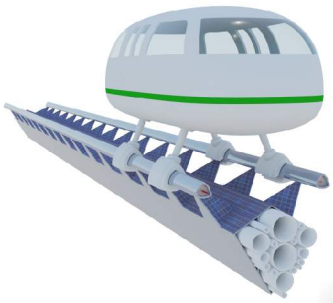
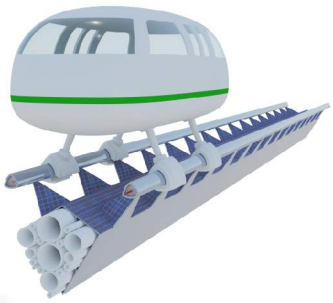




HSH

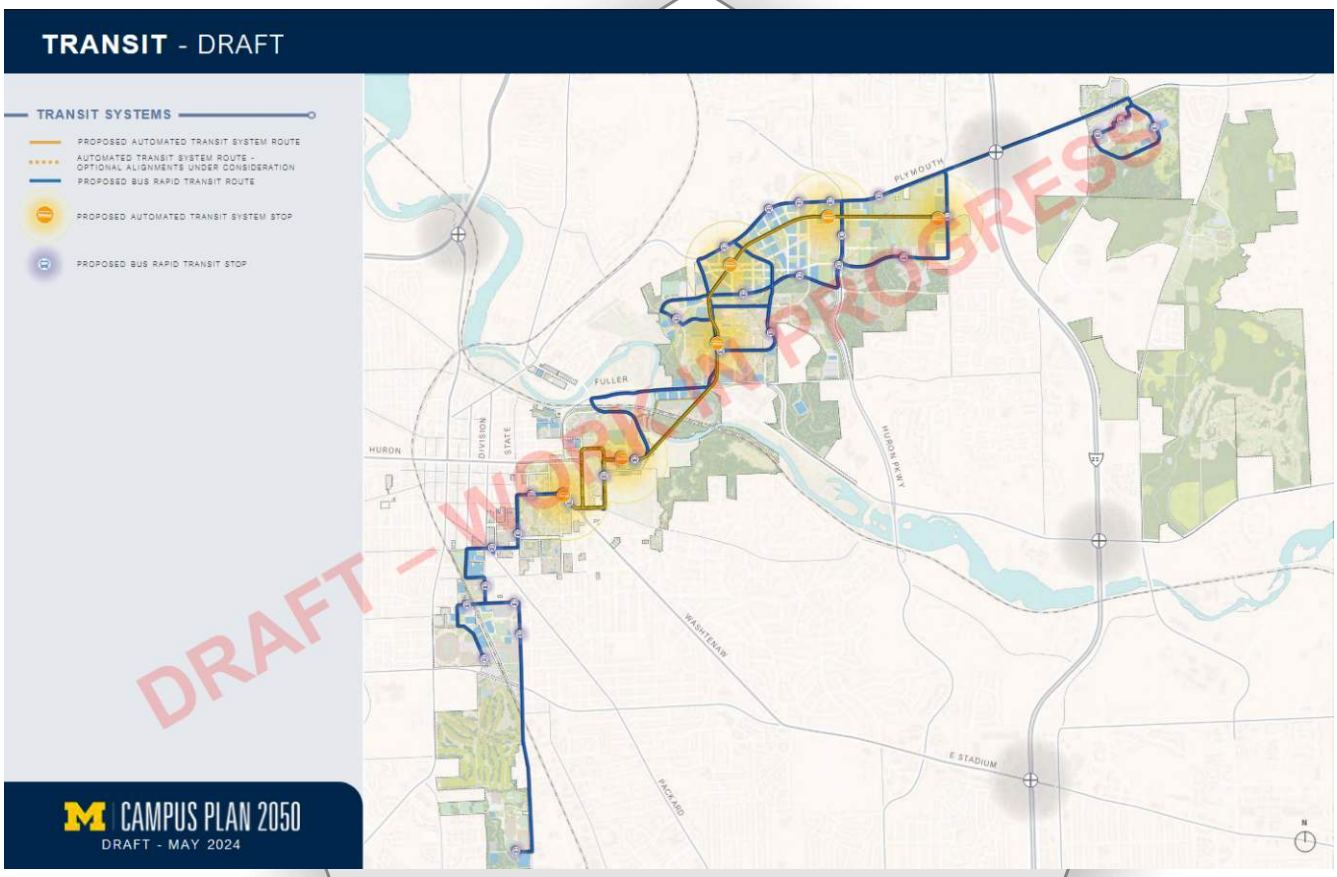
Elevated Rail System

Proposal to build the

University of Michigan Automated Transit System

Event Title: Request for Qualifications - U-M Campus Connector Project
Event Number: RFQ-0010396-UMPS-2023-CE/SE

07 October 2024



Motor City Maglev
Website
QR Code

- www.HyRail.us -
- www.InterstateTraveler.us -
- www.MotorCityMaglev.com -
- www.ElevatedRailSystems.com -
- www.HydrogenSuperHighway.com -

Motor City Maglev
Press Release
QR Code

University of Michigan
Campus Connector - Automated Transit System
Preliminary Proposal Analysis

Event Number: RFQ-0010396-UMPS-2023-CE/SE
Event Title: Request for Qualifications - U-M Campus Connector Project
Cost Estimates based on 6.5' gage (½ Scale) Dual Track

Option A - Arboretum Route

3.9 - Mile Mainline Parallel Track
6 - Stations w/Sidetrack & Switches
12 - Transports (1,200 Standing Passengers)
1 - Freight Transport
1 - Medical Response Transport
4.7 - Miles of Rail in Total
5 - Parking Structures (4000 cars)
$211.6M USD

Option B - Baits Drive Route

4.5 - Miles Mainline Parallel Track
8 - Stations w/Side Track & Switches
16 - transports (1,600 Standing Passengers)
1 - Freight Transport
1 - Medical Response Transport
5.6 - Miles of Rail in Total
5 - Parking Structures (4000 cars)
$233.5M USD

$22M First Pre-Production Prototype

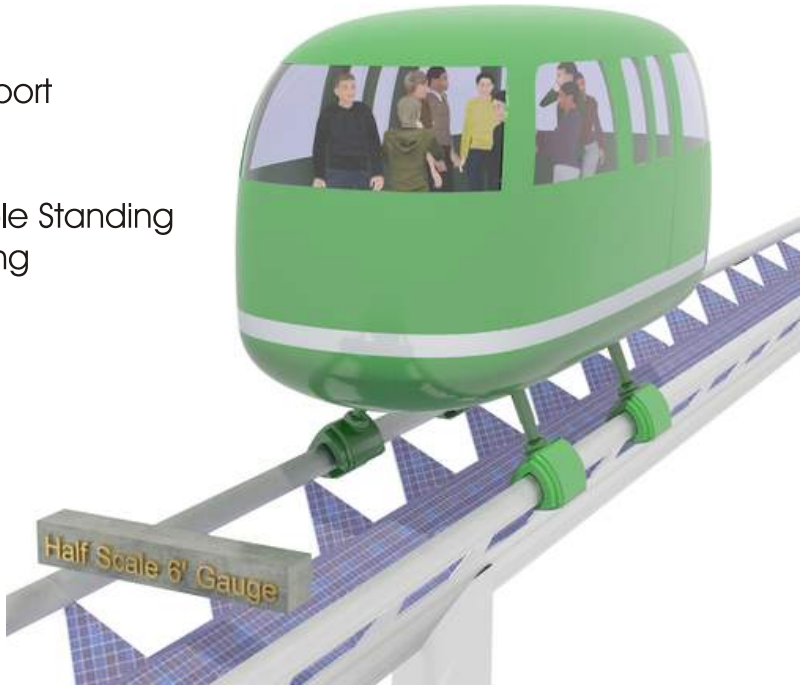
Revised October 7th 2024

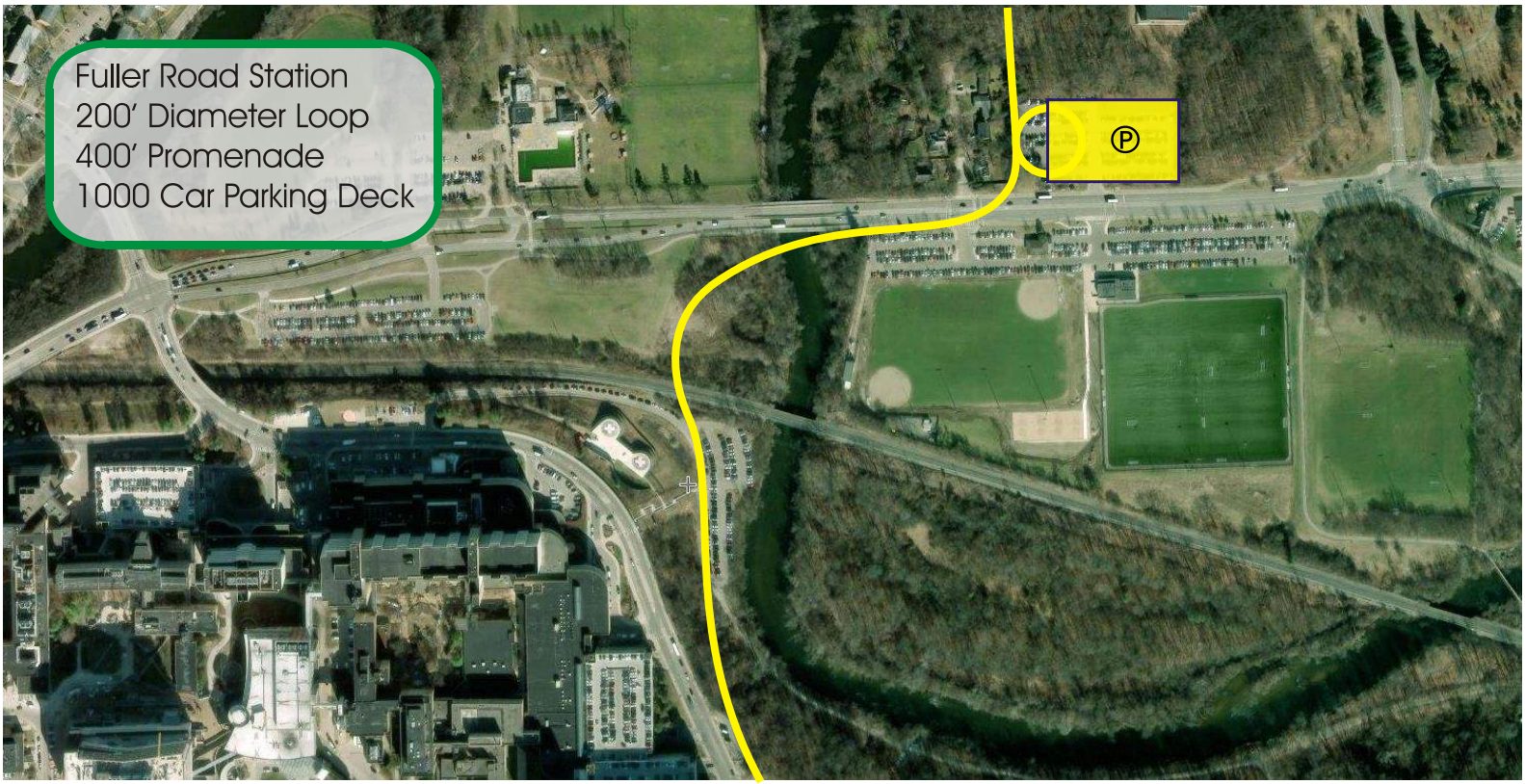
Authored, Typeset & Designed
by
Justin Eric Sutton

Made Possible by the Support of
The Interstate Traveler Company, LLC

HSH Elevated Rail System ½ Scale
Rail Gage: 6ft

Half-Scale Rail Transport
Body Size: 9′ x 20′
Door Size: 5′ x 7′
Capacity: 100 People Standing
Perimeter Wall Seating
Standing Hand-rails
ADA Compliance

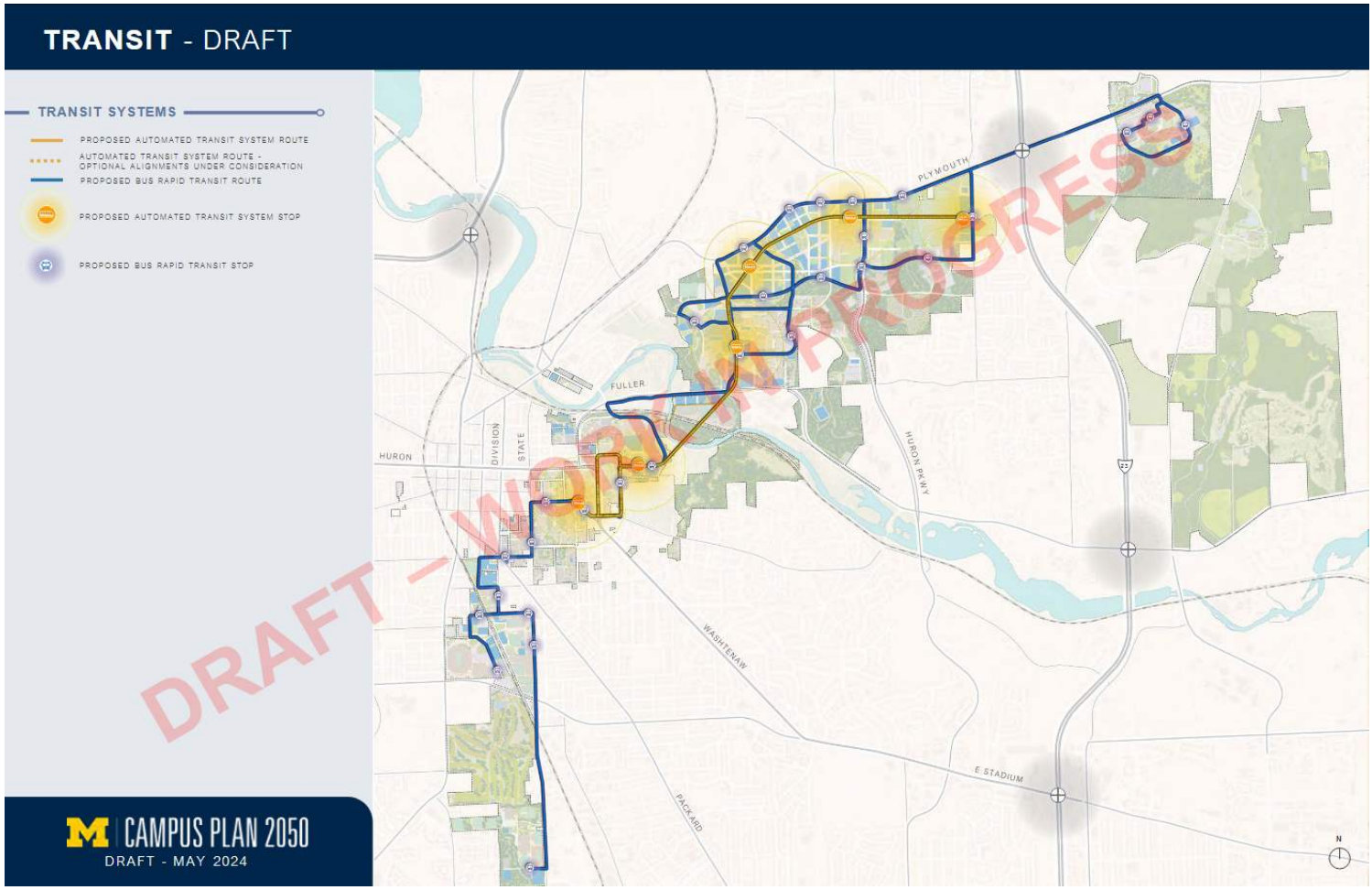




Safely Aligned Below Helicopter Pads
No Special Bridging - Arboretum Intact

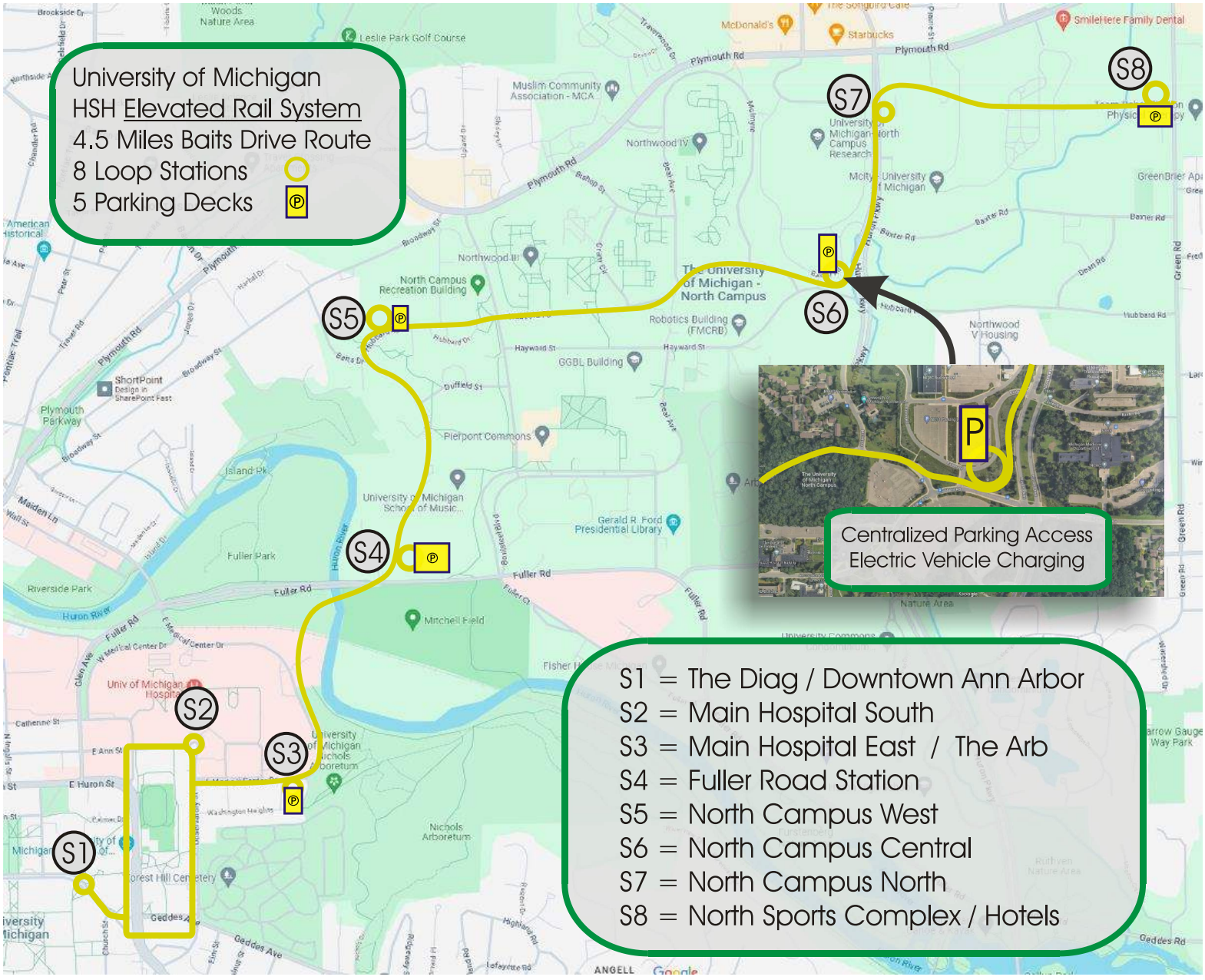
Option A - Arboretum Route

3.9 Mile Mainline Parallel Track
6 Stations w/Sidetrack & Switches
12 Transports (1,200 Passengers)
1 Freight Transport
1 Medical Response Transport
4.7 Miles of Rail in Total
5 Parking Structures (4000 cars)
$211.6M USD



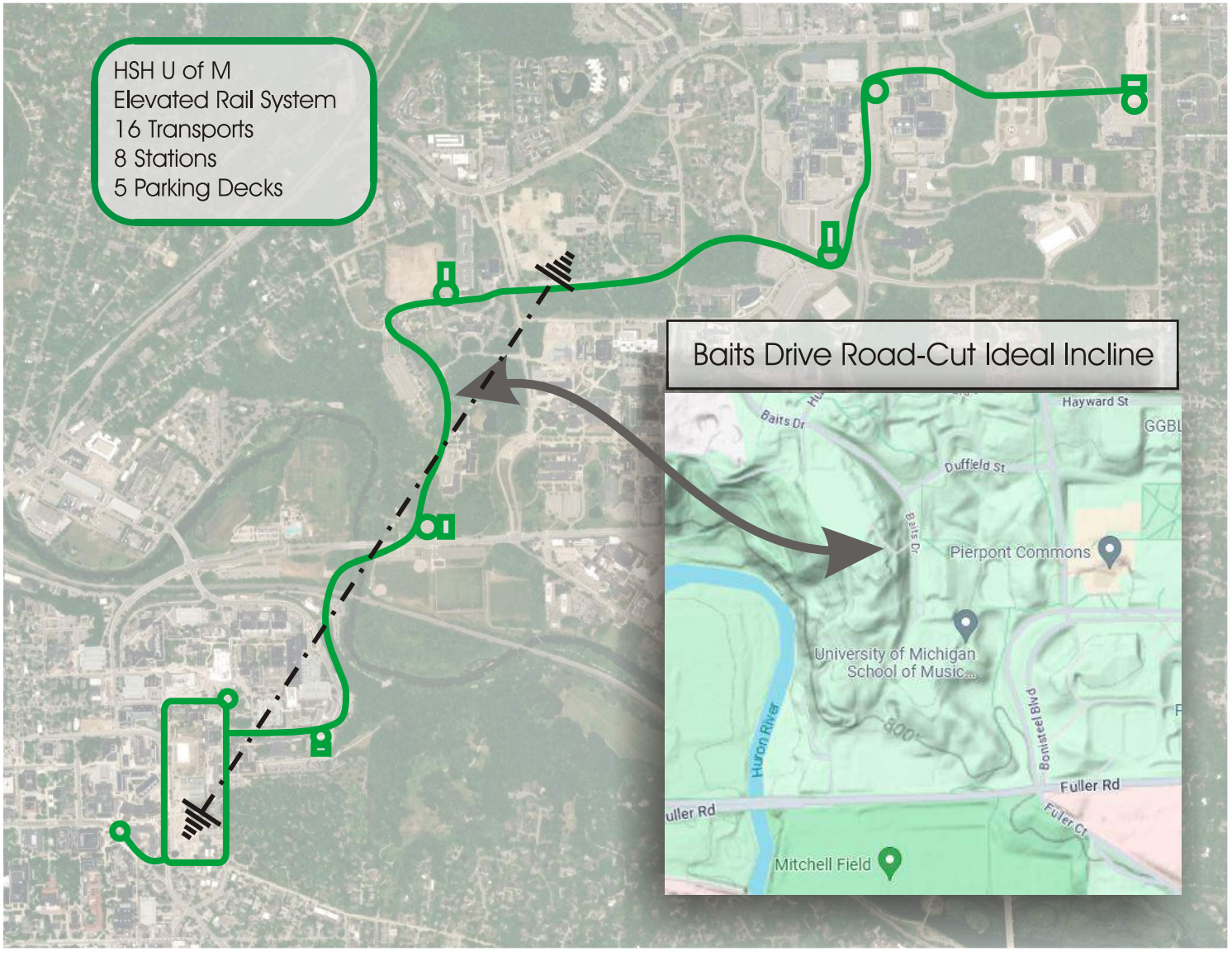
Option B - Baits Drive Route

4.5 Miles Mainline Parallel Track
8 Stations w/Side Track & Switches
16 transports (1,600 Passengers)
1 Freight Transport
1 Medical Response Transport
5.64 Miles of Rail in Total
5 Parking Structures (4000 cars)
$233.5M USD

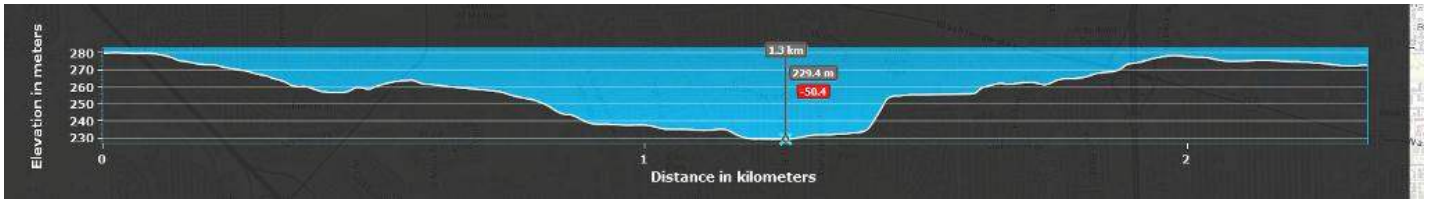


Option B - Baits Drive Road Cut

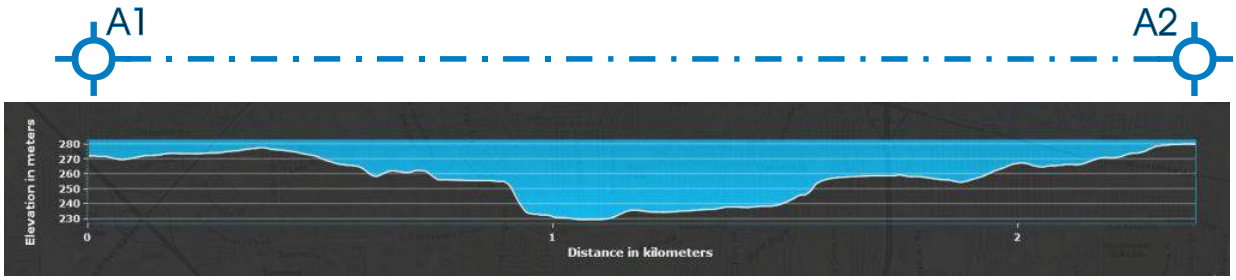
U of M Automated Transit System
Following Baits Drive Road Cut
Most Optimal Slope Path
No Special Structures Required

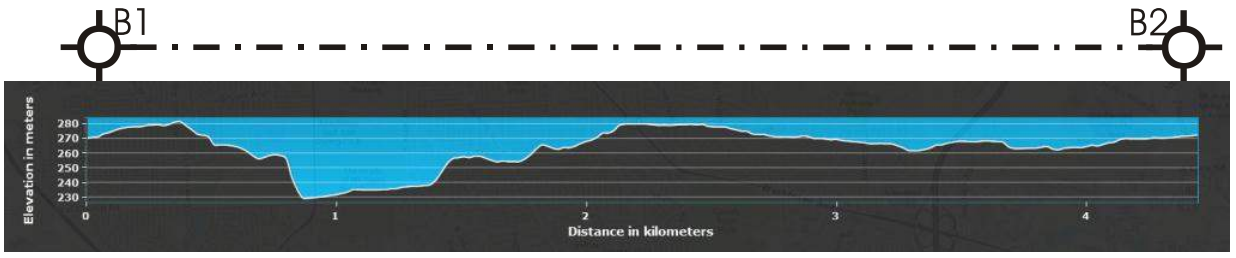


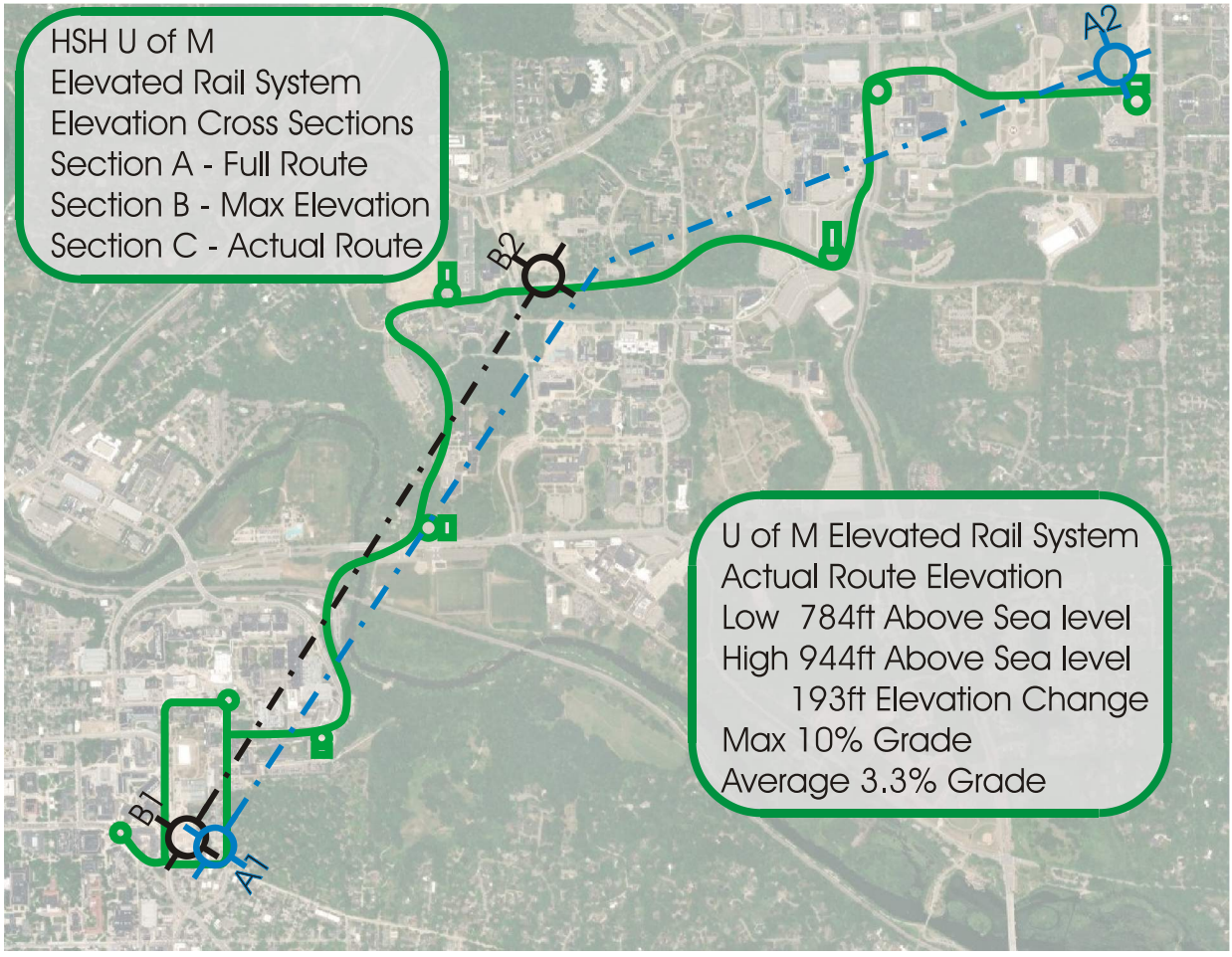
1 Mile River Valley Cross Section Max Elevation Change: 193ft



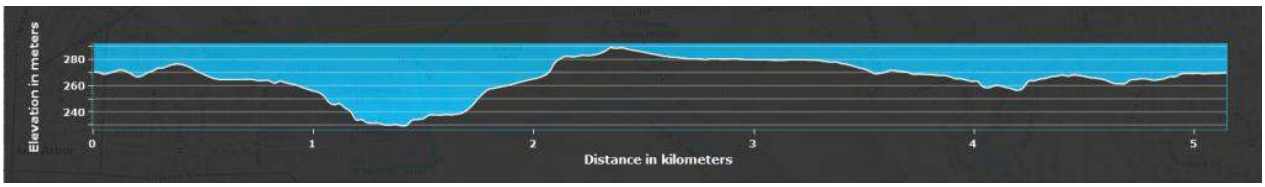
Topographic Elevation Cross Sections







Section C Actual Route Elevation Baits Drive Road Cut



Option B - Baits Drive Route

Interstate Traveler Company, LLC	October 3, 2024		
University of Michigan - Baits Drive Route	*KM Primary Right of Way*	7.24	km
	Miles Primary Right of Way	4.5	miles
	Edit Values in Yellow to Recalculate		
	Rail Scale	50%	
Project Summary and Analysis Tool			
Total Miles (Including Side Track and Main Line)	5.64		
Total Kilometers (Including Side Track and Main Line)	9.08		
Total Parking for Automobiles (all Parking Structures)	4000		
Total Pedestrian Passenger Transports	16		
Total Simultaneous Passenger Capacity	1,600		
Total Car Transports	0		
Total Freight Transports	1		
Total Square Feet of Solar (Rail)	238,178	pv-sqft	
Total Area of PV in Acres:	5.47	/acres	
Total Watts / Square Feet	20		
Total Watts / Hour	4,763,557		
Total Solar Hours	5		
Total Watts per Day	23,817,784		
Total Watts per Year	8,693,491,277		
Total KW per Year	8,693,491		
Average Value / Kw	$0.10		
Average Annual Kw Value:	*$869,349.13*	/year	
Total H2 Production Per Year	*173,870*	Kg/Year (50kw/kg)	
Total Cost for System	$233,519,065.25		
Projected Annual Revenue (Farebox, Rent, Advertising only)	$88,545,720.00		
Return on Investment (after operational 100% Rev)	2.64	Years	
Return on Investment (after operational 50% Rev)	5.27	Years	
Return on Investment (50% Rev +Startup Time)	6.28	Years	
Public Share on Public ROW	50%		
Projected Annual Income (Private)	*$44,272,860.00*		
Projected Annual Public Share	*$44,272,860.00*		

Employment Projections for Hospitality, Concierge and Services			
Total Expected Direct Employment		**138**	Fulltime Equivalent
8	Traveler Stations (Not Including Car Transport Ramps)		
2	Lease Hold Business / Station		
16	Total Business		
3	Employees / Business		
48	Total Employees in Traveler Stations		
18	Transports on System		
5	Concierge / Transport		
90	Concierge Employees		
138	Total Employees (estimated)		

Option B - Baits Drive Route

Interstate Traveler Co. LLC

October 3, 2024

Rail Installation Analysis Budgetary Figures 1 Mile = 5,280 feet 1 Kilometer = 3278 feet

Edit Values in Yellow to Recalculate

University of Michigan - Baits Drive Route

7.24 *KM Primary Right of Way*

4.50 Miles Primary Right of Way

50% Scale

Rail and Utility Substation Costs/Kilometer

Qty	Units	Description	Cost	Amount	Notes
4	Kilometer	AMSC HTS Super Conductor Wire	$120,000.00	$480,000.00	
2	Kilometer	Solar Panel 72" wide x 1 Kilometer long.	$871,948.00	$1,743,896.00	
2	Kilometer	Concrete 3'x3' x 12' concrete Piers	$0.00	$0.00	
2	Kilometer	Steel for Rail Tubing / Stanchion / Central Support	$1,273,532.80	$2,547,065.60	
33	Kilometer	Supplemental Conduit	$3,278.00	$108,174.00	
2	Kilometer	Fiber Optics	$16,000.00	$32,000.00	
0.25	Units/Kilometer	Full Function Utility Substation	$3,000,000.00	$750,000.00	
1	Labor/Kilometer	100 people working simultaneously / 1 week	$100,000.00	$100,000.00	
5	Kilometer	Site work / demolition / adjustment to overhead lines	$100,000.00	$500,000.00	
9	Kilometer / pair of rails	Solid-state Magnets	$655,600.00	$5,900,400.00	
		HSH Elevated Rail Structure + Fractional Utility Substation Costs / Kilometer - Full Scale Subtotal		$12,161,535.60	
			Scaled Price	$6,080,767.80	
			Section Length (Feet)	88	
			Cost per Lineal Foot	$1,855.02	
			Cost per Section	$163,242.09	

Traveler Stations

Qty	Units	Description	Cost	Amount	Notes
0	Each	Grand Terminal Stations	$80,000,000.00	$0.00	
0	Each	"Traveler Station" 10,000sqft @ $330.00/sqft	$3,300,000.00	$0.00	
0	Each	Car Ramp for Car Ferry w/ Parking Structure	$1,200,000.00	$0.00	
0	Each	Parking Structure A 1000 Cars	$25,000,000.00	$0.00	1000
0	Each	Parking Structure B 500 Cars	$12,000,000.00	$0.00	500
0	Each	Air and Sea Port Construction / Integration	$90,000,000.00	$0.00	
0	Kilometer	Sidetrack Single Track for Stations (.23KM/Station)	$6,080,767.80	$0.00	
0	Kilometer	HSH Service Station + Staging Area Budget	$20,000,000.00	$0.00	
0	Each	Basic Access Point, parking, freight access, etc	$500,000.00	$0.00	
				$0.00	

Transports

Qty	Units	Description	Cost	Amount	Notes
0	Each	Grand Public Transport	$8,000,000.00	$0.00	
0	Each	Commuter Public Transport	$2,000,000.00	$0.00	
0	Each	Freight Car - ISO 40' Container Flatbed	$1,500,000.00	$0.00	
0	Each	Car Ferry for Automobiles and Palletized Freight	$1,500,000.00	$0.00	
0	Each	Medical Transport - Mobile ICU	$5,000,000.00	$0.00	

Rail Installation Check List

20 *Enter Watts/SqFt value for Solar Panels here*

Qty	Units	Description	Cost	Amount	Notes
7.24	Kilometer	Primary Parallel Track Right of Way	$6,080,767.80	$44,024,758.87	
1.84	Kilometer	Sidetrack Single Track for Stations (.23KM/Station)	$3,040,383.90	$5,594,306.38	
4.50	Miles	Essential Lineal Parallel Track			
		Stations and Terminals			
-	Each	Grand Terminal Stations	$80,000,000.00	$0.00	
8	Each	"Traveler Station" 10,000sqft @ $330.00/sqft	$3,300,000.00	$26,400,000.00	
-	Each	Car Ramp for Car Ferry w/ Parking Structure	$1,200,000.00	$0.00	
3		Parking Structure A 1000 Cars	$25,000,000.00	$75,000,000.00	
2		Parking Structure B 500 Cars	$12,000,000.00	$24,000,000.00	
-	Each	Basic Access Point, parking, freight access, etc	$500,000.00	$0.00	
1	Each	HSH Service Station + Staging Area Budget	$20,000,000.00	$20,000,000.00	
-	Each	Air and Sea Port Construction / Integration	$90,000,000.00	$0.00	
		Transports			
-	Each	Grand Public Transport	$8,000,000.00	$0.00	
16	Each	Commuter Public Transport	$2,000,000.00	$32,000,000.00	
1	Each	Freight Car - ISO 40' Container Flatbed	$1,500,000.00	$1,500,000.00	
-	Each	Car Ferry for Automobiles and Palletized Freight	$1,500,000.00	$0.00	
1	Each	Medical Transport - Mobile ICU	$5,000,000.00	$5,000,000.00	

16	Total Public Transport	**Total Cost for Interstate Traveler Installation**	**$233,519,065.25**	
-	Total Car Ferry	Cost of Steel at 1200 dollars per ton at 30 tons per section	$17,863,338.24	8%
16	Total Transports	**Balance**	**$215,655,727.01**	92%
8	Total Stations			
2.25	Total Transports / Station			
9.1	Total Kilometers			
5.6	**Total Miles**			
0.889	Stations / Essential Lineal Mile			
3.78	Cars/mile			
18	Total Transports			
4,000	Parking, All Structures			

Cost per Kilometer Complete System	$25,717,958.73
Cost per Mile Complete System	$41,413,782.17

Option B - Baits Drive Route

Interstate Traveler Co. LLC		October 3, 2024	
Return on Investment		7.24	KM Primary Right of Way
University of Michigan - Baits Drive Route		4.50	Miles Primary Right of Way
Rail Return On Investment via Fairbox Collections, Freight, Rent, Advertising		50%	Rail Scale
	Grow budget by X percent:	0%	
	Primary ROW + Side Track (Miles)	**5.64**	Total Miles of Track
	Primary ROW + Side Track (Kilometers)	**9.08**	Total KM of Track
Steps:			
1	Passenger Fee / Minute	$0.50	
2	Car Transport Fee / Minute	$0.00	
3	Freight Fee / Ton Mile	$0.00	Ton Mile
4	Total Tonnage Per Freight Transport	0	Tons
5	Average Distance in Miles per Ton on Freight	1	Miles
6	Number of Freight Cars	1	
7	Total Simultaneous Capacity in Tonnage	0	
8	Total Ton / Mile in Freight @ 1 Miles	0	Ton/Miles Per Day
9	Freight Transports Total Projected Use **Annually**	-	Ton/Miles per Year
10	Average Freight Delivery Time of 1 Miles @ 60MPH	0.02	Hours
11	Total Number of Freight 0.02 Hour Time Blocks / Day	1,200	Time Blocks Per Day
12	Freight Transports Projected Use as an Average over 24 hours	0%	Percent of Capacity
13	Number of Pedestrian Transports	16	
14	Passengers Per Car	100	People
15	Average Time of Trip for Pedestrian	4	Minutes
16	Total Simultaneous Capacity (Pedestrians Only)	1,600	
17	Total Number of 4 Minute Time Blocks / Day	360	
18	Total Daily Capacity (Average Time * Total Capacity)	576,000	
19	Pedestrian Projected Use as an Average over 24 hours	20%	Percent of Capacity
20	Pedestrian Total Projected Use **Daily**	115,200	Rides
21	Pedestrian Total Projected Use **Hourly**	4,800	
22	Pedestrian Total Projected Revenue **Daily**	$230,400.00	
23	Pedestrian Total Projected Use **Annually**	42,048,000	Rides
24	Pedestrian Total Projected Revenue **Annually**	$84,096,000.00	
25	Number of Car Transports	0	
26	Average Time of Trip for Car Transport	1	Minutes
27	Total Number of 1 Minute Time Blocks / Day	1,440	
28	Car Transports Projected Use as an Average over 24 hours	0%	Percent of Capacity
29	Car Transports Total Projected Use **Daily**	-	Rides
30	Car Transports Total Projected Revenue **Daily**	$0.00	
31	Car Transports Total Projected Use **Annually**	-	Rides
32	Car Transports Total Projected Revenue **Annually**	$0.00	
33	Pedestrian Revenue / Trip / Single Pedestrian at $0.5 /minute for 4 minutes	**$2.00**	Fee For Use on a Trip
34	Car Transports Revenue / Trip / Single Car Transport at $0 /minute for 1 minutes	**$0.00**	Fee For Use on a Trip
35	Efficiency Average Speed Traveled	60	Miles per hour
36	Efficiency Possible Distance Covered Traveling at 60mph for 4 minutes	4.0	Miles (Pedestrian)
37	**Relative Cost Per Mile Traveled for Pedestrian**	**$0.50**	**Dollars / Mile**
38	Revenue All Transports/ Annually	$84,096,000.00	**Annual**
39	Revenue for all Freight Transports	$0.00	**Annual**
40	Advertising Revenue Calculations	$2,481,720.00	Annual
41	Rent Revenue Calculations	$1,968,000.00	Annual
	Total Annual Revenue for All Transports / Advertising / Rent	**$88,545,720.00**	Annual
	Budget>> Cost for Installation for 5.64 miles	$233,519,065.25	Cost
	Total Projected Annual Revenue	$88,545,720.00	Annual Revenue
	Return on Investment at 100% of Revenue	2.64	ROI in Years if appeared overnight
	Enter Debt Service Fund Percentage	50%	
	Total Annual Debt Service Fund (P/P Partnership)	$44,272,860.00	
	Return on Investment using Debt Service Fund	5.27	Years

Option B - Baits Drive Route

Interstate Traveler Energy Calculator

University of Michigan - Baits Drive Route — *October 3, 2024*

1 watt-hour = 3.4121415 Btu

Enter Values in fields marked in Yellow — 50% Rail Scale

HSH Rail Combined Wattage Output of Two Parallel Tracks Combined

Mile	5,280	ft
Width (two parallel tracks combined)	8	ft
Area	42,240	SqFt/mile
Watts/SqFt (Average 12)	20	watts/SqFt
Total Watts	844,800	Watts/mile/hour
Total Solar Hours/day	5	Solar Hours/day
Total Watts/day/mile	4,224,000	watts/day/mile
Total Miles	5.6	miles
Total watts/day/all miles	23,817,784	Total watts/day/all miles
Total Watts/year	8,693,491,277	Total watts/year

Traveler Stations Combined Wattage Output of Total Roof Mounted PV Grid

Total Traveler Stations	8	
Average Roof Size (PV)	10,000	SqFt Roof-mounted PV Grid
Minimum watts/SqFt	12	
Total Watts/hr/station	120,000	
Total Watts/hr/all stations	960,000	
Total Watts/day/all stations	4,800,000	
Total Watts/year/all stations	1,752,000,000	

Transports Combined Wattage Output of Total Roof-Mounted PV Grid

Total Transports on System	16	
Total SqFt or roof area	160	SqFt of PV on Roof
Total SqFt all Transports	2,560	Total SqFt PV
Minimum watts/SqFt	22	
Total Solar Hours / Day	8	
Total Watts/hr/Transport	3,520	
Total Watts/hr/all Transports	56,320	
Total Watts/day/all Transports	450,560	
Total Watts/year/all Transports	164,454,400	

Grand Totals of Rail + Stations + Transports + Roof PV Grid Combined

Total Watts/year	10,609,945,677	
Total Kilowatts/year	10,609,946	
Total Megawatts/year	10,610	
Total GigaWatts/year	11	
Total Terawatts/year	0	
Value of a Kilowatt	$0.10	
Total Electrical Output Value	$1,060,994.57	/year
Total BTU / Day	99,185,303.991	
Total BTU/year	36,202,635,956.555	
Total Quadrillion BTU/year	0.000	A unit called the *quad* (short for quadrillion) i
Total watts/ncmh	4,200	watts/normal cubic meter of Hydrogen
Hydrogen mass/NCMH	100	grams/Nm3
Total Cu Meter Hydrogen/year	2,526,178	Total ncmh / year
Total mass of H2/year	252,617,754	grams
	252,618	kilograms
Gasoline Equivelent Units	252,618	Gasoline Equivilent Units 10ncmh/1Gal Gas

Parking Structure A

Standard Parking Space 9' x 18'	162	sqft
Total Number of Cars	1,000	
Total Square Feet Per Car (space and lane)	360	sqft
Total Parking Area Required	360,000	sqft
Cars / Floor	200	
Deck Levels Needed	5	
Deck Footprint	72,000	sqft
	1.65	Acres
Average Costs / Car Space / Deck	$28,000	
Total Cost	$ 28,000,000.00	
	$77.78	$/sqft

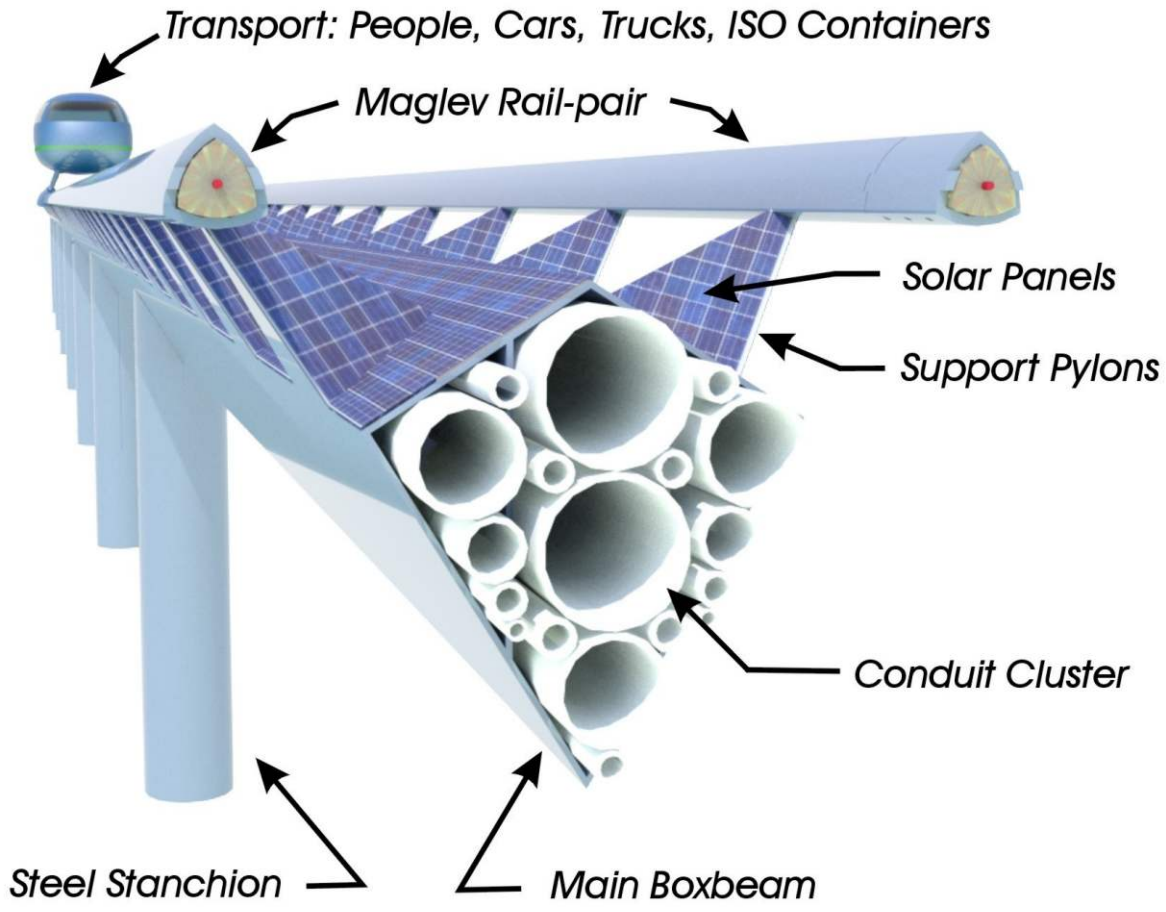
Parking Structure B

Standard Parking Space 9' x 18'	162	sqft
Total Number of Cars	500	
Total Square Feet Per Car (space and lane)	350	sqft
Total Parking Area Required	175,000	sqft
Cars / Floor	100	
Deck Levels Needed	5	
Deck Footprint	35,000	sqft
	0.80	Acres
Average Costs / Car Space / Deck	$25,000	
Total Cost	$ 12,500,000.00	
	$71.43	$/sqft

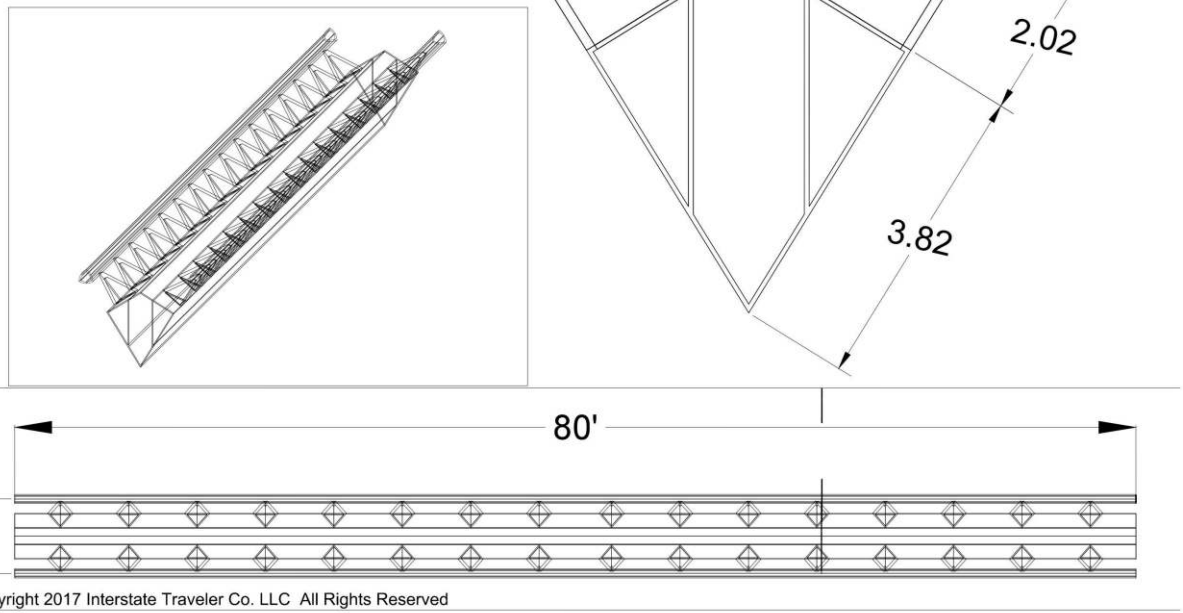
Parking Structure C

Standard Parking Space 9' x 18'	162	sqft
Total Number of Cars	250	
Total Square Feet Per Car (space and lane)	340	sqft
Total Parking Area Required	85,000	sqft
Cars / Floor	80	
Deck Levels Needed	3	
Deck Footprint	27,200	sqft
	0.62	Acres
Average Costs / Car Space / Deck	$25,000	
Total Cost	$ 6,250,000.00	
	$73.53	$/sqft

HSH Elevated Rail System Cross-Sectional Diagram

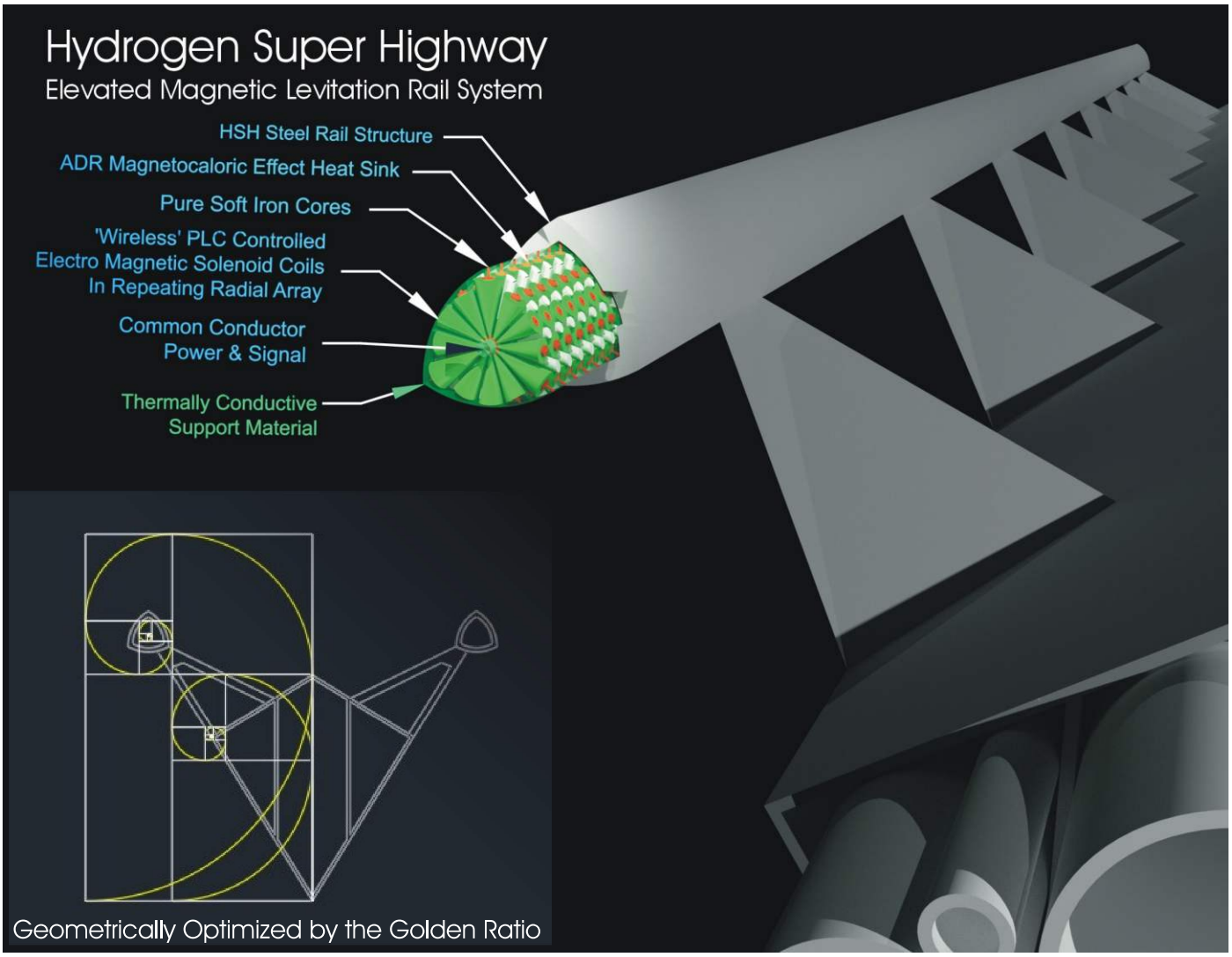


Interstate Traveler Co.
Hydrogen Super Highway
($\frac{1}{2}$ Scale)

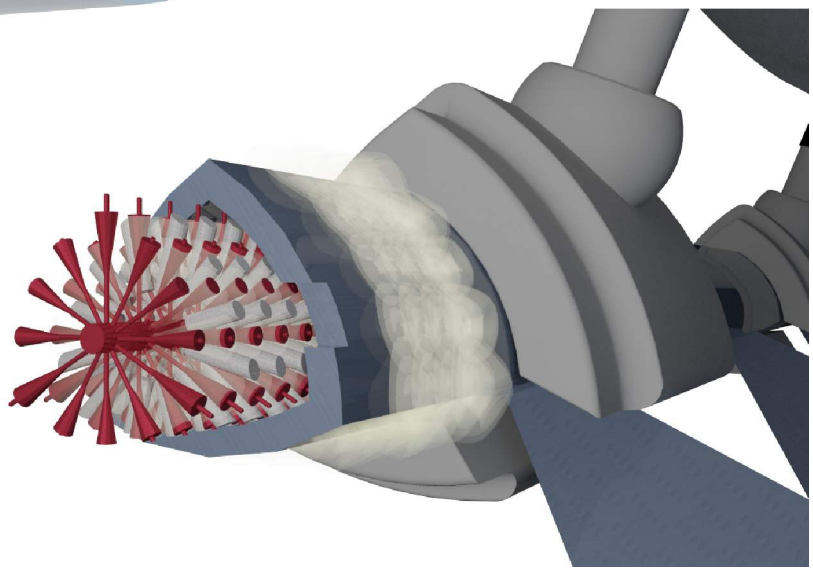


Hydrogen Super Highway

Elevated Magnetic Levitation Rail System

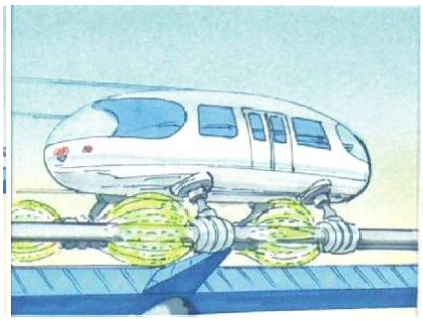


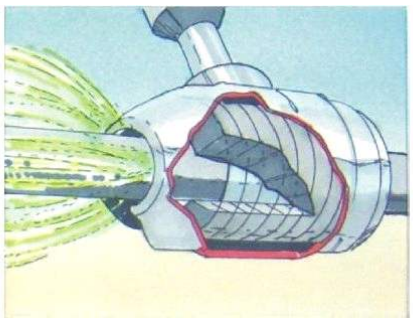
Geometrically Optimized by the Golden Ratio

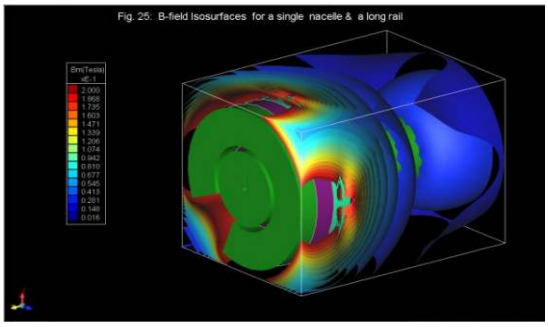


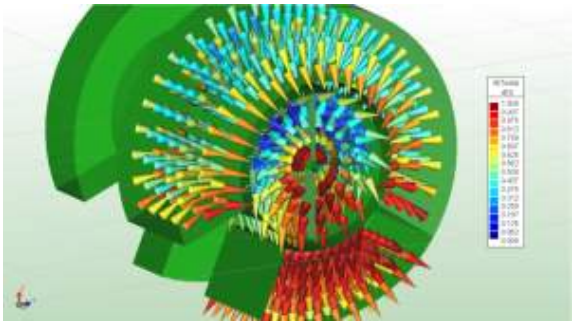
Magnetic Levitation

The unique and practical application of a repeating radially arranged array of magnetic fields enables the most versatile maglev transportation system possible. Hosting motors of almost any size and combination allowing each maglev nacelle to self adjust levitation gaps in real time.







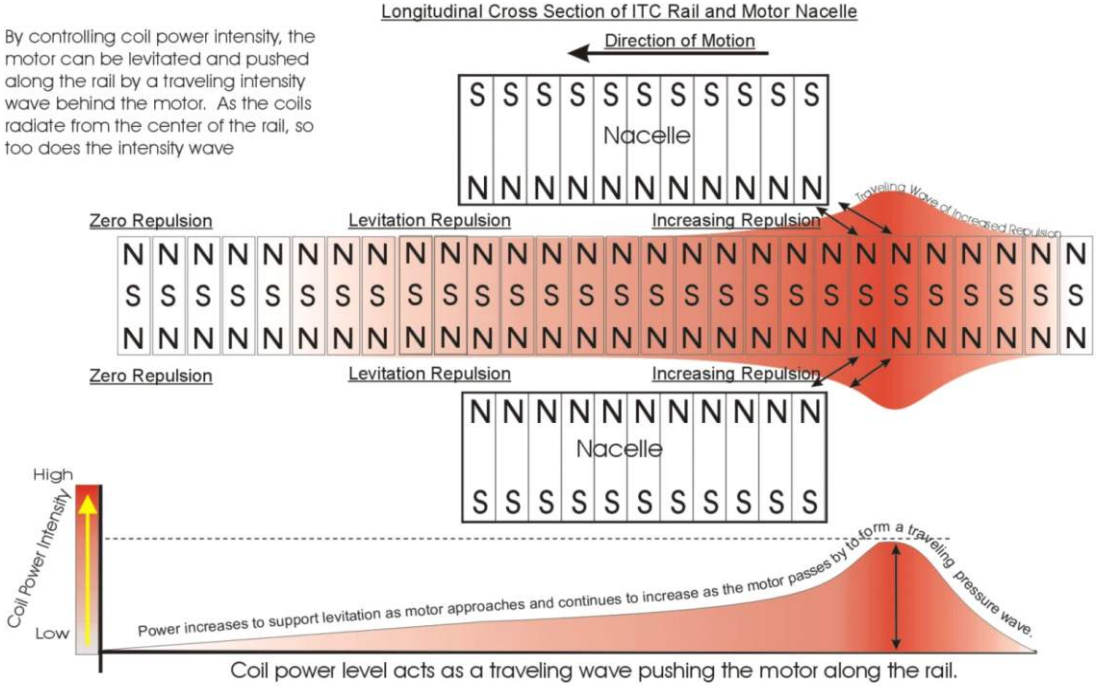


Interstate Traveler Linear Motor and Levitation Coil Arrangement

Traveling Wave Linear Propulsion

(One of several methods to employ the ITC Rail Coil Arrangement to provide levitation and position control)

By controlling coil power intensity, the motor can be levitated and pushed along the rail by a traveling intensity wave behind the motor. As the coils radiate from the center of the rail, so too does the intensity wave



Hydrogen Super Highway

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