BEFORE THE METRO CONTRACT REVIEW BOARD

FOR THE PURPOSE OF AUTHORIZING THE ISSUANCE OF REQUEST FOR BIDS #03-1060-REM FOR A PUBLIC IMPROVEMENT CONTRACT FOR THE REPLACEMENT OF THE ROOF AND VENTILATION SYSTEM AT THE METRO CENTRAL STATION	)))))))	RESOLUTION NO. 03-3307 Introduced by: Mark Williams, Interim Chief Operating Officer, with the concurrence of David Bragdon, Council President

WHEREAS, Metro owns the Metro Central Transfer Station, a solid waste facility located in Northwest Portland; and,

WHEREAS, a Metro renewal and replacement study has specified that the roof and ventilation system of the Metro Central Transfer Station require repairs and improvements; and,

WHEREAS, the Metro Council has assigned funds in the Metro Fiscal Year 2003-04 budget for the expenses of implementing the repairs and improvements; and,

WHEREAS, the staff of the Solid Waste & Recycling Department have recommended the retention of a construction contractor to complete the replacement of the existing roof and ventilation system at the Metro Central Transfer Station; and,

WHEREAS, Metro Code Section 2.04.026 requires approval for the release of requests for bids for all contracts for public improvement in an amount greater than $50,000; and,

WHEREAS, Metro Code Section 2.04.052 requires certain processes for procurement of public contracts in amounts greater than $50,000; and,

WHEREAS, this Resolution was submitted to the Chief Operating Officer for consideration and was forwarded to the Metro Council for its approval; now therefore,

BE IT RESOLVED that the Metro Council hereby authorizes the issuance of RFB #03-1060-REM for a public contract agreement for the replacement of the roof and ventilation system at the Metro Central Transfer Station, and further authorizes the Chief Operating Officer to execute a contract with the lowest responsive and responsible bidder in a form substantially similar to the contract contained in Exhibit A.

ADOPTED by the Metro Council this 17 day of April, 2003.

David Bragdon, Council President

Approved as to Form:

Daniel B. Cooper, Metro Attorney

APPROUVÉ APPROVED METRO COUNCIL CONSEIL METROPOLITAINE METRO

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Exhibit A
Resolution No. 03-3307

REQUEST FOR BIDS

FOR

REPLACEMENT OF THE ROOF &

VENTILATION SYSTEMS

METRO CENTRAL STATION

PLEASE NOTE: This document (Exhibit A) was too large to scan in its entirety. To view the document in hard copy,please Contact the Council Archivst.

April 2003

RFB #03-1060-SWR

Metro
Solid Waste & Recycling Department
600 N.E. Grand Avenue
Portland, OR 97232-2736
www.metro-region.org

STAFF REPORT

IN CONSIDERATION OF RESOLUTION NO. 03-3307, FOR THE PURPOSE OF AUTHORIZING THE ISSUANCE OF REQUEST FOR BIDS #03-1060-REM FOR A PUBLIC IMPROVEMENT CONTRACT FOR THE REPLACEMENT OF THE ROOF AND VENTILATION SYSTEM AT THE METRO CENTRAL STATION

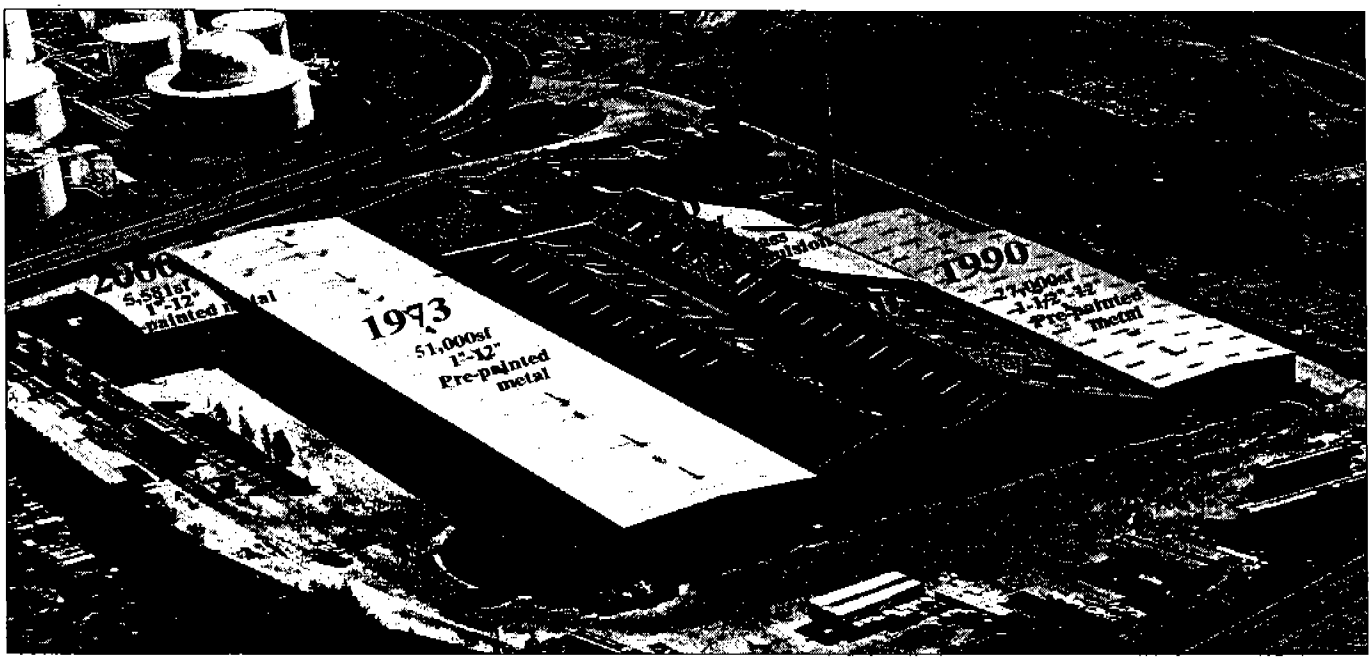
Date: March 13, 2003 Prepared by: Bob McMillan

BACKGROUND

Metro Central Station (MCS) is a Metro-owned solid waste transfer station located in Northwest Portland and operated under contract by Browning Ferris Industries (BFI). It began accepting commercial and public waste in 1991 corresponding with the closure of the St. Johns Landfill located in North Portland. The facility received 328,000 tons of solid waste in 2001. Various recycling programs diverted 6.7% of the waste stream. The remainder was compacted into 30-ton slugs of waste, placed into transfer trailers and sent to the Columbia Ridge Landfill located 150 miles east of Portland near Arlington, Oregon.

The MCS facility is comprised of seven individual steel structures grouped together to create one 171,000sf facility. The original building was erected in 1920 and expanded in 1940, 1955, 1967 and 1973 with the final two stages in 1990 and 2000. The roof materials are metal, pre-painted or coated with chopped glass and asphalt emulsion and appear to be original. The roofs contain approximately 25 smoke vents, 35 exhaust fans and 250 translucent panels.

METRO CENTRAL STATION



Modifications to the roof at MCS have been included in the renewal and replacement report since 1989 and tied to the Metro bond ordinance requirements. The item has also been shown in the Capital Improvement Plan since 1997. In 2001, URS, a local consultant, completed the Facility Master Plan and updated the renewal and replacement account, both of which identify the roof for replacement. Metro subsequently solicited an independent roof inspection that showed all but the last roof installed in 2000, in "poor" condition and "requiring replacement."

The intent of this project is to replace the roof and exhaust fans through the use of a general contractor. The primary objectives of the project are:

- Maximize the natural lighting within the facility to reduce energy costs and improve safety;
- improve ventilation and air quality inside the facility through natural and mechanical means;
- reduce exhaust fan noise and energy requirements;
- minimize disruption to the operation of the facility;
- provide access to the roof for inspection and maintenance.

Roof Replacement

The subsequent design investigation found that corrosion from the underside of the roof, a common problem in waste transfer facilities, is present in this facility. This is due to a combination of factors, including the moist conditions inside the building, organic dust and diesel exhaust gases, which form acids. Metal roof panels are manufactured with the intent of preventing corrosion from the exterior side of the panel. The newer sections of the building (1967, '73, '90) were designed and built at a time when better metallurgy and load calculations were in use. This allowed for lower safety factors and subsequently thinner metal. The method of galvanizing metal panels also changed from complete submersion of the metal into a galvanizing solution to electro-plating a thin film onto the metal. All of these conditions are in place at Metro Central Station. The result has been corrosion of the roof panels and the roof purlins to which the panels are attached. Close inspection by a structural engineer found that most of the purlins in the 1990 section will need to be replaced along with the roof panels. The 1967 and 1973 sections will also require some replacement of the roof purlins. This is similar to the situation found at the Metro South Station when the roof required replacement after 10 years of service.

The selection process for a replacement roof included the evaluation of six options. One was an eco-roof consisting of a solid roof with a layer of soil and low growing drought resistant plants. This would have the advantage of reduced heat gain and storm water run-off. A structural review of the building found that no sections would be capable of supporting the weight of this type roof. The entire structure would have to be modified from the roof purlins down to the footings.

The second type of roof considered was aluminum panels. Aluminum is light weight and naturally corrosion resistant. This option would still require some structural upgrades. Because aluminum is weaker than the existing steel, more purlins would have to be added to support the roof panels. While the aluminum itself is corrosion resistant, when it is laid over steel purlins galvanic corrosion occurs. To prevent this accelerated corrosion caused by physical contact between dissimilar metals, all the purlins would require an isolating tape or sealant be applied to the top of the purlins where the aluminum comes into contact.

The third roof type considered was to use stainless steel roof panels. While this solves the corrosion problem, its weight would require structural upgrades through much of the facility. The cost of stainless steel is also higher than any other panel option both in material and installation.

The fourth roof type evaluated was a coated steel roof similar to the current roof. Some areas of the facility could support a direct overlay with thin steel panels, while other areas would require structural upgrades. To prevent a repeat of the current corrosion problem, the steel panels would require additional rust inhibitor on the underside. This additional coating increases the material cost and its corrosion protection is lost when cut or drilled. An additional option considered was to use insulated steel panels to reduce the conditions that promote corrosion. This, of course, increases the material and installation costs. There was also concern over the insulating material effects on birds and the birds' effect on the insulation.

The fifth roof option was to apply a sprayed polyurethane foam (SPF) on the exterior and/or interior of the existing steel panels. While this option had the advantage of being light weight, the material it adheres to must be clean and structurally sound itself. This is not the case throughout the facility. A thorough cleaning would be required of all the purlins under the roof and good adherence still could not be ensured. Again, this material could be a problem with the birds that frequent the facility.

The sixth roof option evaluated was to replace the roof with fiberglass reinforced plastic (FRP) panels. These panels require minimal structural upgrades and are completely corrosion proof. They have the added advantage of increasing natural lighting inside the facility. To do this requires removal of the existing panels. FRP will not cause galvanic corrosion like aluminum and is strong enough that it does not require addition purlins to be added. The FRP roof's corrosion proof material, unlike coated metal, is unaffected by cutting and drilling. The installed cost of an FRP roof would be less than 1.5% more than coated steel, but is expected to last longer than a metal roof even with additional corrosion coatings.

Since corrosion is the fundamental cause for this replacement, staff recommend the use of fiberglass reinforced plastic (FRP). This material has been used for exhaust ducting of highly corrosive gases for many years but did not see wider application due to its poor performance when subjected to fire. With improved fire resistance, it is now being used in the manufacture of translucent roof and wall panels. These panels have been successfully tested for flame spread, hail damage, and wind uplift. The design architect has consulted with the City of Portland Office of Public Development Review and verified acceptance of these panels for use in the city's jurisdiction. A review of applications similar to ours found that these type of panels are now being used in indoor waste transfer, recycling, and waste water treatment facilities. The use of a non-metal roof, like FRP, will also eliminate the roof as a potential source of zinc in the site's storm water discharge. Discussions with a manufacturer and an FRP products representative found that at the end of its life cycle as a roof, this material can be ground and reused in other plastic products.

A major concern at the start of this design was the building structure. The materials and methods of construction span 80 years. The various sections of our facility were designed for different purposes and under differing building code requirements. Due to the age of some sections, design criteria and calculations were not available for the entire building. This required a thorough structural review to determine the allowable load that could be placed on the roof. The results showed that allowable loads were very small and some sections of the building will require structural upgrades under their current condition. The FRP panels selected are light weight enough to be used with only minimal structural upgrades, yet strong enough to allow personnel to walk on the roof to perform maintenance on the exhaust fans.

FRP panels have the added advantage of being translucent. Depending on the manufacturer, color, and thickness, these panels will allow 50% of the light to pass through to the interior of the building. Measurements of existing light levels within the building indicate that the translucent panels will provide more light than is currently obtained with the facility lights on. This will increase visibility for the truck drivers backing into the facility, and improve safety for the workers on the floor. Allowing much more

natural light into the building will save energy costs for lighting. This increased natural light will also reduce the cost of another budgeted project to replace the current light fixtures.

Ventilation Upgrades
In conjunction with maximizing natural ventilation, the 35 existing 10-horespower roof mounted exhaust fans will be replaced with 25 new 7-1/2 horsepower fans. The existing fans were not designed for the current use, or size of the facility and are also extremely loud and inefficient. Due to their intense noise, they are seldom used during normal operations. The new fans will be of lower horsepower and quieter operation. With fewer fans and smaller motors, the system energy consumption will be reduced.

The facility is completely open on only one end, allowing the wind to interfere with the exhaust fans but not providing natural exhaust. The new ventilation system design will open areas across the top of the walls to maximize natural cross ventilation. This will provide the advantages of free air movement through of the building and additional natural lighting. The increased air movement will reduce dust circulation and settling on the building framework. This will improve the air quality inside the building and reduce the formation of corrosive condensate on the roof purlins.

Release of this RFB is anticipated by late March with the issuance of a construction contract in May. Estimated construction time is 5 months, thereby concluding in late 2003.

ANALYSIS/INFORMATION

1. **Known Opposition**

   There is possible opposition from metal roof suppliers that do not provide FRP roofing.

2. **Legal Antecedents**

   Metro Code 2.04.026(c) requires Council authorization prior to the release of bid documents for contracts designated as having a significant impact on Metro. This project was so designated during the budget review process.

3. **Anticipated Effects**

   The roof, gutters, ventilation and natural lighting will be improved throughout the facility.

4. **Budget Impacts**

   The current budget for construction is $2,672,000. The architectural consultant's estimate of construction costs is $2,316,000.

RECOMMENDED ACTION

The Chief Operating Officer recommends approval of Resolution No. 03-3307.

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