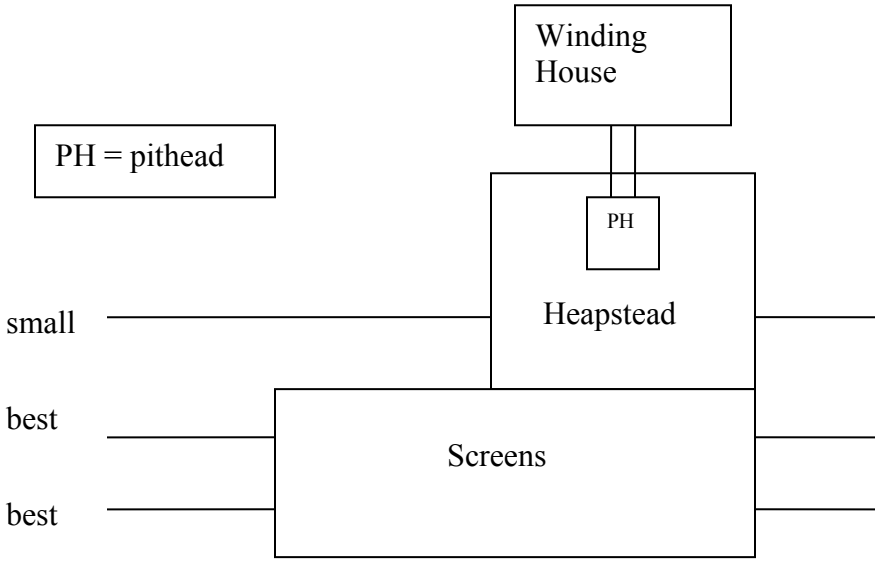
PLL COMBINED COLLIERY HEAPSTEAD, SCREENS & LOADER SUPPORT DOCUMENT
Applies to Trainz assets:
1) Colliery 4-track gravity-fed loader, <kuid2:368725:25010:27>
2) Colliery 8-track gravity-fed loader. Pithead to right and left, <kuid2:368725:25006:23> and <kuid2:368725:25009:14>

Introduction

The downcast pithead frame at Hanley is surrounded to bank level (level at which skips are removed) by a building clad in corrugated iron. No plans or descriptions are currently in our possession that would allow the identification of equipment housed in the enclosure at Hanley. While images of the Chatterley, Birchenwood, Sneyd and Wolstanton collieries cannot resolve whether similar enclosures surround their downcast pitheads, Rail-Sim colleague Andrew Howard has advised "…that the pitheads at Sneyd and Chatterley Whitfield had the screens enclosing the downcast. Wolstanton was somewhat different in that the pitheads were high up on the valley side and the rail access was in the valley bottom so the screens would have been at a lower level."
In "The Railways and Collieries of the West Wallsend District" (Byways of Steam #26, ARHS,2010) Brian Andrews provides the layout and description of enclosed pitheads at Hunter region collieries of NSW in the late 19th and early-mid 20th century. A typical layout of these enclosures is given below:



The processing of coal brought to the surface is described on p.19 of the above article: “Each (skip) passed through a tumbler which emptied its contents by turning the skip upside down. The coal passed through a shaker screen, which separated the best coal from the small. The small coal was taken to the colliery’s boilers…whilst some was loaded into hopper wagons and sold. The best coal was discharged onto a picking belt, where stone was picked from it and the coal was then loaded into hopper wagons.”

My assumption is, given that coal mining in the Hunter was founded using British practice, the pithead enclosures at PLL collieries are of similar design to those in the Hunter region of NSW. One design difference, because of the climatic difference, is that the PLL pithead enclosures had clad walls whereas the Hunter enclosures were open-sided.

The Model

The model retains the low ‘screens’ structure of the Australian plan (above), although the screening to eliminate the small coal would take place in the 'heapstead' structure. In the case of the 4-road loader, the 'screens' structure would contain an adjustable loading belt for each road that can load up to 4 wagons without re-positioning of the rake. For the 8-road loader the 'screens' structure contains the picking belts for the best coal. The 8-road loader loads only from the remote end of the picking belts, and so a rake of up to 4 wagons must be re-positioned to load each one.

The script for the model will enable gravity loading of standard 4-wheel wagons, so locomotives will not be required to pass under the loader set low above track level. To this end, there must be a falling gradient on the track leading to and away from the 8 roads passing under the loader. A gradient of approx. 1 in 100 to 1 in 50 has been found adequate.

The 8 roads (fixed tracks in the model) of the loader are arranged as follows:

- Road 0 : bypass road (does not pass under loader)
- Roads 1 & 2 : ‘small’ coal at pithead end of heapstead
- Road 3 : stone picked from best coal
- Roads 4-7 : ‘best’ coal

Not all roads of the loader need be configured. A road is ‘configured’ when the tracks (if any) that lead to and from it have appropriately-named trackmarks. More on this below.

The arrangement of the ‘empty’ nest above the loader and the ‘full’ nest below it is of key importance to the successful operation of the loader. The

maximum number of sidings in each nest is 32. The empty nest must ‘fan in’ to a single neck road that leads to the junctions that fan out to the 7 or less active roads of the loader. On the outgoing side, the 7 or less active roads leading away from the loader must fan in to a single neck road that then fans out to all the sidings of the full nest.

So that the asset’s script can collect information on the particular siding arrangements at each location where the asset is deployed, a naming convention for junctions and the siding trackmarks must be followed. All junctions and sidings under the control of one instance of this asset must carry the unique ID of the asset. The unique ID is supplied by the first word of the in-game name ascribed to the loader asset instance. For example, if the asset is to be deployed at Hanley Pit, then the unique ID ‘HanleyPit’ (no space between ‘Hanley’ and ‘Pit’) can be used. If there is more than one gravity loader at Hanley Pit, then the IDs ‘HanleyPit1’, ‘HanleyPit2’, etc. can be used. The full in-game name of the gravity loader at Hanley Pit could be “HanleyPit gravity loader” or “HanleyPit gravity-fed loader with heapstead and screens”. Whatever is after the first word “HanleyPit” does not matter as far as the script is concerned.

Junction naming

The junctions used to fan in from the empty nest, fan out to the loader roads on the input side, fan in from the loader roads on the output side and fan out to the full nest, all start with the name root “J_<ID>_” where the ID is as discussed above (<> is used to indicate that the enclosed characters are to be interpreted for each instance and not used as is).

Note that only 2-way junctions are allowed. Do not use 3-way junctions.

The junctions in the empty nest are named with reference to the neck junction from which they all radiate. The empty neck junction is named “J_<ID>_Emp”. The junctions that connect directly to the neck junction record in a suffix the switch direction of the neck junction required to reach them. Hence, “J_<ID>_Emp_L” if the neck junction must switch left and “J_<ID>_Emp_R” if right. Subsequent junctions follow the same pattern by adding to the suffix to describe the switching pattern required to reach them. Hence, “J_<ID>_Emp_RLL” would indicate that the neck junction is switched right, then the next 2 junctions are switched left.

The junctions in the full nest are named in a similar way to those of the empty nest. The only difference is that the neck junction is named "J_<ID>_Full", and all radiating junctions from this will use this as the root name.

For the junctions that fan the neck out to the input side of the loader, the neck junction is called "J_<ID>_In". Again the same rules apply to the naming of subsequent junctions. As it also does to the output side of the loader where the neck junction is called "J_<ID>_Out".

Junctions that do not play a role in the gravity feeding of wagons to and from the loader can be deployed on the route within the loader nest complex. These junctions are not named in compliance with the naming rules discussed above *but must have a default switch direction that supports the through connection of the nests with the loader.*

Trackmark naming

Every empty and full siding has a trackmark at their exit ends**. The trackmarks must face the wagons stored on the siding** (use Surveyor's rotation tool to achieve this, if required). The root name for these trackmarks are "TM_<ID>_Emp_" and "TM_<ID>_Full_", respectively. Unlike the empty nest, the full nest is subdivided into siding groups for best coal, small coal and stone. To identify the commodity to which a full siding is dedicated, an extension to the trackmark root name is added: "TM_<ID>_Full_Best_", "TM_<ID>_Full_Small_" and "TM_<ID>_Full_Stone_". As with the junctions, the suffix of a trackmark name indicates the switching path from the neck junction in order to reach it.
Hence the name "TM_HanleyPit_Full_Best_RL" would indicate that the full nest neck junction is switched to the right, and the subsequent junction (named "J_HanleyPit_Full_R") is switched left.

Each of the tracks leading to and from those of the 4 or 7 roads under the loader **that are to be used** must have trackmarks. Note that the trackmarks are not placed on the asset fixed tracks but on the tracks that are attached to these fixed tracks at both ends. **. The trackmarks must face their respective neck junction** (this means the trackmarks on either side of the loader face away from one another)**.** On the incoming side, the root name is "TM_<ID>_In_", while it is "TM_<ID>_Out_" on the outgoing side. The extension to apply to the root varies according to function and position.

8-road loader:

- Road 0 : bypass road does not need a trackmark
- Road 1 : TM_<ID>_In/Out_Small-1
- Road 2 : TM_<ID>_In/Out_Small-2
- Road 3 : TM_<ID>_In/Out_Stone
- Road 4 : TM_<ID>_In/Out_Best-1
- Road 5 : TM_<ID>_In/Out_Best-2
- Road 6 : TM_<ID>_In/Out_Best-3
- Road 7 : TM_<ID>_In/Out_Best-4

4-road loader:

- Road 1 : TM_<ID>_In/Out_Small
- Road 2 : TM_<ID>_In/Out_Stone
- Road 3 : TM_<ID>_In/Out_Best-1
- Road 4 : TM_<ID>_In/Out_Best-2

Wagons

The wagons used under the loader must be 4-wheeled and of a standard length in 1930s England. The wagon asset must be capable of carrying all 3 commodities produced by the loader. The recommended queues container in the config file is:

```
queues
{
 load0
 {
  size                    12000
  initial-count             0
  animated-mesh               "load"
  product-kuid              <kuid:44179:60013>
 }

 load1
 {
  size                    11000
  initial-count             0
  animated-mesh               "load"
  product-kuid              <kuid:368725:35006>
 }
```

```
  load2
  {
    size                        14000
    initial-count                  0
    animated-mesh                    "load"
    product-kuid                   <kuid:523:15200>
  }
}
```

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