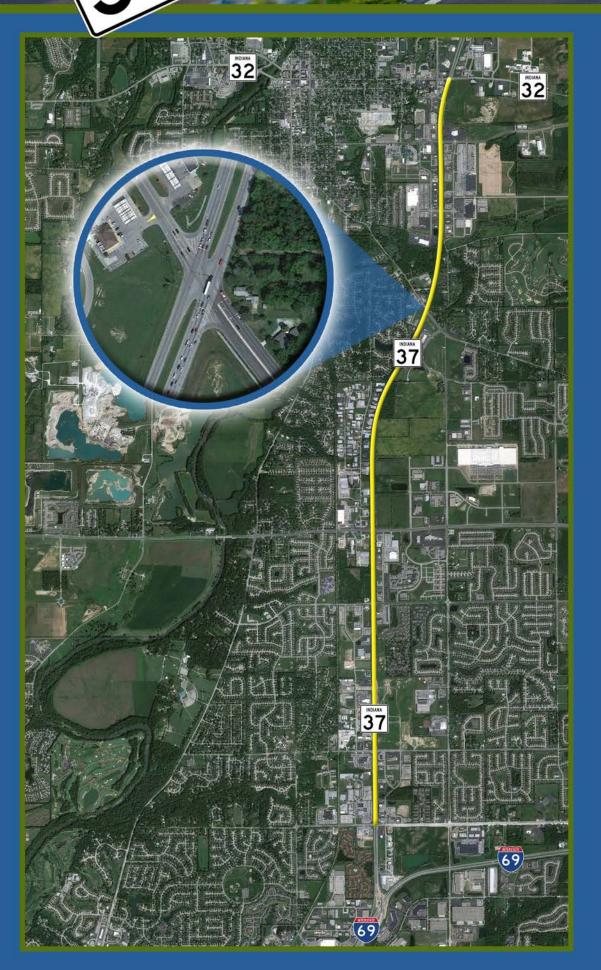
# SR 37 MOBILITY STUDY



INDIANA

## SR 37 AND GREENFIELD AVENUE

Presented to:







SEAL

MAY





Presented by:





## SR 37 Mobility Study Greenfield Avenue 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 Greenfield Avenue:

	Table	1 – Existing R	oadway System	
Facility	Traffic	Travel	Functional	Speed Limit
	Control	Lanes	Classification	(MPH)
SR 37	-	4	Expressway	55
Greenfield Avenue	Signal	2	Primary Arterial	35 (West of SR 37)
				40 (East of SR
				37)

The following paragraphs give additional details for existing Greenfield Avenue within the Study area:

#### **Greenfield Avenue**

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Greenfield Avenue crosses SR 37 at an approximate 30 degree skew to form a four way atgrade 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.

Greenfield Avenue 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, Greenfield Avenue is a two lane roadway with two 12-foot travel lanes, and no shoulders or outside curbs. The existing pavement on the west side of the intersection is full depth HMA and is in good condition within 170 feet of the intersection. Outside of this area, the existing pavement is in poor condition with significant rutting and cracking, mainly in the westbound lane. Outside curb and gutter borders the south side of the roadway, however the north side has no curb and no shoulder.

One the east side of the existing intersection, outside the intersection limits, Greenfield Avenue is a two lane roadway with two 12-foot travel lanes, and no shoulders or outside curbs. The existing pavement on the east side of the intersection is full depth HMA and is in good condition. Outside curb and gutter borders both sides of the roadway. The eastbound and westbound lanes are separated by an eight foot raised center curb. An eight foot wide pedestrian pathway also runs along the south side of the roadway on the east side of the intersection, separated from the curb by a seven foot grass buffer strip.

The intersection of SR 37 and Greenfield Avenue 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. Greenfield Avenue has one left turn lane, two through lanes, and one right turn lane on each approach.

The intersection is bordered by businesses in the southwest and northwest quadrants, and a residence in the northeast quadrant, and a vacant field in the southeast quadrant. The business and the residence in the north two quadrants are situated in closed proximity to the intersection

## SR 37 MOBILITY STUDY

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with little setback. For a listing of each business adjacent to the intersection, see the aerial displays.

## 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 Greenfield Avenue for the study year of 2036. A teardrop roundabout interchange is proposed, with a 4-lane bridge crossing SR 37.

Table 2 – Alternative 1 (2036) Capacity Analysis												
latera d'an	Traffic	Peak	W	est Leg	Ea	ast Leg	So	uth Leg	No	rth Leg	(	Overall
Intersection	Control		LOS	Delay (sec)								
SR 37 NB Ramps and Greenfield Avenue	Roundabout	AM	Α	2.4	Α	3.6	Α	2.4			Α	3.0
SK 57 NB Kallips and Greenileid Avenue	Roundabout	PM	Α	3.0	Α	4.2	Α	3.0			Α	3.5
SR 37 SB Ramps and Greenfield Avenue	Roundabout	AM	Α	3.0	Α	2.4			A	3.0	Α	2.7
SIX 57 SB Kamps and Greenheid Avende	Roundabout	PM	Α	3.6	Α	1.8			Α	3.0	Α	3.0

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.



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In the area of Stony Creek, the soil profile is anticipated to be glacial outwash and/or alluvium (i.e., primarily granular soil), and bedrock could be within 50 to 100 feet of the surface. The issues related to shallow perched groundwater are usually not of concern because of the well-drained profile. However, if the piezometric groundwater level is relatively shallow, a large influx of groundwater can require temporary and permanent dewatering in areas of cut. An additional construction cost of \$500,000 is anticipated for each the Greenfield Avenue and Town and Country intersections 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 (NWI) Map shows a forested wetland along Stony Creek approximately 2,300 feet north of Greenfield Avenue A "Waters of the U.S." (wetland determination/delineation) report will be required to confirm and identify wetland boundaries throughout the corridor. Wetland impacts greater than 0.10 acre will require compensatory mitigation. Any Mitigation efforts should be coordinated with the U.S. Army Corps of Engineers and Indiana Department of Environmental Management.

#### **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 preferred alignment.

<u>Historical:</u> The land use in close proximity and within the project area consists of commercial 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 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 Section 401 Water Quality Certification:</u> The preferred alternative will require Section 401 Water Quality Certification from the Indiana Department of Environmental Management.

<u>US Army Corps of Engineers Section 404 Permit:</u> The preferred alternative will require a Section 404 permit from the Louisville District, U.S Army Corps of Engineers.

<u>IDEM Rule 5 Permit:</u> Since the preferred alternative 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.

<u>IDNR Construction in Floodway Permit:</u> The proposed intersection improvements are within the floodway of Stony Creek. The proposed project will require formal approval from the Indiana Department of Natural Resources (IDNR) - Division of Water for Construction in a Floodway.

## VIII. DRAINAGE

The existing drainage on Greenfield Avenue is conveyed on the southwest leg of the intersection by sheet draining the pavement to the outside curb and gutters, flowing out of curb turnouts into the existing ditch along SR 37. The drainage on the northwest leg of the intersection is conveyed by sheet draining the pavement into the ditch which flows into the ditch along SR 37. On the west leg of the intersection, the drainage is conveyed by sheet draining the pavement to the outside curb and gutters. Curb and gutter inlets are utilized to capture the storm water which flow away from SR 37. On mainline SR 37, the existing drainage is conveyed by an open grass median and outside ditches flowing north to Stony Creek about 2260 feet north of the intersection.

The proposed drainage on Greenfield Avenue 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 Stony Creek approximately 2260 feet north of the intersection. The drainage on SR 37 will be handled similarly. Inlets will be spaced along the outsides against the walls. The inlets that are within the limits of the depressed profile will be conveyed by manholes to a low point of the profile. The manholes will convey the drainage to 2080 feet north of the intersection and outlet into the ditch along SR 37 and maintain positive drainage to Stony Creek.

## IX. UTILITY COORDINATION

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

## **Existing Facilities**

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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 transmission cuts diagonally across the intersection from southwest to northeast corners. Overhead electrical distribution runs from the southwest to the northwest corner and along the north side of Greenfield Avenue. Electrical service to property owners is underground.

Gas: A gas pipeline is on the south side of Greenfield Avenue, east of SR 37, with service laterals to properties on both sides of the street. There is no evidence of a gas pipeline west of SR 37.

Telecommunication: Various telecommunications facilities are located on the overhead electrical, with underground service to properties on both sides of the street. Two "fiber optic" manholes are located on the south side of Greenfield Avenue, east of SR 37.

Water: The water main is on the south side of Greenfield Avenue with service laterals to properties on both sides of the street.

Sanitary: Sanitary manholes are located at the southeast corner of Prosperity Drive and Greenfield Avenue (west of SR 37) and at the southwest corner of Cumberland Road and Greenfield Avenue (east of SR 37). There is no evidence that these manholes are connected. Service laterals connecting properties on both sides of the street to the manholes are expected.

Street Lighting: Decorative street lights were added by the Town of Noblesville during the Greenfield Avenue project. They are located on both the north and south sides of Greenfield Avenue, east of SR 37. The spacing is approximately 300 feet.

## Impacts

With Greenfield Avenue going over SR 37, existing underground facilities along Greenfield Avenue 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 Greenfield Avenue bridge, offset their facilities north or south of the Greenfield Avenue bridge, or relocate underground. Service connections will also need to be adjusted.

If the sanitary sewer runs under SR 37, the trunkline will need to be either lowered or offset. Both options can severely impact a gravity-fed system, requiring a lift station to be constructed.

If utilities in their own easement are required to relocate, relocations expenses are reimbursable. Typically, overhead electrical transmission lines are located in easements due to the additional height of the facility and the complexity of the service. It is expected that this facility is in an easement. The anticipated reimbursable relocation cost to obtain new easements and to relocate this facility overhead within the new easement is \$750,000.



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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>

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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.

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 Greenfield Avenue:

## Between 146<sup>th</sup> Street and Greenfield Avenue

Both northbound and southbound weaving segments are acceptable. The northbound entrance ramp from 146<sup>th</sup> Street and the northbound exit ramp to Greenfield Avenue will be conventional entrance and exit ramps. The southbound entrance ramp from Greenfield Avenue and the southbound exit ramp to 146<sup>th</sup> Street will be conventional entrance and exit ramps. There will not be a continuous auxiliary lane between interchanges in both directions.

North of 146<sup>th</sup> Street, the travel lanes will shift out to transition from the enclosed median to the existing open median. This will eliminate the necessity to reconstruct SR 37, for the sake of enclosing the median, from north of 146<sup>th</sup> Street to Greenfield Avenue. This area can then be evaluated for replacement based solely on the condition of the pavement at the time of interchange construction, and not out of necessity to construct either interchange.

## Between Greenfield Avenue and Town and Country Boulevard

Both northbound and southbound weaving segments are acceptable. The northbound entrance ramp from Greenfield Avenue and the northbound exit ramp to Town and Country Boulevard will be conventional entrance and exit ramps. The southbound entrance ramp from Town and Country Boulevard and the southbound exit ramp to Greenfield Avenue will be conventional entrance and exit ramps. There will be a continuous auxiliary lane between interchanges in both directions.

Between these two interchanges, the travel lanes will need to shift inward to transition from the existing open grass median carried through the Greenfield Avenue interchange, to the proposed enclosed median prior to the Town and Country Boulevard interchange.

#### **Greenfield Avenue**

The preferred alternate for this intersection is to construct a "teardrop" roundabout interchange on Greenfield Avenue consisting of two closely spaced roundabouts on either side of SR 37, which are tied together through the middle to function as one unit. Greenfield Avenue will overpass SR 37. SR 37 will be free-flow through this interchange and traffic traveling through on Greenfield Avenue will drive through the roundabouts with a yield condition on the roundabout approach. The current skew of Greenfield Avenue through this interchange will be maintained, as straightening the skew would require the re-alignment of Greenfield Avenue and potential impact two businesses in the southwest quadrant and/or two additional residences in the northeast quadrant.

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



SR 37 MOBILITY STUDY

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 mainline and the ramps. This wall is necessary to maintain the elevation difference between the mainline and the ramps as they approach Greenfield Avenue. Exterior walls will also be necessary in the southwest and northwest quadrants to minimize impacts to businesses in these quadrants (See aerial sheets for estimated wall limits). The residence in the northeast quadrant will be in conflict with the east roundabout and exit ramp, thus will need to be relocated to construct this interchange.

Greenfield Avenue 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, and one shared through/right lane. Both the northbound and southbound exit ramps will exit as one lane and develop into two lanes at the roundabout approach, consisting of one shared left/through lane, one right turn lane. The entrance ramps will both be one lane entrances. For a diagram of the proposed lane configuration see the Traffic Operations Analysis (binder labeled Traffic Operation Analysis).

Two current drive accesses off Greenfield Avenue will need to be removed due to their close proximity to the interchange and the vertical difference of proposed Greenfield Avenue in the area of the drives. One of these drives accesses the Marathon gas station in the southwest quadrant. This business will maintain access to Greenfield Avenue by way of a second existing drive located approximately 150 feet north of the removed drive. The other drive to be removed accesses the Gas America gas station in the northwest quadrant. This business will maintain access to Greenfield Avenue by 150 feet north of the removed drive. The other drive to be removed access to Greenfield Avenue by way of a second existing drive located approximately 150 feet north of the removed drive.

## 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 Greenfield Ave is anticipated to be a two span, 198.5 foot long, prestressed reinforced concrete bulb tee beam structure built with a 38 degree skew to the roadway. The bridge will be a four lane roundabout facility with a clear roadway width of 232'-8" and an out to out coping of 236'-0". 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.

## SR 37 MOBILITY STUDY

#### XII. MAINTENANCE OF TRAFFIC

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The following is a logical basic MOT plan for the construction of the Greenfield Avenue interchange:

**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 Greenfield Avenue will be closed, with no access to SR 37. The east segment of Greenfield Avenue and roundabout approaches will be constructed.

The west segment of the Greenfield Avenue will maintain access to SR 37. This could be set up as right-in/right-out access to and from Greenfield Avenue with SR 37 traffic remaining freeflow through the intersection. Alternatively, a temporary signal could be utilized to allow the west Greenfield Avenue 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 Greenfield Avenue and the west roundabout. Both sides of Greenfield Avenue 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 Greenfield Avenue 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 Greenfield Avenue in this phase.

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## XIII. LAND ACQUISITION

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Approximately 38 parcels would be impacted by the construction of the teardrop roundabout interchange at the intersection of SR 37 and Greenfield Avenue. Total permanent right of way acquisition required for construction of these improvements would be approximately 6.0 acres.

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.

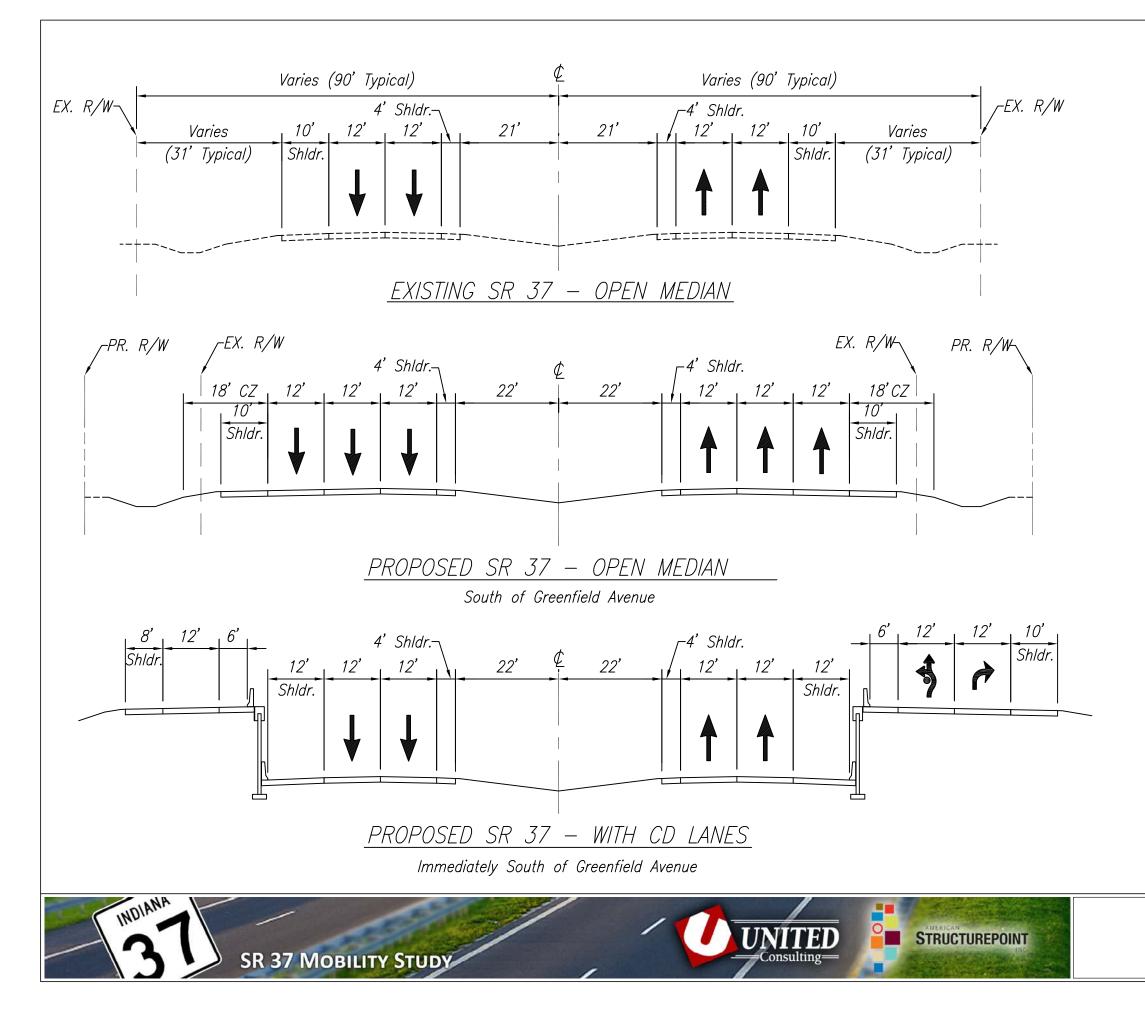
## XIV. PROJECT PRIORITIES

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.

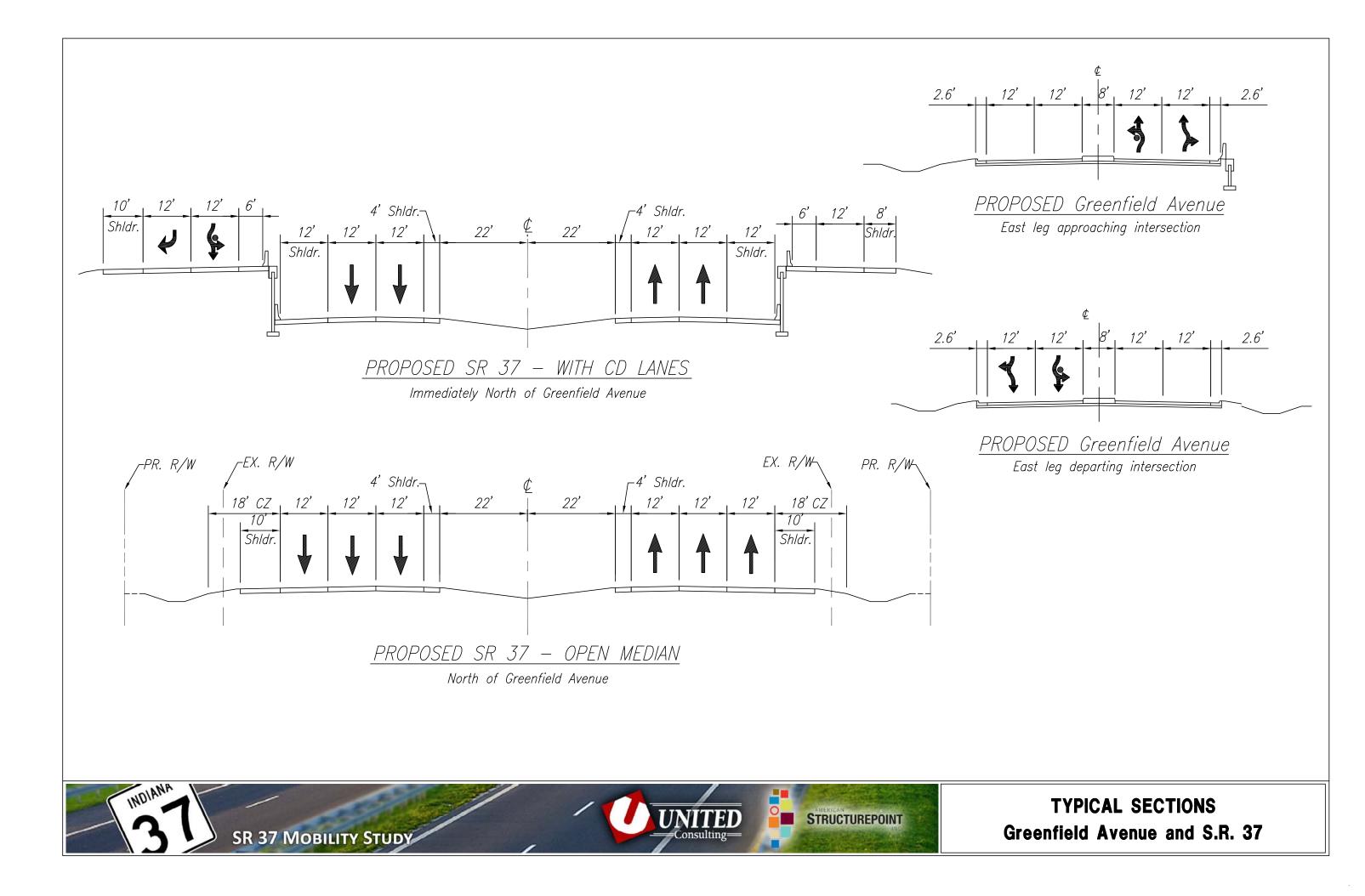
	Table 3 – Construction	Priorities
Priority Rank	Binder Number	Intersection
1.	5	SR 37 at 146 <sup>th</sup> Street
2.	10	146 <sup>th</sup> Street at Allisonville Road
3.	1	SR 37 at 126 <sup>th</sup> Street
4.	2	SR 37 at 131 <sup>st</sup> Street
5.	3	SR 37 at 135 <sup>th</sup> Street
6.	4	SR 37 at 141 <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

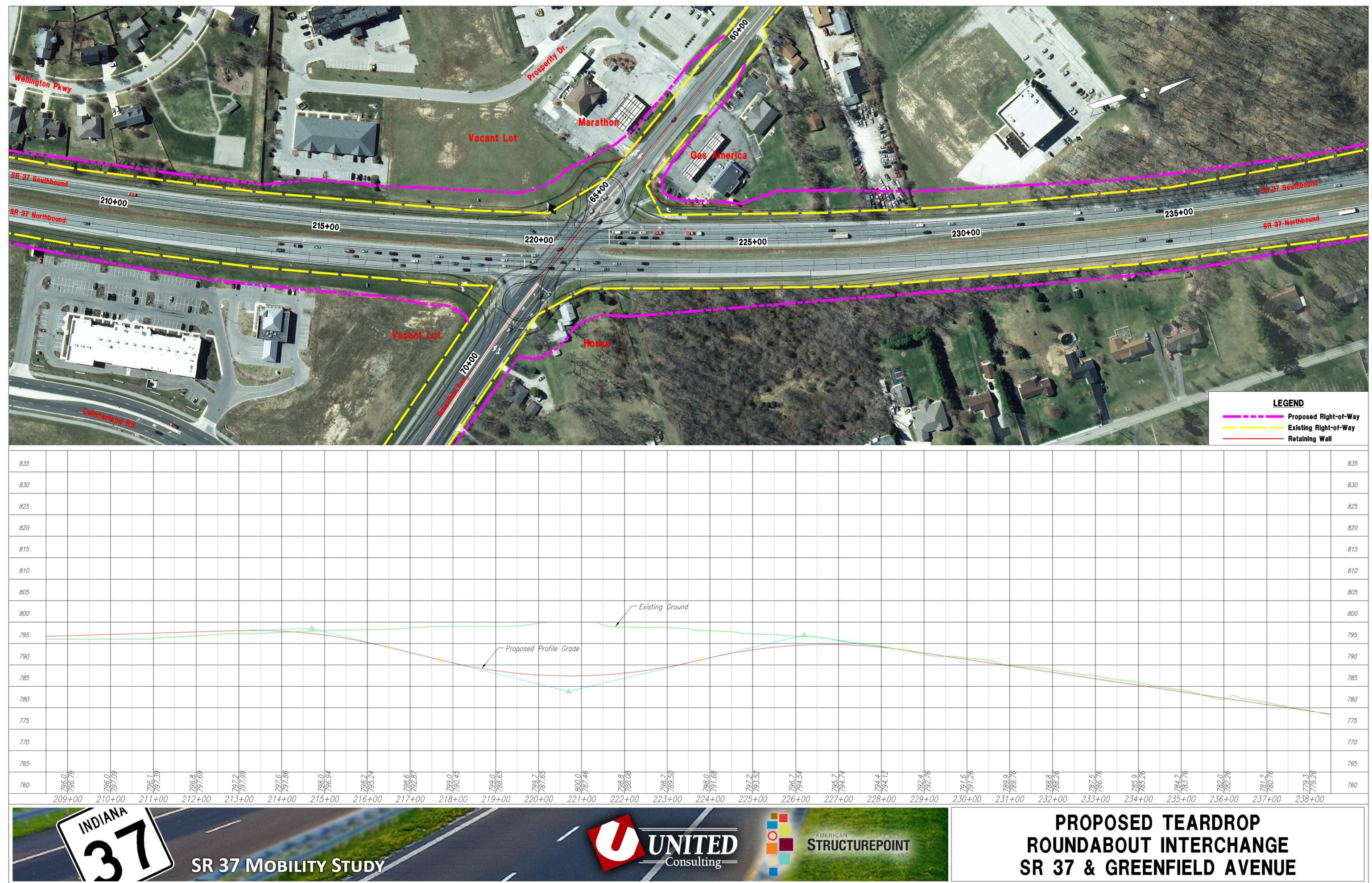
## XV. PROJECT BUDGET

At the intersection of SR 37 and Greenfield Avenue, a teardrop roundabout interchange is proposed, with a 4-lane bridge crossing SR 37. In order to construct these improvements, it is anticipated that construction cost will be \$24,886,132 in year 2024.



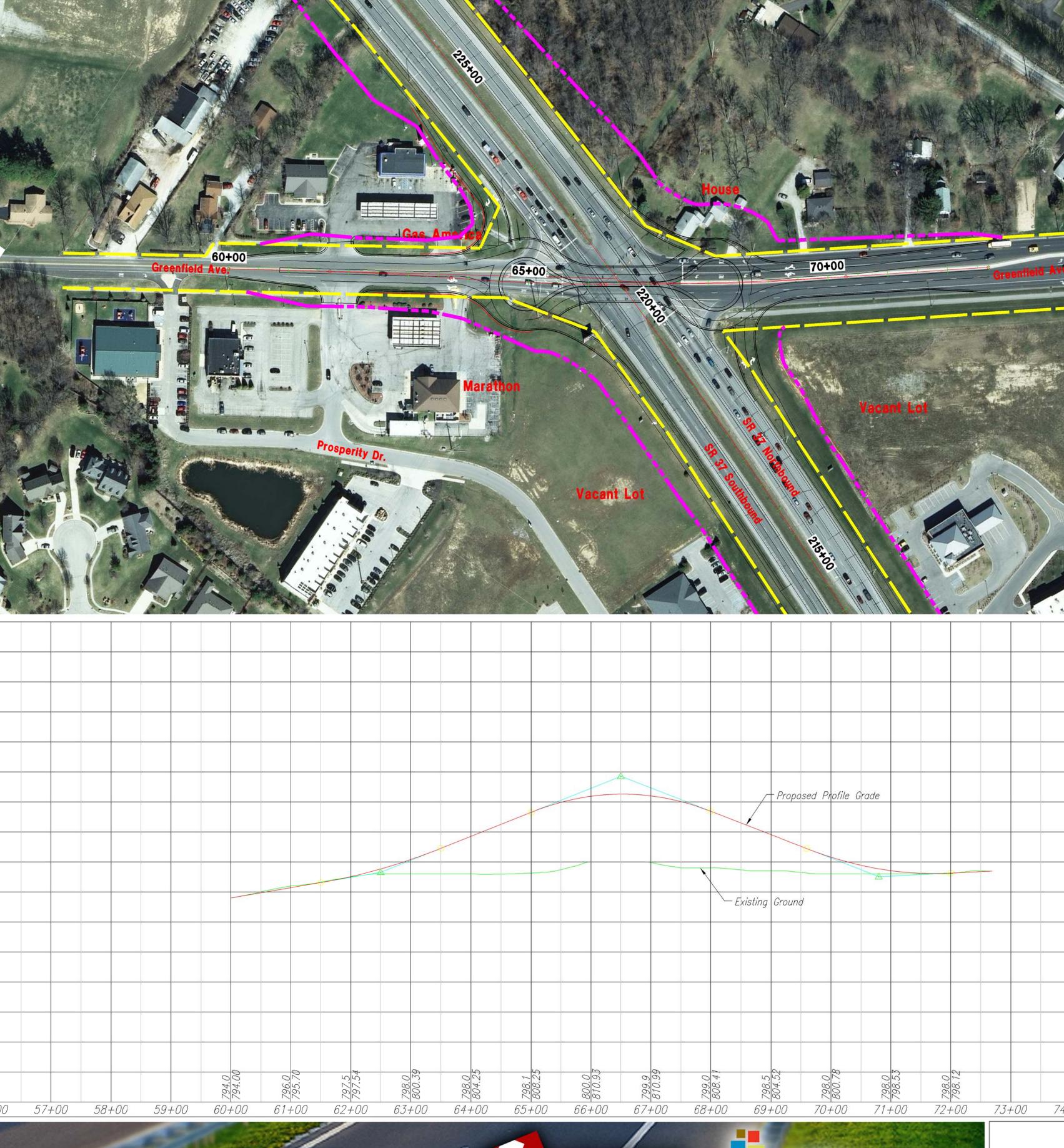
## TYPICAL SECTIONS Greenfield Avenue and S.R. 37





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# RUUNDADUUT INTERCHANGE **GREENFIELD AVENUE & SR 37**

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## Greenfield Avenue Project Development 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

## **PROJECT ITEMS:**

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

GREENFIELD AVENUE		
Engineering Costs	\$ 3,444,240	
Construction Costs	\$ 24,886,132	
Construction Cost Contingencies	\$ 2,488,613	
Construction Inspection Costs	\$ 3,732,919	
Utility Relocation Cost	\$ 1,080,000	
Land Cost	\$ 2,539,173	
Subtotal Greenfield Avenue Interchange		\$34,726,838

\* The Greenfield Avenue Interchange is projected to be constructed in 2024. An inflation factor of 1.469 has been applied to obtain the construction cost shown in this table

TOTAL INTERCHANGE COST:

\$34,726,838





## Greenfield Avenue 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	CO	BASE YEAR NSTRUCTION COST (2012)
ROADWAY	\$	10,890,866
GEOTECHNICAL MITIGATION	\$	500,000
BRIDGE (Greenfield Avenue Over S.R. 37)	\$	5,550,000
LIFT STATION	\$	-
TOTAL CONSTRUCTION COST:	\$	16,940,866

# **ROAD ESTIMATE**

Locatio	on: <b>Greenfi</b> /: <b>HAMIL1</b>			Project ID: Bid Date: Route:	10-703 (6) // State: IN SR 37
Sect Pa	ay Item	Description	Quantity Unit	Bid Price	e Extension Alt
100 10	)5-06845	construction engineering	1.000 L.S.	291,719.63	3 291,719.63
100 11	10-01001	mobilization and demobilization	1.000 L.S.	486,199.39	
	GEN	IERAL PROVISIONS SUBTOTALS			777,919.02 7.1%
200 20	)1-52370	clearing right of way	1.000 L.S.	152,057.47	
	)2-02278	curb, concrete, remove	531.000 L.F.	4.45	
	)2-02279	curb and gutter, remove	2,160.000 L.F.	4.62	
	)2-93999	signal pole, remove	4.000 EACH	495.00	•
	03-02000	excavation, common	93,000.000 C.Y.	7.88	
	05-06931	temporary check dam, revetment riprap	423.000 TON	38.84	
	05-06937	temporary silt fence	500.000 L.F.	1.74	
	07-08263	subgrade treatment, type ia	50,916.000 SYS	6.24	
	07-08267	subgrade treatment, type ilia	300.000 SYS	9.42	
	11-09194	b borrow	32,693.000 TON		1,111,562.00
	1-09264	structural backfill, type 1	728.000 C.Y.	23.88	
200 21	11-09266	structural backfill, type 3	23,469.000 C.Y.	21.27	499,185.63
	EAR	THWORK SUBTOTALS			2,865,193.05 26.3%
300 30	01-07448	compacted aggregate, no. 53, base	3,683.000 TON	15.66	
300 30	)2-06464	subbase for pccp	12,729.000 C.Y.	28.39	
	03-01180	compacted aggregate, no. 53	2,582.000 TON	17.20	
300 30	06-08034	milling, asphalt, 1 1/2 in	11,313.000 SYS	1.30	14,706.90
	AGG	BREGATE PAVEMENT AND BASES SUBTOT	ALS		478,169.39 4.4%
400 40	01-07328	qc/qa-hma, 3, 70, surface, 9.5 mm	934.000 TON	72.77	
	)2-10084	hma for temporary pavement, b	5,469.000 TON	50.00	
	ASP	HALT PAVEMENT SUBTOTALS			341,417.18 3.1%
500 50	01-06266	profilograph, pccp	1.000 L.S.	15,000.00	15,000.00
500 50	01-06323	qc/qa-pccp, 12 in	42,155.000 SYS	70.00	2,950,850.00
500 50	03-05240	d-1 contraction joint	16,911.000 L.F.	9.19	9 155,412.09
	CON	ICRETE PAVEMENT SUBTOTALS			3,121,262.09 28.7%
600 60	01-01522	guardrail, transition type tob	2.000 EACH	1,978.24	3,956.48
600 60	01-94689	guardrail end treatment, os	2.000 EACH	2,530.55	5 5,061.10
600 60	01-99105	quardrail, w-beam, 6 ft 3 in spacing	2.100.000 L.F.	17.42	36,582.00
600 60	03-06040	fence, farm field, 47 in	6,568.000 L.F.	5.50	36,124.00
600 60	04-07569	pavers {pavers}	471.000 SYS	827.77	389,879.67
600 60	05-06120	curb, concrete	620.000 L.F.	23.58	14,619.60
600 60	05-06140	curb and gutter, concrete	3,921.000 L.F.	14.29	56,031.09
600 60	05-06145	curb and gutter, b, concrete	961.000 L.F.	14.17	13,617.37
600 60	)5-06255	center curb, d, concrete	936.000 SYS	48.55	5 45,442.80
	0-09108	pccp for approaches, 9 in	300.000 SYS	57.06	
	15-06510	monument, c	9.000 EACH	419.32	
600 61	15-06515	monument, d	27.000 EACH	141.25	3,813.75

Location: County:	Green HAMIL	<i>Mobility Study - Greenfield Ave field Ave Interchange .TON ordsville</i>	E		0-703 (6) / / State: IN SR 37
Sect Pay I	tem	Description	Quantity Unit	Bid Price	Extension_Alt
600 616-0	)2320	geotextiles	546.000 SYS	2.51	1,370.46
600 616-0	)6405	riprap, revetment	307.000 TON	29.36	9,013.52
600 621-0	01004	mobilization and demobilization for seeding	4.000 EACH	382.61	1,530.44
600 621-0	)6545	fertilizer	6.000 TON	327.69	1,966.14
600 621-0	)6554	seed mixture, u	1,424.000 LBS	5.62	
600 621-0	06557	seed mixture, t	629.000 LBS	2.15	1,352.35
600 621-0	)6565	mulching material	26.000 TON	305.97	7,955.22
600 621-0	06567	water	14.000 M.G.	3.74	52.36
600 621-0	06574	sodding	3,495.000 SYS	3.12	10,904.40
600 628-0	)9403	field office, c	18.000 MONTH	2,082.44	37,483.92
600 628-1	1068	cellular telephone/radio	2.000 EACH	150.38	300.76
600 628-1	1069	cellular telephone/radio service, anytime minutes {cell phone}	36.000 MONTH	112.11	4,035.96
	INC	CIDENTAL CONSTRUCTION SUBTOTALS			709,988.15 6.5%
700 701-9	90386	temporary sheet piling	1.000 L.S.	262,625.00	262,625.00
700 706-0	)8496	reinforced concrete moment slab, 12 in	1,258.000 SYS	87.86	110,527.88
700 706-0	)9545	coarse aggregate, no 8	315.000 C.Y.	61.00	19,215.00
700 706-0	)9959	railing, concrete, ft	5,693.000 L.F.	60.00	341,580.00
700 715-0	)5048	pipe, type 4 circular 6 in	16,125.000 L.F.	3.24	52,245.00
700 715-0	)5053	pipe, underdrain, outlet 6 in	378.000 L.F.	11.77	4,449.06
700 715-0	)5149	pipe, type 2 circular 12 in	4,710.000 L.F.	29.00	136,590.00
700 715-0	06337	pipe extension, circular, 48 in	80.000 L.F.	170.00	13,600.00
700 715-0	9064	video inspection for pipe	4,710.000 L.F.	1.48	6,970.80
700 718-0	)6528	outlet protector, 1	14.000 EACH	519.56	7.273.84
700 718-0	)6532	video inspection for underdrains	3,000.000 L.F.	0.94	2,820.00
700 718-5	52610	aggregate for underdrains	1,452.000 C.Y.	32.72	47,509.44
700 718-9	99153	geotextiles for underdrain	11,049.000 SYS	0.98	10,828.02
700 720-0	07302	inlet, type ha, with slotted drain	12.000 EACH	2,444.15	29.329.80
700 720-4	45030	inlet, e7	4.000 EACH	1,399.63	5,598.52
700 720-4	45065	inlet, n12	5.000 EACH	2,978.77	14,893.85
700 720-4	45410	manhole, c4	12.000 EACH	2,000.00	24,000.00
700 720-9	98174	inlet, b15	12.000 EACH	2,189.87	26,278.44
700 720-9	98555	inlet, c15	12.000 EACH	2,161.77	25,941.24
700 731-9	93945	face panels, concrete	50,913.000 S.F.	11.99	610,446.87
700 731-9	93946	wall erection	50,913.000 S.F.	5.56	283,076.28
700 731-9	93947	leveling pad, concrete	3,323.000 L.F.	22.00	73,106.00
	ST	RUCTURES SUBTOTALS			2,108,905.04 19.4%
800 801-0	01093	temporary worksite speed limit sign assembly	4.000 EACH	723.00	2,892.00
800 801-0	)3290	construction sign, c	4.000 EACH	199.19	796.76
800 801-0		road closure sign assembly	4.000 EACH	308.61	1,234.44
800 801-0	)6625	detour route marker assembly	18.000 EACH	98.84	
800 801-0	06640	construction sign, a	24.000 EACH	160.87	3,860.88

			Project ID: <b>10</b> Bid Date: / Route: <b>Sf</b>	
Sect Pay Item	Description	Quantity Unit	Bid Price	Extension_Alt
800 801-06645	construction sign, b	4.000 EACH	58.33	233.32
800 801-06710	flashing arrow sign	510.000 DAY	8.52	4,345.20
800 801-06775 800 801-07024	maintaining traffic energy absorbing terminal, cz, tl-3	1.000 L.S. 1.000 EACH	194,479.75 7,316.67	194,479.75 7,316.67
800 801-07024	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	3,009.000 L.F.	16.86	50,731.74
800 801-08507	temporary traffic barrier type 1 anchored	296.000 L F	34 09	10 090 64

	т	OTALS		1	0,890,866.22 100.0%
	т 	RAFFICE CONTROL DEVICES AND LIGHTING	SUBTOTALS		488,012.30 4.5%
800	808-75998	snowplowable raised pavement marker	269.000 EACH	19.45	5,232.05
800	808-75510	transverse markings, preformed plastic, crosshatch line, white, 24 in	409.000 L.F.	12.09	4,944.81
800	808-75071	pavement message marking, preformed plastic. lane indication arrow	8.000 EACH	187.00	1,496.00
800	808-10037	line, multi-component, solid, white, 8 in	2,830.000 L.F.	1.04	2,943.20
800	808-10034	line, multi-component, solid, vellow, 4 in	11.288.000 L.F.	0.46	5.192.48
800	808-10033	line, multi-component, solid, white, 4 in	10,789.000 L.F.	0.46	4,962.94
800	808-10031	line, multi-component, broken, white, 4 in	2,708.000 L.F.	0.43	1,164.44
800	804-06770	delineator post	14.000 EACH	43.14	603.96
800	802-76135	overhead sign structure, cantilever single arm	1.000 EACH	20,672.00	20,672.00
	802-76095		681.000 LBS	2.68	1,825.08
800	802-09840	sign, sheet, with legend 0.100 in thickness	115.000 S.F.	17.27	1,986.05
800	802-07159	cantilever sign support foundation, ii	2.000 EACH	3,349.33	6,698.66
800	802-07138	wide flange sign post support foundation, ix	2.000 EACH	242.00	484.00
800	802-07057	sign, panel, with legend	429.000 S.F.	14.81	6,353.49
800	802-05701	sign post, square, type 1, reinforced anchor base	340.000 L.F.	12.95	4,403.00
	801-52817	temporary crossover, b	2.000 EACH	25,000.00	50,000.00
	801-09133	temporary changeable message sign	2.000 EACH	6.193.01	12.386.02
	801-08508	temporary traffic barrier, type 2, anchored	3,009.000 L.F.	25.00	75,225.00
800	801-08507	temporary traffic barrier, type 1, anchored	296.000 L.F.	34.09	10,090.64
800	801-08400	temporary traffic barrier, type 1	3,009.000 L.F.	16.86	50,731.74
800	801-07119	barricade, ili-b	48.000 L.F.	14.08	675.84

## BRIDGE ESTIMATE

JTB 11/26/12 JEC VIZUE/12

Project:	Greenfield Ave over SR37 Revised - Concrete Bridge Option
Location:	Hamilton County
County:	HAMILTON
District:	Greenfield

Project ID: **10-703-GREENFIELD OV** Bid Date: / / State: **IN** Route:

Pay Item	Description	Quantity Unit	Bid Price	Extension A	٩lt
105-06845	construction engineering	1.000 L.S.	150,437.00	150,437.00	
110-01001	mobilization and demobilization	1.000 L.S.	250,729.00	250,729.00	
203-02020	excavation, unclassified	805.000 C.Y.	20.83	16,768.15	
211-02050	b borrow	805.000 C.Y.	27.42	22,073.10	
302-07455	dense graded subbase	584.000 C.Y.	62.94	36,756.96	
609-06259	reinforced concrete bridge approach 12 in	3,493.000 SYS	83.33	291,071.69	
701-06011	dynamic pile load test	3.000 EACH	1,651.34	4,954.02	
701-08122	pile, steel pipe, 0.375", 14	6,060.000 L.F.	42.87	259,792.20	
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	436.000 C.Y.	584.17	254,698.12	
702-51015	concrete, b, footings	299.000 C.Y.	307.53	91,951.47	
703-06028	reinforcing bars	89,570.000 LBS	0.91	81,508.70	
703-06029	reinforcing bars, epoxy coated	907,040.000 LBS	0.95	861,688.00	
704-51002	concrete, c, superstructure	3,248.000 C.Y.	560.34	1,819,984.32	
706-09959	railing, concrete, ft	397.000 L.F.	64.42	25,574.74	
707-07605	structural member, concrete bulb-t beam, 54 in x 48 in	4,925.000 L.F.	259.77	1,279,367.25	
709-51821	surface seal	1.000 L.S.	55,039.00	55,039.00	
	TOTALS			5,515,349.88	

# **ROAD QUANTITIES**

				10	-703	
				SR 37 MOB	LITY STUL	DY
				GREENFIE		
_						
By:	BWS	3/27/12		Checked By:	BWC	11/24/12
						_
105-06845	CO	NSTRUCTION	ENGINEERIN	G		1
						LS
						LS
ENTIRE PROJEC		Project Cost				1.0
	Assume 3% of Total	i i rojeci Cost				
			1	1		

				10	-703	
				SR 37 MOBI GREENFIE		
By:	BWS	3/27/12		Checked By:	BWC	11/24/12
110-01001MOBILIZATION AND DEMOBILIZATION1LS						
						LS
ENTIRE PROJEC						1.0
	Assume 5% of Total	Project Cost				
	<u> </u>					

				10	-703	
				SR 37 MOB	LITY STUL	)Y
				GREENFIE		
By:	BWS	3/27/12	<u>.</u>	Checked By:	BWC	11/24/12
201-52370	(	CLEARING RIG	CHT OF WAY			1
	•		JIII OF WAT			LS
						LS
ENTIRE PROJECT	г Г					1.0
	Assume a Lump Sur	n amount of \$15k				
				<b> </b>		
	<u> </u>	<u> </u>				
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				10	-703	
				SR 37 MOBI GREENFIE		
By:	srs	11/19/12	-	Checked By:	BWS	11/24/12
By: 202-02278	C	CURB, CONCRE	ETE, REMOVE			531 LFT
						lft
West of SR 37						151.0
						146.0 128.0
						106.0
						<b>531</b> 0

				10	-703	
				SR 37 MOB	LITY STUL	ЭY
				GREENFIE		
_						
By:	STS	11/19/12		Checked By:	BWS	11/24/12
202-02279	C	URB AND GUT	TER, REMOVE			2,160
						LFT
						Length (ft)
West of CD 25						100.0
West of SR 37	<u> </u>					182.0
East of SR 37				<u> </u>		537.0
In Median, both sid	es					405.0
East of SR 37						
						518.0 518.0
						518.0
	}					
				<u> </u>		

				10	-703	
By: <b>202-93999</b>						
				SR 37 MOB		
				GREENFIE	LD AVENU	E
Dere	DWC	4/17/12		Cheeked Du	DWC	11/24/12
Dy:	BWS	4/1//12		Спескеа Бу:	DWC	11/24/12
202-93999		SIGNAL POL	E. REMOVE			4
			_,			EACH
Description						Each
T: "G 2 A"						
Line "S-2-A"						4.0
1 at each corner						4.0
		1		1		
				1		

10-703

## SR 37 MOBILITY STUDY GREENFIELD AVENUE

Checked By: \_\_\_\_\_ srp

By: <u>BWS</u> 10/29/12

203-02000

## EXCAVATION, COMMON

93,000

11/26/12

CYS

STATION	CUT AREA	CUT VOLUME	FILL AREA	FILL VOLUME	CUM. CUT VOLUME	CUM. FILL VOLUMI
	(sft)	(cys)	(sft)	(cys)	(cys)	(cys)
Line ''A''						
201+50.00	196.90		2.56			
202+00.00	196.90	364.63	2.56	4.74	364.63	4.74
205+82.00	196.39	2782.16	38.87	293.08	3146.79	297.82
214+84.13	249.48	7448.75	<i>93.89</i>	2217.90	10595.55	2515.72
217+71.57	2158.23	12816.15	1289.63	7364.43	23411.70	9880.15
223+28.00	2131.27	44200.12	1063.69	24249.22	67611.82	34129.37
226+35.56	249.48	13559.69	93.89	6593.06	81171.51	40722.43
235+33.72	196.39	7415.97	38.87	2208.14	88587.49	42930.57
238+33.71	200.89	2207.04	28.28	373.04	90794.52	43303.62
					Earthwork Balance =	47490.91
Line "S-1-A"						
60+00.00	60.17		14.13			
60+85.04	58.64	187.10	13.73	43.87	187.10	43.87
63+60.00	58.64	597.17	13.73	139.82	784.28	183.70
64+95.60	56.21	288.40	1010.80	2572.71	1072.68	2756.41
65+28.78	56.21	69.08	1010.80	1242.16	1141.75	3998.57
65+28.78	0.00	0.00	0.00	0.00	1141.75	3998.57
67+74.09	0.00	0.00	0.00	0.00	1141.75	3998.57
67+74.09	56.21	0.00	1010.80	0.00	1141.75	3998.57
68+12.85	56.21	80.69	1010.80	1451.06	1222.45	5449.63
69+65.20	58.64	324.03	13.73	2890.50	1546.47	8340.13
72+68.37	58.64	658.44	13.73	154.17	2204.91	8494.30
					Earthwork Balance =	-6289.38
				Tot	tal Earthwork Balance =	41201.52
	The Earthwo	ork Balance indicate	es this is a WASTI	E job and no BORR	OW will be required.	
		Common Erom	nation – Cumula	tive Cut Volume =	92999.43	
			uuon – Cumuuu	ure Cui volume =	74777.43	
					TOTAL =	93000.0

				10-	-703	
<i>Ву:</i> <b>205-06931</b>				SR 37 MOBI GREENFIE		
By:	МАС	5/29/12		Checked By:	JPS	11/21/12
205-06931	TEMPORA	RY CHECK DA	AM, REVETMEN	T RIPRAP		423 TON
Begin Sta.	End Sta.	Spacing	Number of Dams	Weight		TON
		Spacing		Tons/Dam		1011
Line "A"	Northbound					
201+50.00	217+50.00	100.0	16.0	6.5		104.0
222+00.00	238+33.95	100.0	17.0	6.5		110.5
Line "A"	Southbound					
201+50.00	219+50.00	100.0	18.0	6.5		117.0
225+07.27	238+33.95	100.0	14.0	6.5		91.0
		1				
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422.5

			10	-703	
			SD 27 MOD	Η ΙΤΥ ΟΤΙΠ	V
			SR 37 MOB		
			GREENFIE	LD AVENU	E
By: MAC	5/10/12		Checked By:	IPS	11/21/12
	5/10/12	-	Спескей Бу.	51.5	11/21/12
205-06937					-
205-06937	TEMPORARY	SILT FENCE			500
					LFT
					LFT
					500.0
Use as areas fall away from jobsite.					500.0
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			10-2	703	
			SR 37 MOBII GREENFIEI		
<i>By:</i>	SRS	5/15/12	Checked By:	ATW	11/24/12
207-08263	SUI	BGRADE TREATMEN	NT, TYPE IA		50,916 SYS

Begin Station	End Station	Side	Begin Width	End Width	Area (sft)	Area (sys)
Pavement Area cop	nied from 501-06323:					42154.1
Dutside Area (2' on	ı either side):					
Line "A"						
201+50.00	201+98.97	Rt	4.00	4.00	195.88	21.8
201+98.97	202+98.97	Rt	4.00	4.00	400.00	44.4
202+98.97	207+60.67	Rt	4.00	4.00	1846.80	205.2
207+60.67	212+98.39	Rt	4.00	4.00	2150.88	239.0
212+98.39	226+33.55	Rt	4.00	4.00	5340.64	593.4
226+33.55	229+30.72	Rt	4.00	4.00	1188.68	132.1
229+30.72	235+33.72	Rt	4.00	4.00	2412.00	268.0
235+33.72	238+33.71	Rt	4.00	4.00	1199.96	133.3
201+50.00	202+84.01	Lt	4.00	4.00	536.04	59.6
202+84.01	205+84.02	Lt	4.00	4.00	1200.04	133.3
205+84.02	211+86.95	Lt	4.00	4.00	2411.72	268.0
211+86.95	214+83.69	Lt	4.00	4.00	1186.96	131.9
214+83.69	228+21.90	Lt	4.00	4.00	5352.84	594.8
228+21.90	233+59.87	Lt	4.00	4.00	2151.88	239.1
233+59.87	238+33.71	Lt	4.00	4.00	1895.36	210.6
Ramp ''GRN_SE''						
10+00.00	13+58.05	Rt	4.00	4.00	1432.20	159.1
13+58.05	14+57.80	Rt	4.00	4.00	399.00	44.3
14+57.80	16+08.33	Rt	4.00	4.00	602.12	66.9
	there is curb on ramp					
14+76.76	16+08.34	Lt	2.00	2.00	263.16	29.2
15+10.52	16+08.34	Rt	2.00	2.00	195.64	21.7
Ramp ''GRN_SW''					<b>├</b> ─── <b>├</b>	
1 -		τ.	1.00	1.00	770.94	05.6
10+00.00	11+92.71	Lt	4.00	4.00	770.84	85.6
11+92.71	15+99.78	Lt	4.00	4.00	1628.28	180.9
	there is curb on ramp		2.00	2.00	266.22	10.7
10+00.00	11+83.16	Lt	2.00	2.00	366.32	40.7
10+00.00	11+29.18	Rt	2.00	2.00	258.36	28.7
				SUBTOTAL (T		46085.8

10-703

## SR 37 MOBILITY STUDY **GREENFIELD AVENUE**

*By: SRS* 5/15/12

## *Checked By: ATW 11/24/12*

207-08263

## SUBGRADE TREATMENT, TYPE IA

SYS

Begin Station	End Station	Side	Begin Width	End Width	Area (sft)	Area (sys)
Ramp ''GRN_NW						
20+10.08	23+22.83	Lt	4.00	4.00	1251.00	139.0
23+22.83	24+23.08	Lt	4.00	4.00	401.00	44.6
24+23.08	24+79.08	Lt	4.00	4.00	224.00	24.9
24+79.08	26+08.60	Lt	4.00	4.00	518.08	57.6
	e there is curb on ramp					
25+00.27	26+08.60	Lt	2.00	2.00	216.66	24.1
25+26.59	26+08.60	Rt	2.00	2.00	164.02	18.2
Ramp ''GRN_NE	"					
10+00.00	11+84.07	Rt	4.00	4.00	736.28	81.8
11+84.07	16+09.45	Rt	4.00	4.00	1701.52	189.1
	e there is curb on ramp					
10+00.00	11+22.49	Lt	2.00	2.00	244.98	27.2
10+00.00	11+75.18	Rt	2.00	2.00	350.36	38.9
Roundabout	<u> </u>				$\left  \right $	
Outside area	subtract inside area				+	
63536.86	16003.63			1	47533.23	5281.5
Line ''S-1-A''						
60+00.00	63+55.89	Rt.	4.00	4.00	1423.56	158.2
69+64.89	72+68.37	Rt.	4.00	4.00	1213.92	134.9
60+00.00	61+00.00	Lt.	4.00	4.00	400.00	44.4
61+00.00	63+18.19	Lt.	4.00	4.00	872.76	97.0
69+46.79	70+31.09	Lt.	4.00	4.00	337.20	37.5
70+31.09	71+32.95	Lt.	4.00	4.00	407.44	45.3
70+31.09	72+68.37	Lt.	4.00	4.00	541.68	60.2
11+34.73	72+00.37	ы.	4.00	7.00	571.00	00.2
Subtract from bridge area:					6046.99	-671.9
Subtract pavemen	t from moment slab					
NE Wall	NO Wall					
SE Wall	NO Wall				$\left  \right $	
	1 1					
SW Wall					4415.29	-490.6
NW Wall	+ +				4607.02	-511.9

*TOTAL* = 50915.6

				10	-703					
				SR 37 MOBI GREENFIE						
By:	SRS	5/7/12		Checked By:	BWS	11/24/12				
207-08267	SUBC	GRADE TREAT	MENT, TYPE I	ПА		300 SYS				
Alignment				Area (sft)		SYS				
Line "S-1-A"										
Driveway @ Sta. 61	+86.79	Rt		1650.15		183.4				
Driveway @ Sta. 61	+84.88	Lt		1043.20		115.9				
		I			1					

*TOTAL* = 299.3

### SR 37 MOBILITY STUDY GREENFIELD AVENUE

10-703

By: SRS 11/16/12

Checked By: \_\_\_\_\_ srp

11/26/12

211-09194

**B BORROW** 

32,693 TON

Station from	Station to	Area	VOLUME	VOLUME
		(sft)	(cft)	(cys)
Borrow f	or behind both inside and o	utside walls. Area calculated in Auto	CAD in "Typicals3 dwg". Areas fo	r two scenarios.
	I I I			
Area hetween hot	h walls at tallest point: 278.	23 sft		
	e wall, no outside wall prese			
NB Wall				
212+98.39	218+91.08	336.29	199315.72	7382.06
212+90.39	220+41.40	336.29	50551.11	1872.26
220+41.40	226+33.55	336.29	199134.12	7375.34
220   11.10	220133.33	550.27	1//134.12	1575.54
SB Wall				
214:04.12	220 . 75 07	226.20	100020.97	7271 40
214+84.13 220+75.97	220+75.97 222+29.03	336.29	199029.87 51472.55	7371.48
		336.29		1906.39
222+29.03 225+07.81	225+07.81 228+21.90	278.23 336.29	77564.96 105625.33	2872.78 3912.05
223+07.01	220+21.90	550.29	105025.55	3912.03
	1 1	<b> </b>		

			10-7	03	
			SR 37 MOBIL GREENFIEL		
<i>By:</i>	BWS	11/19/12	Checked By:	srp	11/26/12
211-09264	ST	RUCTURAL BACKFT	LL, TYPE 1		728 CYS

		Depth	Length	Width		Volume
		Depin	Lengin	waan		
	20.051/0					(cys)
Sum from Item 7	/20-05149	Assume 2'				
	(=10.00	• •		• •		60 <b></b>
	4710.00	2.0	4710.0	2.0		697.78
				Assume 2'		
oipe extension at oipe=48"	Sta 204+75					
pipe=48"						
	NB	2.00	25.61	5.00		9
	SB	2.00	54.48	5.00		20
			(assume	l ft larger than pi	pe width)	
		1 1				
		1 1			1	
		1 1				
	_					
		1 1		I		

TOTAL this page =

			10-7	03	
			SR 37 MOBIL GREENFIEL		
By:	SRS	10/22/12	Checked By:	srp	11/26/12
211-09266	ST	RUCTURAL BACKFII	L. TVPE 3		23.469

211-09266

# STRUCTURAL BACKFILL, TYPE 3

23,469 CYS

Segment	Length	Begin Height	End Height	Structure	e Backfill	Volume
0	( <i>ft</i> )	(ft)	( <i>ft</i> )	Width	Volume	(cys)
Outside Wall	V /		<b>U</b> ,	(ft) (cft)		
	urved and extends b	etween two alignment	s (mainline and ram			D for better
		direction of travel. No				
		d directly in AutoCAD		0	1	0 1 0
Segment 1 = Tran	sition from 4 ft to 7	ft				
Segment $2 = 7 ft$ (	around curve)					
Segment 3 = Tran	sition from 7 ft to 4	ft				
NE Wall						
No Wall						
SE Wall						
No Wall						
SW Wall	287.71					
Segment 1	143.86	4	11	5.25	5664.29	210
Segment 2	143.86	11	11	7.70	12184.52	451
Segment 3						
NW Wall	362.14					
· · · · · · · · · · · · · · · · · · ·	502.14					
Segment 1	181.07	4	11	5.25	7129.63	264
Segment 2	181.07	11	11	7.70	15336.63	568
Segment 3						
		+			+ +	
					+	
					+	

TOTAL this page =

			03			
			SR 37 MOBILITY STUDY GREENFIELD AVENUE			
<i>By</i> :	SRS	10/22/12	Checked By:	srp	11/22/12	
211-09266	ST	RUCTURAL BA	CKFILL, TYPE 3		CYS	

Station From	Station To	Begin Height	End Height	Structure	e Backfill	Volume	
		( <i>ft</i> )	( <i>ft</i> )	Width	Volume	(cys)	
Inside Wall		4		( <i>ft</i> )	(cft)		
		First segment transit ns from 27 ft back to				ll the way through	
NB Wall							
212+98.39	218+91.08	4	27	10.84	99547.07	3687	
218+91.08	220+41.40	27	27	18.90	76708.30	2841	
220+41.40	226+33.55	27	4	10.84	99456.37	3684	
SB Wall							
214+84.13	220+75.97	4	27	10.85	99532.69	3686	
220+75.97	222+29.03	27	27	18.90	78106.52	2893	
222+29.03	228+21.90	27	4	10.84	99577.30	3688	
Additional Area for	cut (2 ft out and )	1:1 slope out under re	(ad)				
Area by AutoCAD			(),,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
			Length	Area	Volume		
NB Wall			( <i>ft</i> )	(sft)	(cft)		
212+98.39	226+33.55		1335	15.12	20187.62	748	
SB Wall							
214+84.13	228+21.90		1338	15.12	20227.08	749	

TOTAL =

				10-	703	
				SR 37 MOBI GREENFIEI		
<i>By</i> :	BWS	4/26/12		Checked By:	BWC	11/24/12
01-07448	COMP	ACTED AGGRE	GATE, NO. 53	, BASE		3,683 TON
escription		Length (ft)	Width (ft)	Depth (ft)	Factor (tons/cys)	Weight (Tons)

Г

Description		Length (ft)	Width (ft)	Depth (ft)	Factor	Weight (Tons)
					(tons/cys)	
Assumptions: Used M			xample MOT Plan	•		
Use 165#/sys of Surfac	ce and 825#/sys og	f Base)				
					1 1	
				+		
				+	+ +	
MOT Phase II: Replac	oo Fristing Insid	o Shouldons and inst	all anassanans		+ +	
Line "A"	NB Inside	e Shoulders and insi	au crossovers			
	INB Instae	200.00	10.00	0.50		
At Beginning		300.00	19.00	0.50	2	211
At End		570.00	19.00	0.50	2	401
Line "A"	SB Inside			<u> </u>		
From Begin to End		1896.00	20.00	0.50	2	1404
North of S-Line (existin		630.00	2.00	0.50	2	47
North of ex. Turn lane:	s	964.00	20.00	0.50	2	714
Line "A"						
Median crossover at e	nd project	400.00	22.00	0.50	2	326
Median crossover at b		400.00	22.00	0.50	2	326
	Star Jan					
MOT Phase III: Insta	ll Temporary Pa	vement across S-Lin	e for NB Ph IV tra	ffic.		
Line "A"	I I J		<u> </u>	<u>,,,</u>		
At S-line for traffic on	ramn Ph IV	360.00	19.00	0.50	2	253
		000100	1,100			
				+		
				<b></b>		
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				1	† †	
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					↓	

10-703

#### SR 37 MOBILITY STUDY GREENFIELD AVENUE

By: SRS

5/17/12

# Checked By: <u>ATW</u>

302-06464

### SUBBASE FOR PCCP

12,729 CYS

11/24/12

Begin Station	End Station	Side	Begin Width	End Width	Area (sft)	Depth (ft)	Volume (cys)
Pavement Area cop	pied from 501-06323	3 multiplied	by 9:		379386.7392	0.75	10538.5
Outside Area (2' or	n either side):						
Line ''A''							
	201 00 07	D.	1.00	1.00	105.00	0.75	5.4
201+50.00	201+98.97	Rt	4.00	4.00	195.88	0.75	5.4
201+98.97	202+98.97	Rt	4.00	4.00	400.00	0.75	11.1
202+98.97	207+60.67	Rt	4.00	4.00	1846.80	0.75	51.3
207+60.67	212+98.39	Rt	4.00	4.00	2150.88	0.75	59.7
212+98.39	226+33.55	Rt	4.00	4.00	5340.64	0.75	148.4
226+33.55	229+30.72	Rt	4.00	4.00	1188.68	0.75	33.0
229+30.72	235+33.72	Rt	4.00	4.00	2412.00	0.75	67.0
235+33.72	238+33.71	Rt	4.00	4.00	1199.96	0.75	33.3
201+50.00	202+84.01	Lt	4.00	4.00	536.04	0.75	14.9
202+84.01	205+84.02	Lt	4.00	4.00	1200.04	0.75	33.3
205+84.02	211+86.95	Lt	4.00	4.00	2411.72	0.75	67.0
211+86.95	214+83.69	Lt	4.00	4.00	1186.96	0.75	33.0
214+83.69	228+21.90	Lt	4.00	4.00	5352.84	0.75	148.7
228+21.90	233+59.87	Lt	4.00	4.00	2151.88	0.75	59.8
233+59.87	238+33.71	Lt	4.00	4.00	1895.36	0.75	52.6
Ramp ''GRN_SE'' 10+00.00	13+58.05	Rt	4.00	4.00	1432.20	0.75	39.8
13+58.05	13+58.05	Rt Rt	4.00	4.00	399.00	0.75	11.1
13+58.05 14+57.80	16+08.33		4.00	4.00			11.1
		Rt	4.00	4.00	602.12	0.75	10./
	there is curb on ran	4	2.00	2.00	262.16	0.75	7 2
14+76.76	16+08.34	Lt	2.00 2.00	2.00 2.00	263.16 195.64	0.75 0.75	7.3
15+10.52	16+08.34	Rt	2.00	2.00	195.04	0.75	5.4
Ramp ''GRN_SW'	,						
10+00.00	11+92.71	Lt	4.00	4.00	770.84	0.75	21.4
11+92.71	15+99.78	Lt	4.00	4.00	1628.28	0.75	45.2
Add Extra 2' where	there is curb on ran	ıp					
10+00.00	11+83.16	Lt	2.00	2.00	366.32	0.75	10.2
10+00.00	11+29.18	Rt	2.00	2.00	258.36	0.75	7.2

SUBTOTAL (THIS PAGE) =

10-703

#### SR 37 MOBILITY STUDY **GREENFIELD AVENUE**

*Checked By: ATW 11/24/12* 

## *By:* SRS 5/17/12

302-06464

#### SUBBASE FOR PCCP

CYS

	26+08.60 26+08.60 11+84.07 16+09.45 the is curb on ram 11+22.49	Lt Lt Lt Lt Lt Rt Rt Rt Rt Rt	4.00 4.00 4.00 4.00 2.00 2.00	$     \begin{array}{r}       4.00 \\       4.00 \\       4.00 \\       4.00 \\       2.00 \\       2.00 \\       2.00 \\       \end{array} $	1251.00 401.00 224.00 518.08 216.66 164.02	0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75	34.8 11.1 6.2 14.4 6.0
20+10.08 23+22.83 24+23.08 24+79.08 Add Extra 2' where then 25+00.27 25+26.59 <b>Ramp ''GRN_NE''</b> 10+00.00 11+84.07 Add Extra 2' where then 10+00.00 10+00.00 <b>Roundabout</b> Outside area sub	24+23.08 24+79.08 26+08.60 re is curb on ram 26+08.60 26+08.60 11+84.07 16+09.45 re is curb on ram 11+22.49	Lt Lt Lt p Lt Rt Rt Rt	4.00 4.00 4.00 2.00	4.00 4.00 4.00 2.00	401.00 224.00 518.08 216.66	0.75 0.75 0.75 0.75	11.1 6.2 14.4
23+22.83         24+23.08         24+79.08         Add Extra 2' where then         25+00.27         25+26.59         Ramp ''GRN_NE''         10+00.00         11+84.07         Add Extra 2' where then         10+00.00         11+84.07         Add Extra 2' where then         10+00.00         10+00.00         0uthabout         Outside area       sub	24+23.08 24+79.08 26+08.60 re is curb on ram 26+08.60 26+08.60 11+84.07 16+09.45 re is curb on ram 11+22.49	Lt Lt Lt p Lt Rt Rt Rt	4.00 4.00 4.00 2.00	4.00 4.00 4.00 2.00	401.00 224.00 518.08 216.66	0.75 0.75 0.75 0.75	11.1 6.2 14.4
24+23.08         24+79.08         Add Extra 2' where then         25+00.27         25+26.59         Ramp ''GRN_NE''         10+00.00         11+84.07         Add Extra 2' where then         10+00.00         11+84.07         Add Extra 2' where then         10+00.00         10+00.00         0uther         0utside area         Substitution	24+79.08 26+08.60 re is curb on ram 26+08.60 26+08.60 11+84.07 16+09.45 re is curb on ram 11+22.49	Lt           Lt           p           Lt           Rt           Rt           Rt	4.00 4.00 2.00	4.00 4.00 2.00	224.00 518.08 216.66	0.75 0.75 0.75	6.2 14.4
24+79.08           Add Extra 2' where then           25+00.27           25+26.59           Ramp ''GRN_NE''           10+00.00           11+84.07           Add Extra 2' where then           10+00.00           11+84.07           Add Extra 2' where then           10+00.00           10+00.00           0000           0000           0000	26+08.60 pre is curb on ram 26+08.60 26+08.60 11+84.07 16+09.45 pre is curb on ram 11+22.49	Lt p Lt Rt Rt	4.00 2.00	4.00 2.00	518.08 216.66	0.75	14.4
Add Extra 2' where then           25+00.27           25+26.59           Ramp ''GRN_NE''           10+00.00           11+84.07           Add Extra 2' where then           10+00.00           10+00.00           10+00.00           0000           0000	re is curb on ram 26+08.60 26+08.60 11+84.07 16+09.45 re is curb on ram 11+22.49	Lt Rt Rt	2.00	2.00	216.66	0.75	
25+00.27 25+26.59 <b>Ramp ''GRN_NE''</b> 10+00.00 11+84.07 Add Extra 2' where then 10+00.00 10+00.00 <b>Roundabout</b> Outside area sub	26+08.60 26+08.60 11+84.07 16+09.45 the is curb on ram 11+22.49	Lt Rt Rt					6.0
25+26.59 <b>Ramp ''GRN_NE''</b> 10+00.00 11+84.07 Add Extra 2' where then 10+00.00 10+00.00 <b>Roundabout</b> Outside area sub	26+08.60 11+84.07 16+09.45 the is curb on ram 11+22.49	Rt Rt					6.0
Ramp ''GRN_NE''           10+00.00           11+84.07           Add Extra 2' where then           10+00.00           10+00.00           Roundabout           Outside area	11+84.07 16+09.45 ire is curb on ram 11+22.49	Rt	2.00	2.00	164.02	0.75	
10+00.00           11+84.07           Add Extra 2' where their           10+00.00           10+00.00           Roundabout           Outside area	16+09.45 re is curb on ram 11+22.49				1	0.75	4.6
11+84.07           Add Extra 2' where their           10+00.00           10+00.00           Roundabout           Outside area	16+09.45 re is curb on ram 11+22.49						
Add Extra 2' where then 10+00.00 10+00.00 Roundabout Outside area sub	re is curb on ram 11+22.49	Rt	4.00	4.00	736.28	0.75	20.5
10+00.00 10+00.00 Roundabout Outside area sub	11+22.49	111	4.00	4.00	1701.52	0.75	47.3
10+00.00 Roundabout Outside area sub		ıp					
<b>Roundabout</b> Outside area sub		Lt	2.00	2.00	244.98	0.75	6.8
Outside area sub	11+75.18	Rt	2.00	2.00	350.36	0.75	9.7
	btract inside area	ī					
	16003.63				47533.23	0.75	1320.4
Line ''S-1-A''							
60+00.00	63+55.89	Rt.	4.00	4.00	1423.56	0.75	39.5
69+64.89	72+68.37	Rt.	4.00	4.00	1213.92	0.75	33.7
60+00.00	61+00.00	Lt.	4.00	4.00	400.00	0.75	11.1
61+00.00	63+18.19	Lt.	4.00	4.00	872.76	0.75	24.2
69+46.79	70+31.09	Lt.	4.00	4.00	337.20	0.75	9.4
70+31.09	71+32.95	Lt.	4.00	4.00	407.44	0.75	11.3
71+32.95	72+68.37	Lt.	4.00	4.00	541.68	0.75	15.0
Subtract from bridge a	irea:				6046.99	0.75	-168.0
Subtract pavement from	m moment slab						
NE Wall	NO Wall						
SE Wall	NO Wall						
	1.0						
SW Wall		<b> </b>			4415.29	0.75	-122.6
NW Wall					4607.02	0.75	-128.0

*TOTAL* = 12728.9

				10-7	703		
	SR 37 MOBILITY STUDY GREENFIELD AVENUE						
By:	SRS	11/18/12	-	Checked By:	ATW	11/24/12	
303-01180	303-01180 COMPACTED AGGREGATE, NO. 53						
Begin Station	End Station		Area (sft)	Volume	Factor	Tons	

201+98.97       20         202+98.97       20         207+60.67       21         226+33.55       22         229+30.72       23         235+33.72       23         201+50.00       20         202+84.01       20         205+84.02       21         211+86.95       21         228+21.90       23         233+59.87       23         233+59.87       23         10+00.00       13         13+58.05       14         Ramp ''GRN_SW''       11+92.71         11+92.71       15         Ramp ''GRN_NW''       20+10.08       23         23+22.83       24	1+98.97         12+98.97         12+98.97         12+98.97         12+98.39         9+30.72         15+33.72         8+33.71         12+84.01         15+84.02         1+86.95         4+83.69         3+59.87         18+33.71         18+58.05         19+50.5	Rt           Rt           Rt           Rt           Lt	5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4           5.4	(cys)           9.79           20.00           92.34           107.54           59.43           120.60           60.00           26.80           60.00           120.59           59.35           107.59           94.77	(T/cys) 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.0000 2.0000 2.0000 2.000 2.000 2.000 2.000 2.000 2.00	19.59 40.00 184.68 215.09 118.87 241.20 120.00 53.60 120.00 241.17 118.70 215.19
201+50.00         20           201+98.97         20           202+98.97         20           207+60.67         21           226+33.55         22           229+30.72         23           235+33.72         23           201+50.00         20           202+84.01         20           205+84.02         21           211+86.95         21           228+21.90         23           233+59.87         23           10+00.00         13           13+58.05         14           Ramp ''GRN_SE''           11+92.71         15           Ramp ''GRN_NW''         20+10.08         23           23+22.83         24	2+98.97 7+60.67 2+98.39 9+30.72 5+33.72 8+33.71 2+84.01 1+86.95 4+83.69 3+59.87 8+33.71	Rt           Rt           Rt           Rt           Lt           Lt	5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4	20.00 92.34 107.54 59.43 120.60 60.00 26.80 60.00 120.59 59.35 107.59	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	40.00 184.68 215.09 118.87 241.20 120.00 53.60 120.00 241.17 118.70 215.19
201+98.97       20         202+98.97       20         207+60.67       21         226+33.55       22         229+30.72       23         235+33.72       23         201+50.00       20         202+84.01       20         205+84.02       21         211+86.95       21         228+21.90       23         233+59.87       23         233+59.87       23         233+59.87       23         201+90.00       13         13+58.05       14         20       11+92.71         15       11+92.71         20+10.08       23         23+22.83       24	2+98.97 7+60.67 2+98.39 9+30.72 5+33.72 8+33.71 2+84.01 1+86.95 4+83.69 3+59.87 8+33.71	Rt           Rt           Rt           Rt           Lt           Lt	5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4         5.4	20.00 92.34 107.54 59.43 120.60 60.00 26.80 60.00 120.59 59.35 107.59	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	40.00 184.68 215.09 118.87 241.20 120.00 53.60 120.00 241.17 118.70 215.19
202+98.97 20 207+60.67 21 226+33.55 22 229+30.72 23 235+33.72 23 201+50.00 20 202+84.01 20 202+84.01 20 205+84.02 21 211+86.95 21 228+21.90 23 233+59.87 23 Ramp ''GRN_SE'' 10+00.00 13 13+58.05 14 Ramp ''GRN_SW'' 20+10.08 23 23+22.83 24	7+60.67         2+98.39         9+30.72         5+33.72         8+33.71         2+84.01         15+84.02         1+86.95         4+83.69         3+59.87         8+33.71	Rt           Rt           Rt           Rt           Lt	5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	92.34 107.54 59.43 120.60 60.00 26.80 60.00 120.59 59.35 107.59	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	184.68 215.09 118.87 241.20 120.00 53.60 120.00 241.17 118.70 215.19
207+60.67         21.           226+33.55         22           229+30.72         23.           235+33.72         23.           201+50.00         20.           202+84.01         20.           205+84.02         21.           211+86.95         21.           228+21.90         23.           233+59.87         23.           233+59.87         23.           233+59.87         23.           231+58.05         14           Camp ''GRN_SE''         11+92.71           11+92.71         15           Camp ''GRN_NW''         20+10.08         23.           23+22.83         24	2+98.39 9+30.72 5+33.72 8+33.71 2+84.01 5+84.02 1+86.95 4+83.69 3+59.87 8+33.71 5 8+58.05	Rt           Rt           Rt           Lt	5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	107.54 59.43 120.60 60.00 26.80 60.00 120.59 59.35 107.59	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	215.09 118.87 241.20 120.00 53.60 120.00 241.17 118.70 215.19
226+33.55       22         229+30.72       23         235+33.72       23         201+50.00       20         202+84.01       20         205+84.02       21         211+86.95       21         228+21.90       23         233+59.87       23         233+59.87       23         211+86.05       14         0       13         13+58.05       14         0       13         13+58.05       14         0       23         228+21.90       23         233+59.87       23         233+59.87       23         10+00.00       13         13+58.05       14         0       0         11+92.71       15         0       23         20+10.08       23         23+22.83       24	9+30.72 5+33.72 8+33.71 2+84.01 15+84.02 1+86.95 4+83.69 3+59.87 8+33.71 3+58.05	Rt           Rt           Lt           Lt           Lt           Lt           Lt           Lt           Lt           Lt           Lt	5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	59.43 120.60 60.00 26.80 60.00 120.59 59.35 107.59	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	118.87 241.20 120.00 53.60 120.00 241.17 118.70 215.19
229+30.72 23. 235+33.72 23. 201+50.00 20. 202+84.01 20. 205+84.02 21 211+86.95 21. 228+21.90 23. 233+59.87 23. <b>Ramp ''GRN_SE''</b> 10+00.00 13 13+58.05 14 <b>Ramp ''GRN_SW''</b> 20+10.08 23 23+22.83 24	5+33.72         8+33.71         12+84.01         15+84.02         1+86.95         4+83.69         3+59.87         8+33.71         3+58.05	Rt           Lt	5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	120.60 60.00 26.80 60.00 120.59 59.35 107.59	2.000 2.000 2.000 2.000 2.000 2.000 2.000	241.20 120.00 53.60 120.00 241.17 118.70 215.19
229+30.72 23. 235+33.72 23. 201+50.00 20. 202+84.01 20. 205+84.02 21 211+86.95 21. 228+21.90 23. 233+59.87 23. Ramp ''GRN_SE'' 10+00.00 13 13+58.05 14 Ramp ''GRN_SW'' 20+10.08 23 23+22.83 24	5+33.72         8+33.71         12+84.01         15+84.02         1+86.95         4+83.69         3+59.87         8+33.71         3+58.05	Rt           Lt	5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	120.60 60.00 26.80 60.00 120.59 59.35 107.59	2.000 2.000 2.000 2.000 2.000 2.000 2.000	241.20 120.00 53.60 120.00 241.17 118.70 215.19
235+33.72 23 201+50.00 20 202+84.01 20 205+84.02 21 211+86.95 21 228+21.90 23 233+59.87 23 Ramp ''GRN_SE'' 10+00.00 13 13+58.05 14 Ramp ''GRN_SW'' 20+10.08 23 23+22.83 24	8+33.71         12+84.01         15+84.02         1+86.95         4+83.69         13+59.87         18+33.71         18+58.05	Rt Lt Lt Lt Lt Lt Lt	5.4 5.4 5.4 5.4 5.4 5.4 5.4	60.00 26.80 60.00 120.59 59.35 107.59	2.000 2.000 2.000 2.000 2.000 2.000 2.000	120.00 53.60 120.00 241.17 118.70 215.19
202+84.01 20. 205+84.02 21 211+86.95 21. 228+21.90 23. 233+59.87 23. Ramp ''GRN_SE'' 10+00.00 13 13+58.05 14 Ramp ''GRN_SW'' 11+92.71 15 Ramp ''GRN_NW'' 20+10.08 23 23+22.83 24	15+84.02       1+86.95       4+83.69       3+59.87       8+33.71       3+58.05	Lt Lt Lt Lt Lt	5.4 5.4 5.4 5.4	60.00 120.59 59.35 107.59	2.000 2.000 2.000 2.000	120.00 241.17 118.70 215.19
202+84.01 20. 205+84.02 21 211+86.95 21. 228+21.90 23. 233+59.87 23. Ramp ''GRN_SE'' 10+00.00 13 13+58.05 14 Ramp ''GRN_SW'' 11+92.71 15 Ramp ''GRN_NW'' 20+10.08 23 23+22.83 24	15+84.02       1+86.95       4+83.69       3+59.87       8+33.71       3+58.05	Lt Lt Lt Lt Lt	5.4 5.4 5.4 5.4	60.00 120.59 59.35 107.59	2.000 2.000 2.000 2.000	120.00 241.17 118.70 215.19
205+84.02       21         211+86.95       21-         228+21.90       23         233+59.87       23         Ramp ''GRN_SE''       10+00.00         13+58.05       14         Ramp ''GRN_SW''       11+92.71         15       15         Ramp ''GRN_NW''       20+10.08         23+22.83       24	1+86.95 4+83.69 3+59.87 8+33.71 3+58.05	Lt Lt Lt Lt	5.4 5.4 5.4	120.59 59.35 107.59	2.000 2.000 2.000	241.17 118.70 215.19
211+86.95       21-         228+21.90       23-         233+59.87       23-         Ramp ''GRN_SE''       10+00.00         13+58.05       14         Ramp ''GRN_SW''       11+92.71         11+92.71       15         Ramp ''GRN_NW''       20+10.08         23+22.83       24	4+83.69 3+59.87 8+33.71 3+58.05	Lt Lt Lt	5.4	59.35 107.59	2.000 2.000	118.70 215.19
228+21.90       23         233+59.87       23         Ramp ''GRN_SE''       10+00.00         13+58.05       14         Ramp ''GRN_SW''       11+92.71         11+92.71       15         Ramp ''GRN_NW''       20+10.08         23+22.83       24	3+59.87 8+33.71 3+58.05	Lt				
233+59.87       23         Ramp ''GRN_SE''       13         10+00.00       13         13+58.05       14         Ramp ''GRN_SW''       14         11+92.71       15         Ramp ''GRN_NW''       20+10.08       23         23+22.83       24	8+33.71	Lt				
Ramp ''GRN_SE''         10+00.00       13         13+58.05       14         Ramp ''GRN_SW''       11+92.71         11+92.71       15         Ramp ''GRN_NW''       20+10.08         23+22.83       24	3+58.05		5.4	94.77	2.000	100 54
10+00.00         13           13+58.05         14           Ramp ''GRN_SW''         11+92.71           11+92.71         15           Ramp ''GRN_NW''         20+10.08           23+22.83         24				1	1	189.54
10+00.00       13         13+58.05       14         Ramp ''GRN_SW''       11+92.71         11+92.71       15         Ramp ''GRN_NW''       20+10.08         23+22.83       24			1			
13+58.05       14         Ramp ''GRN_SW''       11+92.71         11+92.71       15         Ramp ''GRN_NW''       20+10.08         23+22.83       24		Rt	5.4	71.61	2.000	143.22
11+92.71       15         Ramp ''GRN_NW''       20+10.08       23         23+22.83       24	4+57.80	Rt	5.4	19.95	2.000	39.90
11+92.71       15         Ramp ''GRN_NW''       20+10.08       23         23+22.83       24						
Ramp ''GRN_NW''           20+10.08         23           23+22.83         24						
20+10.08         23           23+22.83         24	5+99.78	Lt	5.4	81.41	2.000	162.83
20+10.08         23           23+22.83         24						
23+22.83 24	3+22.83	Lt	5.4	62.55	2.000	125.10
	4+23.08	Lt	5.4	20.05	2.000	40.10
	4+79.08	Lt	5.4	11.20	2.000	22.40
Ramp ''GRN_NE''						
					<u> </u>	
11+84.07 16	6+09.45	Rt	5.4	85.08	2.000	170.15
					TOTAL =	2581.3

TOTAL =

				10-3	703	
				SR 37 MOBII GREENFIEI		
By:	ATW	11/24/12	_	Checked By:	BWS	11/25/12
306-08034	Γ	MILLING, ASP	HALT, 1 1/2 IN			11,313 SYS
Begin Sta.	End Sta.	Side	Width (ft)	Area (sys)		SYS
201+50.00	212+95.00	Rt	24.00	+		3053.3
228+57.50	238+33.71	Rt Rt	24.00			2603.2
201+50.00	212+95.00	Lt	24.00			3053.3
228+57.50	238+33.71	Lt	24.00			2603.2
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					TOTAL -	11212.0

TOTAL = 11.

				10-	703	
				SR 37 MOBI GREENFIE		
By:	ATW	11/24/12	_	Checked By:	BWS	11/25/12
401-07328	328 QC/QA-HMA, 3, 70, SURFACE, 9.5 mm					934 TON
Begin Sta.	End Sta.	Side	Width (ft)	Area (sys)	Factor	Weight (Tons)
					(#/SYS)	
201+50.00	212+95.00	Rt	24.00	3053.33	165	251.9
228+57.50	238+33.71	Rt Rt	24.00	2603.23	165	214.8
201+50.00	212+95.00	Lt	24.00	3053.33	165	251.9
228+57.50	238+33.71	Lt	24.00	2603.23	165	214.8
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		<u> </u>			TOTAL =	933.4

			10-7	703		
			SR 37 MOBIL GREENFIEL			
<i>By:</i>	BWS	4/25/12	Checked By:	BWC	11/24/12	

402-10084

## HMA FOR TEMPORARY PAVEMENT, B

5,469 TON

Description		Length (ft)	Width (ft)	Area (sys)	Factor	Weight (Tons)
					(#/SYS)	
		th and Keystone as e	xample MOT Plan.			
Use 165#/sys of Surj	face and 825#/sys o	f Base)				
	1 T T . 1		11			
		e 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	1005.00	20.00	(0.1.2	0000	
From Begin to End		1896.00	20.00	4213.33	990	2086
North of S-Line (exis		630.00	2.00	140.00	990	69
North of ex. Turn la	nes	964.00	20.00	2142.22	990	1060
Line "A"	. 1 .	400.00	22.00	077 70	000	40.4
Median crossover an		400.00	22.00	977.78	990	484
Median crossover at	t begin project	400.00	22.00	977.78	990	484
				cc:		
MOT Phase III: Ins Line "A"	stall Temporary Pa	vement across S-Lin	e for NB Ph IV traj			
At S-line for traffic	on name Dh IV	360.00	19.00	760.00	990	376
Ai S-une jor irajjic	on ramp Pn Iv	500.00	19.00	700.00	990	570

				10-	-703	
					LITY STUDY LD AVENUE	
By:	BWS	4/17/12		Checked By:	BWC	11/24/12
501-06266		PROFILOGR	АРН, РССР			1 LS
Description						LS
Assume 1 lump Sum	for entire project of	ut \$15k				1.0
						1.0
				SUBTOTAL (T	HIS PAGE) -	1.0

*TOTAL* = 1.0

### SR 37 MOBILITY STUDY **GREENFIELD AVENUE**

10-703

*By: SRS 5/15/12* 

*Checked By: ATW 11/24/12* 

501-06323

# QC/QA-PCCP, 12 IN

42,155 SYS

		Side	Begin Width	End Width	Area (sft)	Area (sys)
T. 11411						
Line "A"	201 00 07		20.00	20.00	10/0.0/	207
201+50.00	201+98.97	Rt	38.00	38.00	1860.86	207
201+98.97	202+98.97	Rt	38.00	50.00	4400.00	489
202+98.97	207+60.67	Rt	50.00	50.00	23085.00	2565
207+60.67	212+98.39	Rt	50.00	69.50	32128.77	3570
212+98.39	226+33.55	Rt	43.50	43.50	58079.46	6453
226+33.55	229+30.72	Rt	69.50	50.00	17755.91	1973
229+30.72	235+33.72	Rt	50.00	50.00	30150.00	3350
235+33.72	238+33.71	Rt	50.00	50.00	14999.50	1667
201+50.00	202+84.01	Lt	38.00	38.00	5092.38	566
202+84.01	205+84.02	Lt	38.00	50.00	13200.44	1467
205+84.02	211+86.95	Lt	50.00	50.00	30146.50	3350
211+86.95	214+83.13	Lt	50.00	69.50	17696.76	1966
214+83.13	228+21.90	Lt	43.50	43.50	58236.50	6471
228+21.90	233+59.87	Lt	69.50	50.00	32143.71	3572
233+59.87	238+33.71	Lt	50.00	50.00	23692.00	2632
amp ''GRN_SE'						
$\frac{10+00.00}{10+00.00}$	13+58.05	Rt	26.00	26.00	9309.30	1034
13+58.05	14+76.75	Rt	26.00	38.00	3798.40	422
14+76.75	15+10.51	Rt	32.00	27.47	1003.85	112
15+10.51	16+08.32	Rt	27.47	32.37	2926.48	325
amp ''GRN_SW		10	27.17	02.07	2720.10	525
$\frac{1}{20+00.00}$	21+32.31	Lt	17.15	13.47	2025.67	225
21+32.31	21+83.15	Lt	13.47	20.00	850.81	95
21+32.51	25+99.78	Lt	26.00	26.00	10832.38	1204
amp ''GRN_NW		En	20.00	20.00	10002.00	1207
$\frac{1}{40+00.00}$	43+12.75	Lt	26.00	26.00	8131.50	904
43+12.75	44+13.00	Lt	26.00	38.00	3208.00	356
44+13.00	44+90.19	Lt	38.00	38.00	2933.22	326
44+90.19	45+13.88	Lt	32.00	27.93	709.87	79
45+13.88	45+98.51	Lt	27.93	47.18	3178.28	353
Ramp ''GRN_NE'		Lu	2,.,5	,,,10	217 0.20	555
$\frac{1}{30+00.00}$	31+25.53	Rt	17.09	13.43	1915.59	213
31+25.53	31+75.17	Rt	13.43	20.00	829.73	92
31+75.17	36+09.44	Rt Rt	26.00	26.00	11291.02	1255
Roundabout	20107.11	111	20.00	20.00	112/1.02	1255
Outside area	subtract inside area		1			
56094.32	16003.63				40090.69	4455

SUBTOTAL (THIS PAGE) = 51744.7

10-703

### SR 37 MOBILITY STUDY GREENFIELD AVENUE

*By:* <u>SRS</u> 5/15/12

Checked By: ATW

11/24/12

501-06323

# QC/QA-PCCP, 12 IN

SYS

Begin Station	End Station	Side	Begin Width	End Width	Area (sft)	Area (sys)
Line ''S-1-A''						
	60.05.04	D.	11.20	20.45	1245 76	150
60+00.00	60+85.04	Rt.	11.20	20.45	1345.76	150
60+85.04	61+36.94	Rt.	16.45	22.10	1000.37	111
61+36.94	62+39.35	Rt.	22.10	24.00	2360.55	262
62+39.35	63+55.89	Rt.	24.00	24.00	2796.96	311
69+64.89	71+68.37	Rt.	24.00	24.00	4883.52	543
71+68.37	72+68.37	Rt.	24.00	36.00	3000.00	333
60+00.00	60+85.04	Lt.	16.00	28.00	1870.88	208
60+85.04	63+18.19	Lt.	24.00	24.00	5595.60	622
69+46.79	72+68.37	Lt.	24.00	24.00	7717.92	858
Subtract pavement	from moment slab					
NE Wall	NO Wall					
SE Wall	NO Wall					
SW Wall					4415.29	-491
NW Wall					4607.02	-512
Subtract from brids	ge area:					
					6046.99	-672
Resurfacing ''A'' (	Subtract from Mair	line)				
201+50.00	212+95.00	Rt	24.00	24.00	27480.00	-3053
228+57.50	238+33.71	Rt	24.00	24.00	23429.04	-2603
201+50.00	212+95.00	Lt	24.00	24.00	27480.00	-3053
228+57.50	238+33.71	Lt	24.00	24.00	23429.04	-2603

SUBTOTAL (THIS PAGE) = -9590.6

*TOTAL* = 42154.1

				10-	703	
				SR 37 MOBI GREENFIE		
By:	srs	11/19/12	_	Checked By:	ATW	11/24/12
503-05240		D-1 CONTRAC				21,078 LFT
Description		Pavement Area	Pavement Area	Spacing		Length (ft)
		(sys)	(sft)	(ft)		
Total Areas taken f	rom 501-06323					
		42,155	379395.00	18.00		21078
		+				
		1				
		1				
		1				
I	1	1	1			

*TOTAL* = 21077.5

				10-70	3	
				SR 37 MOBILI	TY STUDY	
				GREENFIELL	<b>AVENUE</b>	
	ana	11/2//12				11/05/10
By:	SRS	11/24/12	-	Checked By:	BWS	11/25/12
601-01522	GUAR	RDRAIL, TRAN	SITION TYPE	ГGВ		2
						EACH
						EACH
SW Quadrant						1.0
NIW On a lot						1.0
NW Quadrant				├		1.0
				├		
				· · · · · ·	TOTAL =	2.0

				10	-703	
				SR 37 MOB	LITY STUL	)Y
				GREENFIE		
By:	SRS	11/24/12	_	Checked By:	BWS	11/25/12
601-94689	CUA	DDDAIL END	TREATMENT,	06		2
	GUA	RDRAIL END		05		EACH
						EACH
SW Quadrant						1.0
Z Zudan anti						1.0
NW Quadrant						1.0
			ļ			
		1				
			ļ			

				10	-703	
<i>Ву:</i> <b>601-99105</b>						
				SR 37 MOB		
				GREENFIE	ELD AVENU	<b>E</b>
מ	CDC	11/24/12			DUVC	11/25/12
By:	SRS	11/24/12		Checked By:	BWS	11/25/12
601-99105	GUARD	RAIL, W-BEAN	A 6 FT 3 IN SPA	ACING		2,100
	0 cm lb		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			LFT
						LFT
						1500.0
SW Quadrant						1700.0
						400.0
NW Quadrant						400.0
			<u> </u>	<u> </u>		
				1		

				10	-703	
				SR 37 MOBI GREENFIE		
By:	BWS	11/20/12		Checked By:	BWC	11/24/12
603-06040		FENCE, FARM	FIELD, 47 IN			6,568 LFT
Begin Station	End Station			# of Sides		Length (ft)
Line "A"						
201+50.00	218+50.00			2.00		3400
222+50.00	238+33.71			2.00		3167
	1					
						<u> </u>

SUBTOTAL (THIS PAGE) = 6567.4

*TOTAL* = 6567.4

				10-	703	
					LITY STUDY LD AVENUE	
By:	JPS	11/21/12		Checked By:	BWS	11/24/12
604-07569		PAVE	ERS			471 SYS
Begin Station	End Station					SYS
<i>Line</i> ''S-1-A''						470.5
	1	1		SUBTOTAL (TI	HIS PAGE =	470.5

*TOTAL* = 470.5

				10	-703	
					LITY STUD LD AVENUE	
By:	JPS	11/21/12		Checked By:	BWS	11/24/12
605-06120		CURB, CO	NCRETE			620 LFT
Begin Station	End Station					LFT
Line ''S-1-A''						
West Side						310
East Side						310
		620.00				
				SUBTOTAL (T	HIS PACE =	620.0

SUBTOTAL (THIS PAGE) =

			10-703				
	SR 37 MOBILITY STUDY GREENFIELD AVENUE						
By	:Srs	11/19/12	Checked By:B	WS 11/24/12			
605-06140							
Begin Station	End Station		# of Sides	Length (ft)			
WB Side	Length measured in	CAD					
left	60+00.00	63+18.27	1.00	318			
roundabout	00100.00	05+10.27	1.00	685			
right	69+65.24	72+68.37	1.00	303			
EB Side	Length measured in	CAD					
left	60+00.00	65+56.43	1.00	556			
roundabout	00100.00	05 1 5 0.15	1.00	694			
right	69+46.27	72+68.37	1.00	322			
SW Ramp							
20+00.00	21+32.31		2.00	265			
21+32.31	21+83.15		1.00	51			
NW Ramp							
44+90.19	45+13.88		1.00	24			
45+13.88	45+98.51		2.00	169			
NE Ramp							
30+00.00	31+25.53		2.00	251			
31+25.53	31+75.17		1.00	50			
SE Ramp							
14+76.75	15+07.70		1.00	31			
15+07.70	16+08.32		2.00	201			
			SUBTOTAL (THIS P.	AGE) = 3920.4			

SUBTOTAL (THIS PAGE) =

TOTAL =

				10-	-703	
				SR 37 MOBI GREENFIE		
By:	JPS	11/21/12		Checked By:	BWS	11/24/12
605-06145	CUR	B AND GUTTE	CR, B, CONCRE	TE		961 LFT
Begin Station	End Station					LFT
Line "S-1-A"						960.5
				SUBTOTAL (TI	HIS PAGE) =	960.5

SUBTOTAL (THIS PAGE) =

*TOTAL* = 960.5

				10-	703	
					LITY STUDY LD AVENUE	
<i>By</i> :	srs	11/19/12		Checked By:	JPS	11/21/12
605-06255 CENTER CURB, D, CONCRETE						936 SYS
		Begin Station	End Station	Avg. Width (ft)	Area (sft)	Area (sys)
Line ''S-2-A''						
rea before roundabout		60+85.00	63+55.93	8.00	2167.44	241
5						

Teu bejore rounaaboui	00+03.00	03+33.93	0.00	2107.44	241
rea of Center curb north of rounda	bout			1225.27	136
				1220127	100
Area of Center curb south of rounda	hout			1021.50	114
Trea of Center Carb south of rounda	0000			1021.50	117
	69+46.79	70+29.98	8.00	665.52	74
	70+29.98	72+68.37	14.00	3337.46	371
				┥───┤─	
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				1 1	
				┼───┼─	
				+ +	

TOTAL =

				10-7	703	
				SR 37 MOBIL GREENFIEL		
By:	SRS	4/4/12		Checked By:	BWS	11/24/12
610-09108	P	CCP FOR APPF	ROACHES, 9 IN			300 SYS
Station				Area (sft)		SYS
Line "S-1-A" Driveway @ Sta. 6.		Rt		1650.15		183.4
Driveway @ Sta. 6.						115.9
Driveway @ Sta. 6.	1+04.00	Lt		1043.20		113.9
			1			
			}			
		I	I I	TOTAL =	I	299.3

			10-2	703	
			SR 37 MOBII GREENFIEI		
<i>By</i> :	BWS	11/20/12	Checked By:	BWC	11/24/12
615-06510		MONUMENT, C			9 EACH

60+00.00	Begin Project	Yes	
61+68.95	PC	Yes	
62+69.89	PI	Yes	
63+70.77	PT	Yes	
63+71.07	PC	Yes	
64+95.66	PI	Yes	
66+20.10	PT	Yes	
66+29.08	PC	Yes	
68+29.60	PI	Yes	
70+29.98	PT	Yes	
72+68.37	End Project	Yes	
201+50.00	Begin Project	No	1
			1
			1
			1
238+33.71	End Project, PCC	No	1
20+00.00	Begin Project, PC	Yes	
			1
			_
	End Project		
40+00.00		Yes	
42+45.15		Yes	
	PI		1
45+98.51		Yes	
30+00.00	Begin Project, PC	Yes	
30+90.16	PI	No	1
31+75.17	PCC	Yes	
33+92.34	PI	Yes	
36+09.44	End Project	Yes	
10+00.00	Begin Project	Yes	
			1
16+08.32	End Project, PT	Yes	
	$\begin{array}{c} 61 + 68.95 \\ 62 + 69.89 \\ 63 + 70.77 \\ 63 + 71.07 \\ 64 + 95.66 \\ 66 + 20.10 \\ 66 + 29.08 \\ 68 + 29.60 \\ 70 + 29.98 \\ 72 + 68.37 \\ \hline \end{array}$ $\begin{array}{c} 201 + 50.00 \\ 210 + 00.00 \\ 210 + 00.00 \\ 219 + 44.97 \\ 229 + 00.00 \\ 238 + 33.71 \\ \hline \end{array}$ $\begin{array}{c} 20 + 00.00 \\ 20 + 94.53 \\ 21 + 83.15 \\ 26 + 00.00 \\ 20 + 94.53 \\ 21 + 83.15 \\ 26 + 00.00 \\ 40 + 00.00 \\ 40 + 00.00 \\ 42 + 45.15 \\ 44 + 90.19 \\ 45 + 46.84 \\ 45 + 98.51 \\ 30 + 00.00 \\ 30 + 90.16 \\ 31 + 75.17 \\ 33 + 92.34 \\ 36 + 09.44 \\ \hline \end{array}$	61+68.95         PC $62+69.89$ PI $63+70.77$ PT $63+71.07$ PC $64+95.66$ PI $66+20.10$ PT $66+29.08$ PC $68+29.60$ PI $70+29.98$ PT $72+68.37$ End Project $201+50.00$ Begin Project $210+00.00$ Between BP and PI $219+44.97$ PI $229+00.00$ Between PI and EP $238+33.71$ End Project, PCC $20+00.00$ Begin Project, PCC $20+00.00$ Begin Project, PC $20+94.53$ PI $21+83.15$ PCC $26+00.00$ End Project $40+00.00$ Begin Project, PC $30+0.00$ Begin Project, PC <td< td=""><td>61+68.95         PC         Yes           <math>63+70.77</math>         PT         Yes           <math>63+70.77</math>         PC         Yes           <math>64+95.66</math>         PI         Yes           <math>66+29.08</math>         PC         Yes           <math>66+29.08</math>         PC         Yes           <math>66+29.08</math>         PC         Yes           <math>66+29.08</math>         PC         Yes           <math>66+29.08</math>         PT         Yes           <math>70+29.98</math>         PT         Yes           <math>72+68.37</math>         End Project         No           <math>201+50.00</math>         Begin Project         No           <math>210+00.00</math>         Between BP and PI         No           <math>210+00.00</math>         Between PI and EP         No           <math>229+00.00</math>         Between PI and EP         No           <math>238+33.71</math>         End Project, PC         No           <math>20+00.00</math>         Begin Project, PC         Yes           <math>20+00.00</math>         Begin Project, PC         Yes           <math>20+00.00</math>         Begin Project         Yes           <math>20+00.00</math>         Begin Project         Yes           <math>42+45.15</math>         PI         No           <math>21+83.15</math>         PCC         &lt;</td></td<>	61+68.95         PC         Yes $63+70.77$ PT         Yes $63+70.77$ PC         Yes $64+95.66$ PI         Yes $66+29.08$ PC         Yes $66+29.08$ PC         Yes $66+29.08$ PC         Yes $66+29.08$ PC         Yes $66+29.08$ PT         Yes $70+29.98$ PT         Yes $72+68.37$ End Project         No $201+50.00$ Begin Project         No $210+00.00$ Between BP and PI         No $210+00.00$ Between PI and EP         No $229+00.00$ Between PI and EP         No $238+33.71$ End Project, PC         No $20+00.00$ Begin Project, PC         Yes $20+00.00$ Begin Project, PC         Yes $20+00.00$ Begin Project         Yes $20+00.00$ Begin Project         Yes $42+45.15$ PI         No $21+83.15$ PCC         <

SUBTOTAL (THIS PAGE) = 9.0

*TOTAL* = 9.0

			10-2	703	
			SR 37 MOBII GREENFIEI		
<i>By</i> :	BWS	10/20/12	Checked By:	BWC	11/24/12
615-06515		MONUMENT, D			27 EACH

Alignment	Station	Description	Inside Pavement?	Each
Line ''S-1-A''				
	60+00.00	Begin Project	Yes	1
	61+68.95	PC	Yes	1
	62+69.89	PI	Yes	1
	63+70.77	PT	Yes	1
	63+71.07	PC	Yes	1
	64+95.66	PI	Yes	1
	66+20.10	PT	Yes	1
	66+29.08	PC	Yes	1
	68+29.60	PI	Yes	1
	70+29.98	PT	Yes	1
	72+68.37	End Project	Yes	1
Line "A"				
	201+50.00	Begin Project	No	
	210+00.00	Between BP and PI	No	
	219+44.97	PI	No	
	229+00.00	Between PI and EP	No	
	238+33.71	End Project, PCC	No	
SW Ramp				
	20+00.00	Begin Project, PC	Yes	1
	20+94.53	PI	No	
	21+83.15	PCC	Yes	1
	26+00.00	PI	Yes	1
	26+00.00	End Project	Yes	1
NW Ramp	40+00.00	Begin Project	Yes	1
-	42+45.15	PI	Yes	1
	44+90.19	PCC	Yes	1
	45+46.84	PI	No	
	45+98.51	End Project, PT	Yes	1
NE Ramp	30+00.00	Begin Project, PC	Yes	1
<b>.</b>	30+90.16	PI	No	
	31+75.17	PCC	Yes	1
	33+92.34	PI	Yes	1
	36+09.44	End Project	Yes	1
SE Ramp	10+00.00	Begin Project	Yes	1
···· <b>r</b>	12+38.43	PI	Yes	1
	14+76.75	PCC	Yes	1
	15+45.02	PI	No	
	16+08.32	End Project, PT	Yes	1

SUBTOTAL (THIS PAGE) = 27.0

*TOTAL* = 27.0

				10-	703	
By: 616-02320				SR 37 MOBL GREENFIEL		
By:	srs	11/19/12	_	Checked By:	BWS	11/24/12
616-02320		GEOTEZ	XTILES			546 SYS
Begin Station	End Station	Side Slope X:1	Slope Length (FT)	<b>Bottom</b> Perimeter(FT)		<b>Area</b> SYS
Assume 10% of pro	pject					
<i>Ditch Linings</i> Line "A"				+		
201+50.00	238+33.71	3	3.16	13.3		5451.9
				+		
				1 1		
				<u>_</u>		
			 	+ +		
		1		1 1		
				┨		
				+		
		1	1	+ +	Take 10%	5451.9
					TOTAL =	545 2

				10-703			
				SR 37 MOBI GREENFIE			
By:	DJZ	4/11/12	_	Checked By:	BWS	11/24/12	
616-06405		RIPRAP, RE	VETMENT			307 TON	
Begin Station	End Station	<b>Side Slope</b> (3:1)	Area (sys)	Volume (cys)	Factor (tons/cys)	<b>Weight</b> Tons	
Assume 10% of pro	ject						
<i>Ditch Linings</i> Line "A"							
201+50.00	238+33.71	3	1.7	2046.5	1.5	307.0	
				_			
				+			
					TOTAL -	307.0	

	10-703					
<i>By:</i> <b>621-01004</b>				SR 37 MOB	ILITY STUL	DY
				GREENFIE	LD AVENU	'E
	5.17					
By:	DJZ	4/25/12		Checked By:	BWS	11/24/12
(01.01004	MOBILIZ		EMODII 17ATI	ON EOD		
621-01004	MOBILIZ	ATION AND DI	EMUBILIZATI	<b>ON FOR</b>		4
		SEED	ING			EACH
Station						EACH
Use a Total of 4 for	r Entire Project					4.0

				10-703			
<i>By:</i> 621-06545	DJZ	4/25/12	_	SR 37 MOBILI GREENFIELI Checked By:	D AVENUE	11/24/12	
621-06545		FERTI	LIZER			6 TON	
Description		Area		Application Rate (lb/ac)		Ton	
Area of Permanent Seed	ling =	8.37	ac	800		3.3	
Area of Temporary Seed	ling =	4.19				1.7	
					TOTAL =	5.0	

			10-703					
<sub>Ву</sub> 621-06554								
				SR 37 MOBIL				
				GREENFIEL				
Ву	v: DJZ	4/25/12		Checked By:	BWS	11/24/12		
(21.0(554						1 404		
621-06554		SEED MIX	TURE, U			1,424 LBS		
Description			Area	Units		LBS		
Description			Анеи	Onus		LDS		
NE	Area from AutoCAD		103282.41	sft				
NW	Area from AutoCAD		87809.61	sft				
1 4 44			07007.01	Sji				
			05005.0					
SE	Area from AutoCAD		95007.3	sft				
SW	Area from AutoCAD		110147.04	sft				
	Total Seeding		44027.37 <b>9.10</b>	sys				
			9.10	ac				
	Total Sodding		3495.00	sys				
			0.72	ac				
	Total Seed Area		8.37	ac				
	Application Rate		170	#/ac		1423.7		
	+			+				
	+ +			+ +				
	+ +			╂────╂				
	+ +			+ +				
				<u> </u>				
	+ +			+ +				
					TOTAL =	1423.7		

				10	0-703	
By: <b>621-06557</b>	D <i>1</i> 7	4/25/12		GREENFI	BILITY STUD ELD AVENU	Ε
Dy.	DJZ	4/25/12	—	Спескей Бу.	BWS	11/24/12
621-06557		SEED MI	XTURE, T			629 LBS
Description		Area		Application Rate		LBS
Entire Project		4.19	ac	150	#/ac	628.1
					TOTAL =	628.1

			10-703					
				SR 37 MOBI	LITY STUD	Ŷ		
				GREENFIE				
D		105/10						
Ву:	DJZ	4/25/12		Checked By:	BWS	11/24/12		
621-06565		MULCHING I	MATERIAL			26 TON		
Description			Area	Application Rate		LBS		
Entire Project								
Seed Mixture, T			4.19					
Seed Mixture, U			8.37					
			12.56	2.00	Tons/ac	25.1		
<u>├</u>								
+								
<u>├</u>								
┞────┤								
					TOTAL =	25.1		

				10	-703	
				SR 37 MOB	LITY STUD	Y
					LD AVENUI	
By:	DJZ	4/25/12		Checked By:	BWS	11/24/12
621-06567		WAT	'ER			14 kGAL
Description					Rate (kGAL/sys)	kGAL
Area of Sodding =		3495.00	sys		0.004	14.0
				1		
			<u> </u>	1		
					TOTAL =	14.0

				10-	703	
				SR 37 MOBIL		
				GREENFIEL	LD AVENUI	E
By:	DJZ	4/25/12	-	Checked By:	BWS	11/24/12
						2.405
621-06574		SODD	OING			3,495 SYS
						515
Desition Charles and			<b>117:</b> L.L.	<b>D</b> mad a m		
Begin Station	End Station		Width	Factor		Area SYS
NB				+		
201+50	238+34		2.67			1092.8
SB						
201+50	238+32		2.67	+ +		1092.3
				1		
<b>NB</b> 201+50	238+32		16	0.1		654.6
	230+32		10	0.1		054.0
SB	22022		16	0.1		(54.6
201+50	238+32		16	0.1		654.6
				+		
				1 1		
				+		
				T		
				+ +		
				+ +		
				1	mo = + =	
					TOTAL =	3494.2

				10-70	5	
				SR 37 MOBILI GREENFIELL		
<i>By</i> :	STS	11/19/12		Checked By:	BWS	11/24/12
628-08520	CEI	LULAR TELE	CPHONE/RADIO	)		2 EACH
Description						Each
Assume 2 for the entire	project.					2.0
				SUBTOTAL (THIS		2.0

TOTAL =	2.0
IOIAL =	2.0

				10-703		
				SR 37 MOBILITY STU GREENFIELD AVEN		
By:	srs	11/19/12		Checked By: <u>BWS</u>	11/24/12	
628-08521	628-08521 CELLULAR TELEPHONE/RADIO SERVICE					
Description					Months	
Assume 2 phones f	or the entire project	with a project durat	tion of 18 months		36.0	
					+	
					+	
					+	
					+	
					+	
					+	
					-	
					+	
				SUBTOTAL (THIS PAGE) =	= 36.0	

TOTAL = 36.0

				10-	-703	
				SR 37 MOBI GREENFIE		
By:	srs	11/19/12		Checked By:	BWS	11/24/12
628-09403		FIELD OF	FFICE, C			18 MOS
Description						Months
Assume a project d	uration of 18 month	<i>s</i> .				18.0
				SUBTOTAL (T	HIS PAGE) =	18.0

*TOTAL* = 18.0

				10	-703	
				CD 27 1/0D		
				SR 37 MOB		
				GREENFIE	ELD AVENU	'E
Dere	DWC	1/26/12		Cheeked Du	DWC	11/24/12
Ву:	BWS	4/26/12		Checked By:	BWC	11/24/12
701-90386	Т	<b>EMPORARY S</b>	HEET PILING			1
	-					LS
Description						Area (sft)
Assumptions: Used	MOT Plan for 126	th and Keystone as e	example MOT Plan.	Will need wall fo	or Phase III.	
			6 for CD 27 - 1			
r or ine Under optic	to get health and 1	of elevation change	e for SR 37 and rem e bridge, and 200' o	aining grade by S	s-une.	
Assume 485° at 3%	w gei dack to grade	e on euner side of th I	e ortage, and 200' o	j 12.5 wail.		
			Total =	10505.00	cft	
			10101 =	10303.00	sft	
				<u> </u>		<u> </u>
SR 37 will go under	r Greenfield Avenue	2				
Use 10505 sft at \$2.	5/sft for a lump sum	unit cost of \$262,6	25			1.0
	l	<u> </u>	l			
				<u> </u>		

				10-70	3	
				SR 37 MOBILI GREENFIELD		
By:	STS	11/19/12	-	Checked By:	ATW	11/24/12
706-08496 REINFORCED CONCRETE MOMENT SLAB, 12 IN						
Description	Area					Area
	(sft)					(sys)
All areas measured	d in AutoCAD, ''SRS	S Working.dwg'' on	layer ''Moment Slab	"		
NE Wall	No wall					0
SE Wall	No wall					0
SW Wall	5300.64					589
NW Wall	6014.90					668
	1					
					TOTAL -	1257 3

TOTAL =

				10-	-703	
				SR 37 MOBI GREENFIE		
By:	Srs	11/19/12		Checked By:	ATW	11/24/12
706-09545	(	COARSE AGGE	REGATE, NO 8			315 CYS
Description	Area			Depth		Volume
	(sft)			(ft)		(cys)
All areas measured	d in AutoCAD, ''SRS	5 Working.dwg'' on	layer ''Moment Slab	"		
NE Wall	No wall					
SE Wall	No wall					
SW Wall	5300.64			0.75		147
NW Wall	6014.90			0.75		167
	ļ					
	-					
	+					
				SUDTOTAL /T		214.2

SUBTOTAL (THIS PAGE) = 314.3

*TOTAL* = 314.3

				10-703				
				SR 37 MOBII GREENFIEI				
By:	STS	11/24/12	-	Checked By:	BWS	11/25/12		
706-09959		RAILING, CO	NCRETE, FT			5,693 LFT		
Description	Length					Length		
	(ft)					( <i>ft</i> )		
NE Wall	No wall							
SE Wall	No wall							
SW Wall	287.71					288		
NW Wall	362.14					362		
RAMP TOP LEFT	TRAILING							
NB Wall								
212+98.39	218+91.08					593		
220+41.40	226+33.55					592		
SB Wall								
214+84.13	220+75.97					592		
222+29.03	228+21.90					593		
INSIDE WALL BO	DTTOM RAILING							
NB Wall								
212+98.39	226+33.55					1335		
SB Wall								
214.04.12	228 - 21.00					1220		
214+84.13	228+21.90					1338		
				<u> </u>				
				<u>_</u>				

SUBTOTAL (THIS PAGE) = 5692.3

TOTAL =

				10-7	703	
				SR 37 MOBII GREENFIEL		
By:	Srs	11/19/12		Checked By:	BWS	11/24/12
715-05048	]	PIPE, TYPE 4 C	IRCULAR 6 IN			16,125 LFT
Begin Sta.	End Sta.					LFT
Line "A"		A agu	ma hath aidea and m	adian		
201+50.00	238+33.71	Assu	me both sides and m			11051.1
				1 1		
Line "S-1-A" 60+00.00	72+68.37	Assume	both sides outside an	d median		5073.5
	.2.00.37					
				<u> </u>		
					TOTAL =	16124.6

*TOTAL* = 16124.6

				10-7	03	
				SR 37 MOBIL GREENFIELI		
By:	STS	11/19/12	_	Checked By:	BWS	11/24/12
715-05053	PIP	E, UNDERDRA	AIN, OUTLET 6	IN		378 LFT
Begin Station	End Station	Interval	Outlet Length			LFT
Line "A"						
201+50.00	238+33.71	400	27.00			270.0
Line "S-1-A"						
60+00.00	72+68.37	400	27.00	<u> </u>		108.0
				<u>├</u>		
				<u>                                      </u>		
				<u>├</u>		
				<u> </u>		
					TOTAL =	378.0

*TOTAL* = 378.0

				10-703	
				SR 37 MOBILITY STUD GREENFIELD AVENU	
By:	BWS	11/19/12		Checked By: <u>BWC</u>	11/24/12
715-05149	P	IPE, TYPE 2 CI	RCULAR 12 IN		4,710 LFT
Station					Lft
Use 200' inlat and					
Use 300' inlet space Line "A"	Median Inlets				
Line H	meant miers				87
					87
					99
					303
					273 60
					139
					68
					66
					154
					59
					166
					183 64
					99
					87
					0,
Line "A"	Outside Wall Inlets				
	Rt				36
	Lt				38
	Rt				58
	Rt				43
	Lt Rt				<u>38</u> 59
	Ki				<i>J</i> 7
Line "S-1-A"					
60+50.00					157
61+50.00	l				182
62+70.00 63+50.00					151 173
<u>63+50.00</u> <u>64+50.00</u>	+				556
68+50.00	1				651
69+50.00	1				172
70+50.00					167
71+50.00					167
72+50.00					67
	1				
	•			SUBTOTAL (THIS PAGE) =	4710.0

				10-703	
				SR 37 MOBILITY ST GREENFIELD AVE	
By:	srs	11/21/12		Checked By: BWS	11/24/12
715-06337	PIPI	E EXTENSION,	CIRCULAR, 48	IN	80 LFT
Station					Lft
204+75	NB SB				25.6 54
				SUBTOTAL (THIS PAGE	E) = 79.6

*TOTAL* = 79.6

				10-	703	
				SR 37 MOBI 126TH J	LITY STUD STREET	ÞΥ
By:	BWS	11/19/12		Checked By:	BWC	11/24/12
715-09064	V	IDEO INSPECT	TON FOR PIPE	,		4,710 LFT
Station						Lft
Total Length of Pi	pe Item # 715-05149	)				
						4710
L	1					
	L		L	SUBTOTAL (T	HIS PAGE =	4710.0

SUBTOTAL (THIS PAGE) =	4
------------------------	---

				10-7	/03	
				SR 37 MOBIL GREENFIEL		
By:	STS	11/19/12		Checked By:	BWS	11/24/12
718-06528		OUTLET PRO	DTECTOR, 1			14 EACH
Begin Station	End Station	Interval				Volume (cys)
Line "A"						
201+50.00	238+33.71	400				10
Line ''S-1-A''						
60+00.00	72+68.37	400				4
				$\vdash$		
				<u>├</u>		
				<b>├</b> ──── <b>├</b>		
				<u>├</u>		
					TOTAL =	14.0

*TOTAL* = 14.0

				10-703		
				SR 37 MOBILIT	Y STUDY	
				GREENFIELD .	A <i>VENUE</i>	
Byy	crc	11/10/12		Checked By:	RWS	11/24/12
Dy.	SYS	11/19/12		Checkeu Dy.	DWD	11/24/12
718-06532						3,000
	VIDEO	INSPECTION I	FOR UNDERDE	RAINS		LFT
		7 / 1				
Begin Station	End Station	Interval				LFT
Total length of und	erdrain from 715-03	5048	16125.00			
Refe	er to IDM Figure 52-	10B Len	gth>3000 and <30,0	000		3000
					OTAL =	3000.0

*TOTAL* = 3000.0

				10-	703	
				SR 37 MOBI	Ι ΙΤΥ ΥΤΙΙΟ	V
				GREENFIEI		
				GKEENFIEI	LD AVENUI	Ľ
By:	srs	11/19/12		Checked By:	BWS	11/24/12
2						
718-52610				NG		1,452
	AGO	GREGATE FOR	K UNDERDRAI	NS		CYS
						CID
1						
		Tota	al Length of Undera	Irain	Factor	Volume (cys)
			(ft)	IDM Fig 17-4A	(cys/lft)	
Total length of und	lerdrain from 715-0.	5048	16125.00		0.090	1451.3
				ļ		
				┟────┤		
				<u> </u>		
					1	
				↓ ]		
				ļ		
				┟────┤		
				╂─────┤		
				╂────┤		
				† †		
				1		
				1	1	
					TOTAL =	1451.3

				10-	703	
				SR 37 MOBL	LITY STUL	)Y
				GREENFIE	LD AVENU	'E
By:	STS	11/19/12		Checked By:	BWS	11/24/12
Dy.	515	11/1//12	•		Ditto	11/21/12
718-99153	CEC			TNI		11,049
	GEU	<b>)TEXTILES FO</b>	OK UNDEKDKA	.11N		SYS
		Toto	ıl Length of Underd	rain	Factor	Area (sys)
		1010	(ft)	IDM Fig 17-4A	(sft/lft)	Area (sys)
Total length of und	lerdrain from 715-0:	5048	(ft) 16125.00		6.17	11048.6
				┨────┤		
				I		
ļ				┨────┤		
				<b>T</b>		
					TOTAL =	11048.6

*TOTAL* = 11048.6

				10-7	/03	
				SR 37 MOBIL GREENFIEL		
By	y:BWS	5/11/12	_	Checked By:	BWC	11/24/12
720-07302	INLET, T	YPE HA, WI	TH SLOTTED D	PRAIN		12 EACH
Station						Each
Use 300' inlet spo Line "A"	Outside Wall Inlets					
Line A	Rt Inside Wall					1
	Rt Inside Wall Rt Outside Wall		+			1
				<u> </u>		*
	Lt Inside Wall		1			1
	Lt Outside Wall					1
	Rt Inside Wall	Flanking				1
	Sag Right					1
	Sag Left					1
	Rt Inside Wall Lt Inside Wall	Flanking				1
	Li Inside wali	Flanking				1
	Rt Outside Wall					1
						1
	Lt Outside Wall					1
	Rt Outside Wall					1
	+ +					
	+ +			<u>├</u>		
	+ +			<u>├</u>		
	+ +		1			
			1			
				SUBTOTAL (TH	IS PAGE) =	12.0

(1115 11102) =

*TOTAL* = 12.0

				10-	-703	
					LITY STUDY LD AVENUE	
By:	BWS	11/19/12		Checked By:	BWC	11/24/12
720-45030		INLE	Г, Е7			4 EACH
Station						Each
Use 400' inlat ange	ing for onen anges	nadian (SP 27)				
Use 400' inlet space Line "A"	ing for open grass i	neuun (SK 37)				
219+00	Flanking					1
220+50	Sag					1
221+50 226+50	Flanking					<u>1</u> 1
220-30		1				L
					┝────┼	
	<u> </u>				├	
		1			+	
					<u> </u>	
					<u> </u>	
					+	
	•	•	•	SUBTOTAL (T	HEDACE =	4.0

TOTAL = 4.0

				10-	703	
					LITY STUDY LD AVENUE	
By:	BWS	11/19/12		Checked By:	BWC	11/24/12
720-45065		INLET	<sup>r</sup> , N12			5 EACH
Station						Each
Ilso 400' inlot spac	ing for open grass n	nodian (SR 37)				
Line "A"		(SK 57)				
205+50						1
209+50 213+50						<u> </u>
215+50						1
230+50						1
234+50						1
		<u> </u>	}			
				SUBTOTAL (T		5.0

TOTAL = 5.0

				10	-703	
				SR 37 MOB GREENFIE	ILITY STUD	
By:	BWS	11/19/12	-	Checked By:	BWC	11/24/12
720-45410		MANHO	DLE, C4			12 EACH
Station						Each
Use 100' inlet spac	ing					
Line "S-1-A"	Outside Curb and O	Gutter Inlets				
60+50	Rt					1
61+50	Rt		ļ			1
62+70	Rt Di					1
63+50	Rt Lt					1
64+50 64+50	Rt					1
04+50						1
68+50	Lt					1
68+50	Rt					1
69+50	Rt					1
70+50	Rt					1
71+50	Rt					1
72+50	Rt					1
	-				ļ	

TOTAL =

				10	-703	
				SR 37 MOBI	ILITY STUD	
				GREENFIE	LD AVENU	E
By:	BWS	11/19/12		Checked By:	BWC	11/24/12
720-98174		INLET	<sup>2</sup> , B15			12 EACH
Station						Each
Use 100' inlet space	eing					
Line "S-1-A"	Outside Curb and O	Sutter Inlets				1
<u>60+50</u> 61+50	Rt Rt					1
<u>61+30</u> 62+70	Rt Rt	}				<u> </u>
63+50	Rt Rt					1
64+50	Lt	1	1			1
64+50	Rt Rt	1				1
68+50	Lt					1
68+50	Rt					1
69+50	Rt					1
70+50	Rt					1
71+50	Rt					1
72+50	Rt					1
	1	+				
	1	<u> </u>				
		1				
	1	1	1	<u> </u>		
	1	1				
	1					
		+				
					l	10.0

*TOTAL* = 12.0

				10	-703	
				SR 37 MOBI GREENFIE		
By:	BWS	11/19/12		Checked By:	BWC	11/24/12
720-98555		INLET	, C15			12 EACH
Station						Each
Use 1001 in lat an ac						
Use 100' inlet space	ing					
Line "S-1-A" 60+50	Outside Curb and C Lt	<i>suiter Iniets</i>				1
61+50	Lt					1
62+70	Lt					1
63+50	Lt					1
64+50	Lt					1
64+50	Rt					1
68+50	Lt					1
68+50	Rt					1
<u>69+50</u> 70+50	Lt					1
70+50 71+50	Lt Lt					1
71+30	Lt					1
72+30	Li					1
		1				
	1	1		1		
<b> </b>	1	+				
L		1		GUDEOTAL /		

TOTAL =

		10-703				
				SR 37 MOBIL GREENFIEL		
<i>By:</i>	SYS	11/24/12		Checked By:	srp	11/26/12
731-93945		FACE PANELS,	, CONCRETE			50,913 SFT

Begin Station	End Station		Begin Height	End Height	Area (sft)
	nu a d'ann d'ann da h-atau	· · · · · · · · · · · · · · · · · · ·			in AutoCAD for botton account
					in AutoCAD for better accurate
segments measure	a in the attection of th		* = measured directl		lengths depending on what th
Loomont 1 - Tuanci	tion from 4 ft to 7 ft	wall looks like.	+ = measurea arrecu	y in AutoCAD.	
Segment 1 = 1 ransi Segment 2 = 7 ft (ar					
	tion from 7 ft to 4 ft				
segment 5 – Transi	110h j10h 7 j1 10 4 j1				
NE Wall					
No Wall					
SE Wall					
No Wall					
SW Wall	287.71				
Segment 1	143.86	4	11		1079
Segment 2	143.86	11	11		1582
Segment 3					
NW Wall	362.14				
Segment 1	181.07	4	11		1358
Segment 2	181.07	11	11		1992
Segment 3					
INCIDE WALLAD	EAS CODIED EDOM	STRUCTURE	DACVEILI ADEAS	(211,00226)	
NB Wall	EAS COPIED FROM	SIRUCIURE	BACKFILL AKEAS	(211-09220)	
vD vvau					
212+98.39	218+91.08	4	27		9181
212+98.39	220+41.40	27	27		4059
220+41.40	226+33.55	27	4		9172
220 1 11.10	220100.00	27	,	1	21/2
SB Wall				ł – ł –	
214+84.13	220+75.97	4	27		9174
220+75.97	222+29.03	27	27		4133
222+29.03	228+21.90	27	4		9184

TOTAL =

			10-7	703	
			SR 37 MOBIL GREENFIEL		
<i>By:</i>	STS	11/24/12	Checked By:	srp	11/26/12
731-93946		WALL ERECTION			50,913 SFT

Begin Station	End Station		Begin Height	End Height	Area (sft)
1 11 •		. 1.			
					in AutoCAD for better accura
Segments measure	ed in the direction of tr				n lengths depending on what th
		wall looks like.	* = measured directl	y in AutoCAD.	
	ition from 4 ft to 7 ft				
Segment $2 = 7 ft$ (at					
segment 5 = Transi	ition from 7 ft to 4 ft				
NE Wall					
1E mun					
No Wall					
110 11411					
SE Wall					
No Wall					
SW Wall	287.71				
Segment 1	143.86	4	11		1079
Segment 2	143.86	11	11		1582
Segment 3					
NW Wall	362.14				
Segment 1	181.07	4	11		1358
Segment 2	181.07	11	11		1992
Segment 3					
	REAS COPIED FROM	<i>I STRUCTURE</i>	BACKFILL AREAS	(211-09226)	
NB Wall					
					0101
212+98.39	218+91.08	4	27	+ $-$	9181
218+91.08	220+41.40	27	27	<u>↓                                      </u>	4059
220+41.40	226+33.55	27	4	├	9172
SB Wall	<u> </u>			<u>├</u> ───	
	<u>├</u>			╂───╂──	
214+84.13	220+75.97	4	27	+	9174
214+84.13	220+73.97 222+29.03	27	27	┼───┼──	4133
220+73.97	222+29.03	27	4	<u>├</u>	9184
222 1 27.03	220+21.90	21	7	<u> </u>	7107
				<u>├</u>	

TOTAL =

				10-	703	
				SR 37 MOBII GREENFIEI		
By:	Srs	11/24/12		Checked By:	srp	11/26/12
731-93947	Ι	LEVELING PAI	), CONCRETE			3,323 LFT
Description	Length					Length (ft)
_	<i>(ft)</i>					
NE Wall	No wall					
SE Wall	No wall					
SW Wall	287.71					288
N 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	262.14					2/2
NW Wall	362.14					362
INSIDE WALL AH NB Wall	REAS COPIED FRO	DM STRUCTURE B	ACKFILL AREAS (	211-09226)		
212+98.39	218+91.08					592.7
218+91.08	220+41.40					150.3
220+41.40	226+33.55					592.1
SB Wall						
214+84.13	220+75.97					591.8
220+75.97	222+29.03					153.1
222+29.03	228+21.90					592.9
						2222.0

SUBTOTAL (THIS PAGE) = 3322.8

TOTAL =

				10-2	703	
				SR 37 MOBII GREENFIEI		
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 126	h and Keystone as e	example MOT Plan.			
Use 2 at each end o	of SR 37 for every pl	hase of MOT				4
				<u> </u>		
				+		
				SUBTOTAL (TH	IIS PAGE) =	4.0

TOTAL =

				10-	703	
				SR 37 MOBI GREENFIE	LITY STUDY LD AVENUE	
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-03290		CONSTRUCT	ION SIGN, C			4 EACH
Description						Each
Assumptions: Used N	MOT Plan for 126t	h and Keystone as e	xample MOT Plan.			
Use 1 at each end of						4
	- J J. P.	· J · · · -				
+						
┝────┼						
				SUBTOTAL (TH		4.0

*TOTAL* = 4.0

		10-703					
				SR 37 MOBI GREENFIE			
By:	BWS	4/26/12		Checked By:	BWC	11/24/12	
801-04308	ROA	AD CLOSURE S	SIGN ASSEMBI	LY		4 EACH	
Description						Each	
Assumptions: Used	MOT Plan for 126	th and Keystone as e	xample 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	
				11	iahast Total -	4	
				H	ighest Total =	4	

*TOTAL* = 4.0

				10	-703	
				SR 37 MOBI GREENFIE		
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-06625	DETO	UR ROUTE MA	ARKER ASSEM	BLY		18 EACH
Description						Each
Assumptions: Used	MOT Plan for 126	th and Keystone as e	example MOT Plan.			
MOT Phase III						
MOT Phase IV					Total =	18
MOT Phase V					Total =	18
					Total =	18
				Н	ighest Total =	18
						10.0

*TOTAL* = 18.0

				10	-703		
SR 37 MOBILITY STUDY GREENFIELD AVENUE							
<i>By</i> :	BWS	4/26/12		Checked By:	BWC	11/24/12	
801-06640		CONSTRUCT	ION SIGN, A			24 EACH	
Description						Each	
Assumptions: Used N	IOT Plan for 126	th and Keystone as e	example MOT Plan.				
	U		-				
MOT Phase I						0	
Begin Project Midde of project						8 4	
End Project						8	
Ena Project					Total =	20	
MOT Phase II							
Begin Project						8	
Midde of project						2	
End Project					<i>—</i>	8	
MOT Phase III					Total =	18	
Begin Project						8	
Midde of project						1	
End Project						8	
					Total =	17	
MOT Phase IV							
Begin Project						8	
Midde of project						8	
End Project					<i>—</i>	8	
MOT Phase V					Total =	24	
Begin Project						8	
Midde of project						2	
End Project						8	
2.1.4 1 10/000					Total =	18	
				Н	ighest Total =	24	
		1					

TOTAL =

24.0

	10-703						
SR 37 MOBILITY STUD GREENFIELD AVENU							
<i>By</i> :	BWS	4/26/12	_	Checked By:	BWC	11/24/12	
801-06645		CONSTRUCT	ION SIGN, B			4 EACH	
Description		<u> </u>				Each	
Assumptions: Used M	MOT Plan for 12(	th and Keystone as e	example MOT Plan.				
	10111001120						
MOT Phase I							
Begin Project		_				2	
Midde of project						0	
End Project		+			Total =	2 4	
MOT Phase II		1	<u>                                      </u>		10101 -	7	
Begin Project		1	1 1			2	
Midde of project		1				0	
End Project						2	
					Total =	4	
MOT Phase III							
Begin Project			┨─────┤			3	
Midde of project End Project						<u> </u>	
Επα Ετοjετι		+	<del>   </del>		Total =	4	
MOT Phase IV			<u>                                     </u>		10000	,	
Begin Project		1	1 1			2	
Midde of project						0	
End Project		1				0	
					Total =	2	
MOT Phase V							
Begin Project						0	
Midde of project						0	
End Project		+			Total =	<u> </u>	
├		-			10101 -	V	
l			<u> </u>		<del>   </del>		
		1	1 1				
			1		l		
ļ							
┞────┼			┨─────┤				
┞────┼				н	lighest Total =	4	
┠────┼		-		11	lignesi 10iui –	4	
┠────┼		1	<del> </del>				
l – – – – – – – – – – – – – – – – – – –		1	1				
					Ī		

TOTAL =

4.0

			10-703			
	SR 37 MOBILITY STUDY GREENFIELD AVENUE					
By:	BWS	4/26/12	-	Checked By:	BWC	11/24/12
801-06710		FLASHING A	RROW SIGN			510 DAY
Description						Day
Assumptions: Used	MOT Plan for 120	6th and Keystone as e	example MOT Plan.			
MOT Phase I						45
Begin Project Midde of project						<u> </u>
End Project						45
					Total =	90
MOT Phase II						
Begin Project						0
Midde of project						0
End Project					Total =	0 0 0
MOT Phase III					10101 =	0
Begin Project						105
Midde of project						0
End Project						105
					Total =	210
MOT Phase IV						
Begin Project						105
Midde of project				-		0
End Project					Total =	105 210
MOT Phase V					10101 =	210
Begin Project						0
Midde of project						0
End Project						0
					Total =	0
		1				
					Total =	510
		1				
				SUBTOTAL (TH	HSPAGE =	510.0

SUBTOTAL	(THIS PAGE) =	

TOTAL =510.0

		10-703				
		SR 37 MOBILITY STUDY GREENFIELD AVENUE				
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-06775		MAINTAININ	G TRAFFIC			1 LS
Description						LS
Assumptions · Used	MOT Plan for 1261	th and Kovstone as a	example MOT Plan.			
ENTIRE PROJEC	<b>T</b> Assume 2% of Total	Project Cost				1
	2155unie 270 0j 10101					
	<u> </u>					
	<u>_</u>					
	_	-	-	SUDTOTAL (T		1.0

*TOTAL* = 1.0

			10-703			
		SR 37 MOBILITY STUDY GREENFIELD AVENUE				
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	xample MOT Plan.			
Use at hegin projec	t for MOT Phase III					1
ese ai begii projec	1. joi 11.01 1 iuse 111					1
				<u> </u>		
L						
				Н	ighest Total =	1
				SUDTOTAL /T		1.0

*TOTAL* = 1.0

				10-	-703	
					LITY STUDY LD AVENUE	
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-07118		BARRICA	DE, III-A			228 LFT
Description						Length (ft)
Assumptions: Used	MOT Plan for 126t	h and Keystone as e	xample MOT Plan.			
		-				
MOT Phase I						0
Begin Project Midde of project						0 0
End Project						0
2.1.4 1 10/001					Total =	0
MOT Phase II						
Begin Project						0
Midde of project						0
End Project					Total =	0 0
MOT Phase III					10101 -	0
Begin Project						36
Midde of project						156
End Project						36
					Total =	228
MOT Phase IV						
Begin Project						72
Midde of project End Project						72 96
Епи Г Тојест					Total =	168
MOT Phase V					10000	100
Begin Project						12
Midde of project						132
End Project						12
					Total =	156
				U	ighest Total =	228
				П	ignesi 10iai =	220
				SUBTOTAL (T	HIS PAGE) =	228.0

SUBTOTAL (THIS PAGE) =

TOTAL =

228.0

				10	-703	
					LITY STUDY LD AVENUE	
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 126t	h and Keystone as e	y wample MOT Plan			
		n ana Reystone as e				
MOT Phase I						
Begin Project						0
Midde of project						0 0
End Project					Total =	0
MOT Phase II					10000	Ŭ
Begin Project						0
Midde of project						0
End Project						0
					Total =	0
MOT Phase III						24
Begin Project						<u>24</u> 0
Midde of project End Project						24
Lha i rojeci					Total =	48
MOT Phase IV						
Begin Project						24
Midde of project						0
End Project						24
					Total =	48
MOT Phase V						0
Begin Project Midde of project						<u> </u>
End Project						0
Enarrojeer					Total =	0
					<u> </u>	
				1		
				H	ighest Total =	48
					ļļ_	
				1		
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<u></u>	1	1	1	SUBTOTAL (T	HIS PAGE =	48.0

SUBTOTAL	(THIS	PAGE) =	

TOTAL =48.0

				10	-703	
					ILITY STUDY ELD AVENUE	
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-08400	ТЕМРО	PRARY TRAFFI	IC BARRIER, T	YPE 1		3,009 LFT
Description						Length (ft)
Assumptions: Used	MOT Plan for 126	th and Keystone as e	example MOT Plan.			
	for MOT Phase III					3009
		, therefore will use F I between NB and SI	<i>Phase III quantity</i> B traffic, all traffic or	sB lanes and wi	idening.	
					┨────╂─	
					<u> </u>	
					<u> </u>	
				H	lighest Total =	3009
					<b>├</b>	
					┨────╂─	
				SUBTOTAL (T	THIS PAGE) –	3009.0

SUBTOTAL (T	(HIS PAGE) =
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TOTAL =

				10	-703	
				SR 37 MOBI GREENFIE		
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-08507	ТЕМРО	RARY TRAFFI ANCHO	C BARRIER, T DRED	YPE 1,		296 LFT
Description						Length (ft)
Assumptions · Used	MOT Plan for 126t	h and Kovstone as a	rample MOT Plan			
Assumptions. Osea	<b>WOTT</b> un jor 120	n ana Keysione as e	xample MOI I lan.			
Will need at the end	l of the project for M	OT Phase III				168
Will need at the end	l of the project for M	OT Phase IV				296
				H	ighest Total =	296

SUBTOTAL (THIS PAGE) = 296.0

TOTAL =

296.0

				10	-703	
				SR 37 MOB GREENFIE		
By:	BWS	4/26/12		Checked By:	BWC	11/24/12
801-08508	TEMPO	RARY TRAFFI ANCH(	C BARRIER, T DRED	YPE 2,		3,009 LFT
Description						Length (ft)
Againsting Hand	MOT Dian for 126	th and Vanatana as a	MOT Plan			
Assumptions: Osea	MOT Plan for 126	n ana Keysione as e	zampie MOT Fun.			
	ngth of the project fo					3009
Will need at the end Used to protect dro	l of the project for M poff next to NB outsi	OT Phase IV	ucting depressed sec	tion of NR SR 37		355
Oseu io protect uro		ue iune when consin	acting depressed see			
				<b></b>	lighest Total =	3009
				Б	ignesi 10iai =	3009

SUBTOTAL (THIS PAGE) = 3009.0

TOTAL =

3009.0

				10-703	
				SR 37 MOBILITY STUL GREENFIELD AVENU	
By:	BWS	4/26/12		Checked By: <u>BWC</u>	11/24/12
801-09133	TEMPOR	ARY CHANGE	ABLE MESSAG	E SIGN	2 EACH
Description					Each
Assumptions: Used	MOT Plan for 126t	h and Keystone as e	example MOT Plan.		
			ration of the project.		2
		fin SK 57 for the dat	unon of the project.		
	<u> </u>				
				SUBTOTAL (THIS PAGE) =	2.0

*TOTAL* = 2.0

				10-	-703	
				SR 37 MOBI GREENFIE	LITY STUD LD AVENUI	
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 Sk	R 37 for MOT Phase	111				2.0
						2.0
				SURTOTAL (T		2.0

SUBTOTAL (THIS PAGE) = 2.0

*TOTAL* = 2.0

				10-7	703	
				SR 37 MOBII GREENFIEL		
<i>By:</i>	JPS	11/28/12	_	Checked By:	BWC	12/5/12
802-05701	SIGN POS	ST, SQUARE, 7 ANCHO	ГҮРЕ 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
				+		
<u>├</u>			1	+ +		
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<b>├</b> ───				┼───┤		
				╂─────┤		
				SUBTOTAL (TH	US PACE) -	340.0

SUBTOTAL (THIS PAGE) =

TOTAL = 340.0

				10-2	703	
				SR 37 MOBII GREENFIEI		
By:	JPS	11/28/12		Checked By:	BWC	12/5/12
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
				+		
				SUBTOTAL (TH	ISPAGE =	429.0

SUBTOTAL (THIS PAGE) =

*TOTAL* = 429.0

				10-	-703	
					LITY STUDY LD AVENUE	
By:	JPS	11/28/12	_	Checked By:	BWC	12/5/12
802-07138	WIDE FLANC	GE SIGN POST IX		UNDATION,		2 EACH
Description						
Exit Street Name						2.0
Lati Street Ivame						2.0
	1					
	1		I	SUBTOTAL (T	HIS PACE) =	2.0

L (THIS PAGE) =

				10-	703	
				SR 37 MOBL GREENFIEL		
By:	JPS	11/28/12	-	Checked By:	BWC	12/5/12
802-07159		2 EACH				
Description						
						2.0
1/2 Mile Ahead						2.0
				├		
				├		
				├		
				SUBTOTAL (TH	HSPAGE) -	2.0

UTAL (THIS PAGE) =

				10-703	
				SR 37 MOBILIT GREENFIELD A	
By:	JPS	11/28/12		Checked By:	BWC 12/5/12
802-09840	SIGN, SHEE	T, WITH LEGE	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					
	Route Sign Direction	24 24	24 12	4 4	<u> </u>
				+	
				SUBTOTAL (THIS I	PAGE) = 115.0

SUBTOTAL (THIS PAGE) =

TOTAL = 115.0

				10-1	703	
				SR 37 MOBII GREENFIEI		
By:	JPS	11/28/12		Checked By:	BWC	12/5/12
802-76095		UCTURAL STE				681 LBS
Description	LI	L2	W1	W2		
Exit w/ Street Nan						
W8x13	20.00	25.00	307.58	372.58		680.2
W0X15	20.00	23.00	307.56	372.00		000.2
		-				
				+		
				+ +		
				┨		
				+		
				+ +		
				+		
				+ +		
				1	1	
				SUBTOTAL (TH	IIS PAGE) =	680.2

SUBTOTAL (THIS PAGE)

				10-2	703		
				SR 37 MOBII GREENFIEL			
By:	JPS	11/28/12		Checked By:	BWC	12/5/12	
802-76135	OVERHEAD SIGN STRUCTURE, CANTILEVER 1 SINGLE ARM EAC						
Description							
1/2 Mile Ahead						1.0	
						-	
┠────┼							
+							
+							
				SUBTOTAL (TH	IS PAGE) -	1.0	

TOTAL = 1.0

				10	-703	
					ILITY STUDY ELD AVENUE	
By:	srs	11/19/12		Checked By:	BWS	11/24/12
804-06770		DELINEAT	OR POST			14 EACH
						Each
Total # of Outlets fr	om 715-05053					14.0
					THIS PACE) -	14.0

SUBTOTAL (THIS PAGE) = 14.0

*TOTAL* = 14.0

			10 /	703	
DJZ	5/3/12		Checked By:	BWS	11/24/12
LINE, MULT	'I-COMPONEN'	T, BROKEN, V	VHITE, 4 IN		2,708 LFT
End Station	Begin Offset	End Offset		Factor	Length (ft)
NB			++		
	38.62	38.62		0.25	921
208+60.92	50.62	50.62		0.25	140
235+33.72	50.62	50.62		0.25	158
SR					
	-38.35	-38.35		0.25	921
				0.25	158
238+33.71	-50.35	-50.35		0.25	144
EB			++		
	16.00	12.00	+ +	0.25	46
72+68.37	16.00	16.00		0.25	78
WR			┼───┼		
	-16.00	-19.60		0.25	61
			+ +		28
			+ +		53
			+		
			1 1		
	LINE, MULT End Station NB 238+33.71 208+60.92 235+33.72 SB 238+33.71 212+14.99 238+33.71 212+14.99 238+33.71 EB 63+40.17	LINE, MULTI-COMPONEN End Station Begin Offset NB 238+33.71 38.62 208+60.92 50.62 235+33.72 50.62 235+33.72 50.62 SB 238+33.71 -38.35 212+14.99 -50.35 238+33.71 -50.35 238+33.71 -50.35 B 63+40.17 16.00 72+68.37 16.00 WB 63+28.08 -16.00 70+58.71 -16.00	End Station         Begin Offset         End Offset           NB	DJZ       5/3/12       Checked By:         LINE, MULTI-COMPONENT, BROKEN, WHITE, 4 IN         End Station       Begin Offset       End Offset         NB       1000000000000000000000000000000000000	LINE, MULTI-COMPONENT, BROKEN, WHITE, 4 IN         End Station       Begin Offset       End Offset       Factor         NB

TOTAL = 22

2707.3

				10-703	
				SR 37 MOBILITY STU GREENFIELD AVEN	
By:	DJZ	5/3/12		Checked By: BWS	11/24/12
808-10033	LINE, MUL	TI-COMPONE	NT, SOLID, W	HITE, 4 IN	10,789 LFT
Begin Station	End Station	Begin Offset	End Offset	<u> </u>	Length (ft)
Line "A"	NB				
201+50.00	201+98.97	50.62	50.62	+	49
201+98.97	202+98.97	50.62	62.62	+	101
202+98.97	207+60.67	62.62	62.62	1 1	462
207+60.67	212+98.15	62.62	84.12	1 1	538
212+98.39	226+33.55	50.62	50.62	1 1	1335
226+33.98	229+30.72	84.12	62.62	1 1	298
229+30.72	235+33.72	62.62	62.62	1 1	603
235+33.72	238+33.71	62.62	50.62	1 1	300
	SB				
201+50.00	202+84.01	-50.35	-50.35		134
202+84.01	205+84.02	-50.35	-62.35		300
205+84.02	211+86.95	-62.35	-62.35	-	603
211+86.95	214+83.69	-62.35	-83.85		298
214+84.13	228+21.90	-50.35	-50.35		1338
228+21.90	233+59.87	-83.85	-62.35		538
233+59.87	238+33.71	-62.35	-62.35		474
Line ''S-1-A''	NW				
63+12.52	64+02.52	16.00	33.29		92
64+54.97	67+96.26	58.33	43.10		342
68+23.62	69+40.99	33.61	16.00		119
	<u>CP</u>				
62 - 12 52	SE	16.00	20.94		05
63+12.52 64+20.71	64+04.76 67+74.55	-16.00 -50.22	-39.84 -72.83		95 355
68+30.25	69+30.36	-30.22	-72.85	+ +	103
00+30.23	07750.50	-+1.14	-10.00		105
RAMPS	SE				
10+00.00	13+58.05	12.00	12.00		358
13+58.05	14+57.80	12.00	24.00		100
14+57.80	15+13.11	24.00	27.64		55
14+57.80	16+08.30	12.00	15.44		151
	NE				
11 - 25 54		12 42	12.00	+	59
11+25.54 11+84.07	11+84.07 16+09.45	13.43 12.00	12.00 12.00		425
11+04.07	10+09.43	12.00	12.00		423

SUBTOTAL (THIS PAGE) =

9623.3

#### SR 37 MOBILITY STUDY GREENFIELD AVENUE

By: DJZ 5/3/12

Checked By:

808-10033

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

LFT

Begin Station	End Station	Begin Offset	End Offset			Length (ft)
<b>D</b> ( ) ( <b>D</b> (	~~~~					
RAMPS	SW					
15+99.78	11+92.71	12.00	12.00			407
11+92.71	11+32.97	12.00	13.46			60
	NW					
20+09.84	23+22.83	12.00	12.00			313
23+22.83	24+23.08	12.00	24.00			101
24+23.08	25+21.86	24.00	27.74			99
24+23.08	24+89.61	12.00	12.00			67
24+89.61	26+08.60	12.00	15.93			119
				-		
				-		
					{ }	

SUBTOTAL (THIS PAGE) = 1165.2

				10-703	
		UDY UE			
By:	DJZ	5/4/12		Checked By: <u>BWS</u>	11/24/12
808-10034	LINE, MUL7	II-COMPONEN	T, SOLID, YE	LLOW, 4 IN	11,288 LFT
Begin Station	End Station	Begin Offset	End Offset		Length (ft)
Line "A"	NB Inside				
201+50.00	238+33.71	26.62	26.62	1 1	3684
201+50.00	238+33.71	-26.35	-26.35		3684
Line ''S-1-A''					
60+00.00	63+97.12	15.96	12.69	1	397
60+00.00	63+98.76	-4.00	-20.23		399
68+27.59	71+84.85	17.43	4.00	1	358
68+34.29	71+84.85	-18.36	-4.00		351
RAMPS	SE				
10+00.00	14+76.76	0.00	0.00	1	477
14+76.76	16+08.33	0.00	0.00		132
	NE				
10+00.00	11+75.18	0.00	0.00		175
11+75.18	16+09.45	0.00	0.00		434
	SW				
10+00.00	11+83.16	0.00	0.00		183
11+83.16	15+99.78	0.00	0.00		417
	NW				
20+10.18	25+00.27	0.00	0.00		490
25+00.27	26+08.60	0.00	0.00		108
23+00.27	20+00.00	0.00	0.00		

11288.0

TOTAL =

				10-7	03	
				SR 37 MOBIL GREENFIEL		
By:	DJZ	5/4/12		Checked By:	BWS	11/24/12
808-10037	LINE, MUI	LTI-COMPONE	NT, SOLID, W	HITE, 8 IN		2,830 LFT
Begin Station	End Station	Begin Offset	End Offset			Length (ft)
T: // A //		E ' Cara				
<i>Line</i> "A"	NB Outside	Exit Gore	50.02	┥───┤		407
208+60.92	212+98.39	50.62	50.62			437
208+60.92	212+98.38	54.62	72.12	+		438
		Entrance Gore		+ +		
226+33.55	229+02.69	50.62	50.62	+ +		269
226+33.56	229+02.69	72.12	52.62	+ +		209
220133.30	227102.07	/ 2.12	52.02	+ +	+	270
	SB Outside	Entrance Gore		1 1		
212+14.99	214+84.13	-50.35	-50.35	1		269
212+14.99	214+84.12	-52.35	-71.85			270
				1 1		
		Exit Gore				
228+21.90	232+59.58	-50.35	-50.35			438
228+21.81	232+59.58	-71.85	-54.35			438
				┥───┼		
				┥───┼		
				+		
				+		
		-		┥───┼		
				+ +		
				+ +		
				+ +		
				1 1		
				1 1		
				1		
				1		
				+ +		

2829.0

				10-7	703	
				SR 37 MOBIL GREENFIEL		
By:	DJZ	4/19/12	_	Checked By:	BWS	11/24/12
808-75071	808-75071 PAVEMENT MESSAGE MARKING, PREFORMED PLASTIC, LANE INDICATION ARROW					8 EACH
Alignment						Each
SE Ramp						
Line "S-1-A"	WB					2
NW Ramp						2
Line ''S-1-A''	EB					2
						2
				SUBTOTAL (TH	IS PAGE) =	8.0

TOTAL =	8

8.0

				10	-703	
				10	100	
						17
				SR 37 MOB		
				GREENFIE	LD AVENU	E
By:	DJZ	4/19/12		Checked By:	BWS	11/24/12
			-	-		
808-75510	TRANSVER	SE MARKINGS	, PREFORMED	PLASTIC,		409
	CRO	OSSHATCH LIN	NE, WHITE, 24	IN		LFT
Begin Station	End Station	Length				Length (ft)
Degin Station	Linu Station	Lengin				Lengin (ji)
Line ''A''	NB	Exit Gore				
208+61	212+98					
Length by AutoCAL	)	204.42				204
	SB	Exit Gore				
228+22	232+60	Lau Gort				
Length by AutoCAL		204.42				204
						100.0

TOTAL = 408.8

				10-	-703	
					LITY STUDY LD AVENUE	
<i>By</i> :	DJZ	5/4/12		Checked By:	BWS	11/24/12
808-75998	SNOWPLO	WABLE RAISE	D PAVEMENT	MARKER		269 EACH
Begin Station	End Station	Begin Offset	End Offset	Length	Spacing	Each
Line "A"	NB					
201+50.00	238+33.71	38.62	38.62	3683.71	80.00	47
202+98.97	208+60.92	50.62	50.62	561.95	80.00	8
229+02.69	235+33.72	50.62	50.62	631.03	80.00	8
	SB					
201+50.00	238+33.71	-38.35	-38.35	3683.71	80.00	47
205+84.02	212+14.99	-50.35	-50.35	630.97	80.00	8
232+59.58	238+33.71	-50.35	-50.35	574.13	80.00	8
Line "S-1-A"	WB					
60+00.00	63+21.58	27.98	16.00	321.80	80.00	5
69+40.99	71+84.85	16.00	16.00	243.86	80.00	4
	EB					
60+00.00	63+12.52	-16.00	-16.00	312.52	80.00	4
69+30.36	71+15.54	-16.00	-16.00	185.18	80.00	3
07100.00	/1/10.01	10.00	10.00	102.10	00.00	5
Round-A-Bout						
ength by AutoCAD				366.20	40.00	10
1. 116 1 4 11	<b>3</b> 7¥¥7					
Line "S-1-A"	NW (1, 02,52	16.00	22.20	01.55	10.00	2
63+12.52	64+02.52	16.00	33.29	91.65	40.00	3
64+54.97	67+96.26	58.33	43.10	341.63	40.00	9
68+23.62	69+40.99	33.61	16.00	118.68	40.00	3

-39.84

-72.83

-16.00

-16.00

-50.22

-41.14

SE

64+04.76

67+74.55

69+30.36

*63*+*12.52* 

64+20.71

68+30.25

40.00

40.00

40.00

95.27

354.56

103.22

182.0

3

9

3

			10-7	703	
			SR 37 MOBIL GREENFIEL		
<i>By</i> :	DJZ	5/4/12	Checked By:	BWS	11/24/12
808-75998					

#### SNOWPLOWABLE RAISED PAVEMENT MARKER

EACH

Begin Station	End Station	Begin Offset	End Offset	Length	Spacing	Each
RAMPS	SE					
10+00.00	14+76.76	0.00	0.00	476.76	40.00	12
10+00.00	14+70.70	0.00	0.00	470.70	40.00	12
	NE					
11+75.18	16+09.45	0.00	0.00	434.27	40.00	11
	SW					
11+83.16	15+99.78	0.00	0.00	416.62	40.00	11
	NW					
20+10.18	25+00.27	0.00	0.00	490.09	40.00	13
T . 114.11						
<i>Line ''A''</i>	NB Outside	Exit Gore	50.62	127.17	00.00	
208+60.92	212+98.39	50.62	50.62	437.47	80.00	6
208+60.92	212+98.38	54.62	72.12	437.81	80.00	6
		Entrance Gore				
226+33.55	229+02.69	50.62	50.62	269.14	80.00	4
226+33.56	229+02.69	72.12	52.62	269.84	80.00	4
	SB Outside	Entrance Gore				
212+14.99	214+84.13	-50.35	-50.35	269.14	80.00	4
212+14.99	214+84.12	-52.35	-71.85	269.84	80.00	4
		Exit Gore				
228+21.90	232+59.58	-50.35	-50.35	437.68	80.00	6
228+21.90	232+59.58	-71.85	-54.35	438.12	80.00	6
					+ +	
					+	
					<u> </u>	

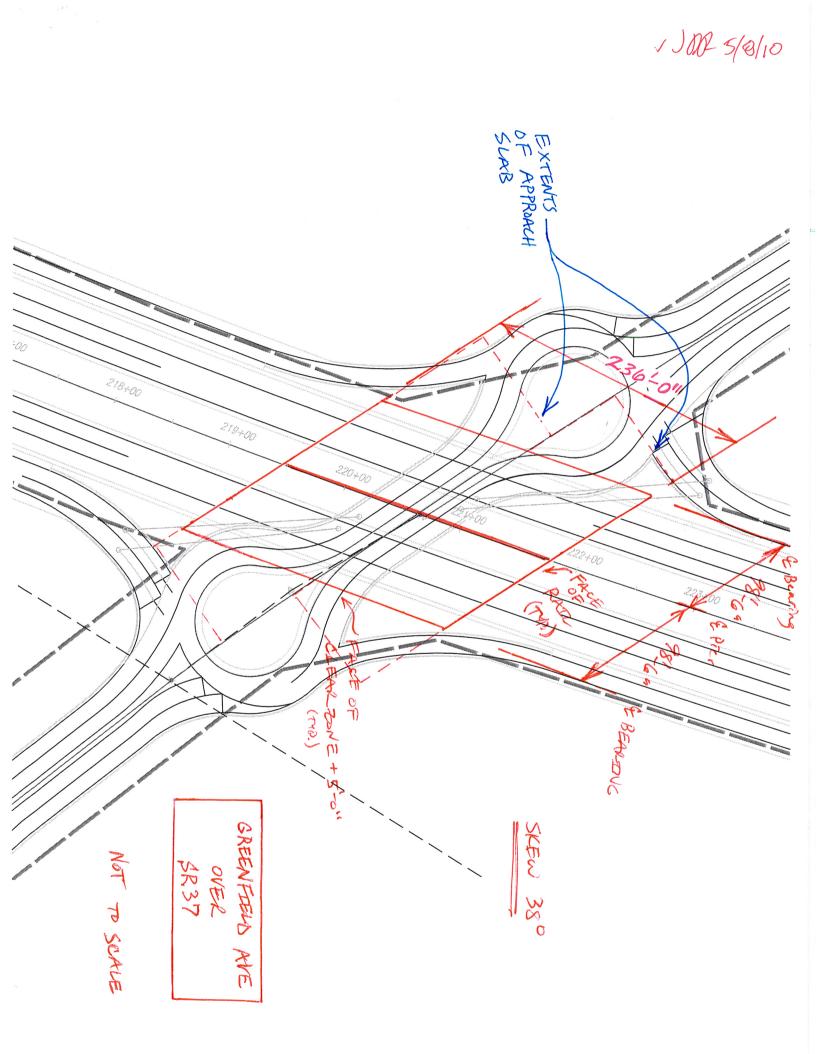
SUBTOTAL (THIS PAGE) =

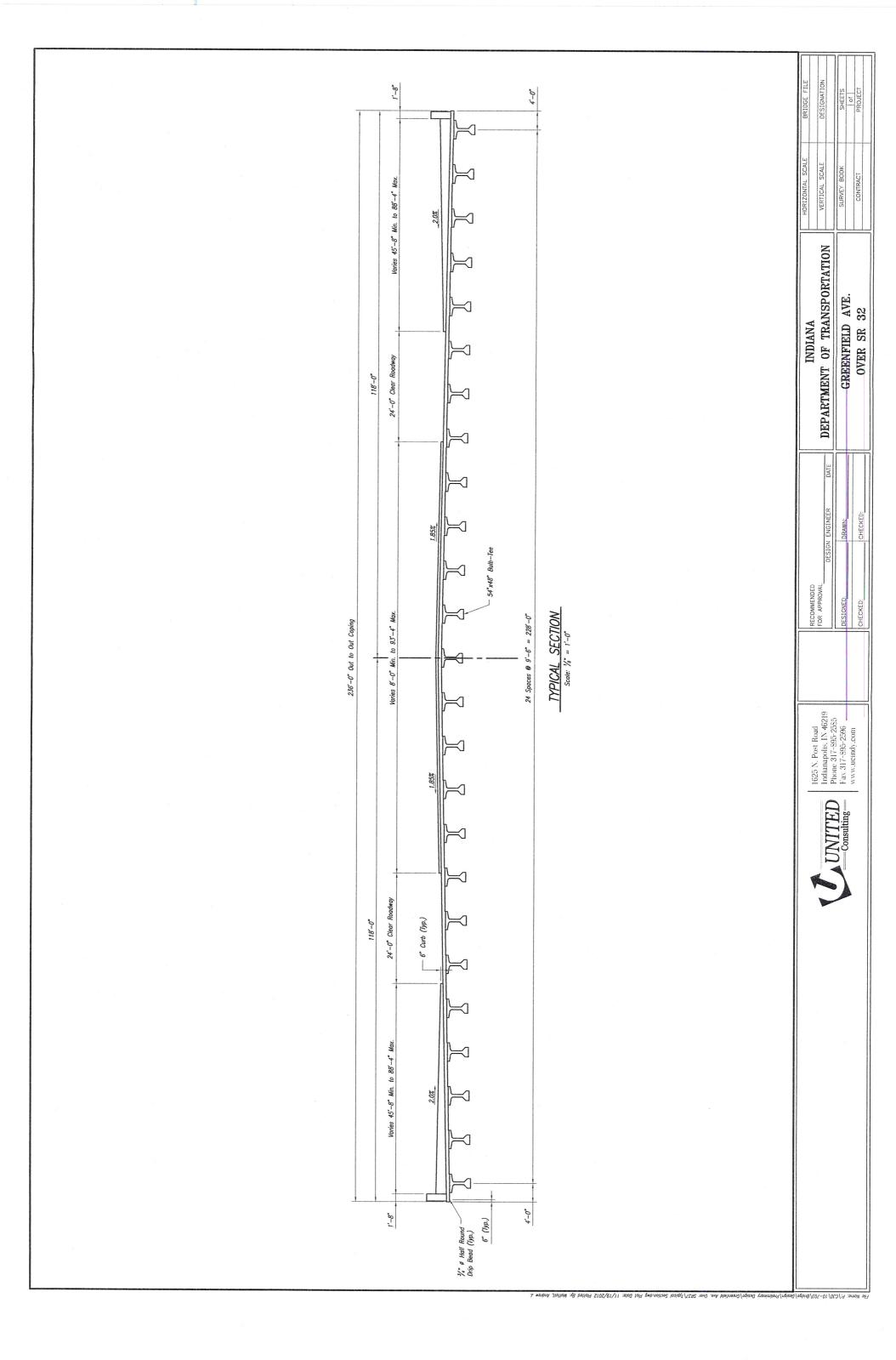
87.0

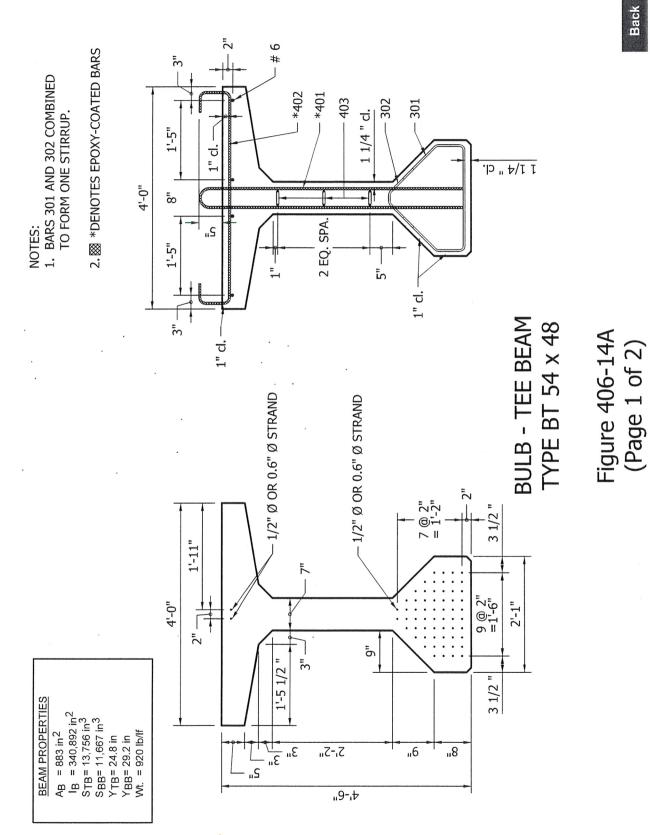
*TOTAL* = 269.0

# **BRIDGE QUANTITIES**

## BRIDGE GEOMETRY GREENFIELD AVENUE OVER SR 37







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2

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#### 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	805	
211-02050	B BORROW	CYS	805	
302-07455	DENSE GRADED SUBBASE	CYS	584	
609-06259	REINFORCED CONCRETE BRIDGE APPROACH, 12 IN.	SYS	3,493	
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	6,060	
702-51005	CONCRETE,A,SUBSTRUCTURE	CYS	436	
702-51015	CONCRETE, B, FOOTINGS	CYS	299	
703-06028	REINFORCING BARS	LBS	89,570	
703-06029	REINFORCING BARS, EPOXY COATED	LBS	907,040	
704-51002	CONCRETE, C, SUPERSTRUCTURE	CYS	3,248	
706-09959	RAILING, CONCRETE, FT	LFT	397	
707-07605	STRUCTURAL MEMBERS, CONCRETE BULB-T BEAM, 54 IN. X 48 IN.	LFT	4,925	
709-51821	SURFACE SEAL	SFT	55,039	estimated

Proposed	Structure # is		_ /	
	Greenfield Ave	over	SR 37	
Design Standards =	Road Over 4R		<u>Under</u> 4R	
Functional Classification =	Urban Collector		Urban Arterial	
ADT =	xxxx (yr	r. 2030)	xxxx	
Design Speed =	35	mph	55	
Vertical Clearance Req'd =	16.5	feet		
Skew =	38 0	degrees		
Calculated C-C End Brg. Length =	197	feet		
USE	197	feet	~	
Span Configuration Anticipated =	1 1	@ @	98.5 fee 98.5 fee	
		W		

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Proposed Structure # is	0
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Greenfield Ave over SR 37

Number of Spans =	2	spans
O-O Coping Width =	236.00	feet
C-C End Brg Length =	197	feet
Skew =	38.0000	degrees
O-O Bridge Length =	198.5	feet
Clear Roadway Width =	232.66 /	feet
Slab Thickness =	8	inches
Number of Piers units =	1	
Number of Substructure units =	3	-
Twin Structure =	NO	-
Type of Slope Wall =	MSE Wall	

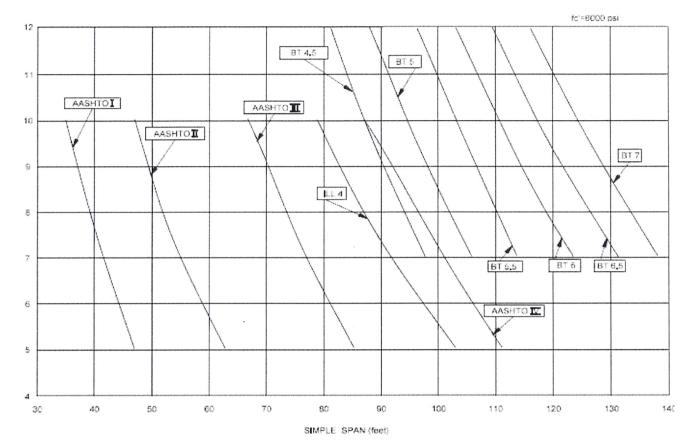


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#### Structure Number 0 Greenfield Ave over SR 37



#### PRESTRESSED CONCRETE HBEAM SELECTION CHART

Figure 59-3K

ft

Beam Type = STRUCTURAL MEMBERS, CONCRETE BULB-T BEAM, 54 IN. X 48 IN.

Overhang to be =	4	ft
Spacing to be =	9.5	ft
out to out width =	236.00	ft
Beam Length =	197.00	ft
Beams Needed =	25	ft
Twin Structure =	NO	
Length Needed =	4,92	25

**Beam Quantities** 

Devil

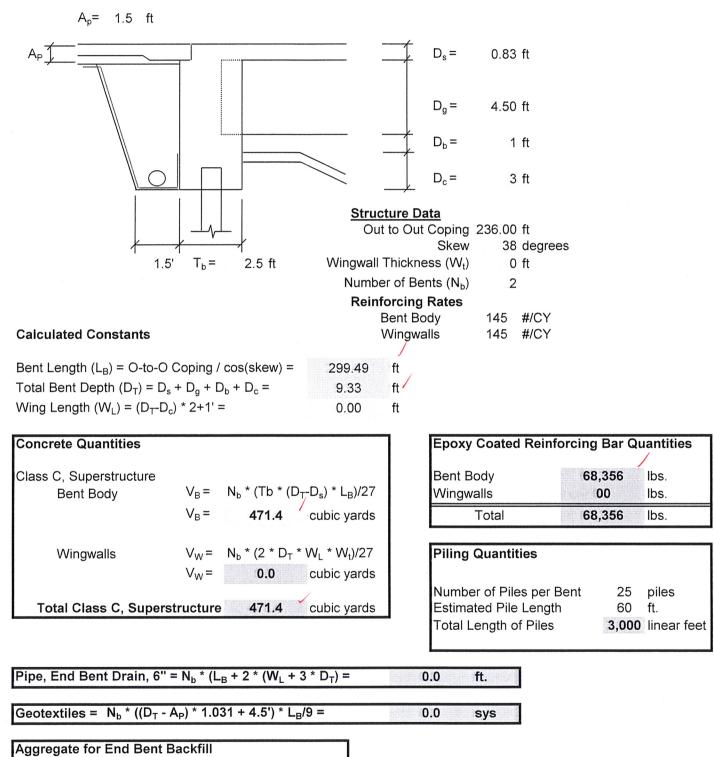
**Bent Quantities** 

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

V<sub>bf</sub> = **0** cubic yards



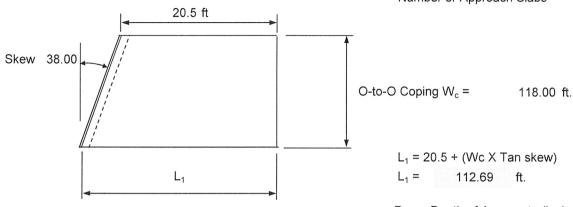
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Number or Approach Slabs 4



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

Reinforced Concrete Bridge Approach (A) = (L1 + 20.5)/2 \* Wc /9A =873sys per approach

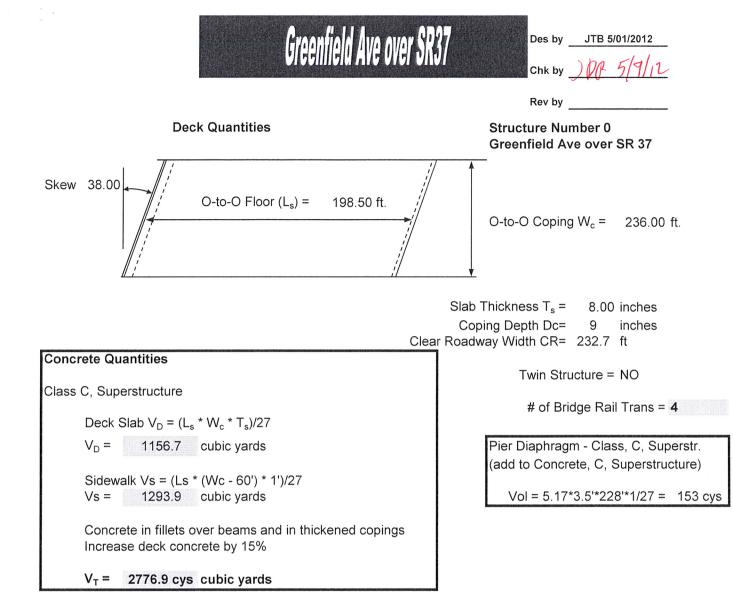
**Approach Slab Quantities** 

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

 $T_{base} = 146.0$  cys per approach

Epoxy Coated	Reinforcin	g Bars	
Reinforcement	Rates	35	#/sy
Total Weight	30,560	Lbs.	
		per ap	oroach

Grand	Totals	
A =	3,493	sys
T <sub>base</sub> =	584	cys
Reinforcing	122,239	Lbs.



Bridge Railing	
Area of Rail A <sub>r</sub> =	3.64 Sq. Ft.
Perimeter P =	8.65 Ft.
LFT = 397	
$V_{R} = (L_{s} * A_{r}) / 27$ $V_{R} = 53.6$	
V <sub>R</sub> = 53.6	cubic Yards

Surface Seal		
Deck = $L_s * W_c =$	46846	square feet
Coping = $L_s * D_c * 2 =$	1324	square feet
Rail = L <sub>s</sub> * P * 2 =	6869	square feet
Total	55,039	square feet

Epoxy Coated Reinforcing Bars						
Reinforcement Rates		250	#/cy			
Deck	250	#/cy				
Rail	330	#/cy				
Deck	694	225	Lbs.			
Rail	17	688	Lbs.			
Trans.	45	532	Lbs.			
Total Weight	716	,445	Lbs.			

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

Roadway Drain (SQ or OS) N<sub>G</sub> = **0** each



**Excavation Quantities** 

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#### Structure Number 0 Greenfield Ave over SR 37

