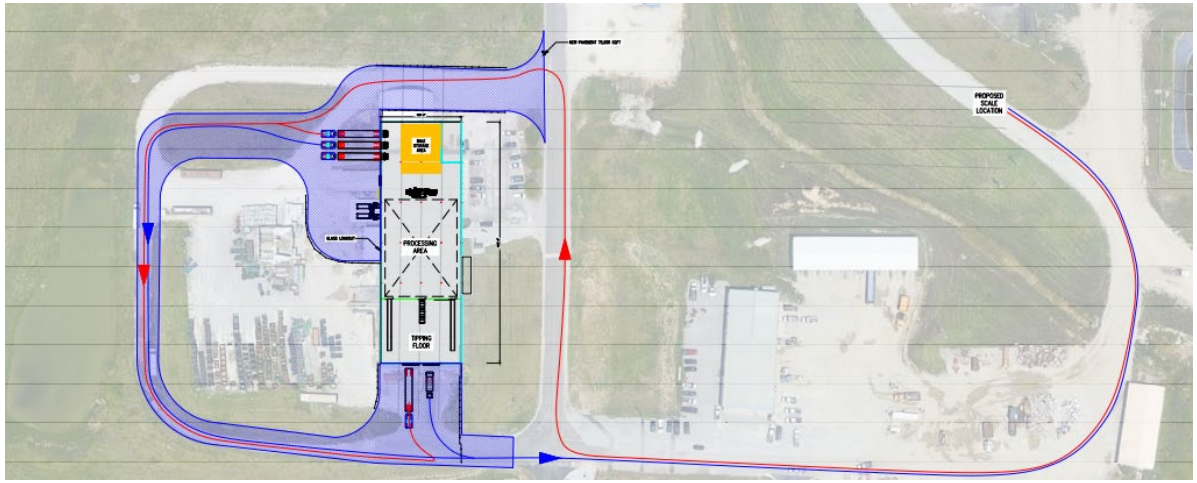

UPDATE ON

DESIGN AND CAPITAL CONSIDERATIONS FOR REINSTATING MRF RECYCLING CAPACITY FOR COLUMBIA

CITY COUNCIL WORK SESSION

June 2, 2025

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Presentation Overview

- Project activities to this point
- Program status
- Review of three options for MRF re-build
- Re-visit of transfer option
- Multi-material environmental center
- Timeline(s)

Project Activities

Phase I Data Collection

- MRF Contamination Study (August 2022)
- Waste Composition Study (May 2023)
- Curbside Collection Study (Spring 2023)
- Stakeholder Engagement (2023)

Phase I Technical documents (Summer 2023)

- Waste generation projections
- Conceptual design
- Cost analyses

Phase I Development of recommendations (Fall 2023)

- Increasing diversion
- Improving participation
- Evaluating performance

Phase II Designs and Capitals Costs (2024)

- Refinement of conceptual designs
- Further detail on capital costs

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PROGRAM STATUS

Recycling and Waste Reduction in Columbia

Project Findings

- Curbside participation: strong
- Public interest: strong
- Drop-off centers: troubled
- High priorities: business recycling and cardboard
- Biggest opportunities: community programs & individual waste reduction

Current Conditions

- Curbside: active
- Public interest: strong
- Drop-off centers: closed
- High priorities: processing of recyclables, staffed drop-off facility, automated residential curbside collection
- Biggest opportunities: reduce contamination, optimize services

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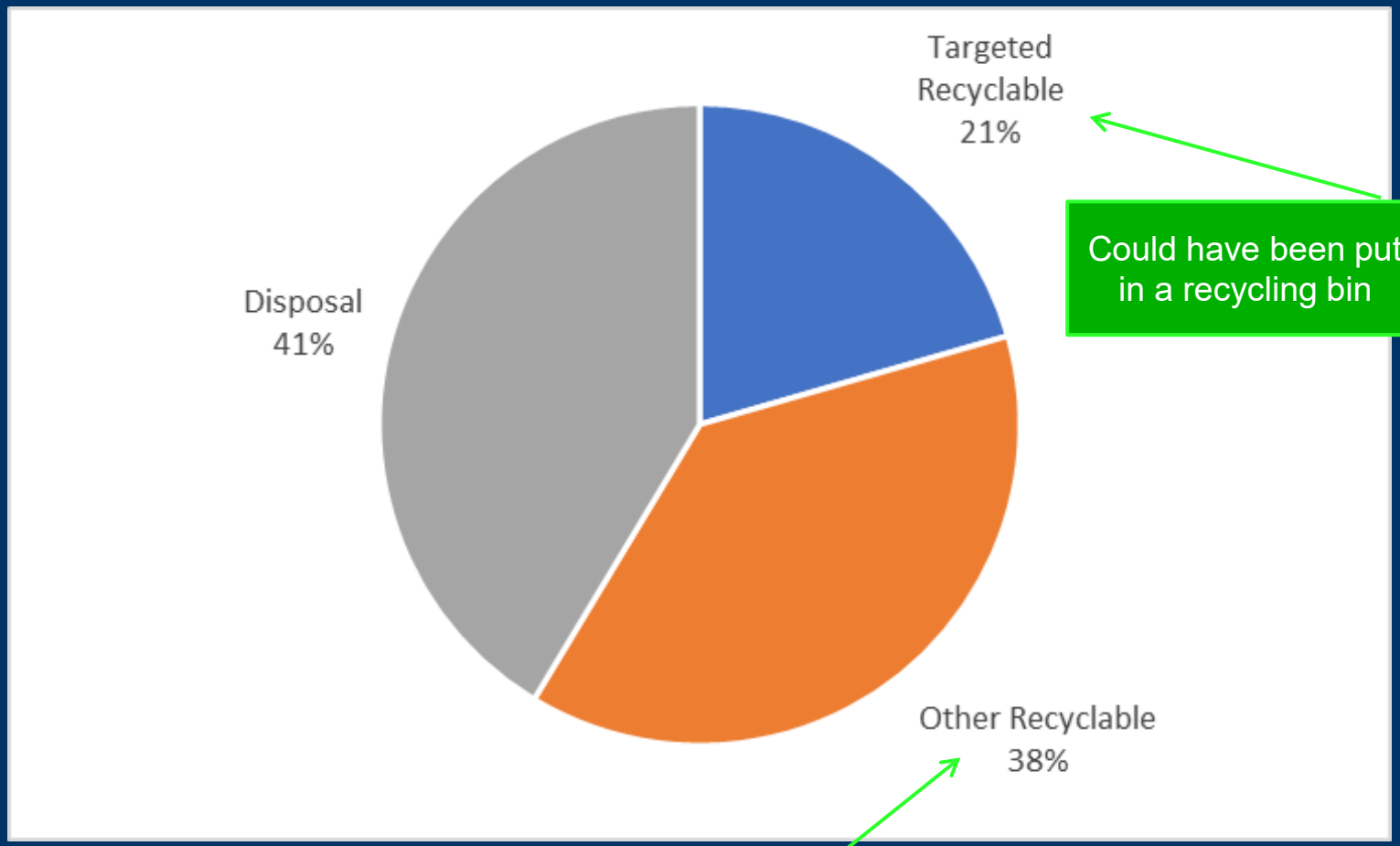
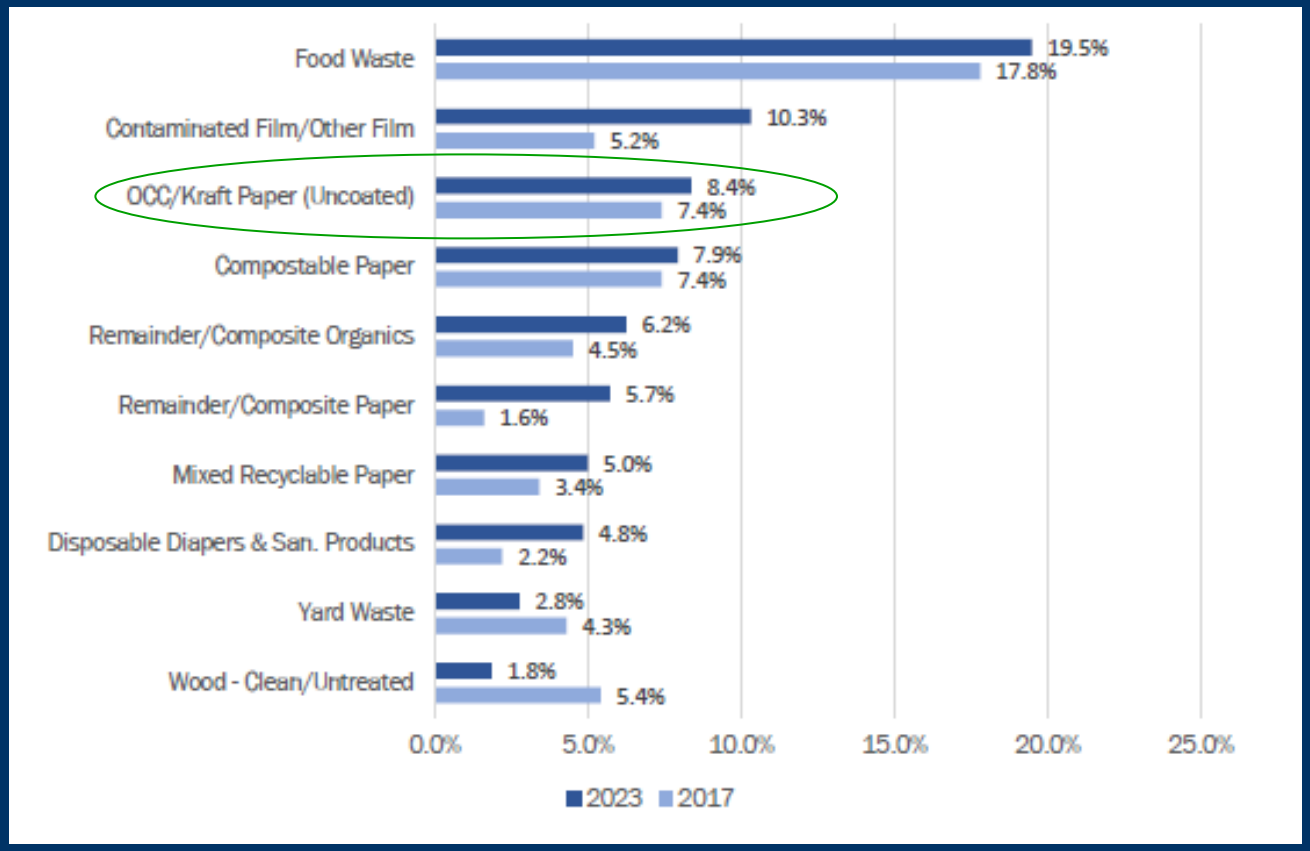
Waste Composition: Overall



Top 10 Most Prevalent Materials in City-Managed Waste ≈ 73.9%



- OCC (Cardboard) is biggest opportunity
- Other 26.1% is primarily plastics (mostly film), then metal and glass

Sources: 2023 Columbia MSW Study and 2017 Missouri Statewide Study

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Un-recycled Cardboard

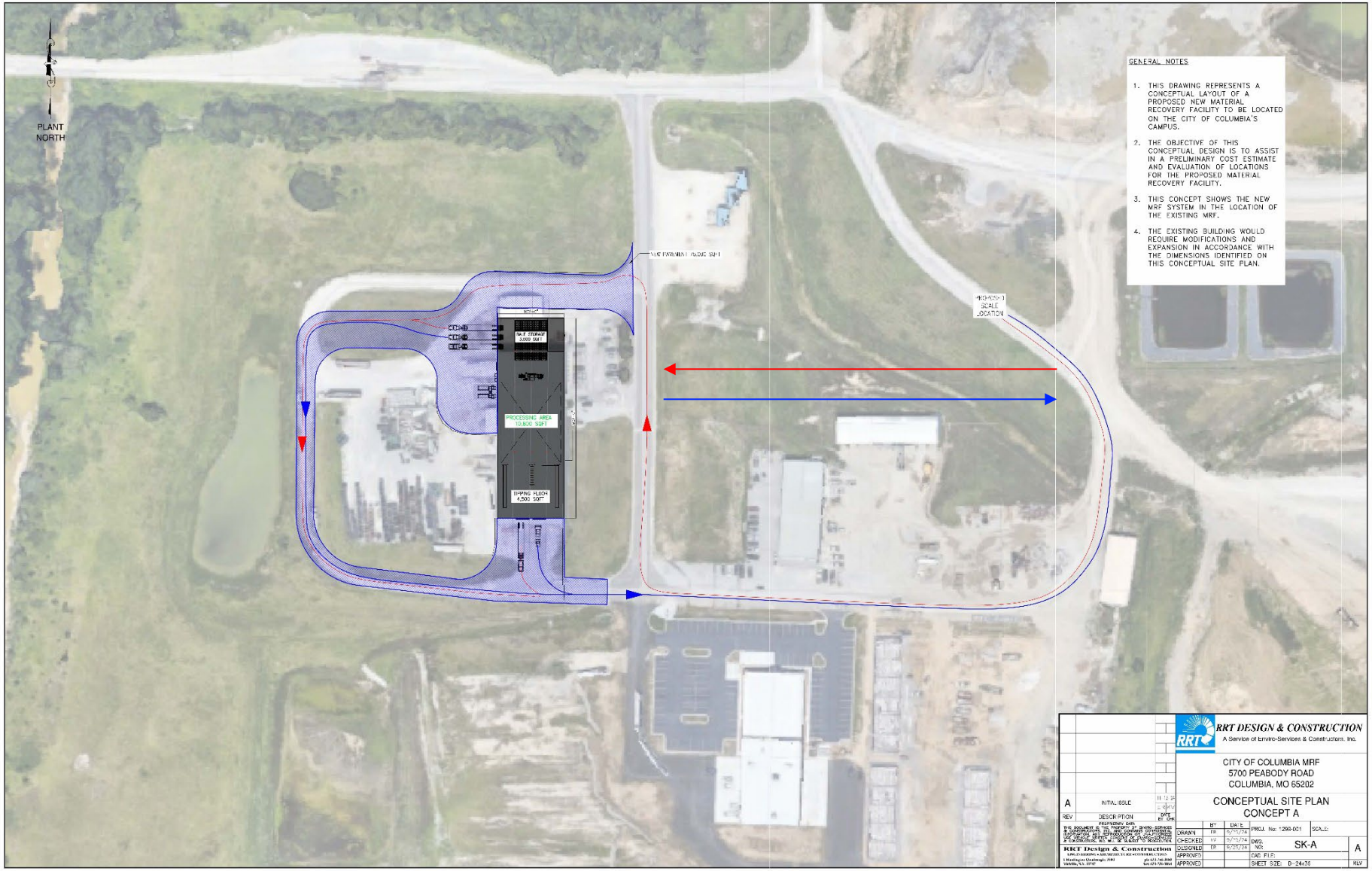
REVIEW OF OPTIONS FOR MRF RE-BUILD

Three Conceptual Designs

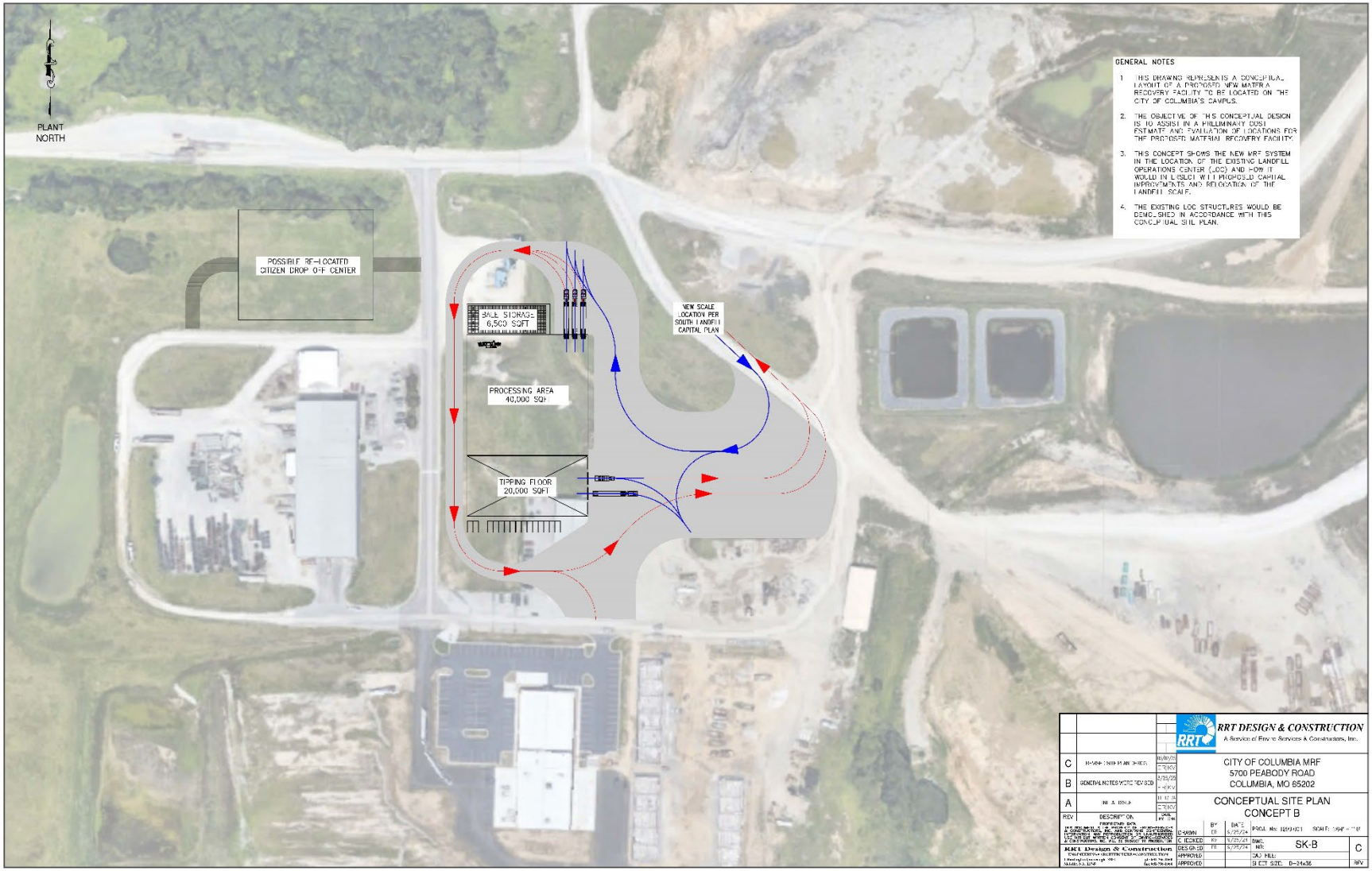
- Scenario A: Build a new MRF on the existing MRF site, salvaging as much of the existing structure, foundation, etc., as possible.
- Scenario B: Build a new MRF on the current Landfill Operations Center (LOC) site.
- Scenario C: Build a new MRF on the open gravel lot due west of the Administration building.


PLANT NORTH
GENERAL NOTES
1. THIS DRAWING REPRESENTS A CONCEPTUAL LAYOUT OF A PROPOSED NEW MATERIAL RECOVERY FACILITY TO BE LOCATED ON THE CITY OF COLUMBIA'S CAMPUS.
2. THE OBJECTIVE OF THIS CONCEPTUAL DESIGN IS TO ASSIST IN A PRELIMINARY COST ESTIMATE AND EVALUATION OF LOCATIONS FOR THE PROPOSED MATERIAL RECOVERY FACILITY.
3. THIS CONCEPT SHOWS THE NEW MRF SYSTEM IN THE LOCATION OF THE EXISTING MRF.
4. THE EXISTING BUILDING WOULD REQUIRE MODIFICATIONS AND EXPANSION IN ACCORDANCE WITH THE DIMENSIONS IDENTIFIED ON THIS CONCEPTUAL SITE PLAN.
BALE STORAGE 3,000 SQFT
PROCESSING AREA 10,800 SQFT
TIPPING FLOOR 4,500 SQFT
RRT DESIGN & CONSTRUCTION
A Service of Enviro-Services & Constructors, Inc.
CITY OF COLUMBIA MRF
5700 PEABODY ROAD
COLUMBIA, MO 65202
CONCEPTUAL SITE PLAN
CONCEPT A
A INITIAL ISSUE
SK-A

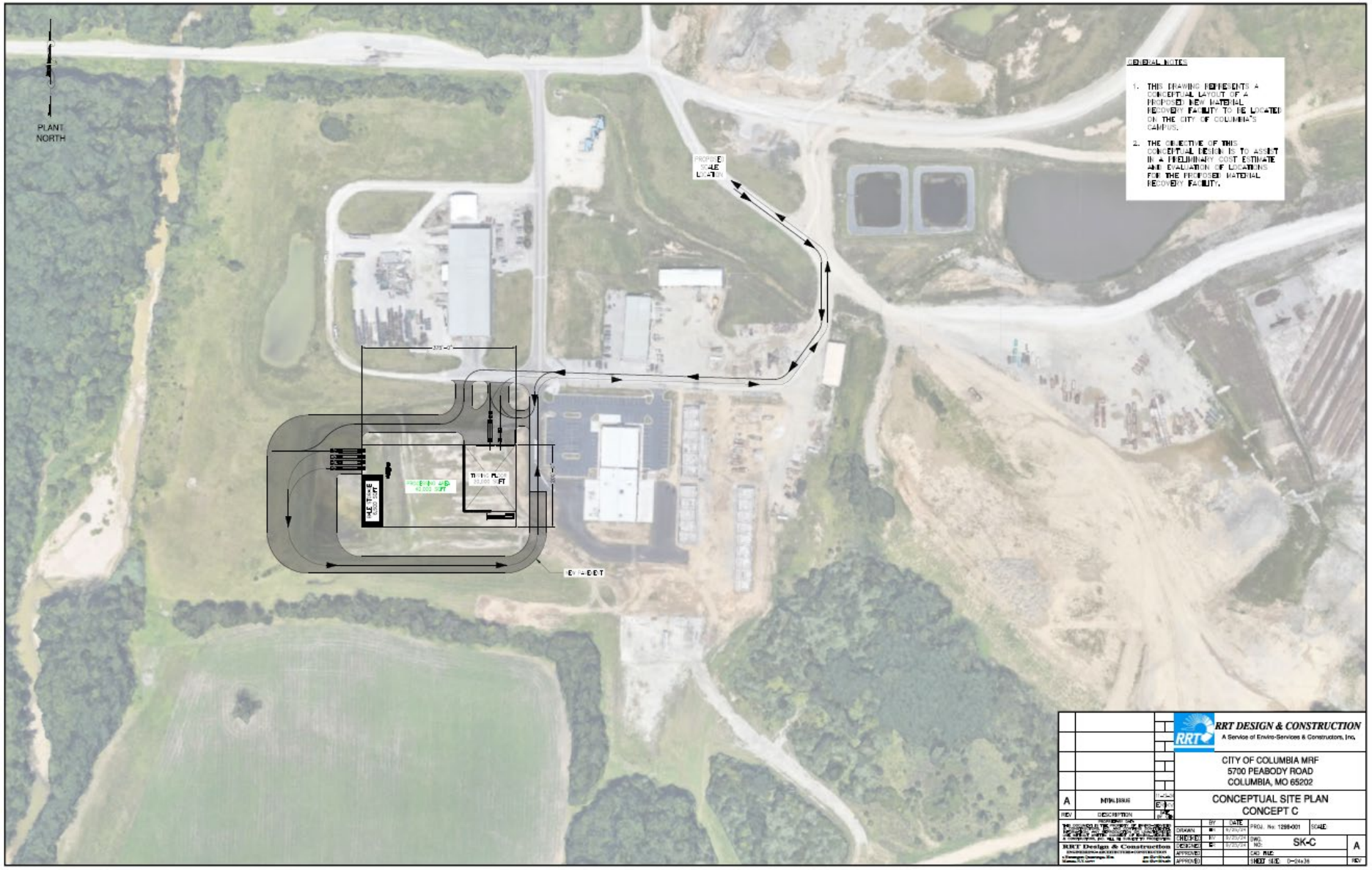
SCENARIO A



SCENARIO A –
Alternate traffic approach



SCENARIO B-
Revised, Less Constrained


PLANT NORTH
PROPOSED SCALE LOCATION
GENERAL NOTES
1. THIS DRAWING REPRESENTS A CONCEPTUAL LAYOUT OF A PROPOSED NEW MATERIAL RECOVERY FACILITY TO BE LOCATED ON THE CITY OF COLUMBIA'S CAMPUS.
2. THE OBJECTIVE OF THIS CONCEPTUAL DESIGN IS TO ASSIST IN A PRELIMINARY COST ESTIMATE AND EVALUATION OF LOCATIONS FOR THE PROPOSED MATERIAL RECOVERY FACILITY.
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CONCEPTUAL SITE PLAN
CONCEPT C
SK-C

SCENARIO C

Risks & Benefits: Pre-Storm

	Benefits	Risks	Limitations
Scenario A: Current MRF site	Cost savings due to salvage of building, largest available footprint	Possible little or nothing can be salvaged	Gap in access to processing capability during construction
Scenario B: Gravel lot	Reserves MRF building for future use, coincides with South LF plans	Stormwater complications	Smaller footprint, adjacent uses, need to relocate parking
Scenario C: Gravel lot	Reserves MRF building for future use, largest footprint	Many unknowns, considerable stormwater complications	Results in loss of a lay-down and storage area, intersects heavily with traffic to South LF

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Risks & Benefits: Today

	Benefits	Risks	Limitations
Scenario A: Current MRF site	~~Cost savings due to salvage of building, largest available footprint~~	~~Possible little or nothing can be salvaged~~	~~Gap in access to processing capability during construction~~
Scenario B: Gravel lot	~~Reserves MRF building for future use,~~ coincides with South LF plans	Stormwater complications	Smaller footprint, adjacent uses, need to relocate parking
Scenario C: Gravel lot	~~Reserves MRF building for future use,~~ largest footprint	Many unknowns, considerable stormwater complications	Results in loss of a lay-down and storage area, intersects heavily with traffic to South LF

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Data for Decision-making

Timing: Scenario A now is the most expeditious.

Scenario B offers the best integration with the other capital plans re: traffic

The cost estimate for Scenario A is still marginally less than Scenario B and Scenario C

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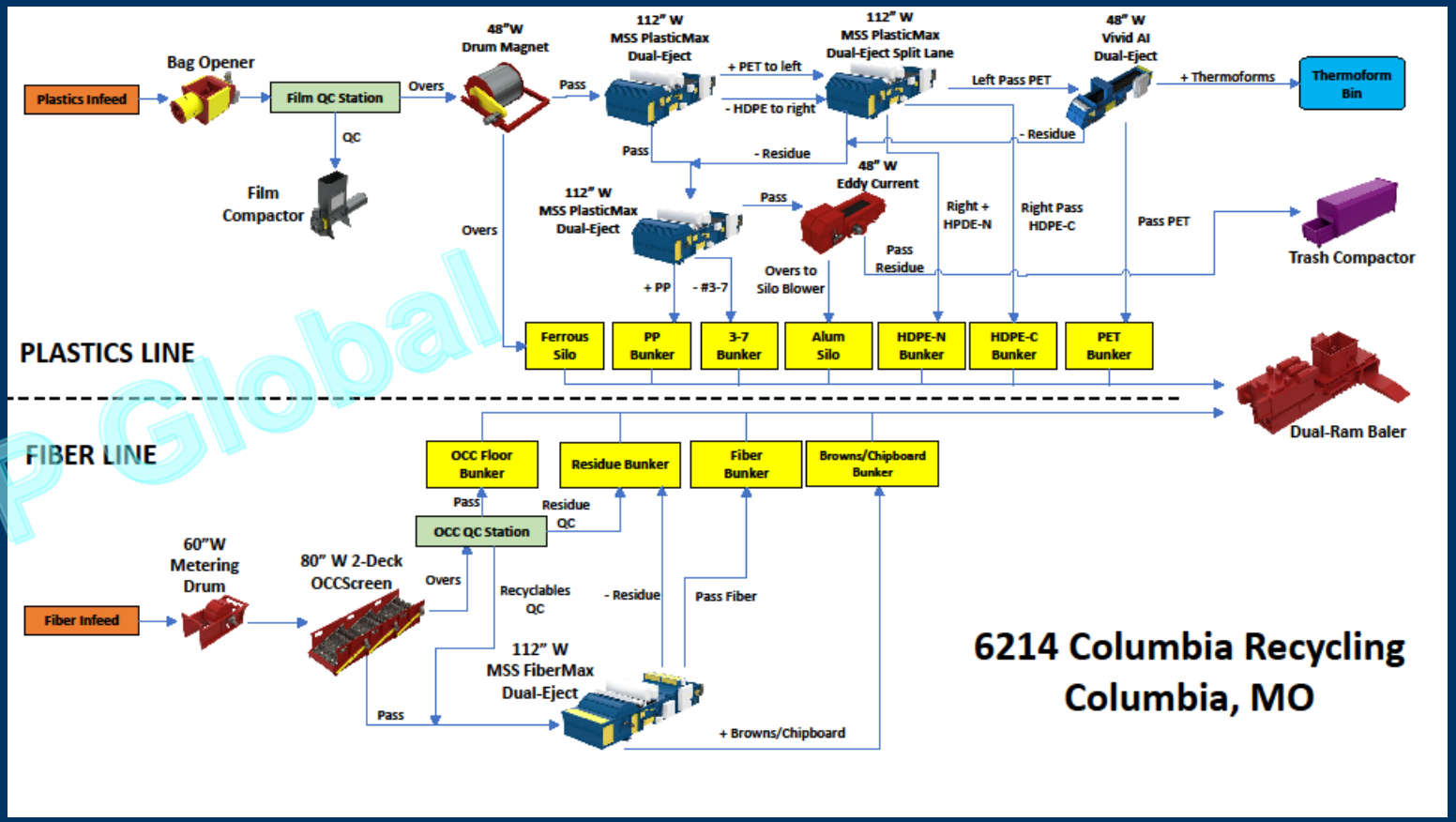
Cost Modeling Assumptions

- A Solid Waste Processing Permit would be needed for any option.
- The processing equipment design and fabrication for a MRF will be the same regardless of the site.
- The Owner's Engineer and construction management for the processing equipment will be the same regardless of the site.
- Geotechnical investigation is based on past work; estimation does not account for unforeseeable complications which would result in higher costs.
- Time and costs for relocation of any current use are not included and would be additional.
- Financing, interest, and other capitalization costs are not included and would be additional.
- Time and costs for demolition are only included if they are essential for completion of the project.

Example Processing Equipment



Equipment & Building

LINE ITEM / DESCRIPTION	Scenario A Construct a New MRF on the current footprint	Scenario B Construct a New MRF on the current LOC site	Scenario C Construct a New MRF on on the current gravel lot
	Cost Estimate	Cost Estimate	Cost Estimate
New Dual Stream Equipment System	$ 12,000,000.00	$ 12,000,000.00	$ 12,000,000.00
Interim Processing	~~$ 5,000,000.00~~	$ -	$ -
Repair existing building damage	~~$ 379,562.00~~	$ -	$ -
~~Repair existing site/pavement (approximately 75,000 sqft)~~	~~$ 1,675,500.00~~	$ -	$ -
~~Construct new 4,000 sqft building addition~~	~~$ 423,880.00~~	$ -	$ -
Construct new 30,000 sqft PEMB	$ 7,500,000	$ 7,295,504.65	$ 7,947,750.00
New sitework (approximately 38,000 sqft)	$ 3,800,000	$ 3,814,919.00	$ 3,737,116.00
Geotechnical site inspection	$ -	$ 25,000.00	$ 25,000.00
New Asphalt Paving	$ 762,499.65	$ 336,719.24	$ 954,419.40
New Sidewalk Paving	$ 41,140.00	$ 40,392.00	$ 53,766.24
New Concrete Curbs	$ 334,323.00	$ 36,526.86	$ 389,306.70
Demolition of Existing LOC	$ -	$ 1,322,217.95	$ -
Demolition on existing MRF Site	$ ~~284,877.19~~	$ -	$ -
Demolition of MRF Equipment	$ ~~230,500.00~~	$ -	$ -

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Engineering & Totals

LINE ITEM / DESCRIPTION	Scenario A Construct a New MRF on the current footprint	Scenario B Construct a New MRF on the current LOC site	Scenario C Construct a New MRF on on the current gravel lot
	Cost Estimate	Cost Estimate	Cost Estimate
Equipment Systems OEM Engineering and Design	$ 300,000.00	$ 300,000.00	$ 300,000.00
Owner's Engineer & CM (equipment demo)	~~$ 80,000.00~~	$ -	$ -
Owner's Engineer & CM (equipment)	$ 300,000.00	$ 300,000.00	$ 300,000.00
Owner's Engineer & CM (building)	$ ~~400,000.00~~ $ 1,000,000.00	$ 1,000,000.00	$ 1,000,000.00
COST ESTIMATE SUMMARY			
PROCESSING EQUIPMENT	$ ~~17,000,000.00~~ $ 12,000,000.00	$ 12,000,000.00	$ 12,000,000.00
BUILDING & SITE IMPROVEMENT	$ ~~3,616,904.65~~ $7,496,162.65	$ 11,549,061.75	$ 13,107,358.34
DEMOLITION	$ ~~515,377.19~~	$ 1,322,217.95	$ -
ENGINEERING	$ ~~1,080,000.00~~ $1,600,000.00	$ 1,600,000.00	$ 1,600,000.00
TOTAL	**$ ~~22,212,281.84~~** **$21,096,162.65**	**$ 26,471,279.70**	**$ 26,707,358.34**

RE-VISITING TRANSFER OF RECYCLABLES

Data for Decision-making

- The biggest change since our last update isn't the tornado demolishing the MRF. It's transfer to Jefferson City.
  1. It removes bypass during construction as a differentiator between MRF options.
  2. It amends the previously unacceptable financial and climate impacts of transferring to St. Louis.

Scoring & Ranking

Scoring 1 to 5: higher value is better

Scenario	Benefits	Risks	Limitations	Construction Time Frame	Capital Costs	Total Score
Scenario A	~~3~~ 2	~~3~~ 4	~~3~~ 4	~~1~~ 4	5	~~**14**~~ **19**
Scenario B	~~5~~ 4	3	4	4	3	~~**19**~~ **18**
Scenario C	~~3~~ 2	1	3	4	3	~~**14**~~ **13**
Transfer	4	4	3	5	5	21

Ranking 1 to 4: lower value is better

	Benefits	Risks	Limitations	Construction Time Frame	Capital Costs	Total Ranking
Scenario A	~~3~~ 2	1	3	~~3~~ 1	2	**9**
Scenario B	1	2	2	1	3	~~**7**~~ **9**
Scenario C	3	3	1	1	4	**12**
Transfer	1	1	1	1	1	**5**

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MULTI-MATERIAL ENVIRONMENTAL CENTER

A “one-stop shop”

- Staffed, safe, and clean
- Responsive and flexible design for multiple materials
- Opportunity for diversion of hard-to-recycle or reusable materials
- Permanent, self-contained Household Hazardous Waste (HHW)

Benefits of these Designs

Flexibility & Versatility	Adjust accepted material types with simple changes to signage
	Respond to customer conditions quickly by opening or closing access to receptacles
	Activate as an emergency debris site if needed
Safety & Accessibility	One-way traffic protects employees, pedestrians, and drivers
	Users do not need to raise arms over head when depositing items; facility is accessible to users of wheelchairs and other mobility aids
	No interaction between customers and the heavy trucks servicing the receptacles
Operational Best Practice	Staffing improves material quality and reduces improper dumping
	Site is easy to keep clean with brooms and/or wash-down
	Assigning 2 or more receptacles to popular materials, then opening and closing them one at a time, allows for better management of trips to the MRF

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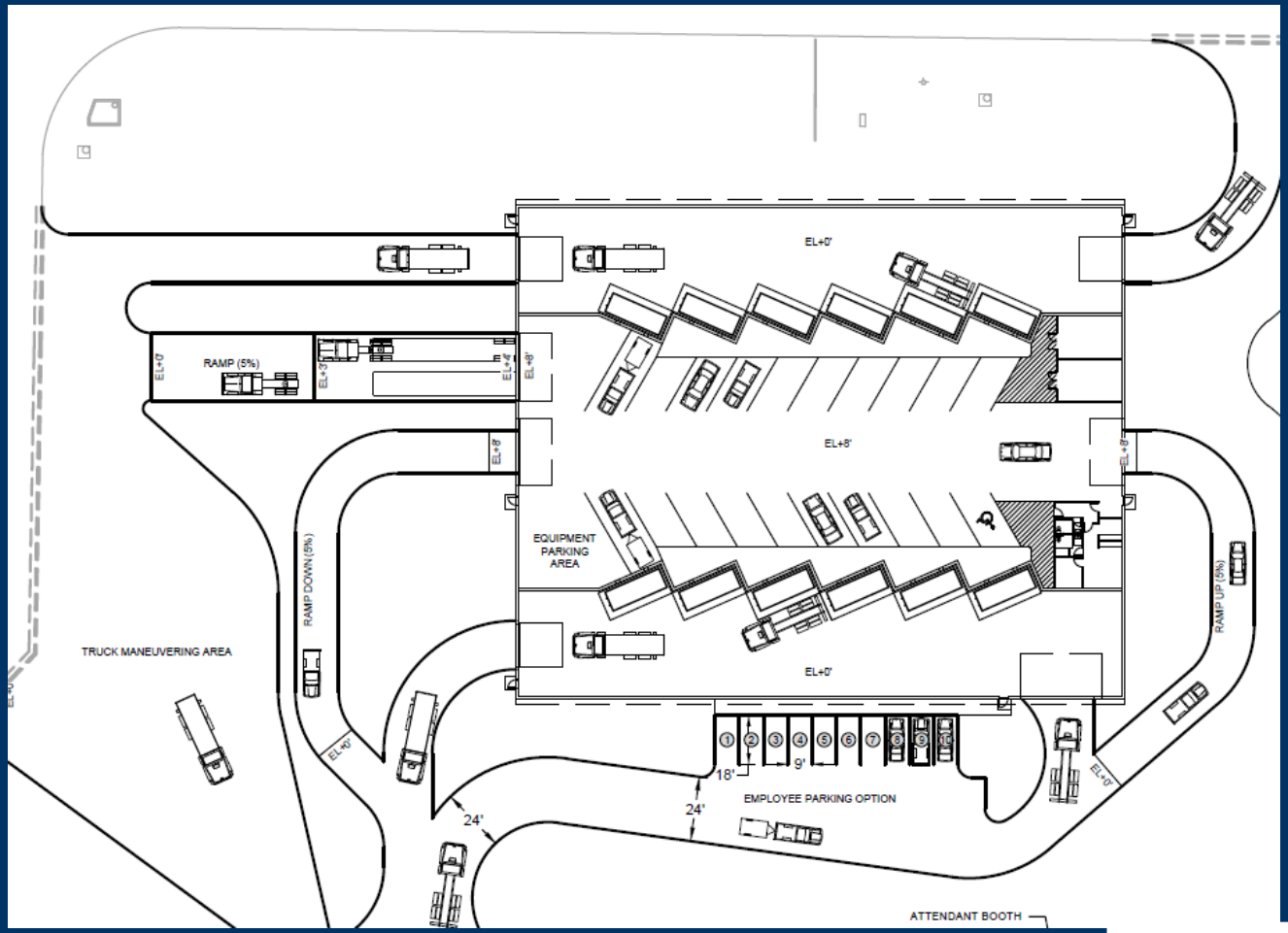
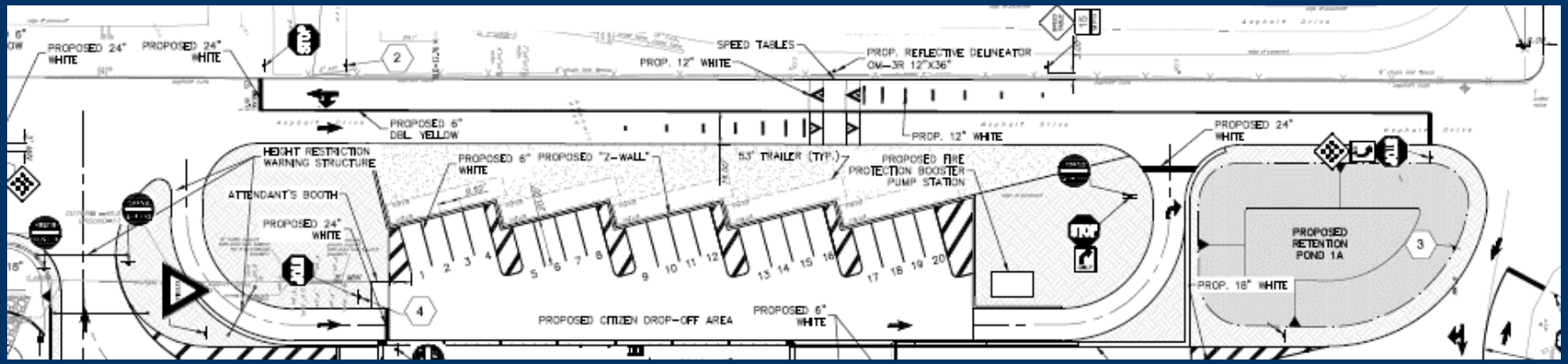
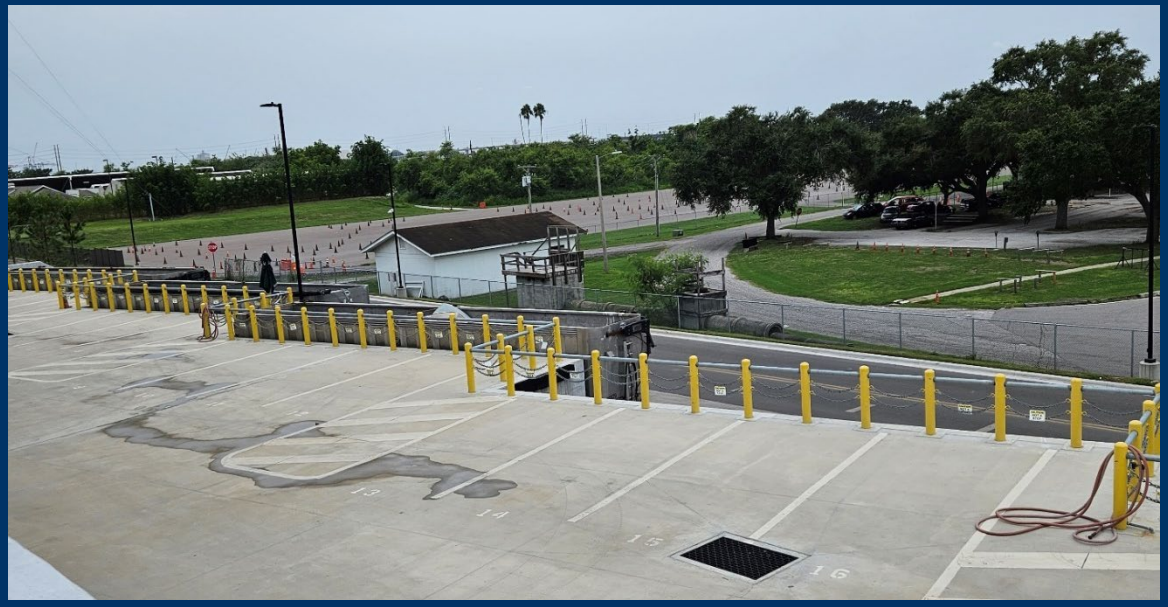
Sample design: Olmsted Co., MN



Sample Design: Tampa, FL





Sample Design: Charlottesville, VA

TIMELINES

High-level scheduling

These timelines can be abbreviated with certain emergency procedures

- MRF
  - 18 months to get operations back is possible with emergency provisions and use of a fabric building
  - Normal conditions:
    - Pre-engineering: Timing depends on City processes
    - Engineering work: Duration 12 to 18 months following NTP
    - Building and MRF equipment procurement: Duration 9 months following NTP
    - MRF Equipment: Duration 18 to 20 months following contract award (concurrent with building)
    - Construction of building: Duration 18 months following award of equipment contract (concurrent with MRF equipment)
    - Commence recyclables processing: Approximately 30 months from NTP
- Transfer Station
  - Temporary operations can be set up in a few months, mostly dependent on site
  - Permanent facility possible within a year with emergency provisions and no major delays
  - Could set up temporary drop-off at the transfer site until convenience center is built
  - Big question: permitting?
- Multi-material Convenience Center
  - Site selection, pre-engineering, construction: 18 – 24 months

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Kate Vasquez,
RRT Design & Construction

THANK YOU!
LET'S TALK