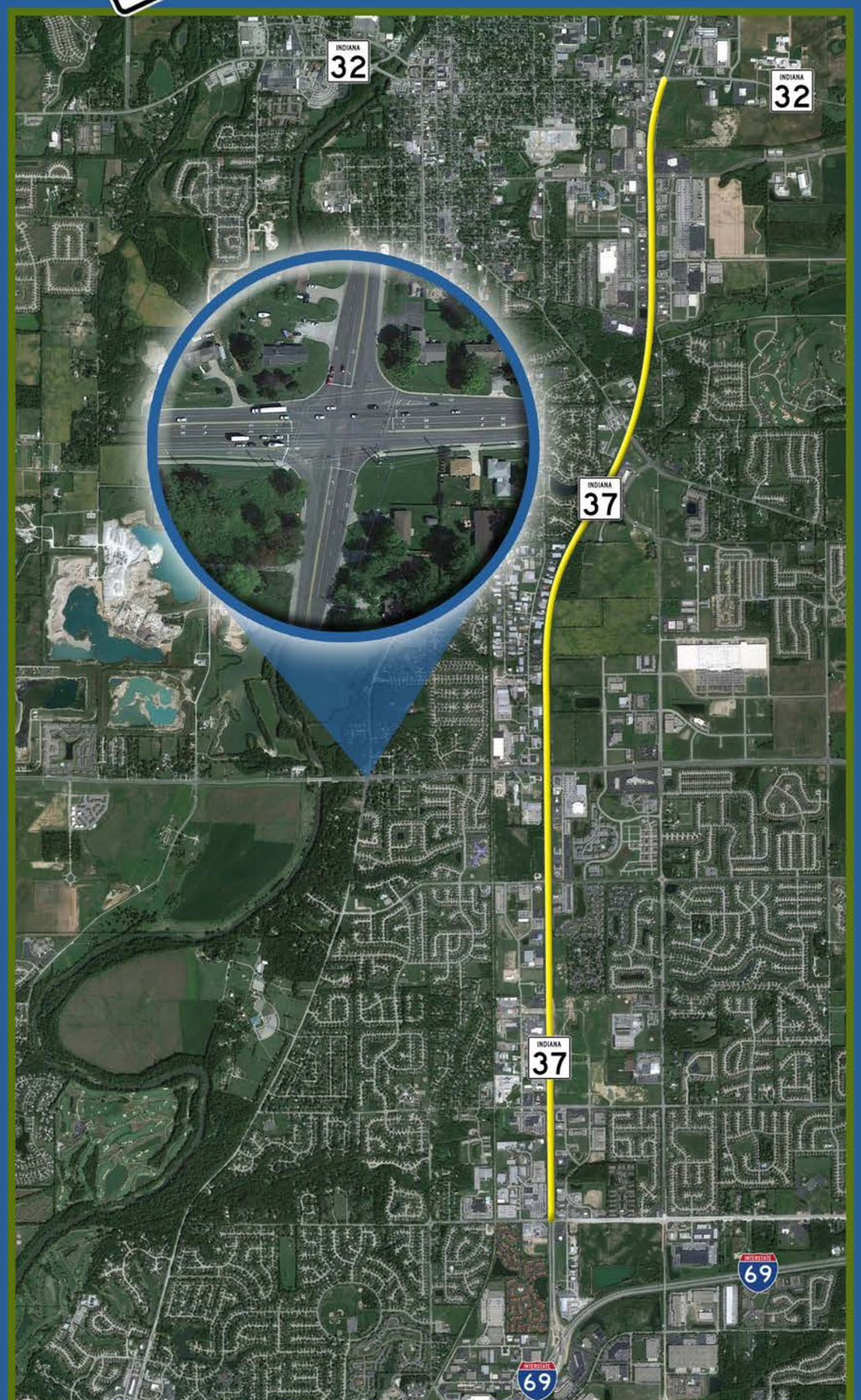
SR 37 Mobility Study



146th Street and Allisonville Road

Presented to:

County of Hamilton State of Indiana

MPO

Town of Fishers Indiana

City of Noblesville Incorporated May 6, 1887 Seal Indiana

Indiana Department of Transportation INDOT

Presented by:

United Consulting

American Structurepoint Inc.

SR 37 Mobility Study
Allisonville Road at 146th Street

Description of Proposed Project

I. GENERAL

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 126th Street to SR 32 / SR 38. The Study area also extends along 146th 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 Allisonville Road and 146th Street:

Table 1 – Existing Roadway System				
Facility	Traffic Control	Travel Lanes	Functional Classification	Speed Limit (MPH)
146th Street	**Signal**	**4**	**Primary Arterial**	**45**
Allisonville Road	**Signal**	**4**	**Primary Arterial**	**35**

The following paragraphs give additional details for existing 146th Street at Allisonville Road within the Study area:

146th Street at Allisonville Road

Allisonville Road runs south to north and crosses 146th Street at a 20 degree skew to form a four way at-grade intersection. 146th Street is considered the major road and is classified as a Primary Arterial through the limits of this intersection. 146st Street is a four lane roadway with four 12-foot travel lanes, a 16-foot median, and outside curb and gutter on each side. There is also an eight foot pedestrian pathway along the south side of 146th Street, separated by a five foot buffer strip. 146th Street overpasses the White River approximately 900 feet west of Allisonville Road. The existing pavement on both sides of the intersection is full depth HMA and is in good condition. Approaching the intersection from both sides, 146th Street has outside curb and gutter and a four foot raised center curb between the eastbound and westbound lanes.

Allisonville Road is classified as a Primary Arterial through the limits of this intersection. On the north and south sides, outside the intersection limits, Allisonville Road is a two lane roadway with two 12-foot travel lanes and six foot outside shoulders. The existing pavement on each side of the existing intersection is full depth HMA and is in good condition. There is outside curb and gutter around each intersection radius, however the curb does not continue along any leg of Allisonville Road past the end of the radii.

The intersection of Allisonville Road and 146th Street is a signalized intersection, operating as an 8 phase signal with protected left turns in each direction. There is a four foot raised center curb on 146th Street separating the eastbound and westbound lanes on each side of the intersection. Approaching the intersection, 146th Street has two left turn lanes, two through lanes, and one right turn lane on both approaches. Approaching the intersection, Allisonville Road has one left turn lane, two through lanes, and one right turn lane on each approach.

The intersection is bordered by residences in the northwest and northeast quadrants in close proximity to the intersection. There is a forested area in the southwest quadrant and an open grassy area in the southeast quadrant. For a listing of each residence 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 146th Street and Allisonville Road for the study year of 2036. A teardrop roundabout interchange is proposed, with a 4-lane bridge crossing 146th Street.

Table 2 – Alternative 1 (2036) Capacity Analysis

Intersection	Traffic Control	Peak	West Leg		East Leg		South Leg		North Leg		Overall	
			LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
146th Street EB Ramps and Allisonville Road	Roundabout	AM	A	3.0	--	--	A	2.4	A	2.4	A	2.7
		PM	A	4.2	--	--	A	9.0	A	2.4	A	5.9
146th Street WB Ramps and Allisonville Road	Roundabout	AM	--	--	A	3.0	A	2.4	A	4.8	A	3.4
		PM	--	--	A	4.2	A	4.2	A	3.0	A	4.0

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.

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 no wetlands or streams within the project limits. A "Waters of the U.S." report (wetland determination/delineation) will be required to verify the NWI map.

Historic and Cultural Resources

Archeological: 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.

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

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

Hazardous Materials

A search of the red flag indicators revealed no potential hazardous waste sites within the project area. As a result, no further environmental site assessment is recommended for this project.

Regulatory Permits

IDEM Rule 5 Permit: Since the project will disturb greater than one acre, Rule 5 administered through the Indiana Department of Environmental Management will apply to this project. The designer shall coordinate all erosion and sediment control measures with the Hamilton County Soil and Water Conservation District.

VIII. DRAINAGE

The existing drainage on Allisonville Road is conveyed by sheet draining the pavement into a small swales. On the south leg of Allisonville Road, the swales flow away from the intersection. On the north leg of Allisonville Road, the swales flow toward 146th Street. On mainline 146th Street, the existing drainage is conveyed by sheet draining the pavement into curb and gutter.

Curb and gutter inlets are utilized to capture the storm water which flow toward and drain into the White River approximately 900 feet west of the intersection.

The proposed drainage on Allisonville Road will utilize an enclosed storm sewer system consisting of curb and gutter inlets spaced appropriately which will connect to manholes. These manholes will be connected to the same enclosed system on 146th Street. The drainage on 146th Street will be handled similarly. Inlets will be spaced along both sides of the raised median curb as well as on the outsides against the walls. The inlets that are within the limits of the depressed profile will be conveyed by manholes to a low point of the profile. The manholes will convey the drainage to 900 feet west of the intersection and outlet into White River.

IX. UTILITY COORDINATION

The following paragraphs give details pertaining to the presence of utilities at Allisonville Road and 146th Street. This is followed by a discussion of potential impacts resulting from the project.

Existing Facilities

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

Electric: Overhead electric distribution runs along the south side of 146th Street. Due to the height of the system, several guy poles are located on the north side of 146th Street with guy wires crossing over 146th Street. Overhead electric distribution runs along the east side of Allisonville Road. Service poles are located sporadically on the north side of 146th Street and the west side of Allisonville Road. Electrical service to properties is also overhead.

Gas: A gas pipeline runs along the east side of Allisonville Road with service laterals to properties on both sides of the street. A gas marker is located at the northeast corner of Wellington Court and 146th Street. Without additional markers, this facility cannot be located.

Telecommunication: Various telecommunications facilities are located on the overhead electrical, with underground service to properties on both sides of the street. Ameritech manhole are located on the north side of 146th Street, west of Wellington Court, and in the southbound right turn lane. Another Ameritech manhole is located on the south side of 146th Street, east of Allisonville Road, near the first driveway.

Water: A water main runs along the east side of Allisonville Road with service laterals to properties on both sides of the street. A fire hydrant is located at the northwest corner of Wellington Court and 146th Street. Without additional markers, this facility cannot be located.

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

Impacts

With Allisonville Road going over 146th Street, existing underground facilities along Allisonville Road can either relocate lower (under 146th Street) or attach their facilities to the bridge. Existing overhead facilities along Allisonville Road can remain if they do not conflict with the Allisonville Road bridge, offset their facilities east or west of the Allisonville Road bridge, or relocate underground. Service connections will also need to be adjusted.

With the lowering of 146th Street below existing grade, existing underground facilities along 146th Street can lower their facilities to maintain their cover or offset their facilities outside the construction limits. Existing overhead facilities can raise their facilities to carry them over Allisonville Road, offset their facilities north or south of the Allisonville Road bridge and maintain their current height, or relocate underground and pass through the embankment. Service connections will also need to be adjusted.

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

X. PROPOSED INTERSECTION FACILITY

The preferred alternate for this intersection is to construct a “teardrop” roundabout interchange on Allisonville Road consisting of two closely spaced roundabouts on either side of 146th Street, which are tied together through the middle to function as one unit. Allisonville Road will overpass 146th Street. 146th Street will be free-flow through this interchange and traffic traveling through on Allisonville Road will drive through the roundabouts with a yield condition on the roundabout approach.

The layout of the ramps will closely resemble a tight diamond interchange with directional entrance and exit ramps in each quadrant. Beyond the back of the gore area, all four ramps will remain directly adjacent to 146th Street 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 146th Street. Exterior walls will also be necessary in the southwest, northwest, and northeast quadrants to minimize impacts to businesses in these quadrants (See aerial sheets for estimated wall limits).

Allisonville Road will have two lanes in each direction through the north/south portion of the roundabouts. On both approaches there will be one shared left/through lane, one shared through/right lane. The westbound exit ramp from 146th Street will exit as one lane and develop into two lanes at the roundabout approach, consisting of one shared left/through lane, and one right turn lane. The eastbound exit ramp will exit as one lane and develop into two lanes at the roundabout approach, consisting of one shared left/through lane, and one right turn lane. Both entrance ramps will depart from the roundabout and merge into 146th Street as one lane.

There are many residential parcels with access points along existing 146th Street in the vicinity of the interchange, mainly on the east side of Allisonville Road. 146th Street will widen as it

approaches Allisonville Road because of the development of ramps and auxiliary lanes approaching the roundabouts. Therefore, many of the houses along 146th Street would be damaged or relocated. Also, access may be affected to some residential parcels that aren't otherwise directly impacted. The north end of Willow Drive would need to end in a cul-de-sac and the public road approach would fall in the middle of the eastbound entrance ramp. Access to houses at the north end of Willow Drive would have access from North Lynn Avenue, for which a road approach could be provided to 146th Street. Likewise the south end of Wellingston Court would need to end in a cul-de-sac as that public road approach would fall in the westbound exit ramp. Access to houses at the south end of Wellingston Court would have access from Chelsea Drive, which has an existing road approach on Allisonville Road north of the interchange.

Because of the length necessary to develop entrance and exit ramp junctions, and gain vertical separation between the mainline and the cross-street, the west side of the interchange is expected to extend well into the existing 146th Street bridge over the White River. This will require widening of this existing bridge to accommodate the width necessary for the tapers and ramp auxiliary lane development.

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 146th Street is 16'-6".

The proposed bridge over 146th Street at Allisonville Road is anticipated to be a two span, 122'-0" long, prestressed reinforced concrete I beam structure built with a 12 degree skew to the roadway. The bridge will be a four lane roundabout facility with a clear roadway width of 217'-6" and an out to out coping of 221'-0". The bridge will be designed to span the four lane 146th Street divided highway with the interior pier placed in the median of 146th Street. 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.

Widening of 146th Street Bridge over the White River

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 the White River is 16'-6".

The existing 146TH Street bridge over the White River west of the Allisonville Road intersection will require widening in order to facilitate the Allisonville Road over 146th Street interchange modifications. The existing bridge is a four span, 530'-2" long, continuous composite prestressed bulb-tee beam bridge with 0 degree skew and is a twin structure. Each structure

currently carries two lanes of traffic along with a pedestrian path and each structure has an out to out coping of 38'-9" with a 9'-6" space between. The widening will allow for an additional lane of traffic on each of the twin structures and will flare out with a 14 foot gore on the eastbound structure to allow ramp access to the new Allisonville Road roundabout. The typical widening to the outside shoulder of each bridge deck structure will be 12'-4" along with removal of approximately 12'-0" of existing concrete bridge deck and the removal of existing bridge railing. The widening will require the placement of one line of new beams along the westbound structure and two lines of new beams along the eastbound structure along with widening of the bridge approaches. In addition, the existing piers and bents will require widening, along with removal and replacement of the wing walls at each bent.

XII. MAINTENANCE OF TRAFFIC

The following is a logical basic MOT plan for the construction of the 146th Street at Allisonville Road interchange:

Phase 1 – The southbound Allisonville Road 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 Allisonville Road 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 Allisonville Road 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 Allisonville Road 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 146th Street will be closed, with no access to Allisonville Road. The east segment of 146th Street and roundabout approaches will be constructed.

The west segment of 146th Street will maintain access to Allisonville Road. This could be set up as right-in/right-out access to and from 146th Street with Allisonville Road traffic remaining free-flow through the intersection. Alternatively, a temporary signal could be utilized to allow the west 146th Street protected access to and from both directions of Allisonville Road.

Phase 3 – All Allisonville Road 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 Allisonville Road will be constructed, as well as the west segment of 146th Street and the west roundabout. Both sides of 146th Street will have no access to or from Allisonville Road in this phase. However, temporary connections could be constructed on the east side between the portion of the east 146th Street segment constructed in phase 2 and the northbound Allisonville Road travel lanes. If desired, this could be done to keep access to and from northbound Allisonville Road and the east side of 146th Street in this phase.

The median pier and the west end bent for the proposed bridge will be constructed in this phase. All beams can also be set in this phase.

Phase 4 – All Allisonville Road traffic will run in the proposed respective northbound and southbound lanes constructed in previous phases. The east roundabout will be constructed in this phase.

The southbound entrance and exit ramps will be functional and access will be open to and from southbound Allisonville Road and the west segment of 146th Street. The northbound exit and entrance ramps will be closed and there will be no access to or from northbound Allisonville Road and the east segment of 146th Street.

XIII. LAND ACQUISITION

Approximately 26 parcels would be impacted by the construction of the teardrop roundabout interchange at the intersection of 146th Street and Allisonville Road. Total permanent right of way acquisition required for construction of these improvements would be approximately __ 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.

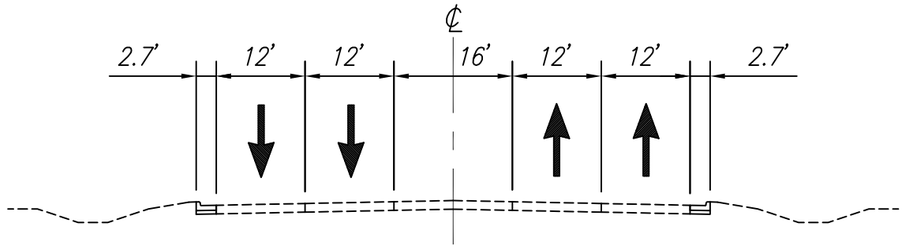
XIV. PROJECT PRIORITIES

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.

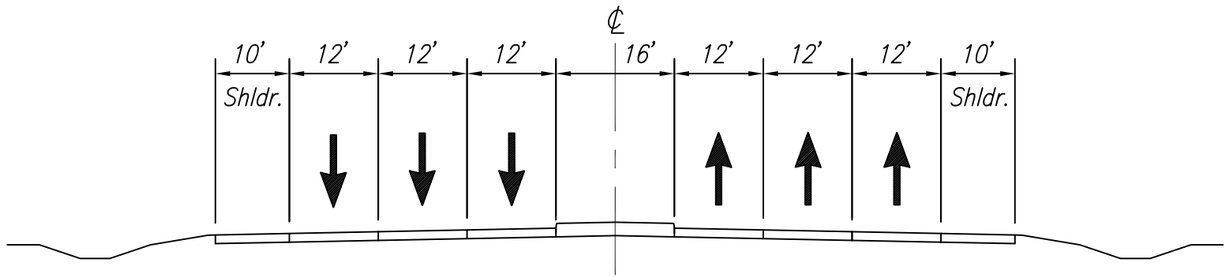
Table 3 – Construction Priorities		
Priority Rank	Binder Number	Intersection
1.	5	SR 37 at 146th Street
2.	**10**	**146th Street at Allisonville Road**
3.	1	SR 37 at 126th Street
4.	2	SR 37 at 131st Street
5.	3	SR 37 at 135th Street
6.	4	SR 37 at 141st Street
7.	6	SR 37 at Greenfield Avenue
8.	7	SR 37 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 146th Street and Allisonville Road, a teardrop roundabout interchange is proposed, with a 4-lane bridge crossing 146th Street. In order to construct these improvements, it is anticipated that construction cost will be $21,856,942 in year 2019.

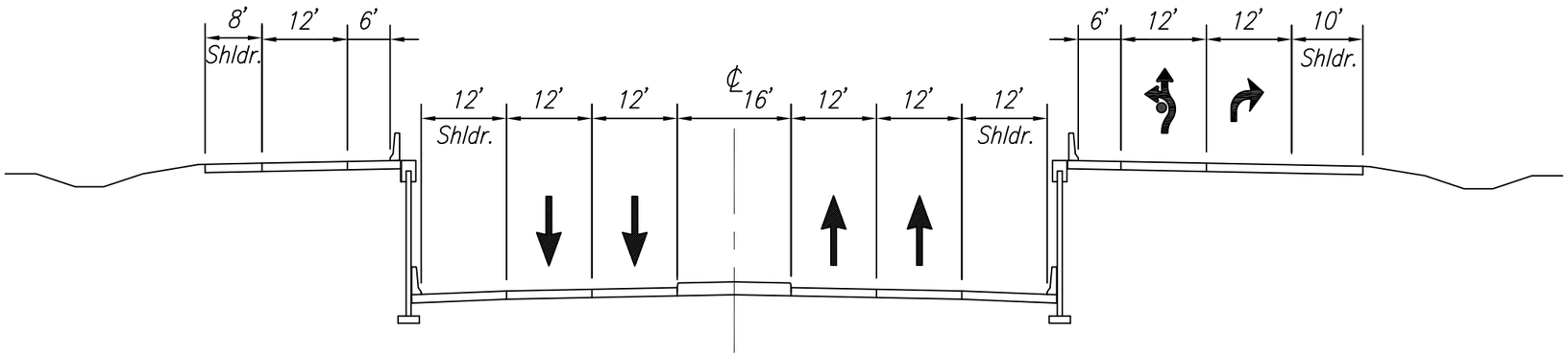


EXISTING 146th Street



PROPOSED 146th Street

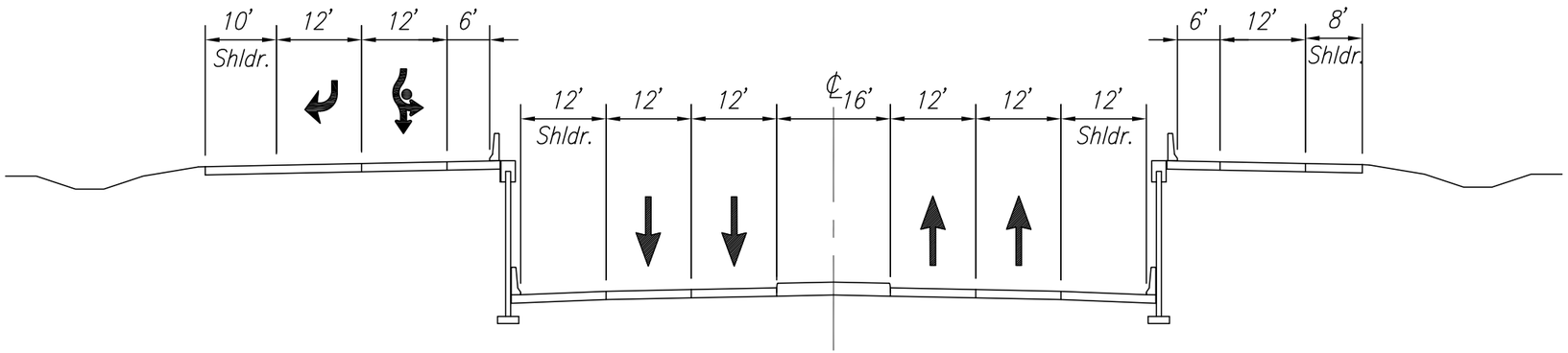
West of Allisonville Rd.



PROPOSED 146th Street

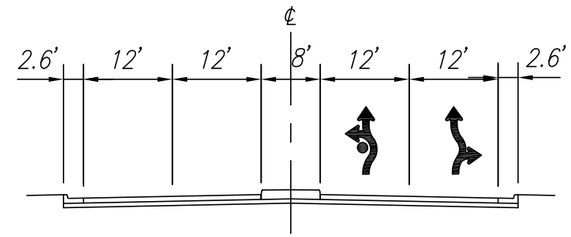
Immediately West of Allisonville Rd.

TYPICAL SECTIONS
146th Street and Allisonville Road



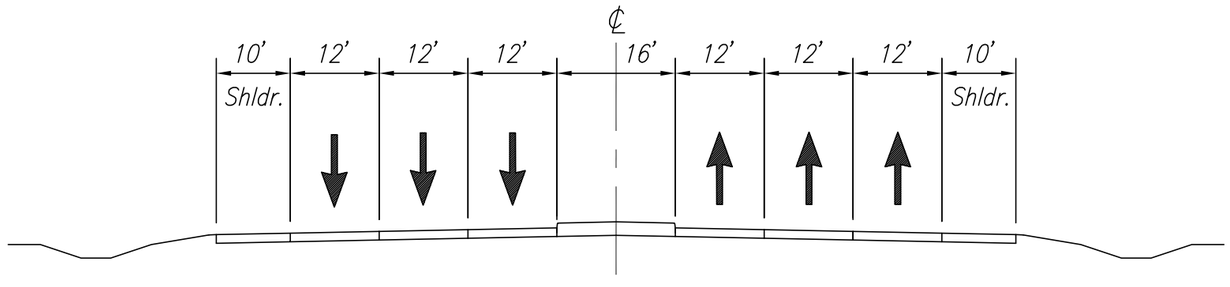
PROPOSED 146th Street

Immediately East of Allisonville Rd.



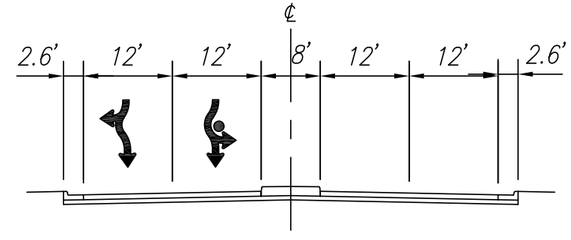
PROPOSED Allisonville Road

Approaching 146th Street Intersection NB



PROPOSED 146th Street

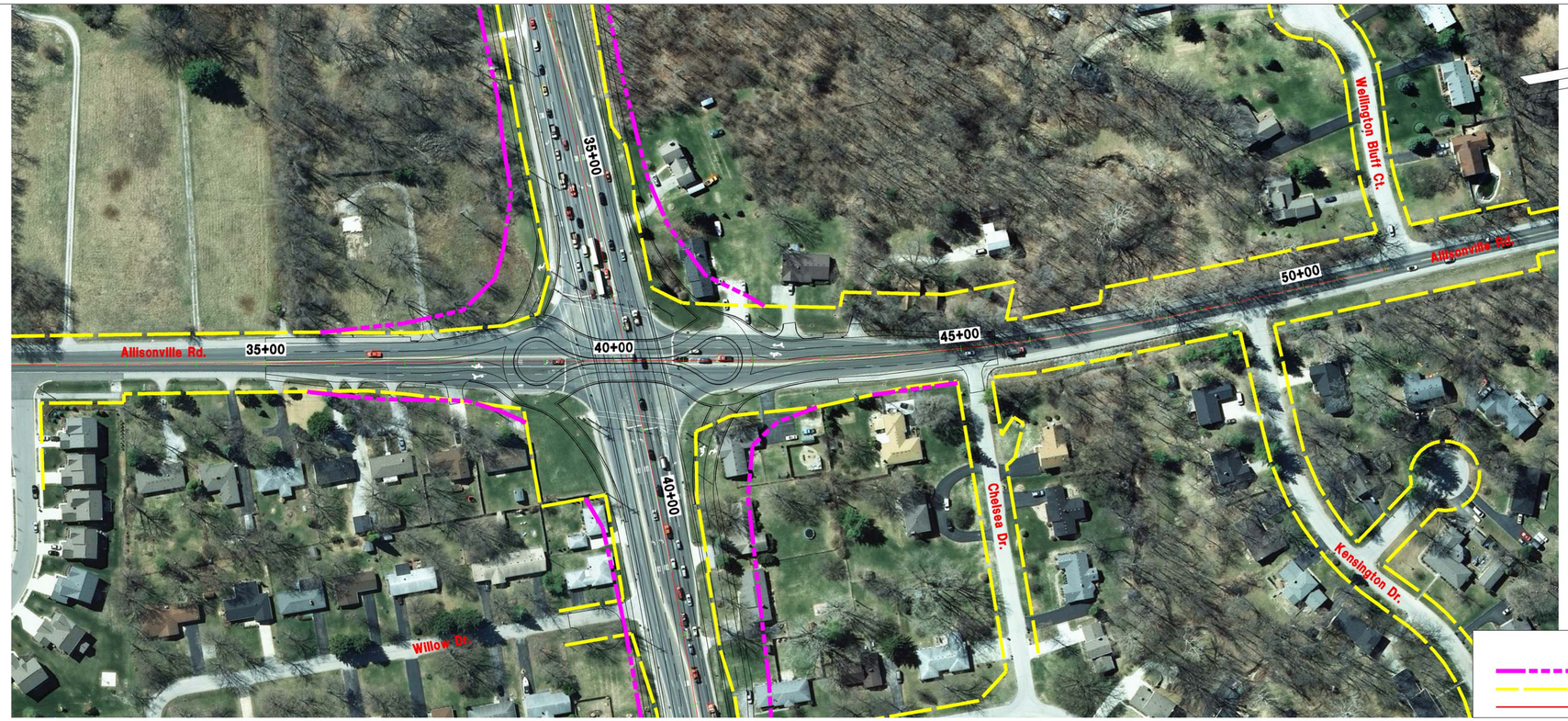
West of Allisonville Rd.

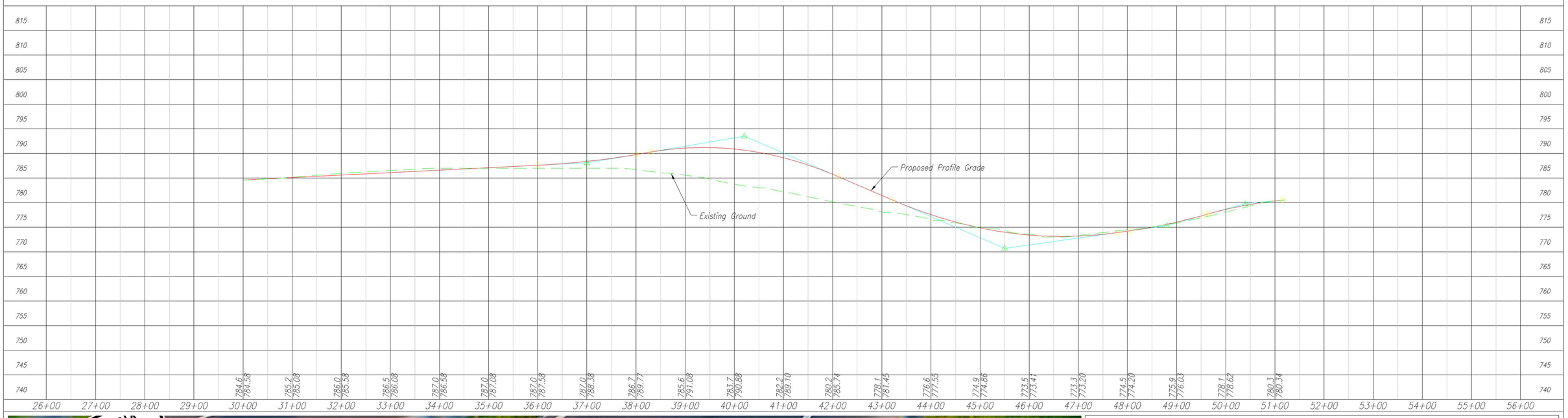


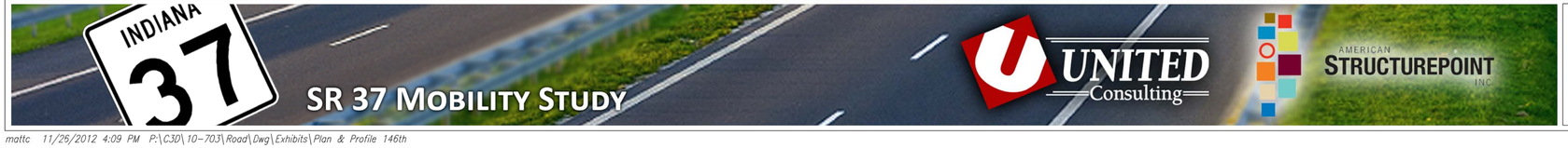
PROPOSED Allisonville Road

Departing 146th Street Intersection NB

TYPICAL SECTIONS
Allisonville Road and 146th Street







PROPOSED TEARDROP ROUNDABOUT INTERCHANGE ALLISONVILLE ROAD & 146TH STREET

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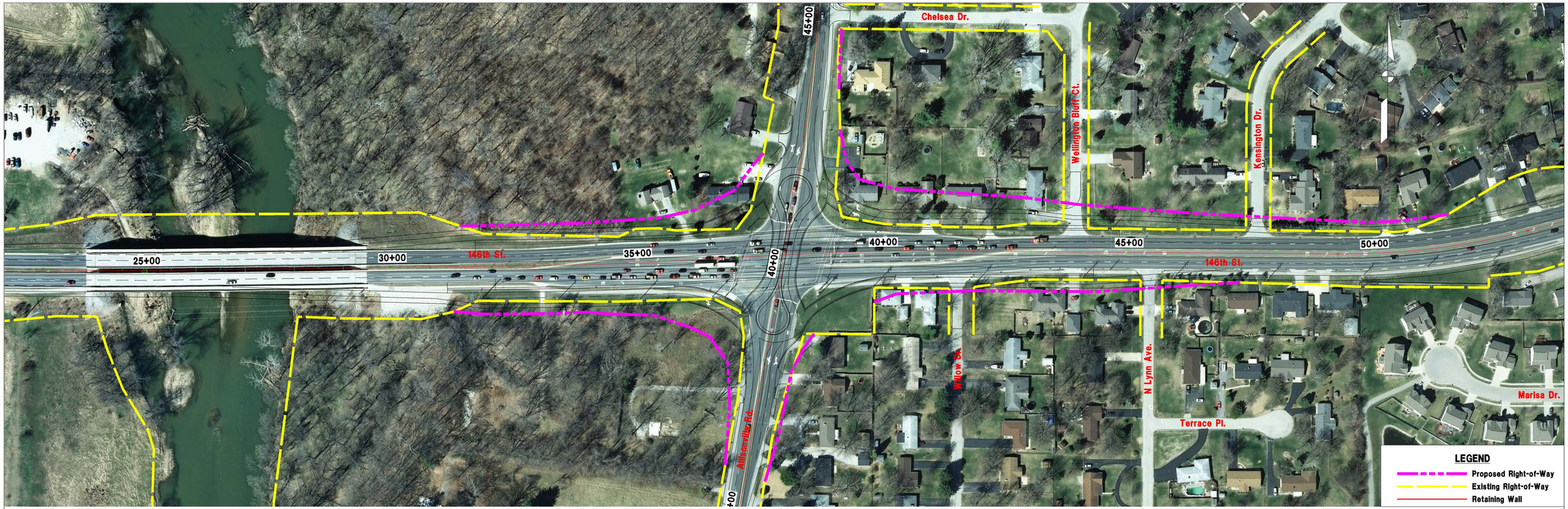

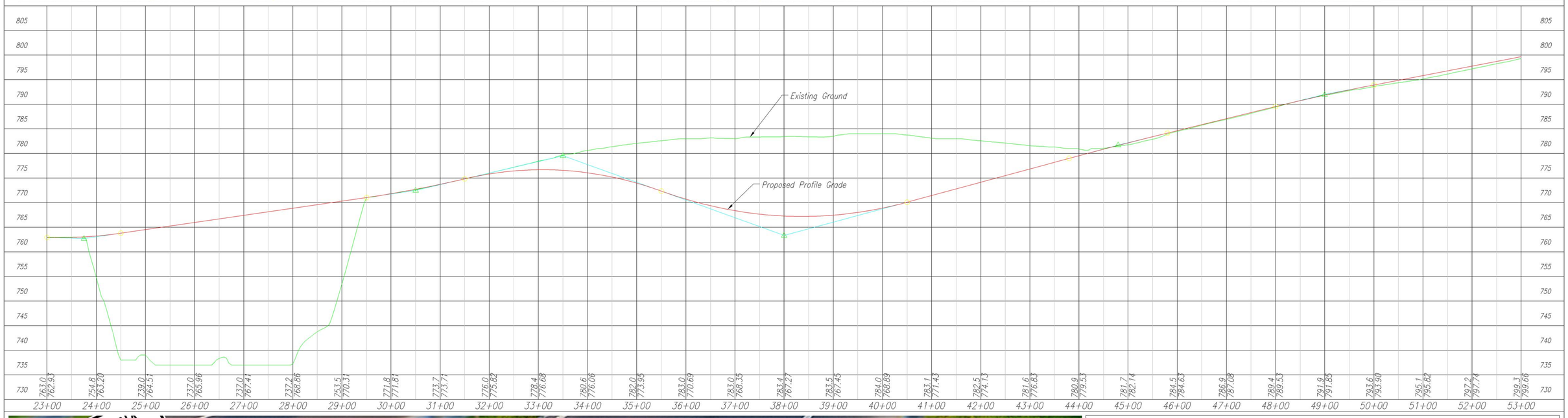

INDIANA 37

SR 37 MOBILITY STUDY

UNITED Consulting

AMERICAN STRUCTUREPOINT INC

PROPOSED TEARDROP ROUNDABOUT INTERCHANGE 146TH STREET & ALLISONVILLE ROAD

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Allisonville Road/146th Street 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)
1	**ALLISONVILLE ROAD**		
	Engineering Costs	$ 2,234,071	
	Construction Costs	$ 21,856,942	
	Construction Cost Contingencies	$ 2,185,694	
	Construction Inspection Costs	$ 2,891,377	
	Utility Relocation Cost	$ -	
	Land Cost	$ 3,612,431	
	Subtotal Allisonvile Road Interchange		$32,780,516

* The Allisonville Road Interchange is projected to be constructed in 2019. An inflation factor of 1.267 has been applied to obtain the construction cost shown in this table

TOTAL INTERCHANGE COST: $32,780,516

Allisonville Rd/146th Street Construction Cost Summary

SR 37 MOBILITY STUDY

Hamilton County, Town of Fishers and City of Noblesville

S.R. 37 from South of 126th Street to North of SR 38/32

MAJOR ELEMENT		BASE YEAR CONSTRUCTION COST (2012)
ROADWAY	$	11,300,941
GEOTECHNICAL MITIGATION	$	-
BRIDGE (Allisonville Road Over 146th Street)	$	3,200,000
BRIDGE (146th Over White River)	$	2,750,000
LIFT STATION	$	-
TOTAL CONSTRUCTION COST:	**$**	**17,250,941**

ROAD ESTIMATE

Project: ***SR 37 Mobility Study - 146th & Allisonville***
Location: ***146th & Allisonville Intersection***
County: ***HAMILTON***
District: ***Greenfield***

Project ID:***10-703 (99)***
Bid Date: ***/ /*** State: ***IN***
Route: ***146th St***

Sect	Pay Item	Description	Quantity	Unit	Bid Price	Extension	Alt
100	105-06845	construction engineering	1.000	L.S.	302,703.78	302,703.78	
100	110-01001	mobilization and demobilization	1.000	L.S.	504,506.30	504,506.30	
		GENERAL PROVISIONS SUBTOTALS				**807,210.08** **7.1%**	
200	201-52370	clearing right of way	1.000	L.S.	159,380.15	159,380.15	
200	202-02273	center curb, concrete, remove	209.000	SYS	16.61	3,471.49	
200	202-02279	curb and gutter, remove	7,238.000	L.F.	4.62	33,439.56	
200	202-52710	sidewalk, concrete, remove	1,740.000	SYS	7.88	13,711.20	
200	202-93999	signal pole, remove	4.000	EACH	495.00	1,980.00	
200	203-02000	excavation, common	103,836.000	C.Y.	7.88	818,227.68	
200	205-02237	temporary erosion & sediment control, curb inlet protection	40.000	EACH	113.25	4,530.00	
200	205-06931	temporary check dam, revetment riprap	78.000	TON	38.84	3,029.52	
200	205-06937	temporary silt fence	500.000	L.F.	1.74	870.00	
200	207-08263	subgrade treatment, type ia	59,923.000	SYS	6.24	373,919.52	
200	207-08267	subgrade treatment, type iiia	1,341.000	SYS	9.42	12,632.22	
200	211-09194	b borrow	32,733.000	TON	34.00	1,112,922.00	
200	211-09264	structural backfill, type 1	1.000	C.Y.	23.88	23.88	
200	211-09266	structural backfill, type 3	21,089.000	C.Y.	21.27	448,563.03	
		EARTHWORK SUBTOTALS				**2,986,700.25** **26.4%**	
300	301-07448	compacted aggregate, no. 53, base	326.000	TON	15.66	5,105.16	
300	302-06464	subbase for pccp	15,066.000	C.Y.	28.39	427,723.74	
300	303-01180	compacted aggregate, no. 53	2,888.000	TON	17.20	49,673.60	
		AGGREGATE PAVEMENT AND BASES SUBTOTALS				**482,502.50** **4.3%**	
400	402-10084	hma for temporary pavement, b	484.000	TON	50.00	24,200.00	
		ASPHALT PAVEMENT SUBTOTALS				**24,200.00** **0.2%**	
500	501-06266	profilograph, pccp	1.000	L.S.	15,000.00	15,000.00	
500	501-06323	qc/qa-pccp, 12 in	49,188.000	SYS	70.00	3,443,160.00	
500	503-05240	d-1 contraction joint	24,594.000	L.F.	9.19	226,018.86	
		CONCRETE PAVEMENT SUBTOTALS				**3,684,178.86** **32.6%**	
600	604-07569	pavers {pavers}	432.000	SYS	827.77	357,596.64	
600	605-06120	curb, concrete	482.000	L.F.	23.58	11,365.56	
600	605-06140	curb and gutter, concrete	2,339.000	L.F.	14.29	33,424.31	
600	605-06145	curb and gutter, b, concrete	769.000	L.F.	14.17	10,896.73	
600	605-06255	center curb, d, concrete	6,870.000	SYS	48.55	333,538.50	
600	610-09108	pccp for approaches, 9 in	1,341.000	SYS	57.06	76,517.46	
600	615-06510	monument, c	4.000	EACH	419.32	1,677.28	
600	615-06515	monument, d	36.000	EACH	141.25	5,085.00	
600	616-02320	geotextiles	533.000	SYS	2.51	1,337.83	
600	616-06405	riprap, revetment	300.000	TON	29.36	8,808.00	
600	621-01004	mobilization and demobilization for seeding	4.000	EACH	382.61	1,530.44	

Project: ***SR 37 Mobility Study - 146th & Allisonville***
Location: ***146th & Allisonville Intersection***
County: ***HAMILTON***
District: ***Greenfield***

Project ID:***10-703 (99)***
Bid Date: ***/ /*** State: ***IN***
Route: ***146th St***

Sect	Pay Item	Description	Quantity	Unit	Bid Price	Extension	Alt
600	621-06545	fertilizer	5.000	TON	327.69	1,638.45	
600	621-06554	seed mixture, u	1,362.000	LBS	5.62	7,654.44	
600	621-06557	seed mixture, t	601.000	LBS	2.15	1,292.15	
600	621-06565	mulching material	25.000	TON	305.97	7,649.25	
600	621-06567	water	14.000	M.G.	3.74	52.36	
600	621-06574	sodding	3,414.000	SYS	3.12	10,651.68	
600	628-09403	field office, c	18.000	MONTH	2,082.44	37,483.92	
600	628-11068	cellular telephone/radio	2.000	EACH	150.38	300.76	
600	628-11069	cellular telephone/radio service, anytime minutes {cell phone}	36.000	MONTH	112.11	4,035.96	
		INCIDENTAL CONSTRUCTION SUBTOTALS				**912,536.72** **8.1%**	
700	701-90386	temporary sheet piling	1.000	L.S.	308,925.00	308,925.00	
700	706-09959	railing, concrete, ft	4,999.000	L.F.	60.00	299,940.00	
700	715-05048	pipe, type 4 circular 6 in	18,592.000	L.F.	3.24	60,238.08	
700	715-05053	pipe, underdrain, outlet 6 in	678.000	L.F.	11.77	7,980.06	
700	715-05149	pipe, type 2 circular 12 in	5,593.000	L.F.	29.00	162,197.00	
700	715-09064	video inspection for pipe	5,593.000	L.F.	1.48	8,277.64	
700	718-06528	outlet protector, 1	24.000	EACH	519.56	12,469.44	
700	718-52610	aggregate for underdrains	1,674.000	C.Y.	32.72	54,773.28	
700	718-99153	geotextiles for underdrain	12,746.000	SYS	0.98	12,491.08	
700	720-07300	inlet, type h, with slotted drain	12.000	EACH	4,502.79	54,033.48	
700	720-07302	inlet, type ha, with slotted drain	12.000	EACH	1,757.87	21,094.44	
700	720-45410	manhole, c4	12.000	EACH	2,000.00	24,000.00	
700	720-98174	inlet, b15	12.000	EACH	2,189.87	26,278.44	
700	720-98555	inlet, c15	12.000	EACH	2,161.77	25,941.24	
700	731-93945	face panels, concrete	43,677.000	S.F.	11.99	523,687.23	
700	731-93946	wall erection	43,677.000	S.F.	5.56	242,844.12	
700	731-93947	leveling pad, concrete	2,628.000	L.F.	22.00	57,816.00	
		STRUCTURES SUBTOTALS				**1,902,986.53** **16.8%**	
800	801-01093	temporary worksite speed limit sign assembly	4.000	EACH	723.00	2,892.00	
800	801-03290	construction sign, c	2.000	EACH	199.19	398.38	
800	801-04308	road closure sign assembly	4.000	EACH	308.61	1,234.44	
800	801-06625	detour route marker assembly	18.000	EACH	98.84	1,779.12	
800	801-06640	construction sign, a	24.000	EACH	160.87	3,860.88	
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	maintaining traffic	1.000	L.S.	201,802.52	201,802.52	
800	801-07024	energy absorbing terminal, cz, tl-3	1.000	EACH	7,316.67	7,316.67	
800	801-07118	barricade, iii-a	228.000	L.F.	13.17	3,002.76	
800	801-07119	barricade, iii-b	48.000	L.F.	14.08	675.84	
800	801-08400	temporary traffic barrier, type 1	3,200.000	L.F.	16.86	53,952.00	
800	801-08507	temporary traffic barrier, type 1, anchored	296.000	L.F.	34.09	10,090.64	
800	801-08508	temporary traffic barrier, type 2, anchored	3,200.000	L.F.	25.00	80,000.00	

Project: ***SR 37 Mobility Study - 146th & Allisonville***
Location: ***146th & Allisonville Intersection***
County: ***HAMILTON***
District: ***Greenfield***

Project ID:***10-703 (99)***
Bid Date: ***/ /*** State: ***IN***
Route: ***146th St***

Sect	Pay Item	Description	Quantity	Unit	Bid Price	Extension	Alt
800	801-09133	temporary changeable message sign	2.000	EACH	6,193.01	12,386.02	
800	801-52817	temporary crossover, b	2.000	EACH	25,000.00	50,000.00	
800	802-05701	sign post, square, type 1, reinforced anchor base	340.000	L.F.	12.95	4,403.00	
800	802-07057	sign, panel, with legend	429.000	S.F.	14.81	6,353.49	
800	802-07138	wide flange sign post support foundation, ix	2.000	EACH	242.00	484.00	
800	802-07159	cantilever sign support foundation, ii	2.000	EACH	3,349.33	6,698.66	
800	802-09840	sign, sheet, with legend 0.100 in thickness	115.000	S.F.	17.27	1,986.05	
800	802-76095	structural steel, breakaway	681.000	LBS	2.68	1,825.08	
800	802-76135	overhead sign structure, cantilever single arm	1.000	EACH	20,672.20	20,672.20	
800	804-06770	delineator post	24.000	EACH	43.14	1,035.36	
800	808-10031	line, multi-component, broken, white, 4 in	2,711.000	L.F.	0.43	1,165.73	
800	808-10033	line, multi-component, solid, white, 4 in	12,746.000	L.F.	0.46	5,863.16	
800	808-10034	line, multi-component, solid, yellow, 4 in	8,580.000	L.F.	0.46	3,946.80	
800	808-10037	line, multi-component, solid, white, 8 in	2,826.000	L.F.	1.04	2,939.04	
800	808-75071	pavement message marking, preformed plastic, lane indication arrow	8.000	EACH	187.00	1,496.00	
800	808-75510	transverse markings, preformed plastic, crosshatch line, white, 24 in	287.000	L.F.	12.09	3,469.83	
800	808-75998	snowplowable raised pavement marker	222.000	EACH	19.45	4,317.90	
		TRAFFICE CONTROL DEVICES AND LIGHTING SUBTOTALS				**500,626.09** **4.4%**	
		TOTALS				**11,300,941.03** **100.0%**	

BRIDGE ESTIMATE

JTB 11/26/12
JTCC 11/26/12

PRICING REPORT

Date: 11/26/2012
Time: 15:21:17

Project: ***Allisonville Rd over 146th Street***
Location: ***Hamilton County***
County: ***HAMILTON***
District: ***Greenfield***

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

Pay Item	Description	Quantity	Unit	Bid Price	Extension	Alt
105-06845	construction engineering	1.000	L.S.	87,850.00	87,850.00	
110-01001	mobilization and demobilization	1.000	L.S.	146,400.00	146,400.00	
203-02020	excavation, unclassified	611.000	C.Y.	20.83	12,727.13	
211-02050	b borrow	611.000	C.Y.	27.42	16,753.62	
302-07455	dense graded subbase	264.000	C.Y.	62.94	16,616.16	
609-06259	reinforced concrete bridge approach 12 in	1,584.000	SYS	83.33	131,994.72	
701-06011	dynamic pile load test	3.000	EACH	1,651.34	4,954.02	
701-08122	pile, steel pipe, 0.375", 14	6,180.000	L.F.	42.87	264,936.60	
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	329.000	C.Y.	584.17	192,191.93	
702-51015	concrete, b, footings	226.000	C.Y.	307.53	69,501.78	
703-06028	reinforcing bars	67,630.000	LBS	0.91	61,543.30	
703-06029	reinforcing bars, epoxy coated	514,233.000	LBS	0.95	488,521.35	
704-51002	concrete, c, superstructure	2,007.000	C.Y.	560.34	1,124,602.38	
706-09959	railing, concrete, ft	244.000	L.F.	64.42	15,718.48	
707-05983	structural member, concrete i-beam, 36 in x 12 in	3,013.000	L.F.	160.01	482,110.13	
709-51821	surface seal	1.000	L.S.	32,000.00	32,000.00	
	TOTALS				**3,161,377.76**	

JTB 11/26/12

JEC 11/26/12

PRICING REPORT

Date: 11/26/2012
Time: 15:20:44

Project: ***146th over White River - Widening***
Location: ***Hamilton County***
County: ***HAMILTON***
District: ***Greenfield***

Project ID: ***10-703-146TH OVER WH***
Bid Date: / / State: ***IN***
Route:

Pay Item	Description	Quantity	Unit	Bid Price	Extension	Alt
105-06845	construction engineering	1.000	L.S.	51,051.00	51,051.00	
110-01001	mobilization and demobilization	1.000	L.S.	127,628.00	127,628.00	
202-51328	present structure, remove portions	1.000	L.S.	140,000.00	140,000.00	
206-51220	excavation, wet	1,139.300	C.Y.	100.00	113,930.00	
302-07455	dense graded subbase	24.100	C.Y.	62.94	1,516.85	
609-06257	reinforced concrete bridge approach, 10 in	144.300	SYS	89.10	12,857.13	
701-51195	pile, steel h, hp 12 in x 53	810.000	L.F.	50.80	41,148.00	
701-91792	pile tip, steel h	118.000	EACH	119.00	14,042.00	
701-93575	pile, steel h, hp 14 in x 73	1,300.000	L.F.	51.40	66,820.00	
701-98856	cored hole in rock, 20 in	1,300.000	L.F.	50.00	65,000.00	
702-51005	concrete, a, substructure	449.700	C.Y.	584.17	262,701.25	
702-51015	concrete, b, footings	360.000	C.Y.	307.53	110,710.80	
702-51110	grates, basins, and fittings, cast iron	5,323.000	LBS	4.50	23,953.50	
702-92857	concrete, c, substructure	92.200	C.Y.	560.00	51,632.00	
703-06028	reinforcing bars	98,061.000	LBS	0.91	89,235.51	
703-06029	reinforcing bars, epoxy coated	258,039.000	LBS	0.95	245,137.05	
704-51002	concrete, c, superstructure	811.600	C.Y.	560.00	454,496.00	
706-09965	railing, concrete, tx	2,120.700	L.F.	113.80	241,335.66	
707-10176	structural member, concrete bulb-t beam, 72 in x 49 in	1,564.000	L.F.	305.00	477,020.00	
709-51821	surface seal	1.000	L.S.	54,516.00	54,516.00	
801-06203	temporary pavement marking, 4 in	2,201.400	L.F.	0.46	1,012.64	
801-06710	flashing arrow sign	480.000	DAY	9.00	4,320.00	
801-06775	maintaining traffic	1.000	L.S.	20,000.00	20,000.00	
801-08508	temporary traffic barrier, type 2, anchored	1,601.400	L.F.	38.20	61,173.48	
	TOTALS				**2,731,236.87**	

ROAD QUANTITIES

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *DJZ* *5/30/12* *Checked By:* *ATW* *11/24/12*

105-06845 **CONSTRUCTION ENGINEERING** **1 LS**

						LS
ENTIRE PROJECT						*1.0*
	Assume 3% of Total Project Cost					
					TOTAL =	***1.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: DJZ 5/30/12 *Checked By:* ATW 11/24/12

110-01001 **MOBILIZATION AND DEMOBILIZATION** **1 LS**

						LS
ENTIRE PROJECT						*1.0*
	Assume 5% of Total Project Cost					

TOTAL = **1.0**

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *DJZ* *5/30/12* *Checked By:* *ATW* *11/24/12*

201-52370 **CLEARING RIGHT OF WAY** **1 LS**

						LS
ENTIRE PROJECT						*1.0*
	Assume a Lump Sum amount of $15k					

TOTAL = ***1.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *MAC* *5/31/12* *Checked By:* *BWS* *11/24/12*

202-02273 **CENTER CURB, CONCRETE, REMOVE** **209 SYS**

Begin Station	*Begin Width*	*End Station*	*End Width*	*Area (SFT)*		*SYS*
146th Street @ Allisonville Rd.						
14+46.72	*2.00*	*16+64.63*	*2.00*	*435.82*		*48.4*
18+82.16	*2.00*	*23+57.36*	*2.00*	*950.40*		*105.6*
.						
Allisonville Rd.						
07+93.72	*2.00*	*09+30.98*	*2.00*	*274.52*		*30.5*
10+64.36	*2.00*	*11+71.81*	*2.00*	*214.90*		*23.9*

TOTAL = ***208.4***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *MAC* *5/31/12* *Checked By:* *BWS* *11/24/12*

202-02279

CURB AND GUTTER, REMOVE

7,238 LFT

Begin Station	*End Station*	*Side*				*LFT*
146th Street						
6+74	*16+97*	*Rt.*				*1022.4*
6+74	*14+47*	*Rt. Median*				*772.6*
6+74	*14+47*	*Lt Median*				*772.6*
6+74	*17+80*	*Lt*				*1105.7*
18+16	*35+98*	*Rt.*				*1782.0*
18+16	*35+98*	*Lt.*				*1782.0*

TOTAL = ***7237.3***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: MAC 5/31/12 Checked By: BWS 11/24/12

202-52710 **SIDEWALK, CONCRETE, REMOVE** **1,740 SYS**

Begin Station	Begin Width	End Station	End Width	Area (SFT)		SYS
146th Street	South Side					
0+12	5.00	3+77	5.00	1821.40		202.4
6+74	5.00	16+96	5.00	5111.00		567.9
18+54	5.00	35+98	5.00	8719.60		968.8

TOTAL = 1739.1

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *MAC* *5/31/12* *Checked By:* *BWS* *11/24/12*

202-93999 **SIGNAL POLE, REMOVE** **4 EACH**

Station		***Side***				***EACH***
146th Street						
17+05		*Rt.*				*1.0*
17+25		*Lt.*				*1.0*
18+62		*Rt.*				*1.0*
19+15		*Lt.*				*1.0*

TOTAL = ***4.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: BWS 11/12/12 *Checked By: srp 11/26/12*

203-02000 **EXCAVATION, COMMON** **103,836 CYS**

STATION	*CUT AREA*	*CUT VOLUME*	*FILL AREA*	*FILL VOLUME*	*CUM. CUT VOLUME*	*CUM. FILL VOLUME*
	(sft)	*(cys)*	*(sft)*	*(cys)*	*(cys)*	*(cys)*
Line "146_ALL"						
20+00.00	*72.13*		*4.18*			
23+00.00	*156.00*	*1267.39*	*463.45*	*2597.94*	*1267.39*	*2597.94*
23+80.00	*156.00*	*462.22*	*463.45*	*1373.19*	*1729.61*	*3971.13*
23+80.00	*0.00*	*0.00*	*0.00*	*0.00*	*1729.61*	*3971.13*
29+50.00	*0.00*	*0.00*	*0.00*	*0.00*	*1729.61*	*3971.13*
29+50.00	*612.96*	*0.00*	*148.17*	*0.00*	*1729.61*	*3971.13*
31+69.14	*612.96*	*4974.96*	*148.17*	*1202.59*	*6704.58*	*5173.72*
35+71.43	*1779.68*	*17824.72*	*61.15*	*1559.40*	*24529.30*	*6733.12*
40+24.14	*2161.76*	*33043.14*	*0.00*	*512.65*	*57572.44*	*7245.77*
42+50.00	*1561.34*	*15572.21*	*0.00*	*0.00*	*73144.65*	*7245.77*
44+28.03	*687.71*	*7414.78*	*0.00*	*0.00*	*80559.43*	*7245.77*
47+25.07	*374.32*	*5841.95*	*0.00*	*0.00*	*86401.38*	*7245.77*
49+88.10	*211.23*	*2852.17*	*0.48*	*2.34*	*89253.55*	*7248.11*
52+97.61	*137.38*	*1998.12*	*0.00*	*2.75*	*91251.67*	*7250.86*
54+80.63	*216.84*	*1200.54*	*0.00*	*0.00*	*92452.21*	*7250.86*
55+97.61	*151.57*	*798.09*	*0.00*	*0.00*	*93250.30*	*7250.86*
Line "All"					***Earthwork Balance =***	***85999.44***
30+00.00	*67.91*		*82.64*			
37+07.75	*32.89*	*1321.13*	*41.73*	*1630.05*	*1321.13*	*1630.05*
38+00.00	*43.22*	*130.02*	*237.12*	*476.37*	*1451.15*	*2106.42*
38+90.44	*44.47*	*146.86*	*493.01*	*1222.83*	*1598.02*	*3329.25*
39+60.71	*44.47*	*115.74*	*493.01*	*1283.10*	*1713.76*	*4612.36*
39+60.71	*0.00*	*0.00*	*0.00*	*0.00*	*1713.76*	*4612.36*
40+80.14	*0.00*	*0.00*	*0.00*	*0.00*	*1713.76*	*4612.36*
40+80.14	*44.47*	*0.00*	*493.01*	*0.00*	*1713.76*	*4612.36*
41+50.44	*44.47*	*115.79*	*493.01*	*1283.65*	*1829.54*	*5896.01*
42+06.91	*51.31*	*100.16*	*583.69*	*1125.95*	*1929.70*	*7021.96*
43+21.66	*152.55*	*433.20*	*59.24*	*1366.23*	*2362.91*	*8388.19*
51+20.80	*403.07*	*8222.56*	*0.00*	*876.69*	*10585.47*	*9264.87*
					Earthwork Balance =	***1320.59***
					Total Earthwork Balance =	***87320.03***
	The Earthwork Balance indicates this is a WASTE job and no BORROW will be required.					
	Common Excavation = Cumulative Cut Volume =				***103835.76***	
					TOTAL =	***103836.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *JPS* *11/20/12* *Checked By:* *BWS* *11/24/12*

205-02237 **TEMPORARY EROSION & SEDIMENT CONTROL, CURB INLET PROTECTION** **40 EACH**

Station						***EACH***
146th Street						
1 per each curb inlet						
C15						*12.0*
B15						*28.0*

TOTAL = ***40.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: JPS 11/20/12 *Checked By:* BWS 11/24/12

205-06931 **TEMPORARY CHECK DAM, REVETMENT RIPRAP** **78 TON**

Begin Station	***End Station***	**Spacing**	**Number of Dams**	**Weight**		***TON***
	10% of ditches use Riprap			**Tons/Dam**		
20+00	*37+00*	*100*	*2*	*6.5*		*13.0*
39+00	*56+00*	*100*	*2*	*6.5*		*13.0*
20+00	*37+00*	*100*	*2*	*6.5*		*13.0*
39+00	*56+00*	*100*	*2*	*6.50*		*13.0*
35+00	*38+50*	*100*	*1*	*6.5*		*6.5*
42+00	*45+50*	*100*	*1*	*6.50*		*6.5*
35+00	*38+50*	*100*	*1*	*6.5*		*6.5*
42+00	*45+50*	*100*	*1*	*6.50*		*6.5*

TOTAL = ***78.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *MAC* *5/31/12* *Checked By:* *BWS* *11/24/12*

205-06937 **TEMPORARY SILT FENCE** **500 LFT**

Begin Station	***End Station***	***Side***				***LFT***
146th Street						
Assume 500' for entire project						*500.0*

TOTAL = ***500.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: SRS 5/21/12 *Checked By: ATW 11/25/12*

207-08263 **SUBGRADE TREATMENT, TYPE IA** **59,923 SYS**

Begin Station	*End Station*	*Side*	*Begin Width*	*End Width*	*Area (sft)*	*Area (sys)*
Pavement Area copied from 501-06323:						*49187.9*
Outside Area (2' on either side):						
Line "146th All"						
20+00.00	*20+12.43*	*EB*	*4.00*	*4.00*	*49.72*	*5.5*
20+12.43	*21+12.43*	*EB*	*4.00*	*4.00*	*400.00*	*44.4*
21+12.43	*25+73.99*	*EB*	*4.00*	*4.00*	*1846.24*	*205.1*
25+73.99	*30+85.18*	*EB*	*4.00*	*4.00*	*2044.76*	*227.2*
30+85.18	*31+11.73*	*EB*	*4.00*	*4.00*	*106.20*	*11.8*
31+11.73	*44+28.03*	*EB*	*4.00*	*4.00*	*5265.20*	*585.0*
44+28.03	*47+25.07*	*EB*	*4.00*	*4.00*	*1188.16*	*132.0*
47+25.07	*52+97.51*	*EB*	*4.00*	*4.00*	*2289.76*	*254.4*
52+97.51	*55+97.61*	*EB*	*4.00*	*4.00*	*1200.40*	*133.4*
20+00.00	*23+00.00*	*WB*	*4.00*	*4.00*	*1200.00*	*133.3*
23+00.00	*28+72.09*	*WB*	*4.00*	*4.00*	*2288.36*	*254.3*
28+72.09	*31+69.14*	*WB*	*4.00*	*4.00*	*1188.20*	*132.0*
31+69.14	*44+80.62*	*WB*	*4.00*	*4.00*	*5245.92*	*582.9*
44+80.62	*49+88.10*	*WB*	*4.00*	*4.00*	*2029.92*	*225.5*
49+88.10	*54+80.63*	*WB*	*4.00*	*4.00*	*1970.12*	*218.9*
54+80.63	*55+80.63*	*WB*	*4.00*	*4.00*	*400.00*	*44.4*
55+80.63	*55+97.61*	*WB*	*4.00*	*4.00*	*67.92*	*7.5*
Ramp "146Al_SW"						
20+00.00	*20+73.41*		*4.00*	*4.00*	*293.64*	*32.6*
20+73.41	*24+42.46*		*4.00*	*4.00*	*1476.20*	*164.0*
24+42.46	*26+10.18*		*4.00*	*4.00*	*670.88*	*75*
Ramp "146Al_NW"						
40+00.00	*46+05.89*		*4.00*	*4.00*	*2423.56*	*269.3*
Ramp "146Al_SE"						
10+00.00	*16+04.48*		*4.00*	*4.00*	*2417.92*	*268.7*
Ramp "146Al_NE"						
30+00.00	*30+94.37*		*4.00*	*4.00*	*377.48*	*41.9*
30+94.37	*31+94.37*		*4.00*	*4.00*	*400.00*	*44.4*
31+94.37	*34+43.86*		*4.00*	*4.00*	*997.96*	*110.9*
34+43.86	*36+10.13*		*4.00*	*4.00*	*665.08*	*73.9*
Roundabout						
Outside Area	***Subtract middle area***					
74474.49		*10321.33*			*64153.16*	*7128*
Subtract from bridge area:						
				6046.99	*6046.99*	*-672*
					TOTAL=	***59922.3***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *SRS* *5/10/12* *Checked By:* *BWS* *11/24/12*

207-08267 **SUBGRADE TREATMENT, TYPE IIIA** **1,341 SYS**

Alignment				***Area (sft)***		***SYS***
Line "146th All"						
41+50.89		*RT*		*391.34*		*43.5*
45+41.97		*RT*		*448.67*		*49.9*
47+59.98		*LT*		*489.08*		*54.3*
cul de sac		*north*		*3367.69*		*374.2*
cul de sac		*south*		*3367.69*		*374.2*
Line "All"						
36+28.55	*(two drives)*	*RT*		*473.72*		*52.6*
36+82.36		*RT*		*277.05*		*30.8*
37+30.80		*LT*		*430.61*		*47.8*
37+74.35		*RT*		*820.74*		*91.2*
42+53.44		*LT*		*448.67*		*49.9*
43+50.97		*LT*		*489.08*		*54.3*
45+16.57		*RT*		*1057.76*		*117.5*

TOTAL = ***1340.2***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: SRS 11/16/12 Checked By: srp 11/26/12

211-09194 **B BORROW** **32,733 TON**

Station from	Station to		Area		VOLUME	VOLUME
			(sft)		(cft)	(cys)
Borrow for behind both inside and outside walls. Area calculated in AutoCAD in "Typicals3.dwg". Areas for two scenarios.						
Area between both walls at tallest point: 278.23 sft						
Area behind inside wall, no outside wall present: 336.29 sft						
EB Wall						
31+11.49	37+04.59		336.29		199453.60	7387.17
37+04.59	38+35.79		336.29		44121.25	1634.12
38+35.79	44+28.03		336.29		199164.39	7376.46
WB Wall						
31+69.14	37+61.49		336.29		199201.38	7377.83
37+61.49	38+87.72		336.29		42449.89	1572.22
38+87.72	44+80.62		336.29		199386.34	7384.68

TOTAL = 32732.5

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *BWS* *11/19/12* *Checked By:* *BWC* *11/25/12*

211-09264 **STRUCTURAL BACKFILL, TYPE 1** **1**
CYS

		Depth				Volume
						(cys)
Sum from Item 715-05149		Assume 2'		Assume 2'		
	5593.00	2.0	2.0	2.0		0.30

TOTAL = **0.3**

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *SRS* *10/22/12* *Checked By:* *srp* *11/22/12*

211-09266 **STRUCTURAL BACKFILL, TYPE 3** **21,089 CYS**

Station From	***Station To***	***Begin Height***	***End Height***	***Structure Backfill***		***Volume***
		(ft)	***(ft)***	***Width***	***Volume***	***(cys)***
Inside Wall				***(ft)***	***(cft)***	
Wall along SR 37, in three segments. First segment transition from 3.98 ft to 27 ft. Second segment stays 27 ft all the way through roundabout. Third segment transitions from 27 ft back to 3.98 ft. Heights in AutoCAD in "Typicals3.dwg"						
EB Wall						
31+11.49	*37+04.59*	*4*	*27*	*10.84*	*99615.93*	*3689*
37+04.59	*38+35.79*	*27*	*27*	*18.90*	*66951.36*	*2480*
38+35.79	*44+28.03*	*27*	*4*	*10.84*	*99471.49*	*3684*
WB Wall						
31+69.14	*37+61.49*	*4*	*27*	*10.85*	*99618.46*	*3690*
37+61.49	*38+87.72*	*27*	*27*	*18.90*	*64415.17*	*2386*
38+87.72	*44+80.62*	*27*	*4*	*10.84*	*99582.34*	*3688*
Additional Area for cut (2 ft out and 1:1 slope out under road)						
Area by AutoCAD in "Typicals3.dwg" = 15.12 sft						
			Length	*Area*	*Volume*	
EB Wall			*(ft)*	*(sft)*	*(cft)*	
31+11.49	*44+28.03*		*1317*	*15.12*	*19906.08*	*737*
WB Wall						
31+69.14	*44+80.62*		*1311*	*15.12*	*19829.58*	*734*

TOTAL = 21088.5

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: JPS 11/20/12 *Checked By:* BWC 11/25/12

301-07448 **COMPACTED AGGREGATE, NO. 53, BASE** **326 TON**

Description		*Length (ft)*	*Width (ft)*	*Depth (ft)*	*Factor*	*Weight (Tons)*
					(tons/cys)	
Assumptions: Existing pavement is adequate to carry traffic loads.						
Only need a crossover at west end of project.						
Median crossover at begin project		*400.00*	*22.00*	*0.50*	*2*	*326*

TOTAL = ***325.9***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: SRS 5/21/12 *Checked By: ATW 11/25/12*

302-06464 **SUBBASE FOR PCCP** **15,066 CYS**

Begin Station	*End Station*	*Side*	*Begin Width*	*End Width*	*Area (sft)*	*Depth (ft)*	*Volume (cys)*
Pavement Area copied from 501-06323 multiplied by 9:					*442691.29*	*0.75*	*12297.0*
Outside Area (2' on either side):							
Line "146th All"							
20+00.00	*20+12.43*	*EB*	*4.00*	*4.00*	*49.72*	*0.75*	*1.4*
20+12.43	*21+12.43*	*EB*	*4.00*	*4.00*	*400.00*	*0.75*	*11.1*
21+12.43	*25+73.99*	*EB*	*4.00*	*4.00*	*1846.24*	*0.75*	*51.3*
25+73.99	*30+85.18*	*EB*	*4.00*	*4.00*	*2044.76*	*0.75*	*56.8*
30+85.18	*31+11.73*	*EB*	*4.00*	*4.00*	*106.20*	*0.75*	*3.0*
31+11.73	*44+28.03*	*EB*	*4.00*	*4.00*	*5265.20*	*0.75*	*146.3*
44+28.03	*47+25.07*	*EB*	*4.00*	*4.00*	*1188.16*	*0.75*	*33.0*
47+25.07	*52+97.51*	*EB*	*4.00*	*4.00*	*2289.76*	*1.75*	*148.4*
52+97.51	*55+97.61*	*EB*	*4.00*	*4.00*	*1200.40*	*0.75*	*33.3*
20+00.00	*23+00.00*	*WB*	*4.00*	*4.00*	*1200.00*	*0.75*	*33.3*
23+00.00	*28+72.09*	*WB*	*4.00*	*4.00*	*2288.36*	*0.75*	*63.6*
28+72.09	*31+69.14*	*WB*	*4.00*	*4.00*	*1188.20*	*0.75*	*33.0*
31+69.14	*44+80.62*	*WB*	*4.00*	*4.00*	*5245.92*	*0.75*	*145.7*
44+80.62	*49+88.10*	*WB*	*4.00*	*4.00*	*2029.92*	*0.75*	*56.4*
49+88.10	*54+80.63*	*WB*	*4.00*	*4.00*	*1970.12*	*0.75*	*54.7*
54+80.63	*55+80.63*	*WB*	*4.00*	*4.00*	*400.00*	*0.75*	*11.1*
55+80.63	*55+97.61*	*WB*	*4.00*	*4.00*	*67.92*	*0.75*	*1.9*
Ramp "146Al_SW"							
20+00.00	*20+73.41*		*4.00*	*4.00*	*293.64*	*0.75*	*8.2*
20+73.41	*24+42.46*		*4.00*	*4.00*	*1476.20*	*0.75*	*41.0*
24+42.46	*26+10.18*		*4.00*	*4.00*	*670.88*	*0.75*	*18.6*
Ramp "146Al_NW"							
40+00.00	*46+05.89*		*4.00*	*4.00*	*2423.56*	*0.75*	*67.3*
Ramp "146Al_SE"							
10+00.00	*16+04.48*		*4.00*	*4.00*	*2417.92*	*0.75*	*67.2*
Ramp "146Al_NE"							
30+00.00	*30+94.37*		*4.00*	*4.00*	*377.48*	*0.75*	*10.5*
30+94.37	*31+94.37*		*4.00*	*4.00*	*400.00*	*0.75*	*11.1*
31+94.37	*34+43.86*		*4.00*	*4.00*	*997.96*	*0.75*	*27.7*
34+43.86	*36+10.13*		*4.00*	*4.00*	*665.08*	*0.75*	*18.5*
Roundabout							
Outside Area		***Subtract middle area***					
74474.49			*10321.33*		*64153.16*	*0.75*	*1782.0*
Subtract from bridge area:							
					6046.99	*0.75*	*-168.0*
						TOTAL =	***15065.4***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: SRS 3/2/12 *Checked By:* ATW 11/24/12

303-01180 **COMPACTED AGGREGATE, NO. 53** **2,888 TON**

Begin Station	*End Station*	*Side*	*Area (sft)*	*Volume*	*Factor*	*Tons*
				(cys)	*(T/cys)*	
Line "146th All"						
20+00.00	*20+12.43*	*EB*	*5.4*	*2.49*	*2.000*	*4.97*
20+12.43	*21+12.43*	*EB*	*5.4*	*20.00*	*2.000*	*40.00*
21+12.43	*25+73.99*	*EB*	*5.4*	*92.31*	*2.000*	*184.62*
25+73.99	*30+85.18*	*EB*	*5.4*	*102.24*	*2.000*	*204.48*
30+85.18	*31+11.73*	*EB*	*5.4*	*5.31*	*2.000*	*10.62*
44+28.03	*46+97.05*	*EB*	*5.4*	*53.80*	*2.000*	*107.61*
46+97.05	*52+97.51*	*EB*	*5.4*	*120.09*	*2.000*	*240.18*
52+97.51	*55+97.61*	*EB*	*5.4*	*60.02*	*2.000*	*120.04*
20+00.00	*28+72.09*	*WB*	*5.4*	*174.42*	*2.000*	*348.84*
28+72.09	*31+68.71*	*WB*	*5.4*	*59.32*	*2.000*	*118.65*
31+68.71	*44+80.62*	*WB*	*5.4*	*262.38*	*2.000*	*524.76*
49+88.10	*54+80.63*	*WB*	*5.4*	*98.51*	*2.000*	*197.01*
54+80.63	*55+80.63*	*WB*	*5.4*	*20.00*	*2.000*	*40.00*
55+80.63	*55+97.61*	*WB*	*5.4*	*3.40*	*2.000*	*6.79*
Ramp "146Al_SW"						
20+00.00	*20+73.41*		*5.4*	*14.68*	*2.000*	*29.36*
20+73.41	*24+42.46*		*5.4*	*73.81*	*2.000*	*147.62*
Ramp "146Al_NW"						
40+00.00	*46+05.89*		*5.4*	*121.18*	*2.000*	*242.36*
Ramp "146Al_SE"						
10+00.00	*16+04.48*		*5.4*	*120.90*	*2.000*	*241.79*
Ramp "146Al_NE"						
30+00.00	*30+94.37*		*5.4*	*18.87*	*2.000*	*37.75*
30+94.37	*31+94.37*		*5.4*	*20.00*	*2.000*	*40.00*
					TOTAL =	***2887.5***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: JPS 11/20/12 *Checked By:* BWS 11/24/12

402-10084 **HMA FOR TEMPORARY PAVEMENT, B** **484 TON**

Description		Length (ft)	Width (ft)	Area (sys)	Factor (#/SYS)	Weight (Tons)
Assumptions: Existing pavement is adequate to carry traffic loads.						
Only need a crossover at west end of project.						
Median crossover at begin project		400.00	22.00	977.78	990	484

TOTAL = 484.0

_10-703_

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *DJZ* *4/11/12* *Checked By:* *ATW* *11/24/12*

501-06266 **PROFILOGRAPH, PCCP** **1 LS**

Begin Station	***End Station***	***Spacing***				***LS***
Entire Project						*1.0*

TOTAL = **_1.0_**

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: SRS 5/10/12 *Checked By: ATW 11/25/12*

501-06323 **QC/QA-PCCP, 12 IN** **49,188 SYS**

Begin Station	*End Station*	*Side*	*Begin Width*	*End Width*	*Area (sft)*	*SYS*
Line "146th All"						
20+00.00	*20+12.43*	*EB*	*34.00*	*34.00*	*422.62*	*47.0*
20+12.43	*21+12.43*	*EB*	*34.00*	*46.00*	*4000.00*	*444.4*
21+12.43	*25+73.99*	*EB*	*46.00*	*46.00*	*21231.76*	*2359.1*
25+73.99	*30+85.18*	*EB*	*46.00*	*66.46*	*28744.21*	*3193.8*
30+85.18	*31+11.73*	*EB*	*66.46*	*67.98*	*1784.69*	*198.3*
31+11.73	*44+28.03*	*EB*	*39.50*	*39.50*	*51993.85*	*5777.1*
44+28.03	*47+25.07*	*EB*	*65.50*	*46.00*	*16559.98*	*1840.0*
47+25.07	*52+97.51*	*EB*	*46.00*	*46.00*	*26332.24*	*2925.8*
52+97.51	*55+97.61*	*EB*	*46.00*	*24.00*	*10503.50*	*1167.1*
20+00.00	*23+00.00*	*WB*	*34.00*	*46.00*	*12000.00*	*1333.3*
23+00.00	*28+72.09*	*WB*	*46.00*	*46.00*	*26316.14*	*2924.0*
28+72.09	*31+69.14*	*WB*	*46.00*	*65.50*	*16560.54*	*1840.1*
31+69.14	*44+80.62*	*WB*	*39.50*	*39.50*	*51803.46*	*5755.9*
44+80.62	*49+88.10*	*WB*	*65.50*	*46.00*	*28292.01*	*3143.6*
49+88.10	*54+80.63*	*WB*	*46.00*	*46.00*	*22656.38*	*2517.4*
54+80.63	*55+80.63*	*WB*	*46.00*	*34.00*	*4000.00*	*444.4*
55+80.63	*55+97.61*	*WB*	*34.00*	*34.00*	*577.32*	*64.1*
Ramp "146Al_SW"						
20+00.00	*20+73.41*		*28.48*	*38.00*	*2440.15*	*271.1*
20+73.41	*24+61.86*		*38.00*	*38.00*	*14761.10*	*1640.1*
24+61.86	*24+92.38*		*32.00*	*27.39*	*906.29*	*100.7*
24+92.38	*26+10.18*		*27.39*	*31.21*	*3451.54*	*383.5*
Ramp "146Al_NW"						
40+00.00	*41+46.19*		*17.65*	*13.50*	*2276.91*	*253.0*
41+46.19	*41+97.16*		*13.50*	*20.00*	*853.75*	*94.9*
41+97.16	*46+05.89*		*26.00*	*26.00*	*10626.98*	*1180.8*
Ramp "146Al_SE"						
10+00.00	*11+50.91*		*17.68*	*13.51*	*2353.44*	*261.5*
11+50.91	*12+01.82*		*13.51*	*20.00*	*853.00*	*94.8*
12+01.82	*16+04.48*		*26.00*	*26.00*	*10469.16*	*1163.2*
Ramp "146Al_NE"						
30+00.00	*30+94.37*		*26.00*	*26.00*	*2453.62*	*272.6*
30+94.37	*31+94.37*		*26.00*	*38.00*	*3200.00*	*355.6*
31+94.37	*34+63.19*		*38.00*	*38.00*	*10215.16*	*1135.0*
34+63.19	*34+93.79*		*32.00*	*27.38*	*908.51*	*100.9*
34+93.79	*36+10.13*		*27.38*	*31.16*	*3405.27*	*378.4*
Roundabout		***Subtract middle area***				
66106.03			*10321.33*		*55784.70*	*6198.3*
Subtract from bridge area:						
					6046.99	*-671.9*

TOTAL = 49187.9

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *DJZ* *4/11/12* *Checked By:* *ATW* *11/24/12*

503-05240

D-1 CONTRACTION JOINT

24,594 LFT

Begin Station	*End Station*	*Spacing*				*LFT*
Total Project						
(SYS)		***(FT)***				
49187.92		*18.0*				*24594.0*

TOTAL = ***24594.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *JPS* *11/21/12* *Checked By:* *BWS* *11/24/12*

604-07569 **PAVERS** **432 SYS**

Begin Station	End Station					SYS
Line "All"						431.3
					TOTAL =	431.3

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *JPS* *11/21/12* *Checked By:* *BWS* *11/24/12*

605-06120 **CURB, CONCRETE** **482 LFT**

Begin Station	*End Station*					*LFT*
Line "All"						
South Side						*241*
North Side						*241*

TOTAL = ***482.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *srs* *11/20/12* *Checked By:* *BWS* *11/24/12*

605-06140 **CURB AND GUTTER, CONCRETE** **2,339 LFT**

Begin Station	*End Station*			*# of Sides*		*Length (ft)*
Line "ALL"						
Length of right side measured in CAD				*1.00*		*627*
Length of left side measured in CAD				*1.00*		*588*
SW Ramp						
24+61.86	*24+95.16*			*1.00*		*33*
24+95.16	*26+10.18*			*2.00*		*230*
NW Ramp						
40+00.00	*41+46.19*			*2.00*		*292*
41+46.19	*41+97.16*			*1.00*		*51*
NE Ramp						
34+63.19	*34+96.57*			*1.00*		*33*
34+96.57	*36+10.13*			*2.00*		*227*
SE Ramp						
10+00.00	*11+47.74*			*1.00*		*148*
11+47.74	*12+01.82*			*2.00*		*108*
					TOTAL =	***2338.1***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *JPS* *11/21/12* *Checked By:* *BWS* *11/24/12*

605-06145 **CURB AND GUTTER, B, CONCRETE** **769** **LFT**

Begin Station	End Station					LFT
Line "All"						769.0
					TOTAL =	769.0

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *srs* *11/20/12* *Checked By:* *ATW* *11/24/12*

605-06255 **CENTER CURB, D, CONCRETE** **6,870 SYS**

Begin Station	*End Station*	*Width*			*Area (sft)*	*Area (sys)*
Line "ALL"						
Area of Center curb north of roundabout					*1140.83*	*126.8*
Area of Center curb south of roundabout					*3125.55*	*347.3*
Line "146_ALL"						
20+00.00	*55+97.61*	*16.00*			*57561.76*	*6395.8*

TOTAL = ***6869.9***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: SRS 11/17/12 *Checked By: BWS 11/24/12*

610-09108 **PCCP FOR APPROACHES, 9 IN** **1,341 SYS**

Station				*Area (sft)*		*SYS*
Line "146th All"						
41+50.89		*RT*		*391.34*		*43.5*
45+41.97		*RT*		*448.67*		*49.9*
47+59.98		*LT*		*489.08*		*54.3*
cul de sac		*north*		*3367.69*		*374.2*
cul de sac		*south*		*3367.69*		*374.2*
Line "All"						
36+28.55	*(two drives)*	*RT*		*473.72*		*52.6*
36+82.36		*RT*		*277.05*		*30.8*
37+30.80		*LT*		*430.61*		*47.8*
37+74.35		*RT*		*820.74*		*91.2*
42+53.44		*LT*		*448.67*		*49.9*
43+50.97		*LT*		*489.08*		*54.3*
45+16.57		*RT*		*1057.76*		*117.5*
				TOTAL =		***1340.2***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: BWS 11/20/12 *Checked By: BWC 11/25/12*

615-06510 **MONUMENT, C** **4 EACH**

Alignment	*Station*	*Description*	*Inside Pavement?*			*Each*
Line "ALL"	*35+00*	*Begin Project*		*Yes*		
	40+20.44	*Int*		*Yes*		
	41+98.42	*PC*		*Yes*		
	45+50.00	*End Project*		*Yes*		
Line "146_ALL"	*20+00.00*	*Begin Project*		*Yes*		
	24+95.41	*PI*		*Yes*		
	32+89.23	*PC*		*Yes*		
	36+64.63	*PRC*		*Yes*		
	39+24.31	*PI*		*Yes*		
	41+83.76	*PT*		*Yes*		
	49+25.08	*PC*		*Yes*		
	51+21.40	*PI*		*Yes*		
	53+15.51	*PT*		*Yes*		
	54+51.52	*PC*		*Yes*		
	55+24.62	*PI*		*Yes*		
	55+97.61	*End Project*		*Yes*		
SW Ramp	*20+00.00*	*Begin Project, PC*		*Yes*		
	21+77.50	*PC*		*Yes*		
	23+19.70	*PI*		*Yes*		
	24+61.86	*PRC*		*Yes*		
	25+39.61	*PI*		*No*		*1.0*
	26+10.18	*End Project*		*Yes*		
NW Ramp	*40+00.00*	*Begin Project*		*Yes*		
	41+02.29	*PI*		*No*		*1.0*
	41+97.16	*PCC*		*Yes*		
	43+41.50	*PI*		*Yes*		
	44+85.79	*PT*		*Yes*		
	46+05.89	*End Project*		*Yes*		
NE Ramp	*30+00.00*	*Begin Project, PC*		*Yes*		
	32+96.87	*PC*		*Yes*		
	33+80.03	*PI*		*Yes*		
	34+63.19	*PRC*		*Yes*		
	35+40.15	*PI*		*No*		*1.0*
	36+10.13	*End Project*		*Yes*		
SE Ramp	*10+00.00*	*Begin Project*		*Yes*		
	11+04.90	*PI*		*No*		*1.0*
	12+01.82	*PCC*		*Yes*		
	12+81.02	*PI*		*Yes*		
	13+60.21	*PT*		*Yes*		
	16+04.48	*End Project*		*Yes*		
					TOTAL =	***4.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: BWS 11/20/12 *Checked By: BWC 11/25/12*

615-06515 **MONUMENT, D** **36 EACH**

Alignment	*Station*	*Description*	*Inside Pavement?*			*Each*
Line "ALL"	*35+00*	*Begin Project*		*Yes*		*1.0*
	40+20.44	*Int*		*Yes*		*1.0*
	41+98.42	*PC*		*Yes*		*1.0*
	45+50.00	*End Project*		*Yes*		*1.0*
Line "146_ALL"	*20+00.00*	*Begin Project*		*Yes*		*1.0*
	24+95.41	*PI*		*Yes*		*1.0*
	32+89.23	*PC*		*Yes*		*1.0*
	36+64.63	*PRC*		*Yes*		*1.0*
	39+24.31	*PI*		*Yes*		*1.0*
	41+83.76	*PT*		*Yes*		*1.0*
	49+25.08	*PC*		*Yes*		*1.0*
	51+21.40	*PI*		*Yes*		*1.0*
	53+15.51	*PT*		*Yes*		*1.0*
	54+51.52	*PC*		*Yes*		*1.0*
	55+24.62	*PI*		*Yes*		*1.0*
	55+97.61	*End Project*		*Yes*		*1.0*
SW Ramp	*20+00.00*	*Begin Project, PC*		*Yes*		*1.0*
	21+77.50	*PC*		*Yes*		*1.0*
	23+19.70	*PI*		*Yes*		*1.0*
	24+61.86	*PRC*		*Yes*		*1.0*
	25+39.61	*PI*		*No*		
	26+10.18	*End Project*		*Yes*		*1.0*
NW Ramp	*40+00.00*	*Begin Project*		*Yes*		*1.0*
	41+02.29	*PI*		*No*		
	41+97.16	*PCC*		*Yes*		*1.0*
	43+41.50	*PI*		*Yes*		*1.0*
	44+85.79	*PT*		*Yes*		*1.0*
	46+05.89	*End Project*		*Yes*		*1.0*
NE Ramp	*30+00.00*	*Begin Project, PC*		*Yes*		*1.0*
	32+96.87	*PC*		*Yes*		*1.0*
	33+80.03	*PI*		*Yes*		*1.0*
	34+63.19	*PRC*		*Yes*		*1.0*
	35+40.15	*PI*		*No*		
	36+10.13	*End Project*		*Yes*		*1.0*
SE Ramp	*10+00.00*	*Begin Project*		*Yes*		*1.0*
	11+04.90	*PI*		*No*		
	12+01.82	*PCC*		*Yes*		*1.0*
	12+81.02	*PI*		*Yes*		*1.0*
	13+60.21	*PT*		*Yes*		*1.0*
	16+04.48	*End Project*		*Yes*		*1.0*
					TOTAL =	***36.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *srs* *11/19/12* *Checked By:* *BWS* *11/24/12*

616-02320 **GEOTEXTILES** **533 SYS**

Begin Station	***End Station***	***Side Slope*** *X:1*	***Slope Length*** *(FT)*	***Bottom*** *Perimeter(FT)*		***Area*** *SYS*
Assume 10% of project						
Ditch Linings						
146th						
20+00	*55+98*	*3*	*3.16*	*13.3*		*5324.5*
					Take 10%	*5324.5*

TOTAL = ***532.4***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *srs* *11/20/12* *Checked By:* *BWS* *11/24/12*

616-06405 **RIPRAP, REVETMENT** **300 TON**

Begin Station	***End Station***	***Side Slope*** *(3:1)*	***Area*** *(sys)*	***Volume*** *(cys)*	***Factor*** ***(tons/cys)***	***Weight*** *Tons*
Assume 10% of project						
Ditch Linings						
146th						
20+00	*55+98*	*3*	*1.7*	*1998.7*	*1.5*	*299.8*

TOTAL = ***299.8***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *DJZ* *4/11/12* *Checked By:* *BWS* *11/24/12*

621-01004 **MOBILITY AND DEMOBILIZATION FOR SEEDING** **4 EACH**

Station						*EACH*
Use a Total of 4 for Entire Project						*4.0*

TOTAL = ***4.0***

_10-703_

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *srs* *11/20/12* *Checked By:* *BWS* *11/24/12*

621-06545 **FERTILIZER** **5 TON**

Description		***Area***		***Application Rate***		***Ton***
				(lb/ac)		
Area of Permanent Seeding =		*8.01*	*ac*	*800*		*3.2*
Area of Temporary Seeding =		*4.00*	*ac*	*800*		*1.6*
					TOTAL =	***4.8***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *srs* *11/20/12* *Checked By:* *BWS* *11/24/12*

621-06554 **SEED MIXTURE, U** **1,362 LBS**

Description			***Area***	***Units***		***LBS***
Quadrants measured in autocad						
	NE		*92680.3*	*sft*		
	SE		*97621.33*	*sft*		
	NW		*97031.88*	*sft*		
	SW		*92203.65*	*sft*		
	Total Seeding		*42170.80*	***sys***		
			8.71	***ac***		
	Total Sodding		*3414.00*	***sys***		
			0.71	***ac***		
	Total Seed Area		***8.01***	***ac***		
	Application Rate		***170***	***#/ac***		***1361.3***

TOTAL = ***1361.3***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *srs* *11/20/12* *Checked By:* *BWS* *11/24/12*

621-06557 **SEED MIXTURE, T** **601 LBS**

Description		*Area*		*Application Rate*		*LBS*
Entire Project		*4.00*	*ac*	*150*	*#/ac*	*600.6*

TOTAL = ***600.6***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *srs* *11/20/12* *Checked By:* *BWS* *11/24/12*

621-06565 **MULCHING MATERIAL** **25 TON**

Description			***Area***	***Application Rate***		***LBS***
Entire Project						
Seed Mixture, T			*4.00*			
Seed Mixture, U			*8.01*			
			12.01	*2.00*	*Tons/ac*	*24.0*

TOTAL = ***24.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *DJZ* *4/25/12* *Checked By:* *BWS* *11/24/12*

621-06567 **WATER** **14 kGAL**

Description					***Rate (kGAL/sys)***	***kGAL***
Area of Sodding =		*3413.73*	*sys*		*0.004*	*13.7*

TOTAL = ***13.7***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: srs 11/20/12 — *Checked By:* BWS 11/24/12

621-06574 **SODDING** **3,414 SYS**

Begin Station	End Station		Width	Factor		Area SYS
NB						
20+00	55+98		2.67			1067.3
SB						
20+00	55+98		2.67			1067.3
NB						
20+00	55+98		16	0.1		639.6
SB						
20+00	55+98		16	0.1		639.6

TOTAL = **3413.7**

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *DJZ* *4/11/12* *Checked By:* *BWS* *11/24/12*

628-08520 **CELLULAR TELEPHONE/RADIO** **2 EACH**

						EACH
Entire P roject						*2.0*

TOTAL = ***2.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *DJZ* *4/11/12* *Checked By:* *BWS* *11/24/12*

628-08521 **CELLULAR TELEPHONE/RADIO SERVICE** **36 MOS**

			# of Phones			MOS
Assume Project Length is 18 months			2			36.0

TOTAL = 36.0

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *DJZ* *4/11/12* *Checked By:* *BWS* *11/24/12*

628-09403 **FIELD OFFICE, C** **18 MOS**

						MOS
Assume Project Length is 18 months						*18.0*

TOTAL = ***18.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *BWS* *11/20/12* *Checked By:* *BWC* *11/25/12*

701-90386 **TEMPORARY SHEET PILING** **1 LS**

Description						*Area (sft)*
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan. Will need wall for Phase III.						
For the Under option, assume 14.5 feet of elevation change for 146th St. and remaining grade by Allisonville Rd.						
Assume 485' at 3% to get back to grade on either side of the bridge, and 200' of 14.5' wall.						
			Total =	*12357.00*	*sft*	
Allisonville Rd. will go OVER 146th Street						
Use 12375 sft at $25/sft for a lump sum unit cost of $308,925						*1.0*
					TOTAL =	***1.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: srs 11/24/12 *Checked By: BWS 11/25/12*

706-09959 **RAILING, CONCRETE, FT** **4,999 LFT**

Description	*Length (ft)*					
RAMP TOP LEFT RAILING						
EB Wall						
31+11.49	*37+04.59*					*593*
38+35.79	*44+28.03*					*592*
WB Wall						
31+69.14	*37+61.49*					*592*
38+87.72	*44+80.62*					*593*
INSIDE WALL BOTTOM RAILING						
EB Wall						
31+11.49	*44+28.03*					*1317*
WB Wall						
31+69.14	*44+80.62*					*1311*

SUBTOTAL (THIS PAGE) = 4998.6

TOTAL = 4998.6

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *srs* *11/21/12* *Checked By:* *BWS* *11/24/12*

715-05048 **PIPE, TYPE 4 CIRCULAR 6 IN** **18,592 LFT**

Begin Station	*End Station*					*LFT*
146th Street						
20+00	*55+98*	*Assume both sides outside and median*				*14392.0*
Allisonville Rd						
35+00	*45+50*					*4200.0*
		Assume both sides outside and median				

TOTAL = ***18592.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: MAC 5/31/12 *Checked By:* BWS 11/24/12

715-05053 **PIPE, UNDERDRAIN, OUTLET 6 IN** **678 LFT**

Begin Station	End Station	Total length	# of outlets	outlet length		LFT
Allisonville Rd						
35+00	45+50	1050	6	26		156.0
146th Street						
20+00	55+98	3598	18	29		522.0

TOTAL = **678.0**

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *BWS* *11/19/12* *Checked By:* *BWC* *11/25/12*

715-05149 **PIPE, TYPE 2 CIRCULAR 12 IN** **5,593 LFT**

Station						***Lft***
Use 300' inlet spacing						
Line "146_ALL"	*Median Inlets*					
						80
						92
						38
						296
						296
						296
						246
						246
						296
						296
						296
						38
Line "146_ALL"	*Outside Wall Inlets*					
	Rt					*54*
	Lt					*54*
	Rt					*66*
	Lt					*54*
	Rt					*38*
	Lt					*38*
	Rt					*38*
	Lt					*38*
	Rt					*66*
	Lt					*66*
	Rt					*54*
	Lt					*66*
Line "ALL"						
35+50.00						*157*
36+50.00						*182*
37+70.00						*151*
38+50.00						*173*
39+50.00						*556*
43+50.00						*651*
44+50.00						*172*
45+50.00						*167*
46+50.00						*167*
47+50.00						*67*

TOTAL = ***5592.4***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *BWS* *11/19/12* *Checked By:* *BWC* *11/25/12*

715-09064 **VIDEO INSPECTION FOR PIPE** **5,593 LFT**

Station						***Lft***
Total Length of Pipe Item # 715-05149						
						5593

TOTAL = ***5593.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *MAC* *5/31/12* *Checked By:* *BWS* *11/24/12*

718-06528 **OUTLET PROTECTOR, 1** **24 EACH**

Begin Station	*End Station*	*Total length*	*S*			*EACH*
Allisonville Rd						
35+00	*45+50*	*1050*				*6.0*
146th Street						
20+00	*55+98*	*3598*				*18.0*

TOTAL = ***24.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: MAC 5/31/12 *Checked By:* BWS 11/24/12

718-52610

AGGREGATE FOR UNDERDRAINS

1,674
CYS

Begin Station	*End Station*		*Total Length*	*Factor*		*CYS*
Allisonville Rd						
35+00	*45+50*		*4200.0*	*0.090*		*378.0*
146th Street						
20+00	*55+98*		*14392.0*	*0.090*		*1295.3*

TOTAL = 1673.3

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *MAC* *5/31/12* *Checked By:* *BWS* *11/24/12*

718-99153

GEOTEXTILES FOR UNDERDRAIN

12,746 SYS

Begin Station	*End Station*		*Total Length*	*Factor*		*SYS*
Allisonville Rd						
35+00	*45+50*		*4200.0*	*6.170*		*2879.3*
146th Street						
20+00	*55+98*		*14392.0*	*6.170*		*9866.5*

TOTAL = ***12745.8***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: BWS 5/11/12 Checked By: BWC 11/25/12

720-07300 **INLET, TYPE H, WITH SLOTTED DRAIN** **4 EACH**

Station						Each
Use 300' inlet spacing						
Line "146_ALL"	Outside Wall Inlets					
	Rt					1
	Lt					1
	Rt					1
	Lt					1

TOTAL = 4.0

SR 37 MOBILITY STUDY
146TH & Allisonville

By: BWS 5/11/12 Checked By: BWC 11/25/12

720-07302 **INLET, TYPE HA, WITH SLOTTED DRAIN** **12 EACH**

Station						Each
Use 300' inlet spacing						
Line "146_ALL"	Outside Wall Inlets					
	Lt Outside Wall					1
	Lt Inside Wall					1
	Rt Outside Wall					1
	Rt Inside Wall					1
	Lt Inside Wall					1
	Rt Inside Wall					1
	Lt Inside Wall					1
	Rt Inside Wall					1
	Lt Outside Wall					1
	Lt Inside Wall					1
	Rt Outside Wall					1
	Rt Inside Wall					1

TOTAL = 12.0

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: BWS 11/19/12 Checked By: BWC 11/25/12

720-45410 **MANHOLE, C4** **12 EACH**

Station						*Each*
Use 100' inlet spacing						
Line "ALL"	*Outside Curb and Gutter Inlets*					
35+50	*Lt*					*1*
36+50	*Lt*					*1*
37+70	*Lt*					*1*
38+50	*Lt*					*1*
39+50	*Lt*					*1*
40+24	*Lt*					*1*
42+23	*Lt*					*1*
43+50	*Lt*					*1*
44+50	*Lt*					*1*
45+50	*Lt*					*1*
46+50	*Lt*					*1*
47+50	*Lt*					*1*

TOTAL = 12.0

		10-703	
		SR 37 MOBILITY STUDY 146TH & Allisonville	
By: BWS	11/19/12	Checked By: BWC	11/25/12
720-98174	INLET, B15		28 EACH

Station						Each
Use 100' inlet spacing						
Line "ALL"	*Outside Curb and Gutter Inlets*					
35+50	*Rt*					*1*
36+50	*Rt*					*1*
37+70	*Rt*					*1*
38+50	*Rt*					*1*
39+50	*Lt*					*1*
39+50	*Rt*					*1*
43+50	*Lt*					*1*
43+50	*Rt*					*1*
44+50	*Rt*					*1*
45+50	*Rt*					*1*
46+50	*Rt*					*1*
47+50	*Rt*					*1*
Use 300' inlet spacing						
Line "146_ALL"	*Median Inlets*					
median is curb and gutter each side with raised grass in between						*2*
(2 inlets at each location for 2 separate median curb runs)						*2*
						2
						2
	Sag					*2*
	Sag					*2*
						2
						2
					TOTAL =	***28.0***

	_10-703_	
	SR 37 MOBILITY STUDY **_146TH & Allisonville_**	
By: BWS 11/19/12	*Checked By:* BWC 11/25/12	
720-98555	**INLET, C15**	**12** **EACH**

Station						***Each***
Use 100' inlet spacing						
Line "ALL"	*Outside Curb and Gutter Inlets*					
35+50	*Lt*					*1*
36+50	*Lt*					*1*
37+70	*Lt*					*1*
38+50	*Lt*					*1*
39+50	*Lt*					*1*
39+50	*Rt*					*1*
43+50	*Lt*					*1*
43+50	*Rt*					*1*
44+50	*Lt*					*1*
45+50	*Lt*					*1*
46+50	*Lt*					*1*
47+50	*Lt*					*1*
					TOTAL =	***12.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *SRS* *11/24/12* *Checked By:* *srp* *11/26/12*

731-93945 **FACE PANELS, CONCRETE** **43,677 SFT**

Begin Station	*End Station*	*Begin Height*	*End Height*	*Average Ht.*		*SFT*
INSIDE WALL AREAS COPIED FROM STRUCTURE BACKFILL AREAS (211-09226)						
EB Wall						
31+11.49	*37+04.59*	*4*	*27*			*9187*
37+04.59	*38+35.79*	*27*	*27*			*3542*
38+35.79	*44+28.03*	*27*	*4*			*9174*
WB Wall						
31+69.14	*37+61.49*	*4*	*27*			*9181*
37+61.49	*38+87.72*	*27*	*27*			*3408*
38+87.72	*44+80.62*	*27*	*4*			*9184*

TOTAL = ***43677.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *SRS* *11/24/12* *Checked By:* *srp* *11/26/12*

731-93946

WALL ERECTION

43,677 SFT

Begin Station	*End Station*	*Begin Height*	*End Height*	*Average Ht.*		*SFT*
INSIDE WALL AREAS COPIED FROM STRUCTURE BACKFILL AREAS (211-09226)						
EB Wall						
31+11.49	*37+04.59*	*4*	*27*			*9187*
37+04.59	*38+35.79*	*27*	*27*			*3542*
38+35.79	*44+28.03*	*27*	*4*			*9174*
WB Wall						
31+69.14	*37+61.49*	*4*	*27*			*9181*
37+61.49	*38+87.72*	*27*	*27*			*3408*
38+87.72	*44+80.62*	*27*	*4*			*9184*

TOTAL = ***43677.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *SRS* *11/24/12* *Checked By:* *srp* *11/26/12*

731-93947 **LEVELING PAD, CONCRETE** **2,628 LFT**

Begin Station	*End Station*					*LFT*
Description	*Length*					
	(ft)					
INSIDE WALL AREAS COPIED FROM STRUCTURE BACKFILL AREAS (211-09226)						
EB Wall						
31+11.49	*37+04.59*					*593.1*
37+04.59	*38+35.79*					*131.2*
38+35.79	*44+28.03*					*592.2*
WB Wall						
31+69.14	*37+61.49*					*592.4*
37+61.49	*38+87.72*					*126.2*
38+87.72	*44+80.62*					*592.9*

TOTAL = ***2628.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: BWS 4/25/12 *Checked By: BWC 11/25/12*

801-01093 **TEMPORARY WORKSITE SPEED LIMIT SIGN ASSEMBLY** **4 EACH**

Description						*Each*
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.						
Use 2 at each end of SR 37 for every phase of MOT						*4*

TOTAL = ***4.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *BWS* *4/25/12* *Checked By:* *BWC* *11/25/12*

801-03290 **CONSTRUCTION SIGN, C** **2 EACH**

Description						*Each*
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.						
Use 1 at each end of SR 37 for every phase of MOT						*2*

TOTAL = ***2.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: BWS 4/25/12 *Checked By: BWC 11/25/12*

801-04308 **ROAD CLOSURE SIGN ASSEMBLY** **4 EACH**

Description						*Each*
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.						
MOT Phase III						
Use one at each end of the S-Line						*2*
MOT Phase IV						
Use one at each end of the S-Line						*2*
MOT Phase V						
Use one at each end of the S-Line						*4*
				Highest Total =		***4***
				TOTAL =		***4.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *BWS* *4/25/12* *Checked By:* *BWC* *11/25/12*

801-06625 **DETOUR ROUTE MARKER ASSEMBLY** **18 EACH**

Description						*Each*
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.						
MOT Phase III						
					Total =	*18*
MOT Phase IV						
					Total =	*18*
MOT Phase V						
					Total =	*18*
					Highest Total =	***18***
					TOTAL =	***18.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: BWS 4/25/12 *Checked By: BWC 11/25/12*

801-06640 **CONSTRUCTION SIGN, A** **24 EACH**

Description						***Each***
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.						
MOT Phase I						
Begin Project						*8*
Midde of project						*4*
End Project						*8*
					Total =	*20*
MOT Phase II						
Begin Project						*8*
Midde of project						*2*
End Project						*8*
					Total =	*18*
MOT Phase III						
Begin Project						*8*
Midde of project						*1*
End Project						*8*
					Total =	*17*
MOT Phase IV						
Begin Project						*8*
Midde of project						*8*
End Project						*8*
					Total =	*24*
MOT Phase V						
Begin Project						*8*
Midde of project						*2*
End Project						*8*
					Total =	*18*
					Highest Total =	***24***
					TOTAL =	***24.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *BWS* *4/25/12* *Checked By:* *BWC* *11/25/12*

801-06645 **CONSTRUCTION SIGN, B** **4 EACH**

Description						*Each*
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.						
MOT Phase I						
Begin Project						*2*
Midde of project						*0*
End Project						*2*
					Total =	*4*
MOT Phase II						
Begin Project						*2*
Midde of project						*0*
End Project						*2*
					Total =	*4*
MOT Phase III						
Begin Project						*3*
Midde of project						*1*
End Project						*0*
					Total =	*4*
MOT Phase IV						
Begin Project						*2*
Midde of project						*0*
End Project						*0*
					Total =	*2*
MOT Phase V						
Begin Project						*0*
Midde of project						*0*
End Project						*0*
					Total =	*0*
					Highest Total =	***4***
					TOTAL =	***4.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *BWS* *4/25/12* *Checked By:* *BWC* *11/25/12*

801-06710 **FLASHING ARROW SIGN** **510 DAY**

Description						***Day***
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.						
MOT Phase I						
Begin Project						*45*
Midde of project						*0*
End Project						*45*
					Total =	*90*
MOT Phase II						
Begin Project						*0*
Midde of project						*0*
End Project						*0*
					Total =	*0*
MOT Phase III						
Begin Project						*105*
Midde of project						*0*
End Project						*105*
					Total =	*210*
MOT Phase IV						
Begin Project						*105*
Midde of project						*0*
End Project						*105*
					Total =	*210*
MOT Phase V						
Begin Project						*0*
Midde of project						*0*
End Project						*0*
					Total =	*0*
					Total =	***510***
					TOTAL =	***510.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *BWS* *4/25/12* *Checked By:* *ATW* *11/24/12*

801-06775 **MAINTAINING TRAFFIC** **1**
LS

Description						***LS***
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.						
ENTIRE PROJECT						*1*
	Assume 2% of Total Project Cost					

TOTAL = ***1.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: BWS 4/25/12 *Checked By: BWC 11/25/12*

801-07024 **ENERGY ABSORBING TERMINAL, CZ, TL-3** **1 EACH**

Description						***Each***
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.						
Use at begin project for MOT Phase III						*1*
					Highest Total =	***1***
					TOTAL =	***1.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: BWS 4/25/12 *Checked By: BWC 11/25/12*

801-07118 **BARRICADE, III-A** **228 LFT**

Description						*Length (ft)*
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.						
MOT Phase I						
Begin Project						*0*
Midde of project						*0*
End Project						*0*
					Total =	*0*
MOT Phase II						
Begin Project						*0*
Midde of project						*0*
End Project						*0*
					Total =	*0*
MOT Phase III						
Begin Project						*36*
Midde of project						*156*
End Project						*36*
					Total =	*228*
MOT Phase IV						
Begin Project						
Midde of project						*72*
End Project						*96*
					Total =	*168*
MOT Phase V						
Begin Project						*12*
Midde of project						*132*
End Project						*12*
					Total =	*156*
					Highest Total =	***228***
					TOTAL =	***228.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: BWS 4/25/12 *Checked By: BWC 11/25/12*

801-07119 **BARRICADE, III-B** **48 LFT**

Description						*Length (ft)*
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.						
MOT Phase I						
Begin Project						*0*
Midde of project						*0*
End Project						*0*
					Total =	*0*
MOT Phase II						
Begin Project						*0*
Midde of project						*0*
End Project						*0*
					Total =	*0*
MOT Phase III						
Begin Project						*24*
Midde of project						*0*
End Project						*24*
					Total =	*48*
MOT Phase IV						
Begin Project						*24*
Midde of project						*0*
End Project						*24*
					Total =	*48*
MOT Phase V						
Begin Project						*0*
Midde of project						*0*
End Project						*0*
					Total =	*0*
					Highest Total =	***48***
					TOTAL =	***48.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *BWS* *4/25/12* *Checked By:* *BWC* *11/25/12*

801-08400 **TEMPORARY TRAFFIC BARRIER, TYPE 1** **3,200 LFT**

Description						***Length (ft)***
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.						
Use length of SR 37 for MOT Phase III						*3200*
This phase requires more that Phase IV, therefore will use Phase III quantity						
					Highest Total =	***3200***
					TOTAL =	***3200.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: BWS 4/25/12 *Checked By: BWC 11/25/12*

801-08507 **TEMPORARY TRAFFIC BARRIER, TYPE 1, ANCHORED** **296 LFT**

Description						*Length (ft)*
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.						
Will need at the end of the project for MOT Phase III						*168*
Will need at the end of the project for MOT Phase IV						*296*
					Highest Total =	***296***
					TOTAL =	***296.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *BWS* *4/25/12* *Checked By:* *BWC* *11/25/12*

801-08508 **TEMPORARY TRAFFIC BARRIER, TYPE 2, ANCHORED** **3,200 LFT**

Description						***Length (ft)***
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.						
Will need for the length of the project for MOT Phase III						*3200*
Will need at the end of the project for MOT Phase IV						*355*
					Highest Total =	***3200***

TOTAL = ***3200.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *BWS* *4/25/12* *Checked By:* *BWC* *11/25/12*

801-09133 **TEMPORARY CHANGEABLE MESSAGE SIGN** **2 EACH**

Description						*Each*
Assumptions: Used MOT Plan for 126th and Keystone as example MOT Plan.						
Assume one at each end of the project on SR 37 for the duration of the project.						*2*

TOTAL = *2.0*

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *BWS* *4/25/12* *Checked By:* *BWC* *11/25/12*

801-52817 **TEMPORARY CROSSOVER, B** **2 EACH**

Description						*Each*
1 at each end of SR 37 for MOT Phase III						*2.0*

TOTAL = ***2.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *JPS* *11/28/12* *Checked By:* *BWC* *12/5/12*

802-05701 **SIGN POST, SQUARE, TYPE 1, REINFORCED ANCHOR BASE** **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*

SUBTOTAL (THIS PAGE) = ***340.0***

TOTAL = ***340.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *JPS* *11/28/12* *Checked By:* *BWC* *12/5/12*

802-07057 **SIGN, PANEL, WITH 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 (THIS PAGE) = ***429.0***

TOTAL = ***429.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *JPS* *11/28/12* *Checked By:* *BWC* *12/5/12*

802-07138 **WIDE FLANGE SIGN POST SUPPORT FOUNDATION, IX** **2 EACH**

Description						
Exit Street Name						*2.0*

SUBTOTAL (THIS PAGE) = ***2.0***

TOTAL = ***2.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *JPS* *11/28/12* *Checked By:* *BWC* *12/5/12*

802-07159 **CANTILEVER SIGN SUPPORT FOUNDATION, II** **2 EACH**

Description						
1/2 Mile Ahead						*2.0*

SUBTOTAL (THIS PAGE) = ***2.0***

TOTAL = ***2.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *JPS* *11/28/12* *Checked By:* *BWC* *12/5/12*

802-09840 **SIGN, SHEET, WITH LEGEND 0.100 IN THICKNESS** **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	*24*	*24*	*4*		*16.0*
	Direction	*24*	*12*	*4*		*8.0*

SUBTOTAL (THIS PAGE) = ***115.0***

TOTAL = ***115.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: JPS 11/28/12 *Checked By:* BWC 12/5/12

802-76095 **STRUCTURAL STEEL, BREAKAWAY** **681 LBS**

Description	*L1*	*L2*	*W1*	*W2*		
Exit w/ Street Name						
W8x13	*20.00*	*25.00*	*307.58*	*372.58*		***680.2***

SUBTOTAL (THIS PAGE) = ***680.2***

TOTAL = ***680.2***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *JPS* *11/28/12* *Checked By:* *BWC* *12/5/12*

802-76135 **OVERHEAD SIGN STRUCTURE, CANTILEVER SINGLE ARM** **1 EACH**

Description						
1/2 Mile Ahead						*1.0*

SUBTOTAL (THIS PAGE) = ***1.0***

TOTAL = ***1.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *DJZ* *4/11/12* *Checked By:* *BWS* *11/24/12*

804-06770 **DELINEATOR POST** **24 EACH**

						EACH
Entire Project						
SR 37						*24.0*

TOTAL = ***24.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *srs* *11/20/12* *Checked By:* *BWS* *11/24/12*

808-10031 **LINE, MULTI-COMPONENT, BROKEN, WHITE, 4 IN** **2,711 LFT**

Begin Sta.	End Sta.				*Factor*	*LFT*
146th ST	**Westbound**					
20+00.00	55+97.61				*0.25*	899.4
23+00.00	29+00.12				*0.25*	150.0
49+18.12	54+80.63				*0.25*	140.6
	Eastbound					
20+00.00	55+97.61				*0.25*	899.4
21+12.43	26+74.23				*0.25*	140.5
46+97.05	52+97.61				*0.25*	150.1
NE Ramp						
31+94.37	34+53.47				*0.25*	64.8
SW Ramp						
20+73.41	24+52.11				*0.25*	94.7
Allisonville	**NB**					
36+00.00	37+29.17				*0.25*	32.3
43+12.00	45+50.00				*0.25*	59.5
	SB					
35+00.00	37+18.85				*0.25*	54.7
43+03.01	44+00.00				*0.25*	24.2

TOTAL = ***2710.3***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *srs* *11/20/12* *Checked By:* *BWS* *11/24/12*

808-10033 **LINE, MULTI-COMPONENT, SOLID, WHITE, 4 IN** **12,746 LFT**

Begin Sta.	End Sta.	Begin Offset	End Offset			*LFT*
Allisonville						
Lengths By AutoCAD						
						440.4
						67.6
						112.4
						121.3
						67.0
						433.0
						52.1
146th	**WB**					
29+00.12	49+18.12					2018.0
29+00.12	31+69.14					269.0
44+80.62	49+18.12					437.5
20+00.00	20+12.43	32.0	32.0			12.4
20+12.43	21+12.43	32.0	44.0			100.7
21+12.43	25+73.99	44.0	44.0			461.6
25+73.99	30+85.18	44	64.65			511.6
30+85.18	31+85.14	64.65	77.50			100.8
31+85.14	35+99.34	77.50	77.50			414.2
39+75.68	44+56.41	65.5	65.5			480.7
44+56.41	47+25.44	65.5	44			269.9
47+25.44	55+97.61	44	32			872.3
	EB					
26+74.23	46+97.05					2022.8
26+74.23	31+11.73					437.5
44+28.03	46+97.05					269.0
20+00.00	23+00.00	32	44			300.2
23+00.00	28+72.09	44.0	44.0			572.1
23+00.00	25+73.99	44.0	65.50			274.8
25+73.99	30+85.18	65.50	73.5			511.3
39+93.10	42+86.25	77.5	77.5			293.2
42+86.25	43+86.00	77.5	65.5			100.5
43+86.00	44+80.86	65.5	44			97.3
44+80.86	49+88.10	44	44			507.2
55+97.61	54+80.63	*44*	*32*			117.6
					TOTAL =	***12746.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *srs* *11/20/12* *Checked By:* *BWS* *11/24/12*

808-10034 **LINE, MULTI-COMPONENT, SOLID, YELLOW, 4 IN** **8,580 LFT**

Begin Sta.	End Sta.					*LFT*
146th ST	**WB**					
20+00.00	55+97.61					3597.6
	EB					
20+00.00	55+97.61					3597.6
Allisonville						
	NB					
35+00.00	38+40.44					340.4
41+98.43	45+50.00					351.6
	SB					
35+00.00	38+40.44					340.4
41+98.43	45+50.00					351.6

TOTAL = ***8579.2***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *JPS* *11/20/12* *Checked By:* *BWS* *11/24/12*

808-10037 **LINE, MULTI-COMPONENT, SOLID, WHITE, 8 IN** **2,826 LFT**

Begin Sta.	End Sta.	Begin Offset	End Offset			*LFT*
146th St.	***EB Exit Gore***					
26+74.23	31+11.73	32.0	32.0			437.5
26+74.23	31+11.73	36.0	53.5			437.5
	EB Entrance Gore					
44+28.03	46+97.05	32.0	32.0			269.0
44+28.03	46+97.05	53.5	34.0			269.0
	WB Entrance Gore					
29+00.12	31+69.14	-32.0	-32.0			269.0
29+00.12	31+69.14	-34.0	-53.5			269.0
	WB Exit Gore					
44+80.62	49+18.12	-32.0	-32.0			437.5
44+80.62	49+18.12	-53.5	-36.0			437.5

TOTAL = ***2826.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *JPS* *11/20/12* *Checked By:* *BWS* *11/24/12*

808-75071 **PAVEMENT MESSAGE MARKING, PREFORMED PLASTIC, LANE INDICATION ARROW** **8 EACH**

Station						***EACH***
146th Street	*Eastbound*					*2.0*
	Westbound					*2.0*
Allisonville Rd.	*Northbound*					*2.0*
	Southbound					*2.0*

TOTAL = ***8.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: *JPS* *11/20/12* *Checked By:* *BWS* *11/24/12*

808-75510 **TRANSVERSE MARKINGS, PREFORMED PLASTIC, CROSSHATCH LINE, WHITE, 24 IN** **287 LFT**

						LFT
146th St.	*Eastbound Entrance*					*101.0*
146th St.	*Westbound Entrance*					*52.0*
Allisonville Rd.	*Northbound Entrance*					*67.0*
Allisonville Rd.	*Southbound Entrance*					*67.0*
					TOTAL =	***287.0***

10-703

SR 37 MOBILITY STUDY
146TH & Allisonville

By: JPS 11/20/12 *Checked By: BWS 11/24/12*

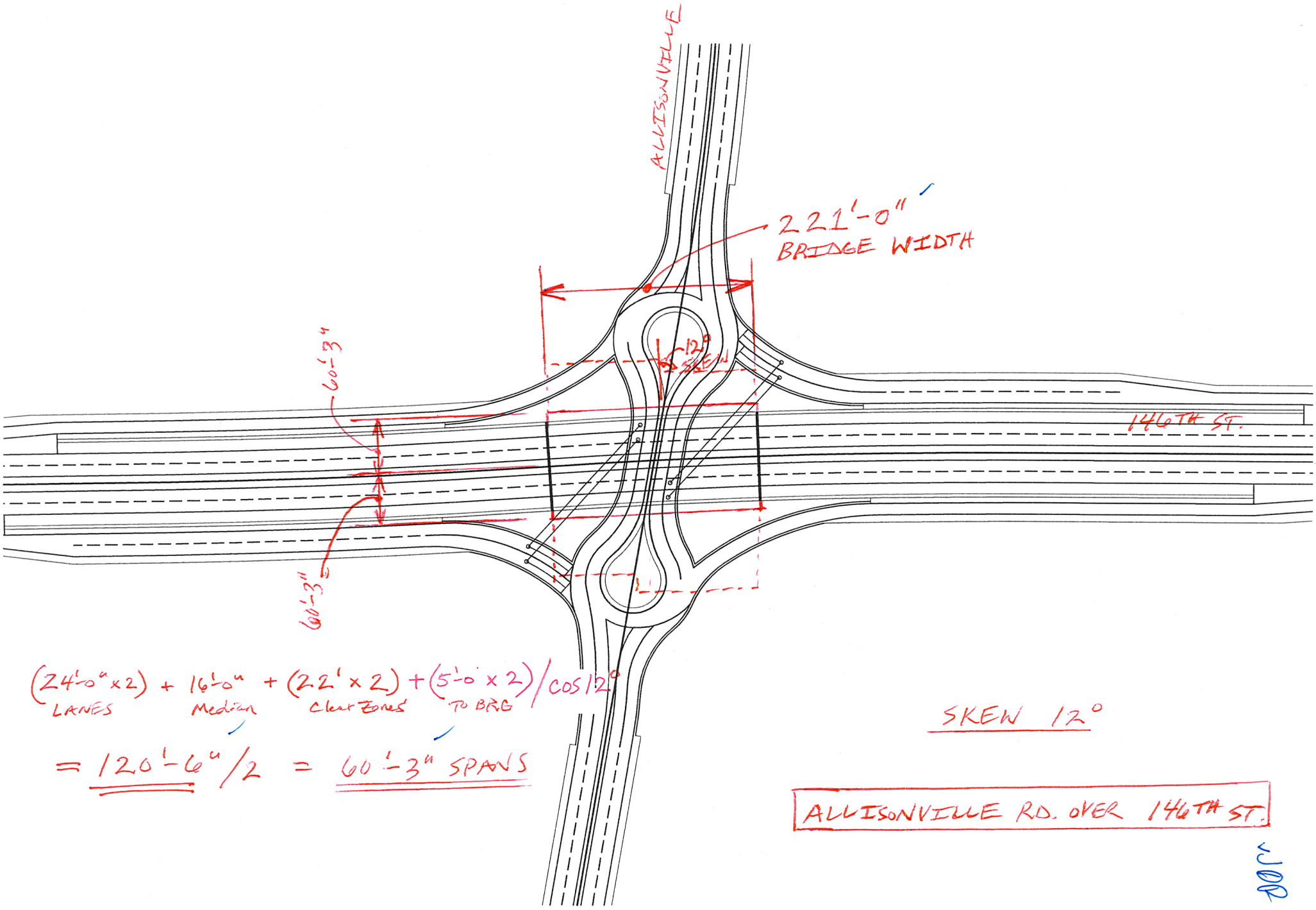
808-75998 **SNOWPLOWABLE RAISED PAVEMENT MARKER** **222 EACH**

Begin Station	*End Station*		*Spacing*	*Length*		*EACH*
146th St.	***Eastbound***					
20+00	*55+98*		*80.0*	*3598.0*		*45.0*
21+12	*26+74*		*80.0*	*561.6*		*8.0*
46+97	*52+98*		*80.0*	*601.0*		*8.0*
	Westbound					
20+00	*55+98*		*80.0*	*3598.0*		*45.0*
23+00	*29+00*		*80.0*	*600.0*		*8.0*
49+18	*54+81*		*80.0*	*563.0*		*8.0*
Gores	***SW***					
26+74	*31+12*		*40.0*	*438.0*		*11.0*
	SE					
44+28	*46+97*		*40.0*	*269.0*		*7.0*
	NW					
29+00	*31+69*		*40.0*	*269.0*		*7.0*
	NE					
44+81	*49+18*		*40.0*	*437.0*		*11.0*
Ramps	***146 SW***					
31+85	*35+62*		*40.0*	*377.0*		*10.0*
	146 NE					
40+28	*42+86*		*40.00*	*258.0*		*7.0*
Line "ALL"						
36+00.00	*38+46.87*		*40.00*	*246.9*		*7.0*
35+00	*38+45*		*40.00*	*345.2*		*9.0*
41+96	*45+50*		*40.00*	*354.0*		*9.0*
41+94	*44+00*		*40.00*	*206.5*		*6.0*
ROUNDABOUT						
Length by CAD			*40*	*292*		*8.0*
			40	*292*		*8.0*

TOTAL = ***222.0***

BRIDGE QUANTITIES

BRIDGE GEOMETRY
ALLISONVILLE RD. OVER 146TH ST.



$(24'\text{-}0" \times 2)$ + $16'\text{-}0"$ + $(2.2' \times 2)$ + $(5'\text{-}0 \times 2) / \cos 12°$

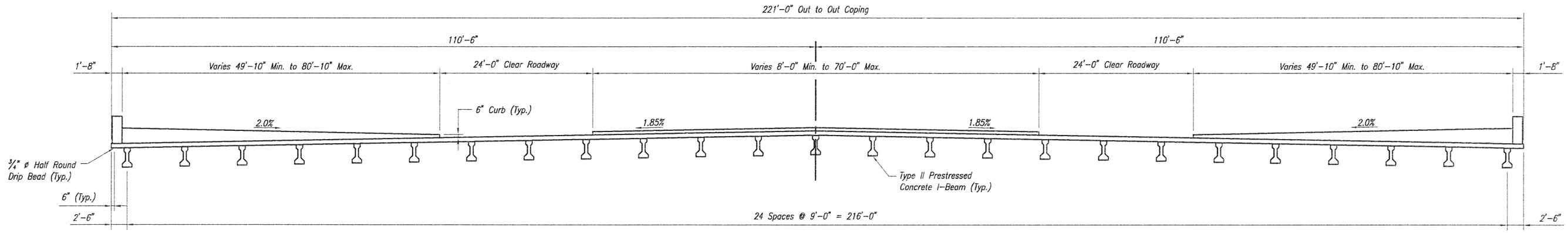
LANES · Median · Clear Zones · TO BRG

$= 120'\text{-}6" / 2 = 60'\text{-}3"$ SPANS

SKEW 12°

ALLISONVILLE RD. OVER 146TH ST.

JBR 11/14/12



TYPICAL SECTION

Scale: 1/8" = 1'-0"

File Name: P:\C201\10-7031\Bridge\Design\Preliminary Design\Allisonville Rd. over 146th St\Typical Section.dwg Plot Date: 11/19/2012 Plotted By: Moffatt, Andrew J.

UNITED Consulting
1625 N. Post Road
Indianapolis, IN 46219
Phone 317-895-2555
Fax 317-895-2596
www.ucindy.com

RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER _____ DATE

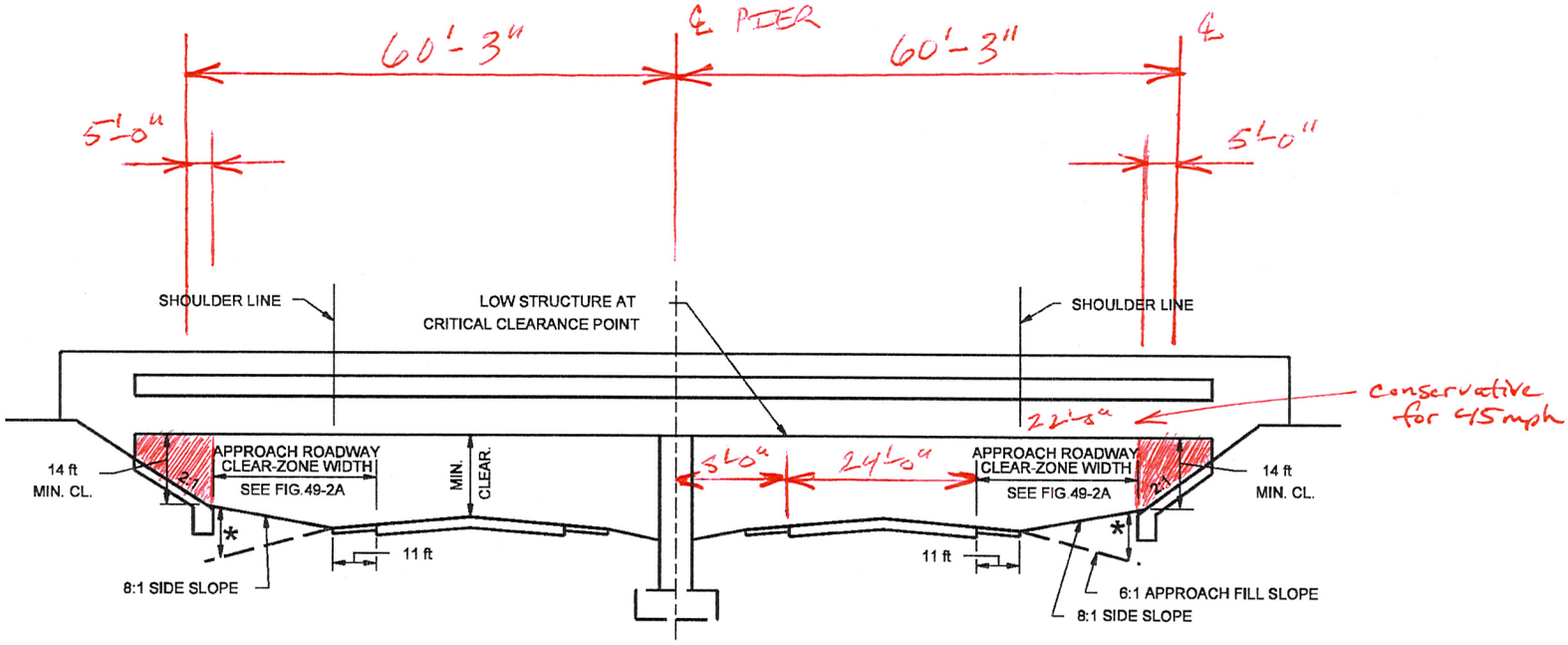
DESIGNED: _____ DRAWN: _____

CHECKED: _____ CHECKED: _____

INDIANA
DEPARTMENT OF TRANSPORTATION

ALLISONVILLE ROAD
OVER 146TH STREET

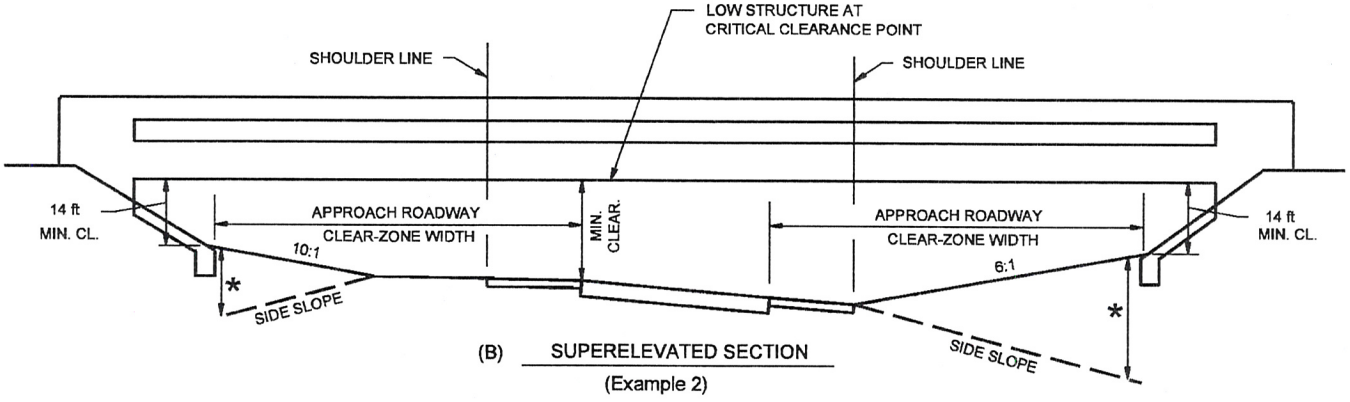
HORIZONTAL SCALE	BRIDGE FILE
VERTICAL SCALE	DESIGNATION
SURVEY BOOK	SHEETS of
CONTRACT	PROJECT



(A) TANGENT SECTION

(Example 1)

* SEE SECTION 49-3.06(03) FOR SPILLSLOPE TRANSITIONS.



(B) SUPERELEVATED SECTION

(Example 2)

$(24'-0" \times 2) + 16'-8" + (22' \times 2) + (5'-8" \times 2) / \cos 12°$

Lanes Median Clear Zones TO BRG

$= 120'-6" / 2 =$ 60'-3" SPANS

BRIDGE PIER AND SPILLSLOPE CLEARANCE,
NEW CONSTRUCTION

Figure 49-3K

SPAN = 60-3"

℄ PIER TO ℄ BEARING

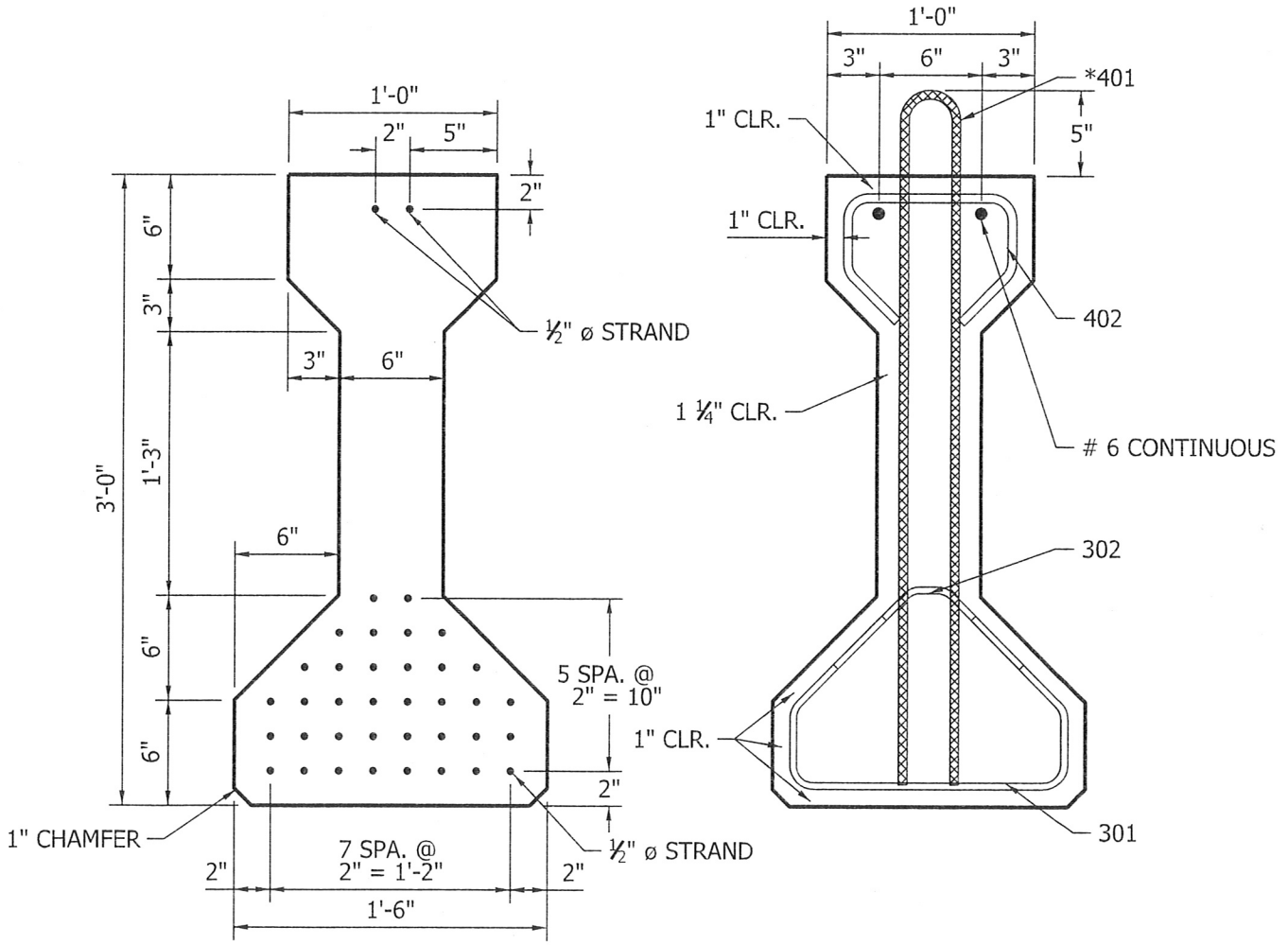
ALLISONVILLE RD. OVER 146TH ST.

VJDD 11/14/12

BEAM PROPERTIES	
A_B	= 369 in.^{2}
I_B	= 50,979 in.^{4}
S_{TB}	= 2,527 in.^{3}
S_{BB}	= 3,221 in.^{3}
Y_{TB}	= 20.2 in.
Y_{BB}	= 15.8 in.
Wt.	= 384 lb/lf

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

2. ▨ *DENOTES EPOXY-COATED BAR



I - BEAM TYPE II

Figure 406-13B
(page 1 of 3)

Allisonville Rd over 146th St

Des by JTB 11/12/2012

Chk by [illegible] 11/14/12

Rev by _____

Summary of Bridge Quantities

Structure Number

INDOT Item Code	Item Description	unit	Quantity	
105-06845	CONSTRUCTION ENGINEERING	LS	3%	
110-01001	MOBILIZATION AND DEMOBILIZATION	LS	5%	
203-02020	EXCAVATION, FOUNDATION, UNCLASSIFIED	CYS	611	
211-02050	B BORROW	CYS	611	
302-07455	DENSE GRADED SUBBASE	CYS	264	
609-06259	REINFORCED CONCRETE BRIDGE APPROACH, 12 IN.	SYS	1,584	
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	6,180	
702-51005	CONCRETE,A,SUBSTRUCTURE	CYS	329	
702-51015	CONCRETE,B,FOOTINGS	CYS	226	
703-06028	REINFORCING BARS	LBS	67,630	
703-06029	REINFORCING BARS, EPOXY COATED	LBS	514,233	
704-51002	CONCRETE, C, SUPERSTRUCTURE	CYS	2,007	
706-09959	RAILING, CONCRETE, FT	LFT	244	
707-07605	STRUCTURAL MEMBERS, CONCRETE I-BEAM, II, 36 IN. X 12 IN.	LFT	3,013	
709-51821	SURFACE SEAL	SFT	31,998	estimated

Rev. 9/2/09

Allisonville Rd over 146th St

Des by JTB 11/12/2012
Chk by JTB 11/14/12
Rev by

Proposed Structure # is _____

Allisonville Road over 146th Street

	Road Over		Under	
Design Standards =	4R		4R	
Functional Classification =	Urban Arterial		Urban Arterial	
ADT =	xxxx	(yr. 2030)	xxxx	
Design Speed =	35	mph	45	
Vertical Clearance Req'd =	16.5	feet		
Skew =	12	degrees		
Calculated C-C End Brg. Length =	120.5	feet		
USE	120.5	feet		
Span Configuration Anticipated =	1	@	60.25	feet
	1	@	60.25	feet

Rev. 9/2/09

Allisonville Rd over 146th St

Des by JTB 11/12/2012
Chk by 11/14/12
Rev by

Proposed Structure # is _____

Allisonville Road over 146th Street

Number of Spans = 2 spans

O-O Coping Width = 221.00 feet

C-C End Brg Length = 120.5 feet

Skew = 12.0000 degrees

O-O Bridge Length = 122.0 feet

Clear Roadway Width = 217.50 feet

Slab Thickness = 8 inches

Number of Piers units = 1

Number of Substructure units = 3

Twin Structure = NO

Type of Slope Wall = MSE Wall

Allisonville Rd over 146th St

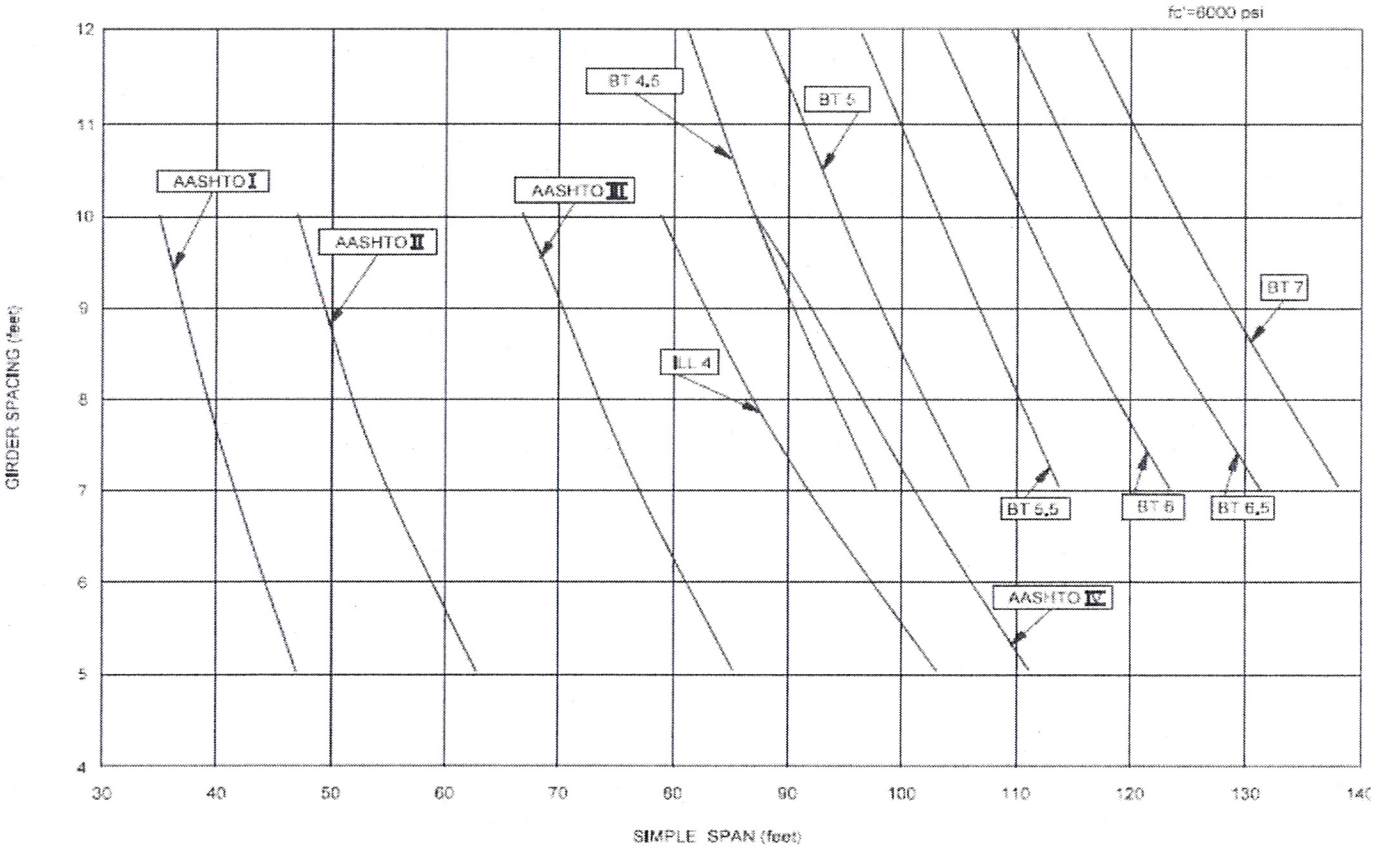
Des by JTB 11/12/2012

Chk by JTB 11/14/12

Rev by _____

Beam Quantities

Structure Number
Allisonville Road over 146th Street



PRESTRESSED CONCRETE I-BEAM SELECTION CHART

Figure 59-3K

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

Overhang to be =	2.5	ft
Spacing to be =	9	ft
out to out width =	221.00	ft
Beam Length =	120.50	ft
Beams Needed =	25	ft
Twin Structure =	NO	
Length Needed =	**3,013**	ft

Allisonville Rd over 146th St

Des by JTB 11/12/2012

Chk by JTB 11/14/12

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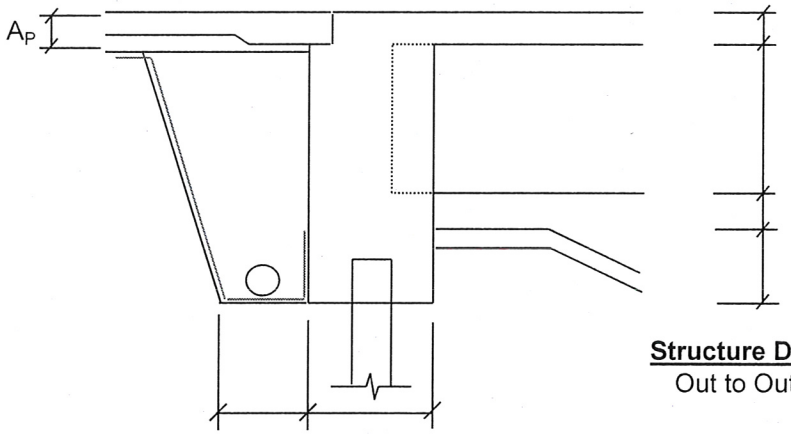
Bent Quantities

Structure Number
Allisonville Road over 146th Street

A_p= 1.5 ft



D_s = 0.83 ft

D_g = 3.00 ft

D_b = 1 ft

D_c = 3 ft

Structure Data

Out to Out Coping	221.00	ft
Skew	12	degrees
Wingwall Thickness (W_t)	0	ft
Number of Bents (N_b)	2	

Reinforcing Rates

Bent Body	145	#/CY
Wingwalls	145	#/CY

Calculated Constants

Bent Length (L_B) = O-to-O Coping / cos(skew) =	225.94	ft
Total Bent Depth (D_T) = D_s + D_g + D_b + D_c =	7.83	ft
Wing Length (W_L) = (D_T-D_c) * 2+1' =	0.00	ft

Concrete Quantities

Class C, Superstructure

Bent Body

V_B = N_b * (Tb * (D_T-D_s) * L_B)/27

V_B = **292.9** cubic yards

Wingwalls

V_W = N_b * (2 * D_T * W_L * W_t)/27

V_W = **0.0** cubic yards

Total Class C, Superstructure **292.9** cubic yards

Epoxy Coated Reinforcing Bar Quantities

Bent Body	**42,468**	lbs.
Wingwalls	**00**	lbs.
Total	**42,468**	lbs.

Piling Quantities

Number of Piles per Bent	25	piles
Estimated Pile Length	60	ft.
Total Length of Piles	**3,000**	linear feet

Pipe, End Bent Drain, 6" = N_b * (L_B + 2 * (W_L + 3 * D_T) = **0.0** **ft.**

Geotextiles = N_b * ((D_T - A_P) * 1.031 + 4.5') * L_B/9 = **0.0** **sys**

Aggregate for End Bent Backfill

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

V_{bf} = **0** cubic yards

Rev. 9/2/09

Allisonville Rd over 146th St

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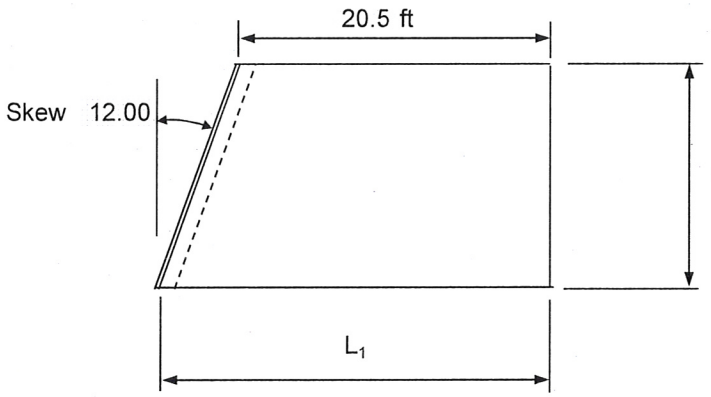
Approach Slab Quantities

Structure Number
Allisonville Road over 146th Street

Number or Approach Slabs 4 ✓



O-to-O Coping W_c = 110.50 ft. ✓ HALF WIDTH

L_1 = 20.5 + (Wc X Tan skew)

L_1 = 43.99 ft.

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

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

A = 396 sys per approach

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

T_{base} = 66.0 cys per approach

Epoxy Coated Reinforcing Bars

Reinforcement Rates 35 #/sy

Total Weight **13,856** Lbs. per approach

Grand Totals

A =	**1,584**	**sys**
T_{base} =	**264**	**cys**
Reinforcing	**55,426**	**Lbs.**

Allisonville Rd over 146th St

Des by JTB 11/12/2012

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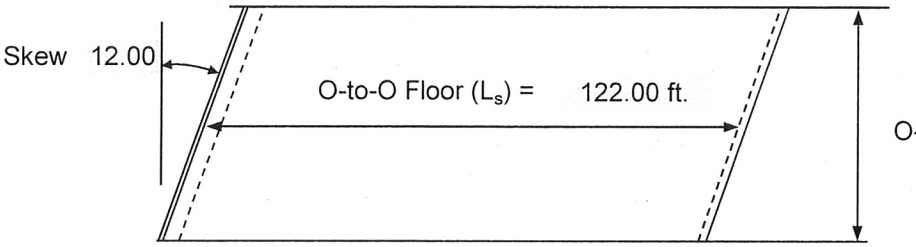
Deck Quantities

Structure Number
Allisonville Road over 146th Street



O-to-O Coping W_c = 221.00 ft. ✓

Slab Thickness T_s = 8.00 inches ✓
Coping Depth Dc= 9 inches ✓
Clear Roadway Width CR= 217.5 ft ✓

Twin Structure = NO

# of Bridge Rail Trans = **4**

Concrete Quantities

Class C, Superstructure

Deck Slab $V_D = (L_s * W_c * T_s)/27$

V_D = 665.7 cubic yards

Sidewalk Vs = (Ls * (Wc - 60') * 1')/27
Vs = 727.5 cubic yards

Concrete in fillets over beams and in thickened copings
Increase deck concrete by 15%

V_T = 1603.8 cys cubic yards

Pier Diaphragm - Class, C, Superstr.
(add to Concrete, C, Superstructure)

Vol = 3.83*3.5'*223'*1/27 = 111 cys ✓

Bridge Railing

Area of Rail A_r =	3.64	Sq. Ft.
Perimeter P =	8.65	Ft.
LFT =	**244**	
V_R =	$(L_s * A_r) / 27$	
V_R =	32.9	cubic Yards

Surface Seal

Deck = $L_s * W_c$ =	26962	square feet
Coping = $L_s * D_c * 2$ =	814	square feet
Rail = $L_s * P * 2$ =	4222	square feet
Total	**31,998**	square feet

Epoxy Coated Reinforcing Bars

Reinforcement Rates 250 #/cy

Deck	250	#/cy
Rail	330	#/cy

Deck	400950	Lbs.
Rail	10857	Lbs.
Trans.	4532	Lbs.
Total Weight	**416,339**	Lbs.

Grates, Basins, and Fittings, Cast Iron

N_G =	0	each
Weight per Drain =	1000	Lbs.
Total Weight	**0**	Lbs.

Roadway Drain (SQ or OS)

N_G = **0** each

Allisonville Rd over 146th St

Des by JTB 11/12/2012

Chk by JTB 11/14/12

Rev by _____

Excavation Quantities

Structure Number
Allisonville Road over 146th Street

Number of Piers N_p= 1

D_c = 6 ft.

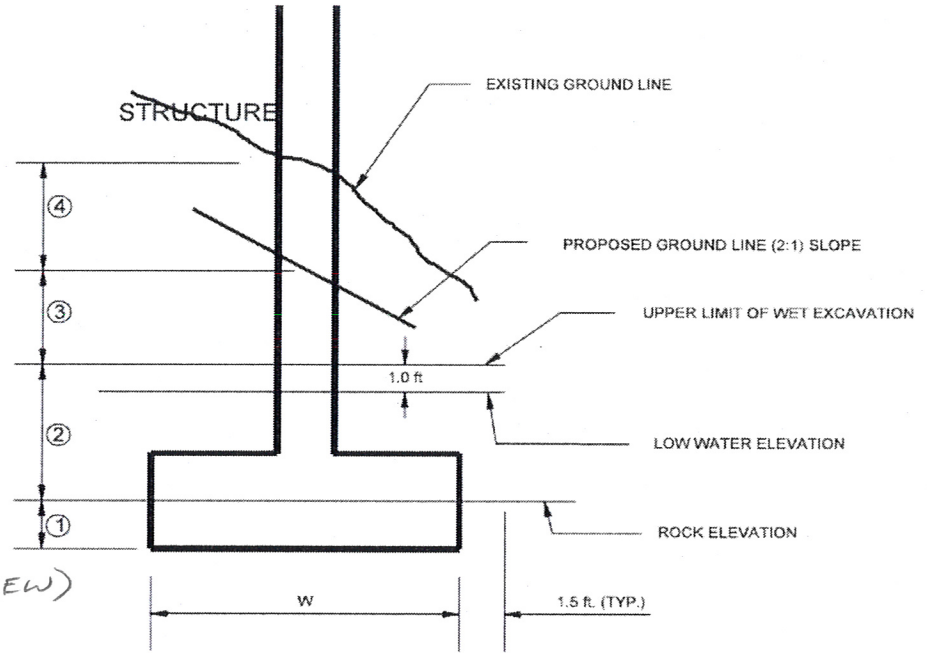
D_{dry} = 0 ft.

D_{wet} = 0 ft.

D_x = 0 ft.

W = 9 ft.

L = 226 ft. ✓ (12° SKEW)



Class X Excavation (Vx) = N_p X L X W X DX/27 =	0	cubic yards
Wet Excavation (V_{wet}) = Np X (L+3)(W+3)(Dwet)/27 =	0	cubic yards
Dry Excavation (V_{dry}) = N_p X (L+3)(W+3)(D_{dry})/27 =	0	cubic yards
Fnd. Exc.(Unclass.) (V_c) = Np X (L+3)(W+3)(Dc)/27 =	611	cubic yards

Is this structure over a waterway? **No**

B-Borrow (V_b) = Sum of Excavation Items =	611	cubic yards

Rev. 9/2/09

Allisonville Rd over 146th St

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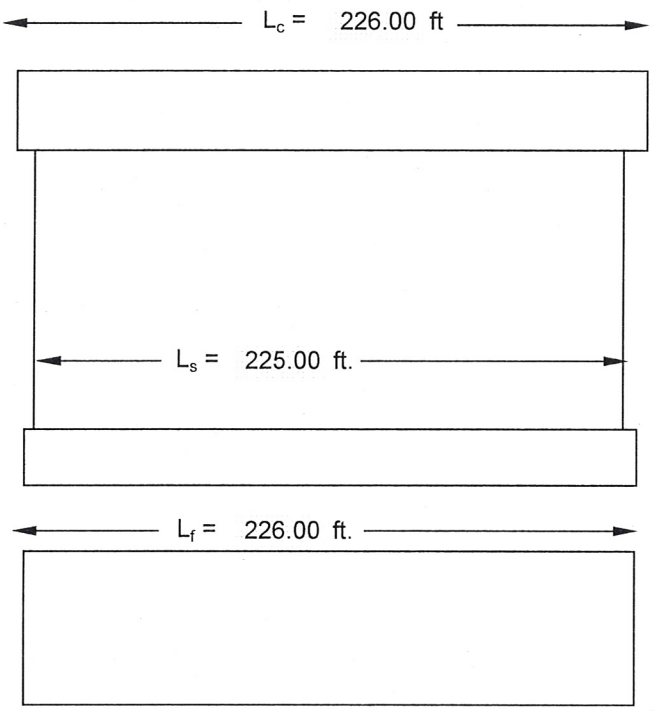
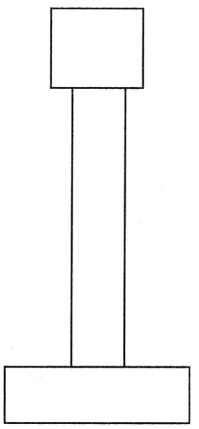
Pier Quantities

Structure Number
Allisonville Road over 146th Street





W_c = 3 ft

H_c = 2.5 ft

T_s = 2

H_s = 16 ft

H_f = 3 ft

W_f = 9 ft

Number of Piers 1

Reinforcing Rates

Footings	110	#/CY
Stem & Cap	130	#/CY

Concrete Quantities

Class B, Footing	V_B =	L_f X W_f X H_f X 1/27
	V_B =	**226.0** cubic yards
Class A, Substructure	V_A =	(L_s X W_s X H_s + L_c X W_c X H_c) X 1/27
	V_A =	**329.0** cubic yards

Reinforcing Bar Quantities

Footings	**24,860**	lbs.
Stem and Cap	**42,770**	lbs.
Total	**67,630**	lbs.

Piling Quantities

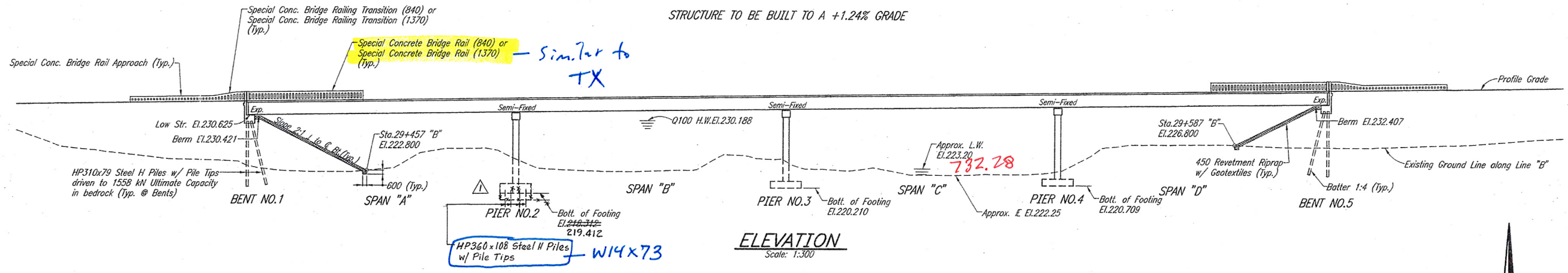
Est of Piles per Pier	56	piles
Estimated Pile Length	60	ft.
Total Length of Piles	**3,360**	linear feet

Rev. 9/2/09

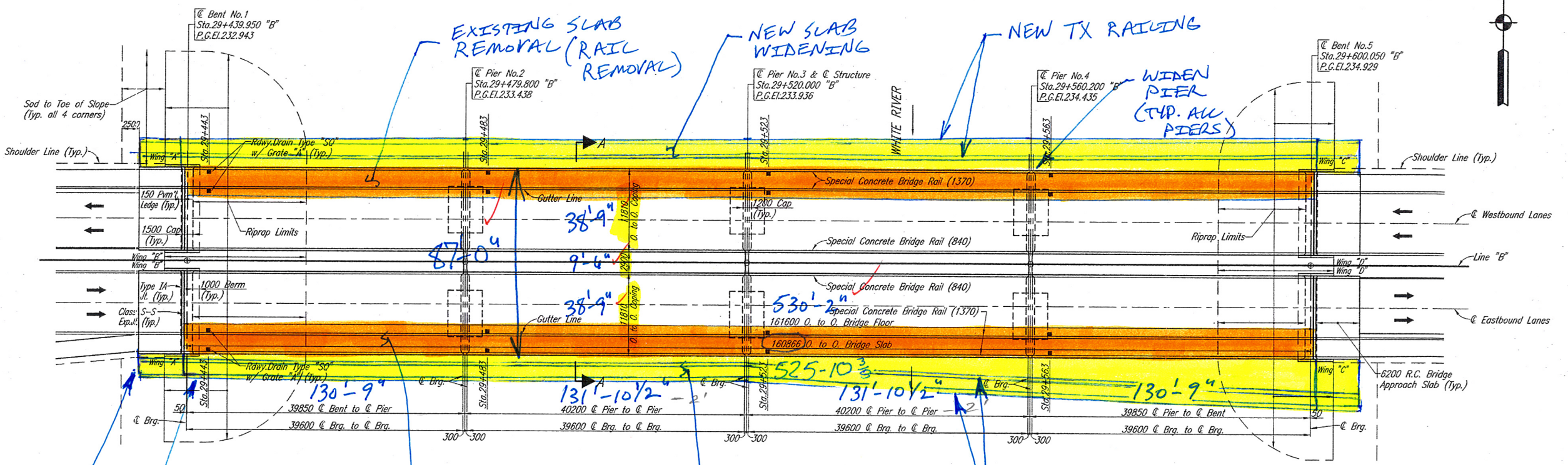
BRIDGE GEOMETRY
146TH STREET OVER WHITE RIVER

3375019W

STRUCTURE TO BE BUILT TO A +1.24% GRADE



ELEVATION
Scale: 1:300



PLAN
Scale: 1:300

EXPANSION JOINT CLASS S-S

	BENT NO.1	BENT NO.5
Expansion Length	80700	80700

Notes:
For General Notes & Design Data, see Dwg.C3.
For Section A-A w/ additional dimensions, see Dwg.C3.
Grates to be placed with direction of bars perpendicular to traffic within Multi-Use-Paths.

GENERAL PLAN

TWIN CONTINUOUS COMPOSITE PRESTRESSED BULB-TEE BEAM BRIDGE
4 SPANS: 39850, 2 @ 40200, 39850
8410 CLEAR ROADWAY SKEW: SQUARE
146th STREET OVER WHITE RIVER
HAMILTON COUNTY

MICHAEL L. McCOOL JR. REGISTERED No. PE19700067 STATE OF INDIANA PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL Michael L McCool 4-8-99
DESIGN ENGINEER DATE

DESIGNED: MLM DRAWN: DAM
CHECKED: MWC CHECKED: MLM

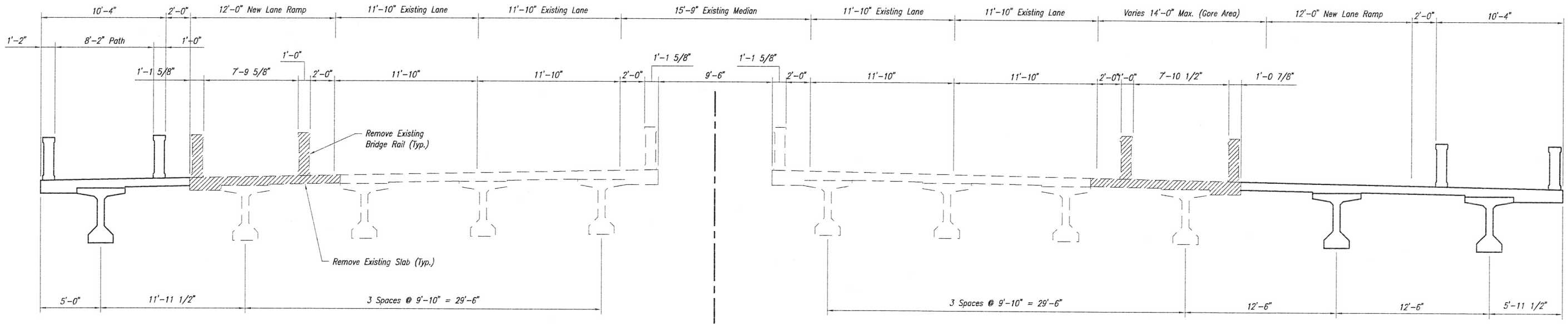
BEAM, LONGEST & NEFF, L.L.C.
CONSULTING ENGINEERS
INDIANAPOLIS, INDIANA

GENERAL PLAN

SCALE
AS NOTED
DESIGNATION
C2 of C25
DRAWING
11 of 43
BRIDGE FILE
HAMILTON 230

⚠ Rev.12-16-99 Pier N°2

D:\Project\3375\Plans\3375b18e.dwg Thu Apr 08 09:03:47 1999 DAM



TYPICAL SECTION

Scale: 1/4" = 1'-0"

File Name: P:\CDI\10-703\Bridge\Design\Preliminary Design\146th over White River\Typical Section.dwg Plot Date: 11/19/2012 Plotted By: Mattatt, Andrew J.

UNITED Consulting

1625 N. Post Road
Indianapolis, IN 46219
Phone 317-895-2555
Fax 317-895-2596
www.ucindy.com

RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

DESIGNED: _____ DRAWN: _____

CHECKED: _____ CHECKED: _____

INDIANA
DEPARTMENT OF TRANSPORTATION

146TH. ST.
OVER WHITE RIVER

HORIZONTAL SCALE	BRIDGE FILE
VERTICAL SCALE	DESIGNATION
SURVEY BOOK	SHEETS
CONTRACT	PROJECT

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BY JTB DATE 4/25/12 SUBJECT SR 37 INTERCHANGES SHEET NO. ____ OF ____
CHKD BY JDR DATE 5/3/12 HAMILTON CO. JOB NO. 10-703

131ST STREET OVER SR37 ALTERNATE ✓

BRIDGE WIDTH ≈ BASED ON SIGHT DISTANCE = 206'-2" ✓

16'-6" MIN. VERTICAL CLEARANCE

2 LANE ROUNDABOUT

2 SPANS @ 58'-3"

(53'-3" ℄ PIER TO FACE RETAINING WALL + 5' TO ℄ BEARING) ✓

135TH STREET OVER SR37 ALTERNATE

BRIDGE WIDTH ≈ BASED ON SIGHT DISTANCE = 173'-0"

16'-6" MIN. VERTICAL CLEARANCE

1 LANE ROUNDABOUT (ALLOWANCE FOR ADDED LANE FUTURE)

2 SPANS @ 58'-3"

(53'-3" ℄ PIER TO FACE RETAINING WALL + 5' TO ℄ BEARING)

141ST STREET OVER SR37 ALTERNATE

BRIDGE WIDTH ≈ BASED ON SIGHT DISTANCE = 160'-0"

16'-6" MIN. VERTICAL CLEARANCE

1 LANE ROUNDABOUT (ALLOWANCE FOR ADDED LANE FUTURE)

2 SPANS @ 58'-3"

(53'-3" ℄ PIER TO FACE RETAINING WALL + 5' TO ℄ BEARING)

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BY JTB DATE 5/1/12 SUBJECT SR 37 INTERCHANGES SHEET NO. ____ OF ____

CHKD BY JBR DATE 5/8/12 HAMILTON CO. JOB NO. 10-703

GREENFIELD AVE. OVER S37

BRIDGE WIDTH ≈ BASED ON SIGHT DISTANCE = 236'-0" ✓

16'-6" MIN. VERTICAL CLEARANCE ✓

2 LANE ROUNDABOUT ✓

(2) SPANS @ 98'-6" ✓

SR37 CROSS-SECTION ≈ 53' + 24' + 24' + 22' + 22' = 145'
MEDIAN PAVEMNT. CLEAR ZONE

LENGTH C TO C = 145' + 2(5')/cos 38° = 196.7' ≈ USE 197'

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BY JTB DATE 10/24/12 SUBJECT SR37 INTERCHANGES HAMILTON CO. SHEET NO. ____ OF ____

CHKD BY JKR DATE 11/14/12 JOB NO. 10-703

* ASSUMED SAME SPAN AND SIMILAR BRIDGE WIDTHS AS 131ST OVER 37 FOR THE FOLLOWING BRIDGES:

126TH OVER SR37
146TH OVER SR37
TOWN & COUNTRY OVER SR37
PLEASANT ST. OVER SR37

* ALL OF THESE BRIDGES OVER SR 37 CARRY TWO LANE SIMILAR SIZE ROUNDABOUTS OVER SR37 WITH SAME ROADWAY CROSS-SECTION AND NO SKEW.

SR32 OVER SR37 ALTERNATE

BRIDGE WIDTH BASED ON SIGHT DISTANCE = 185'-4"

16'-6" MIN. VERT. CLEARANCE

2 LANE ROUNDABOUT

2 SPANS @ 61'-8"

(56'-8" ℄ PIER TO FACE RETAINING WALL + 5' TO ℄ BEARING)

ALLISONVILLE RD. OVER 146TH ST.

BRIDGE WIDTH BASED ON SIGHT DISTANCE = 221'-0"

16'-6" MIN. VERT. CLEARANCE

2 LANE ROUNDABOUT

2 SPANS @ 60'-3"

(55'-3" ℄ PIER TO FACE RETAINING WALL + 5' TO ℄ BEARING)

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BY JTB DATE 11/14/12 SUBJECT SR37 MOBILITY SHEET NO. ____ OF ____
CHKD BY JDR DATE 11/15/12 JOB NO. 10-703

202-51328 PRESENT STRUCTURE, REMOVE PORTIONS LS

SLAB (530.167')(12' + 12')($8.00/SFT) = $101,792 ✓

RAILING (530.167')(4)($12.00/LFT) = $25,448 ✓

WINGWALLS (16.4' x 11.4')($8.00/SFT) x4 = $5,983

DRAINS 16 EA. x $300/EA = $4,800

TOTAL = $138,023

USE = $140,000

1 LS

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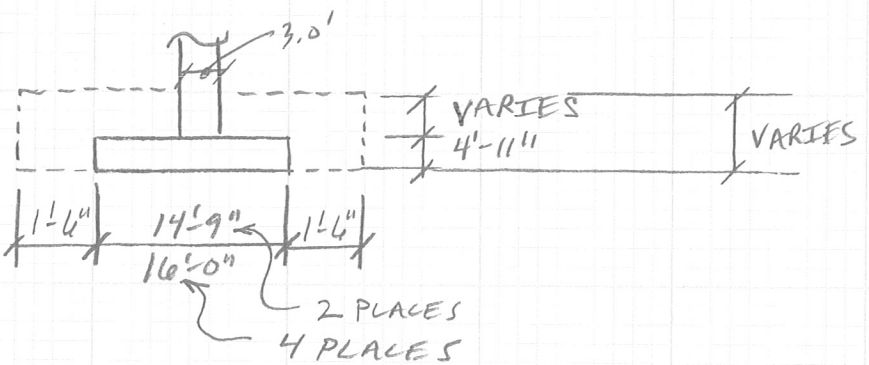
BY JTB DATE 11/14/12 SUBJECT SR 37 MOBILITY SHEET NO. ____ OF ____

CHKD BY JDR DATE 11/15/12 JOB NO. 10-703

206-51220 EXCAVATION, WET CYS



AT 2 PLACES PIER #2 = (15.3' x 17.75' x 22.583')/27 x 2 = 454.3 CYS

AT 3 PLACES PIER #3/4 NORTH = (9.8' x 19.0' x 22.583')/27 x 3 = 467.2 CYS

AT 1 PLACE PIER #4 SOUTH = (9.8' x 19.0' x 31.583')/27 x 1 = 217.8 CYS

TOTAL VOLUME = 1139.3 CYS

1139.3 CYS

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302-07455 DENSE GRADED SUBBASE CYS

TOTAL AREA OF APPROACHES = 144.3 SYS (FROM APPROACH QNTY)

DEPTH OF SUBBASE = 6" ≈ 0.167 yds

TOTAL VOLUME = 144.3 SYS x 0.167 yds = 24.1 CYS

24.1 CYS

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609-06257 REINFORCED CONCRETE BRIDGE APPROACH, 10 IN SYS

WIDTH OF EXTENSION = 12.33 FT

LENGTH OF APPROACH = 20.5 FT

OF LOCATIONS = 3 places

TOTAL AREA 3 places = (12.33' x 20.5' x 3)/9 = 84.3 SYS

WIDTH OF EXTENSION AT FLAREA LOCATION = 26.33 FT

LENGTH OF APPROACH = 20.5 FT

OF LOCATIONS = 1 place

TOTAL AREA 1 PLACE = (26.33 FT x 20.5 FT x 1)/9 = 60.0 SYS

TOTAL APPROACH AREA = 144.3 SYS

144.3 SYS

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CHKD BY JDD DATE 11/15/12 JOB NO. 10-703

701-51195 PILE, STEEL H, HP 12x53 LFT

OF PILES AT 3 PLACES = 4 piles x 3 bent extensions = 12 PILES

OF PILES AT 1 PLACE = 6 piles x 1 bent extension = 6 PILES

AVG. PILE LENGTH = 45 FT

TOTAL LENGTH = 18 PILES x 45 FT = 810 LFT

810 LFT

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701-91792 PILE TIP, STEEL H EACH

TOTAL # OF PILE TIPS = 100 PILES AT PIERS + 18 PILES AT BENTS = 118 EA.

118 EA.

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701-93575 PILE, STEEL H, HP14x73 LFT

OF PILES AT 5 PLACES = 16 PILES x 5 piers = 80 PILES

Piers #2, 3, 4 NORTH

OF PILES AT 1 PLACES = 20 PILES x 1 pier = 20 PILES

Pier #4 SOUTH

AVG. PILE LENGTH = 13 FT

TOTAL LENGTH = 100 piles x 13' = 1,300 LFT

1,300 LFT

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701-98856 COREA HOLE IN ROCK, 20 IN LFT

100 PILE LOCATIONS AT PIERS × 13' Depth = 1300 LFT

1300 LFT

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BY JTS DATE 11/14/12 SUBJECT SR37 MOBILITY SHEET NO. ____ OF ____
CHKD BY ____ DATE 11/15/12 JOB NO. 10-703

762-51005 CONCRETE A, SUBSTRUCTURE CYS

PIER CAP @ EXTENSION (PIERS #2, 3, 4 NORTH) = $(3.25' \times 4.0' \times 12.33') / 27 \times 5 = 29.7$ CYS

PIER WALL EXTENSION @ 5 PLACES (PIERS #2, 3, 4 NORTH) = $\left[(19.583' \times 3.0' \times 29.75') - (0.5 \times 3.5' \times 7.25 \times 3.0')\right] / 27$

$\times 5 = 316.6$ CYS

PIER CAP @ 1 PLACE EXTENSION (PIER #4 SOUTH) = $(3.25' \times 4.0' \times 21.33') / 27 \times 1 = 10.3$ CYS

PIER WALL EXTENSION @ 1 PLACE (PIER #4 SOUTH) = $\left[(28.583' \times 3.0' \times 29.75') - (0.5 \times 3.5' \times 7.25' \times 3.0')\right] / 27$

$\times 1 = 93.1$ CYS

TOTAL = $29.7 + 316.6 + 10.3 + 93.1 = 449.7$ CYS

449.7 CYS

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702-51015 CONCRETE B FOOTINGS CYS

CONCRETE FOOTING AT 2 PLACES (Pier #2) = (4.92' Depth x 14.75' Width x 19.583' Length)/27 x 2 = 105.3 CYS

CONCRETE FOOTING AT 3 PLACES (Pier #3/4 (NORTH)) = (4.92' Depth x 16.0' Width x 19.583' Length)/27 x 3 = 171.3 CYS

CONCRETE FOOTING AT 1 PLACE (Pier #4 (SOUTH)) = (4.92' Depth x 16.0' x 28.583')/27 x 1 = 83.3 CYS

TOTAL = 105.3 + 171.3 + 83.3 = 360

360 CYS

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CHKD BY JEC DATE 11/15/12 JOB NO. 10-703

702-51110 GRATES, BASINS, AND FITTINGS CAST IRON LBS

DRAINS (TYPE SQ)

16 DRAINS @ 215 lb = 3440 LBS

TOTAL = 3440 LBS

PIPES

NO. OF DRAINS = 16

LENGTH PER PIPE = 6.5 ft

TOTAL LENGTH OF PIPE = 104 ft

WEIGHT OF PIPE = 18.1 LBS/FT

TOTAL = 1883 LBS

TOTAL WEIGHT = 5,323 LBS

5,323 LBS

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CHKD BY [illegible] DATE 11/15/12 JOB NO. 10-703

702-92857 CONCRETE, C, SUBSTRUCTURE CYS

BENTS BELOW BEAM SEAT @ 3 PLACES (BENTS #1, #5 NORTH) = (27.5 FT² AREA BENT × 12.33' Length) / 27 × 3 = 37.7 CYS

BENTS BELOW BEAM SEAT @ 1 PLACE (BENT #5 SOUTH) = (27.5 FT² AREA BENT × 26.33' LENGTH) / 27 × 1 = 26.8 CYS

WINGWALLS AT 4 CORNERS MATCH EXIST. = (16.4' width × 11.4' length × 1.0' thickness) / 27 × 4 = 27.7 CYS

92.2 CYS

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BY JTB DATE 11/15/12 SUBJECT SR 37 MOBILITY SHEET NO. _____ OF _____

CHKD BY JM DATE 11/15/12 JOB NO. 10-703

703-06028 REINFORCING BARS LBS

/

PIER CAP & STEM (CONC. A) = 449.7 CYS x 130#/CYS = 58,461#

PIER FOOTING (CONC. B) = 360 CYS x 110#/CYS = 39,600#

TOTAL LBS = 98,061 LBS

98,061 LBS

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CHKD BY JDP DATE 11/15/12 JOB NO. 10-703

703-06029 REINFORCING BARS EPOXY COATED LBS

SUPERSTRUCTURE = 811.6 CYS x 250#/CYS = 202,900#

SUBSTRUCTURE @ BENTS = 92.2 CYS x 250#/CYS = 23,050#

RAILING = 2,120.67 LFT x 12.75#/LFT = 27,038.5#

APPROACH SLAB = 144.3 SYS x 35#/SYS = 5,050.5#

TOTAL LBS = 258,039 LBS

258,039 LBS

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704-5/002 CONCRETE C SUPERSTRUCTURE CYS

WIDTH DECK WIDEN = 24.33' x 2 sides = 48.66 FT

LENGTH O TO O = 530.167' FT

THICKNESS = 0.67 FT

VOLUME MAIN DECK WIDEN = (48.66' x 530.167' x 0.67')/27 = 640.2 CYS ✓

FLARE OF DECK WIDEN AT SOUTHEAST WIDTH = 14.0' FT

LENGTH OF FLARE = 262.58' FT

THICKNESS = 0.67 FT

VOLUME OF DECK FLARE = (0.5' x 14.0' x 262.58' x 0.67')/27 = 45.6 CYS ✓

NEW BEAM FILLETS 2" x 61" ON 3 BEAMS = (0.167' x 5.083' x 3 BMS x 525.25')/27 = 49.5 CYS ✓

PIER DIAPHRAGMS = (6.0' x 1.0' x 80')/27 = 17.8 CYS ✓

CONTINUED NEXT PAGE

Page 753.1 CYS

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CONCRETE C SUPERSTRUCTURE CONTINUED

BENTS ABOVE BEAM SEAT @ 3 PLACES (BENTS #1, #5 NORTH) = $(12.33' \times 6.33' \times 3.94')/27 \times 3 = 34.2$ CYS ✓

BENTS ABOVE BEAM SEAT @ 1 PLACE (BENT #5 SOUTH) = $(26.33' \times 6.33' \times 3.94')/27 \times 1 = 24.3$ CYS /

TOTAL VOLUME = 640.2 + 45.6 + 49.5 + 17.8 + 34.2 + 24.3

= 811.6 CYS ✓

/

811.6 CYS

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706-09965 RAILING CONCRETE TX LFT

BRIDGE LENGTH = 530'-2"
× 4

TOTAL RAIL LENGTH = 2120.7 FT

2,120.7 LFT

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707-10176 STRUCTURAL MEMBER, CONCRETE BULB-T BEAM, 72IN x 49IN LFT

* 3 NEW BEAMS FULL BRIDGE LENGTH, 2 BEAMS FLARED ON SOUTH SIDE SPANS 3 & 4

NORTH SIDE ALL (4) SPANS = 521.25 FT x 1 BEAM = 521.25 LFT

SOUTH SIDE SPANS 1, 2 = 260.62 FT x 2 BEAMS = 521.24 LFT

SOUTH SIDE SPANS 3, 4 FLARED = 260.80 FT x 2 BEAMS = 521.6 LFT

TOTAL LENGTH = 521.25' + 521.24' + 521.6' = 1564.0 LFT

1,564 LFT

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CHKD BY JDF DATE 11/15/12 JOB NO. 10-703

709-51821 SURFACE SEAL LS

NEW DECK WIDTH = 24.33' x 2 sides = 48.66 FT

LENGTH = 530.167 FT

AT FLARE WIDTH = 14.0 FT

LENGTH OF FLARE = 262.58 FT

AREA ON DECK = (48.66' x 530.167') + (0.5 x 14.0' x 262.58')
= 27,636 SFT

AREA BOTTOM OF OVERHANG = 10.92' x 530.167' = 5,789.4 SFT
5'-0" NORTH, 5'-11 SOUTH

AREA SIDE OF DECK = 0.67' x 530.167' x 2 = 710.4 SFT
8" Deck

AREA ON RAIL PERIMETER = 9.61' x 4 x 530.167' = 20,379.6 SFT
Perimeter = 9.61 FT

TOTAL AREA = 54,515.4 SFT

$1 PER SQ. FT. OF SURFACE SEAL

1 LS = #54,516

1 LS

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801-06203 TEMPORARY PAVEMENT MARKING, 4IN. LFT

BARRIER LENGTH = 800.7' EA. SIDE

ADDITIONAL LENGTH = 100.0'

FLARE LENGTH = 200.0'

20' OFFSET AT 10:1

TOTAL LENGTH = 1100.7 x 2 sides = 2201.4 LFT

2201.4 LFT

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801-06710 FLASHING ARROW SIGN DAY

8 MO. x 30 DAYS = 240 DAYS

x 2 LANES

480 DAYS ✓

480 DAYS

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BY JTB DATE 11/15/12 SUBJECT SR37 MOBILITY SHEET NO. ____ OF ____

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801 - 06775 MAINTAINING TRAFFIC LS

SAY $20,000

1 LS

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801-08508 TEMPORARY TRAFFIC BARRIER, TYPE 2, ANCHORED LFT

BRIDGE LENGTH = 530.167'

Approach Length = 20.5'

Additional Length = 50.0'

Flare Length = 200.0'

20' OFFSET AT 10:1

TOTAL LENGTH = (530.167' + 20.5' + 50.0' + 200') x 2

= 1601.4 LFT

1601.4 LFT