

Waste Reduction Coordination for Headquarters Renovation

Meeting Summary

October 20, 1992

Attendees: Jim Goddard, Pat Merkle, Flor Matias , Andy Sloop, Bill Metzler,
Pat Varley Michel Gregory, Berit Stevenson, John Kotrlik

(Additional distribution: Leigh Zimmerman, Genya Arnold,
Steve Kraten, Glenn Taylor, Debbie Gorham, Joanna Karl)

Salvage & Construction Site Recycling: Pat Merkle distributed a handout of all of the materials which have left the project site. To-date, 5,915 tons of material have been removed from the site. 610 tons have been used and recycled and a mere 154 tons have been disposed. Additional reuse will be computed before the signs on location are changed, (see attachment).

Recycling System: No new information.

Status of Buy Recycled: Pat Varley requested an update from Regional Facilities on recycled materials incorporated into the Headquarters Project. Syndacrete is still an option with a \$6,000 to \$8,000 price preference. The design will be decided in the immediate future. Cade has been asked to respond to Regional Facilities request regarding Santana shower benches, homosote, wheel stops and the playground material. The playground will not be dealt with until a later date.

Pat Varley will meet with Debbie Gorham with a proposed list of purchases for the allocation of the \$35,000 price preference for Buy Recycled. Berit mentioned that recycled or refurbished -- may need a price preference. This furniture could spend the remaining \$10,000. The recycled furniture is modular with partitions, desks and chairs, with a recycled content of 80% to 90%. Jim Goddard requested to know if the sound board for that system is manufactured with a recycled content.

Green glass cullet is continuing to be incorporated into this project. Glenn Taylor, Andy Sloop and Pat Merkle met this week to discuss the possibility of using glass as an sub-base in the parking lot in front of the daycare area. Cade has written the contractor, Goldie Gentle, requesting that they use this material, a waste product for Owens Brockway with non-ferrous metal in it. Ron Sprague has spoken with Andy and has agreed to donate the material. This is a contaminated material that has bottle caps in it that cannot be removed with a magnet. When it is detected, a large handful of glass is removed from the line with a bottle cap in it. Pat Merkle spoke with Don Nail of Hoffman Construction and was referred to Goldie Gentle regarding transportation of this material and its potential for use in the project.

The light-weight soil change order has been received, and the cost, \$675.00 has been approved. This light-weight soil will be supplied by Grimms Fuel and used in the Plaza planters. Pat Merkle is continuing to negotiate with McFarlanes to receive a sample of their top soil available this Spring. Leigh Zimmerman and Lauren Ettlin will be at McFarlane's tomorrow (Wednesday, September 21) and hope to bring back a sample which will then be delivered to Hoffman for testing.

Andy Sloop has been tracking the paint. Apparently Chris has spoken with Reickle. Reickle is planning to substitute Metro paint. Berit said this morning's meeting specified a 50/50 recycled primer and a surface coat of 100% virgin. Andy will watch the paint and update us at the next meeting.

Public Affairs: Michel Gregory reported that the video tape which takes 2-1/2 hours to view is in her possession. All involved felt it was a good experience and a lot of fun. Michel Gregory also shared an article from this week's *Daily Journal of Commerce* showcasing Debbie Palarmeni. That article will be attached with this Summary.

The subcontractor magazine article has been received from Hoffman Construction and will be attached to these minutes.

Landscape: Bill Metzler, Berit Stevenson, Flor Matias, John Kotrlik and Jim Goddard met to discuss the benefits and disadvantages of drip irrigation on the project. The results are attached.

Action Items:

Pat Varley: will acquire a current total spent on recycled from Regional Facilities and meet with Debbie Gorham to allocate any residual funds.

Pat Merkle: will get the topsoil take off from the landscape plans. This will allow McFarlanes and Grimms to bid a topsoil with a recycled content.

Andy Sloop: will monitor the paint for this project, and update the committee at the next meeting.

Pat Merkle: will work with Hoffman and the subcontractor and Owens to coordinate the green glass delivery for sub-base.

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SUBCONTRACTOR

Don't card, V.
Cerven
Ferguson
Hessick
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Hilman
Kline
Kryza
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Sorenson
Stoltz
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Wagner
Wright
Young

SEP 14 1992

VOLUME 14 NUMBER 3

Published by the American Subcontractors Association

SEPTEMBER 1992

Subs don't see big jobs as 'recession ending' signs

Some in industry remain pessimistic

By MARSHARHEA

In the nation's heartland several major construction projects are boosting the industry's outlook, but subcontractors still take a dim view of the future.

"Stay alive till '95" is the favorite slogan of one member of the American Subcontractors Association-Chicago Chapter, according to Executive Director Perry Doubt. Chicago is getting a boost from an expansion to McCormick Place (the convention center), a new stadium for the Black Hawks and Bulls, and additional work at the airport. Still that is not enough to boost the economy to health.

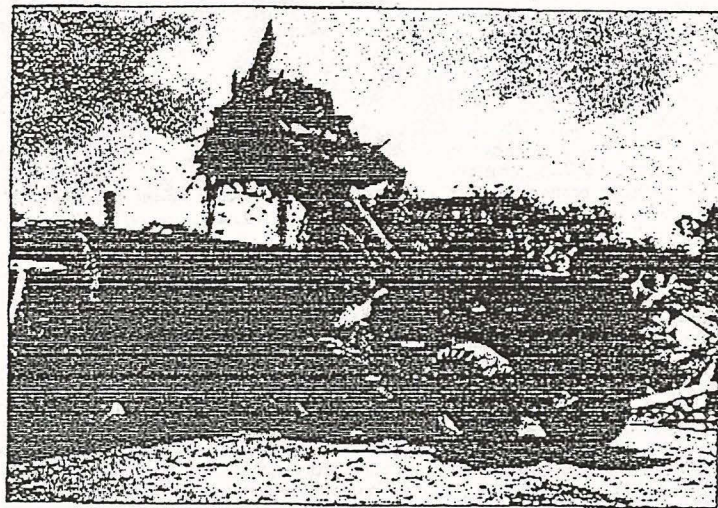
In an effort to revitalize the construction industry, the chapter became the leading construction association to endorse a proposed \$2 billion casino/entertainment center. Since the Illinois Legislature must approve the project, the chapter has been lobbying for it.

"It will put a big spark in our construction industry and provide tax revenue for the city and state," said Anne Wilson, chapter president and president of Bigane Paving Company. She admits she would rather see a \$2 billion manufacturing project come into Chicago because it would generate higher paying jobs, but no one is proposing one.

Dave Sauerman, vice president with Harrie Trust Bank and an ASA-Chicago Chapter board member, said the "core commercial-industrial market is deadlier than a doornail. The general feel is that while things might get better, people better adapt to this marketplace."

"If you aren't a top notch contractor, you might as well close your doors right now," Sauerman said. "In this kind of market I am going to take a fantastic contractor with years of experience at a great price. I am still getting my building built at 96 cents on the dollar, so why take Brand X?"

In Columbus, Ohio, construction continued on page 3



The cost of cleanup and removal are being passed to subcontractors. (Photo courtesy of National Solid Waste Management Association)

Subcontractors recycle construction waste for profit and by necessity

By MARSHARHEA

Bazan Painting Company in St. Louis is transforming a potential hazardous waste problem into what may be a profitable sideline business, becoming one of the few construction companies making recycling work.

The company processes leftover solvent-based paint and dirty paint thinners through a distillation system, and sends the sludge to a local paint manufacturer for reprocessing as a mill-end primer. Overcoming the greatest impediment to construction recycling, the industrial painting contractor has created its own market

for the recycled product purchasing primer.

Walt Bazan Jr., Bazan vice president and an American Subcontractors Association board member, says, "When I get things running smoothly, I plan to hire a salesman and sell the primer to steel fabricators." He is even trying to persuade other union painting contractors in St. Louis to try his approach.

"I think it is a system that will work. It's technically illegal to accept someone else's wastes, but if you are able to make something out of it, it becomes a product," Bazan said. Un-

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Congress OKs bill to study subs' access to bonding

ASA initiative awaits president's signature

By E. COLETTENELSON

In the closing hours before recessing for the Republican National Convention, Congress approved and sent to the president an American Subcontractors Association initiative designed to determine if construction contractors have adequate access to surety bonding.

The "Small Business Access to Surety Bonding Survey Act" would require the U.S. General Accounting Office to conduct a comprehensive survey of firms concerning experiences in obtaining surety bonding. Federal, state and local laws require contractors to provide payment and performance bonds as a precondition to the award of a construction contract. Many private sector purchasers of construction services also require contractors to provide bonds.

The survey requirement, originally introduced as individual bills by Del. Eleanor Holmes Norton (D-D.C.) and Sen. Harris Wofford (D-Pa.), was added as an amendment to a bill that would authorize more Small Business Administration loans to businesses unable to get credit at banks. President Bush is expected to sign the package.

"This study will help determine the extent to which qualified contractors have a problem in obtaining adequate surety bonding," said ASA Government Relations Committee Chairman Wayne Ruth.

In order to ensure that GAO conducts a comprehensive review, the bill establishes a base line of questions that should be included in a questionnaire sent to construction firms. It then requires GAO, in conjunction with the Small Business Administration, to prepare an assessment of the data collected by the survey and submit it to the Senate and House Small Business committees within 18 months of enactment. The bill does not require GAO to recommend Congressional action based on its assessment. continued on page 3

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The rising cost of disposal is driving subcontractors to seek alternatives ...

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til the sideline business takes off. Bazan is already saving money by avoiding the \$200 per drum charge to burn the waste paint at a fuel-to-energy plant.

"I think a lot more can be done with recycling of materials," said ASA President Ben C. Griggs. "The waste is horrendous."

"The biggest problem is to make the numbers add up and create markets for the recycled products," said William Baker, executive director for the National Association of Demolition Contractors. Since his members are responsible for waste disposal, they are interested in recycling. But Baker admits that few demolition contractors have set up sideline businesses in recycling.

In the Midwest, Baker says, landfill costs are still below recycling costs. That may change as lack of landfill space becomes a growing problem, and government agencies take greater

"Our big thing as subcontractors is that we are being charged more for cleanup and removal," said Sam Fromkin, president of Fromkin Brothers and president of the New Jersey Subcontractors Association.

note of the volume of debris construction generates. Depending on the region of the country, construction and demolition debris ranges from 10 to 30 percent of a community's waste stream.

"Our big thing as subcontractors is that we are being charged more for cleanup and removal," said Sam Fromkin, president of Fromkin Brothers and president of the New Jersey Subcontractors Association. New Jersey has a serious landfill problem, and disposal costs can run from \$450 to \$750 per 40-yard dumpster. General contractors are passing the cost through to subcontractors.

"As the cost of disposal continues to go up, contractors will be looking for alternative disposal sites," said Robert Brickner, senior vice presi-

dent for Gershman, Brickner & Bratton Inc., a solid waste consultant based in Falls Church, Va. "A high alternative cost is the mother of invention" and leads to recycling entrepreneurship, Brickner said.

Typically construction involves a private developer working with a private hauler, taking the debris to a private landfill. Construction debris "tends not to be the highest profile issue for municipalities," Brickner said.

Brickner said most construction materials are still placed in a single roll-off box, which lowers the value of the material for recycling. Some projects are beginning to place multiple boxes onsite to separate materials. Though uncommon, he has heard at least one general contractor making subcontractors responsible for their own disposal.

More than 95 percent of construction and demolition waste falls into three categories:

- inert granular materials (aggregate, asphalt, and dirt);
- shredded wood products; and
- ferrous metals.

For many years concrete and asphalt have been recycled. Scrap metal is reprocessed. Untreated wood and broken bricks can be chipped into landscape materials. Asphalt shingles are sent to remelt plants to use in the manufacture of asphalt. Aluminum siding companies are profiting from recycling their scrap. But in many areas, construction companies have little access to recycling companies with the technology and the markets to reuse their byproducts.

It may be some years before the Metropolitan Services District headquarters project in Portland, Ore. is a typical project. Dubbed the "Resourceful Renovation" project, the project is a model for both recycling construction waste and specifying that recycled products be used whenever possible.

This solid waste management agency elected to renovate a former department store for its offices. Not only did Metro insist on salvage operations during demolition work, the agency included a waste management plan in all subcontract packages. In



Photo courtesy of the National Solid Waste Management Association.

the specifications, all subcontractors were encouraged to propose how they might use recycled products in their work as well as recycle waste materials.

When the bids were filed, the subcontractors ignored the call for recycled products and "did it the old way", so general contractor Hoffman Construction had to go back out for bids again. Because landfill costs are

high in Portland, Wayne Drinkward, Hoffman executive vice president, said the company would have tried about 70 percent of the recycling specifications anyway. It took the owner's insistence on using recycled products to provide the incentive for them.

"It has always been good business to recycle where it makes economic sense," Drinkward said.

Subs holding on until economic rebound ...

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starts are off 35 to 40 percent, but there is a lot of bidding activity, according to Chet Gibson, crane manager for George J. Igel & Co. Inc. and Legislative Committee chairman for ASA-Central Ohio.

"Everything is getting tighter. All the bids are tighter. A lot of people have downsized to keep going until the industry rebounds," Gibson said. Although payments have slowed down, there are few bankruptcies.

In the Akron/Canton area, ASA Chapter Executive Director Ann Makley said the industry is better than it has been in the last two years. "That's not saying a lot because the year before was the pits," she said. She is seeing more project plans in the chapter's plan room, although there are not a lot of big jobs.

"I think a lot of our people are trying very hard to hang in there," Makley said.

"I'm very reluctant to tell you it's great because it will attract outside competition," said William Allen of A & A Mechanical Inc. in Louisville, Ky. "There's a lot of contracting capacity in this area that just isn't being used," said the ASA-Kentuckiana Chapter president.

In Louisville a \$660 million Ford truck plant expansion was heralded as a much needed boost, but local contractors are now disappointed that most of the work is going to out-of-

town contractors.

Indiana subcontractors are looking ahead to a \$400 million United Airlines maintenance facility, which is expected to employ about 370 subcontractors. "This project was the plum of 1992," said Gary Price, executive director of the Indiana chapter of ASA. "Other than that the vacancy rate is high downtown."

"It's uneven. Some subcontractors are having a record year, while others are barely keeping up with prior years," Price said.

Subcontractors are like other business owners who are skeptical about the possibilities for economic growth, according to a quarterly economic survey released in August by the National Federation of Independent Business. The Optimism Index slid more than two points to 100.0 (1978=100), reaching its lowest ebb since March. The percentage of those expecting favorable conditions for expansion declined four points from April's figures to 12 percent.

Small businesses increased hiring slightly during the quarter, according to the NFIB survey, but expect a tighter job market ahead. Only a net 2 percent of the respondents plan to add workers in the coming quarter, the weakest July figures in a decade.

"It's not really a good idea to hold onto a big costly organization in the hopes that things will turn around," Sauerman of Chicago advised.

Surety bill awaits president's signature ...

continued from page 1

ment. The Foundation of the American Subcontractors Association, the National Association of Minority Contractors, and George State University have underwritten surveys which seem to show that some contractors have problems in obtaining surety bonding.

However, representatives of the surety industry have challenged the validity of these studies.

The most recent FASA survey, conducted in 1990, generally revealed:

- a surety market that is placing

increasing demands on its contractor clients, through increased underwriting requirements and increased premiums - and a reluctance by some contractors to meet those demands;

- a pattern of surety bond agents not providing their clients with needed information;

- an effort by specialty trade contractors to satisfy their bonding requirements outside of the standard surety market; and

- an underclass of principally small contractors who refuse to or are unable to provide surety bonds for a variety of reasons.

GREEN BUILDING

So many questions, so much to be recycled

Resourcefulness

Today's builders are beginning to ask more questions about ways to build environmentally friendly structures

Environmental concerns, such as dwindling forest products and other natural resources have grown very rapidly over the past few years and have significantly impacted the building industry.

One very important question facing the Northwest is, "How can the building industry balance the need to protect the environment with the need to provide affordable housing for an estimated 500,000 new households over the next 10 to 20 years?"

One answer is for builders to develop a philosophy of "building sustainably." The Sustainable Building Collabora-

BY
DEBBI PALERMINI and MICHAEL O'BRIEN
Sustainable Building Collaborative

tive (SBC), a new non-profit educational organization is trying to develop answers to questions, such as what is "building sustainably."

In August, the SBC brought together a group of experts in energy and resource-efficiency to help develop a working definition for sustainable building. The group came up with: "sustainable" construction meets present needs and doesn't compromise future choices. It is accomplished by incorporating resource-efficiency throughout all phases of design, construction, operation and demolition.

What impact will all of this have on the building industry? While there is an obvious need to develop new build-

ing products that provide an efficient alternative to traditional resource intensive materials, can America's waste stream provide some of those needed materials? We are hoping the answer is yes.

COMPONENTS: Innovators in the building and design community are beginning to look further into the energy and resource impacts of the building itself. There are really four basic components of any green building plan:

- Conserve natural resources, such as energy, water and forest products.
- Provide for indoor air quality, which has two parts: the ventilation system and reducing pollutants, such as off-gassing of formaldehyde and other fumes from paint, furniture, finishes, etc.
- Recycle construction debris and use new recycled content building materials.
- Developing a water quality plan



Debbi and Don Palermini sort wood on this year's Street of Dreams in an experiment to find out what types of building material could be recycled.

that includes reducing soil erosion and surface water runoff and reduce the use of hazardous materials.

When thinking about which building materials to use, they are asking such questions as:

- Do the products use virgin resources efficiently?
- Are the materials produced locally?
- Do they make reasonable use of recycled materials?
- Will they offer high quality, durability and value over the life of the building?
- Will they help ease pollution?
- Do they minimize health risks to those who manufacture the products, use them to construct the building or to those who occupy or operate the building.
- Can they be recycled?

For many builders who want to build environmentally responsible buildings, one frustration is a lack of clear guidelines. What really works in the real world? How much is this new "resource-efficient" building product going to cost me and my client? How easily is it to recycle construction debris on a job site? How much extra labor and time will it take to install these new products? What is the market for new "green" buildings? And what are these new "resource-efficient" building products anyway?

DEMONSTRATIONS: Two demonstration projects are currently being built in Portland that will help answer some of those questions. The first project is Metro's new regional center. This project, currently under way, is the renovation of an old, 1920s era commercial structure into a 93,000-square-foot office building.

Throughout the project, the majority of construction waste has been salvaged, reused or recycled. New resource-efficient building materials are being incorporated and a state-of-the-art recycling system is being installed. In addition, the building meets new high energy and water-efficiency standards.

Care is being taken to incorporate

landscaping that will require less water and pesticides.

A second project, is called the HERE Today House. This Healthy, Environmentally sound, Resource and Energy efficient house is sponsored by Portland General Electric and the Sustainable Building Collaborative, and endorsed by Metro, the Home Builders Association of Metropolitan Portland and the City of Portland.

The 2,500-square-foot home was designed and is being built by Gregory Acker of Eco+Tech Construction. Acker is also a founding member of the Sustainable Building Collaborative.

The purpose of the demonstration home is to see first hand the successes as well as pitfalls of building a more resource-efficient home.

A high priority has been placed on using wood as efficiently as possible and utilizing wood composites or substitutes whenever possible.

Other examples of materials to be used are:

- Tile made from recycled auto glass
- Willamette Valley rye-grass manufactured into wall coverings and tiles
- Recycled pop bottle carpet
- Recycled content drywall
- Paint containing recycled paint
- Insulation made from old newspapers.
- Ceiling tiles and panels made with recycled newsprint.

Additionally, all construction wastes will be recycled to reduce the amount of waste generated by the building process. Landscaping will focus on plantings that need little pesticides and water, and a rainwater collection system will be incorporated.

Only preservative-free paints as well as non-toxic adhesives and finishes will be used. Care is also being taken to prevent soil erosion and reduce surface-water run-off.

The home is owned by Michael and Andrea Burke, who have been very active in helping make the "right" decisions about products and construction

methods.

A resource guide is being developed to document the building process and to provide guidelines and offer choices for those interested in building or living in an "environmentally sustainable" home.

Builders and consumers, such as the Burkes, are faced with many choices each and every day. Information learned from demonstration projects such as Metro's Resourceful Renovation and PGE's HERE Today house will provide invaluable information for the new generation of "green" builders.

It is up to all of us to promote a healthy environment. One of the most important ways to do this is by building with a philosophy that sustains and at the same time enhances our environment. □

Debbi Palermini and Michael O'Brien are members of the Sustainable Building Collaborative in Portland.

HQWASTE2.XLS

Date	Generator	Material	Quantity		Transportation	Recycling Co.	Amount	
			yd3	tons			Disposal Site	Disposal
30-Jun	Pen-Nor	Cardboard		0.25	Fred	Wastech	\$5	
1-Jul	Hoffman	Cardboard	5	0.11	MDC	Wastech	\$0	
1-Aug	Hoffman	Cardboard	5	0.11	MDC	Wastech	\$0	
14-Oct	Sound	Cardboard	10	0.3	self	Wastech	\$66	
			20	0.77			\$71	\$0
Feb-92	Hoffman	Metal		1		Hippo		
12-Jun		Metal		300	Traded	Allied		
23-Jun	Hoffman	Metal		3	Jerry's Trucking	COPI	-0-	\$0
23-Jun	Hoffman	Metal		5	Jerry's Trucking	COPI	-0-	\$0
29-Jun	Hoffman	Metal		3	Jerry's Trucking	COPI	-0-	\$0
29-Jun	Hoffman	Metal		5	Jerry's Trucking	COPI	-0-	\$0
30-Jun	Pen-Nor	Metal		0.82	Self	Schnitzer	\$43	\$0
15-Jul	Hoffman	Metal		8	BoxMDC	Schnitzer	-0-	
27-Jul	Hoffman	Metal		4	Jerry's Trucking	COPI	-0-	
27-Jul	Hoffman	Metal		4	Jerry's Trucking	COPI	-0-	
16-Aug	Basic Fire	Metal		3	self	Mt. Hood Met	\$135	
15-Sep	Hoffman	Metal		3	Jerry's Trucking	COPI	-0-	
16-Sep	Hoffman	Metal		3	Jerry's Trucking	COPI	-0-	
30-Sep	Sound	Metal		19	flatbed	Mt. Hood Met	\$869	
				361.8			\$1,048	\$0
12-Jun		Mixed		132	MDC	Grabhorn		
2-Jul	Hoffman	Mixed	30	6	Box/MDC	Grabhorn	(\$318)	\$150
22-Jul	Hoffman	Mixed	20	3.4	Box/MDC	Metro Transfe	(\$295)	\$75
28-Sep	Hoffman	Mixed	30	11.06	Box/MDC	Metro Central	(\$830)	\$75
6-Oct	Buckaroo	Mixed		1	self	Metro	(\$75)	
14-Oct	Sound	Mixed		0.1	self	Shop Dumpste	-0-	
				153.6			(\$1,517)	\$300
14-Oct	Buckaroo	Polystyrene Foam	10	0.05	self	Shop	-0-	
			10	0.05			\$0	\$0

12-Jun		Rubble		3925		St. Johns Land	\$0	
12-Jun		Rubble		74	Truck/Allied	Porter Yett		
16-Jun	Hoffman	Rubble			Box/MDC	St. Johns Landfill	\$60	
23-Jun	Hoffman	Rubble			Truck/Allied	St. Johns Land	-0-	\$0
23-Jun	Hoffman	Rubble			Truck/Allied	St. Johns Land	-0-	\$0
23-Jun	Hoffman	Rubble			Truck/Allied	St. Johns Land	-0-	\$0
23-Jun	Hoffman	Rubble			Truck/Allied	St. Johns Land	-0-	\$0
30-Jun	Hoffman	Rubble			Truck/Allied	St. Johns Land	-0-	
1-Jul	Hoffman	Rubble			Box/MDC	St. Johns Landfill	\$60	
2-Jul	Hoffman	Rubble			Box/MDC	St. Johns Landfill	\$60	
10-Jul	Hoffman	Rubble			Box/MDC	St. Johns Landfill	\$60	
15-Jul	Hoffman	Rubble			Box/MDC	St. Johns Landfill	\$60	
16-Jul	Hoffman	Rubble			Box/MDC	St. Johns Landfill	\$60	
20-Jul	Hoffman	Rubble			Box/MDC	St. Johns	\$60	
21-Jul	Hoffman	Rubble			Box/MDC	St. Johns	\$60	
28-Jul	Hoffman	Rubble			Box/MDC	St. Johns Landfill	\$60	
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29-Jul	Hoffman	Rubble			Truck/Allied	St. Johns Land	-0-	
29-Jul	Hoffman	Rubble			Truck/Allied	St. Johns Land	-0-	
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29-Jul	Hoffman	Rubble			Truck/Allied	St. Johns Land	-0-	
29-Jul	Hoffman	Rubble			Truck/Allied	St. Johns Land	-0-	
29-Jul	Hoffman	Rubble			Truck/Allied	St. Johns Land	-0-	
30-Jul	Hoffman	Rubble			Truck/Allied	St. Johns Land	-0-	
30-Jul	Hoffman	Rubble			Truck/Allied	St. Johns Land	-0-	
30-Jul	Hoffman	Rubble			Truck/Allied	St. Johns Land	-0-	
30-Jul	Hoffman	Rubble		Total	Truck/Allied	St. Johns Land	-0-	
30-Jul	Hoffman	Rubble		992.1	Truck/Allied	St. Johns Land	-0-	
17-Aug	JWP Grasle	Rubble	25	40.5	Moe & Son	PorterYett	(\$12)	
20-Aug	JWP Grasle	Rubble	35	56.7	Moe & Son	Porter Yett	(\$18)	
25-Sep	Hoffman	Rubble			Box/MDC	St. Johns Land	\$0	\$60
16-Oct	Goldie/Gent	Rubble	10	20	truck	Porter Yett	(\$18)	

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16-Oct	Goldie/Gent	Rubble	10	20	truck	Porter Yett	(\$18)		
16-Oct	Goldie/Gent	Rubble	10	20	truck	Porter Yett	(\$18)		
19-Oct	Goldie/Gent	Rubble	10	20	truck	Porter Yett	(\$18)		
19-Oct	Goldie/Gent	Rubble	10	20	truck	Porter Yett	(\$18)		
19-Oct	Goldie/Gent	Rubble	10	20	truck	Porter Yett	(\$18)		
				5208			(\$138)	\$1,320	
13-Aug	PCI	Sheetrock and	30	3.5	Box/MDC	Gypsum Dryw	(\$158)	\$120	
13-Sep	PCI	Sheetrock and	20	3.5	Box/MDC	Gypsum Dryw	(\$156)	\$120	
			50	7			(\$314)	\$240	
12-Jun	Hoffman	Wood	30	6	Box/MDC	Bredl	(\$20)	\$60	
15-Jun	Hoffman	Wood	30	6	Box/MDC	Bredl	(\$20)	\$60	
16-Jun	Hoffman	Wood	30	6	Box/MDC	Bredl	(\$20)	\$60	
23-Jun	Hoffman	Wood	30		Box/MDC	Wastech	(\$108)	\$60	
8-Jul	Hoffman	Wood	30	5	Box/MDC	Bredl	(\$20)	\$60	
9-Jul	Hoffman	Wood	30	3.8	Box/MDC	Wastech	(\$111)	\$60	
21-Jul	Hoffman	Wood	30	5	Box/MDC	Bredl	(\$20)	\$60	
17-Sep	Hoffman	Wood	30	6	Box/MDC	Bredl	(\$20)	\$60	
6-Oct	Harmon	Wood		0.6	self	Bredl	(\$20)		
15-Oct	Sound	Wood	10	2	Self	give aways	\$0	\$0	
20-Oct	Hoffman	Wood	30	5	MDC	Bredl	(\$20)	\$60	
			280	45.4			(\$379)	\$540	
1-May	Hoffman	Flooring		180	Sold/Traded	Rejuvenation	\$3,600		
1-May	Hoffman	Shrubs		4					
1-May	Hoffman	Carpet		9	Self	Salvation Army, Church, Wherehouse			
1-May	Hoffman	Fixtures & Doors		2	Self	Hippo, Wherehouse, Rejuvenation			
				195			\$3,600		
		TOTALS		5972		TOTALS	\$2,370	\$2,400	
		Rubble		-5208					
		Mixed		-154					
				610	Reuse and Recycling				

Analysis of Drip Irrigation System at Metro Regional Center

JLS (6-27)

The following is an analysis of the benefits and risks involved with incorporating a drip irrigation system into the Metro Regional Center Project. The participants who discussed this were: Berit Stevenson, Bill Metzler, John Kotrlik, Flor Matias, Jim Goddard and Michel Gregory. This analysis is based on installation of a drip irrigation system as shown on drawings produced by H. D. Fowler which includes the Plaza planters and planting areas on the south side of the building. It does not include drip irrigation of lawn areas.

COST:

Benefits:

- Savings on water bill has not been calculated.

Liability

- \$3,500 additional cost for drip irrigation, above cost of standard sprinklers

OPERATION AND MAINTENANCE:

Benefits

- Reduced overspray
- Reduced water usage, of 35% to 75% in application areas.
- Reduced liability for water on sidewalk and water on streets.
- The drip system works best most efficiently in conjunction with a fertilizer injection system which can be purchased for \$160.00. The benefit is efficient delivery of fertilizers directly to the plant root system. It is expected that plant fertilizing time will be reduced.

Liability:

- Requires more maintenance attention, estimated to be .05 FTE
- Requires initial education to gain experience about monitoring and maintaining system. This would require more maintenance staff attention during the initial operation.
- Plant replacement and change-out becomes more complicated than with conventional system

PUBLIC RELATIONS:

Benefit

- Water savings figures could be a good public relation feature for the building.
- Metro would demonstrate its leadership in resource conservation in the region.
- Would serve as a demonstration project for community education.

Liability:

- If cost of drip irrigation system and the water savings do not justify the system, Metro could be scrutinized for inappropriate spending of public funds.

WATER SAVINGS:

Benefit:

Actual quantity of water saved has not been calculated, however it is expected to range between 35% and 75%.

Liability:

none

DESIGN:

Benefit:

- Design by H. D. Fowler, with only minor modifications and additions of details, is adequate for installation according to Landscapes West.
- H. D. Fowler would provide on-site technical assistance during system installation.
- Landscaper's warranty on labor and materials of the system would be the same for either system and is valid for one (1) year.
- The design could be checked by an independent landscape architect to ensure its adequacy.

Liability:

- Hoffman would not warrant the adequacy of design as they would with the sprinkler system.

- Hoffman would not warrant the replacement of plants in areas where drip irrigation was used, as they would with the conventional sprinkler system.

INSTALLATION:

Benefit:

- Landscapes West would potentially use H. D. Fowler as a material supplier. H. D. Fowler would be providing an "Installer Workshop" prior to this job.
- Landscapes West has checked other projects that have used this system and have received good comments.
- H. D. Fowler can provide technical and "in-field" assistance.

Liability:

- Landscapes West has not installed this type of system in the past.
- Hoffman's prior experience with Landscape's West indicates that installation of a new type of system may not be the most prudent decision.

RECOMMENDATION:

The major concern of the group with the drip irrigation system was Metro's potential liability for plant replacement during the first year. Typical landscape projects can require extensive plant replacement due to a number of factors not related to the irrigation system. In this case, Metro would bear the liability for all plant replacement regardless of fault. The potential cost for plant replacement could far outweigh the public relations and water savings benefit.

An alternative is to limit installation to a portion of the area. The attached sketch shows a plaza planter that could be watered with the drip system.

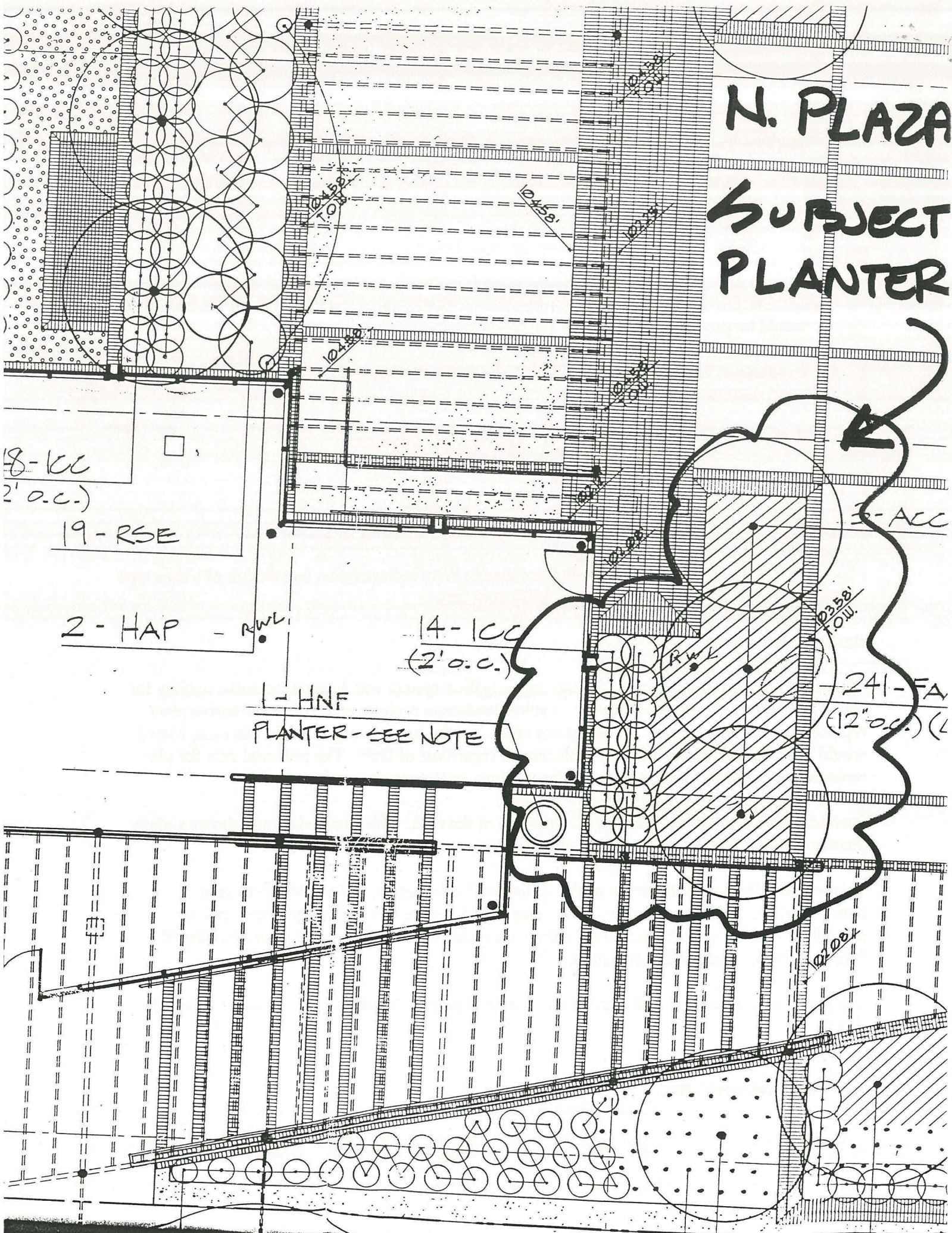
This will provide a demonstration of the system's effectiveness and allow Metro to gain operational and maintenance experience. This would also reduce Metro's potential risk by providing working system operational data upon which to make future decisions, and would decrease the cost for initial installation.

The group recommends that drip system be installed only in the planter shown in the attached sketch.

JG:clk

s:\Godd\H\Qirriga.rpt (October 27, 1992)

N. PLAZA SUBJECT PLANTER



18-1CC
(2' o.c.)
19-RSE

2-HAP - RWL

14-1CC
(2' o.c.)

L-HNF
PLANTER - SEE NOTE

241-FA
(12" o.c.) (L

3-ACC

10x55'

10x55'

10x35'

10x55'

10x55'

10x55'



METRO

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

Agenda

WASTE REDUCTION COORDINATION FOR HEADQUARTERS RENOVATION

TO: Jim Goddard Pat Merkle Genya Arnold
 Berit Stevenson Michel Gregory Andy Sloop
 Joanna Karl Bill Metzler Pat Varley
 Debbie Gorham ✓ Leigh Zimmerman Glenn Taylor
 Steve Kraten Flor Matias

MEETING ANNOUNCEMENT

DATE: November 3, 1992
DAY: Tuesday
TIME: 1:00 - 2:00
PLACE: Metro Center, Room 240

AGENDA

- < Project Status
- < Recycling
- < Buy Recycled
- < Landscape and Irrigation
- < **Video Theme** -- Think about the target audience and uses for the viewo prior to the meeting.

JG:clk