| | | | |
|---|---|---|---|
| BECHTEL | **Mechanical Handling Data Sheet**<br>Top Running, Double Girder | CM 3 | Data Sheet No. 24590-HLW-M0D-HPH-00063<br>Plant Item No. 24590-HLW-MJ-HPH-CRN-00002 — Rev. 3 |

| | | | |
|---|---|---|---|
| Project | RPP-WTP | Description | Canister Handling Crane (Upper) |
| Project No. | 24590 | Supporting Calculation No. | N/A 3 |
| Planning Area | | Associated Drawing No. | N/A |
| System No. | HPH | Associated Specification No. | 24590-WTP-3PS-MJKG-T0003 |
| Building No. | 30 | Associated MR No. | 24590-QL-MRA-MJKG-00002 |
| Quality Level | ▶ CM 3 | | |
| Seismic Criteria | SC-II | | |
| Function | Canister Handling and Maintenance Activities | | |

R10704041

ISSUED BY RPP-WTP PDC

**DESIGN CRITERIA**

| | | | |
|---|---|---|---|
| Design Life | 40 years | Safety Classification | ▶ APC 3 |

| **OPERATING ENVIRONMENT** | | | In-Cave Rm # H-0136 | | Out-Cave Rm # H-329A | | List All Special Conditions |
|---|---|---|---|---|---|---|---|
| | | | Min | Max | Min | Max | |
| Temperature | | deg F | 59 | 113 | 59 | 113 | |
| Relative Humidity | | % | 0 | 70 | 0 | 70 | |
| Radiological Equip. Dose | gamma | mrad/hr | ▶4.0*E+4 3 | | ▶10 3 | | |
| | neutron | mrad/hr | Negligible | | Negligible | | |
| Radiological Classification | | | R5 | | ▶R3 3 | | |
| Contamination Classification | | | ▶C5 3 | | ▶C3 3 | | |

**CRANE REQUIREMENTS**

| | | | |
|---|---|---|---|
| Type of Crane | Top Running Double Girder Electric Overhead Traveling Crane | | Tons |
| Service Information | CMAA 70-2000, Class E | Capacity | 6 Ton |
| Crane Operation Indoors? | Yes, In-Cave | Main Hoist | 6 Ton |
| Material Handled | Canisters | Auxiliary Hoist | N/A |
| Class Information | Class E | Trolley | 6 Ton |
| No. of Cranes Required | 1 | Bridge | 6 Ton |
| ASCE Rail Type or Beam Size | ▶ 104 lb/yd Crane Rail 3 | | |

**OPERATING CHARACTERISTICS AND FREQUENCY OF MOVEMENT**

| | | | |
|---|---|---|---|
| Hoist- Range of Lift | (F) - (G) | No. lifts/day | 6 |
| Average Moves - Bridge | 1/2 Runway Length | Moves/day | 6 |
| Average Moves - Trolley | 3/4 Bridge Length | Moves/day | 6 |

| **CRANE DIMENSIONS AND ELEVATIONS** | Symbol | ft - in. |
|---|---|---|
| Lowest Obstruction Elevation | (A) | 48'-0" |
| Shield Door Corner Obstruction Elevation | (B) | 47'-6" |
| Trolley Rail Elevation | (C) | 44'-0" NOMINAL |
| Bridge Rail Elevation | (D) | 42'-4.5" |
| Lowest Point of Crane Elevation | (E) | 42'-4.5" |
| High Hook Elevation | (F) | 42'-4.5" |
| Low Hook Elevation | (G) | -3-0" |
| Side Approach - hoist center line to South Rails | (H) | 3'-4" MAXIMUM |
| Side Approach - hoist center line to North Rails | (I) | 3'-4" MAXIMUM |
| Distance from Grid line "R" to Inside face of South Wall | (J) 3 | ▶2'-0" IN/OUT CAVE |
| Distance from hoist center line to end-truck East bumper | (K) 3 | ▶5'-7" |
| Distance from hoist center line to end-truck West bumper | (L) 3 | ▶6'-10 1/2" |
| Distance from hoist center line to In-Cave East Wall | (M) 3 | ▶5'-7" |
| Distance from hoist center line to CMA West Wall | (N) 3 | ▶6'-10 1/2" |
| Distance from Grid Line "15" to inside face of East Wall | (0) | 7'-6" |
| Total distance between inside wall faces of CMA and Cave | (P) | 188'-7" |
| Range of Lift | (R) | 45'-4.5" |
| Runway Rails Span | (S) | 19'-4" |
| Shield Door Corner Obstruction | (T) | 0-6" |

| Date | REV | Revisions | By | Checked | Supervisor | Approved |
|---|---|---|---|---|---|---|
| 8/10/06 | 3 | See note 13 | N J Darwen | A. Whitford RT | P. Snider SLW | D. Wilsey FOR |
| 09/08/03 | 2 | See note 12 | A. Whitford | L. Harrison | G. Marr | D. Wilsey |
| 11/27/02 | 1 | See note 11 | David Horton | Paul Carter | Brower | Dave Wilsey |
| 02/26/02 | 0 | Issued for Procurement | Joseph Roach | Andy Whitford | Jim Brower | Dave Wilsey |

| | | |
|---|---|---|
| **Mechanical Handling Data Sheet**<br>Top Running, Double Girder | Data Sheet No.<br>24590-HLW-M0D-HPH-00063 | |
| | Plant Item No.<br>24590-HLW-MJ-HPH-CRN-00002 | Rev.<br>3 |

**DRIVE TYPE SPEED AND HORSEPOWER**

| Drives | Drive Type | Speed | Horsepower | | Slow | Fast |
|---|---|---|---|---|---|---|
| Main Hoist Drive Type | Flux Vector | Variable 0 - 25 | 12 HP | Nominal Speed (ft/m): | 5 | 25 |
| Recovery Hoist Drive Type | Single Speed | Single Speed | 7 HP | Nominal Speed (ft/m): | 5 | |
| Main Bridge Drive Type | VFD | Variable 0 - 50 | 4 HP | Nominal Speed (ft/m): | 5 | 50 |
| Recovery Bridge Drive Type | Single Speed | Single Speed | 1 HP | Nominal Speed (ft/m): | 5 | |
| Main Trolley Drive Type | VFD | Variable 0-25 | 1.5 HP | Nominal Speed (ft/m): | 5 | 25 |
| Recovery Trolley Drive Type | Single Speed | Single Speed | 0.75 HP | Nominal Speed (ft/m): | 5 | |
| Powered Hook | DC Motor | Fixed | 0.05 HP | Nominal Speed (rpm): | 1-2 | |

**CONDUCTOR TYPE**

| | |
|---|---|
| Bridge | Cable Reel |
| Trolley | Cable Track |

**CONTROLS**

| | |
|---|---|
| Method of Control | Manual |
| Location of Control | Dedicated Crane Control Room/ Window Station/ Crane Maintenance Area |
| Type of Control Enclosure | NEMA 4X or IP 66 |

**ELECTRICAL REQUIREMENTS**

| | |
|---|---|
| Item | Volts / Phase / Hertz |
| Motor | 480 VAC / 3 Phase / 60 HZ |
| | |
| Special Wiring Conditions | National Electric Code |

**MAINTENANCE REQUIREMENTS**

| | |
|---|---|
| Construction | Modular for ease of assembly / dismantling |
| Modularization | Heaviest Modular item except bridge beams / end trucks / must be < 5 tons. |
| Retrieval | Crane must be retrievable / Hoist must be retrievable |
| Decontamination | Crane and hoist needs to be decontaminable and minimize cracks and crevices that can trap debris |

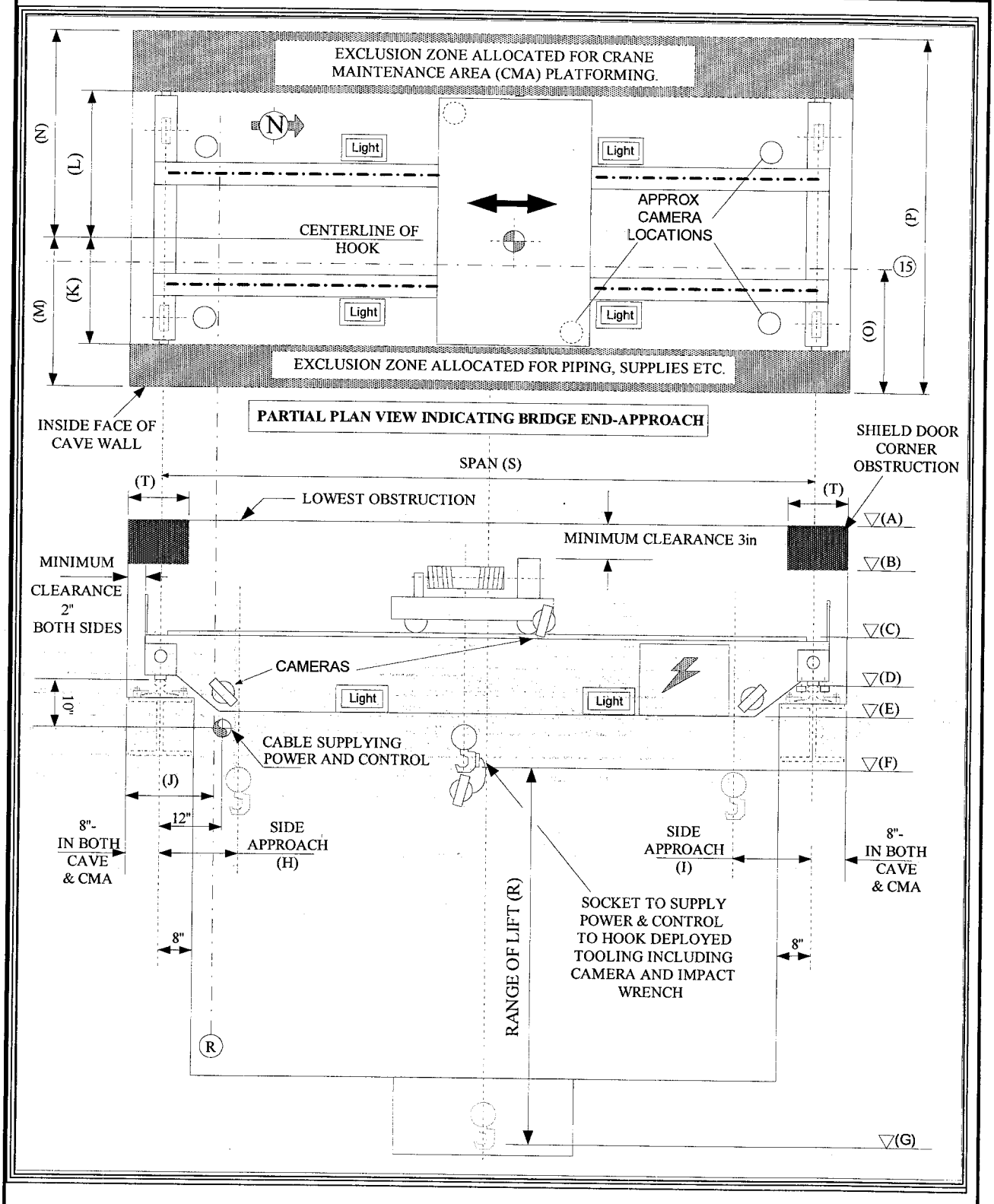
**ADDITIONAL REQUIREMENTS**

1. Motors and electrical cabinets etc. to be sealed to withstand occasional washdown during decontamination.
2. Four bridge mounted and two trolley mounted cameras capable of pan, zoom, iris and tilt and one hook deployed camera including lighting, pan, tilt, zoom and iris to view cave floors. The Buyer supplies the cameras, Seller provides mounts.
3. All cranes shall be designed to allow operator positioning to within +/- 3/8".
4. Four crane mounted lights as well as light supplied by cameras.
5. Must be able to hold and control suspended payload without mechanical braking for sustained periods.
6. Must not drop load during any single random or common mode electrical failure.
7. Must be recoverable by remote means after any specified single random or common mode failure by use of redundant drives in conjunction with cable reel where necessary.
8. Power supply is required at hook for crane held tools.
9. Motor horsepower estimated for plant electrical load sizing. Seller to provide.
10. This drawing provided basic outlines, design objectives, and bounding dimensions to contracted design or fabrication supplier(s) and shall not be used to confirm the as built WTP structure, system or component identified herein. See vendor information for final configuration provided in conformance to purchase order QL-POA-MJKG-00002.

► 11. Revision 1 changes: Changed additional requirements, drives, and description 3

► 12. Revision 2 changes: Revised based on 24590-HLW-DCA-PL-03-002 Rev 0, and editorial changes. Changed recovery drive type; was VFD. 3

► 13. Revision 3 changes: Safety Classification changed to APC; Quality Level changed to CM; Calc ref deleted; Dimension K & M ammended to include bumper extensions that allow bumpers to engage on cave wall, IAW 24590-HLW-ACA-M-05-00031 3


EXCLUSION ZONE ALLOCATED FOR CRANE MAINTENANCE AREA (CMA) PLATFORMING.
N
Light
Light
Light
Light
APPROX CAMERA LOCATIONS
CENTERLINE OF HOOK
(N)
(L)
(K)
(M)
(P)
(O)
15
EXCLUSION ZONE ALLOCATED FOR PIPING, SUPPLIES ETC.
INSIDE FACE OF CAVE WALL
PARTIAL PLAN VIEW INDICATING BRIDGE END-APPROACH
SHIELD DOOR CORNER OBSTRUCTION
SPAN (S)
(T)
(T)
LOWEST OBSTRUCTION
MINIMUM CLEARANCE 3in
(A)
(B)
(C)
(D)
(E)
(F)
(G)
MINIMUM CLEARANCE 2" BOTH SIDES
CAMERAS
Light
Light
10"
CABLE SUPPLYING POWER AND CONTROL
(J)
12"
8"- IN BOTH CAVE & CMA
SIDE APPROACH (H)
SIDE APPROACH (I)
8"- IN BOTH CAVE & CMA
RANGE OF LIFT (R)
SOCKET TO SUPPLY POWER & CONTROL TO HOOK DEPLOYED TOOLING INCLUDING CAMERA AND IMPACT WRENCH
8"
8"
R