FS overhead crane requirements

1. Hook work envelope for bridge crane (need plan view)
    a. Working distance from N/S cavern walls – The hook shall be capable of operating a minimum of 1500 mm (4.9 ft) from the neat line of the North and South walls of the cavern. (This number wants to be as small as possible. Ideally 850 mm like the monorail hoists. 1500 mm is an estimate by Jean-Louis of the smallest it could be.)
    b. In the E/W direction, the hook envelope should extend a minimum of 1000 mm (3.3 ft) onto the 3000 mm (9.8 ft) extensions at each end of the cavern.
2. Hook work envelope for monorail hoist
    a. Working distance from N/S cavern walls – The hook shall be capable of operating in line with the monorail beams that are currently located 850 mm (2.8 ft) from the neat line of the cavern.
    b. In the E/W direction, the hook envelope should extend a minimum of 2000 mm (6.6 ft) onto the 3000 mm (9.8 ft) extensions at each end of the cavern.
    c. Separate monorail hoists must be able to operate a minimum distance of 5000 mm (16.4 ft) from the bridge crane.
3. Lifting capacity 15 metric tons per conveyance. This includes the hoists on the monorail and the conveyance on the bridge crane. (Note – This value may be reduced to 12.5 metric tons, but this is still being discussed)
4. Number of conveyances per bridge beam = 1
5. Hook usable down to 4910 level.
6. The crane shall be designed to maximize the hook clearance above 4850L utilizing the position of the current monorail beams.
7. Number of overhead cranes per cavern = 2
8. Bridge and conveyances must operate from wireless pendant.
9. The monorail hoists must operate independently from the bridge crane and its conveyances.
10. Specify travel speeds – ? industry standard values?

If a second conveyance is necessary on the bridge crane, these items need to be addressed.

1. The bridge conveyances must be able to operate a minimum distance of XXXX mm from each other.
2. The bridge conveyances can be offset in the E/W direction on the bridge by XXXX mm.

Current Monorail requirements

FSCF-Engr-073	Monorail Controls	FSCF shall ensure that the monorails are equipped with radio controls that provide individual or simultaneous controls for the 3 monorails, i.e. all 3 or a combination of 2 shall be wirelessly controlled simultaneously	This is a wireless control mechanism that will prevent interferences during travel of hoists
FSCF-Engr-074	Monorail Design	The lifting beam and the spool piece design shall be provided by cryostat taking into consideration the space availability	Due to restricted space availability an optimal design of the beam and spool piece is necessary
FSCF-Engr-075	Monorail Extension	FSCF shall ensure that the monorail beams extend 3m into the eastern-most and western-most drifts to facilitate loading of the cryostat pieces, and that they are continuous along the entire length of cavern one (includes chamber 1 and 2) while allowing the portion over the N-S bridge to be removable.	This is a result of removal of rock septum as described in CR-0249 and docdb-8058
FSCF-Engr-076	Monorail Height Capacity	FSCF shall ensure that monorail hoists are equipped so that the hook reaches the floor of the detector pit.	This is necessary to provide maximum flexibility of use.
FSCF-Engr-077	Monorail Hoist Power	FSCF shall ensure that all hoists are equipped with back-up power capable of supplying power for 10 minutes in the event of a power failure	If the power goes out while a load is in the air, the hoists should operate to allow load to be lowered to the ground in a safe manner
FSCF-Engr-078	Monorail Hoists Capacity	FSCF shall ensure that two sets of three monorail hoists each have a minimum capacity of 15 metric tons (16.54 US short tons).	These two sets are to be installed in caverns 1 and 2. Hoists for caverns 3 and 4 will be provided at a later date; however, monorail beams shall be provided in all four caverns. This capacity provided by cryostat takes into account the weight of the largest piece to be assembled. The intent is that IF multiple hoists operate on the same beam the minimum design capacity of 15 metric tons is not exceeded.
FSCF-Engr-079	Monorail Hoists Operation	FSCF shall ensure that monorail hoist motors have a heavy (H5) duty cycle	This is due to possible 24 hrs/day, 7 days/week, multiple year initial usage planned
FSCF-Engr-082	Monorail Power Supply	FSCF shall ensure that the monorails are provided with a shoe-style power supply strip that runs along the length of the monorail beam	The shoe-style power supply will help prevent interference caused by the use of festoon power supply wires during travel
FSCF-Engr-083	Monorail Quantities	FSCF shall ensure that each excavated chamber is equipped with 3 monorail beams, the locations of which shall be as specified in the minimum clearance definition drawing F10043159	This quantity is needed for the installation of cryostat pieces