

GRAIN BIN SAFETY SYMPOSIUM

Assumption, IL

March 23, 24

TUNNEL DESIGN AND
WATERPROOFING

DESIGN CONSIDERATIONS

- Equipment Access
 - Size of equipment
 - Bin discharge Gate Access
 - Frequency of inspection
 - Clean standards
- Installation and removal
 - How do we get the equipment in and out?
- Maintenance
 - What will normal routine be and how often is it performed?
 - What access will be required?

BELT CONVEYOR ACCESS AND MAINTENANCE

- Access both sides to access bearings for greasing
 - Walkway along each side preferred
 - Walkway one side of 36” is best, 30” minimum with 18” on back side minimum
 - 12” clearance off the tunnel floor
- Access at head for motor, drive and guard
- Access at tail (or head) for take-up access
 - Do we have enough distance to work the wrench to loosen or tighten take-up screws?
 - Can we get the drive components off without cutting?

DRAG CONVEYOR ACCESS AND MAINTENANCE

- Access one side
 - Walkway one side of 36” is best, 30” minimum with 6” clear on back side minimum
 - 12” clearance off the tunnel floor to allow for liner replacement
- Access at head for motor, drive and guard
 - Can the drive components be removed without cutting?
- Access at tail (or head) for take-up access
 - Do we have enough distance to work the wrench to loosen or tighten take-up screws?

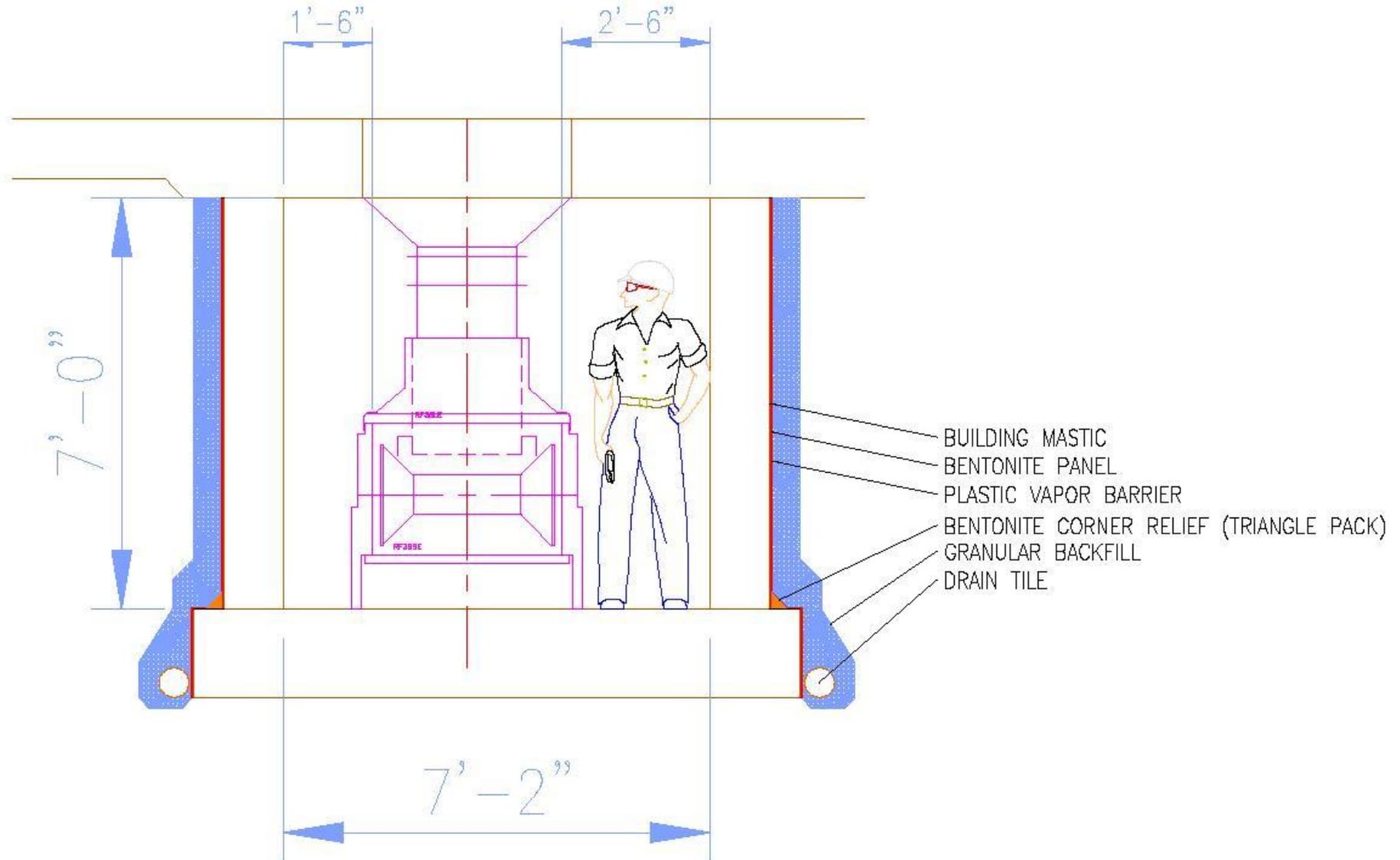
WATERPROOFING

- Is there a better way for construction?
- Only good time for waterproofing is during initial construction
- Waterproof on outside
- Keep water out before it gets in
- Condensation will occur
- Sump pits for water that does get in

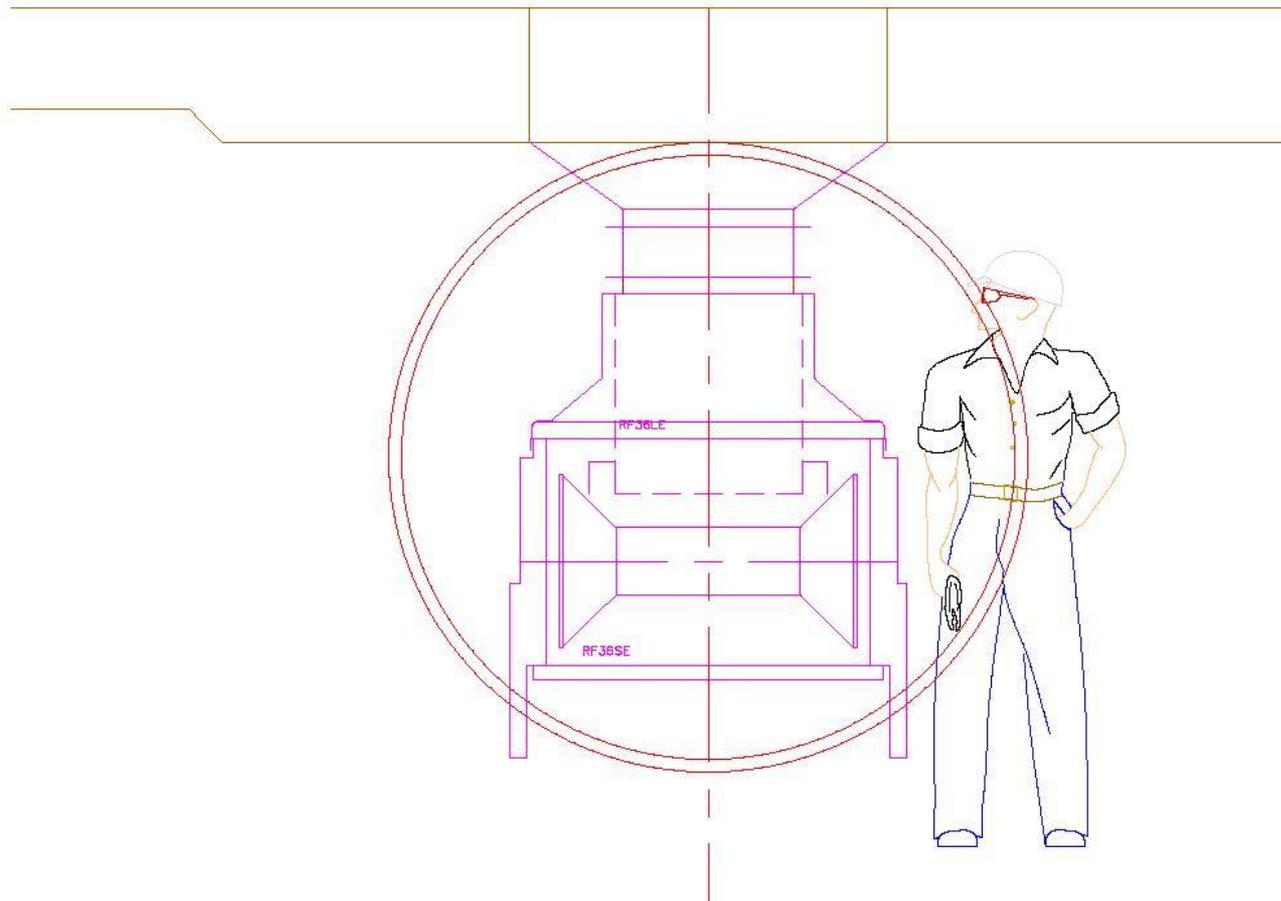
INITIAL WATERPROOFING

- Building mastic
- Bentonite clay panels or equal
 - Wrap from bottom of foundation to top of tunnel
 - Ease corners
- Vapor barrier plastic
- Granulated backfill to aid in water travel
- Perforated drain tile with small gravel
- Outside sump well connecting drains

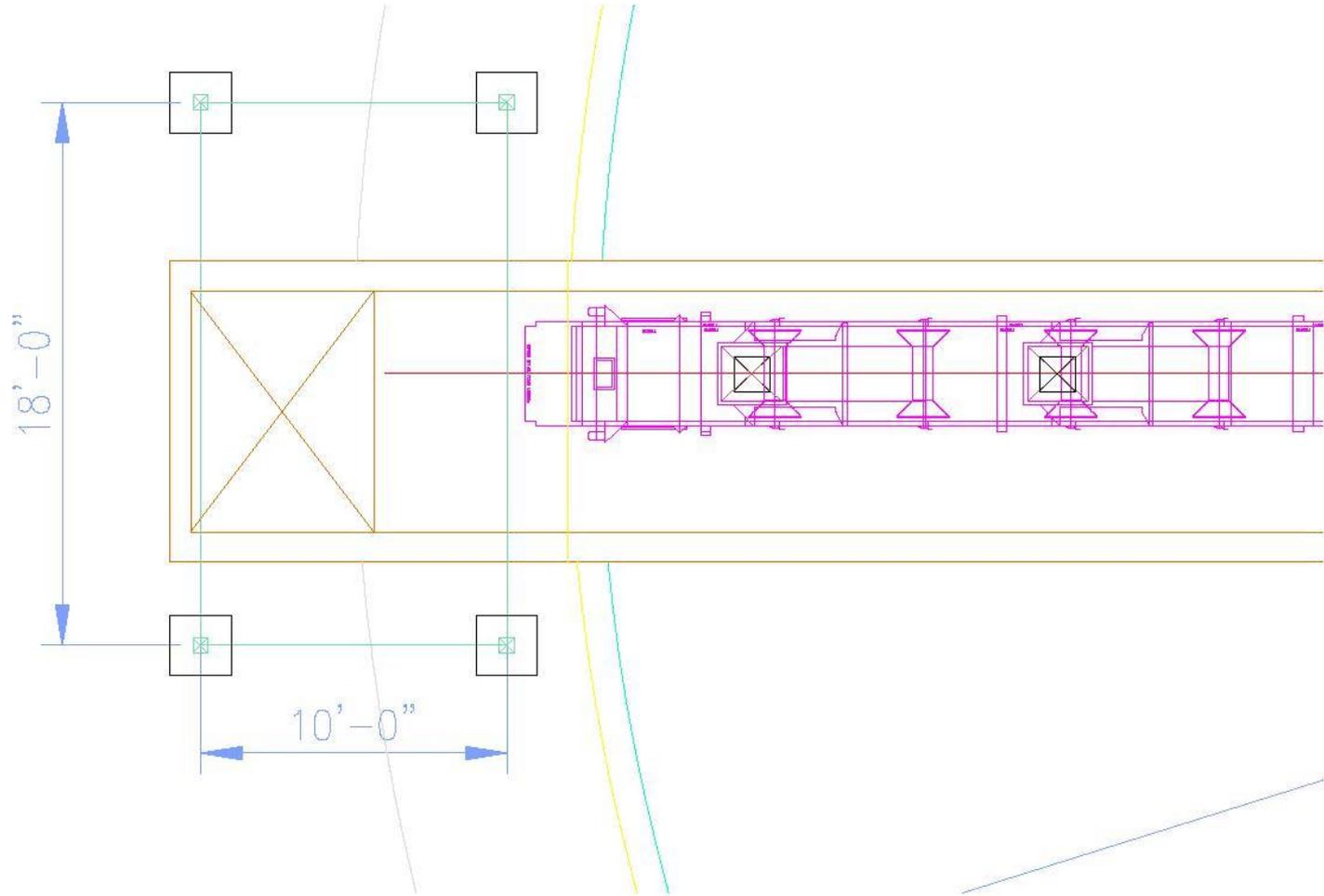
TUNNEL SECTION



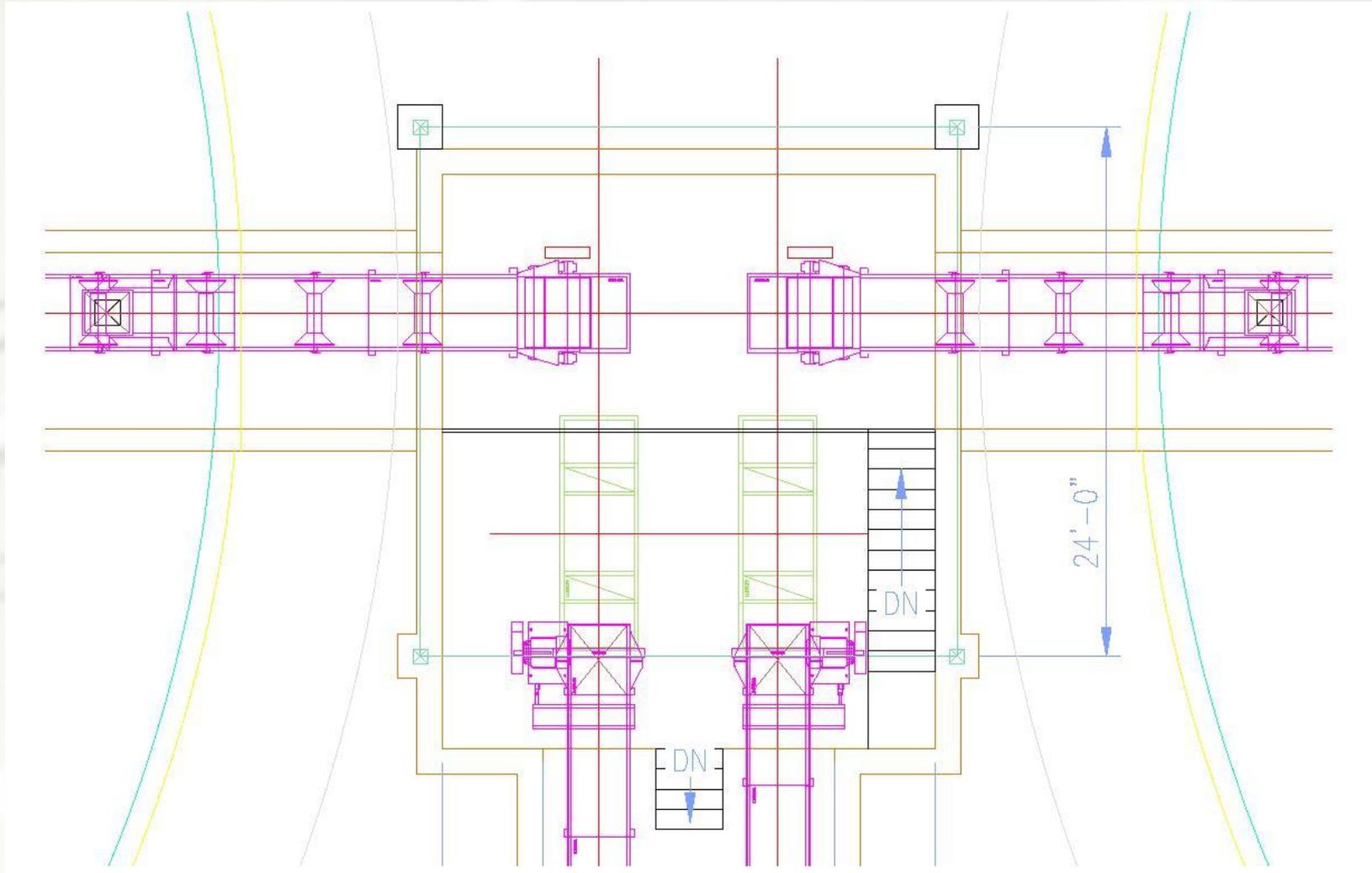
CLEARANCE ISSUES



MAINTENANCE ISSUES



PLAN AT HEAD



Questions?