Reinventing the Honeybucket Final Report

Background

According to an informal 2014 survey by our office, 44% of YK Delta residents lack sufficient indoor plumbing. Many of these communities have never had sewage service, and a growing number revert to honeybuckets as Flush Tank and Haul (FTH) and piped systems fail. There are almost no honeybucket collection bins, or hoppers available locally. Since they are no longer mass produced, the costs of purchasing new ones are far above what any community in our region can afford.

The difference in available funding and need for addressing rural Alaska's major sanitation issues is $658 million and growing. At some point we must come to terms with the fact that honey buckets are not likely to be going to "the museum" anytime soon. There is a real need for improved sewage disposal that cannot be ignored. Communities lacking sewage disposal are plagued by unregulated dumpsites, often near resident homes. The current situation leaves our population at risk for infectious disease and drastically lowers our collective standard of living. It is with this understanding that I applied for a Zender/EPA grant to develop an affordable honeybucket haul system.

Progress

YKHC Remote Maintenance Worker (RMW), Bob White and I worked with Shorty's Welding Shop in Bethel throughout the winter of 2013-2014 to create a prototype haul unit that could mount on to existing haul carts scattered throughout the YK Delta. At the same time, we ordered and tested numerous affordable plastic barrels by filling them with dog team waste and water at different rates, freezing them solid and then emptying the frozen contents. The design was finalized in the late spring of 2014.

In early June, we identified homes in need and transported the equipment to the village of Napaskiak for a pilot test. Upon installation, both the sewage haulers and homeowners were educated about the system and given my contact information. I have kept in regular contact with all parties involved for feedback. As of December, no homeowners have reported spills or any other major issues. To date, the haulers have made suggestions on improvements to the haul cart design but have not noted any issues with the barrels. They will continue to be tested throughout the winter. The next big test will be how the barrels hold up to the wear and tear of an entire winter of frozen dumping.

Results

One operational issue we immediately noted is that the bins were being filled too high. Just like traditional hoppers, when filled much over half way, they become increasingly difficult to empty under freezing conditions. This results in frequent cracking. People's natural tendency is to try and fill them up as much as possible to get more for their money. I attempted to get rates adjusted by the Tribe to encourage proper dumping but as of December it hasn't yet happened. I will continue to work with the tribe on this issue. Emptying hoppers at the proper level is the most important operational consideration. Local fee structures should reflect this.

While we continue to evaluate the effectiveness of this collection system, we were successful in adapting an affordable sewage collection system in a reasonable timeframe. We believe the

project was successful in having a direct, positive impact on public health. Because they are not manufactured in large numbers a single new traditional honeybucket hopper costs upwards of $4,000 dollars before shipping. If a community already has a haul cart or can acquire one, they can equip 10-15 homes for roughly the same price as one traditional hopper.

Under ideal use conditions we believe our honeybucket hoppers can work. They are much more cost effective than traditional hoppers, but just like traditional hoppers, they have to be used properly.

Another success of this project is demonstrating the effectiveness of simple solutions. The thing that really attracted me to the public health profession is that for the most part, solutions to basic sanitation are simple. In this case, people in Napaskiak didn't have a sanitary means to dump their honeybuckets. The solution was to give them a bucket to dump into; cheap, effective and timely.

Success for the people that live in this harsh climate has always demanded simple and efficient solutions; the present sanitation issues are no different. A prevailing thought process that stresses simple, effective and real time solutions needs to be the mantra of sanitation infrastructure in the future of bush Alaska. In the face of dwindling resources, we need to acknowledge the failures of our prevailing system and develop solutions that fit the original residents of this land. I am by no means recommending that we revert to honeybuckets and erase the progress made in the last decades; I only advocate an open and honest discussion about what we are doing wrong and what the best way to serve the needs of rural Alaskans.

Attachments:

1. 11 pages – Grant timeline
2. 2 pages – 2/24/14 Meeting Handout
3. 3 pages – Homeowner instructions
4. 3 pages – Sewage hauler instructions
5. 1 page – Rate change letter
6. 5 pages – Shop drawings of haul cart

"Reinventing the Honey Bucket" Project Timeline

1/6/2014 – Initial meeting with Shorty to talk about design/project. Went over drawings and talked about timeline/construction considerations.

1/16/2014 – Received word from Zender that we had received the full $20,000 of grant funding.

1/10/2014 – Went to Shorty's to see what he had completed so far. Advised him on balance point of the hopper basket and spoke about options for chariot addition.

1/22/2014 – Bob and I drove down to Napaskiak to pick up old hopper chariot for design process. Chariot was frozen in the ground. We chiseled it out, transported in back to Bethel and brought it over to Shorty's.

1/23/2014 – Bob and I went to Shorty's to advise again on the chariot addition for hopper basket. Advised him on shape of addition and making sure it could be secured by bolts so no welding would be needed in the village. We also discussed placement of the support rails and bushings to ensure the basket could be tipped over enough for dumping. The shape of the chariot addition was developed at this time and it was determined that the bar would be secured with a pin that would be chained to the chariot addition piece.

At this time Shorty ordered tires, wheel assembly and jack piece for the chariot.

1/24/2014 – Ordered 1 drum from Unitech of Alaska for 136.66. Receipt saved in project folder.

1/27/2014 – Picked up drum from NAC and brought it over to Shorty's.

1/28/2014 – Revisited Shorty to see the bucket in the haul unit. Advised that he make the side and back walls higher so they remain snug any chosen drum. This design change allows the "basket" unit to haul traditional steel drums as well. We also discussed options for a lift and dumping arm, chain straps and latch considerations for the lid of the unit.

2/5/2014 – Bob White and I took a 4 wheeler over to Shorty's to test the hopper, by filling it with water and driving it around. It seemed to work well but we had to turn around fairly quickly after noticing that Shorty had not finished mounting the tires. We tested picking up and dumping the drum full of water and noted that it was no more difficult that the traditional hopper. Some adjustments should make the process smoother. A dump was successfully completed and several modifications were suggested:

- The dump handle needs to be lowered so people do not have to get too far down to dump the bucket.
- The pipes that rest in the chariot need to be moved closer to the middle of the structure. At its current mounting point, the hopper is tilted backwards during transport.
    - The bushings on the pivot pipe need to be an equal distance and hold tighter to the chariot addition.
    - The pivot pipe needs to be adjusted at a slight angle to fit into the chariot straighter.
- We decided that the ring used to close the bucket wouldn't last through a couple uses. Shorty designed a latch that he had on the back of the basket to hold in the bucket while dumping. We have suggested he add the same hardware to each of the 3 sidewalls. This should hold the lid tight enough to the bucket to prevent any spillage during transportation.
- The chariot addition needed to be smoothed out. This coupled with adjusting the angle on one of the bars should help the basket roll on to the chariot with ease.

As of now it is a bit more of a 2 man job. Ideally, we want one person to be able to collect the bins with ease.

2/10/14 – Considerations:

What is needed from the community?

- Will they have money to pay the sewage haulers and provide 4 wheeler (how many hours/week and how many employees)
- They need to be emptied before they are full. Just like regular hoppers if they are much over 60% full. We need to know that this will happen. To find out if they actually work they need to be emptied in the correct fashion.
- Lids? We can use the lid that comes with it for transportation, any ideas on a good lid for bucket when it isn't in transport.
- Placement – they pretty much have to be on the boardwalk, are their spots where
- I'm going to order 20 buckets to start with. According to my numbers there are 10 houses receiving absolutely no service and 11 having issues with their sewer. I have all the names and current description of problems. I need someone to sit in front of a town map with me and figure out placement of bins. After we note how many houses need the bins I'd like to set up a collection plan. We might need to update the information too.
    - Does the city have records for who is currently not receiving service?

Ideas for Improvement

- A handle on the lid? Lid needs some work. If we aren't going to use the rings then how do we secure it when it is out in the community. We need it to be covered since it would fill up really quickly with rain or snow and increase chance of spillage.

2/15/14 – Went to try to beat the frozen water out of plastic container. We couldn't get it out. Bottom and sides expanded a bit. With incremental fill, we are thinking having it freeze all at once made it expand more than it normally would. Going to check and see if we can thaw it a bit with a torch and beat it out next.

Next idea is to build a steel hopper with lift bars mirroring the shape of the current hopper. We are thinking about trying snoflo paint or liners. Waiting to begin on this until we try a few more things with the plastic bin. Shorty brought a bill of $9,500, waiting on and actual invoice.

2/19/14 – Tried to torch the bin and perform a frozen dump. FAILED. Even if it would have worked it would be too time consuming to impliment

2/24-2/25 – Incremental fill (3-4 gallons at a time) and complete freeze completed.

2/28/14- Two hits with the sledge hammer knocked all the ice out of the bin.

2/29-3/3 – Repeat incremental fill with 7 to 8 gallons at a time.

3/3/14 – Ordered 2 more plastic bins from Unitech. In the coming week we will try using liners to see if that makes the water easier to dislodge from the barrel. I will also bring one of the bins to my dogyard and fill it with 5 gallons of water/dog feces mix to see if an increased amount of solids makes the process of emptying them while frozen easier.

3/11/14 – The wrong bins were sent. Contacted Unitech to have the correct drums shipped. Bob purchased 55 gallon drum liners as well.

3/15/14 – Received two correct bins and an additional thicker non-tapered drum. We placed a liner in the tapered bin. After a warm spell that would not allow for freezing I began to incrementally fill both bins with water. (3/25-4/8) All through-out this period I have been incrementally filling a barrel with waste from my dog team and water.

4/9/14 – Went over to Shorty's and asked him to cut a 10 inch diameter hold in the bottom of the basket. We decided a hole is necessary because the bottom of the barrel needs to be beaten directly with a sledge hammer to dislodge the barrels contents.

4/10/14 – Bob and I went and picked up the cart from Shorty's and tested the thicker barrel, lined barrel and the one at the dogyard filled with actual waste. Our findings are below:

- The sides need to brought back up to height and the hooks need to be moved up as well. Three hooks will be needed. They need to placed so they lay flat on the top of the barrel.
- The handle needs to be welded on. We will advise Shorty on placement.
- The corners on the bottom of the basket should be cut off. Because the basket arms aren't perfectly straight the corners rub on the side of chariot when you are flipping it over.
- The bottom of the barrel is 18 inches, we would like the hole on the bottom to be extended from 10 inch to 14 inch.
- The basket is definitely overbuilt. On a rebuild we would use about half of the steel. The barrel gets all the beating and the basket doesn't have to be so strong.

- The thicker bucket was no good. It broke after just a few hits. The strength of the other barrel is in it's flexibility. We brought one of the yellow barrels back to YKHC and over the next few days staff will continue to beat it with a sledge hammer. We are curious to see just how much of a beating they could take.

5/12/14 – Received 20 barrels from ACE and brought them to YKHC.

5/20/14 – Attended community meeting in PKA with 20 people in attendance to discuss FTH Haul problems. A lot of residents at the meeting were the owners of homes without functioning Co-Water toilets. We went over the report given to the City and Tribe a year ago that lists all the parts needed for each home with a malfunctioning system. We also discussed the need for the city or tribe to purchase all the parts needed and sell them to community members in need. Tim Allan, of Co-Water has offered to come to Napaskiak and train community members to fix the systems. Richard Larson completed many of the original instillations in the community and has offered to get trained by Tim. He could then be hired by community members to work on their systems, using parts bought from the city or Tribe.

Bob and I walked around the village when we got there and looked at the homes where honeybuckets are being dumped to find sites for the hoppers. Bob and I have decided to make simple plywood base holders for the hopper, with 18" walls. We will use shims to make the platforms level. Deanna has promised to send me a map of the village with all the homes in need of a hopper marked on it in the coming week.

5/27/14 – Shorty stopped in to talk about how he didn't want to raise the walls. Instead he just extended the hooks. I advised him that we want the walls extended to the top of the barrel. Bob and I will stop by to check the cart this week.

5/28/14 – Received a map from Deanna with the 10 failing systems locations. Original map had 20 locations, but 10 were not broken systems, just people who aren't paying their bill. Deanna and I paired down the sites to those who have broken systems.

5/29/14- Reviewed and updated financial information. As of today, we have $5,989.34 left of the $20,000. I am toying with the idea of bringing the system to homes in need @ Mountain Village as well. During an ongoing RMW project in the village it has come about that there are a lot of homes in the village using honeybuckets and with no designated public dump site. I will be talking to the village about it next week after RMWs return from their trip.

6/6-6/7 – Constructed 5 stands

6/10/14 – ordered rubber latches – Bob picked them up in ANC

6/11/14- Made letter for homeowner and sewage hauler.

6/12/14- Mounted all the latches to the barrels.

6/13/14- I departed Bethel by boat at 10:30 am, arriving in Napaskiak at 11:00 am. Moses and Henry met me at the boat launch and we spent the next few hours delivering the honey bucket barrels to the 8 households identified by the City of Napaskiak. At each home, I explained the project and homeowner responsibilities to the residents receiving the hoppers.

Residents were happy to receive the new style hoppers. 5 homes received hoppers and stands, while the other three will be free-standing. 7 of the homes received the latching lids and one home received the strap down lid.

On the following Monday, Bob White brought the hauler basket down to Napaskiak and trained the sewage hauler on its use. I will be returning to the village late this week to check in with the homeowners.

My initial reaction is that most people are going to prefer the latched lids and stands. There were several homes where the best location was not utilized as preference by the homeowner. After a weeks use, I hope to be able to convince them to move the untis. Another issue we will inevitably face is regular emptying of the barrels. The City of Napaskiak is charging $15 a haul. I anticipate that at least a few of these homes, especially those with over 10 residents will have issues paying the bill and therefore the bucket will not work correctly.

6/26/14 and 7/2/14 follow up trips

House 1- At this home there is one person. As of 7/2/14 the bin is getting near to full and hasn't been emptied. Latches on the unit were being used. No one has been home at either home visit.

No one home on 6/26/14 or 7/2/14.

House 2- 8 people live in this home. They seemed reluctant to pay the $15 service charge.

House 3 – There are 4 people living in this house. They like the system so far. A little worried that the latches will freeze and break during the winter months. Good observation considering I modeled them off snowmachine latches which break often.

House 4- No one has been available at the house. As of 7/2/14 the barrel still isn't in use.

House 5- There are 12 people living in this home. On both 6/26/14 and 7/2/14 the residents had no complaints about the system. The latches were being used and it had been emptied several times.

House 6- There are 4 people in this home. Homeowners like the system and have no complaints. Latches were not being used during either visit. The barrel is set back on the property, off the boardwalk. I think the haulers will have trouble emptying it.

House 7 – This home has 2 people and the clasp model, not clasped at either visit. All the rest have the latch models. Although they haven't had any spills, they want something to secure the barrel. They said they would strap it to the piling on their home.

House 8 – 3-12 people in the home. No problems yet. She called and requested a stand, delivered on 7/2/14. Set the stand on extra wood to get it level with the boardwalk. The family moved the barrel further down the boardwalk in front of their home.

Reflections: No one latching them tells me that they are having issues with the latches. I need to find an alternative method to secure them. While people like the stands, they make the entire system too expensive. Each stand cost around $100 to build.

Moses went around a drew lines on the barrels of where they can be filled to. The line is way too high. I will contact him this week to find out

09/16/14 – I went down to Napaskiak and walked through the community to talk with homeowners about how well the bucket was working. Still no complaints of spills, smells, etc. Just about everybody had their bucket filled too high. I went in and spoke with Stephen Maxie about making a new rate structure to encourage people to get their buckets dumped when they are half full, instead of totally full.

09/17/14 – I wrote a letter to the Napaskiak Tribal Council to attempt to get them to change their user rates. Letter is attached. The letter was supposed to be brought up in the next Tribal Council meeting. I do not believe it was ever brought up at meetings and noted full bins during a visit in October.

9/25/14 – Coming near the end of the project, I have concluded that even if the barrels fail in the winter time, the cart would still be useful much of the year and other barrels could still be tested. I contacted an architect/engineer to see about getting some shop drawings completed for the cart. Before sending out the cart to Napaskiak I made preliminary drawings of the cart; I shared this with Hall-Hopkins Architecture at this time.

11/10/14 – I received drawings from Hall-Hopkins architecture and reviewed them with Bob White. All revisions will be free of charge. Drawings are attached to this report.

11/25/14 – Bob and I made a trip down to Napaskiak. We met with Harry Williams who is the sewage hauler that has been using the haul unit. We discussed improvements and reviewed the shop drawings we had made. The hauler dumping arm needs to be extended another two feet and a loop should be attached to the cart so it can be chained off to the haul cart. This will prevent the cart from rocking on uneven surfaces and reduce the chance of spills. The shop

drawing needs to be altered so there is no 45 degree bend on the cart addition piece. Harry had been doing frozen dumps with the back end of an axe. On the 26th, I bought a sledge hammer and sent it out to the village on the 1st of December.

During the same visit I met with the new mayor Tim Jacob, to complete a CDBG application for the establishment of a FTH maintenance system to repair and maintain home plumbing systems in the village. Over the next week I developed a complete itemized budget for all parts and labor for the project. A local worker from Napakiak was identified by Cowater as the best foreman for the job and was contacted about the work. I reviewed and corrected the final application on 12/04/2014.

I do not believe that the community had all the documentation required to get the CDBG grant. I have shared the application and associated documents with the Tribe and am encouraging both entities to use the information in the CDBG grant to apply for other funding. Including labor and enough parts to maintain a stock inventory the budget ran at $46,000.

11/26/14- I met with Shorty about constructing 3 more haul carts. I offered $3,500 for their completion. After checking with several fabrication shops in Anchorage who priced the build between $2,000 and $4,000 a piece we reduced the order from Shorty to two units. Once travel conditions allow Bob and I will travel down to Atmautluak and borrow an old haul trailer that has not ever been used. The first trailer we had was not true; because of this the lift points on the original design are flawed as they were tailored around the slightly bent frame. As we did with the original unit, we will work alongside Shorty and further improve the design. The drawings will be updated after the second cart is made.

12/08/14 – I contacted Curley Ardnt at Unitech about ordering $800 worth of the barrels.

12/09/14 – During visits to Napaskiak it was noted that most of the homeowners were not latching the bins. Several people I talked to said that they were tough to latch. Since nobody complained about the buckets falling over and since the cart secures lids during transportation Bob and I decided to use 6” bungee and boat type cleats. They are much cheaper and should be a lot easier to use. I ordered 100 ball bungees and 60 cleats to use in the future.

2015 - The additional carts will be held in Bethel and sent out to villages on an as needed basis in the coming year to further test the product. We will continue to monitor the existing collection system that is in place and make improvements as best we can.

Napaskiak Emergency Honey Bucket Design Meeting – February 12, 2014 Attachment 2

YKHC OEHE has been in communication with the village of Napaskiak about the need for emergency sewage hauling equipment for the homes that do not have service. Presently there are no used available honeybucket hoppers in the YK Delta and a new one costs close to $4,000 even before shipping. OEHE recognizes that there isn't a community in the YK Delta that can afford these costs while numerous communities are in need of sewage hauling equipment.

Since traditional funding methods (ANTHC, VSW) aren't satisfying the need for honeybucket hoppers in our region I applied for a Zender Environmental/EPA grant to develop an alternative solution to our honeybucket issue. I received the grant and have been working with Shorty's Shop in Bethel to create a new hopper. A few details about the project:

- The traditional hoppers will be replaced by plastic, 55 gallon tapered drums. These drums are only $120, as opposed to the $3,500 price tag on traditional hoppers.
- Small additions are mounted on traditional chariots to receive the hopper basket. A community will only need one hopper basket to serve all homes.
- When a community uses this system they could buy 20 plastic drums and a hopper basket/chariot addition for under $5,000.

2/12/14 Meeting Topics:

What is needed from the community?

- Will Napaskiak have money to pay the sewage haulers and provide 4 wheeler? How many hours/week and how many employees will there be?
- They bins need to be emptied before they are full. Just like regular hoppers if they are much over 60% full they are very likely to spill. **We need to know that this will happen.** To find out if they actually work they need to be emptied in the correct fashion.
- Placement – Unless there are available platforms (are there?) the drums will have to be placed on the boardwalk.
- According to my numbers there are 10 houses receiving absolutely no service and 11 having issues with their sewer. Before bringing the system to the village I need someone from the city to sit in front of a town map with me and figure out placement of bins. After we note how many houses need the bins we can set up a collection plan.
- Does the city have records for who is currently not receiving service?

Ideas for Improvement

- A handle on the lid? Best way to secure lid on bucket when they are out in the community.
- How do we stop the wind from blowing them over when they are empty?

Emergency Honeybucket Project

Dear Homeowner,

According to a YKHC conducted survey, 44% of homes in the YK Delta still rely on honeybuckets. Many of these homes have failing systems like yours. One new honeybucket hopper costs $5,000. There isn't a village in the Delta that can afford this.

YKHC-OEH received a small grant in 2014 to try and build an affordable honeybucket collection system. Throughout the winter we designed and built a haul cart and tested different honeybucket bins. With our design, a community could buy 20 units for the price of one traditional hopper.

To test this new system, OEHE has teamed up with the City of Napaskiak to provide the new style hoppers to homes with broken haul systems. The bins are free, but we are hoping for your participation in this ongoing design process.

I'm sure our design isn't perfect and your feedback is needed for us to improve the design. We are glad to be working with you on this process. Don't hesitate to contact me with any questions, concerns or suggestions. I can be reached at 907-543-6422.

Please see below for instructions for the bins use and the following page for sewage clean up instructions.

Thanks,

Brian Berube
Yukon Kuskokwim Health Corporation
Office of Environmental Health

Barrel Use Instructions:

1) Waste can be bagged or dumped directly into the barrel.
2) Be sure to clip all the latches shut after dumping.
3) Small children should not empty honeybuckets, many will be too short to reach.
4) If your barrel is in the wooden stand, make sure the open side is not facing away from the prevailing wind.
5) If your barrel has a bungee to secure it to a building, be sure it remains secured when not in use.
6) The barrel needs to be emptied when it is a bit over half full. If this isn't happening please contact OEHE and the City of Napaskiak. Like all honeybucket hoppers, there will be spills if it isn't emptied often enough.
7) Be sure to wash hands thoroughly after dumping honeybucket waste into the haul unit.

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Barrel Use Instructions:

1) Waste can be bagged or dumped directly into the barrel.
2) Secure the close ring to the lid of the barrel and close.
3) Small children should not empty honeybuckets, many will be too short to reach.
4) Try to keep the barrel out of a very windy area. When empty, they could blow over. Secure the barrel in the wooden stand or to a post or building with a bungee.
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Office of Environmental Health

Barrel Use Instructions:

1) Waste can be bagged or dumped directly into the barrel.
2) Pull the handle on the rubber latch upwards to close bin.
3) Small children should not empty honeybuckets, many will be too short to reach.
4) Try to keep the barrel out of a very windy area. When empty, they could blow over. Secure the barrel in the wooden stand or to a post or building with a bungee.
5) The barrel needs to be emptied when it is a bit over half full. If this isn't happening please contact OEHE and the City of Napaskiak. Like all honeybucket hoppers, there will be spills if it isn't emptied often enough.
6) Be sure to wash hands thoroughly after dumping honeybucket waste into the haul unit.

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Sewage Hauler Instructions-

Wear proper protective equipment. You should always wear rubber gloves, rain gear, and rubber boots. Disinfect equipment with bleach after work is done.

To protect your health be up to date on your vaccinations. You should be up to date on Hepatitis A and tetanus immunizations. You can get these at your local clinic.

The hoppers need to be emptied when they are a little over half full. If the hoppers are too full they will be difficult to load on to the trailer and are more likely to spill.

Loading the Chariot

1) Make sure the rubber latches on the barrel are closed
2) Back the hauler chariot to the barrel
3) Unhitch the chariot and tilt it upwards so the basket rests on the ground

4) Slide barrel in to the basket.

5) Close the chain clasp on the painted link.

6) Secure the hooks to the top of the barrel.

8)Push down on the front of the chariot to reattach hitch to the 4 wheeler.

7) DRIVE CAREFULLY!

<u>Emptying the Chariot</u>

1) Back the hauler chariot to the lagoon edge and loosen the hooks on the basket.
2) Remove the lid from the barrel.
3) Set the basket hooks tightly in the lip of the barrel.

4) Use the lever to tilt the barrel to dump the sewage into the lagoon.

5) In the winter, the frozen sewage will need to be beaten out with a sledge hammer.
    a) After setting the hooks in the barrel, flip the basket and barrel over with the lever. Once it is flipped over, the basket should hold itself.
    b) Beat the sides and the middle of the bottom of the barrel with a sledge hammer until the contents loosen.
    c) Once you hear the contents begin to loosen step back and continue to hit the top bottom of the barrel

YUKON-KUSKOKWIM HEALTH CORPORATION
"Working Together to Achieve Excellent Health"

September 17, 2014

Napaskiak Traditional Council,

Good afternoon. The new style honeybucket hopper being tested in Napaskiak seem to be working well. To date, I haven't had any complaints; the next real test will be the containers durability over the winter months.

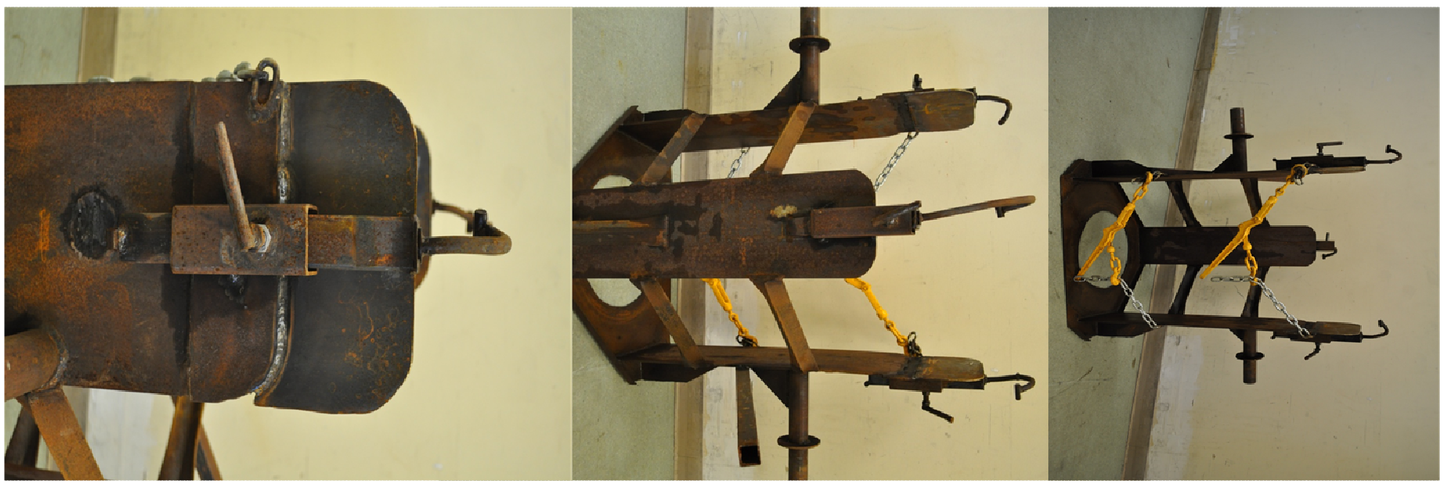
The sewage haulers suggested to me last week that some homes are overfilling the containers. When this happens the containers are harder to handle and more likely to spill. Totally full hoppers will be much harder to empty in the winter time as well.

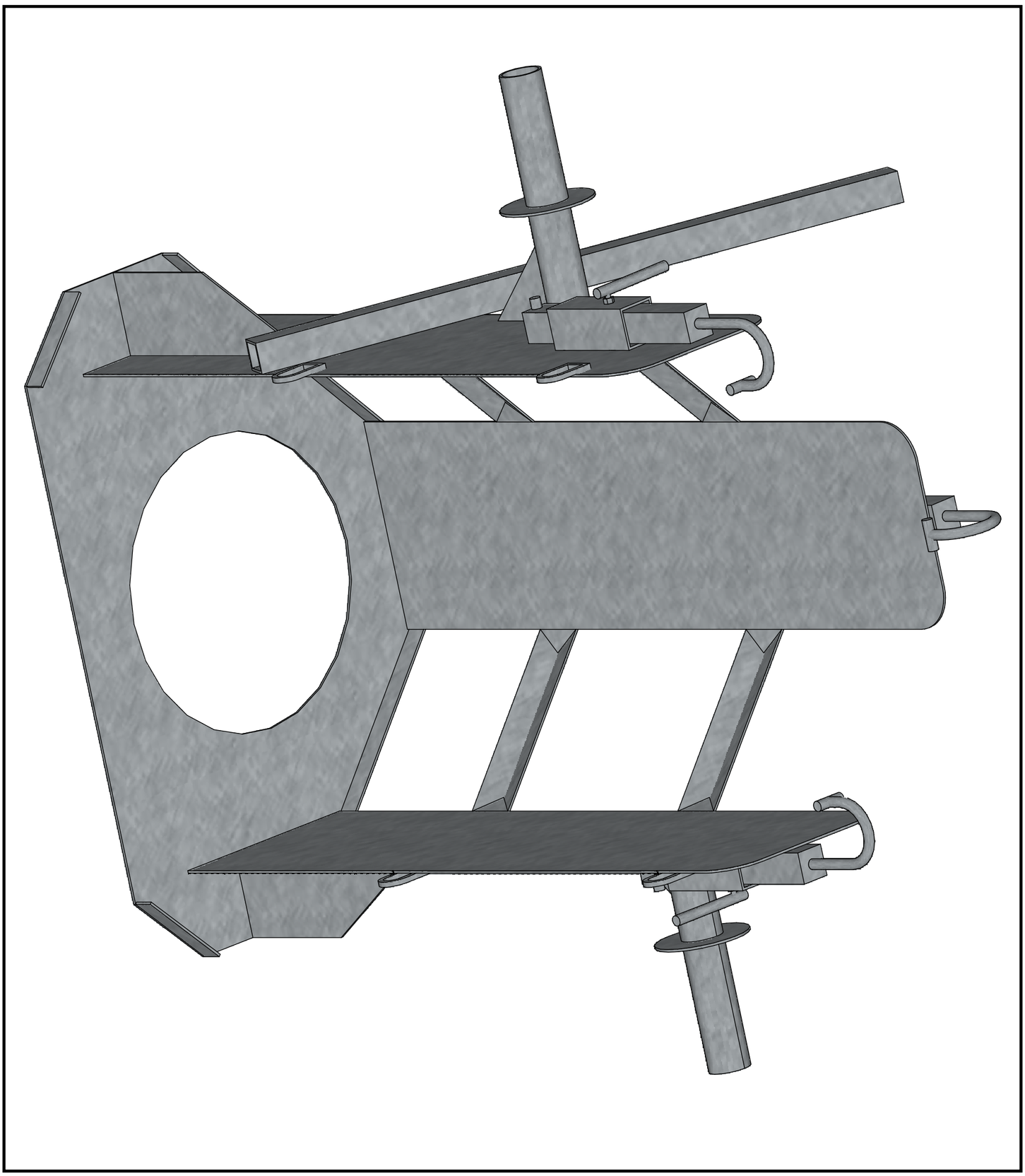
The containers are designed to be emptied when they are half full. To encourage correct use and safety I suggest altering the costs so a half full dump costs $10, while a full dump would cost $25 or $30.

Let me know what you think. I hope you can briefly discuss this at your next meeting. I can write letters to the homeowners explaining the reasoning if you'd like. I have no problem going door to door either. I can be reached at 907-543-6422.

Thanks

Brian Berube
YKHC-OEHE



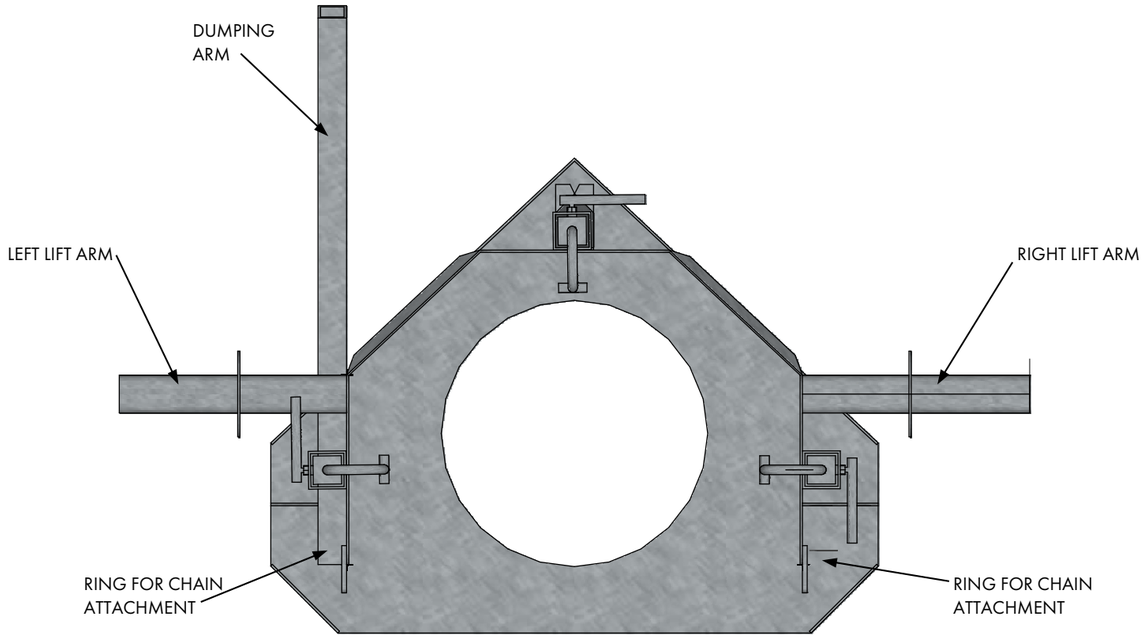


YKHC - HAUL CART BASKET

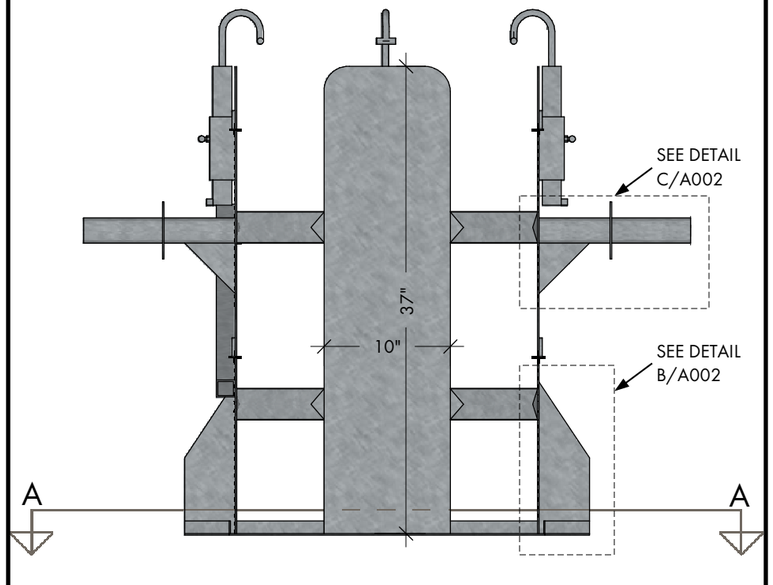
HALL HOPKINS ARCHITECTURE, LLC
CHICAGO, IL
(574) 276-4962

10 NOVEMBER 2014

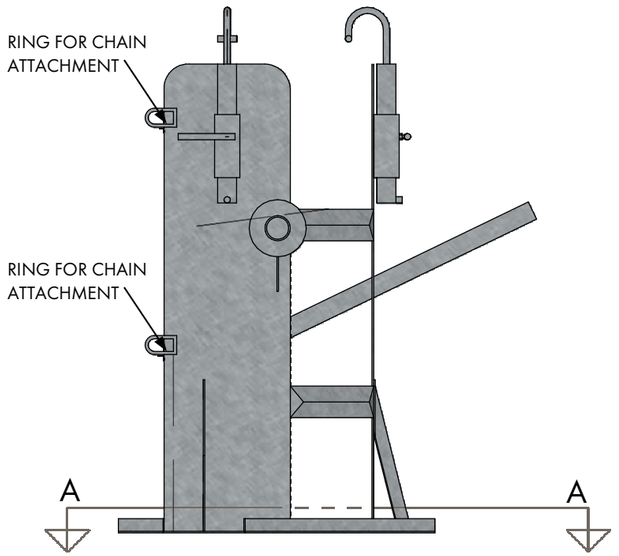
Attachment 6



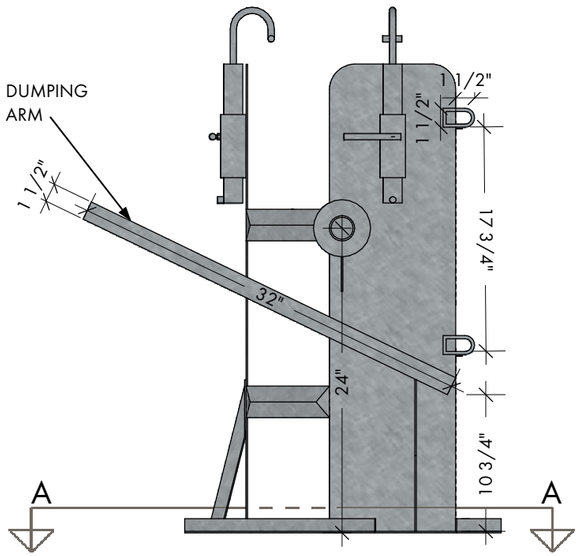
TOP VIEW - 1 1/2" = 1'-0"



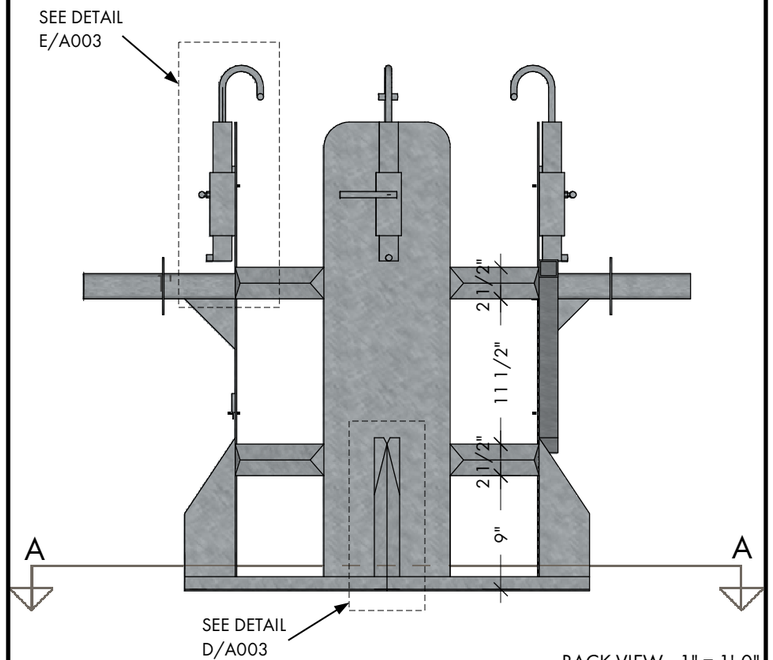
FRONT VIEW - 1" = 1'-0"



RIGHT SIDE VIEW - 1" = 1'-0"



LEFT SIDE VIEW - 1" = 1'-0"



BACK VIEW - 1" = 1'-0"

REVISIONS

	MM/DD/YY	REMARKS
1	11/10/2014	FIRST SUBMISSION
2	--/--/--	...
3	--/--/--	...
4	--/--/--	...
5	--/--/--	...

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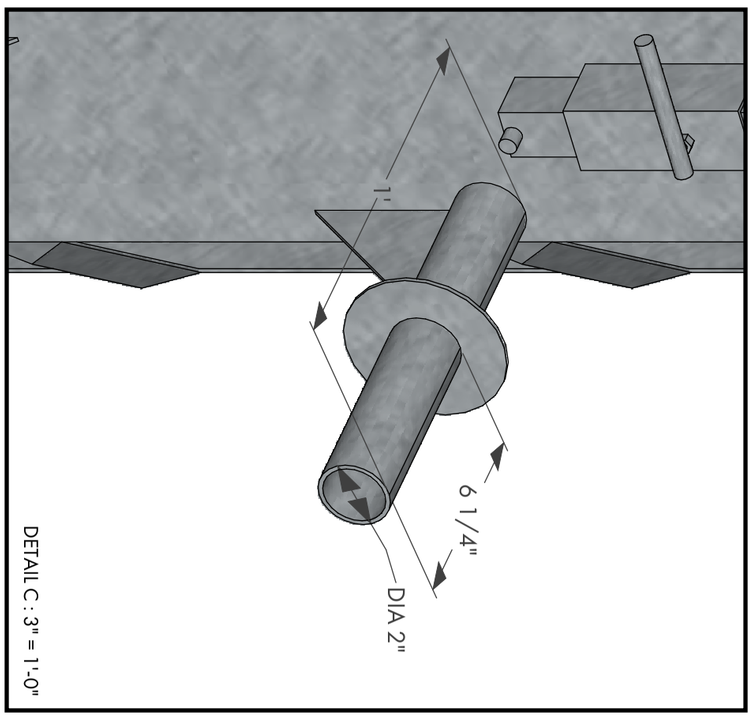
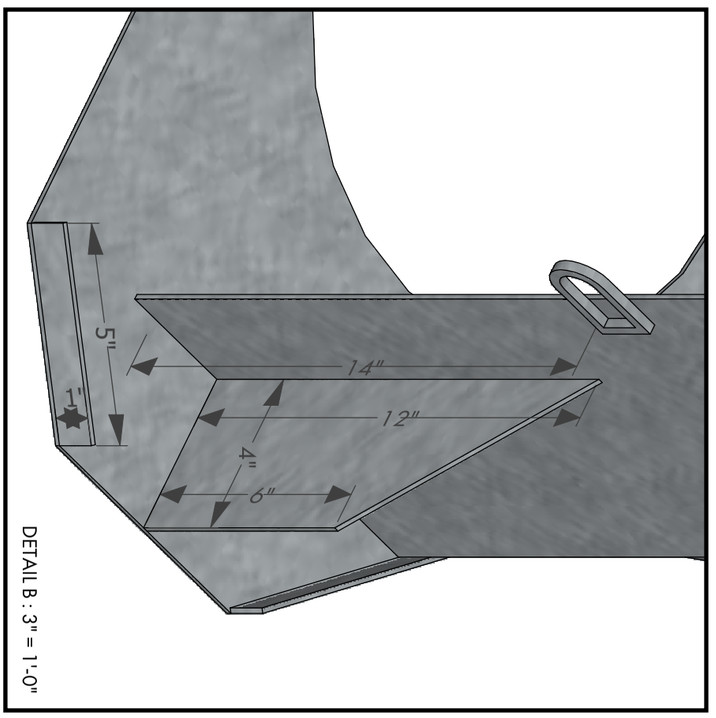
YKHC - HAUL CART BASKET

PLANS AND ELEVATIONS

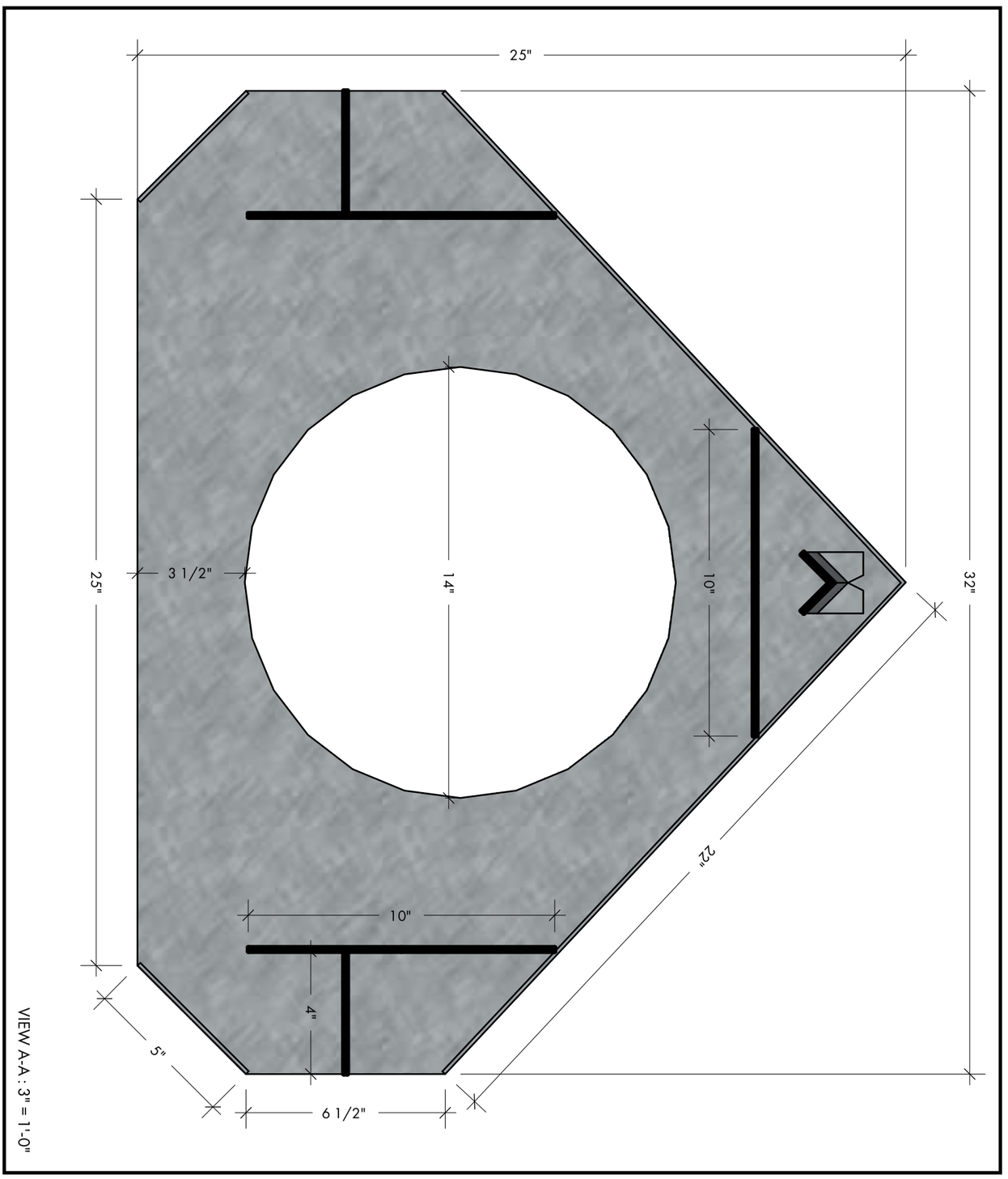
A 001



DETAIL C : 3" = 1'-0"



DETAIL B : 3" = 1'-0"



VIEW A-A : 3" = 1'-0"

A 002	PLANS AND DETAILS	HALL HOPKINS ARCHITECTURE, LLC CHICAGO, IL (574) 276-4962
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REVISIONS

	MM/DD/YY	REMARKS
1	11/10/2014	FIRST SUBMISSION
2	__/__/__	...
3	__/__/__	...
4	__/__/__	...
5	__/__/__	...

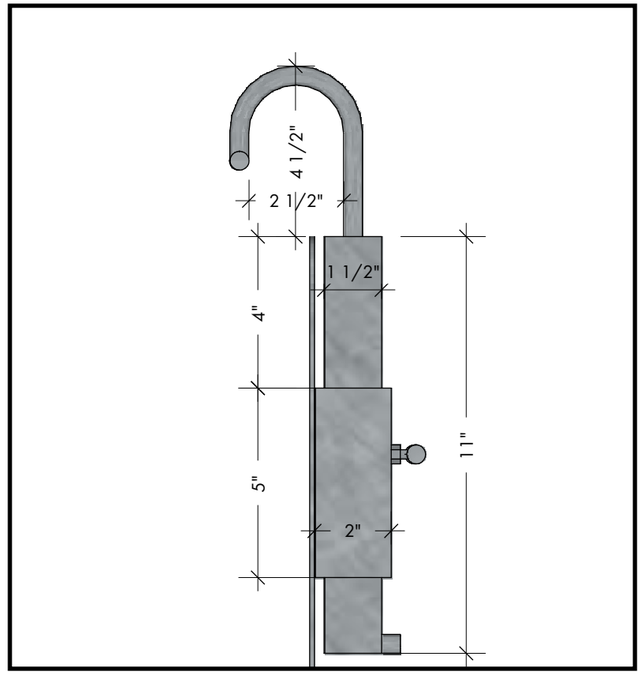
NOTES

1. SHOP DRAWINGS ARE REQUIRED TO BE PROVIDED FOR APPROVAL PRIOR TO FABRICATION

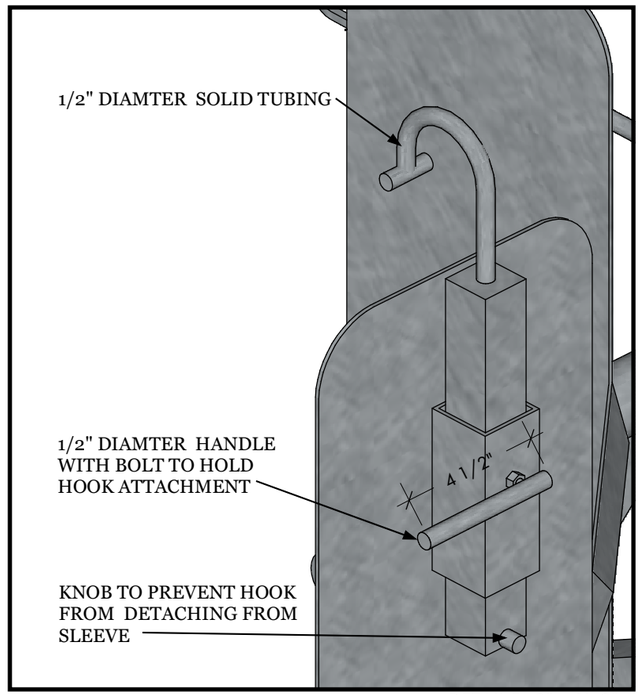
2. THE PURPOSE OF THE BASKET AND FORK ATTACHMENT ARE TO CARRY WASTE CONTAINERS THAT COULD WEIGH UP TO 800 POUNDS. IT IS THE RESPONSIBILITY OF THE FABRICATOR TO DETERMINE THE PROPER WELDS AND MATERIAL THICKNESSES TO ACCOMODATE ANTICIPATED LOADS

3. GRIND ALL EXPOSED WELDS SMOOTH. APPLY PRIMER AND GREY EXOXY PAINT AFTER FABRICATION

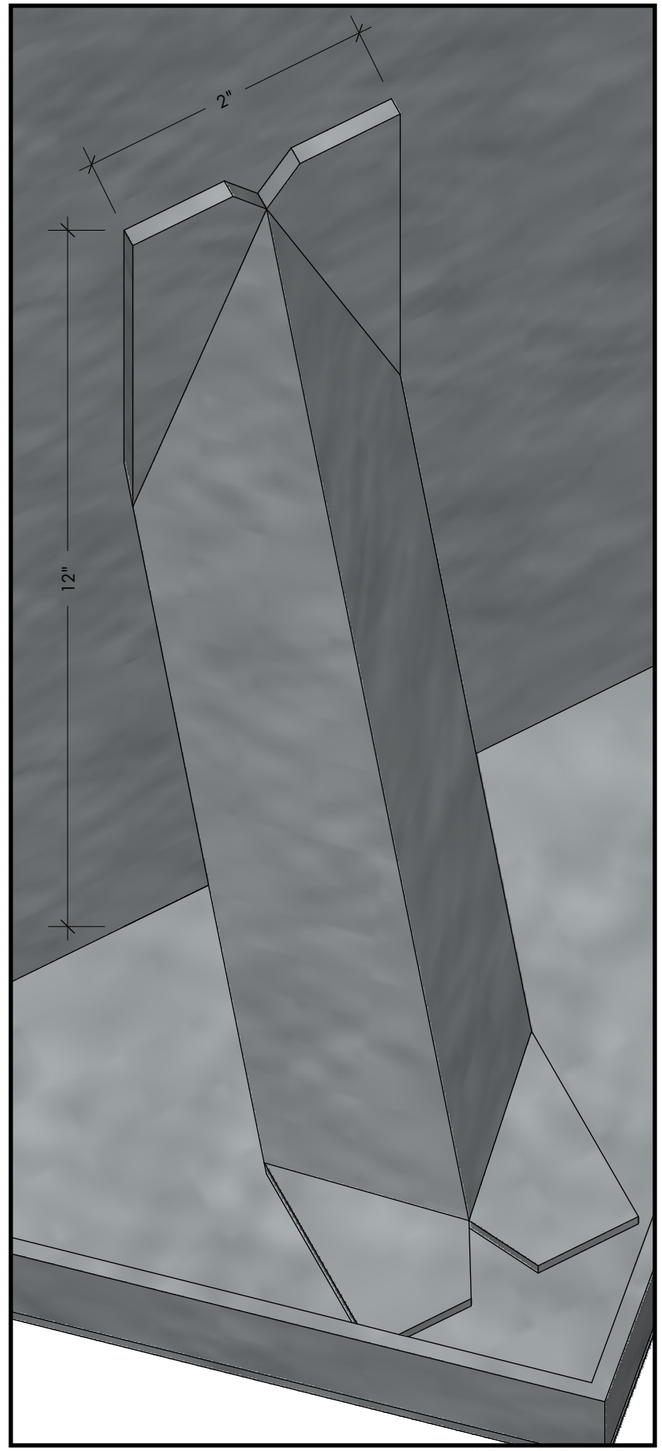
4. ALL BOLTS, NUTS, AND WASHERS TO BE SIZED BY FABRICATOR



DETAIL E : 3" = 1'-0"



DETAIL F : 3" = 1'=0"



DETAIL D : FULLSIZE

REVISIONS

	MM/DD/YY	REMARKS
1	11/10/2014	FIRST SUBMISSION
2	__/__/__	...
3	__/__/__	...
4	__/__/__	...
5	__/__/__	...

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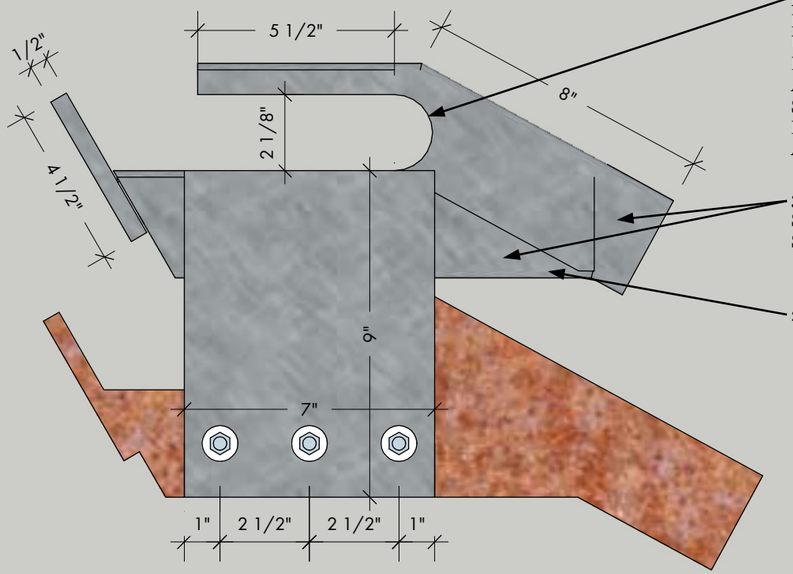
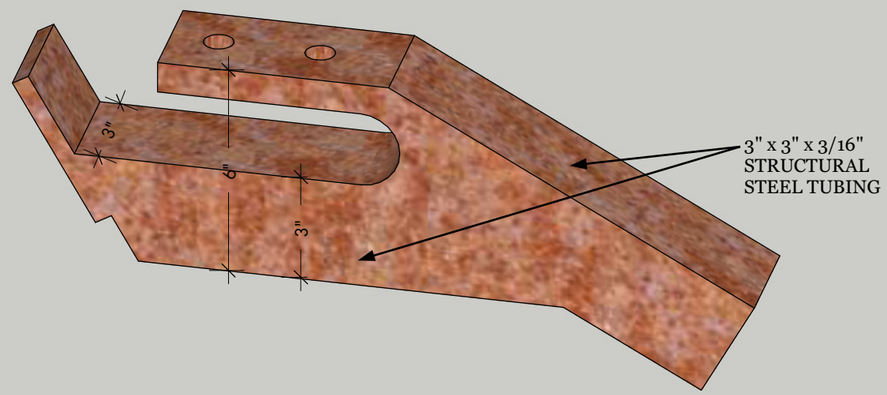
DETAILS

A | 003



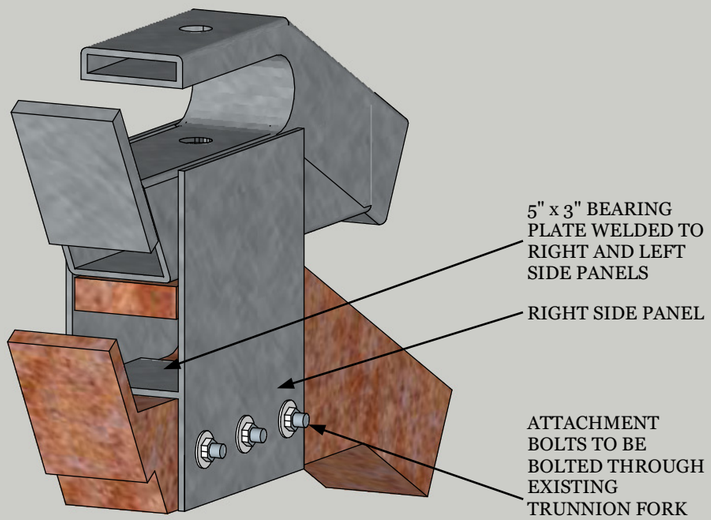
RIGHT SIDE VIEW

DETAIL 4 : 3" = 1'=0"



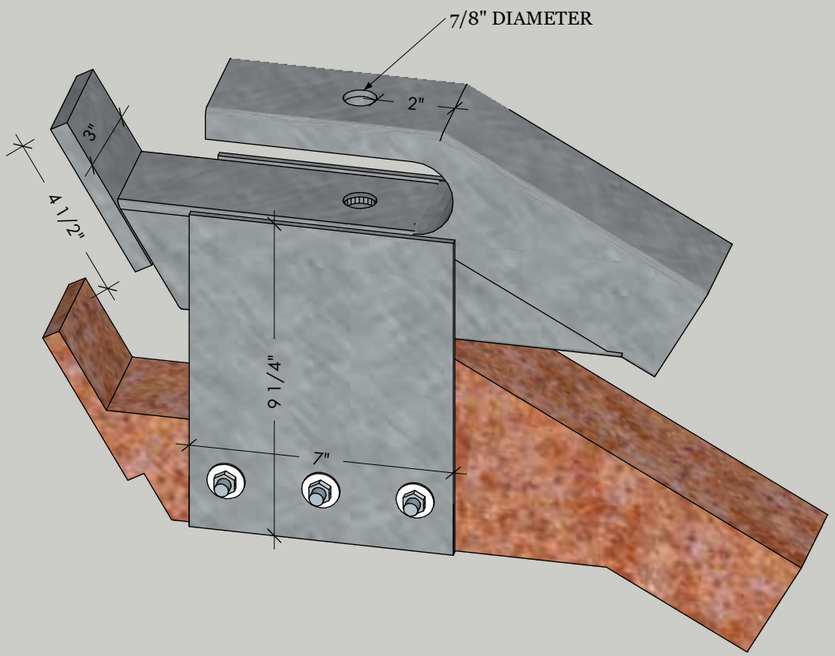
EXISTING TRUNNION FORK

DETAIL 1 : 3" = 1'=0"



FRONT VIEW

DETAIL 3 : 3" = 1'=0"



NEW FORK ATTACHMENT TO BE FABRICATED

DETAIL 2 : 3" = 1'=0"

REVISIONS

	MM/DD/YY	REMARKS
1	11/10/2014	FIRST SUBMISSION
2	__/__/__	...
3	__/__/__	...
4	__/__/__	...
5	__/__/__	...

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TRUNNION FORK ATTACHMENT

A 004