BEFORE THE COUNCIL OF THE

METROPOLITAN SERVICE DISTRICT

FOR THE PURPOSE OF AUTHORIZING AWARD OF CONTRACTS TO TRANS INDUSTRIES FOR CONSTRUCTION AND OPERATION OF THE METRO EAST STATION	))))	RESOLUTION NO. 89-1169A Introduced by Rena Cusma, Executive Officer

WHEREAS, The Metropolitan Service District has been engaged in a methodical process to procure landfill capacity, transportation, transfer station capacity and alternative technology as elements of Metro's implementation of the Regional Solid Waste Management Plan; and

WHEREAS, Metro has entered into or authorized contracts for landfill capacity, transportation of waste, and alternative technology for composting of solid waste; and

WHEREAS, Metro has taken steps to close the St. Johns Landfill by February 1991 as required by the lease agreement with the City of Portland; and

WHEREAS, A remaining major element of Metro's solid waste system is for the Metro East Station to be in service by the time established for closure of the St. Johns Landfill; and

WHEREAS, Resolution No. 88-1009 established a procurement process for the Metro East Station; and

WHEREAS, Resolution No. 89-1061B approved the Request for Proposals to solicit private proposals to provide a site and design, construct, own and operate the Metro East Station; and

WHEREAS, Resolution No. 89-1091 approved the evaluation methodology for proposals for the Metro East Station and approved solicitation of a turnkey proposal; and

WHEREAS, One of the requirements in the Request For Proposals was that proposers submit a Facility Site Plan, a narrative description of how the proposed project would comply with the conditions set out in the Mitigation Agreement (hereinafter referred to as "Mitigation Agreement") between the City of Portland and Metro, and a Traffic Impact Assessment; and

WHEREAS, Proposals for the Metro East Station were received from four qualified proposers on the June 13, 1989, deadline for submission of proposals; and

WHEREAS, Analysis of the Metro East Station proposals involved an intensive process involving Metro staff and an Evaluation Committee consisting of representatives from the City of Portland, the Port of Portland, Multnomah County and Metro; and

WHEREAS, The Evaluation Committee, following the evaluation methodology approved by the Council, determined that the Trans Industries' turnkey proposal received the highest score; and

WHEREAS, During the evaluation process, it was determined that the site proposed by Trans Industries is zoned HI (Heavy Industrial) and would not require a variance for construction or operation of a transfer and recycling center; and

WHEREAS, During the evaluation process, it also was determined that the Trans Industries' proposal provided an acceptable plan for complying with the Mitigation Agreement and that it was the only proposal that was complete in terms of aesthetics, hazardous waste handling, safety measures, identified environmental concern areas, litter and substantially complete in other areas including traffic, odor and noise mitigation; and

WHEREAS, Resolution No. 89-1131A authorized the Executive Officer to enter into contract negotiations with Trans Industries for the purpose of procuring the Metro East Station as a Metro-owned facility to be operated by Trans Industries under a five-year operations contract with Metro; and

WHEREAS, The potential for truck traffic on St. Helens Road and the St. Johns Bridge is a concern of the citizens of North Portland; and

WHEREAS, additional studies have been recommended by the firm of Dames & Moore; and

WHEREAS, The Executive Officer has negotiated contracts with Trans Industries for the construction, the operation and acquisition of the Metro East Station; now, therefore,

BE IT RESOLVED,

1. That the Council of the Metropolitan Service District adopts and by this reference herein incorporates the Findings of Fact attached hereto as Attachment A.

2. That the Executive Officer is authorized to execute separate contracts with Trans Industries as follows:

a. "1989 Metro Transfer Station Construction Agreement"

b. "Real Estate Purchase and Sale Agreement"

c. "1989 Metro Transfer Station Operation Agreement"

for the Metro East Station.

3. That prior to executing the Operations Agreement, the Executive Officer and Trans Industries shall renegotiate the terms of the Agreement to remove the provision that the contractor will be paid a Materials Recovery Incentive on source separated recyclables. The Materials Recovery Incentive shall be paid only on recyclable materials that the contractor extracts from mixed solid waste.

4. That the additional investigations listed as items 1, 2 and 3 on page 31 of the Dames & Moore report dated November 2, 1989 be conducted by Metro.

5. That the Council of the Metropolitan Service District supports the actions shown in Attachment B (attached), in order to reduce the potential impact of truck traffic on St. Helens Road and the St. Johns Bridge.

ADOPTED by the Council of the Metropolitan Service District this 21st day of November 1989.

Mike Ragsdale

Mike Ragsdale, Presiding Officer

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RESOLUTION NO. 89-1169A

ATTACHMENT B

Citizens of North Portland are concerned about truck traffic on St. Helens Road and the St. Johns Bridge due to the proposed operation of a solid waste transfer station at 6161 N.W. 61st Avenue. The Metro Council supports the following actions to reduce the impact of truck traffic on St. Helens Road and the St. Johns Bridge:

1. All traffic from the Trans Industries site, including transfer trucks, will be directed by signage to use the Front Avenue/Kittredge route when leaving the station.

2. Metro finds that the use of the St. Johns Bridge is not an acceptable route for use by solid waste transfer trucks and will not approve a transfer truck operations plan that utilizes the St. Johns Bridge.

3. Metro will encourage the State of Oregon to resurface the roadway of the St. Johns Bridge as soon as possible.

4. Metro will work with all affected neighborhood groups to improve traffic safety and to minimize the effects of truck traffic generated by the East Transfer Station.

FINDINGS OF FACT

I. SOLID WASTE MANAGEMENT PLAN

The Solid Waste Management Plan ("SWMP"), which was adopted by Metro on October 27, 1988 by Ordinance No. 88-266B, is a functional plan whose goal it is to implement a solid waste system which is regionally balanced, cost effective, logically feasible, environmentally sound and publicly acceptable. The SWMP facilities policy in Chapter 5, together with the state hierarchy in ORS 459.015, provides for an integrated regional system of facilities for managing solid waste.

Chapter 5B of the SWMP facilities policy identifies specific provisions for transfer station services for the region's east waste shed, which encompasses the City of Portland and Multnomah County, and sets forth the framework for the siting, construction and operation of the Metro East transfer and recycling center (hereinafter referred to as "Metro East Station"). The SWMP at 5-41, identifies a need for a transfer station facility within the east waste shed prior to the scheduled closure of the St. Johns Landfill in February, 1991.

1. Relationship of the Metro East Station with the Depot.

In the SWMP, it was concluded that it would not be necessary to require a combined transfer station/depot. In Ordinance No. 89-1053, the Metro Council authorized the execution of a transportation services contract with a trucking company. Trucks can transport the region's solid waste directly from the transfer stations to the Gilliam County Landfill. Thus, there is no need to consider depot locations. Therefore, the Metro Council finds that the Metro East Station agreement is consistent with the SWMP.

2. Number of Transfer Station Facilities.

The SWMP, at 5-49, concludes that there is no compelling rationale to support exclusive selection of either a single station or a two station option for the east waste shed transfer station. The SWMP further concludes that transfer station services can be provided by any number of transfer station facilities as long as they serve the entire east waste shed. Selection of a single or multiple station option should be based on a comparison and evaluation of the various options.

The Request for Proposal ("RFP") process utilized to select a contractor for the Metro East Station gave vendors an opportunity to propose single or multiple facility

configurations. With the addition of the Mass Compost Facility, and the continuation of Oregon Processing and Recycling Center ("OPRC"), a single transfer station facility is consistent with the SWMP's objective of providing full coverage for the east waste shed and is the most cost-effective and efficient option at this time.

3. Waste Reduction.

Waste reduction by post-collection material recovery from the mixed waste stream was a prime operational consideration in the development of the Metro East Station. Trans Industries' proposal demonstrated its ability to recover recyclable materials from the mixed waste stream and to provide a drop-off for source separated waste, both of which are consistent with the state hierarchy to reduce, reuse, recycle, recover and landfill.

The goal of the Metro East Station, as constructed and operated by Trans Industries, will be to achieve an overall material recovery rate from the existing waste stream of 25.2 percent. The Metro East Station provided by Trans Industries is designed as a high recovery program which demonstrates a commitment to material recovery. The waste reduction component of Trans Industries' Metro East Station operations, therefore, is

consistent with the state waste reduction hierarchy, (i.e. reduce, reuse, recycle, recover and landfill) and is consistent with the waste reduction recommendations adopted in the SWMP, and the Metro Council so finds.

4. Combined Service for Commercial Haulers and the Public.

The SWMP concludes that the Metro East Station should be designed to handle both commercial and self-haul waste. The Metro East Station has been designed to, and will, handle both commercial and self-haul waste in accordance with this provision of the SWMP.

5. Land Use Siting Criteria.

Prioritized land use siting criteria have been established by the SWMP at 5-57 in order to minimize the impact of the Metro East Station. The SWMP assigns weighting factors to the various criteria to be used in evaluating the competing proposals. An evaluation system to apply the criteria was approved in Ordinance 89-1091 which adopted Option 2 of the SWMP, by establishing a relative comparison system in which sites are compared to each other and ranked according to compliance with the criterion.

The purpose of the land use siting criteria adopted in the SWMP is to minimize the land use impacts of the Metro East Station. The criteria adopted in the SWMP are guidelines for evaluating sties for the Metro East Station.

The SWMP adopted one "fatal flaw" criterion and seven other criteria as guidelines for evaluating prospective sites for the Metro East Station. The "fatal flaw" criterion is that the project must include a land use approval and construction schedule which demonstrates that the Metro East Station can be operational to receive waste before the scheduled closure of the St. Johns Landfill in February, 1991.

The SWMP "fatal flaw" criterion was included in the Metro East RFP. The Metro East Station proposed by Trans Industries is located on a site which is zoned HI (Heavy Industrial), and is permitted outright subject to the Mitigation Agreement between Metro and the City of Portland discussed hereinbelow. The construction schedule proposed by Trans Industries (Trans Industries Proposal, Figure III-2) demonstrates that the Metro East Station will be operational to receive waste before the St. Johns Landfill closes.

In addition to identifying evaluation criteria, the SWMP adopted an evaluation methodology based on a relative

comparison system in which sites are compared to each other and ranked according to compliance with the criteria. The Metro East Station evaluation process, adopted by the Metro Council in Resolution No. 89-1091 and Resolution No. 89- 1104, incorporated both the evaluation methodology and evaluation criteria adopted in the SWMP.

The guideline criteria adopted in the SWMP include; on-site characteristics, utilities, land use permits, traffic capacity of primary access routes, transportation access for collection vehicles and self-haulers, land use impacts along access routes, and land use impacts on adjacent uses. Under the Metro East RFP, proposals were evaluated and ranked based on the following technical criteria:

1. Overall soundness of the Metro East Station design and integration of separate elements of the Station (e.g. receiving, storage, materials recovery, compacting, and loading);

2. Drive time relative to centroid of waste;

3. Technical feasibility of equipment and unit processes;

4. Soundness of operations and maintenance plans, including flexibility of the system with regard to fluctuations of quantity and composition in the Acceptable Waste stream, and contingency capabilities of the system;

5. Consistency, accuracy and reasonableness of process flow diagram;

6. Reliability/availability of system;

7. Ability to prepare Recovered Materials for sale to the appropriate market(s);

8. Configuration of Facility Site plan;

9. Demonstration that proposal is capable of complying with environmental regulations;

10. Progress in meeting mitigation requirements;

11. Energy and water conservation measures indicated in design/operation;

12. Commitment of Contractor to operate the Facility to maximize Materials Recovery;

13. Environmental condition of site.

Each of the listed criteria was weighted, and each proposal was evaluated and scored for responsiveness to each criteria.

In addition to the technical criteria, the evaluation process adopted by the Metro Council scored and ranked proposals on management, costs, ability to meet required performance standards, qualifications, and vertical integration. Bonus points were available for proposal responsiveness to issues such as special and household hazardous waste handling.

Having considered the evaluation criteria guidelines and evaluation methodology adopted in the SWMP, the Metro Council finds that the process utilized in soliciting and evaluating proposals for the Metro East Station as outlined herein, and described more fully in the Metro East Station Proposal Evaluation dated August 16, 1989, said Evaluation being fully incorporated herein by this reference, is consistent with the SWMP. The Metro Council further finds that applying the criteria and evaluation methodology adopted by the Metro Council in the Metro East Station RFP, the Trans Industries Metro East Station proposal receives the highest ranking.

6. Hazardous/Unacceptable Waste.

The SWMP concluded that the Metro East Station owner/operator shall be required to ensure that hazardous waste will not be transferred from the facility to the landfill and that hazardous wastes are not transferred to resource recovery facilities. One of the performance standards in the Metro East Station RFP is that the proposers demonstrate that their facility operations will minimize the risk of hazardous waste being transported to the landfill or to resource recovery facilities. The RFP required that proposers identify their inspection procedures which, at a minimum, are required to include the steps outlined in Section 5.2.6 of the RFP.

The Trans Industries' proposal provided insufficient detail to determine compliance with the hazardous waste detection program. However, Trans Industries' DEQ permit application and Mitigation Agreement proposals submitted to the City of Portland, both of which have been reviewed by Metro staff, include an extensive training component designed to train all staff in hazardous waste detection. By committing to an extensive training program designed to acquaint its employees with hazardous waste detection and handling procedures, Trans Industries has fulfilled the requirement of the SWMP that steps be taken to ensure that hazardous waste will not be transferred from the facility to the landfill or to resource recovery facilities.

7. Ownership of Facility.

Chapter 13 of the SWMP adopted the following criteria for determining what form of facility ownership best serves the public interest:

1. Compare the anticipated capital and operating costs;
2. Adhere to the waste reduction policies;
3. Best achieve implementation of the SWMP;
4. Compatibility with existing facilities and programs;

5. Ability to adjust to changing circumstances which may require capital improvement, new methods of operation or similar factors;
6. Environmental acceptability;
7. Provide ease of access by the public and collection industry, where applicable;
8. Avoid vertical integration (monopoly) of the solid waste business;
9. Demonstrate ease of facility management, including fee collection equity, periodic review, rate changes, flow control, and related operational changes;
10. Provide appropriate mitigation and/or enhancement measures deemed appropriate to the host jurisdiction.

The Metro East Station RFP was structured to elicit both public and private ownership alternatives. Alternative No. 1 was an option in which the proposer would retain ownership after expiration of a 19 year contract with Metro. Alternative No. 2 was an option in which Metro obtained the site, facility and equipment after the 19 year contract expired. The original intent was to evaluate the two alternatives separately. However, after application of the evaluation criteria, it was found that the only significant difference between the two alternatives

occurred in the cost category. The evaluation process, therefore, combined the two alternatives. A third proposed alternative included in the Metro East Station RFP, was an option in which Metro would finance the construction of the facility with the proposer operating the facility for a period of five years.

Three of the criteria used to evaluate the two private ownership alternatives (Alternative No. 1 and No. 2.) were not applicable to Alternative No. 3, the "turnkey" option. The three criteria which are not applicable to the "turnkey" option are criteria number 9 in the Cost Proposal, (i.e. proposer's financing plan and ability to secure the financing); criteria number 3 in the Qualifications Criteria, (i.e. the proposer's experience in project financing for solid waste facilities); and criteria number 13 in the Qualification Criteria, (i.e. competitiveness of the financial resources or credit rating of the proposer, its parent, or joint venture partner to support their contractual obligations from construction through operations.) These criteria are not applicable to the "turnkey"/public ownership option.

Having considered the ownership criteria and evaluation methodology adopted in the SWMP, the Metro Council hereby finds that the process utilized in soliciting and evaluating the

ownership options for the Metro East Station as outlined herein, and more fully described in the Metro East Station Proposal Evaluation dated August 16, 1989, said Evaluation being fully incorporated herein by this reference, is consistent with the SWMP. The Council further finds that, applying the ownership criteria and evaluation methodology adopted by the Metro Council in the Metro East Station RFP, the Trans Industries Metro East Station proposal receives the highest ranking.

II. MITIGATION AGREEMENT

Consistent with SWMP Policy 16.0, which provides that solid waste management solutions are to be developed at the local level and in conjunction with local governments, and pursuant to ORS 190.003 through 190.110 and ORS 268.300(2), Metro and the City of Portland, Oregon ("City") entered into a certain Mitigation Agreement dated March 31, 1989. The Mitigation Agreement is premised on the SWMP and establishes appropriate standards for mitigation measures for the siting, construction, and operation of solid waste disposal sites within the City limits.

The Mitigation Agreement requires that all solid waste facilities acquired or constructed within the Portland city limits comply with a number of measures in the following general areas, the specifics of which are more fully detailed in the

Mitigation Agreement, which by this reference is herein incorporated:

(1) Traffic;

(2) Odor;

(3) Noise;

(4) Off-site Impacts;

(5) Storage;

(6) Sanitary Sewage/Processing Wastewater/Stormwater;

(7) Aesthetics (Architectural) and Site Design;

(8) (Omitted in Mitigation Agreement);

(9) Hazardous Waste Handling;

(10) Safety Measures;

(11) Identified Environmental Concern Areas;

(12) Economic Impacts;

(13) Litter;

In addition to the listed general areas of mitigation, the Mitigation Agreement requires that a City representative serve on the evaluation committee used to evaluate solid waste disposal facility proposals. It also requires that after selection of a solid waste disposal site, Metro shall adopt a site specific mitigation plan ("Plan") for the facility which addresses the listed mitigation concerns. The Plan shall be

reviewed and approved or denied by the City's Director of the Bureau of Planning based on the standards set forth in the Mitigation Agreement.

The Metro East Station RFP required proposers to demonstrate significant progress in meeting the mitigation requirements. The Mitigation Agreement was included in the Metro East Station RFP. The evaluation criteria adopted by the Metro Council for the Metro East Station proposals were included, and are consistent, with the mitigation requirements set forth in the Mitigation Agreement.

As required by the Mitigation Agreement, a representative from the City served on the Metro East Station Evaluation Committee. During the evaluation process, informal review comments on mitigation compliance were received from the City's Bureau of Planning, Office of Transportation, and Bureau of Buildings. Review and scoring of proposers' progress in meeting the mitigation requirements took into consideration the assessments made by the listed City agencies.

Having considered the mitigation measures set forth in the Mitigation Agreement, the Council finds that the evaluation criteria and process used to evaluate the Metro East Station

Metro East Station Proposal Evaluation dated August 16, 1989, said Evaluation being fully incorporated herein by this reference, is consistent with the mitigation requirements in the Mitigation Agreement. The Council also finds that the Trans Industries proposal has demonstrated acceptable progress towards complying with the mitigation requirements. Applying the progress towards mitigation requirement and evaluation methodology adopted by the Metro Council in the Metro East Station RFP, the Trans Industries Metro East proposal receives the highest ranking.

A final determination regarding Trans Industries' compliance with the Mitigation Agreement will be made when Metro adopts a site specific mitigation Plan which, pursuant to the terms of the Mitigation Agreement, will be submitted to the City for approval.

III. STATEWIDE LAND USE PLANNING GOALS.

In accordance with the recent decision by the Land Use Board of Appeals ("LUBA") in Sensible Transportation Options for People (STOP), et al v. Metropolitan Service District, _____ Or LUBA _____ (LUBA No. 89-030, October 25, 1989), the Metro Council hereby makes findings regarding the Statewide Land Use Planning ("Goals") as set forth in ORS 197.005 to 197.465. The Metro Council believes, however, the STOP decision notwithstanding, that its actions are not subject to the Goals

and no findings with regard thereto need be made. However, in the event the STOP decision is affirmed on appeal and it is finally determined that the Goals are applicable to Metro's actions, the Metro Council makes the following findings:

Goal 1. Citizen Involvement.

The SWMP, upon which the present action is based, was adopted in compliance with Goal 1. The SWMP was adopted only after extensive citizen involvement, as is set forth in the Findings to Metro Ordinance No. 88-266B, a copy of which is attached hereto as Exhibit 1 and which is fully incorporated herein by this reference.

In addition to the citizen involvement in the development and adoption of the SWMP, citizen involvement was also elicited in the following ways in the Metro Council's decision regarding the siting, construction and operation of the Metro East Station:

1. June 16, 1989 - Press release, fact sheet, maps release to media.

2. July 19, 1989 - Letters sent to the following district neighborhood associations announcing proposed sites and describing the review process: Neighbors West/Northwest, Neighbors North, Hayden Island, NE Neighborhood, Central NE, East Portland, Cully. Each office was sent a full copy of

eering, the press release, the fact sheet, location maps, and proposal summaries.

3. July 20, 1989 - Letters were sent to the following individual neighborhood association leaders announcing proposed sites and describing the review process: Pam Arden (Kenton), Patricia Freeman (Portsmouth), Selwyn Binghan (NW Industrial), William Muir (Concordia), Margaret Regon (Piedmont), Martha Johnston (E. Columbia), Agnes Kurill (Sunderlan), Alison Stoll (Beaumont-Wilshire), Gary Gregory (Parkrose), Tom Burns (Interlachen), and D.W. Owns (Lents).

4. August 9, 1989 - A memorandum was sent to the above-listed organizations and individuals regarding the Executive Officer's August 15th recommendation announcement and the Metro Council's public hearing schedule.

5. August 10, 1989 - Press release issued regarding August 15, 1989 press conference by Executive Officer to announce Metro East Station recommendation.

6. August 15, 1989 - A memorandum was sent to above-listed associations regarding Executive Officer's recommendation that the Council authorize negotiations with the Trans Industries, with Rose City as the back-up proposal. The memorandum also announced open house dates in the Northwest and Kenton neighborhoods.

7. August 17, 1989 - Information packet and letter sent to Linnton Community Association.

8. August 24, 1989 - Metro Solid Waste Director made a presentation to the Northwest Industrial Neighborhood Association regarding the Trans Industries proposal.

9. August 25, 1989 - Open house announcement distributed to homes in the vicinity of the Trans Industries site.

10. August 28, 1989 - Open house held at the Northwest Service Center to answer questions and concerns regarding the Trans Industries proposal. Advertisements were placed in the "Oregonian" prior to the meeting announcing the date, time and location. Approximately fifteen neighbors attended.

11. August 29, 1989 - Open house held at the Kenton Firehouse to answer questions and concerns regarding the Trans Industries proposal. Advertisements were place in the "Oregonian" prior to the meeting announcing the date, time and location. Approximately six neighbors attended the meeting.

12. September 6th and 7th, 1989 - Four by six inch advertisement run in the "Oregonian" announcing Solid Waste Committee meetings on the Metro East Station.

13. September 6, 1989 - Metro Solid Waste Director makes a presentation to the Linnton Neighborhood Association. Approximately eight neighbors attended the meeting.

14. September 11, 1989 - Representative from Metro's Solid Waste Department makes presentation to the Forest Park Neighborhood Association. Approximately twenty-eight neighbors attended the meeting.

Having considered the actions taken to elicit public input and to respond to public questions and concerns regarding the Metro East Station, the Metro Council finds that the citizen involvement process used complies with Goal 2 and with the public involvement process adopted in Chapter 15 of the SWMP.

Goal 2. Land Use Planning.

The SWMP established the land use planning process and policy framework which was used as a basis for the present decision. The SWMP and the present action is in compliance with Goal 2 for the reasons set forth in the Goal 2 findings in the attached Exhibit 1 which are incorporated herein by reference.

Furthermore, the Metro Council's solid waste decision is based on extensive review of the competing proposals submitted in response to the Metro East RFP, and evaluation of those proposals on the basis of the evaluation methodology approved by the Metro Council in Resolution No. 89-1091.

Accordingly, the Metro Council finds that its action is in compliance with Goal 2.

Goal 3. Agricultural Lands.

and

Goal 4. Forest Lands.

The Metro Council finds that Goals 3 and 4 are inapplicable to its present action, for the reason that the Metro East Station is not located in an agricultural or forest zone. Even so, as part of the SWMP, the Metro East Station is consistent with Goals 3 and 4 by preserving and maintaining agricultural lands, and conserving forest lands, again for the reasons set forth in the findings attached as Exhibit 1.

Goal 5. Open Spaces, Scenic and Historic Areas, and Natural Resources.

Based on the location and industrial character of the Metro East Station site as well as adjacent property, the Metro Council finds that the siting, construction, and operation of the Metro East Station is consistent with the resource policies of Goal 5. The site has no value as, and would have no impact on, any of those resources identified in Goal 5. Furthermore, the Metro East Station is consistent with the resources policies of the local government comprehensive plan, and does not impact on any resources inventoried by the local government in accordance with Goal 5. Therefore, Metro Council finds that its action is in compliance with Goal 5.

Goal 6. Air, Water and Land Resources Quality.

The Metro East Station, which was sited and is to be constructed and operated in accordance with the provisions of the SWMP, complies with all air, land, and water quality regulations of the state Environmental Quality Commission and the federal Environmental Protection Agency. The Metro Council finds that there will be no adverse impacts on the quality of air, water, and land resources as a result of the siting, construction, or operation of the Metro East Station, and that Goal 6 is, therefore, complied with.

For the foregoing reasons, the Metro Council finds that its action is consistent with Goal 6.

Goal 7. Areas Subject to Natural Disasters and Hazards.

Based on all relevant data, the Metro Council finds that the Facility is not at risk from natural disasters or hazards. The site is not part of an inventory of such sites by the local governing body, nor is it included on a federal list of hazardous areas. Accordingly, the Metro Council determines that its action is in compliance with Goal 7.

Goal 8. Recreational Needs.

Based on the fact that the Metro East Station site is located in an existing industrial area, the Metro Council finds that the Metro East Station would not adversely impact any

recreational needs of citizens and visitors to this state. Additionally, as part of the overall SWMP, the Metro East Station promotes the effective management of solid waste for the region, resulting in better liveability of the region for all citizens and an increase in the desirability of the area for visitors. See also the findings in Exhibit 1 incorporated herein. For these reasons, therefore, the Metro Council finds that its action is in compliance with Goal 8.

Goal 9. Economy of the State.

The Metro East Station contributes to the diversification and improvement of the state's economy by enhancing the ability to manage the region's solid waste effectively and economically. As part of the SWMP, the Metro East Station promotes such economic diversification and improvement for the reasons set forth in the findings regarding Goal 9 on the attached Exhibit 1. Therefore, the Metro Council finds that its action is in compliance, with State Goal 9.

Goal 10. Housing.

The Metro East Station, as part of the comprehensive SWMP, furthers the goal of providing housing needs for citizens of the state. This is accomplished through the efficient handling of waste and by the recycling and recovery programs to

be carried out at the Metro East Station. See also the findings regarding Goal 10 in Exhibit 1. For these reasons, the Metro Council finds that its action is consistent with Goal 10.

Goal 11. Public Facilities and Services.

The Metro East Station is one component in the SWMP's development of a timely, orderly, and efficient arrangement of public facilities and services to address the region's solid waste needs. The Metro East Station is a vital component of the Plan's meeting the solid waste disposal needs of the region served by Metro. Accordingly, the Metro Council finds that the Metro East Station complies with Goal 11.

Goal 12. Transportation.

As part of a coordinated system of solid waste facilities, the Metro East Station promotes the ends of a safe, convenient, and economic transportation system set forth in Goal 12. The regional system of solid waste facilities under the SWMP results in a more cost-effective system of transport of solid waste to strategically located facilities, than would the development of local sites coordinated and planned by different regions.

The Traffic Impact Assessment required by the Metro East Station RFP, is a requirement of the Mitigation Agreement. A final determination regarding the adequacy of Trans Industries'

Traffic Impact Assessment will be made when Metro adopts a site specific mitigation Plan which, pursuant to the terms of the Mitigation Agreement, will be submitted to the City of Portland for approval.

For the foregoing reasons, therefore, the Metro Council finds that the process for evaluating transportation impacts is consistent with Goal 12.

Goal 13. Energy Conservation.

As part of a coordinated solid waste system, the Metro East Station achieves the goal of energy conservation by providing a more efficient, and thus, less energy-consuming system for solid waste management. The Metro East Station provides one central transfer station for the east waste shed (see Chapter 5 SWMP) and thus provides a more energy efficient system of collection and preparation of waste materials for ultimate transfer to the landfill site.

Additionally, a waste recovery and recycling system is a major component of the Metro East Station, which also furthers the goal of energy conservation. The SWMP, RFP, and the evaluation process established to evaluate the competing proposals, placed waste recovery and recycling efforts as prime considerations in the decision making process. The Metro East Station, as constructed and operated, will thus further the

energy conservation goal of Goal 13. Accordingly, the Metro Council finds that the Metro East Station is consistent with Goal 13.

Goal 14. Urbanization.

The Metro East Station, as part of the comprehensive SWMP, provides a necessary link in the solid waste disposal system, which provides for an orderly and efficient transition from rural to urban use. The siting, construction, and operation of the Metro East Station does not directly impact the establishment and change of urban growth boundaries established to identify and separate urban from rural areas. The Metro Council therefore finds that it need not make findings regarding its Urban Growth Boundary adopted pursuant to Oregon Laws 1979, Chapter 402, Sec.1, and that its action is in compliance with Goal 14.

Goals 15 through 19.

The Metro East Station does not impact the areas addressed by these Goals. Accordingly, the Metro Council finds that Goals 15 through 19 are inapplicable and findings need not be made with regard thereto.

IV. CRAG GOALS AND OBJECTIVES

In addition to the statewide Goals discussed above, the Metro Council also makes the following findings regarding the Columbia Region Association of Governments ("CRAG") Goals and Objectives, which were adopted in 1976 by CRAG, and which remain in effect by virtue of Oregon Laws 1979, Chapter 665, Sec. 25.

Goal I. Land Development.

1. Diversity and improvement of the economy - see Goal 9 findings above.
2. Housing - see Goal 10 findings above.
3. Recreation - see Goal 8 findings above.
4. Transportation - see Goal 12 findings above.
5. Development of urban areas and
6. Development of non-urban areas - see Goal 2 findings above.
7. Energy conservation - see Goal 13 findings above.

Goal II. Land Preservation or Conservation.

1. Agricultural land - see Goal 3 findings above.
2. Forest land - see Goal 4 findings above.
3. Preserve mineral and aggregate resources and

4. Preserve open space, natural, fragile, historic, and scenic areas - see Goal 5 findings above.

5. Air, water, and land quality - see Goal 6 findings above.

6. Natural disasters and hazards - see Goal 7 findings above.

Goal III. Integration of Land Development, Preservation and Conservation

1. Citizen involvement - see Goal 1 findings above.

2. Land use planning - see Goal 2 findings above.

3. Objectives - see Goal findings above.

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STAFF REPORT

CONSIDERATION OF RESOLUTION NO. 89-1169 FOR THE PURPOSE OF AUTHORIZING AWARD OF CONTRACTS TO TRANS INDUSTRIES FOR CONSTRUCTION AND OPERATION OF THE METRO EAST STATION

Date: November 9, 1989 Presented by: Bob Martin

FACTUAL BACKGROUND AND ANALYSIS

In the Summer of 1988, the Metro Council identified the need to locate a transfer station in the Metro East Wasteshed to replace service provided by the St. Johns Landfill (scheduled for closure in February, 1991). The Council directed staff to evaluate both a publicly-owned and privately-owned Metro East Station, and to evaluate which option was in Metro's best interests. In the Fall of 1988, the Council authorized issuance of an RFP to acquire the services of a consultant to examine the feasibility of a publicly-sited/owned Metro East Station, which included the ranking of potential sites and preliminary cost estimates for construction and operation. A contract for these services was awarded to R.W. Beck in April, 1989 and was completed in June, 1989.

Also in April, 1989, Council approved release of an RFP for a privately-owned Metro East Station, which included a mitigation agreement with the City of Portland. The RFP required that proposers respond to two alternative ownership arrangements: Alternate #1 in which the proposer retained ownership of the facility after contract expiration; and Alternate #2 in which Metro obtained ownership of the facility. An addendum to the RFP was issued in May, 1989, which changed the proposal requirements in two important respects. First, proposers were required to submit a third alternative ownership arrangement referred to as a "turnkey" or Alternate #3. Under the turnkey arrangement, Metro finances construction of the facility and retains ownership, while the proposer is responsible for the design, construction and the first five years of operation. Secondly, the addendum adopted a detailed evaluation criteria to be used to rank the proposals received.

On June 13, 1989, four proposals were received. The firms submitting the proposals were Norcal, Trans Industries, Rose City Resource Recovery and a joint proposal from Riedel/Wastech. The proposals were evaluated by staff in conjunction with an evaluation committee which included representatives from the City of Portland, Multnomah County, and the Port of Portland. In addition, staff from the City of Portland reviewed the proposals to determine compliance with the mitigation agreement between Metro and the City of Portland.

The proposal submitted by Trans Industries was ranked significantly higher in all three alternatives than the other proposals received. The highest ranking was for the Trans Industries turnkey alternative. On September 14, 1989, the Council adopted Resolution No. 89-1131 for the purpose of authorizing negotiations with Trans Industries to obtain a Metro owned facility to be operated by Trans Industries under a five year operations contract.

On September 18, 1989 negotiations were initiated between Trans Industries and Metro. A series of draft agreements have now been reached through the negotiations consisting of a Site Acquisition Agreement, a Construction Agreement and an Operations Agreement - a summary of which will follow.

Concurrent with the negotiations, Metro entered into a contract with Dames and Moore to assess the Environmental Risk and Liability of developing the Trans Industries proposed site (the American Steel property) as a transfer station. Dames and Moore based their conclusions upon a review of nine existing reports pertaining to the American Steel site and adjacent property. The basic conclusions of their report are:

1. There is no evidence that past activities on the site have caused any contamination of the site, except for possible limited contamination from underground fuel tanks which are to be removed by Trans Industries.

2. The site contamination from off-site sources has low probability of necessitating remediation.

3. USEPA and DEQ will ensure cleanup on adjacent property doesn't impair air quality on the American Steel property.

4. Additional work is recommended during project development to complete identification of soils and groundwater contamination on the site. The results of this additional work would help ensure that cleanup of the Gould property also cleans up battery casings on adjacent areas of the American Steel property if they are found there. Estimated costs for the proposed additional work at the American Steel site are $20,000.

Summary of Negotiations

Real Estate Purchase and Sale Agreement (Site Acquisition Agreement)

This agreement covers the purchase of the property to be developed as the transfer station. The property is presently owned by American Industries. Trans Industries has an agreement with American Industries which permits them to purchase the property on or before June 20, 1990.

Overall objectives: Metro will buy the property only after DEQ issues a final permit to operate the facility. The agreement allows for demolition and some construction prior to Metro purchasing the property. This will facilitate Trans Industries ability to meet the February 1991 operations date.

Purchase price: $2.3 million for property, and existing improvements and equipment

Date of Closure: Closing will occur no later than 35 days after the issuance of the final DEQ permit.

Extension of Closure: Metro agrees to reimburse Trans Industries for the option of extending the closing date from December 1989 up to June 1990. The cost will be $23,667 per month for each month of the extension.

Trans Industries' environmental indemnification of Metro: Metro has reduced its risks of environmental liability in four ways:

1) Metro will not take ownership of the property until after DEQ issues their final permit. If the permit is not issued by June 15, 1990, either party may terminate the Purchase Agreement. This ensures Metro will not own a site which is incapable of meeting the environmental requirements for a transfer site.

2) Remediation of any environmental problems discovered during construction both before and after purchase will be the sole responsibility of Trans Industries.

3) During the period of the Operations Agreement, Trans Industries will indemnify Metro for environmental liability resulting from federal or state agency claims related to the release or threatened release of hazardous waste from the property or into the groundwater.

4) After the expiration or termination of the Operations Agreement, Trans Industries is obligated to defend Metro through use of their in-house technical and legal personnel and spend up to $100,000 on outside costs.

Termination: Both Metro and Trans Industries may terminate the Agreement if DEQ does not issue its final permit by June 15, 1990. In addition, if prior to closing the DEQ or other government agency orders an area wide environmental clean-up, either party may terminate the Agreement.

Construction Agreement

This is the agreement under which Trans Industries will build the facility.

Cost: The facility capital cost of $18,269,825 (which includes $2.3 million for the site) is the same as that originally proposed by Trans Industries.

Completion deadline and extensions: The facility must be operational to the extent it can receive and transfer waste by January 1991. The entire facility is required to be completed and tested 13 months after Metro gives Trans Industries a Preliminary Notice to Proceed. The Preliminary Notice is contingent upon performance bonds, insurance, and city permits and is anticipated to be given in December 1989.

The January 1991 limited operation deadline cannot be extended except for Force Majeure or Metro fault. The 13 month construction period can be extended for Force Majeure, change orders, and Metro suspensions. However, once the closing occurs under the Site Acquisition Agreement, Trans Industries is bound to the deadline, which cannot be extended for any reason related to the environmental condition of the property.

Termination: Trans Industries may only terminate for specific reasons as listed in the Agreement. If the reason is not Metro's fault, Trans Industries receives payments due under the agreement plus termination costs. If the reason is Metro's fault, Trans Industries receives the following liquidated damages:

$350,000 if before closing on the property;
$500,000 if construction is less than 75 percent;
$350,000 if construction is more than 75 percent.

Metro may terminate for either specific reasons or no cause. If termination is for cause, and Metro has to complete the work, Trans Industries either receives the balance owed for work performed, or owes Metro for any cost overruns. If Metro terminates Trans Industries without cause, Trans Industries gets payments owed, termination costs, and liquidated damages as stated above.

Operations Agreement

This agreement begins on the date Metro accepts the facility and ends five years later, except that Metro may terminate after only three years. The exception ensures compliance with IRS rules related to tax-exempt financing.

Services: Trans Industries will process the waste by recovering usable materials and compacting the residual for transportation to the Gilliam County Landfill. Trans Industries will be operating processing lines designed to recover 25% of the waste received. Trans Industries will credit Metro with 20 percent of the revenues from sales of Recovered Materials.

Service Fees: Trans Industries will stand ready to process 35,000 tons of waste per month for which Metro will pay an annually adjusted monthly fee of $285,250. For monthly tonnages over 35,000, Metro will pay fees based on the following annually adjusted schedule:

Monthly Tonnage	Unit Price
35,000	$ 8.15
38,500	$ 7.49
43,500	$ 6.29
47,000+	$ 5.53

(Prices for tonnages between categories are based on a sliding scale.)

For every ton of material Trans Industries recovers, Metro will pay Trans Industries the unit costs Metro would otherwise have paid to transport and dispose of the material at the Gilliam County Landfill. These avoided costs of disposal will be annually adjusted and will amount to $34.88/ton in 1991. In addition, Metro will pay Trans Industries a $3.25 bonus per ton for maximizing compactor loads (This fee is fixed and not subject to annual adjustment.)

Metro termination: If Metro terminates for public convenience or Metro fault after three years, Trans Industries receives payments due and termination costs. If Metro terminates without cause before three years, Trans Industries receives payments due, termination costs, lost profits, and other damages under law sustained by Trans Industries.

Traffic Routing Issues

Concerns have been raised by citizens in North Portland that all the traffic from the Trans Industries site would, on leaving the transfer station, be directed Northbound onto St. Helens Rd. via Balboa Ave. (because it is a right turn only) requiring all traffic to return across the St. Johns Bridge.

In fact, all traffic, including transfer trucks, will be directed by signage to use the Front Ave./Kittridge route when leaving the transfer station. While some vehicles may choose to use the Balboa/St. Helens route in order to return to North Portland via the St. Johns bridge, this route will not be signed as a recommended route.

BUDGET IMPACT

The Fiscal Year 1989-90 Budget projected proceeds from Revenue Bonds of $15.7 million to fund the Metro East Station. The Revenue Bond requirements are now estimated at $22.0 million.

Resolution 89-1131A which authorized negotiations with Trans Industries also authorized payments to Trans Industries of $350,000 for preliminary design work.

Costs for both the $350,000 in preliminary design work and the $2.3 million required for purchase of the site will be paid for by loans from cash on hand in the Solid Waste Operating Fund. Those loans will be repaid within FY 1989-90 from proceeds of the Revenue Bond sale.

Additional expenditures for design, construction, and equipment during FY 1989-90 will be paid out on a formal draw down schedule from proceeds of the Revenue Bonds sale.

Metro has been advised that the first interest payment on the Revenue Bonds will not be due until July 15, 1989, and the first principle payment not due until January 1, 1991.

EXECUTIVE OFFICER'S RECOMMENDATION

The Executive Officer recommends adoption of Resolution No. 89-1169, authorizing award of contracts to Trans Industries for construction and operation of the Metro East Station.

BEFORE THE COUNCIL OF THE

METROPOLITAN SERVICE DISTRICT

FOR THE PURPOSE OF AUTHORIZING AWARD OF CONTRACTS TO TRANS INDUSTRIES FOR CONSTRUCTION AND OPERATION OF THE METRO EAST STATION	))))	RESOLUTION NO. 89-1169 Introduced by Rena Cusma, Executive Officer

WHEREAS, The Metropolitan Service District has been engaged in a methodical process to procure landfill capacity, transportation, transfer station capacity and alternative technology as elements of Metro's implementation of the Regional Solid Waste Management Plan; and

WHEREAS, Metro has entered into or authorized contracts for landfill capacity, transportation of waste, and alternative technology for composting of solid waste; and

WHEREAS, Metro has taken steps to close the St. Johns Landfill by February 1991 as required by the lease agreement with the City of Portland; and

WHEREAS, A remaining major element of Metro's solid waste system is for the Metro East Station to be in service by the time established for closure of the St. Johns Landfill; and

WHEREAS, Resolution No. 88-1009 established a procurement process for the Metro East Station; and

WHEREAS, Resolution No. 89-1061B approved the Request for Proposals to solicit private proposals to provide a site and design, construct, own and operate the Metro East Station; and

WHEREAS, Resolution No. 89-1091 approved the evaluation methodology for proposals for the Metro East Station and approved solicitation of a turnkey proposal; and

WHEREAS, One of the requirements in the Request For Proposals was that proposers submit a Facility Site Plan, a narrative description of how the proposed project would comply with the conditions set out in the Mitigation Agreement (hereinafter referred to as "Mitigation Agreement") between the City of Portland and Metro, and a Traffic Impact Assessment; and

WHEREAS, Proposals for the Metro East Station were received from four qualified proposers on the June 13, 1989, deadline for submission of proposals; and

WHEREAS, Analysis of the Metro East Station proposals involved an intensive process involving Metro staff and an Evaluation Committee consisting of representatives from the City of Portland, the Port of Portland, Multnomah County and Metro; and

WHEREAS, The Evaluation Committee, following the evaluation methodology approved by the Council, determined that the Trans Industries' turnkey proposal received the highest score; and

WHEREAS, Resolution No. 89-1131A authorized the Executive Officer to enter into contract negotiations with Trans Industries for the purpose of procuring the Metro East Station as a Metro-owned facility to be operated by Trans Industries under a five-year operations contract with Metro; and

WHEREAS, During the evaluation process, it was determined that the site proposed by Trans Industries is zoned HI (Heavy Industrial) and would not require a variance for construction or operation of a transfer and recycling center; and

WHEREAS, During the evaluation process, it also was determined that the Trans Industries' proposal provided an acceptable plan for complying with the Mitigation Agreement and that it was the only proposal that was complete in terms of aesthetics, hazardous waste handling, safety measures, identified environmental concern areas, litter and substantially complete in other areas including traffic, odor and noise mitigation; and

WHEREAS, Resolution No. 89-1131 authorized the Executive Officer to enter into contract negotiations with Trans Industries for the purpose of procuring the Metro East Station as a Metro-owned facility to be operated by Trans Industries under a five-year operations contract with Metro; and

WHEREAS, The Executive Officer has negotiated contracts with Trans Industries for the construction, the operation and acquisition of the Metro East Station; now, therefore,

BE IT RESOLVED,

That the Executive Officer is authorized to execute separate contracts with Trans Industries as follows:

a. "1989 Metro Transfer Station Construction Agreement"

b. "Real Estate Purchase and Sale Agreement"

c. "1989 Metro Transfer Station Operation Agreement" for the Metro East Station.

ADOPTED by the Council of the Metropolitan Service District this _____ day of November 1989.

Not Adopted
Mike Ragsdale, Presiding Officer

MML/gl

METRO

2000 S.W. First Avenue
Portland, OR 97201-5398
503/221-1646

Memorandum

DATE: November 21, 1989

TO: Metro Council

FROM: Councilor David Knowles DK

RE: AMENDMENT TO RESOLUTION NO. 89-1169A

The Association of Oregon Recyclers (AOR) testified before the Solid Waste Committee on November 14, 1989, that "the most critical flaw in the proposed [Metro East Station] contract is that the contractor would be paid a Materials Recovery Incentive on source separated recyclables."

It is my position that a materials recovery incentive should only be paid to the contractor for recyclable materials removed from mixed solid waste. Therefore, I recommend the following amendment to the BE IT RESOLVED section of Resolution No. 89-1169A:

2. That prior to executing the Operations Agreement, the Executive Officer and Trans Industries shall renegotiate the terms of the Agreement to remove the provision that the contractor will be paid a Materials Recovery Incentive on source separated recyclables. The Materials Recovery Incentive shall be paid only on recyclable materials that the contractor extracts from mixed solid waste.

DK:RB:pa

#1C:\DK1121.MEM

SOLID WASTE COMMITTEE REPORT

RESOLUTION NO. 89-1169A FOR THE PURPOSE OF AUTHORIZING AWARD OF CONTRACTS TO TRANS INDUSTRIES FOR CONSTRUCTION AND OPERATION OF THE METRO EAST STATION

Date: November 15, 1989 Presented by: Councilor Gary Hansen

COMMITTEE RECOMMENDATION: The Solid Waste Committee voted 3 to 1 to recommend Council adoption of Resolution No. 89-1169A as amended. Voting aye: Councilors Hansen, DeJardin and Ragsdale. voting nay: Councilor Wyers. Absent: Councilor Buchanan. This action was taken on November 14, 1989.

COMMITTEE DISCUSSION/ISSUES: The Solid Waste Director explained the major provisions of the three separate agreements with Trans Industries for the construction and operation of the Metro East Station: 1) Real Estate Purchase/Sale Agreement; 2) Construction Agreement; 3) Operation Agreement.

Real Estate Purchase/Sale Agreement

This agreement includes the following:

1. Metro will buy the property only after DEQ issues a final permit to operate the facility.

2. The purchase price is $2.3 million for property, existing improvements and equipment.

3. Environmental indemnification of Metro:

   - Metro will not take ownership of the property until after DEQ issues their final permit.

   - Remediation of any environmental problems discovered during construction both before and after purchase will be the sole responsibility of Trans Industries.

   - During the period of the Operations Agreement, Trans Industries will indemnify Metro for environmental liability resulting from federal or state agency claims related to the release or threatened release of hazardous waste from the property or into the groundwater.

   - After the expiration or termination of the Operations Agreement, Trans Industries is obligated to defend Metro through use of their in-house technical and legal personnel and spend up to $100,000 on outside costs.

Construction Agreement

- The facility capital cost is $18,269,825 (includes $2.3 million for the site). This is the same as that originally proposed by Trans Industries.

- The facility must be operational to the extent it can receive and transfer waste by January 1991.

Operations Agreement

- Trans Industries will recover 25% of the waste received and will credit Metro with 20% of the revenues from sales of recovered materials.

- Trans Industries will stand ready to process 35,000 tons of waste per month for which Metro will pay an annually adjusted monthly fee of $285,250. For monthly tonnages over $35,000, Metro will pay fees based on an annually adjusted schedule.

- For every ton of material Trans Industries receives, Metro will pay Trans Industries the unit costs Metro would otherwise have paid to transport and dispose of the material at the Gilliam County Landfill.

Traffic Routing

All traffic, including transfer trucks, will be directed by signage to use the Front Avenue/Kittridge route when leaving the transfer station.

Public Hearing

Five individuals testified at the public hearing held by the Solid Waste Committee on November 14, 1989. The major issues raised by each are as follows:

1. Michael Sievers, project manager for Rose City Recycling, expressed concerns about environmental risks that Metro may face with the Trans Industries site. He also is concerned with the put-or-pay provision in the proposed contract.

2. Estle Harlan of the Tri-County Council stated that the Tri-County Council is generally satisfied with the proposed facility/site. The Council expressed concern that we will pay for 35,000 tons of waste per month even though there may be

less than 35,000 tons. However, Metro's flow control ability may solve this. If train crossing problems can be solved, then traffic flow should be satisfactory. She was also concerned that delays in the project would be costly.

3. Judy Roumph of AOR submitted a letter to the Committee and made the following points: The most critical flaw in the contract is that the contractor would be paid a materials recovery incentive on source separated recyclables. The materials recovery incentive should be paid only for recyclable materials the contractor extracts from mixed solid waste.

   The contract contradicts itself in describing what the recycling center is. AOR recommends that Section 5.2.3 (page 21) be replaced with a clause that prohibits the company from promoting or engaging in any activity that discourages the source separation of recyclable materials or that co-mingles source separated materials with acceptable waste.

4. T.R. Factor referred the Committee to a letter she received from the PUC, dated November 9, 1989 regarding Jack Gray transport routing and the transfer station. She quoted from the PUC letter: "Applying the NW 61st driving time to the planned daily driving schedule brings our mutual concern for consistent compliance into sharp focus. It appears access to the NW 61st facility on both of the westbound segments of a single driver shift will strain the 10-hour driving limitation. This concern is particularly true if both trips require use of an alternate (other than I-405) route."

5. Lauren Blank, secretary for the Friends of the Cathedral Bridge expressed concerns about truck routing and the condition of the St. Johns Bridge. She suggested that Metro do something to mitigate these concerns.

The majority of the Committee discussion focused on environmental concerns regarding the Trans Industries site and the environmental indemnification of Metro. Another major issue was the routing of trucks from the proposed facility.

Indemnification

The Committee amended the Real Estate Purchase/Sale Agreement as follows: "Seller agrees to defend [only] Purchaser in claims, suits or proceedings brought after the end of the term by any agency of the United States or the State of Oregon or any person

under the Comprehensive Environmental, Response Compensation, Liability Act..."

Environmental Concerns

The Committee questioned if Metro could void acquisition of the property if Metro finds an "environmental surprise" at the property. Metro's General Counsel stated that Metro could void acquisition.

The Committee asked what we will know and not know about the site at closing. A representative of Dames and Moore indicated that Metro will have the additional information that was recommended in the Dames and Moore Report.

Regarding underground storage tanks on the site, the Committee moved to add to the contract that purchase of the property was contingent on the removal of the underground storage tanks.

The Committee wants to make certain that the easement on the property is perpetual for use as an ingress or egress.

Concerns were expressed by Council members regarding all the hazardous materials listed in the Dames and Moore Report that are on neighboring sites. They stated that the Dames and Moore Report is full of damaging materials. They stated that the risks to Metro are great. More information regarding environmental hazards is needed.

Truck Routes

Exhibit B was added to the Resolution because the citizens of North Portland are concerned about truck traffic on St. Helens Road and the St. Johns Bridge. The Resolution now provides that all traffic from the Trans Industries site, including transfer trucks, will be directed by signage to use the Front Avenue/Kittridge route when leaving the station. Staff indicated that it is estimated that 85% of the trucks will be coming from south of the station.

The Committee amended item No. 2 of Exhibit B of the Resolution as follows: "Metro finds that the use of the St. Johns Bridge is not an acceptable [the preferred] route for use by solid waste transfer trucks...."

Railroad Crossings

Concern was expressed regarding railroad crossings. It was pointed out that the PUC may require safety devices and that it could take from 30 days to 2-3 years to get a PUC order. They normally take six to nine months to process.

Rich Owings, a representative of the contractor, stated that Trans Industries will install safety devices if required by the PUC.

RB:aeb
A:\RB.125

AMENDMENT TO RESOLUTION NO. 89-1169A PROPOSED BY COUNCILOR JUDY WYERS

Add to page 4 a new paragraph 4:

"Prior to executing the Operation Agreement, the Executive Officer and Trans Industries shall renegotiate the provisions regarding payments to limit the payment of the Materials Recovery Incentive to 90 percent of Metro's avoided cost for disposal for all recovered materials that are burned or otherwise incinerated except that no Materials Recovery Incentive shall be paid for materials sent to a facility whose primary fuel is solid waste or refuse-derived fuel.

JRAMEN.RA

DATE: November 21, 1989

TO: Metro Council

FROM: Judy Skinner, Citizen

RE: RESOLUTION NO. 89-1169A

Regarding Section 8.2 of Materials Recovery Incentive, it seems unfair that Metro will pay $35 a ton to Trans Industries for materials that are already source separated when the same incentive is not paid to any other persons or companies which are collecting source separated recyclables.

Perhaps if the same incentive had been given to the Lions Club, we would have phone book recycling this year. There are outlets for U.S. West phone books, but no adequate outlets for G.T.E phone book users.

METRO

2000 S.W. First Avenue
Portland, OR 97201-5398
503/221-1646

Memorandum

DATE: June 27,1989

TO: Interested Parties

FROM: Chuck Geyer, Project Manager CG

RE: Metro East Station Proposal Materials

Metro has received and accepted the enclosed Metro East Station proposal materials which were submitted after 3 p.m. on June 13, 1989. The set of materials labelled "ADDENDUM - Instructions" will be incorporated into the Riedel/Wastech proposal and the materials labelled "TRAFFIC IMPACT ASSESSMENT FOR METRO'S SOLID WASTE TREATMENT FACILITY" will be incorporated into the Norcal proposal.

In addition, Wastech's Form E of the Riedel/Wastech proposal was received after 3 p.m. on June 13, 1989, and incorporated into the proposals copied and distributed to interested parties. Metro has accepted this submission as part of the proposal.

CG:jc
cc: Monica Little

metroeas\prop0627.mem

ADDENDUM - Instructions
Correct Pages Attached

Volume 1

1) Add the Equal Employment Opportunity and Non-Discrimination Policy Statement behind the letters ahead of Section I.

Volume 2

1) Insert Form R, behind the general table of contents.

2) Insert Wastech Form I-1 and I-2 at the end of Section V.

3) Insert the following pages in Appendix 1, Section B, Transportation Impact Analysis Riedel Reclamation and Transfer Center (RTC) & Table of Contents. Pages 7, 43, 44, 45, 46, 47, and 48. 42

4) Insert the following pages in Appendix 1, Section C. Transportation Impact Analysis, Killingsworth Fast Disposal (KFD). Pages 5, 11, 13, 27, 28, 29, 30, and 31.

Volume 3

1) Add the two credit affirmation letters behind Forms A.

   a) Credit Suisse
   b) Donald, Lufkin and Jenrette

Volume 4

1) Add Exhibit E, Wastech History of Fiber Based Fuel and Recycling Efforts.

"IMAGINEERING A CLEANER WORLD"

RIEDEL WASTE
DISPOSAL SYSTEMS, INC.

Corporate:
P.O. Box 5007
Portland, Oregon 97208-5007
(503) 286-4656
FAX (503) 283-2602

June 13, 1989 3:10pm

EQUAL EMPLOYMENT OPPORTUNITY AND NON-DISCRIMINATION POLICY STATEMENT

It is and will continue to be the policy of Riedel Waste Disposal Systems, Inc. to provide equal employment opportunities to all qualified persons regardless of race, color, age, sex, religion, creed, national origin, marital status, physical or mental handicaps, and to comply with the Vietnam-Era Veteran's Readjustment Assistance Act of 1984.

The above will be applied, but not limited to, interviewing, hiring, placing, transfer, upgrading, demoting, advertising for employment, solicitation for employment, recruitment for employment, treatment prior to employment, treatment during employment, treatment after employment, wages, fringes, all forms of compensation, selection for apprenticeship, selection for training, reduction in force, and/or termination.

This company welcomes the referral of any qualified minority, female or handicapped applicant for employment.

It is and will continue to be the policy of Riedel Waste Disposal Systems, Inc. to cooperate to the fullest extent with all applicable measures of the latest developed civil rights acts and Executive Order Number 11246, as amended.

W. Alex Cross
President

Walter Swanson
Senior Equal Employment Opportunity Officer

FORM R-2

CHECKLIST

Forms to be Submitted with the Proposer's Private Ownership Proposal

Form	Indicate That Form has Been Submitted With A Check	Title
A	X	Proper Information
B	X	Technical Description of Site/Facility/Equipment (4 pages)
E	X	Service Fee Components - Private Ownership
F	X	Performance Guarantees
G	X	Materials Recovery Rate
H	X	Performance Assurances
I-1	X	Summary of Insurance to be Carried by Contractor during Construction
I-2	X	Summary of Insurance to be Carried by Contractor during Operation
J	X	Disadvantaged Business Enterprise
K	X	Woman-owned Business Enterpriser
Q	X	Confidential Information Section

FORM I-1

SUMMARY OF INSURANCE TO BE CARRIED BY CONTRACTOR DURING CONSTRUCTION TO FACILITY ACCEPTANCE

Coverage

1. Worker's Compensation	Statutory
2. Employer's Liability	$500,000
3. Comprehensive General Liability and property damage	$1,000,000 per occurrence/aggregate combined single limit
4. Comprehensive Automotive Liability	$1.0 million
5. Excess Umbrella Liability	$5 million
6. Professional Liability	$5 million per occurrence
7. "All Risk" Builders Risk including Transit with extended coverage for fire, earthquake, flood, and testing	Full replacement value in an amount equal to the replacement of the project
8. Owners and Contractors Protective Liability	$1.0 million
9. Other (Identify) _____	
_____	

Total Premium $ 142,000.00
(Show here and on Form C, Phase II, line G)

FORM I-2

SUMMARY OF INSURANCE TO BE CARRIED BY CONTRACTOR DURING FACILITY OPERATION

Coverage

1. Worker's Compensation	Statutory
2. Employer's Liability	$500,000
3. Comprehensive General Liability and property damage	$1,000,000 per occurrence/ aggregate combined single limit
4. Comprehensive Automotive Liability	$1.0 million
5. Excess Umbrella Liability	$5 million
6. All Risk on Facility	Full replacement value
7. Boiler and Machinery	Full value
8. Environmental Liability	Subject to negotiation
9. Other (Identify)	
_____	
_____	

Total Premium $ 352,500.00
(Show here and on Form D, line I.)

TABLE OF CONTENTS

feet of storage for commercial haulers should be provided between the gatehouse/scale area and Columbia Boulevard. The proposed design provides for separation of the commercial hauler and transfer truck operations and excellent on-site stacking lengths for these different users.

The provision of two weigh scales on the inbound lanes will ensure that the 20-vehicle on-site queuing capacity at the gatehouse/weigh scale will not be exceeded. The provision of 14 stalls in the transfer facility and 4 stalls at the wash rack facility will be adequate to ensure that queueing does not exceed the on-site queuing capacity at the respective facilities.

INTERNAL SITE CIRCULATION DESIGN REVIEW

ON-SITE QUEUING REQUIREMENTS

Since Columbia Boulevard is a major component in the City of Portland transportation system, it is imperative that access to abutting development parcels does not influence or restrict the movement of through traffic. With this in mind, the preliminary design of the internal site circulation system has focused on eliminating the impact of on-site queuing on the off-site intersection operations. Therefore for the purposes of the on-site queuing analysis, the site-generated traffic estimates are based on the projected "Highest Day of the Year". The highest day of the year was determined through the same procedure as was described earlier for the tenth highest day.

The analysis used a standard procedure to evaluate multiple channel queuing characteristics for vehicles waiting at the gatehouse/weigh scale, vehicles waiting to enter the transfer facility, and vehicles waiting to enter the wash rack facility. The analysis was based on the following assumptions:

- The gatehouse/weigh scale facility has the ability to make use of up to three scales at an average service rate of one (1) vehicle per minute per scale.

- The RTC Facility has 14 stalls and an average service rate of 6.0 trucks/hour-stall.

- The wash rack facility has 4 stalls and an average service rate of 12.0 trucks/hour-stall.

- There should be at least a 99 percent probability that the available queue length will not be exceeded during the highest demand hour of the highest demand day.

- Average vehicle length is 40 feet

- The distance between the scales and Columbia Boulevard is adequate to store up to 20 trucks (10 per lane).

- The distance between the transfer facility entrance and the scales is adequate to store up to 16 trucks.

- There is adequate stacking distance at the wash rack facility to store up to 15 trucks.

- 50 percent of the commercial refuse trucks would use the wash rack facility during the peak hour for site-generated traffic. (Based on conversations with officials at CTRC, this is a reasonable worst-case assumption).

Table 9 displays the results of the queuing analysis at each of the key locations. As shown in the table, the provision of 2 weigh scales at the gatehouse, 14 stalls at the transfer facility, and 4 stalls at the wash rack facility will be adequate to ensure that queueing does not exceed the capacity at the respective facilities.

To accommodate the expected traffic volumes with the transfer and recycling operation, three inbound lanes are provided to the site. Two inbound lanes will be provided for the commercial refuse haulers in addition to a separate third lane that will allow employees and transfer trucks to enter the site without stopping at the gatehouse. Directional signs and pavement markings should be provided to guide the commercial haulers and the transfer trucks to their appropriate lanes for waste disposal and recycling activities. Experience at the CTRC and other similar facilities throughout the United States has shown that the separation of the major user vehicle types will result in smooth on-site operations and decrease vehicle conflicts.

TABLE 9

ON-SITE QUEUING ANALYSIS RESULTS

Location	Available Storage Capacity (Veh.)	Required Storage Capacity (Veh.)	Available Capacity Adequate ?
Scalehouse	20	5	Yes
Transfer Facility	16	8	Yes
Wash Rack	15	7	Yes

STREET DESIGN CRITERIA

The preliminary design of the on-site roadways meets the requirements of the private industrial street standards outlined in the City of Portland Development Codes (Reference 9). The curvature and width of the internal roads have been designed to accommodate the appropriate user vehicle turning radii. The structural pavement design for the internal roads will be based upon the vehicle loading characteristics and results of soil investigations.

EMPLOYEE AND VISITOR USAGE

Employee and visitor usage is expected to be a very minor portion of the site generated traffic at the RTC facility. Employee trip generation was discussed in a previous section. Visitor groups consisting of school children and municipal officials have been planned for at the RTC facility. Visitor tours are random occurrences and are not expected to significantly affect traffic operations on the adjacent streets. Forty (40) parking spaces will be provided adjacent to the administrative offices at the west side of the main building.

DESIGNATED TRUCK ROUTES

Metro has contractual control over the designated routes that the transfer truck drivers must follow between the RTC site and the landfill. The transfer truck route will likely be restricted to Columbia Boulevard and other major traffic and truck routes in the area. The routing of the commercial haulers will be determined by the individual hauling companies.

CONCLUSIONS AND RECOMMENDATIONS

Based on the traffic impact analysis described in this report, it is concluded that the proposed transfer & recycling facility can be constructed without significant traffic impacts to the adjacent street system. The specific findings of the analysis are as follows:

- Site generated traffic estimates are based upon the most recent refuse projections (Year 2005) for Multnomah County and historic vehicle operating characteristics at other Portland metropolitan refuse facilities. Analysis at the site access drive is based upon the tenth highest weekday site generated traffic volumes.

- The future traffic patterns with the proposed RTC facility comply with the goals and objectives of the City of Portland Arterial Streets Classification Policy. The proposed design and recommended traffic control at the proposed RTC access driveway will ensure that the use of the facility meets the City's plan for Columbia Boulevard to be a Major Traffic and Truck Street.

- The proposed access drive on Columbia Boulevard, with the recommended design, will provide acceptable levels of service and safe operations during the peak hour periods. The access drive design recommendations include the following:

  - The access driveway should consist of a four lane cross section, including separate left and right turn lanes for vehicles exiting the proposed facility and two lanes for entering vehicles

  - The access driveway should be a curb return style driveway instead of the City of Portland standard driveway cut design

- Provide a westbound right turn deceleration lane east of the proposed site driveway to separate these turning vehicles from the through Columbia Boulevard traffic flow

- Provide an acceleration taper on Columbia Boulevard for right turning vehicles exiting the site.

o Egress at the proposed access driveway should be controlled with a stop sign. There are adequate gaps in the existing traffic flows on Columbia Boulevard to allow safe and efficient movements out of the proposed site with stop sign control.

o The minimum traffic volume peak hour warrant for installation of a traffic signal is expected to be met at this location under year 2005 conditions. However, it is likely that the intersection will continue to operate unsignalized within acceptable service levels for at least several years. Therefore, it is recommended that a signal not be installed until such a time that it is warranted, and after other less restrictive mitigation measures have been fully considered.

o The design of the Riedel Reclamation and Transfer Center's internal circulation patterns will minimize impacts to the operations at the site access drive. At least 400 feet of storage for commercial haulers should be provided between the gatehouse/scale area and Columbia Boulevard. The proposed design provides for separation of the commercial hauler and transfer truck operations and excellent on-site stacking lengths for these different users.

o The provision of two weigh scales on the inbound lanes will ensure that the 20-vehicle on-site queuing capacity at the gatehouse/weigh scale will not be exceeded.

o The provision of 14 stalls in the transfer facility and 4 stalls at the wash rack facility will be adequate to ensure that queueing does not exceed the on-site queuing capacity at the respective facilities.

REFERENCES

1. Metropolitan Service District. *Metro East Station Request for Proposals.* April 1989

2. City of Portland. *Arterial Streets Classification Policy* (October 1983).

3. City of Portland. Traffic Volume Map for 1987 (1988).

4. Institute of Transportation Engineers. *Trip Generation Manual: Fourth Edition* (1988).

5. Transportation Research Board. *Highway Capacity Manual.* Special Report Number 209 (1985).

6. Federal Highway Administration. *Manual on Uniform Traffic Control Devices* (1978 plus Revisions 1-4, 1986).

7. American Association of State Highway and Transportation Officials. A Policy on Geometric Design of Highways and Streets (1984).

8. City of Portland. Standard Drawings.

9. City of Portland. Development Codes.

- The access driveway should consist of a three lane cross section, including separate left and right turn lanes for vehicles exiting the proposed facility and one lane for entering vehicles,

- The access driveway should be a curb return style driveway instead of the City of Portland standard driveway cut design,

- A westbound right turn deceleration lane should be provided east of the proposed site driveway to separate these turning vehicles from the through N.E. Killingsworth Street traffic flow, and

- An acceleration taper area should be provided on N.E. Killingsworth Street for right turning vehicles exiting the site.

Egress at the proposed access driveway should be controlled with a stop sign. There are adequate gaps in the existing traffic flows on N.E. Killingsworth Street to allow safe and efficient movements out of the proposed site with stop sign control.

The minimum traffic volume peak hour warrant for installation of a traffic signal is is marginally met for 1991 conditions. However, it is likely that the intersection will continue to operate unsignalized within acceptable service levels for several years. Therefore, it is recommended that a signal not be installed until such a time that it is warranted, and then only after other less restrictive mitigation measures have been fully considered.

The design of the KFD transfer and recycling center's internal circulation patterns will minimize impacts to the operations at the site access drive. At least 800 feet of lane storage for public haulers should be provided between the pay booth area and N.E. Killingsworth Street.

The provision of 19 stalls in the facility and area for 21 vehicles in the wood and yard debris area will be adequate to ensure that queueing does not exceed the on-site queuing capacity at the facility during the 10th highest demand day.

Public Refuse Haulers

Based on discussions with City staff, it was determined that the traffic analysis at the proposed site access driveway should be based on the tenth highest waste flow day of the year. In order to determine how much waste could be expected on the tenth highest day, an analysis was conducted of data collected in 1987 by Metro at the existing St. John's Landfill, the existing Killingsworth Fast Disposal (KFD) facility, and the Clackamas Transfer and Recycling Center (CTRC). This data included a breakdown of the amount of public tonnage as well as the number of vehicle trips at each of the facilities on a daily basis for an entire year (1987).

Because background traffic on N.E. Killingsworth Street is significantly higher on the weekday evening peak hour than on the weekend peak hour, and the fact that the site-generated traffic is significantly higher on the weekends than on weekdays, the traffic analysis has focused on both weekday evening peak hour conditions and weekend peak hour conditions.

Based on the information obtained from Metro, the tenth highest day was determined and expressed as a percent of the total annual tonnage in order to facilitate its application to future projected annual tonnages. In 1987, the tenth highest day was found to be approximately 0.38 percent of the total annual tonnage. For the KFD site this equates to 50,000 tons per year.

Another key component in the trip generation analysis is the number of vehicles trips that can be expected to be generated by a given amount of waste tonnage. The data Metro provided indicated that the average load per public hauler during the peak summer months was 0.42 tons per trip for the weekdays and 0.38 on the weekend. For the KFD site this equates to 120 round trips during the weekend peak hour, and 30 round trips for the weekday peak hour.

Based on the information provided by Metro, it was determined that the site-generated traffic would not generally be greater than 10 percent of the total daily site-generated traffic for the morning, and evening time periods respectively. The peak weekend hour for site-generated traffic was determined to be about 18 percent of the total daily site-generated traffic.

TABLE 1

DESIGN YEAR TRIP GENERATION
TENTH HIGHEST DAY

Trip Type	Tons of Waste		Generated Trips (B)					
			Weekend Pk. Hour			Weekday Pk. Hour		
	Annual	Daily	Total	In	Out	Total	In	Out
Public Haulers	50,000	255	240	120	120	60	30	30

INTERNAL SITE CIRCULATION DESIGN REVIEW

ON-SITE QUEUING REQUIREMENTS

Since N.E. Killingsworth Street is a major component in the City of Portland transportation system, it is imperative that access to abutting development parcels does not influence or restrict the movement of through traffic. With this in mind, the preliminary design of the internal site circulation system has focused on eliminating the impact of on-site queuing on the off-site intersection operations. Therefore, for the purposes of the on-site queuing analysis, the site-generated traffic estimates are based on the projected 10th highest day of the year.

The analysis used a standard procedure to evaluate multiple channel queuing characteristics for vehicles waiting at the pay booth, and vehicles waiting to enter the wood and yard debris dumping area. The analysis was based on the following assumptions:

- The pay booth facility has the ability to make use of up to three pay booth lanes at an average service rate of one (1) vehicle per minute per booth.
- The KFD site has 19 stalls and an average service rate of 3.33 vehicles/hour-stall.
- The wood and yard debris dumping area can accommodate up to 26 vehicles at a time and has an average service rate of 3.33 vehicles/hour-space.
- There should be at least a 95 percent probability that the available queue length will not be exceeded during the highest demand hour of the highest demand day.
- Average vehicle length is 40 feet

- The distance between the pay booth and N.E. Killingsworth Street is adequate to at least 15 vehicles.

- The distance between the transfer facility entrance and the pay boothes is adequate to store up to 13 vehicles.

Table 6 displays the results of the queuing analysis at the key locations. As shown in the table, the provision of three pay booths at the gatehouse, 19 stalls at the KFD building and 400 feet of dumping area frontage will be adequate to ensure that queueing does not exceed the capacity at the respective facilities during the 10th highest day.

STREET DESIGN CRITERIA

The preliminary design of the on-site roadways meets the requirements of the private industrial street standards outlined in the City of Portland Development Codes (Reference 9). The curvature and width of the internal roads have been designed to accommodate the appropriate user vehicle turning radii. The structural pavement design for the internal roads will be based upon the vehicle loading characteristics and results of soil investigations.

TABLE 6

ON-SITE QUEUING ANALYSIS RESULTS

Location	Available Storage Capacity (Veh.)	Required Storage Capacity (Veh.)	Available Capacity Adequate ?
Toll Booth	22/lane	15-20	Yes
Transfer Facility	19	13	Yes

CONCLUSIONS AND RECOMMENDATIONS

Based on the traffic impact analysis described in this report, it is concluded that the proposed Killingsworth Fast Disposal facility can be constructed without significant traffic impacts to the adjacent street system. The specific findings of the analysis are as follows:

- Site generated traffic estimates are based upon factual data and assumptions supplied by the Metropolitan Service District (Metro) in Reference 1. Analysis at the site access drive is based upon the tenth highest weekday site generated traffic volumes. The peak demand at the KFD site occurs on Saturdays, while the peak highway traffic within the vicinity of the site occurs during the weekday evening peak hour. Therefore, for the purposes of this report both the weekday evening peak hour, and the weekend peak hour were examined.

- The future traffic patterns with the proposed KFD facility comply with the goals and objectives of the City of Portland Arterial Streets Classification Policy. The proposed design and recommended traffic control at the proposed KFD access driveway will ensure that the use of the facility meets the City's plan for Killingsworth Street to be a Major City Traffic and Through Truck Street.

- The site access drive on N.E. Killingsworth Street, with the recommended design, will provide acceptable levels of service and safe operations during the peak hour periods, and will meet the minimum criteria established by Metro. The access drive design recommendations include the following:

    - The access driveway should consist of a three lane cross section, including separate left and right turn lanes for vehicles exiting the proposed facility and one lane for entering vehicles

- The access driveway should be a curb return style driveway instead of the City of Portland standard driveway cut design

- A westbound right turn deceleration lane should be provided east of the proposed site driveway to separate these turning vehicles from the through N.E. Killingsworth Street traffic flow

- An acceleration taper area should be provided on N.E. Killingsworth Street for right turning vehicles exiting the site.

o Egress at the proposed access driveway should be controlled with a stop sign. There are adequate gaps in the existing traffic flows on N.E. Killingsworth Street to allow safe and efficient movements out of the proposed site with stop sign control.

o The minimum traffic volume peak hour warrant for installation of a traffic signal is is marginally met for 1991 conditions. However, it is likely that the unsignalized intersection will continue to operate within acceptable service levels for several years. Therefore, it is recommended that a signal not be installed until such a time that it is warranted, and then only after other less restrictive mitigation measures have been fully considered.

o The design of the KFD transfer and recycling center's internal circulation patterns will minimize impacts to the operations at the site access drive. At least 800 feet of lane storage for public haulers should be provided between the pay booth area and N.E. Killingsworth Street.

o The provision of 19 stalls in the KFD building will be adequate to ensure that queueing does not exceed the on-site queuing capacity at the facility on the 10th highest demand day.

CREDIT SUISSE

FOUNDED 1856

SCHWEIZERISCHE KREDITANSTALT
CREDITO SVIZZERO

NEW YORK

Telephone (212) 612-8000
Cable Address Credswiss
Swift Cresus 33
Telex 420 149
Letters 100 Wall Street
New York, N.Y. 10005

R. Kendall Holman
Vice President

June 8, 1989

Mr. Philip North
Metropolitan Service District
2000 S. W. First Avenue
Portland, OR 97201-5398

Dear Mr. North,

We understand that Metro has solicited a proposal from Riedel Environmental Technologies, Inc. to design, construct and operate a municipal solid waste transfer station, "the Metro East Station". Should Riedel's proposal be selected, Credit Suisse would be in a position to provide financing for this facility subject to our satisfaction with the financing documents, the agreements between Metro and Riedel and the approval of our credit committees in New York and Zurich. We are currently involved in the financing of Metro's mass composting facility and would welcome the opportunity to be of further service to your organization. Please contact the undersigned should you have any questions.

Sincerely,

R. Kendall Holman

Donaldson, Lufkin & Jenrette

Donaldson, Lufkin & Jenrette Securities Corporation • 140 Broadway, New York, NY 10005 • (212) 504-3000

Douglas J. Sealy
Senior Vice President
DLJ Public Finance Division
(212) 504-4621

June 12, 1989

Mr. Philip North
Metropolitan Service District
2000 S.W. First Avenue
Portland, Oregon 97201

Re: FINANCING IN CONNECTION WITH RIEDEL PROPOSAL FOR METRO TRANSFER STATION

Dear Mr. North:

Donaldson, Lufkin & Jenrette ("DLJ") serves as investment banker to Riedel Environmental Technologies, Inc. ("RET"). As such, we are familiar with the operations and financial condition of RET.

RET is acting as a proposer in connection with the above-captioned waste transfer facility for Metro. The Request for Proposal states that the proposer should be credit worthy. In our opinion, and based on RET's demonstrated financial capability in connection with Metro's mass composting facility, RET has sufficient financial resources to provide financing for the transfer station.

If you have any questions, please call me.

Sincerely,

Douglas J. Sealy

DJS:ls

EXHIBIT E

WASTECH HISTORY OF FIBER BASED FUEL

AND RECYCLING EFFORTS

OVERVIEW OF WASTECH

There are two aspects to Wastech's current OPRC operation that make it an integral part of Metro's Solid Waste Management Plan. Source separated material such as corrugated cardboard, newsprint, office paper, container glass, tin cans, ferrous and non-ferrous metals and plastics are purchased from the general public and commercial accounts. OPRC is one of the largest full line buy-back centers in the Metro area and possibly the entire State of Oregon. OPRC is also an integral part of the City of Portland's waste reduction efforts since we accept all recyclable items that the City of Portland requires the garbage haulers to collect on a monthly basis from each house within the City.

In 1988, Wastech embarked on an innovative program to increase the level of high grade office paper recycling. A test project was implemented in downtown Portland using the woven plastic bags produced by the Bay Connection. This program proved to be such a success that Wastech in cooperation with a major refuse hauler is expanding this program to 29 office buildings in Portland.

The success of this program prompted Wastech and an association of five refuse haulers to use these bags for the collection of curbside recyclables under S.B.405. Currently, over 3,500 homes are provided two bags which are collected on a monthly basis. One bag is for plastic milk jugs and newspaper while the other bag is for container glass and tin cans. These bags are collected by the hauler and delivered to Wastech where they are dumped on a specially designed conveyor belt and the recyclables removed.

A unique part of OPRC is its material recovery operation. Since 1985, OPRC has accepted and processes mixed loads of commercial and industrial solid waste. Mixed loads of office paper are dumped and processed through a specially designed trommel where the majority of the small sized dirt, grit and other contaminates are removed. The material is then carried over conveyor belts where further manual sorting occurs. Items such as metal, plastic and cardboard are separated for recovery. Clean waste paper is ultimately baled for economical transport to market.

Mixed loads containing a high percentage of cardboard and plastic are unloaded and similarly processed through another trommel screen for initial cleaning. Marketable material is removed from the waste and baled. Reject materials from both the office paper and cardboard lines are conveyed to trailers for transport to St. Johns Landfill. The majority of the reject material is composed of non-recoverable paper and wood, with some glass and grit. Because of changing market conditions, Wastech is now recovering plastics from the waste stream. The plastic is baled and shipped to various consuming mills. OPRC is the first facility in Oregon to recover post consumer plastic from mixed solid waste.

Metro Approved Expansion OPRC (June 1988)

Wastech's approach to solid waste management is consistent with the hierarchical policy for waste reduction which was adopted by metro and the State of Oregon, and is a vital part of the City of Portland's curbside recycling efforts. It is our goal to provide a facility to maximize the removal of marketable items from mixed waste and to minimize the amount landfilled. To accomplish this, we pioneered the first large scale material recovery facility in Oregon as described above. In June, 1988, Metro approved a new franchise that will continue this aggressive approach to waste reduction and allow expansion of the existing material recovery portion of the OPRC operation. This will increase the receipt of commercial and industrial solid waste to approximately 100,000 tons per year and add the ability to manufacture a fiber based fuel (FBF). With the production of FBF, we will be able to receive mixed loads currently not acceptable at OPRC, such as those which are primarily wood or those which have a lower recovery rate of paper or cardboard. This will greatly accelerate the recovery of office paper, cardboard, metals and plastic while at the same time providing a stable outlet for mixed waste paper.

The production of the FBF is necessary for two reasons. Based on our experience, the reject material represents approximately 50% of the incoming waste and is composed of mainly wood, metals, some plastic and small particles of paper fiber not recovered through the office paper or cardboard picking

process. After extensive testing, we have determined that this reject material is ideal for use in existing boilers as a supplemental fuel and its recovery will result in further reduction of the amount which requires landfilling. In addition to recovering more material from our current rejects, the FBF provides another important service. The history of waste paper as a consistent marketable material has been poor. The waste paper market experiences more fluctuations than other recyclables, and waste paper sometimes cannot be sold at a breakeven price. This unstable market and the difficulty in providing a long term outlet for this material creates problems convincing the generator to create high grade recyclables loads. With the OPRC process, the waste paper, which is the bulk of the recoverable material in the waste stream, will be sold to a consuming mill as a paper product or densified for use as a high-grade fuel, depending on market conditions. Whatever market is used, the waste paper will always be recovered thereby providing the necessary long term outlet for the generator and processor.

In the past, OPRC has developed solid markets for the products produced from the material recovery operation. Cardboard and other waste paper grades are sold to Weyerhaeuser; ferrous metals are sold to Schnitzer Steel Company; tin cans are sold to MRI Corporation in Seattle and non-ferrous metals are sold to either Calbag Metals or Acme Trading and Supply Company. Fiber based fuel will be sold to Smurfit Paper Co. Plastics are recovered and sold overseas or domesticly. Exhibit I includes letters of support from the various markets.

On March 2, 1989, Metro passed a Resolution which further modifies the franchise by allowing Wastech to enter into supply agreements with commercial refuse haulers to guarantee delivery of 100,000 tons per year of select waste of OPRC. As a result, Wastech has secured agreements and has embarked on the design for the expansion. It is anticipated that construction will begin in early August 1989 with completion occurring in early 1990.

Proposed Expanded Operation and East Transfer Station

Metro has identified a need to provide facilities to receive and recover solid waste generated in the East Wasteshed prior to the closure of St. John's Landfill in February 1991. To accomplish this, metro has adopted the East Transfer and Recycling White Paper which provides that the private sector may design, own and operate a system consisting of one or more facilities. According to the Metro staff report dated February 16, 1988, regarding the East Transfer and Recycling Center, "An example of the two-facility system could be a combined mixed waste composting and transfer station (Riedel) facility in conjunction with an expanded material recovery and transferring facility (OPRC)." The multi-station concept was adopted by metro to allow existing permitted or contracted facilities the opportunity to be utilized instead of siting and constructing a new transfer station.

As stated above, Wastech has received approval from metro to expand OPRC to receive and process approximately 100,000 tons of mixed commercial and industrial solid waste each year. That expansion will involve an enlarged building so that all dumping, processing and storage will be enclosed. In addition, new access from North Kerby Street, new computerized weighing systems and the necessary maintenance and administrative support systems will be provided. Wastech's primary goal is to recover as much material from the waste stream as possible.

The Riedel-Wastech East Transfer Station proposal involves further expansion of OPRC to receive an additional 100,000 tons per year of mixed solid waste for processing and transfer. A total of 200,000 tons per year (considering the recent approval by Metro) of select commercial and industrial solid waste generated in the East Waste Shed will be received, material removed and the non-recoverable waste loaded into trailers for transport to eastern Oregon. The additional capacity at OPRC, along with Riedel's RTC and KFD transfer stations, will serve the entire East Waste Shed.

In addition to processing 200,000 tons of Metro's solid waste, Wastech may also receive and process approximately 33,000 tons per year of commercial and industrial solid waste generated in Clark County, Washington. Wastech has subcontracted with Tidewater Barge Lines, and together we have submitted a proposal to Clark County to provide a comprehensive recycling, transfer and landfill system for the next 20 years. An element of the Clark County proposal is to accept at OPRC select commercial and industrial solid waste which has been initially screened at transfer stations in Clark

County to insure a high recovery rate. The capacity at OPRC will be sufficient to process both Metro's 200,000 tons and Clark County's 33,000 tons.

The expansion of OPRC to receive additional waste over that which has already been approved by Metro in June 1988, can be accomplished quite easily and with minimal impact on the surrounding neighborhood. In order to receive and process the additional tonnage. Wastech will enlarge the building to approximately 64,000 square feet, install two additional densification machines for the fiber based fuel, operate both the mixed waste paper/fuel processing line and the mixed corrugated line simultaneously and process for 2 shifts, 6 days per weed. Detailed drawings of the facility are contained in Exhibit Q. Because of the increased traffic, the facility will be accessed from two streets. Commercial refuse trucks will enter the site through the new entrance off Kerby Street while the general public and commercial haulers delivering source separated material will continue to use the existing Albina entrance. Mixed commercial waste will be dumped in the new receiving area and those loads with a high percentage of cardboard will be processed through the cardboard line where corrugated and plastic will be removed and baled. The rejects from this process will be conveyed back onto the main tipping floor. Mixed waste with a high percentage of paper and wood will also be dumped in the new receiving area. This material will be mixed with the rejects from the cardboard line and processed through the waste paper grade will be removed and baled. When material does not qualify for a waste paper grade or when markets for waste paper are poor or non-existent, the material will be further processed for use as a fiber based fuel. The fuel will e conveyed to storage bins while the reject material will be conveyed back to the tipping floor, pushed into the Amfab compactor and loaded into a trailer for transport to the Arlington Landfill.

To ensure that non-acceptable waste is not delivered to the landfill, Wastech will inspect all loads dumped and will institute the testing program outlined in the RFP. Unacceptable waste will be reloaded onto the truck delivering such waste of into a container for transport and proper disposal. Drop boxes will be provided for waste not suitable for compaction, and will be loaded and delivered to a proper designated landfill or other disposal site.

Acceptable waste that is not suitable for processing will either be pushed directly into the Amfab compactor or stock piled along the east wall. To insure sufficient storage while at the same time achieve maximum density in the transport trailer, Wastech may use a crawler track loader to crush the waste prior to loading. Enough capacity exists on the tipping floor as shown in Exhibit B to store approximately 1200 tons of waste in an emergency.

The facility will be open twenty four hours per day, seven days per week except Christmas and New Years. This will allow the commercial hauler continuous access to dump waste collected during the night or early morning from downtown Portland. It is anticipated that processing will occur during two shifts while maintenance will be performed during the third shift. Since the facility will be manned 24 hours per day, onsite security will be provided. Additional security will be provided Christmas and New Years.

The facility and support buildings are designed to meet Metro requirements. For example, the office building will incorporate storage space, lunch room, showers, rest rooms and conference area. Emergency power will be available for key equipment to minimize disruption of service. Fire hydrants and control systems will be available throughout the facility. Wash-down capability will be available with the collection of wash water which comes in contact with solid waste property collected and disposed into the sanitary sewer. In addition all dumping of waste, processing and sorting and storage of baled recyclables shall be within the main enclosed building.

Wastech will continue to operate as a buy-back center for source separated material as stated above, and source separated recyclables will be received at a scale house, operated by Wastech personnel, located at the Albina Street entrance. Recyclables will be received Monday through Saturday, 8:00 a.m. to 5:00 p.m. Corrugated cardboard, newsprint and high grade office paper will be received in the main building. j Drop boxes for container glass will be provided. Curbside recyclables collected by refuse haulers using the plastic woven bags will be received and processed at a nearby warehouse.

Wastech has developed a material recovery technology in both Portland and British Columbia, Canada

including an integrated processing capability to achieve maximum recovery of recyclables from solid waste. As we have demonstrated with plastics, FBF and the use of plastic bags for curbside and commercial recycling, the Wastech system is easily adapted to changing markets and conditions. Wastech offers a full range of options to the waste generator and refuse haulers from handling non-recoverable waste to high grade loads to purchasing source separated material.

TRAFFIC IMPACT ASSESSMENT

FOR

METRO'S SOLID WASTE TREATMENT FACILITY

COLUMBIA BLVD. AT HURST STREET

PORTLAND, OREGON

PREPARED BY: CTAK ASSOCIATES

JUNE 1989

CTAK ASSOCIATES

Suite 520, One S.W. Columbia • Portland, Oregon 97258 • (503) 228-9507

June 14, 1989

Mr. Neil Alongi
Sweet-Edwards/Emcon, Inc.
7504 S.W. Bridgeport Rd.
Portland, OR 97224

SUBJECT: Final Report for Traffic Impact Assessment
METRO Solid Waste Treatment Facility
Columbia Blvd. at Hurst St.

Dear Mr. Alongi:

We have completed the final report for the subject traffic assessment and it is consistent with the previous summary report. Three copies are being submitted.

It was a pleasure working with you on the project and, if we can be of further help, give us a call.

Sincerely,
CTAK ASSOCIATES

Frank Charbonneau, P.E.
Traffic Engineer

FC:ch
Enclosure

TRAFFIC IMPACT ASSESSMENT

FOR

METRO'S SOLID WASTE TREATMENT FACILITY

COLUMBIA BLVD. AT HURST ST.

PORTLAND, OREGON

PREPARED BY: CTAK ASSOCIATES

JUNE 1989

CONTENTS

INTRODUCTION AND BACKGROUND

CTAK Associates was hired by Sweet-Edwards/EMCON, Inc. to perform the traffic impact study for the proposed METRO Solid Waste Treatment facility in the City of Portland. The project will consist of a waste transfer station available for both public and commercial use. The location will be westerly of Interstate 5 and adjacent to Columbia Blvd. at Hurst Street. Presently the site contains the abandoned Pacific Carbide Plant.

This traffic impact analysis follows the guidelines established in METRO's Request for Proposal and data for solid waste facility traffic generation. Impacts to the existing vicinity streets including access, location, traffic safety, vehicular and railroad operation and performance, trip generation, distribution, queueing, traffic flow, sight distance, turning lane, channelization, and signalization are analyzed in this study. Several other elements were also analyzed and are documented in this report as follows.

- This project analyzes existing traffic plus site generated traffic. No future year traffic was accounted for.
- Following METRO's RFP criteria, peak commercial traffic will occur on Weekdays (Monday) and peak public traffic will occur on Saturdays. Therefore peak hour traffic counts of existing traffic were performed on these days.

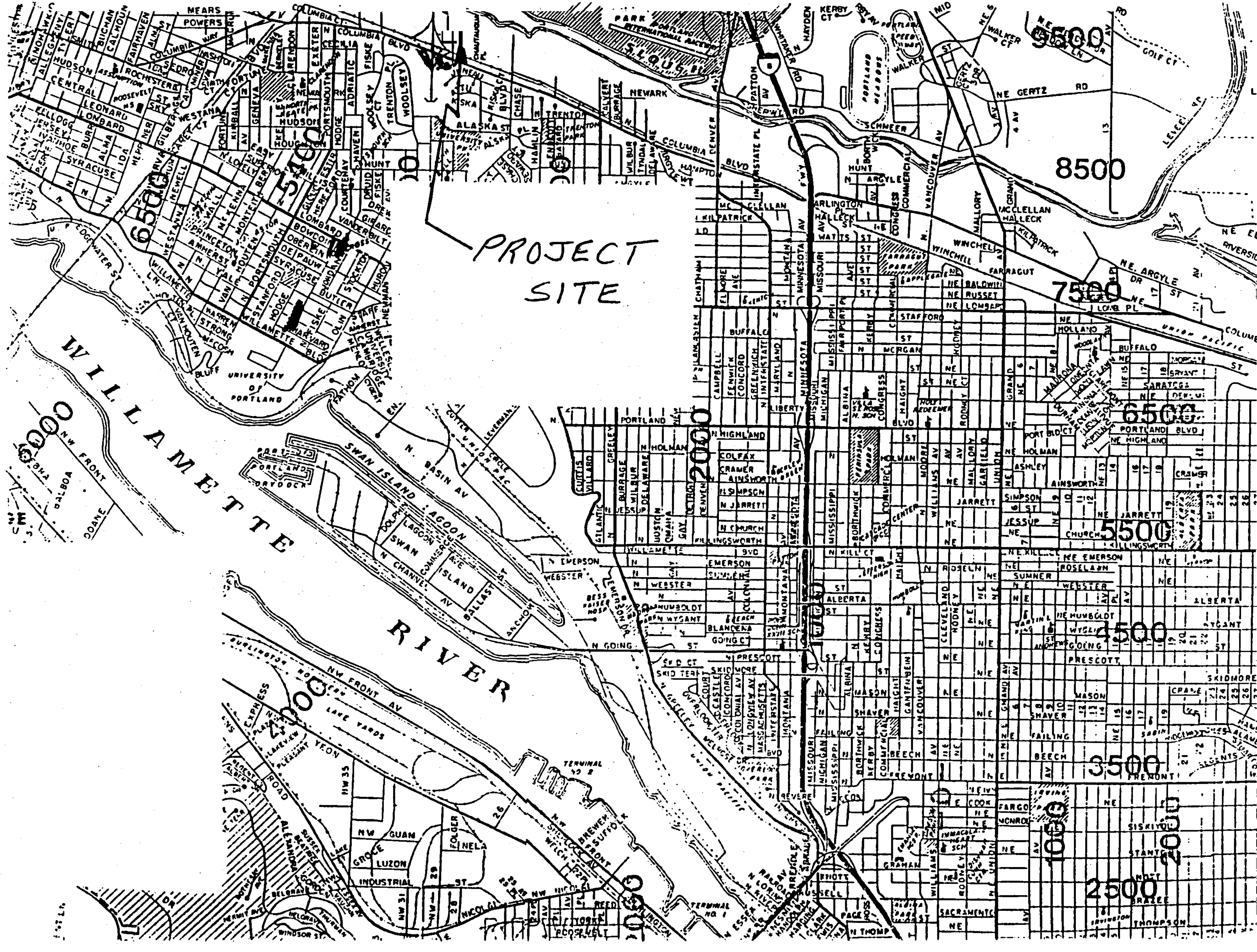
- Maximum incoming vehicular trip data from the RFP was used in this analysis for trip generation.

SITE DESCRIPTION AND EXISTING VICINITY STREETS

Access to the proposed site is being proposed at the existing intersection of Columbia Blvd. and Hurst Street. Hurst Street is controlled by a Stop sign and approaches Columbia Blvd. at 90 degrees as it crosses several sets (3) of railroad tracks. Presently the intersection is configured as tee-shaped and will remain like this when developed. Sight distance is adequate at the intersection and any further street, intersection, or frontage improvements would have to maintain the existing sight distance condition. Some vegetation removal and maintenance will be necessary, however.

Hurst Street is a two lane street and private access, serving several small commercial businesses (see the attached vicinity map). There are two existing railroad spur lines serving the site after crossing through the Hurst St. intersection. The Union Pacific Railroad also crosses at this intersection and branches out to the north, west, and south. There are railroad signals with drop arm gates for traffic control on Columbia Blvd. There is no railroad signal control on Hurst St.

Columbia Blvd. is a major City street. Near the project site the street consists of five lanes, including center left turn (two-way) median lane and two through lanes in each direction. Hurst street is approximately 24 feet wide and


PROJECT SITE
WILLAMETTE RIVER
SWAN ISLAND LAGOON
UNIVERSITY OF PORTLAND
COLUMBIA BLVD
LOMBARD
PORTLAND BLVD
HIGHLAND
ALBERTA
KILLINGSWORTH
PRESCOTT
FREMONT
NE ARGYLE
NE GERTZ RD
N BASIN AV
N CHANNEL AV
NW FRONT AV
SWAN
ISLAND
TERMINAL NO 2
TERMINAL NO 1
9500
8500
7500
6500
5500
4500
3500
2500
5400
2000
1000
3000
2000

Columbia Blvd. 60 feet between curbs.

VEHICULAR TRIP GENERATION AND DISTRIBUTION

Vehicular trip generation rates from METRO's RFP were applied in performing the analysis. For the maximum number of trips per hour entering the site, the following values were used for commercial and public traffic during the peak period.

PROJECTED TRIP GENERATION

	Saturday Peak Hour Trips	
	Enter	Exit
Commercial Vehicles	4	4
Public Vehicles	121	121
	125	125

	Weekday Peak Hour Trips	
	Enter	Exit
Commercial Vehicles	95	95
Public Vehicles	30	30
	125	125

Based on the anticipated on-site vehicle operation it was determined that all vehicles entering during the peak hour would also leave the site. Some values or trip rates in the above tables were rounded off for simplicity. No diverted traffic from existing passing volumes was applied in the analysis as all generated traffic was added to existing traffic in determining the total site conditions.

Vehicle trip distribution was established using approximately 90% of the generated traffic accessing the site from the east. Approximately 10% would come from the west.

TRAFFIC FLOW ANALYSIS

In order to obtain updated traffic volume data and perform the traffic flow analysis, manual turning movement counts were performed at the Columbia Blvd. and Hurst Street intersection. Counts were made on Saturday, May 20, 1989 from 2:00 P.M. to 4:00 P.M. and on Monday, May 22, 1989 from 6:00 A.M. to 8:30 A.M. and 3:00 P.M. to 5:00 P.M. Data were recorded in 15 minute intervals and summarized for volume and peak hour determination. The weekday A.M. peak occurred from 7:30-8:30 A.M. and the P.M. peak occurred from 3:00-4:00 P.M. The Saturday peak hour occurred from 2:15-3:15 P.M.

Train crossings were also recorded during the traffic count observations. On Saturday there was one train crossing (Hurst St.) at 3:00 P.M. It resulted in a three minute delay for Hurst St. traffic. During the weekday counts there were two train crossings. One occurred on Columbia Blvd. at 4:25 P.M. and the other occurred on Hurst St. at 4:45 P.M. Both resulted in three and one-half minute delays.

In discussing the train crossings with Union Pacific Railroad, it was determined that there are approximately 22 crossings at Hurst Street per day. On the average there will be one crossing per hour (two crossings maximum). The main track crossing Columbia Blvd. has much fewer crossings according to

Union Pacific.

Traffic flow maps were prepared showing the traffic count data (rounded to the nearest five vehicles) and turn movements for the peak hour conditions. Flow distribution for the site generated traffic was proportioned as explained in the previous section.

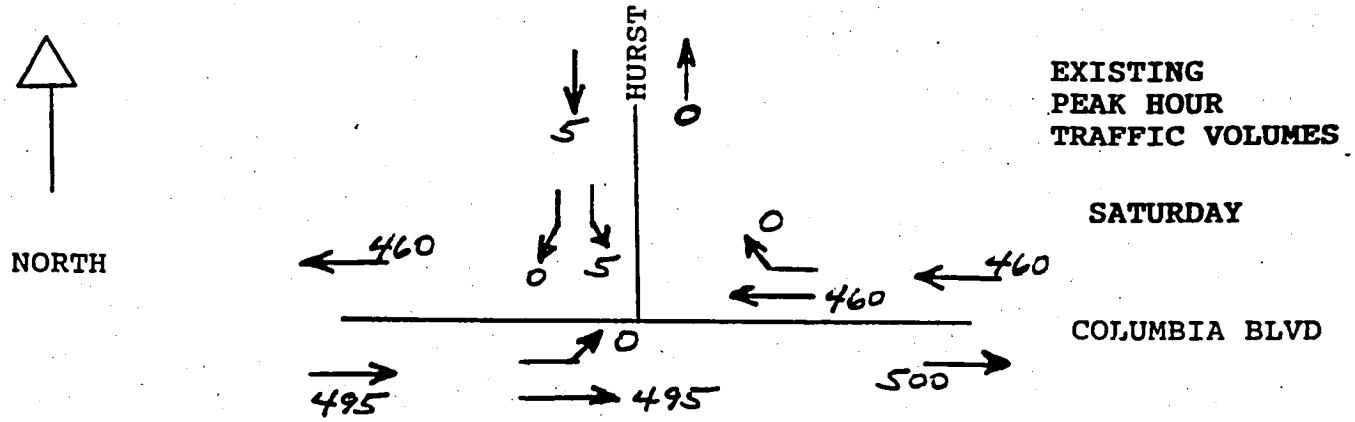
The following flow maps depict the various components used in compiling the total site traffic scenarios for the A.M. and P.M. peak hour conditions. Total site traffic was then evaluated in terms of intersection capacity and traffic control. Flow maps were prepared for several categories.

- Existing Traffic
- Site Generated Traffic
- Total Site Traffic

INTERSECTION CAPACITY ANALYSIS

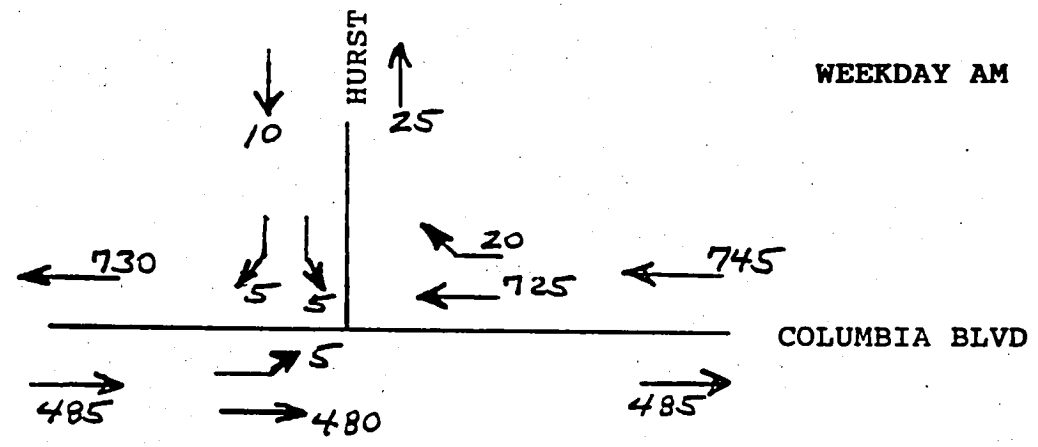
Capacity analyses were preformed for the existing non-signalized intersection and projected signalized intersection condition (based on the latest Highway Capacity manual and vehicular delay method) to determine intersection service levels. Worksheets for the capacity calculations are contained in the appendix.

Several scenarios were studied for the intersection and the following tables summarize the capacity analysis results.

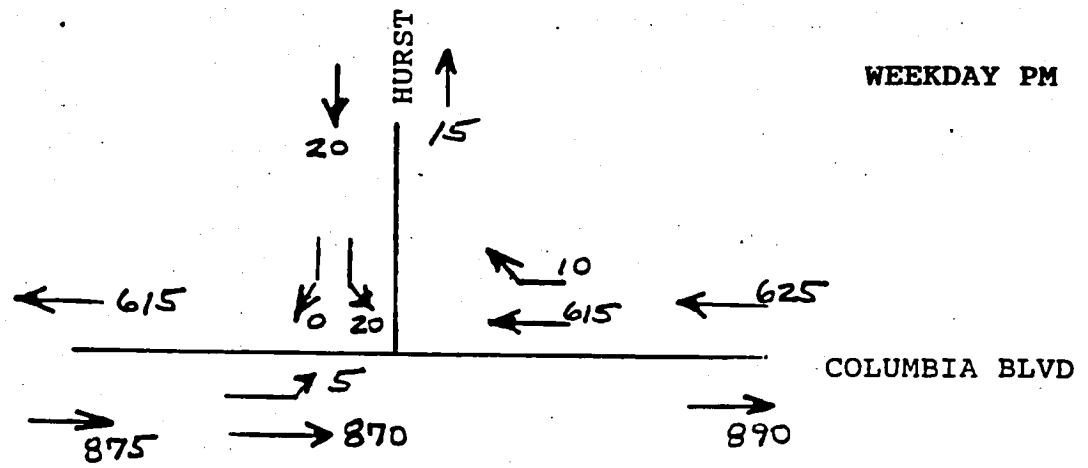


EXISTING
PEAK HOUR
TRAFFIC VOLUMES

SATURDAY

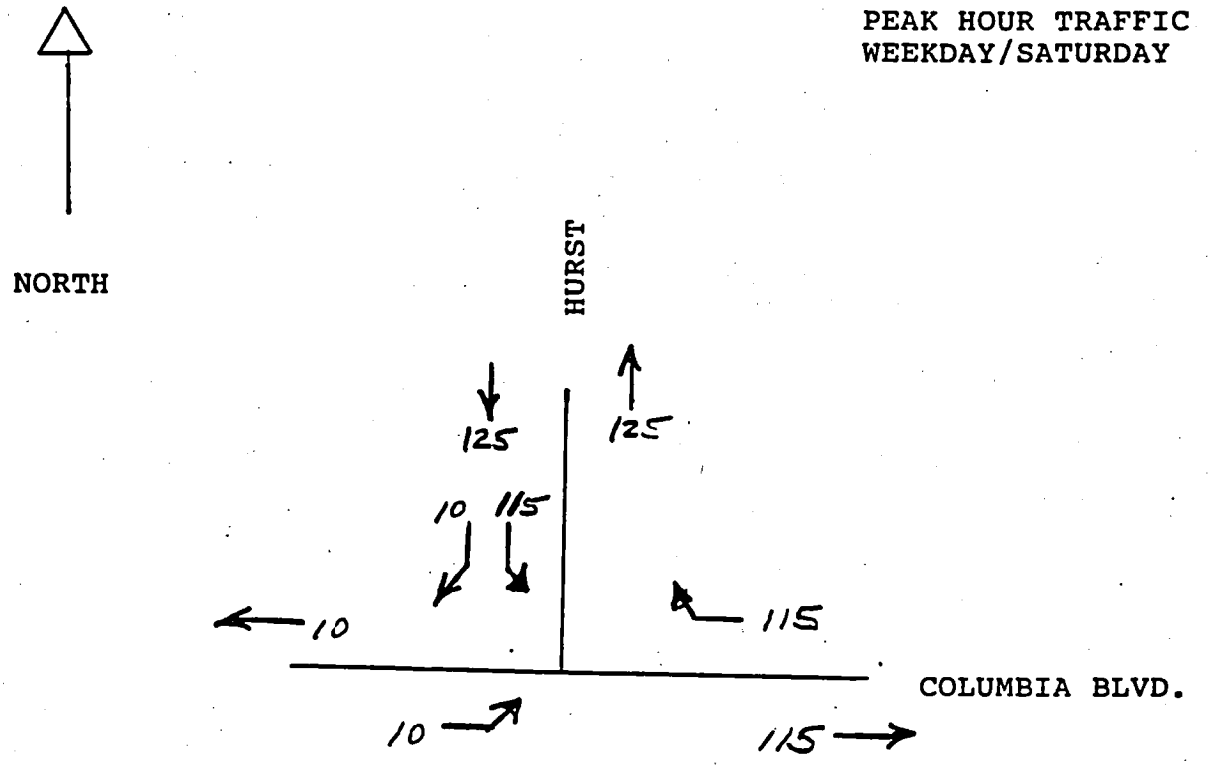


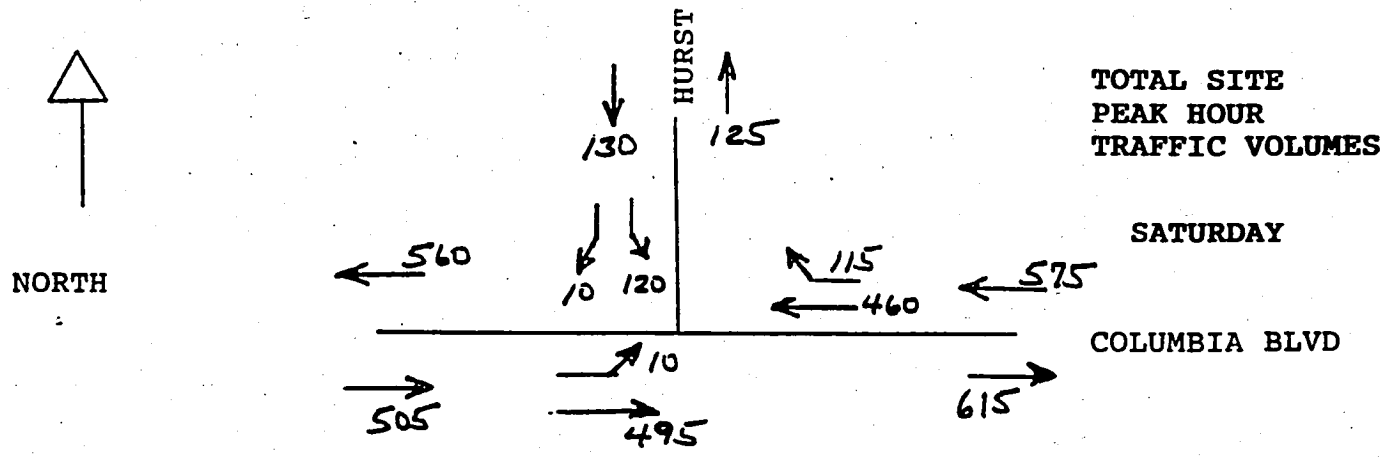
WEEKDAY AM



WEEKDAY PM

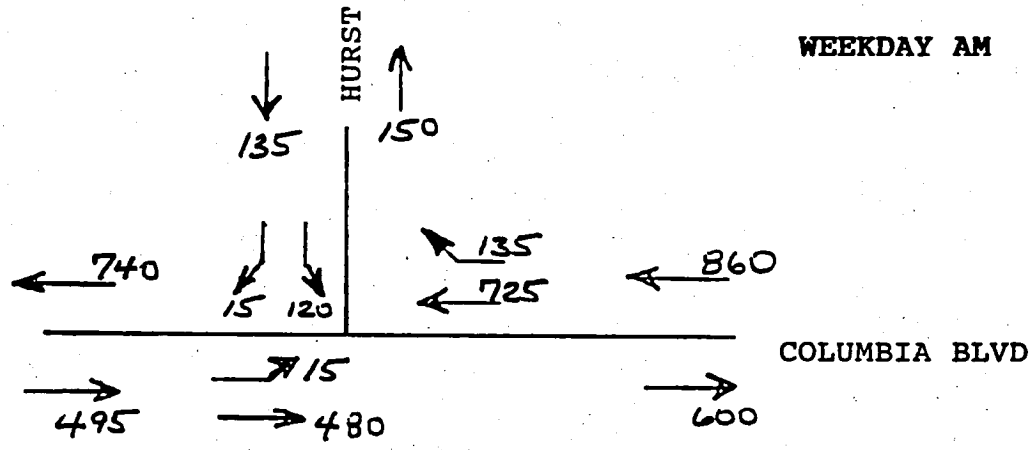
SITE GENERATED
PEAK HOUR TRAFFIC
WEEKDAY/SATURDAY



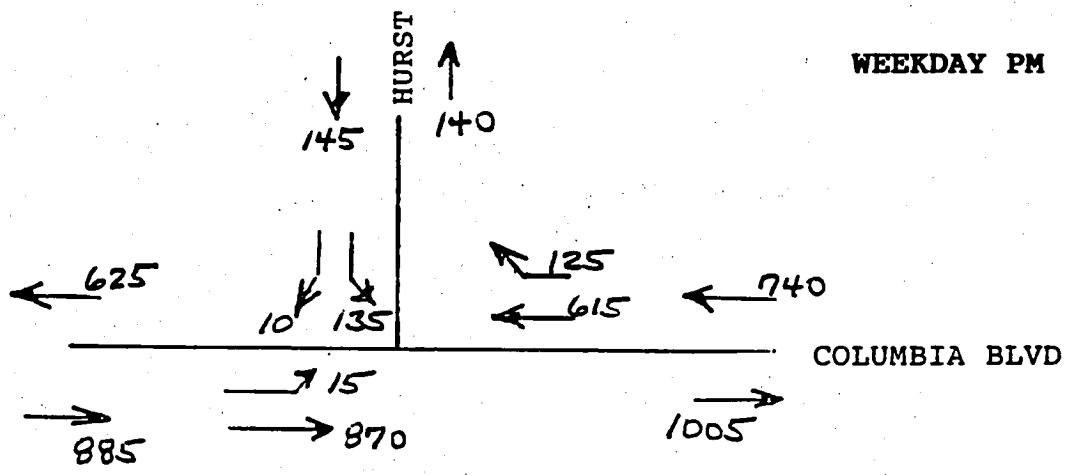


TOTAL SITE PEAK HOUR TRAFFIC VOLUMES

SATURDAY



WEEKDAY AM



WEEKDAY PM

SUMMARY OF SERVICE LEVELS

Non-Signalized Intersection L.O.S.

	Columbia Blvd.	Hurst St.	
	EB Left	SB Left	SB Right
Existing Traffic			
Weekday A.M. Peak Hour	A	E	A
Weekday P.M. Peak Hour	A	E	A
Saturday P.M. Peak Hour	A	D	A
Total Site Traffic			
Weekday P.M. Peak Hour	A	F	A

Signalized Intersection L.O.S.

	Columbia Blvd.		Hurst St.	
	EB Left	WB Thru	SB Left	SB Right
Total Site Traffic				
P.M. Peak Hour	C	C	B	C

The increase in traffic at the intersection results in the need for signalization to gain capacity. Under non-signalized conditions, the intersection presently operates at a L.O.S. "E" on Hurst Street in the A.M. and P.M. weekday peak hours. After the development occurs, the intersection would operate at overall L.O.S. "B" in the peak hour (signalized with separate turn lanes on Hurst St.). The interaction would operate at L.O.S. "F" in the P.M. peak hour with no signal improvements.

Generally L.O.S. "A", "B" and "C" are desirable service levels ranging from no vehicular delay to some or average peak hour delays. Level "D" will result in longer delays but is

acceptable for peak conditions. Levels "E" and "F" represent very long vehicle delays in the peak hour or period analyzed.

SIGNAL WARRANTS

Due to the projected additional traffic caused by the development, traffic signals will be required at Columbia Blvd. and Hurst. Criteria for the peak hour warrant from the Manual on Uniform Traffic Control devices is met. In conjunction, requirements of the capacity analysis indicate a signal is necessary.

LANE REQUIREMENTS

Separate southbound turn lanes will be required on Hurst Street for outbound traffic in order to maximize intersection capacity. On Columbia Blvd. the existing five lane section would be adequate to handle the traffic volumes. However, a separate westbound to northbound right turn lane should be considered to increase safety and for the following reasons.

- Minimize delays to through (westbound) traffic on Columbia Blvd.
- Provide a storage lane for site-bound traffic being stopped by trains crossing Hurst street.

For this project the following turn lane storage lengths are suggested as determined from the Highway Capacity Manual. Values are based on turn volumes, signal cycle lengths, volume to capacity ratios for the various left turn lane groups, and anticipated train delay periods. The left turn lane for the

south to east movement considers that on-site storage space will be available. Length of storage for trucks was based on WB-40 large truck lengths (50 feet).

Turn Lane Storage Requirements

Movement	Full Storage Length
SB Left	450'
SB Right	180'
WB Right	550'

Summary of Traffic Impact Assessment

This paper summarizes the results and findings by CTAK Associates in preparing the Traffic Impact Assessment for the proposed solid waste transfer station on Columbia Blvd. A complete report is available which documents the analysis including traffic counts, traffic flow maps, trip generation and distribution, intersection capacity analysis, signal warrants, and lane requirements.

Upon completing the study it has been determined from a traffic engineering standpoint that the proposed development can adequately function based on the data analyzed. There should be no adverse impacts to Columbia Blvd., Hurst Ave. (a private street approach) or other vicinity streets if the recommendations proposed in this report are adopted and implemented.

Trip Generation

Vehicular trip generation data from METRO's request for proposal was applied or 91 commercial and 29 public trips entering on weekdays in the peak hour and three commercial and 121 public trips entering on Saturdays in the peak hour.

Traffic Count Data

Turning movement traffic counts were performed during the peak hours at Columbia Blvd. and Hurst Ave. on a Saturday and a weekday. Peak hour traffic levels were then determined and the total site traffic determined using the generated volumes. One train crossing was observed during the Saturday peak hour count, none during the weekday A.M. period and one during the P.M. period. The train delay was 3.5 minutes.

Trip Distribution

In the peak hour, trip distribution was assigned for the site generated traffic as 90% from/to the east and 10% from/to the west. All entering traffic would also depart during the peak hour. It is projected the site will generate 120 inbound vehicles and 120 outbound vehicles on weekdays during the peak hour. On Saturdays, the generation will be 125 vehicles inbound and 125 vehicles outbound.

Existing and Site Traffic

Existing traffic at the intersection was highest during the weekday P.M. peak hour. The count yielded the following volumes; 625 westbound on Columbia Blvd., 875 eastbound on Columbia Blvd., 20 southbound on Hurst and 15 northbound on Hurst. Coupled with the generated traffic, the volumes increase to 740 westbound, 885 eastbound, 145 southbound, and 140 northbound.

Capacity Analysis and Level of Service (L.O.S.)

Presently the intersection of Hurst Ave. at Columbia operates at L.O.S. "D" during the Saturday and A.M. weekday peak hours and L.O.S. "E" during the P.M. peak hour. Level of service "E" represents a poor service level and indicates there are long delays for the side street traffic. The L.O.S. will be level "F" (extremely long delays) if the site traffic is added without a traffic signal. A capacity analysis was performed for the total site (weekday P.M. peak hour or worst case) condition under signalized control. The L.O.S. will be level "B" (short delays) with a traffic signal of four phases. Therefore a signal is required and is warranted (see next section).

Peak Hour Signal Warrant

Peak hour signal warrants were determined from the Manual on Uniform Traffic Control devices. The peak hour warrant is met for all lane conditions using Figure 4-6 (above 40 M.P.H. on the major street).

Lane and Storage Requirements

No additional lanes are required on Columbia Blvd. Hurst Avenue will require sufficient width for three lanes, including one inbound and two outbound (separate left and right turns) lanes for the southbound movements. The storage length for queuing of outbound trucks will require 450 feet. This will occur partially on Hurst Ave. and the remainder on site. Two hundred feet is required for the southbound right turn lane. With potential 3.5 minute train delays, these distances are necessary for traffic operation and safety. The existing left turn lane on Columbia Blvd. is adequate for the westbound to northbound movement.

Turning Radii

Intersection turning radii improvements need to incorporate turning path requirements for medium to large truck and tractor-semi-trailer combinations (WB-40). The turn radii required are 20 feet (inside radius and 40 feet (outside radius).

Additional Requirements

Maintenance of adequate sight distance along Columbia Blvd. and Hurst Ave. is essential. Obstruction by landscaping, parking, signing, buildings, or other objects would be unsafe.

It will be necessary to implement standard traffic control devices, including pavement turn arrows, signing, and stop bars as per City of Portland standards and the Manual on Uniform Traffic Control Devices.

APPENDIX

- Capacity Analysis Worksheets
- Traffic Volume Count Data Summaries
- Left Turn Lane Length Design (H.C.M.)
- Peak Hour Volume Signal Warrants

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 45

PEAK HOUR FACTOR..... .93

AREA POPULATION..... 1200000

NAME OF THE EAST/WEST STREET..... Columbia Blvd.

NAME OF THE NORTH/SOUTH STREET..... Hurst Ave.

NAME OF THE ANALYST..... FRC

DATE OF THE ANALYSIS (mm/dd/yy)..... 5-3-89

TIME PERIOD ANALYZED..... Exist. am pk hr

OTHER INFORMATION.... Monday Count

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE SOUTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	5	0	--	5
THRU	480	725	--	0
RIGHT	0	20	--	5

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	2	--	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	-----	---	---	-
SOUTHBOUND	3.00	90	30	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	0	0	0
WESTBOUND	0	0	0
NORTHBOUND	---	---	---
SOUTHBOUND	0	0	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	SB	6.10	5.60	0.00	5.60
MAJOR LEFTS	EB	5.80	5.30	0.00	5.30
MINOR LEFTS	SB	7.90	7.40	0.00	7.40

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Columbia Blvd.
NAME OF THE NORTH/SOUTH STREET.... Hurst Ave.
DATE AND TIME OF THE ANALYSIS..... 5-3-89 ; Exist. am pk hr
OTHER INFORMATION.... Monday Count

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
SB LEFT	8	100	100	> 100	> 91	> E
				> 174	> 157	>D
RIGHT	8	684	684	> 684	> 675	> A
MAJOR STREET						
EB LEFT	6	454	454	454	449	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Columbia Blvd.
NAME OF THE NORTH/SOUTH STREET.... Hurst Ave.
DATE AND TIME OF THE ANALYSIS..... 5-3-89 ; Exist. am pk hr
OTHER INFORMATION.... Monday Count

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 45

PEAK HOUR FACTOR..... .93

AREA POPULATION..... 1200000

NAME OF THE EAST/WEST STREET..... Columbia Blvd.

NAME OF THE NORTH/SOUTH STREET..... Hurst Ave.

NAME OF THE ANALYST..... FRC

DATE OF THE ANALYSIS (mm/dd/yy)..... 5-3-89

TIME PERIOD ANALYZED..... Exist. PM Pk Hr

OTHER INFORMATION.... Monday Count

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE SOUTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	5	0	--	20
THRU	870	615	--	0
RIGHT	0	10	--	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	2	--	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	-----	---	---	-
SOUTHBOUND	3.00	90	30	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	0	0	0
WESTBOUND	0	0	0
NORTHBOUND	---	---	---
SOUTHBOUND	0	0	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	SB	6.10	5.60	0.00	5.60
MAJOR LEFTS	EB	5.80	5.30	0.00	5.30
MINOR LEFTS	SB	7.90	7.40	0.00	7.40

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Columbia Blvd.
NAME OF THE NORTH/SOUTH STREET.... Hurst Ave.
DATE AND TIME OF THE ANALYSIS..... 5-3-89 ; Exist. PM Pk Hr
OTHER INFORMATION.... Monday Count

MOVEMENT	FLOW-RATE v (pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
SB LEFT	33	63	63	> 63	> 29	E
RIGHT	0	742	742	> 742	> 742	A
MAJOR STREET						
EB LEFT	6	538	538	538	532	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Columbia Blvd.
NAME OF THE NORTH/SOUTH STREET.... Hurst Ave.
DATE AND TIME OF THE ANALYSIS..... 5-3-89 ; Exist. PM Pk Hr
OTHER INFORMATION.... Monday Count

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 45

PEAK HOUR FACTOR..... .93

AREA POPULATION..... 1200000

NAME OF THE EAST/WEST STREET..... Columbia Blvd.

NAME OF THE NORTH/SOUTH STREET..... Hurst Ave.

NAME OF THE ANALYST..... FRC

DATE OF THE ANALYSIS (mm/dd/yy)..... 5-3-89

TIME PERIOD ANALYZED..... Exist. pk hr

OTHER INFORMATION.... Saturday Count Swt3

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE SOUTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	0	--	5
THRU	495	460	--	0
RIGHT	0	0	--	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	2	--	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	-----	---	---	-
SOUTHBOUND	3.00	90	30	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	0	0	0
WESTBOUND	0	0	0
NORTHBOUND	---	---	---
SOUTHBOUND	0	0	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	SB	6.10	5.60	0.00	5.60
MAJOR LEFTS	EB	5.80	5.30	0.00	5.30
MINOR LEFTS	SB	7.90	7.40	0.00	7.40

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Columbia Blvd.
NAME OF THE NORTH/SOUTH STREET.... Hurst Ave.
DATE AND TIME OF THE ANALYSIS..... 5-3-89 ; Exist. pk hr
OTHER INFORMATION.... Saturday Count Swt3

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
SB LEFT	8	160	160	> 160	> 151	D
RIGHT	0	825	825	> 825	> 825	A
MAJOR STREET						
EB LEFT	0	666	666	666	666	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Columbia Blvd.
NAME OF THE NORTH/SOUTH STREET.... Hurst Ave.
DATE AND TIME OF THE ANALYSIS..... 5-3-89 ; Exist. pk hr
OTHER INFORMATION.... Saturday Count Swt3

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 45

PEAK HOUR FACTOR..... .93

AREA POPULATION..... 1200000

NAME OF THE EAST/WEST STREET..... Columbia Blvd.

NAME OF THE NORTH/SOUTH STREET..... Hurst Ave.

NAME OF THE ANALYST..... FRC

DATE OF THE ANALYSIS (mm/dd/yy)..... 5-3-89

TIME PERIOD ANALYZED..... Total Traffic pm pk

OTHER INFORMATION.... Monday Swt4

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE SOUTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	15	0	--	135
THRU	870	615	--	0
RIGHT	0	125	--	10

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	2	--	2

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	-----	---	---	-
SOUTHBOUND	3.00	90	40	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	0	0	0
WESTBOUND	0	0	0
NORTHBOUND	---	---	---
SOUTHBOUND	0	0	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	SB	6.10	5.60	0.00	5.60
MAJOR LEFTS	EB	5.80	5.30	0.00	5.30
MINOR LEFTS	SB	7.90	7.40	0.00	7.40

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Columbia Blvd.
NAME OF THE NORTH/SOUTH STREET.... Hurst Ave.
DATE AND TIME OF THE ANALYSIS..... 5-3-89 ; Total Traffic pm pk
OTHER INFORMATION.... Monday Swt4

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
SB LEFT	225	63	62	62	-163	F
RIGHT	17	686	686	686	669	A
MAJOR STREET						
EB LEFT	18	458	458	458	440	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Columbia Blvd.
NAME OF THE NORTH/SOUTH STREET.... Hurst Ave.
DATE AND TIME OF THE ANALYSIS..... 5-3-89 ; Total Traffic pm pk
OTHER INFORMATION.... Monday Swt4

1985 HCM: SIGNALIZED INTERSECTIONS
SUMMARY REPORT

****

INTERSECTION..Columbia Blvd./Hurst Ave.
AREA TYPE.....OTHER
ANALYST.....FRC
DATE.....6-3-89
TIME.....Total Site pm pk
COMMENT.....Weekday Swt5

	VOLUMES					GEOMETRY							
	EB	WB	NB	SB		EB		WB		NB		SB	
LT	15	0	0	135	L	12.0	T	12.0		12.0	L	12.0	
TH	879	615	0	0	T	12.0	TR	12.0		12.0	R	12.0	
RT	0	125	0	10	T	12.0		12.0		12.0		12.0	
RR	0	0	0	5		12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	
						12.0		12.0		12.0		12.0	

ADJUSTMENT FACTORS

	GRADE (%)	HV (%)	ADJ Y/N	PKG Nm	BUSES Nb	PHF	PEDS	PED. Y/N	BUT. min T	ARR.	TYPE
EB	0.00	10.00	N	0	0	0.90	5	Y	11.3		3
WB	0.00	20.00	N	0	0	0.90	5	Y	11.3		3
NB	0.00	2.00	N	0	0	0.90	5	Y	22.8		3
SB	3.00	80.00	N	0	0	0.90	5	Y	22.8		3

SIGNAL SETTINGS CYCLE LENGTH = 90.0

		PH-1	PH-2	PH-3	PH-4			PH-1	PH-2	PH-3	PH-4
EB	LT	X				NB	LT				
	TH	X	X				TH				
	RT						RT				
	PD		X				PD				
WB	LT					SB	LT	X			
	TH		X				TH				
	RT		X				RT	X			
	PD		X				PD	X			
GREEN		15.0	35.0	0.0	0.0	GREEN		28.0	0.0	0.0	0.0
YELLOW		4.0	4.0	0.0	0.0	YELLOW		4.0	0.0	0.0	0.0

LEVEL OF SERVICE

	LANE GRP.	V/C	G/C	DELAY	LOS	APP. DELAY	APP. LOS
EB	L	0.058	0.178	23.4	C	6.7	B
	T	0.491	0.611	6.4	B		
WB	TR	0.676	0.400	15.2	C	15.2	C
SB	L	0.462	0.322	19.2	C	19.0	C
	R	0.016	0.322	13.4	B		

INTERSECTION: Delay = 11.2 (sec/veh) V/C = 0.481 LOS = B

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Columbia Blvd.

NAME OF THE NORTH/SOUTH STREET..... Hurst Ave.

AREA TYPE..... OTHER

NAME OF THE ANALYST..... FRC

DATE OF THE ANALYSIS..... 6-3-89

TIME PERIOD ANALYZED..... Total Site pm pk

OTHER INFORMATION:
Weekday Swt5

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	15	0	0	135
THRU	879	615	0	0
RIGHT	0	125	0	10
RTOR	0	0	0	5

(RTOR volume must be less than or equal to RIGHT turn volumes.)

INTERSECTION GEOMETRY

NUMBER OF LANES PER DIRECTION INCLUDING TURN BAYS:
EASTBOUND = 3 WESTBOUND = 2 NORTHBOUND = 0 SOUTHBOUND = 2

	EB		WB		NB		SB	
LANE	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH	TYPE	WIDTH
1	L	12.0	T	12.0		12.0	L	12.0
2	T	12.0	TR	12.0		12.0	R	12.0
3	T	12.0		12.0		12.0		12.0
4								
5								
6								

L - EXCLUSIVE LEFT LANE
LT - LEFT/THROUGH LANE
LR - LEFT/RIGHT ONLY LANE
LTR - LEFT/THROUGH/RIGHT LANE
T - EXCLUSIVE THROUGH LANE
TR - THROUGH/RIGHT LANE
R - EXCLUSIVE RIGHT LANE

ADJUSTMENT FACTORS

	GRADE (%)	HEAVY VEH. (%)	ADJACENT PKG Y/N	(Nm)	BUSES (Nb)	PHF
EASTBOUND	0.00	10.00	N	0	0	0.90
WESTBOUND	0.00	20.00	N	0	0	0.90
NORTHBOUND	0.00	2.00	N	0	0	0.90
SOUTHBOUND	3.00	80.00	N	0	0	0.90

Nm = number of parking maneuvers/hr; Nb = number of buses stopping/hr

	CONFLICTING PEDS (peds/hour)	PEDESTRIAN BUTTON (Y/N)	(min T)	ARRIVAL TYPE
EASTBOUND	5	Y	11.3	3
WESTBOUND	5	Y	11.3	3
NORTHBOUND	5	Y	22.8	3
SOUTHBOUND	5	Y	22.8	3

min T = minimum green time for pedestrians

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Columbia Blvd.
NAME OF THE NORTH/SOUTH STREET... Hurst Ave.
DATE AND TIME OF THE ANALYSIS.... 6-3-89 ; Total Site pm pk
OTHER INFORMATION:
Weekday Swt5

ACTUATED LOST TIME/PHASE = 3.0 CYCLE LENGTH = 90.0

EAST/WEST PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
EASTBOUND				
LEFT	X			
THRU	X	X		
RIGHT				
PEDS		X		
WESTBOUND				
LEFT				
THRU		X		
RIGHT		X		
PEDS		X		
NORTHBOUND RT				
SOUTHBOUND RT				
GREEN	15.0	35.0	0.0	0.0
YELLOW + ALL RED	4.0	4.0	0.0	0.0

NORTH/SOUTH PHASING

	PHASE-1	PHASE-2	PHASE-3	PHASE-4
NORTHBOUND				
LEFT				
THRU				
RIGHT				
PEDS				
SOUTHBOUND				
LEFT	X			
THRU				
RIGHT	X			
PEDS	X			
EASTBOUND RT				
WESTBOUND RT				
GREEN	28.0	0.0	0.0	0.0
YELLOW + ALL RED	4.0	0.0	0.0	0.0

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Columbia Blvd.
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DATE AND TIME OF THE ANALYSIS.... 6-3-89 ; Total Site pm pk
OTHER INFORMATION:
Weekday Swt5

VOLUME ADJUSTMENT WORKSHEET

	MVT. VOL.	PHF	ADJ. VOL.	LANE GRP.	LANE GRP. VOL.	NO. LN	LANE UTIL. FACT.	GROWTH FACT.	ADJ. GRP. VOL.	PROP LT	PROP RT
EB											
LT	15	0.90	17	L	17	1	1.000	1.000	17	1.00	0.00
TH	879	0.90	977	T	977	2	1.050	1.000	1026	0.00	0.00
RT	0	0.90	0								
WB											
LT	0	0.90	0								
TH	615	0.90	683	TR	822	2	1.050	1.000	863	0.00	0.17
RT	125	0.90	139								
NB											
LT	0	0.90	0								
TH	0	0.90	0								
RT	0	0.90	0								
SB											
LT	135	0.90	150	L	150	1	1.000	1.000	150	1.00	0.00
TH	0	0.90	0								
RT	10	0.90	5	R	5	1	1.000	1.000	5	0.00	1.00

* Denotes a Defacto Left Turn Lane Group

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Columbia Blvd.
NAME OF THE NORTH/SOUTH STREET... Hurst Ave.
DATE AND TIME OF THE ANALYSIS.... 6-3-89 ; Total Site pm pk
OTHER INFORMATION:
Weekday Swt5

	IDEAL SAT. FLOW	NO. LNS	f W	f HV	f G	f p	f BB	f A	f RT	f LT	ADJ. SAT. FLOW
EB											
L	1800	1	1.000	0.950	1.000	1.000	1.000	1.000	1.000	0.950	1625
T	1800	2	1.000	0.950	1.000	1.000	1.000	1.000	1.000	1.000	3420
WB											
TR	1800	2	1.000	0.910	1.000	1.000	1.000	1.000	0.974	1.000	3192
NB											
SB											
L	1800	1	1.000	0.670	0.985	1.000	1.000	1.000	1.000	0.848	1007
R	1800	1	1.000	0.670	0.985	1.000	1.000	1.000	0.848	1.000	1007

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Columbia Blvd.
NAME OF THE NORTH/SOUTH STREET... Hurst Ave.
DATE AND TIME OF THE ANALYSIS.... 6-3-89 ; Total Site pm pk
OTHER INFORMATION:
Weekday Swt5

	ADJ. FLOW RATE (v)	ADJ. SAT. FLOW RATE (s)	FLOW RATIO (v/s)	GREEN RATIO (g/C)	LANE GROUP CAPACITY (c)	v/c RATIO	
EB							
L	17	1625	0.010	0.178	289	0.058	
T	1026	3420	0.300	0.611	2090	0.491	*
WB							
TR	863	3192	0.270	0.400	1277	0.676	
NB							
SB							
L	150	1007	0.149	0.322	324	0.462	*
R	5	1007	0.005	0.322	324	0.016	

Cycle Length, C = 90.0 sec. Sum (v/s) critical = 0.449
Lost Time Per Cycle, L = 6.0 sec. X critical = 0.481

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Columbia Blvd.
NAME OF THE NORTH/SOUTH STREET... Hurst Ave.
DATE AND TIME OF THE ANALYSIS.... 6-3-89 ; Total Site pm pk
OTHER INFORMATION:
Weekday Swt5

	v/c RATIO	g/C RATIO	CYCLE LEN.	DELAY d 1	LANE GROUP CAP.	DELAY d 2	PROG. FACT.	LANE GRP. DELAY	LANE GRP. LOS	DELAY BY APP.	LOS BY APP.
EB											
L	0.058	0.178	90.0	23.4	289	0.0	1.00	23.4	C	6.7	B
T	0.491	0.611	90.0	7.4	2090	0.2	0.85	6.4	B		
WB											
TR	0.676	0.400	90.0	16.9	1277	1.0	0.85	15.2	C	15.2	C
NB											
SB											
L	0.462	0.322	90.0	18.5	324	0.8	1.00	19.2	C	19.0	C
R	0.016	0.322	90.0	15.8	324	0.0	0.85	13.4	B		

Intersection Delay = 11.2 (sec/veh) Intersection LOS = B

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... Columbia Blvd.
NAME OF THE NORTH/SOUTH STREET... Hurst Ave.
DATE AND TIME OF THE ANALYSIS.... 6-3-89 ; Total Site pm pk
OTHER INFORMATION:
Weekday Swt5

HURST
TR 3
TR 2
TR 1
6
4
8
9
5
7
COLUMBIA
BLVD
N

Saturday 2:00-4:00 pm 5/20/

Traffic Volumes: Movement Columbia / Hurst.

Lane / time	9	8	7	6	5	4	
2:00	—	—	—	—	—	—	
2:15	116	0	1	0	0	113	230
2:30	124 ⑥	1	2	0	1	129 ②	257
2:45	111 ④	1	1	0	0	118 ⑥	231
3:00 ①	104 ①	0	0	0	0	110 ⑤	214
3:15	123 ③	0	0	0	1	136 ③	260
3:30	91 ②	0	2	1	0	82 ①	176
3:45	113 ⑤	0	0	1	1	122 ③	239
4:00	121 ①	1	0	0	0	96 ⑤	218
PK Hr. 2:15-3:15	462	2	3	0	2	493	962

trucks (1 truck out of 121 veh.)

	TR1	TR2	TR3
①		① 3 min west (WE)	

Only 1 train @ 3:00 see above.

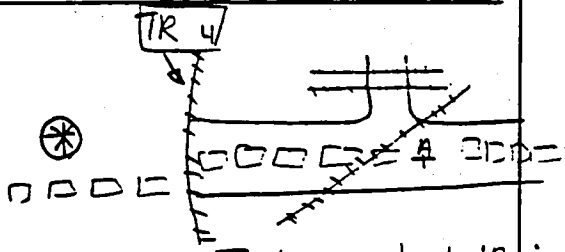
Peak Hour
2:15-3:15

Monday 6:00 – 8:30 5/6

Traffic Volumes. Movements. Columbia / Hurst.

Time \ Lane	9	8	7	6	5	4	
6:00	–	–	–	–	–	–	
6:15	75 (6)	2	0	0	0	77 (9)	15
6:30	119 (8)	4	2	0	1	73 (7)	19
6:45	196 (12)	4	1	1	0	125 (1)	31
7:00	235 (11)	7	0	2	1	111 (11)	35
7:15	121 (11)	5	1	0	1	119 (11)	24
7:30	173 (21)	4	1	0	1	122 (5)	30
7:45	140 (12)	1	0	0	0	103 (9)	24
8:00	181 X	4	2	0	3	211	40
8:15	114 (18)	0	1	1	2	110 (16)	22
8:30	97 (19)	2	0	0	2	103 (16)	20
AM PH Hr. 6:30-9:30	725	20	3	3	3	477	1231

	TR1	TR2	TR3



TR4 - passed at 10min. till 15min

Traffic stopped, count is till

** The train was three when I started counting.

One Train on TR 4

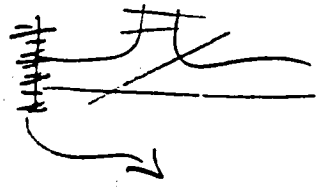
Monday 3:00 – 5:00 5/24

Traffic Volumes. Movements Columbia / Hurst

Time \ Lane	9	8	7	6	5	4	
3:00	–	–	–	–	–	–	
3:15	165 (A)	6	4	0	2	165 (23)	342
3:30	172 (23)	1	6	1	0	212 (26)	392
3:45	108 (15)	1	7	0	0	196 (17)	312
4:00	170 (21)	3	4	1	1	296 (24)	475
4:15	137 (11)	2	2	0	2	195 (19)	338
4:30	140 (?)	0	1	1	1	230 (?)	373
4:45	120 (8)	0	9	1	1	191 (15)	322
5:00	137 (11)	2	4	0	1	193 (13)	337
3:00 – 4:00	615	11	21	2	3	869	1521

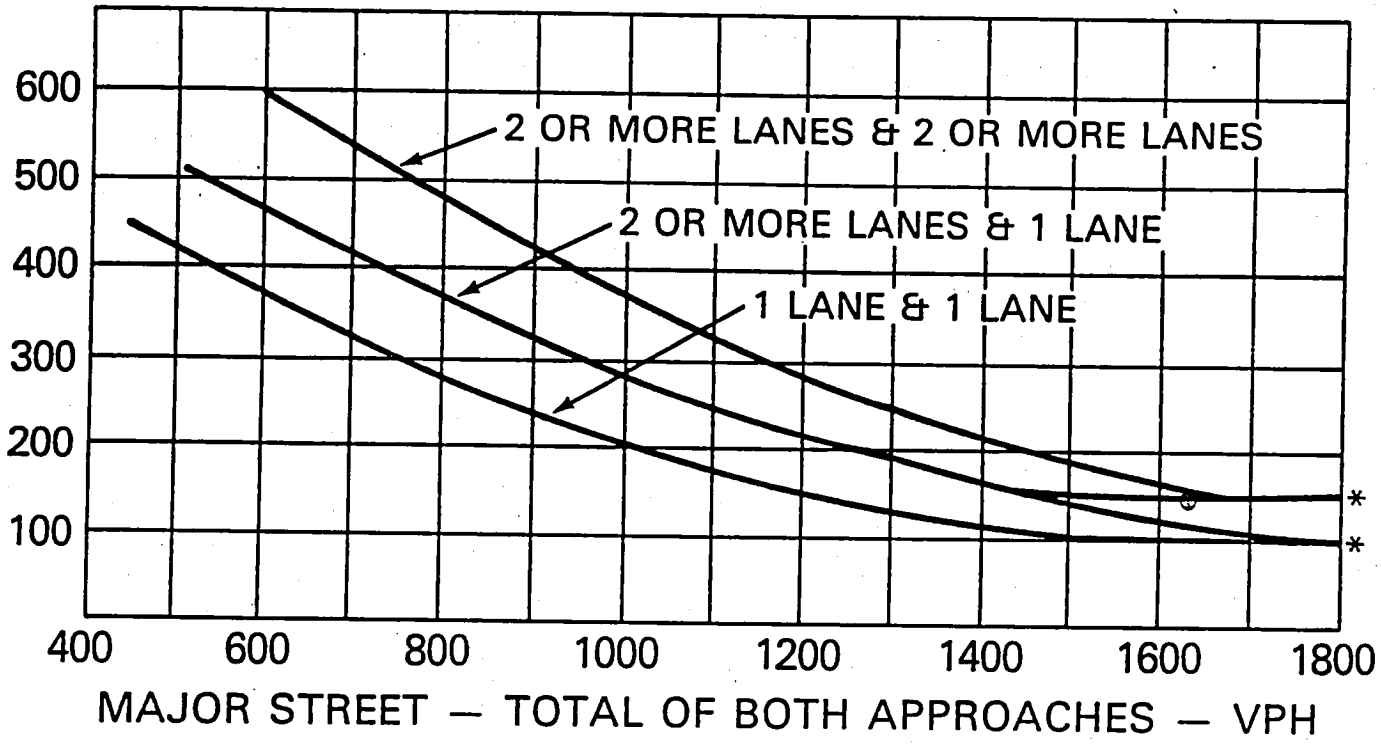
	TR3	TR2	TR1 — 2nd Train
*	11:00 ↓ 15:00		passed 3 min 44 sec.
**	1:00 ↓ 3:35		
0			

One Train 6.5 delays



Train down the road passing at 6:00 → 9:30

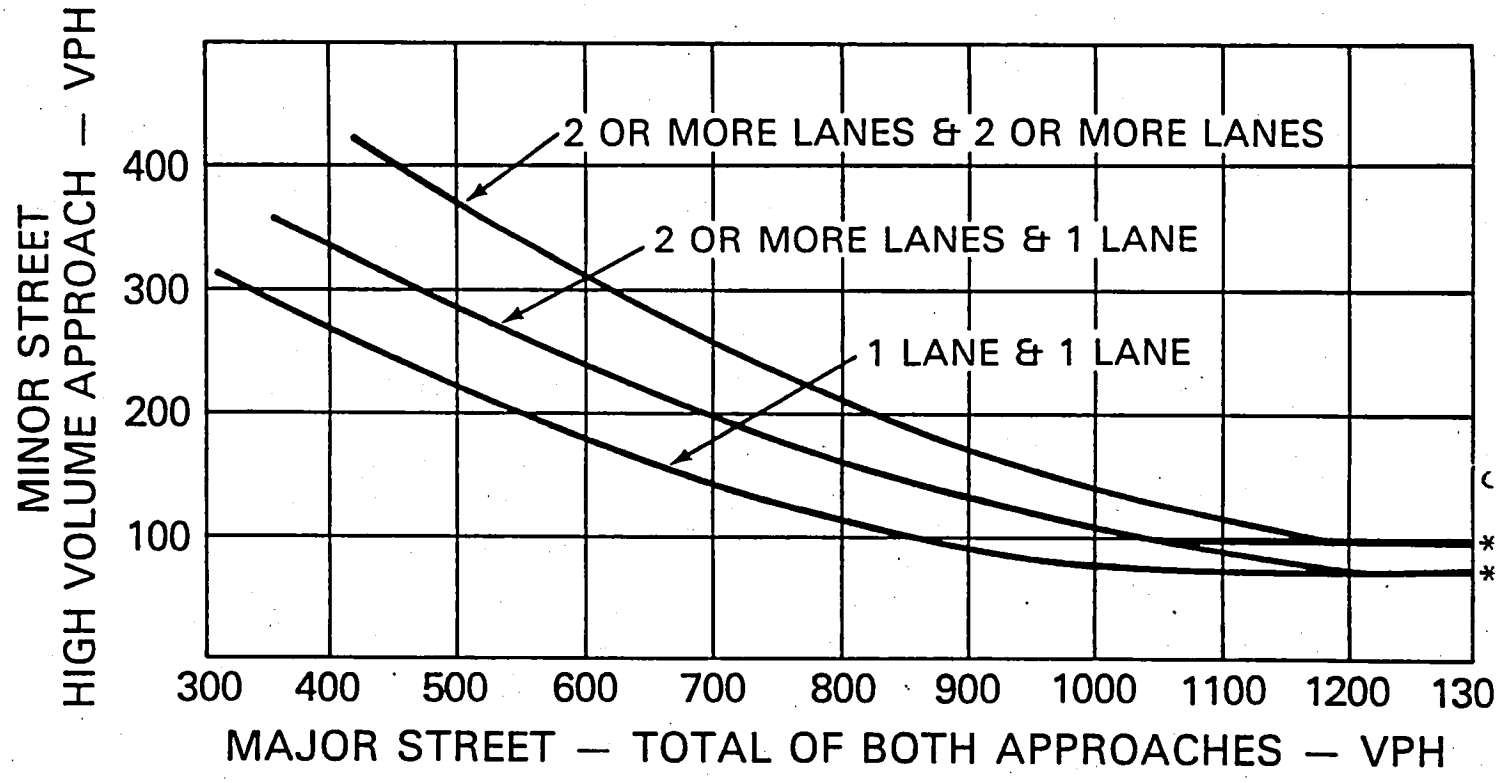
FIGURE 4-5. PEAK HOUR VOLUME WARRANT



E: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

FIGURE 4-6. PEAK HOUR VOLUME WARRANT

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*NOTE: 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.