APPENDIX E – R1

EASTERN TRANSIT GARAGE REQUIRED FEATURE LIST AND DESIGN GUIDELINES

Table 1: Features to Include in Garage Design

Review elements with Winnipeg Transit before commencing design.

Component	Features
SITE	1. Space for bus movements needs to be more generous than AutoTurn templates suggest; 2. Exterior circulation lanes are to have no curbs; 3. Access/egress routings for buses must be separate from the access/egress routings for other vehicles; 4. Access route for buses is to be controlled by a guardhouse; 5. Concrete aprons at either end of the garage should be of sufficient size; 6. Sufficient dedicated parking is required for Transit Supervisors, contractors, and garage staff; 7. Access to the parking lot is to be controlled by a barrier arm; 8. The parking lot should be located in close proximity to Bus Operator access and Dispatch areas; 9. Adequate space needs to be provided in the parking lot for snow storage; 10. The perimeter of the site is to be enclosed by a fence that is 3.0 metres in height; 11. Three 50,000 litre diesel tank fuel farm and one 5,000 litre windshield washer fluid tank required on site adjacent to vehicle servicing bay; 12. The site is to be monitored by CCTV; 13. The site and all facilities to include wifi coverage;
BUS STORAGE AREA	14. Rows with a maximum of 12 buses are preferred; however, rows of up to 15 buses are acceptable; 15. Pedestrian walkways 1.5 m. wide are to be provided along and across bus parking rows every three buses and along walls; 16. Spacing between buses exclusive of pedestrian walkways to be .95 m. wide;

Component	Features
	17. The distance from the garage door to the first or last bus in a row is to be approximately 6.0 m. 18. Garage doors for buses are required to provide a 4.3 m. X 4.3 m. opening; 19. Floors must be sloped for positive drainage and large sand catch basins with round covers are required to minimize drain blockages; 20. One inch cold water hose connections for floor washing and washing out trenches are required every 30 m; 21. A maximum of one column line in the centre of the bus storage area is allowed and column spacing must allow bus movements between columns; 22. Columns and wall areas must be equipped with adequate numbers of electrical outlets, air drops and telephone jacks. 23. Concrete side walls must have a minimum height of 2.5 m; 24. Concrete end walls must have a minimum height of 4.3 m. 25. Ventilation system capacity and controls designed to ensure that employees are not exposed to concentrations of NO_2, CO and particulates that exceed specified TLV's.
BUS SERVICE BAYS	26. Bus washer to be sized to accommodate articulated buses (18 m length). 27. Double service bays are required for two lines of bus servicing equipment. 28. The horizontal clearance between the service line entrance door and the rear of the last bus in the service line, and between the front of the first bus in the service line and the exit door, should each be a minimum of 6.0 m. 29. Concrete side walls should have a height of 2.5 m. 30. Concrete end walls should have a height of 4.3 m. 31. Ventilation system capacity and controls designed to ensure that employees are not exposed to concentrations of NO2, CO and particulates that exceed specified TLV's. 32. Garage doors for buses are required to provide a 4.3 m. X 4.3 m. opening;

Component	Features
BUS MAINTENANCE BAYS	33. Vehicle work bay floor slopes suitable for the safe use of safety stands and mobile column lifts. 34. Ventilation system capacity and controls designed to ensure that employees are not exposed to concentrations of NO2, CO and particulates that exceed specified TLV's. 35. Sufficient space for tool boxes and equipment on all sides of buses. 36. Drive in/back out maintenance bays are acceptable. 37. Garage doors for buses are required to provide a 4.3 m. X 4.3 m. opening;
STAFF FACILITIES	38. Facilities need to be provided for 46 servicing and maintenance staff (expandable to 115) including the following: • washrooms containing showers, water closets in stalls, sinks (and urinals in men's washrooms) • locker rooms; • lunchroom with kitchen facilities. 39. Facilities need to be provided for Bus Operators including the following: • washrooms containing showers, water closets in stalls, sinks (and urinals in men's washrooms); • men's and women's locker rooms with 55 and 20 lockers respectively, expandable to 75 and 25. 40. Hygiene facilities need to be located close to work areas; 41. A multi-use room for employees designed to accommodate 70 persons (expandable to 100) and to include a folding partition to enable the room to be divided into two separate spaces as required. This room to be designed to accommodate exercise classes and equipment as required. 42. A bus operator waiting room equipped with a kitchen and food/beverage vending area, tables and chairs to accommodate 175 staff. (with future expansion to 250) The room to be separated into three areas with suitable partitions. One area to house a kitchen/games area and one to house a television viewing area. 43. Three private meeting rooms (2 sized for 10 people, one sized for 20 people, with a divider between one of the 10 and 20 people rooms to allow "opening up" for a 30 person meeting) acoustically separated from adjoining spaces with sufficient space to

Component	Features
	accommodate meetings with tables and chairs. 44. The Dispatch Office area should accommodate 6 work stations, a backup Control Centre, a UPS, and an emergency power generator.

List of Schematic Design Guidelines

Table 2 provides a list of the guidelines used to determine the functional space requirements for a 350 bus facility, with expansion capability to ultimately accommodate 500 buses. Figure 1 shows a conceptual design for a 200 stall design previously under consideration.

Review elements with Winnipeg Transit before commencing design.

Table 1: Functional Design Guidelines for New Transit Garage

Component	Description	
No. of Buses	350 Buses: • 300 Standard • 50 Articulated	500 Buses: • 425 Standard • 75 Articulated
Bus Dimensions	Standard with Bike Rack: Length: 13.1 m Width: 2.6 m Height: 3.8 m	
	Articulated with Bike Rack: Length: 19.2 m Width: 2.6 m Height: 3.8 m	
Buses per Parking Lane	12 Standard Buses, or 8 Articulated Buses	
Approx. No. of Parking Lanes	32 for 350 unit garage, expandable to 45 ultimately to accommodate 500 units.	
Lane Widths	Must accommodate overhead garage doors 4.30 m in width	
Parking Lane Clearances	• 0.95 m between parked buses in lanes • 6.0 m between entrance door and back of nearest bus • 6.0 m between front of nearest bus and exit door	
Walkway Aisles	• 1.50 m wide, between every third row of buses along the length of the parking row and between every third bus across parking rows and along walls.	

Component	Description	
Parking Lane Other	• Secure Storage alcove for bus advertising boards (600 square feet minimum)	
No. of Servicing Lanes	4 drive-through lanes with two servicing stations in each lane, expandable to 5 drive-through lanes	
Servicing Lane Length	120 m	
Servicing Lane Width	8 m	
Servicing Lane Facilities	• Refuelling stations • Interior bus cleaning with vacuum extraction • 4 drive-through bus washers that accommodate standard and articulated buses, expandable to 5. • Windshield washer, diesel exhaust fluid • Revenue servicing stations	
Repair Bays	27 bays (expandable to 35): • 21 bays with hydraulic inground hoists for standard buses (expandable to 27) • 6 bays with hydraulic inground hoists for articulated buses, (expandable to 8) • 1 entrance door/1 exit door/single drive-through lane for repair bays	
Wash Bay	• 2 bays with hoist that accommodates both standard and articulated buses, expandable to 3. • Requires sand pits and trenches to capture water, dirt, and grease • No electrical, computer rooms, compressor facilities are to be located in wash bay area	
Shop Area	• Sufficient space for benches, tools, stands, computers, welding booth, grinders, plasma tools, etc. • Exhaust extraction system on moveable rail and tail pipe exhaust.	
Other Repair Bay Requirements	• Stores area for tools and parts • Maintenance Supervisor office for two workstations • Staff facilities in close proximity (for 25 staff)	
Operator Dispatch Office Required Facilities	• 3 workstations • 3 enclosed offices (3.0 m x 3.0 m) • UPS and emergency generator power supply	
No. of Staff	• 80 service staff, expandable to 115 • 315 bus operators, expandable to 450 • 70% male/30% female	
Male Washrooms	For 350 bus garage • 7 showers • 2 accessible shower • 2 accessible water closet • 5 conventional water closet • 7 sinks	For 500 bus garage • 10 showers • 3 accessible shower • 3 accessible water closet • 8 conventional water closet • 10 sinks

Component	Description	
	• 7 urinals	• 10 urinals
Female Washrooms	For 350 bus garage • 4 showers • 2 accessible shower • 2 accessible water closet • 4 conventional water closets • 4 sinks	For 500 bus garage • 5 showers • 3 accessible shower • 3 accessible water closet • 5 conventional water closets • 5 sinks
Bus Operator Waiting Area	• See Table 1, Item 42. • Separated into 3 areas with a low wall or partition for a recreation area and full height wall for television viewing area • Include kitchen space and non-fixed tables and chairs	
Multi Use Space	• See Table 1, Item 40. • To include a folding partition or movable wall to enable the room to be divided into two separate spaces as required	
Meeting Room	• See Table 1, Item 43. • To include conference table and chairs	
Parking Supervisor Kiosk	• Located upstream of entrance to bus storage area • Used by supervisor to issue parking instructions to operators of returning buses • Requires heating, air conditioning, voice and data service, and a telephone on the outside of the kiosk for use by bus operators when a supervisor is not present	
On-Site Parking	• 265 spaces (expandable to 375) for a site served by a high level of transit service • 315 spaces (expandable to 450) for a site that is not proximate to a high level of transit service	
Support Facilities	• Data/Telecom room • Electrical room • Mechanical room with space for oil tank and air compressors • Outdoor storage space for diesel tanks and windshield washer fluid tank • Indoor storage for oil tank, DEF tank, air compressors, diesel generator • Electric charging station	

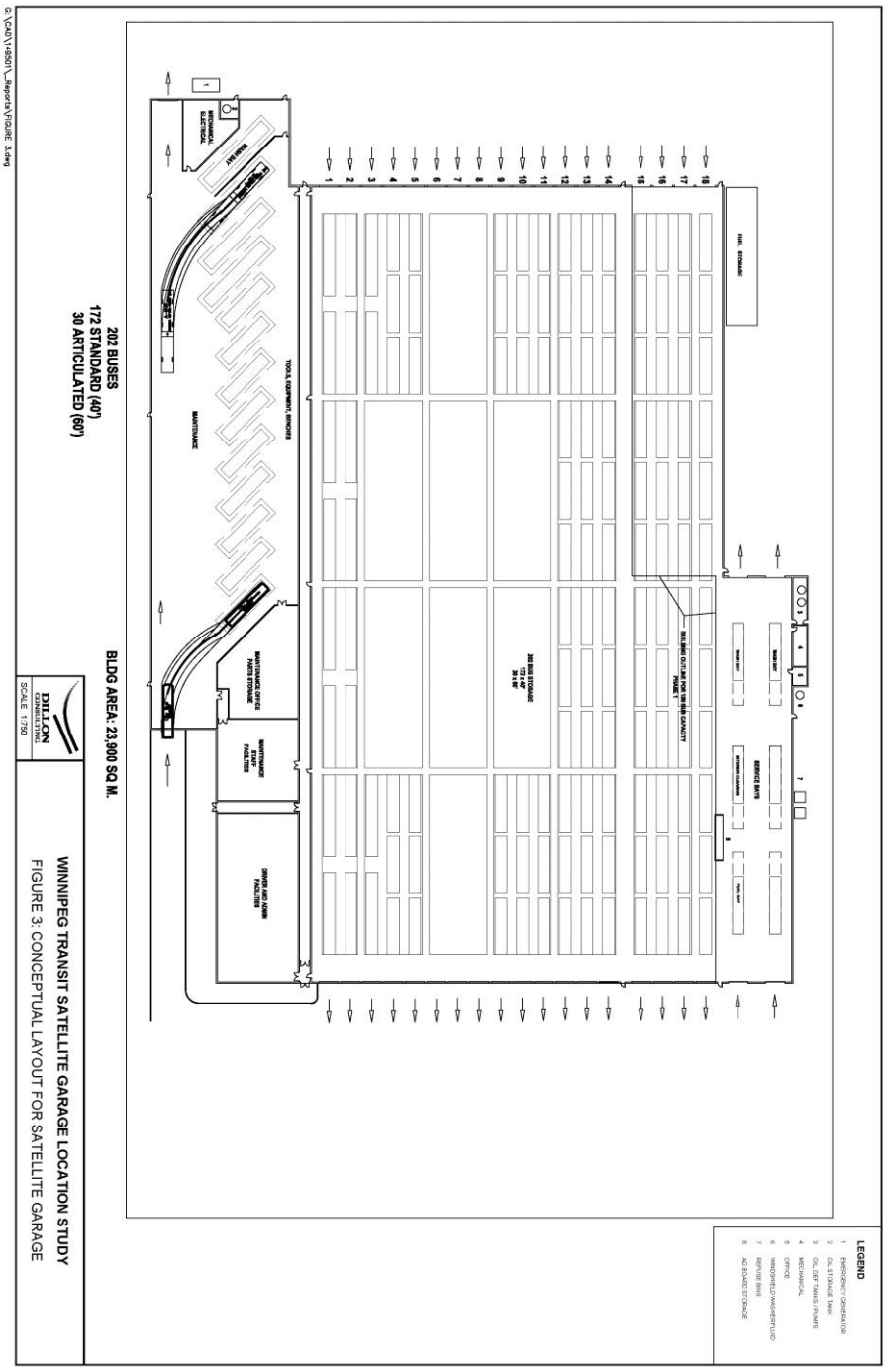

Figure 1: Conceptual Layout for a 200 Stall Facility

(Note that the requirements now call for a 350 stall facility, expandable to 500 stalls.)