D R A F T

Kittitas County Transfer Station Basis of Design Report

Prepared for

Kittitas County

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Contents

Tables

Figures

Acronyms and Abbreviations

ADA	Americans with Disabilities Act of 1990
ASP	aerated static pile
CDL	Construction and Demolition Landfill
County	Kittitas County
MRW	moderate risk waste
MSW	municipal solid waste
OFM	State of Washington Office of Financial Management
yd^3	cubic yard(s)

SECTION 1

Introduction

Kittitas County intends to construct a new solid waste transfer station, compost facility, moderate risk waste (MRW) facility, and recycling depot at a new location (that has yet to be determined). The new facility will replace the existing Ellensburg transfer station and will be designed to address some existing site challenges and prepare the County for future growth.

The County has retained CH2M HILL, Inc. (CH2M) to perform preliminary engineering services in support of the development of this new solid waste transfer station. The project will also accomplish the following: comply with local planning and state (Washington Administrative Code 173-350-310) regulations; efficiently manage all material types (solid waste, recyclables, and green waste); provide safe operation for customers and workers; be cost effective; be designed to efficiently process material; and address community concerns.

The project is expected to be conducted in multiple phases. This report summarizes the work conducted as part of the first phase (Phase A – Project Initiation and Programming) and incudes the basis of design and conceptual layouts for this facility.

1.1 Project Background and Objectives

The existing Ellensburg transfer station has location and size constraints. Located in a floodplain, the facility is closed because of customer access issues during significant rainfall or spring runoff events. The facility is also undersized for the number of customers using the facility. The small size of the facility results in long queuing times and potentially unsafe conditions within the small unloading and processing areas.

The new transfer station will be designed to address these limitations and to fit the current and long-term needs of the County. The new facility will include a transfer building, composting area, MRW building, and recycling depot as well as various administrative, parking, and other required elements.

1.2 Service Area

The existing Ellensburg transfer station, located within the City of Ellensburg, off Industrial Way, is one of two solid waste transfer stations used by County residents. Waste Management, Inc. is the current operator of the transfer facility.

Solid waste generated by commercial accounts and residents from Kittitas County is hauled to this transfer station where the solid waste is loaded into transfer trailers and transported approximately 80 miles to the Greater Wenatchee Landfill in Douglas County, Washington.

The population of Kittitas County in 2010 was 40,915. Table 1-1 shows the annual population estimates prepared by the State of Washington Office of Financial Management (OFM) for 2015 through 2035.

These population values and estimates do not account for the rather large transient student population associated with the Central Washington University in Ellensburg (enrollment of approximately 11,000 students).

Population estimates in Table 1-1, indicate a 31 percent average increase in population from 2015 to design horizon 2035. The new transfer station will need to accommodate this significant growth.

Table 1-1. Kittitas County Population Estimates: 2015 to 2035
Kittitas County Transfer Station Basis of Design Report

	Total Estimated Population	
Year	**Intermediate Series**	**High Series**
2015	42,592	47,759
2020	45,255	52,395
2025	47,949	57,065
2030	50,567	61,652
2035	53,032	66,075
% growth (2015 to 2035)	24%	38%
Average % growth	31%	

Source:
http://www.ofm.wa.gov/pop/gma/projections12/GMA_2012_county_pop_projections.pdf

1.3 Purpose of Basis of Design Report

This Basis of Design document provides the project team with vital facility design parameters and land area required for a new facility. This information was gathered during the project workshop that was conducted with County staff and the existing site operator on November 2, 2016. Key "takeaways" from the workshop included design parameters (tons per day, peak daily flows, tipping floor storage capacity) for current and future materials (solid waste, recycling, green waste, other materials), and confirmation about other important facility parameters such as compost area size, administrative building requirements, parking requirements (including contract operator truck parking), and County equipment preferences (scales, software, equipment, etc.).

1.4 Process Selection

The new transfer station will be designed to operate in a similar fashion to the existing facility and will use open-top trailers to haul the municipal solid waste (MSW). The main transfer building will be a two-level facility with a drive-through tunnel for loading. Commercial collection vehicles and residents will deposit their loads directly onto the tipping floor (the upper level). A front-end loader will move the waste from the tipping floor to floor opening(s) over the tunnel to push the MSW into the trailers below.

In addition to the main transfer building, the facility will include a composting area, MRW building, recycling depot, and support equipment and structures.

SECTION 2

Design Parameters

Design parameters used in this basis of design report are based on 2015 data provided by the County, additional information gathered during the November 2, 2016 workshop, and the 31 percent population increase estimates that were described in Table 1-1. This data is further discussed in the sections below.

2.1 Existing Tonnages and Traffic

The existing Ellensburg transfer station accepts, processes, and transfers MSW, yard waste, recyclable material, and MRW material from residential and commercial customers in the Ellensburg area and lower Kittitas County. Material is hauled to the facility in commercial garbage trucks and from a significant flow of self-haul vehicles (automobiles, pickup trucks, and trailers). Table 2-1 summarizes 2015 quantities and traffic at the Ellensburg transfer station.

Table 2-1. 2015 Ellensburg Transfer Station Quantities and Traffic
Kittitas County Transfer Station Basis of Design Report

Category	2015 Quantities (tons)	2015 Traffic (vehicles)
MSW, Yard Waste, CDL Quantities and Incoming Traffic		
Commercial – MSW	15,327	3,626
Commercial – yard waste	387	255
Commercial – CDL	2	1
Self-haul – MSW	7,056	51,458
Self-haul – yard waste	2,011	9,139
Self-haul – CDL	1,767	3,608
Yard waste from Cle Elum	320	45
Tires from Cle Elum	71	11
MRW		1,000[a]
Total Incoming	*26,941*	*68,143*
MSW and Material Outgoing		
Compost sold	1,537	172
Recycling drop-box	747	354
Vehicle batteries	3	4
Metal	48	5
MSW transfer to Wenatchee	22,543	909
CDL to Ryegrass Landfill	1,373	179
Total Outgoing	*26,251*	*1,623*

[a]Approximately 1,000 customers used the MRW facility in 2015.

Note:

CDL = Construction and Demolition Landfill

Table 2-1 does not include an estimated 50,000 to 60,000 customers that used the recycling drop-off area in 2015 or septage or leachate loads that are weighed at the scalehouse.

In 2015, the County weighed 161 septage hauler vehicles at the scalehouse and hauled 60 truckloads of leachate from the facility (compost stormwater ponds and transfer station tunnel) to the Ryegrass Landfill septage facility. In addition, the Ellensburg transfer station weighed Waste Management, Inc.'s curbside recycling trucks containing single stream and cardboard recycling material at the scalehouse (420 vehicles representing 1,283 tons). These loads are not included in the table above.

Table 2-1 also does not include an estimated 50,000 to 60,000 customers that used the recycling drop-off area in 2015.

In summary, the existing Ellensburg transfer station accepted, processed, and transferred approximately 27,000 tons of MSW, yard waste, and CDL from approximately 70,000 vehicles in 2015.

2.2 Projected Design Quantities and Traffic

Projected waste quantities were estimated using 2015 quantities, a 30-year design life, and OFM population projections (intermediate to high growth – 31 percent) through 2035.

Table 2-2 summarizes the estimated design waste volumes for the proposed facility.

Table 2-2 Recommended 2046 Design Parameters
Kittitas County Transfer Station Basis of Design Report

Parameter	Quantity	Unit
Current waste tonnage	80	Tons per day
Projected 2046 waste tonnage	105	Tons per day
2046 peak-hour tons[a]	26	Tons per hour
2046 peak-hour traffic[b]	78	Vehicles per hour
2046 yard waste quantities[c]	7,145	Tons per year

[a] Based on CH2M's previous experience, a peak hourly tonnage was estimated using 25 percent of the daily tonnage.

[b] The peak-hour vehicle count was determined by using the 2015 Peak Hour (Saturday, July 9, 2016) vehicle count and increasing it by the estimated growth (31 percent).

[c] Yard Waste quantities are based on doubling the current quantities and increasing that amount by the estimated growth rate (31 percent).

2.3 Peak Storage

To account for inclement weather conditions and other unexpected issues that may affect delivery of waste to the landfill, 5 days of peak storage are used to size the waste receiving and processing building. The 5-day peak storage quantity is 525 tons and was calculated using five times the 2046 average daily throughput (105 tons per day). Contingency storage of up to 7,000 cubic yards (i.e., approximately 10 days of current waste receipts) could be accomplished by stacking waste 10' deep across the tipping floor.

SECTION 3

Conceptual Site Layout Road Geometry

The proposed facility is designed to keep traffic flowing in the same general direction and minimizing traffic cross-over points. The conceptual layout uses a counter-clockwise loop, which is an industry standard safety practice, to allow collection vehicle drivers a proper backing site-line, without having to rely on passenger side mirrors. It is assumed that the site of the proposed facility will be located in an area of high groundwater, requiring the placement of approximately 15 feet of structural fill to elevate the transfer building tipping floor to allow gravity feed of solid waste to open-top transfer trailers in the tunnel.

The road configuration for each of the vehicle and customer types is discussed in the following sections.

3.1 Transfer Trailers

The basic design principle for the site layout is to use perimeter roads for transfer trailer traffic with a counter-clockwise loop to minimize traffic impacts on vehicles accessing the transfer building. Transfer trailers will enter the site and use the bypass lane to maneuver around the scalehouse. The transfer building is designed with a drive-through tunnel to minimize backing of transfer trailers. Loaded and empty trailers will use a lane adjacent to the transfer building (on both sides) for parking. A pit scale will be installed under the load-out port to maximize trailer loads. Once a trailer is loaded with solid waste, the truck will pull through the tunnel and will park, or use the bypass lane to exit the site. Transfer trailers will make a complete circle around the site, passing several merge points, but never having to cross traffic.

3.2 Commercial Vehicles

Commercial vehicles will enter the facility and proceed to the scalehouse where their weights will be recorded. Departing the scale plaza, the vehicle will turn left at the entrance to the tipping building, where the vehicle will use a dedicated lane and climb up a 4 ± percent slope to the flat backing apron located outside the tipping building. The vehicle will back in the proper direction (over the left shoulder) into the building where solid waste will be unloaded onto a flat concrete floor. The vehicle will depart the site using an access road and proceed across the scale to record the tare (empty) weight in order to calculate the solid waste tonnage. Commercial vehicles with tare weight on file may use the bypass lane.

3.3 Self-haul Vehicles

Self-haul vehicles will use the same general traffic pattern that is used by commercial vehicles, but self-haul vehicles will use a dedicated lane to access the backing apron and separate unloading area. The self-haul vehicle will proceed to a separate unloading area, discharge the material onto the concrete tipping floor, and exit the site using the shared outbound scale lane.

3.4 Yard Waste/Composting Material Traffic

Customers dropping off yard waste will proceed to the scalehouse to obtain their weights and proceed along the perimeter access road to the yard waste unloading area. After discharging yard waste material, the vehicle will proceed to the scalehouse. Yard waste traffic will have to cross the loaded-outbound transfer trailer lane. The crossing will not affect traffic because it is estimated that only four to five transfer trailers per day will be hauled offsite (which equals about one trailer every 2 hours).

3.5 Recycling Vehicles

Recycling vehicles will have a separate entrance before the scalehouse. The recycling drop-off area will be a pull-through type facility with adequate unloading areas. An additional two pull-through lanes will be available during peak times (i.e., Saturdays).

3.6 Moderate-risk Waste Vehicles

Customers dropping off used oil and antifreeze will access the MRW building using the recycling drop-off area entrance. They will enter the MRW facility using a drive-through lane.

Customers dropping off other MRW material (batteries, household chemicals, batteries, etc.) will contact the County for drop off. A County representative will meet the customer at the same drive-through lane to drop off material.

3.7 Employee/Visitor Vehicles

County employee and visitor traffic will turn left before the scalehouse to access the administrative building. Contract employees will proceed past the scalehouse (via the bypass lane) and will park in areas near the transfer building.

3.8 Scale Plaza

The scale plaza is designed initially with one inbound and one outbound scale to handle all traffic. The scale plaza is designed with a bypass lane for transfer trailers and has an area where another scale could be added at a later date. There are accommodations for automated inbound and outbound commercial transactions in the future (e.g., card-readers, RFID, etc.)

See Figure 1 for conceptual facility layout.

SECTION 4

Tipping Building

The approximate 100- by 210-foot transfer building will be divided into three primary functional areas: (1) waste receiving, storage, and handling; (2) tire and white goods loading area; and (3) contractor offices.

4.1 Tipping Floor Level

The tipping floor level will consist of a cast-in-place concrete floor surface enclosed by a separate superstructure. The large tipping floor area will be covered by a pre-engineered steel rigid frame system spanning the entire floor. Cast-in-place concrete push walls protecting the exterior building walls will be constructed independent of the building's framing. Walls enclosing the tipping floor will be a combination of metal panel walls designed to be hosed down for cleaning, and louvered openings will be provided as needed for cross ventilation. Translucent panels will be used high in the walls to provide a natural light source where possible. The exterior walls of the contractor office area will be a combination of cast-in-place concrete and load-bearing concrete block masonry walls.

The tipping floor has two separate areas for unloading commercial and self-haul vehicles.
The commercial unloading area is designed to handle four vehicles at a time, includes areas for at least 5 days of storage, and has an area for stockpiling single stream recycling material for load-out by the contract operator.

The self-haul unloading area is designed to unload nine vehicles at a time and has an area designated for stockpiling construction and demolition debris material for separate load-out. During peak times (Saturdays), the commercial unloading area will be available to unload self-haul vehicles.

The transfer building roofing system is designed to provide a minimum of 28 feet of clearance to allow unloading of all types of garbage trucks and other vehicles. The roof is designed so that rain water will flow to the load-out tunnel side of the building at a slope of 2 to 12. The roof system will consist of metal standing-seam panels and selected areas of skylight panels attached to the sub-framing of the pre-engineered building. The metal roof panels will have a bottom surface of sheet metal to protect insulation from water generated by interior hose-down activities. Perimeter gutters will provide drainage from the upper roof with external downspouts discharging to underdrains at the foundation.

4.2 Ground Floor (Tunnel) Level

The ground floor level construction will be primarily cast-in-place concrete with portions of the exterior wall surfaces exposed to view. These exposed areas will be finished using painted concrete. Doors, framing, and window framing materials will match other buildings onsite using noncorroding materials wherever possible.

The load-out tunnel will have a flat concrete floor, with a pit scale under the load-out port. The tunnel may have two 15-foot-wide by 20-foot-high doors (one on either end).

See Figure 2 for the transfer building plan and Figures 3 and 4 for building elevations.

SECTION 5

Composting Area

Similar to the existing operation, the new composting area will be an outdoor operation designed to accept and process yard waste, agricultural by-products, and wood waste into compost. Future addition of other feedstocks may be considered at a later date; however, the County has indicated that it is not interested in accepting post-consumer food waste or biosolids at this site.

The composting technology used at the new site will be different from that at the existing windrow operation. The new site will use a combination of aerated static pile (ASP) and windrow curing, and will be designed to be operated in a batch process.

5.1 Composting Area Components

The following key components of the proposed development are shown on the attached process flow diagram (Figure 5) and compost area concept layout (Figure 6):

- An uncovered feedstock receiving, grinding, and mixing area (223 feet by 242 feet) situated just off the compost traffic lane, toward the top of the site. This area will be designed for back-in access to customers for dropping off materials for composting. Feedstocks will be unloaded onto the asphalt pad in this area and then subsequently moved or handled with a small front-end loader. The existing electric grinder will be used to grind feedstock and amendment as needed.
- Eight outdoor (55 feet by 25 feet) ASP composting systems with back, side, and interior walls constructed of ecology blocks. These systems will have an associated biofilter odor treatment system. This area will be designed for a material residence time of 4 weeks. The ASP composting system will consist of eight discrete aeration zones that are constructed in two identical groups of four. The two groups of aeration zones will run independently of each other, and each will consist of the following components:
  - On-grade high-density polyethylene aeration laterals situated below each composting pile (two per aeration zone)
  - An above-grade header pipe that distributes air to and from the aeration laterals (one per aeration zone)
  - A common process air duct that provides the connection between the individual aeration zone headers and the fan equipment
  - Centrifugal fans (one per group of four aeration zones) and associated dampers that allow airflow to each zone to be controlled
  - An organic media biofilter that will treat process air collected from the composting piles
- An outdoor pad for windrow curing of feedstocks. The size of the windrow pad will be based on managing materials in up to 18 windrows that are up to 18 feet wide and 7 feet high using a large straddle-type windrow turner with an 8-week residence time. The typical length of each windrow will be 115 feet.
- A screening area between the curing windrows. The aisle between the two rows of curing windrows will be wide enough to accommodate the existing trommel screen.
- An amendment storage and finished product screening and storage pad designed for up to eight rectangular finished product piles that are 55 by 75 feet and will accommodate a height of 12 to 13 feet. Piles will be made with a front-end loader.

- A product sales area located near the finished product storage area.
- Up to three surface water retention ponds to capture runoff from the active operating areas. The site will be graded to separate runoff from the ASP and receiving area from the rest of the site so that surface water collected from areas other than the ASP pad and receiving area can be used to moisten piles as needed. Leachate and condensate that collect within the aeration system's laterals and ducts will be captured and drained via gravity through polyvinyl chloride piping to one of two leachate manholes. The two leachate manholes will also serve as the "water trap" that is necessary to allow leachate and condensate to drain continuously from the aeration system while it is in operation. The leachate manholes will be equipped with electric pumps and float level sensors that will transfer liquid that collects in the manhole to the retention pond located near the ASP area.

5.2 Facility Capacity

The facility is designed to accept and process the projected 7,000 tons per year of feedstocks that are anticipated. The facility design also factors in the historical peaking factor based on quarterly data from 2013 through 2015 from the existing site. However, the mass of material present at the site at any one time will vary based on the type of equipment used to form and turn the windrows, residence times, and the density and moisture content of the materials being composted. For these reasons, it is more convenient to refer to the volumetric capacity of the various composting systems. The facility will have the following capacities:

- The ASP composting system is designed around operators constructing two composting piles per week which have a combined capacity of up to 654 cubic yards (yd^3). At times of the year when feedstock quantities are lower, the composting piles will be built with a lower height.
- The capacity of the windrow composting and curing operation is expected to be approximately 5,028 yd^3. However, this capacity may change (increase or decrease) as a result of changes in turning methods and equipment and changes in windrow spacing. These changes can be accommodated without the need to expand the physical size of the windrow pad.
- The amount of material stored in the finished product storage area is expected to vary significantly from year to year. Also, amounts will vary within each year based on compost production levels and market demand. The capacity of the area will be based on storage of materials in eight rectangular piles (75 feet by 55 feet). However, this storage capacity will be increased to respond to lagging seasonal or year-over-year market demands by building stockpiles closer together or using an extended pile configuration.

5.3 Acceptable Feedstocks

The new facility will be designed to process the same materials that the existing facility is permitted to receive and process (Type 1 [vegetative] and Type 2 [manures] feedstocks), which include the following:

- Landscaping and yard trimmings
- Wood wastes (natural woody debris, including land clearing stumps and brush, and clean, unpainted, and untreated dimensional wood)
- Straw and bedding with associated manures (primarily from nearby fairgrounds and small farms)

Future addition of pre-consumer food waste may be considered at a later date.

The current site experiences seasonal variation of compost material depending on the weather. During the late fall and early winter periods, incoming material contains a higher proportion of brush and tree limbs.

5.4 Amendments

Amendments are normally added to organic feedstocks as part of the composting process. This is done to adjust the moisture content and carbon-to-nitrogen ratio to the desired range. In addition, amendments provide structure and free air space to improve the movement of air through the composting pile. While the necessary adjustments can often be achieved through the use of one amendment type, it is not uncommon to use two or more amendments to achieve the desired results. Amendments may also be added to curing piles or to finished compost product to enhance their agronomical characteristics.

The following are common amendment sources that may be used at the compost facility:

- Wood chips produced from onsite grinding of wood waste, dimensional lumber and logs, stumps, or brush, or purchased from material brokers
- Oversized material screened from finished compost produced at the site (screening overs)
- Leaves and brush from leaf and yard waste diversion programs
- Cardboard and paper
- Sawdust
- Straw

Actual quantities and types of amendments used at the site will vary from week to week depending on feedstock characteristics and amendment availability.

SECTION 6

Administrative Building

The administrative building will be designed primarily for County staff and will be located near the entrance/exit of the facility. Additionally, this building will be located near the MRW building, scalehouse, and recycling depot, and will also be accessible to visitors without requiring them to cross the scales. The administrative area will be constructed with a pre-engineered steel rigid-frame system. The exterior walls of the administrative area will be a combination of cast-in-place concrete and metal panel siding over steel framing. The architectural features of this building will be similar to those of the scalehouse.

The administrative building will include the following main features:

- A reception/customer service area
- A conference room with capacity for 16 to 18 people
- Three enclosed offices and four open offices (cubicles)
- Two Americans with Disabilities Act of 1990 (ADA)-accessible restrooms for staff

See Figure 7 for the administrative building plan.

SECTION 7

Scalehouse and Scales

The new facility will be equipped with an inbound and outbound manual scale, and an inbound automated scale that will be dedicated for commercial accounts. The scalehouse and scale area will also have room to accommodate a future outbound automated scale.

The scalehouse will be situated between the inbound and outbound manual scale and will have a working area large enough to accommodate three computer screen monitors (each side for inbound/outbound), a camera system, an ADA-accessible restroom, one ADA parking stall, a break area, and a floor-mounted safe that will be built into the floor. The exterior walls of the scalehouse will be a combination of cast-in-place concrete and metal panel siding over steel framing. The architectural features of this building will be similar to those of the administrative building.

See Figure 7 for the scalehouse plan.

SECTION 8

Recycling Drop-off Area

Similar to the existing site, the new site will include a recycling drop-off area that is accessible without going through the scale. The recycling drop-off area will include a row of 15 roll-off containers located on a concrete pad with an ADA ramp, ADA platform, and stairs on both ends of the row. The area will not be covered. Both sides of the row of roll-off boxes will be accessible during peak days and hours. Only one side of the row of roll-off boxes will be accessible during non-peak days and hours. Each side will be equipped with two drive-through lanes and one bypass lane. A gate on either end of the roll-off boxes will be used to control access to the side used only for peak periods.

See Figure 8 for the recycling drop-off area plan.

SECTION 9

Moderate Risk Waste Building

The new MRW building will be much larger than the current facility in order to improve separation and storage as required. The MRW building will be an open, two-sided structure with a fully enclosed portion that is explosion proof and has proper ventilation. The building will be located before the scale and will be designed for customers to pull through the drive-through area that will be located under a roof.

See Figure 7 for the MRW building plan.

SECTION 10

Stormwater Management

The site drainage and stormwater scheme will be largely dependent on the actual site that is selected. However, it is anticipated that the site will be graded to maximize gravity flow. Stormwater will be collected in a series of swales and retention basins strategically located throughout the site. The collected stormwater can be used for the composting process as needed, and contact water from the transfer station's loadout tunnel will be managed as leachate.

SECTION 11

Facility Land Area Requirements

Based on the results of facility needs and future growth projections for Kittitas County, the estimated area required to provide the solid waste and material management needs for this new facility will be approximately 20 to 25 acres. This estimate does not take into account site-specific features and dimensional limitations that may modify the space and design requirements. However, this estimate will provide the County and the CH2M team with the required information to begin identifying and evaluating specific sites.

SECTION 12

References

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Figures Divider

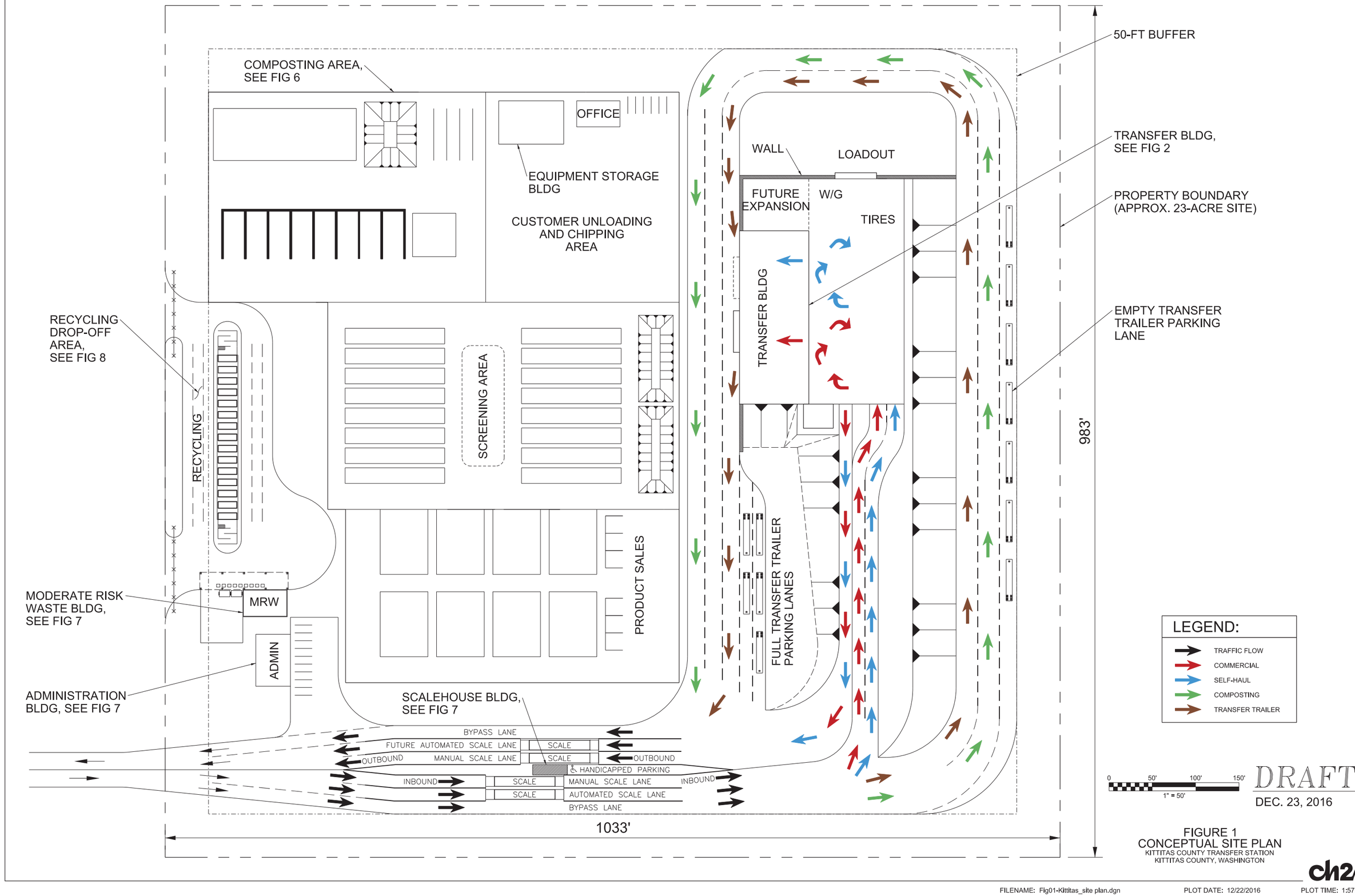

FIGURE 1
CONCEPTUAL SITE PLAN
KITTITAS COUNTY TRANSFER STATION
KITTITAS COUNTY, WASHINGTON

ch2m

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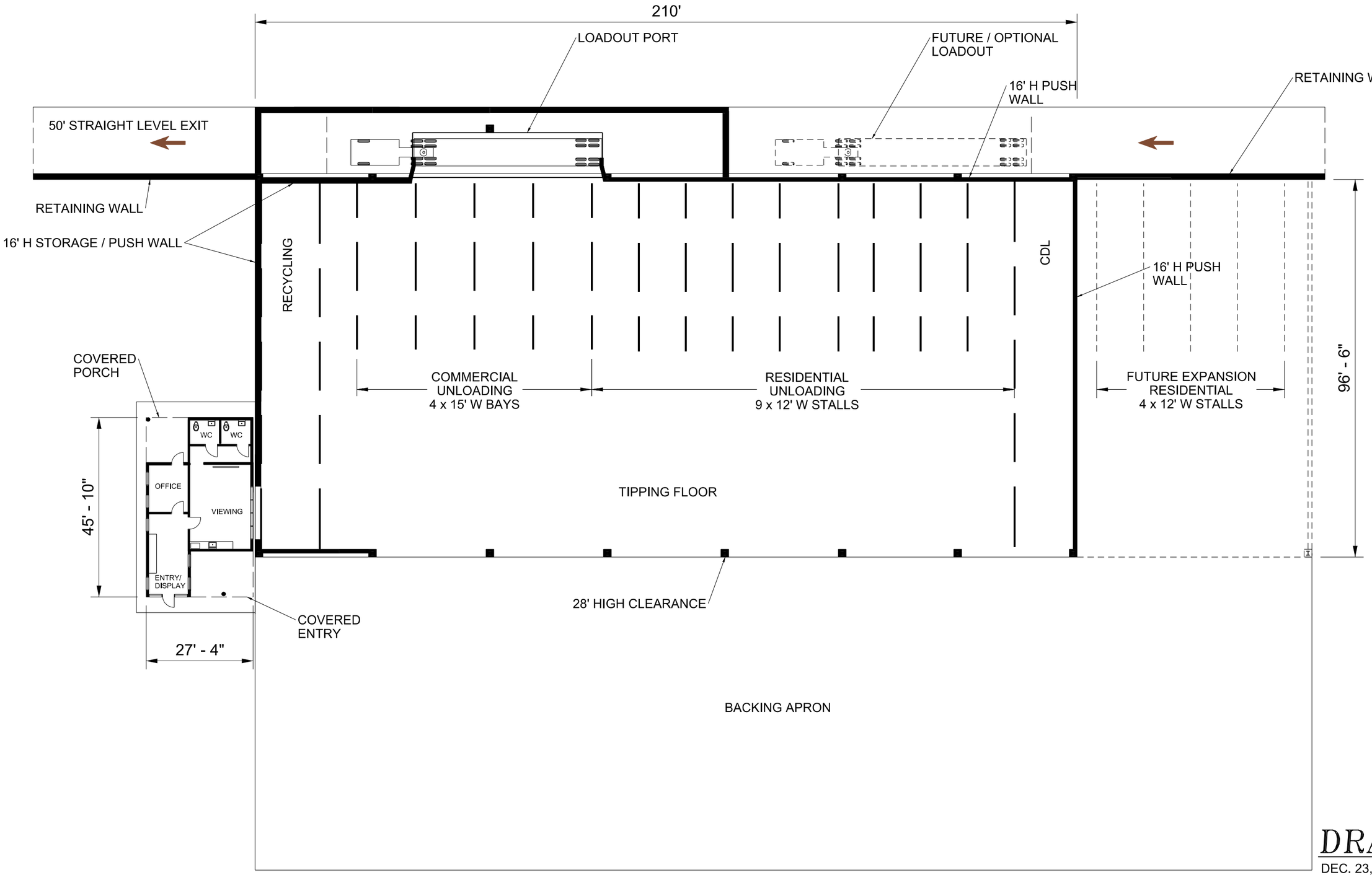

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0 12' 24' 36'

1" = 12'

FIGURE 2
TRANSFER BUILDING PLAN
KITTITAS COUNTY TRANSFER STATION
KITTITAS COUNTY, WASHINGTON

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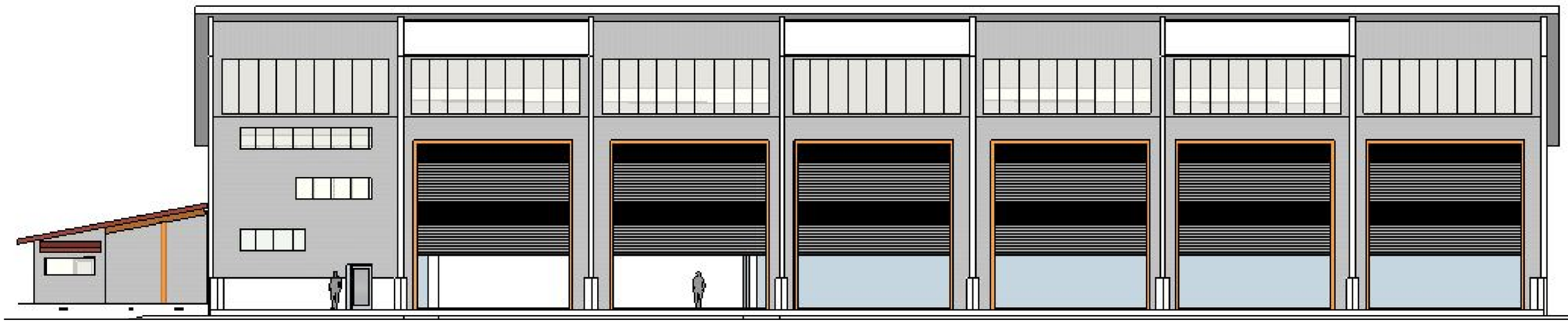
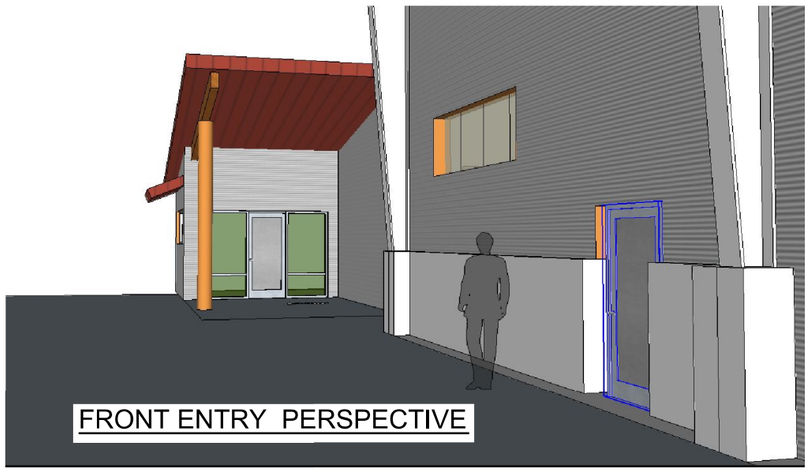
FRONT ELEVATION





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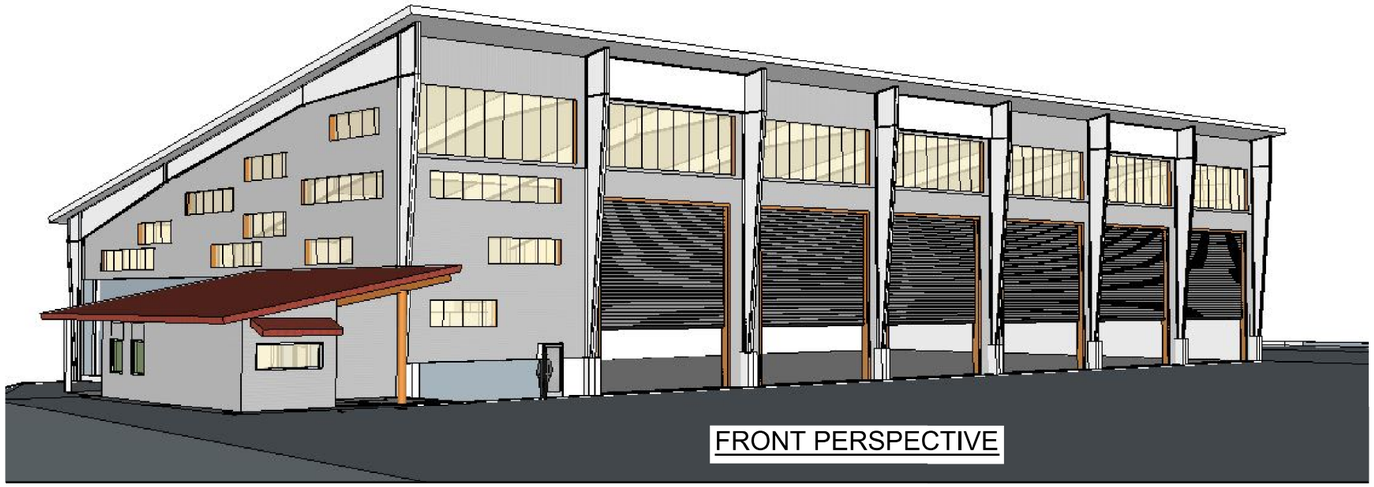

FRONT PERSPECTIVE

FRONT PERSPECTIVE

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DEC. 23, 2016

FIGURE 3
TRANSFER BUILDING ELEVATIONS (1 OF 2)
KITTITAS COUNTY TRANSFER STATION
KITTITAS COUNTY, WASHINGTON

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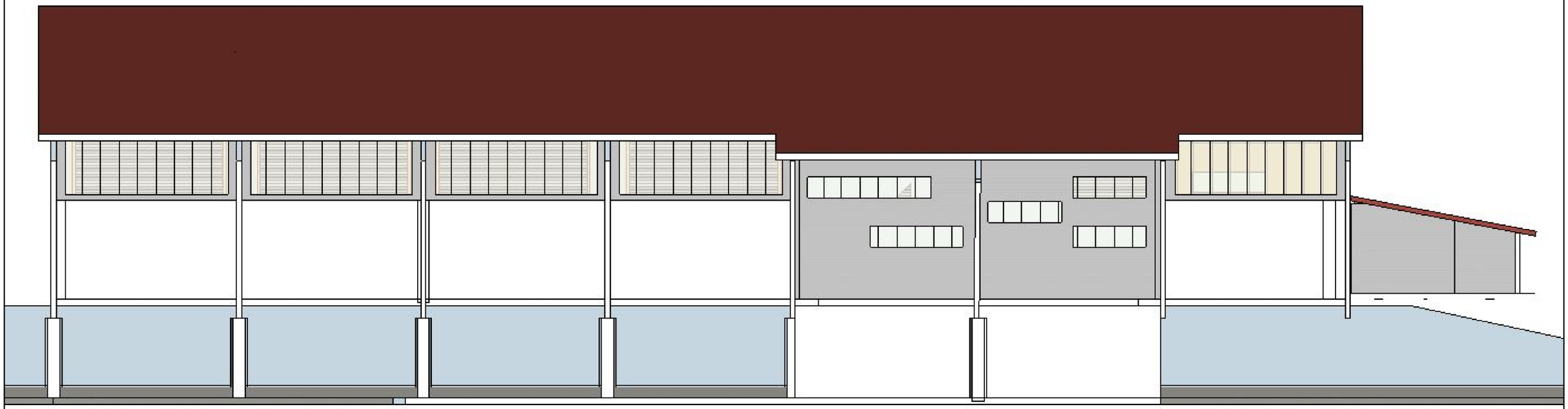
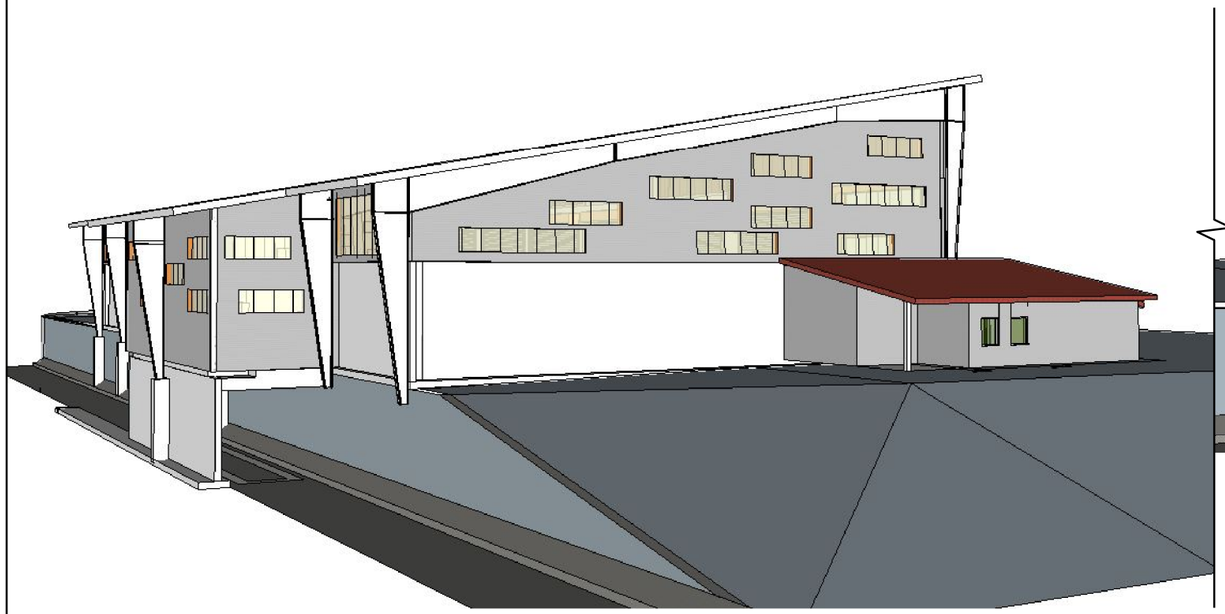
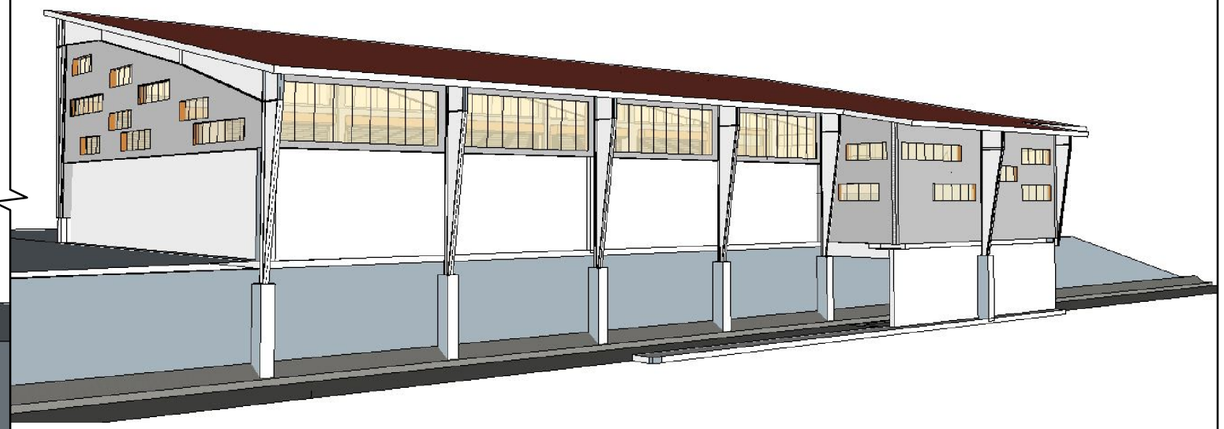
BACK ELEVATION





BACK PERSPECTIVE



BACK PERSPECTIVE

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FIGURE 4
TRANSFER BUILDING ELEVATIONS (2 OF 2)
KITTITAS COUNTY TRANSFER STATION
KITTITAS COUNTY, WASHINGTON

ch2m

FILENAME: Fig04-Kittitas_transfer bldg elev.dgn PLOT DATE: 12/22/2016 PLOT TIME: 9:30:27 PM

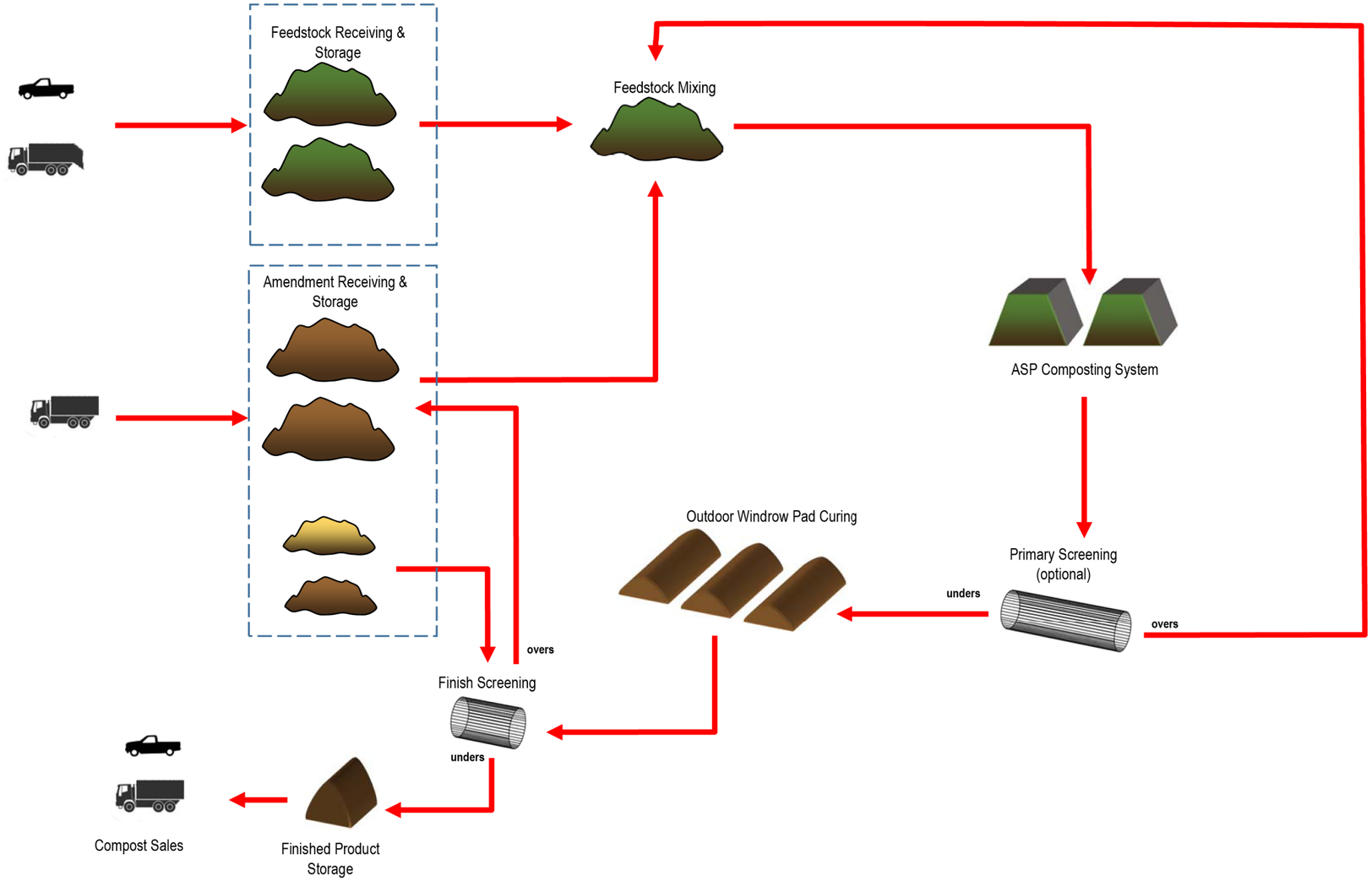

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FIGURE 5
COMPOST PROCESS FLOW DIAGRAM
KITTITAS COUNTY TRANSFER STATION
KITTITAS COUNTY, WASHINGTON

681'

223'

OFFICE

EQUIPMENT STORAGE BLDG

CUSTOMER UNLOADING AND CHIPPING AREA

STORMWATER PONDS

PRODUCT SALES

FINISHED PRODUCT STORAGE PILE

SCREENING AREA

385'

PARKING

PARKING

PARKING

PARKING

STORMWATER POND

GRINDER

55'

ASP BUNKERS 8 x 25' W BAYS

18'

WINDROW CURING PILE

115'

55'

75'

320'

165'

BIOFILTER

60'

200'

239'

FINISHED PRODUCT STORAGE 8 PILES

WINDROW CURING 16 PILES

242'

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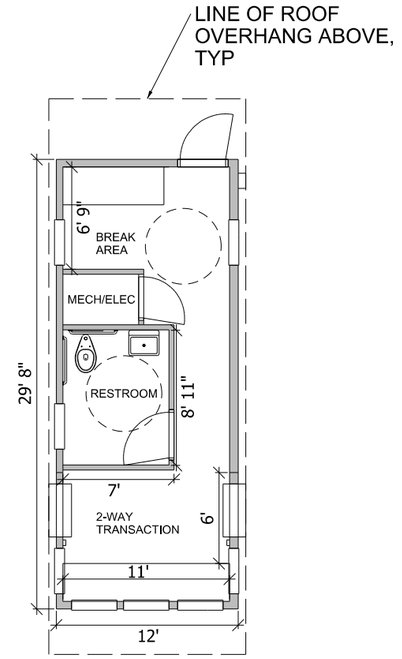
0 30' 60' 90'

1" = 30'

FIGURE 6
COMPOSTING AREA PLAN
KITTITAS COUNTY TRANSFER STATION
KITTITAS COUNTY, WASHINGTON

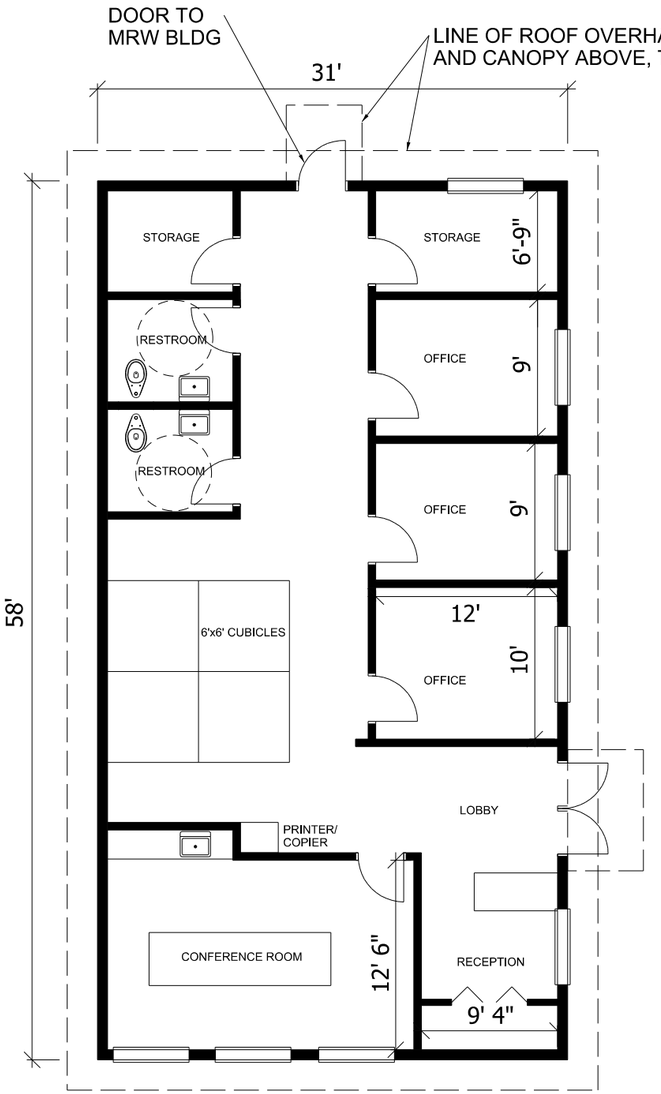
ch2m

FILENAME: Fig06-Kittitas_composting plan.dgn PLOT DATE: 12/22/2016 PLOT TIME: 9:46:44 PM



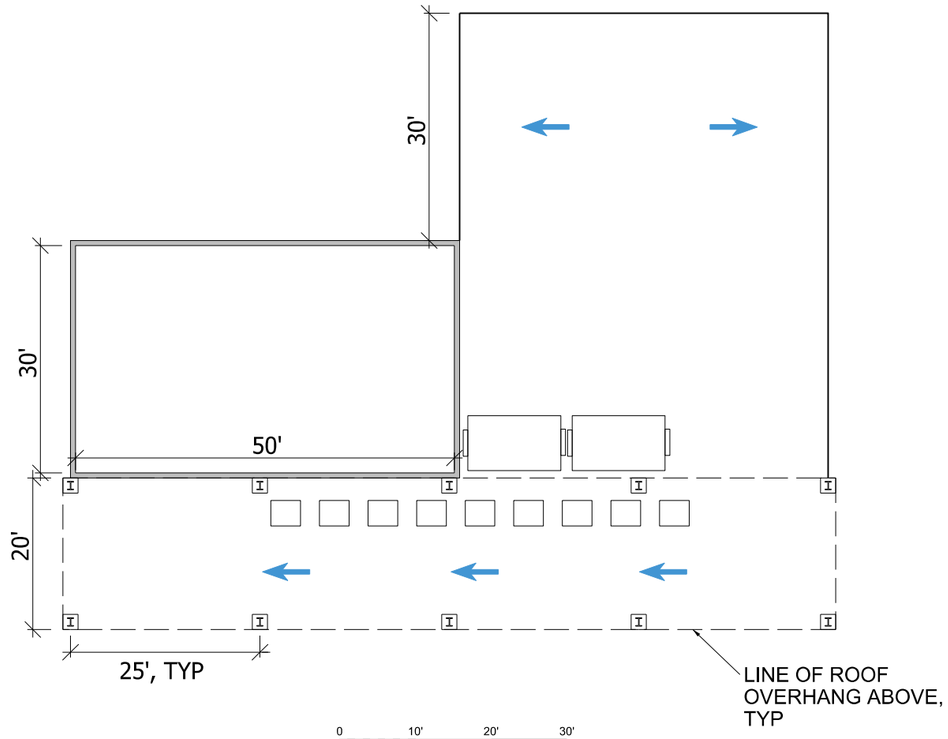
0 5' 10' 15'
1" = 5'

SCALEHOUSE BLDG
1"= 5'



0 5' 10' 15'
1" = 5'

ADMINISTRATION BLDG
1"= 5'



0 10' 20' 30'
1" = 10'

MODERATE RISK WASTE (MRW) BLDG
1"= 10'

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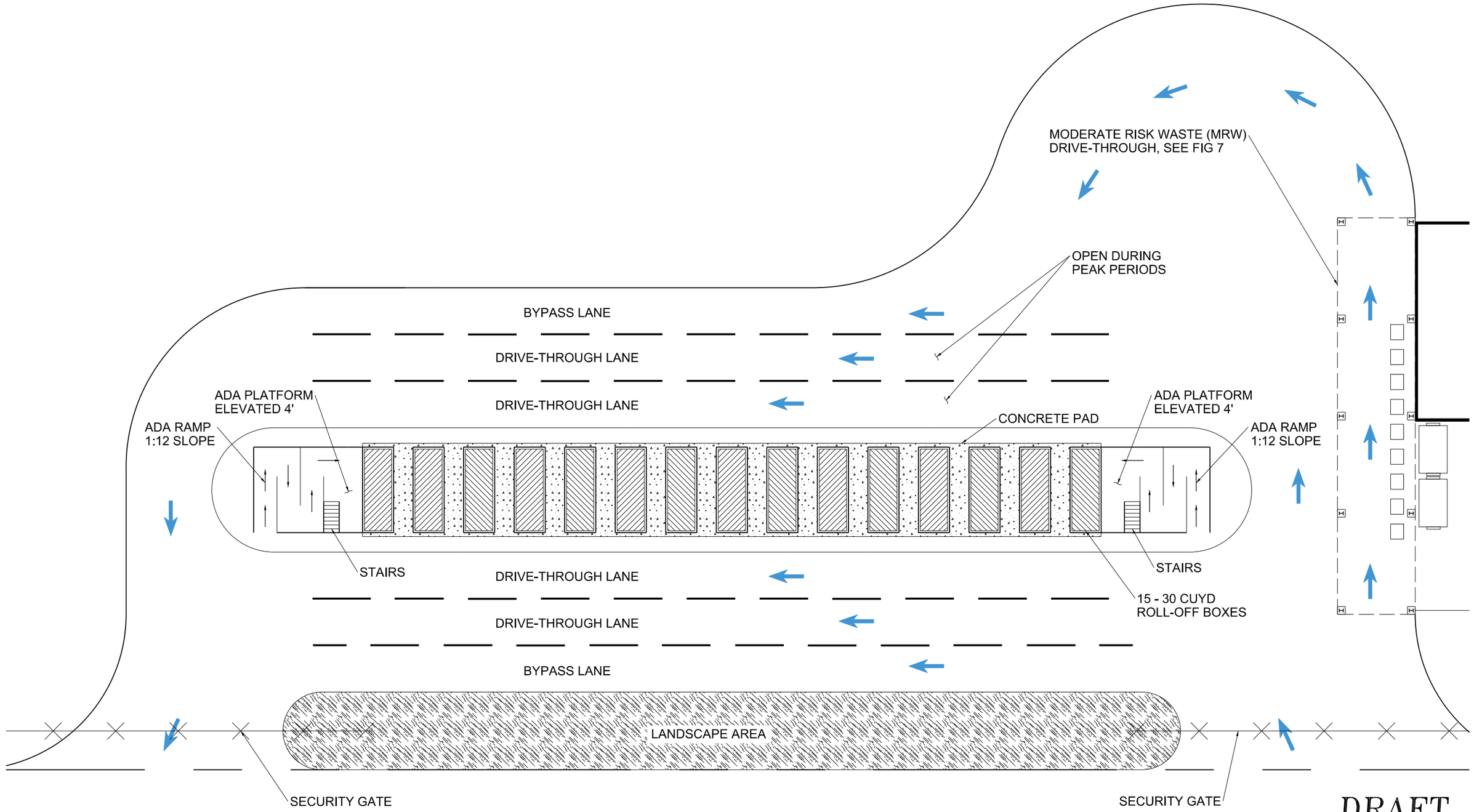
FIGURE 7
SCALEHOUSE, ADMINISTRATION, AND MRW BUILDING PLANS
KITTITAS COUNTY TRANSFER STATION
KITTITAS COUNTY, WASHINGTON

ch2m

FILENAME: Fig07-Kittitas_scale admin mrw plans.dgn PLOT DATE: 12/22/2016 PLOT TIME: 10:17:41 PM



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0 12' 24' 36'

1" = 12'

FIGURE 8
RECYCLING DROP-OFF PLAN
KITTITAS COUNTY TRANSFER STATION
KITTITAS COUNTY, WASHINGTON

ch2m

FILENAME: Fig08-Kittitas_recycling drop-off plan.dgn PLOT DATE: 12/22/2016 PLOT TIME: 10:31:20 PM