

June 27, 2004

Hon. Jan Drago  
Council President  
Seattle City Council  
600 4<sup>th</sup> Avenue, Floor 2  
P.O. Box 34025  
Seattle, WA 98124-4025

RE: Seattle Monorail Project

Dear Councilmember Drago:

The transitway agreement for the Seattle Monorail Project (SMP) is in the final stages of development, but there are many issues which have not been resolved. This agreement is very, very important for the protection of Seattle taxpayers and citizens, both today and for generations to come.

During the first week of June a staff member from your office contacted my assistant about scheduling a time for me to share with the Council the questions I have been raising about SMP. The first date proposed by your office was during a business trip I was planning to Chicago. We received no call back to try for another date or for the opportunity to let you know that I would be willing to fly back from Chicago to meet with you. The message simply came back to me that the Council didn't need my input.

Last week, I was contacted by Councilman Conlin and was able to provide him with input on some of the technical and contracting issues related to SMP. However, each of the Council members should understand these issues so that a wise and all encompassing agreement can be developed with SMP.

It has been an interesting personal experience raising questions about SMP. After frustration with my attempts to get "reassuring" answers from SMP staff about my technical questions, I went "public" raising them in a press conference on May 20<sup>th</sup>. Since that time absolutely no one from the SMP technical staff has tried to contact me to further understand the issues being raised. SMP leadership has made public statements that my questions have all been addressed; however, that is simply not true.

There are many very capable people on the SMP technical staff. The problem is that they are not be given the time or planning and construction dollars by SMP management to do what needs to be done to create an appropriate monorail system for Seattle.

It may be most helpful to you that I state these concerns in terms of specific questions that you should demand that SMP answer. For each of the following topics, there are questions that logically follow:

## CITY MONORAIL MASTERPLAN

The law Seattle voters passed authorized the initial phase of a city monorail system. In order to properly design the first phase of any engineered system the master plan must be completed. This does not mean detailed design of the whole system, but rather, sufficient planning to evaluate system-wide ridership projections, transfers stations, and track geometrics at line intersections. Every great transit system in the world has quick and convenient transfers from one line to another to maximize mobility and ridership.



Q1: What station in Ballard is the transfer station for the Purple Line?

Q2: How has this station been designed to expand to allow future transfers?

Q3: How tall will this station be in the final configuration?

Q4: What is the projected ridership for the Green, Blue, Purple, Gold, and Red Lines by time of day? (This is needed to verify that the lines have sufficient cost/benefit.)

Q5: What is the systemwide ridership transfer matrix? (This determines transfer station size and design.)

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Q6: The masterplan shows that only the Green Line goes through the CBD. Please provide calculations for the peak passenger capacity of that part of the line.

Q7: Please provide Green, Blue, Purple, Gold, and Red Lines total peak ridership projections for riders with destinations in the CBD.

Q8: If the total rider demand in Q7 exceeds the total capacity in Q6, what additional streets will be used to meet the demand? First Avenue? Third Avenue? Fourth Avenue? Fifth Avenue? Sixth Avenue?

Q9: What section of the DBOM RFP requires the contractor to install the guideway switches in the Green line for future connection to the Blue Line?

Q10: If the Blue Line switches in Q9 are not built now, how long will the Green Line need to be taken out of service to construct the switches in the future?

Q11: How will the trains from different lines be able to get to the maintenance base?

Q12: What section of the RFP grants SMP the rights to the proprietary monorail technology of the successful bidder so that SMP can have other contractors expand the system in the future? (This is essential so that the taxpayers do not get stuck in position with no competitive forces to keep prices reasonable.)

Q13: The masterplan shows arrows to the north, south, and east of the city limits. What are the plans for these lines?

Q14: The southern section of the Blue Line meets the Green Line at a section of single beam. Please provide a drawing showing how this works.

Q15: Are the single beam sections being built in such a way that the second beam can be added in the future to meet increased ridership demands?

Q16: If the answer to Q15 is no, are the single beam sections being built on the other side of the street from the "best" alignment, so that double beam can be built with only short cutover periods to reduce Green Line downtime?

Q17: Ridership has been projected for 2020. Have projections been done for 2050 and 2070 like other transit systems being planned around the country?

Q18: Has the single beam decision been reviewed for these longer term projections with the full masterplan in place?

Q19: When were the ridership projections completed? Have they been updated since?

Q20: What firm did the ridership projections?

Q21: Is this firm in a position to potentially benefit from the award of the DBOM contract?

Q22: Ridership is highly dependent on both the total cost and duration of a trip, including both the feeder bus and monorail. It is not possible to predict ridership without this information. What fare was assumed for the monorail?

Q23: What fare was assumed for the bus?

Q24: What level of service (frequency/area coverage) was assumed for the feeder bus network?

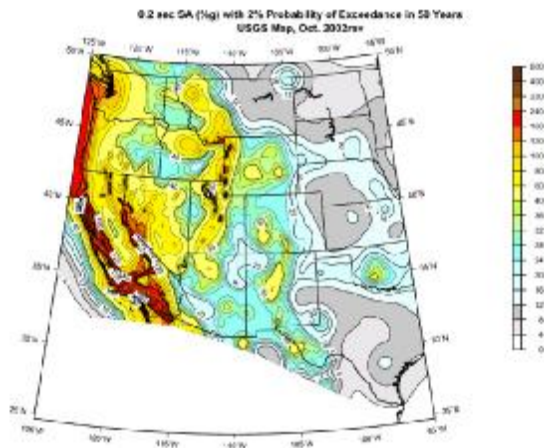
Q25: Was it assumed that all express bus service beneath the monorail route would be eliminated?

Q26: How many people are projected to depart from the Safeco Field /Qwest Field station on the monorail after an event?

Q27: Please provide calculations for the length of time necessary to handle the volume of people in Q26.

## GREEN LINE DESIGN

Most people agree that a critical part of the whether this system's design is judged a success is the way that supporting columns are designed. Some people have looked at the system in Las Vegas in order to extrapolate that design to Seattle. This is extremely misleading. The system in Seattle will be much, much heavier than the system in Las Vegas. The U. S. Geologic Survey classifies ground shaking hazard in the following way:



This map shows that the earthquake design forces in Seattle are about four times greater than they are in Las Vegas. This fact combined with the taller Seattle system means that our columns will be much larger and heavier than those in Las Vegas. A clear understanding of just how big these columns will be and what design requirements should be included in the transitway agreement is essential before approving it.

I can not think of a project with a cost in excess of \$100 million that the Owner has not had a model made. This is essential to understand what the project will *really* look like. Most of the time changes are made is a result of model studies. SMP has not made any models of the entire project available. Model cameras are used so that people can actually “get inside” the model and truly understand how the project will appear. An excellent model of the full length of this system could be built for about the same amount as was spent on about two weeks of SMP’s “public education” advertising campaign recently. This is far superior to computer imaging because it avoids tricks of not showing shadows and showing street trees where they can’t exist. It is real, not virtual.

This project has suffered from a lack of reality in many of its visualizations. The following is from one of SMP’s “public education” television spots:



This picture was clearly taken from the upper level of the Alaskan Way Viaduct, three city blocks (all filled with view-blocking buildings) away from the Green Line. Even though this view is absolutely not possible from the Green Line, to this day SMP still claims that it is accurate.

It has been interesting to observe that people have very different “views” of the monorail. Most people that I have met that are excited about the prospect of the monorail talk about the view from the train to the outside. While most of the people that are not excited about the monorail talk about the view of the monorail system itself.

A prominent developer in Seattle gave me some insight into “views” as I told him that his new building had just destroyed the view from my office. He responded that the view was not destroyed; instead it had been transferred into his building. Views are not created or destroyed; they are just moved from one vantage point to another. Any “new” views created for riders of the monorail are actually simply blockage of someone else’s current view.

A few questions related to design:

Q28: What were the design ground motions for the Las Vegas monorail system?

Q29: How do these compare with the design ground motions for SMP?

Q30: Provide calculations comparing the design ground motion for the West Seattle Bridge with the rest of the SMP system. (It appears that the West Seattle Bridge may be checked for only about 1/5 of the strength being used for the rest of the system.)

Q31: In the single beam section, how will train breakdowns be handled and how long will the system be down?

Q32: How will train fires be fought on the Ballard crossing?

Q33: How will disabled persons be evacuated in emergency situations along the length of the line?

Q34: What section of the RFP requires emergency escape routes for passengers along the full length of the line?

Q35: What section of the RFP limits column sizes and what are those limits?

Q36: If there are no limits on column sizes, please provide calculations that show anticipated sizing.

Q37: What percentage of the SMP’s evaluation criteria for bidder’s proposals is related to overall design excellence (such as column designs and switch platforms)?

Q38: Many renderings and models of stations have been shown to citizens at public meetings. What section of the RFP requires the DBOM contractor to actually build these designs and not substitute cheaper, less desirable versions?

Q39: Has the land for the 2<sup>nd</sup> and Madison station been secured? If not, how can the City Council be assured that there will be a station there?

Q40: What section of the RFP specifies remediation responsibility for wind buffeting of adjacent buildings caused by the monorail trains?

Q41: For each station, how long will the elevators take to transport the equivalent of a full train of people?

#### DBOM CONTRACTING METHOD

I have personally been involved in over \$1 billion worth of design/build projects in the last 10 years...both as an engineer working for the design/build contractor and as a representative of the Owner. The claim that DBOM transfers all risk to the contractor is far from the truth. The key to a successful design/build from the Owner's standpoint is a "bullet proof" RFP. Major projects routinely have technical peer reviews by independent designers and constructability reviews by independent construction contractors. Both of these review entities are usually then prohibited from working on the project.

A recent article in *The Military Engineer* magazine talked about the quality of a design/build RFP and stated that if it isn't done right the Owner may not actually get what they want and "you risk construction problems that can send schedule and cost out of control, and set the stage for disputes and litigation."

The trend nationally is to move away from "design/build" to a method called "bridging design/build". This approach has nothing to do with bridges, but rather, means preparing approximately 35% design under the Owner's complete control and then bridging the design and construction responsibility on a fixed price basis to the contractor. This helps to correct the most serious problem of design/build...the fact that the Owner doesn't really know what they are getting until it is too late.

Q42: What are the risks that will remain with SMP that have not been assigned by the DBOM RFP to the contractor?

Q43: The original SMP proposal evaluation period was 90 days, it is now 30 days. How can a detailed evaluation be done in 1/3 of the time that was originally planned?

Q44: If the losing team receives \$2 million, how can you guard against the possibility of a high "placeholder" bid, just to get this bonus, and leaving SMP with only one real bid?

The preceding are a few of the preliminary questions that the group of professionals that have volunteered to start looking at DBOM RFP have come up with. It is a big job, and we all have our "day jobs". We probably won't have our final questions and comments until about the middle of July...about a month before bids are due.

As a licensed engineer, I am ethically obligated to disclose my client when I express a professional opinion. In this case the answer is very simple: the people of Seattle, their

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children, and grandchildren. As a community, we must get this right. It is too big and important and will have far-reaching impacts for decades to come. I have received absolutely no compensation from anyone for any work on the monorail and will not do so in the future. In fact, the firm that I am associated with provided free services to the monorail project in the past to try to find ways to make the columns smaller.

As you and the Council consider this critically important transitway agreement, you should demand the following from SMP before finalizing it:

1. **Specific answers to the preceding 44 questions.** Do not let SMP just brush these off by saying that they are already covered...they have not been answered!
2. **Conduct an independent financial review** that looks at tax revenues, fare revenue based on real ridership projections, and all agency costs and risks.
3. **Conduct a technical review using independent designers and contractors.** This is a critically important audit to determine what the taxpayers are actually getting and compares that to what has been promised and what is necessary to make the system work as we all hope.
4. **Demand a model of the full length of the system.** This is the only way for the public to evaluate what is coming and to make appropriate adjustments to improve the design. This must be done before the contract is awarded or any change becomes a very expensive change order.

The Seattle City Council has a huge responsibility in the form of the transitway agreement. I respectfully submit that any due diligence effort in this regard would include the four points above as a minimum. It is critical that you know what the City is "buying" by granting of this transitway agreement. Thank you.

Sincerely,

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cc: Seattle City Council Members