u>	11/24/12
808-10037	LINE, MUI	LTI-COMPONE	NT, SOLID, W	HITE, 8 IN	4,348 LFT
Begin Station	End Station	Begin Offset	End Offset		Length (ft)
Line "A"	NB Inside	Exit Gore	21.05		105
294+40.26	299+25.39	31.25	31.25	<u> </u>	485
294+40.26	299+25.17 NB Outrida	35.25	52.74		485
245+60.21	250 + 28 72	Emrance Gore	52 75		470
243+09.21 $245\pm60.21$	250+30.72 $250\pm38.72$	35.25	52.75		470
273+07.21	NB	Entrance Gore	52.15		770
312+60.85	315+29.87	31.25	31.25		269
312+60.85	315+29.87	52.75	33.25		270
	SB Outside	Exit Gore			
295+39.90	297+81.53	-43.25	-60.75		242
295+39.90	297+81.53	-64.75	-64.75		242
	SB Outside	Entrance Gore			
295+67.95	298+37.20	-31.25	-31.25		269
295+67.95	298+37.19	-33.25	-52.75		270
	SB	Exit Gore	21.05		100
311+72.77	316+10.27	-31.25	-31.25		438
311+/2.//	310+10.27	-52.75	-33.23		438
		1			
				+	
	<u> </u>	1			
		ł			

TOTAL = 4

4347.2

				10-2	703	
				SR 37 MOBII SR 32/	LITY STUDY (SR 38	
<i>By</i> :	DJZ	5/9/12	-	Checked By:	BWS	11/24/12
808-75071	PAVEMEN PLAS	T MESSAGE M TIC, LANE INI	IARKING, PRE	FORMED OW		11 EACH
Alignment						Each
SE Ramp						3
Line "S-4-A"	WB					3
NW Ramp						2
Line ''S-4-A''	EB					3
				SUBTOTAL (TH	(IS PAGE) =	11.0

SUBTOTAL (THIS PAGE) =

*TOTAL* = 11.0

			10-7	/03	
			SR 37 MOBIL SR 32/2	ITY STUDY SR 38	Y
By:	DJZ	5/9/12	Checked By:	BWS	11/24/12
808-75510	TRANSVER CR	SE MARKINGS, PRE OSSHATCH LINE, W	FORMED PLASTIC, HITE, 24 IN		549 LFT

Begin Station	End Station	Begin Offset	End Offset		Length (ft)
Line "A"	NB	Exit Gore			
Over	rall Length by Auto	CAD			224
<b>T</b> • • • • • •	(CP)				
Line "A"	<u>SB</u>	Exit Gore			
297+81.53	295+39.90				100
Over	rall Length by Auto(	CAD			120
310+10.27	<u>311+/2.//</u>				204
Ove	rau Length by Auto <b>(</b>	JAD			204
			1	TOTAL =	548.9

				10	-703	
				SR 37 MOBI SR 32	LITY STUDY 2/SR 38	7
By:	DJZ	5/10/12		Checked By:	BWS	11/24/12
808-75998	SNOWPLOV	WABLE RAISE	D PAVEMENT	MARKER		213 EACH
Begin Station	End Station	Begin Offset	End Offset	Length	Spacing	Each
Line "A"	NB					
293+28.79	316+29.65	19.25	19.25	2300.86	80	29
316+29.65	321+47.37	19.25	38.08	518.06	80	7
321+47.37	324+47.59	38.08	38.07	300.22	80	4
293+28.79	294+40.26	31.25	31.25	111.47	80	2
298+69.63	299+24.72	62.75	64.73	55.13	80	1
315+29.87	321+48.03	31.25	50.11	618.45	80	8
202 - 20 70	<b>3</b> <i>B</i>	10.25	10.25	211061	<u>ەم</u>	21
293+28.79	31/+//.40	-19.25	-19.25	2448.01	80	31
$\frac{317+77.40}{203+28.70}$	322+72.33 295+67.95	-19.25	-37.23	239.16	80	/ 3
316+10.27	317+77.18	-31.25	-31.25	166.91	80	3
317+77.18	321+72.34	-31.25	-45.62	395.42	80	5
297+81.53	298+37.20	-64.75	-64.75	55.67	80	1
Line ''S-4-A''						
11+01.20	11+62.10	12.00	16.00	61.03	80	1
11+00.60	11+62.10	24.00	28.00	61.63	80	1
18+54.10	21+28.04	14.41	12.00	273.95	80	4
18+38.26	19+26.08	27.86	24.00	87.90	80	2
18+17.59	21+28.04	-16.00	-12.00	310.48	80	4
18+17.59	18+69.91	-28.00	-28.00	52.32	80	1
Round-A-Bout				(00.00	10	
Lengths by AutoCA	D			609.20	40	16
Line ''S-4-A''						
11+62.10	12+96.91	16.00	18.94	134.84	40	4
11+62.10	13+08.55	28.00	45.71	147.52	40	4
16+54.33	18+54.10	55.29	14.41	203.91	40	6
10+24.34 Round-A-Rout	18+38.20	80.79	27.80	221.70	40	0
Length by AutoCAD	)			586.00	40	15
PAMPS	SE					
13±20 50	3E 16±04.05	24.00	24.00	223 55	10	6
13+99.19	16+04.05	12.00	12.00	204.86	40	6
10+00.00	13+99.19	12.00	12.00	399.19	40	10
				SUBTOTAL (T	HIS PAGE) =	187.0

10-100	1	0-	7	03
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### SR 37 MOBILITY STUDY SR 32/SR 38

By: DJZ 5/10/12

Checked By: <u>BWS</u> 11/24/12

808-75998

## SNOWPLOWABLE RAISED PAVEMENT MARKER

EACH

Begin Station	End Station	Begin Offset	End Offset	Length	Spacing	Each
DAMOG						
KAMPS	NE 12 - 20 00	16.00	10.00	221.02	10	(
10+00.00	12+30.99	16.00	12.00	231.02	40	6
12+30.99	13+13.39	12.00	12.00	82.60	40	3
	CW				-	
10+00.00	12+05.47	16.00	12.00	205 51	40	6
16+10.00	12+05.47	12.00	12.00	205.51	40	0
10+10.91	12+03.47	12.00	12.00	405.44	40	11
					-	
		}				
		}				
		1				
		1			1	
		İ				
				SUBTOTAL (	THIS PAGE) =	26.0

# **BRIDGE QUANTITIES**

## BRIDGE GEOMETRY SR 32 OVER SR 37







JOR 11/14/12

NAME AND ADDRESS OF TAXABLE PARTY.	والمحاومين الجامع والمحاصر المحاجية والمحاج المحاجة والمحاجة والمحاجة المحاجة والمحاجة والمحاجم والمحاجمة والمحاجمة المحا
B	EAM PROPERTIES
A <sub>B</sub> :	= 369 in. <sup>2</sup>
ΙB	= 50,979 in. <sup>4</sup>
STB	= 2,527 in. <sup>3</sup>
SBB	= 3,221 in. <sup>3</sup>
Υ <sub>TB</sub>	= 20.2 in.
Υ <sub>BB</sub>	= 15.8 in.
Wt.	= 384 lb/lf

NOTES: 1. BARS 301 AND 302 COMBINED TO FORM ONE STIRRUP.

2. 
\*DENOTES EPOXY-COATED BAR



I - BEAM TYPE II Figure 406-13B (page 1 of 3)

## SR32 over SR37

Des by JTB 10/24/2012 Chk by JR 11 14 17

Rev by

## Summary of Bridge Quantities

### Structure Number

INDOT Item Code	Item Description	unit	Quantity	
105-06845	CONSTRUCTION ENGINEERING	LS	3%	
110-01001	MOBILIZATION AND DEMOBILIZATION	LS	5%	
203-02020	EXCAVATION, FOUNDATION, UNCLASSIFIED	CYS	533	
211-02050	B BORROW	CYS	533	
302-07455	DENSE GRADED SUBBASE	CYS	256	
609-06259	REINFORCED CONCRETE BRIDGE APPROACH, 12 IN.	SYS	1,539	
701-06011	DYNAMIC PILE LOAD TEST	EACH	3	
701-09559	TEST PILE, DYNAMIC, RESTRIKE	EACH	3	
701-09690	TEST PILE, DYNAMIC, 14 IN NON-PRODUCTION	LFT	210	
701-08122	PILE, STEEL PIPE, 0.375", 14	LFT	5,460	
702-51005	CONCRETE,A,SUBSTRUCTURE	CYS	287	
702-51015	CONCRETE, B, FOOTINGS	CYS	197	
703-06028	REINFORCING BARS	LBS	58,980	
703-06029	REINFORCING BARS, EPOXY COATED	LBS	439,486	
704-51002	CONCRETE, C, SUPERSTRUCTURE	CYS	1,683	
706-09959	RAILING, CONCRETE, FT	LFT	250	
707-07605	STRUCTURAL MEMBERS, CONCRETE I-BEAM, II, 36 IN. X 12 IN.	LFT	2,590	
709-51821	SURFACE SEAL	SFT	28,288	estimated

SR 32 over SR37

Proposed	Structure # is		_		
	SR32	over	SR 37		
Design Standards =	Road Over 4R		Under 4R		
Functional Classification =	Urban Arterial		Urban Arterial		
ADT =	XXXX	(yr. 2030)	XXXX		
Design Speed =	35	mph	55		
Vertical Clearance Req'd =	16.5	feet			
Skew =	20	degrees			
Calculated C-C End Brg. Length =	123.33	feet			
USE	123.33	feet			
Span Configuration Anticipated =	1 1	@ @	61.67 61.67	feet feet	



JTB 10/24/2012 Des by JOR 11/19/12 Chk by Rev by

Proposed Structure # is			
SR32	over	SR 37	
	-		

Number of Spans =2	spans
O-O Coping Width =185.33	feet
C-C End Brg Length = 123.33	feet
Skew =20.0000	degrees
O-O Bridge Length = <u>124.8</u>	feet
Clear Roadway Width = <u>181.83</u> $\checkmark$	feet
Slab Thickness =8	inches
Number of Piers units =1	
Number of Substructure units = 3	
Twin Structure = NO	
Type of Slope Wall =MSE Wall	



**Beam Quantities** 

Des by JTB 10/24/2012



Rev by

#### Structure Number SR32 over SR 37



#### PRESTRESSED CONCRETE HBEAM SELECTION CHART

Figure 59-3K

Beam Type = STRUCTURAL MEMBERS, CONCRETE I-BEAM, II, 36 IN. X 12 IN.

Overhang to be = 2.665 ft Spacing to be = 9 ft out to out width = 185.33 ft Beam Length = 123.33 ft Beams Needed = 21 ft Twin Structure = NO Length Needed = **2,590** ft



Des by JTB 10/24/2012

Chk by

lbs.

lbs.

lbs.

piles

ft.

2,760 linear feet

00

23

60

Rev by

Structure Number SR32 over SR 37





Geotextiles =  $N_b^* ((D_T - A_P) * 1.031 + 4.5') * L_B/9 =$ 

0.0 sys

Aggregate for End Bent Backfill

$$V_{bf} = ((D_T - A_P)/4 + 1.5) + 1.5)/2 * (D_T - A_P) * L_B * N_b$$

cubic yards  $V_{bf} =$ 0





Rev by

#### Structure Number SR32 over SR 37

Number or Approach Slabs 4



 $D_{sub}$  = Depth of Aggregate (inches) = 6

Reinforced Concrete Bridge Approach (A) = (L1 +20.5)/2 * Wc /9
A = 385 sys per approach

**Approach Slab Quantities** 

Dense Graded Subbase ( $T_{base}$ ) = A \*  $D_{sub}$ 

 $T_{base} = 64.0$  cys per approach

Epoxy Coated Reinforcing Bars					
Reinforcement	35	#/sy			
Total Weight 13,466		Lbs.			
per approach					

Grand	Totals	ALE REPORTED AND AND AN AND AN A CARD AND AND AND AND AND AND AND AND AND AN
A =	1,539	sys
T <sub>base</sub> =	256	cys
Reinforcing	53,863	Lbs.



Bridge Railing	
Area of Rail $A_r =$	3.64 Sq. Ft.
Perimeter P =	8.65 Ft.
LFT = <b>250</b>	
$V_{R} = (L_{s} * A_{r}) / 27$	
V <sub>R</sub> = 33.7	cubic Yards

Surface Seal		87 MILLION AND MALTING AND AND AND AND AND AND AND AND AND AND
Deck = $L_s * W_c =$	23135	square feet
Coping = $L_s * D_c * 2 =$	833	square feet
Rail = L <sub>s</sub> * P * 2 =	4320	square feet
Total	28,288	square feet

Epoxy Coated Reinforcing Bars						
Reinforcemer	t Rate	s	250	#/cy		
Deck	250	#/cy				
Rail	330	#/cy				
Deck	332	2900	Lbs.			
Rail	11121		Lbs.			
Trans.	s. 4532		Lbs.			
Total Weight	348	,553	Lbs.			

Grates, Basins, and Fittings, Cast Iron				
N <sub>G</sub> =	0	each		
Weight per D	rain =	1000 Lbs.		
Total Weight		0 Lbs.		

Roadway Drain (SQ or OS)

 $N_G = 0$  each



Rev by

#### **Excavation Quantities**

#### Structure Number SR32 over SR 37



