



CHAMPAIGN-URBANA MASS TRANSIT DISTRICT BOARD MEETING

AGENDA

Wednesday, May 29, 2019 – 3:00 p.m.

Champaign City Council Chambers
102 North Neil Street, Champaign

Board of Trustees:

Dick Barnes	Matthew Cho
Linda Bauer	James Faron
Bradley Diel – Chair	Bruce Hannon
Margaret Chaplan – Vice Chair	

Advisory Board:

Lowa Mwilambwe/Marty Paulins
Jacob Rajlich

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2. Roll Call	
3. Approval of Agenda	
4. Audience Participation	
5. Approval of Minutes	
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6. Communications	
A. John Dwyer, Coordinator for Champaign County Emergency Management Agency	
7. Reports	
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CHAMPAIGN-URBANA MASS TRANSIT DISTRICT BOARD MEETING

AGENDA

Wednesday, May 29, 2019 – 3:00 p.m.

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D. Boiler Replacement Contract	66-68
E. New Flyer Contract for Hydrogen Fuel Cell Electric Buses	69
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9. Next Meeting	
A. Public Hearings for Fall 2019 Revisions to Routes and Schedules:	
1) Thursday, May 30, 2019 – 6:00 p.m. – 8:00 p.m. at Urbana City Council Chambers, 400 S Vine Street, Urbana	
2) Thursday, June 6, 2019 – 4:00 p.m. – 6:00 p.m. at Illinois Terminal, 4 th Floor – 45 E University Avenue, Champaign	
B. Regular Board of Trustees Meeting and Public Hearing on the FY2020 Budget & Appropriation Ordinance – Wednesday, June 26, 2019 – 3:00 p.m. at Champaign City Council Chambers – 102 North Neil Street, Champaign	
10. Adjournment	



Champaign-Urbana Mass Transit District (MTD) Board of Trustees Special Meeting

MINUTES – SUBJECT TO REVIEW AND APPROVAL

DATE: Monday, April 15, 2019
TIME: 3:00 p.m.
PLACE: Champaign City Council Chambers
102 North Neil Street, Champaign, IL

The video of this meeting can be found at:

<https://www.youtube.com/CUMTD>

Trustees:

Present	Absent
Dick Barnes	
Linda Bauer	
Bradley Diel (Chair)	
Margaret Chaplan (Vice-Chair)	
	Matthew Cho
James Faron	
Bruce Hannon	

Advisory Board:

Present	Absent
Marty Paulins	
Jacob Rajlich	

MTD Staff:

Karl Gnadt (Managing Director), Amy Snyder (Chief of Staff), Brenda Eilbracht (Chief Administrative Officer), Michelle Wright (Finance Director), Jane Sullivan (Grants & Governmental Affairs Director), Autumn Soliman (Marketing Manager), Fred Stavins (Counsel), Beth Brunk (Clerk)

Others Present: Hans Grotelueschen and Tim Johns (CORE Spaces)

MINUTES

1. Call to Order

Chair Diel called the meeting to order at 3:00 p.m.

2. Roll Call

A verbal roll call was taken, and a quorum was declared present.

3. Approval of Agenda

MOTION by Mr. Barnes to approve the agenda as distributed; seconded by Ms. Bauer. Upon vote, the **MOTION CARRIED** unanimously.

Ms. Chaplan entered the meeting at this time.

4. Audience Participation

None

5. Action Items

A. Scope for Illinois Terminal Expansion at The Yards

Mr. Gnadt explained that Attachment A contained the scope and cost estimates of The Yards Project that includes the renovation and expansion of Illinois Terminal, expansion of MTD bus platforms, and the mixed-use facility with parking, retail and commercial space. This project has not been analyzed by architects or engineers yet, so the numbers are estimations only.

Dr. Faron inquired about the mix-use portion of the project. Mr. Gnadt explained that the federal government encourages grant recipients to develop joint projects with public/private partnerships. Any revenue the District receives from the project will be used to offset the expenses of the buildings' operation. The District will again apply for \$25M in federal grant funds from the BUILD and Bus & Bus Facilities programs. If those grant applications are not successful, MTD will tap into other sources of federal funding and capital reserves for the \$25M. If the University decides not to proceed with the hockey arena, the District will continue this project with a smaller scope.

MOTION by Ms. Bauer to approve the scope of the Illinois Terminal expansion and joint development project commonly referred to as The Yards, as it is described in Attachment A of the Board packet. Furthermore, Ms. Bauer moved that the District support the project with a commitment of \$25,000,000; seconded by Mr. Hannon.

Roll Call:

Aye (6) – Barnes, Bauer, Chaplan, Diel, Faron, Hannon

Nay (0)

Absent (1) – Cho

MOTION CARRIED.

6. Next Meeting

- A. Regular Board of Trustees Meeting – Wednesday, April 24, 2019, 3:00 p.m. at Champaign City Council Chambers – 102 North Neil Street, Champaign

7. Adjournment

Mr. Diel adjourned the meeting at 3:26 p.m.

Submitted by:

Clerk

Approved:

Board of Trustees Chair



Champaign-Urbana Mass Transit District (MTD) Board of Trustees Meeting

MINUTES – SUBJECT TO REVIEW AND APPROVAL

DATE: Wednesday, April 24, 2019
TIME: 3:00 p.m.
PLACE: Champaign City Council Chambers
102 North Neil Street, Champaign, IL

The video of this meeting can be found at:

<https://www.youtube.com/CUMTD>

Trustees:

Present	Absent
Dick Barnes	
Linda Bauer	
Bradley Diel (Chair)	
Margaret Chaplan (Vice-Chair)	
Matthew Cho	
James Faron	
Bruce Hannon	

Advisory Board:

Present	Absent
Marty Paulins	
Jacob Rajlich	

MTD Staff:

Karl Gnadt (Managing Director), Amy Snyder (Chief of Staff), Brenda Eilbracht (Chief Administrative Officer), Eric Broga (Maintenance Director), Michelle Wright (Finance Director), Jane Sullivan (Grants & Governmental Affairs Director), Autumn Soliman (Marketing Manager), Chuck Wilson (Interim Operations Director), Drew Bargmann (Special Services Manager), Evan Alvarez (Planning & Outreach Coordinator), Fred Stavins (Counsel), Beth Brunk (Clerk)

Others Present:

MINUTES

1. Call to Order

Chair Diel called the meeting to order at 3:00 p.m.

2. Roll Call

A verbal roll call was taken, and a quorum was declared present.

3. Approval of Agenda

Mr. Diel noted that the Boiler Replacement Contract, Item 9.A. will be deferred until next month.

MOTION by Ms. Chaplan to approve the agenda as amended; seconded by Ms. Bauer. Upon vote, the **MOTION CARRIED** unanimously.

1 **4. Audience Participation**

2 None

3
4 **5. Approval of Minutes**

5 A. *Board Meeting – March 27, 2019 – Open Session*

6
7 **MOTION** by Mr. Barnes to approve the open session minutes of the March 27, 2019 MTD Board meeting
8 as distributed; seconded by Ms. Chaplan. Upon vote, the **MOTION CARRIED** unanimously.

9
10 B. *Board Meeting – March 27, 2019 – Closed Session*

11
12 **MOTION** by Ms. Bauer to approve the closed session minutes of the March 27, 2019 MTD Board
13 meeting as distributed; seconded by Ms. Chaplan. Upon vote, the **MOTION CARRIED** unanimously.

14
15 **6. Communications**

16 Ms. Chaplan and Dr. Faron commented that the ISO Management Review for MTD 2071 held on 4/4 was
17 very impressive and informative.

18
19 **7. Community Customer Satisfaction Survey**

20 Mr. Gnadt explained that historically MTD conducts a Community Customer Satisfaction Survey every
21 other year. A survey was administered in 2018 by a new firm, ECT Institute, using mail/email options
22 versus phone interviews as in the past. The respondent demographics changed dramatically with 36%
23 more non-student participants. Autumn Soliman, Marketing Manager, analyzed the survey results.

24
25 **8. Rider Preference Survey**

26 Evan Alvarez, Planning and Outreach Coordinator, presented the results from a Rider Preference Survey
27 administered by MTD at the beginning of 2019.

28
29 **9. Reports**

30 A. Managing Director

31 March statistics show a 2.4% decrease in ridership from last year due to MCORE reroutes at the end of the
32 month and fewer weekdays.

33
34 Ms. Sullivan announced that tomorrow, April 25th, is Get On Board Day, a national awareness and advocacy
35 day to highlight the many ways public transit provides benefits for everyone. MTD has built a photo booth
36 constructed from the front of a bus so citizens can post photos on social media, tagging public officials and
37 spreading support for public transit. The photo booth will be at Illinois Terminal from 7:30a – 11:00a and
38 then be at the UI Quad from noon – 3:00p.

39
40 **10. Next Meeting**

41 A. Regular Board of Trustees Meeting – Wednesday, May 29, 2019, 3:00 p.m. at Champaign City
42 Council Chambers – 102 North Neil Street, Champaign

43
44 **11. Adjournment**

45 **MOTION** by Ms. Chaplan to adjourn the meeting; seconded by Mr. Hannon. Upon vote, the **MOTION**
46 **CARRIED** unanimously.

47
48 Mr. Diel adjourned the meeting at 4:00 p.m.

49
50 Submitted by:

51
52
53 _____
54 Clerk

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Approved:

Board of Trustees Chair



Champaign-Urbana Mass Transit District (MTD) Board of Trustees Special Meeting

MINUTES – SUBJECT TO REVIEW AND APPROVAL

DATE: Tuesday, April 30, 2019
TIME: 7:00 p.m.
PLACE: Champaign City Council Chambers
102 North Neil Street, Champaign, IL

The video of this meeting can be found at:

<http://champaign.cablecast.tv/CablecastPublicSite/show/4668?channel=1>

Trustees:

Present	Absent
Dick Barnes	
	Linda Bauer
	Bradley Diel (Chair)
	Margaret Chaplan (Vice-Chair)
	Matthew Cho
James Faron	
Bruce Hannon	

MTD Staff: Karl Gnadt (Managing Director), Jane Sullivan (Grants & Governmental Affairs Director),
Beth Brunk (Clerk)

MINUTES

1. Call to Order

Mayor Feinen called the Champaign City Council Study Session to order at 7:00 p.m.

2. Action

Bruce Knight (Champaign City Planner) and Kay Nees (Champaign Finance Director) outlined the City of Champaign's proposed participation in The Yards Project. The Council directed the City of Champaign staff to proceed with continuing negotiations, including a development agreement with CORE Spaces and an intergovernmental agreement with MTD.

3. Adjournment

Mayor Feinen adjourned the meeting at 9:27 p.m.

Submitted by:

Clerk

Approved:

Board of Trustees Chair

MTD MANAGING DIRECTOR OPERATING NOTES

May, 2019

RIDERSHIP

Monthly Ridership

■ FY2018
■ FY2019
■ 5 Year Average

1,292,424

1,203,603

1,303,583

April

↓ -6.87%
↓ -7.67%

Year-to-Date Ridership

■ FY2018
■ FY2019
■ 5 Year Average

10,407,714

10,569,359

11,108,177

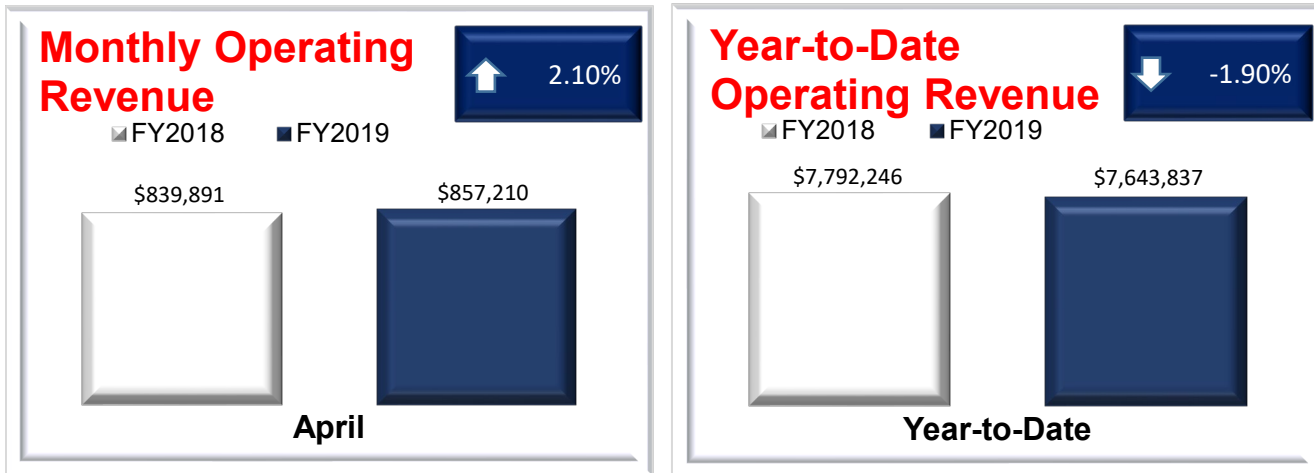
Year-to-Date

↑ 1.55%
↓ -4.85%

As was expected, ridership was down 6.9% from last April. The largest impact to ridership was the return of MCORE. This new phase involved Wright Street, which was closed southbound between John Street and Chalmers. This began April 2nd which caused many routes to be diverted to Goodwin Avenue, including the 1/100S Yellow, 4W Blue, 9A Brown, and the 13/130S Silver. The 22/220S Illini was also rerouted but went Green to Fourth to Daniel to avoid Wright Street. There were many routes that remained regular route on Wright Street northbound, but it was an unpleasant experience with the stops being moved and construction being ramped up.

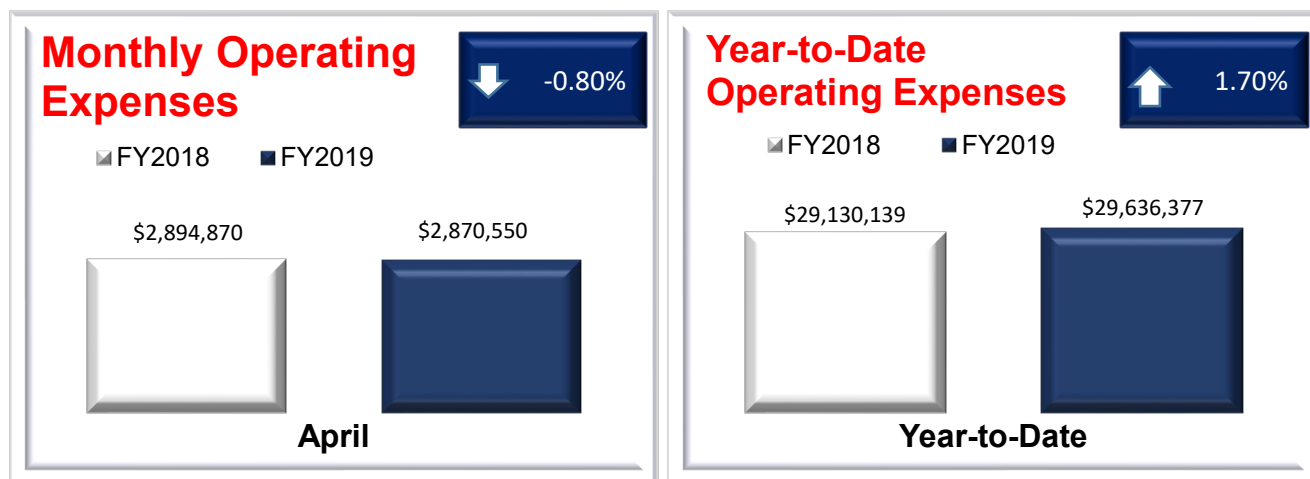
SafeRides Connect had a full month using the new app-based program. There were a few issues with the technology and with a learning curve from an operational perspective, but we are fairly pleased with how we coped with the issues and fought to figure out how to overcome obstacles. Routematch will update many of the components before the Fall semester so we hope that some of the more obvious issues (aggressive ETA's and vehicle tracking) will be resolved. We have a list of suggestions for improvements that we hope they can integrate as well. But overall, the change in the SafeRides management program went well this Spring. We will work towards an analysis of utilization soon.

OPERATING REVENUE



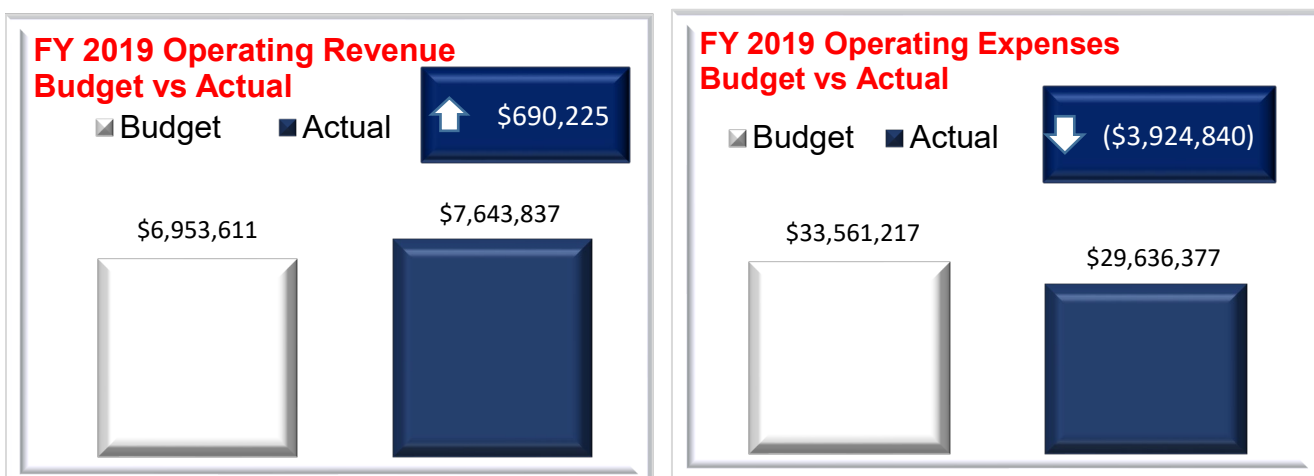
April, 2019 operating revenue was 2.1% above April, 2018, and year-to-date operating revenue was 1.9% below FY2018.

OPERATING EXPENSES



April operating expenses were 0.80% below April, 2018. Year-to-date operating expenses were 1.70% above FY2018.

YEAR-TO-DATE REVENUE & EXPENSES



Year-to-date operating revenues are \$690,225 above budget while operating expenses are \$3,924,840 under budget.

MANAGING DIRECTOR'S NOTES

- * The week of May 6, we completed the ISO recertification audit for both of the standards we have certifications for – ISO 14001:2015 (Environmental) and ISO 9001:2015 (Quality). This finally fully combines the two certifications into one merged system (what we're calling MTD2071). The audit was exhausting for the core team that worked on it and the auditors were HARD! The two internationally-certified auditors were on-site for five days reviewing documentation, touring facilities, interviewing employees across disciplines, and identifying opportunities for improvement of our services and environmental protection. I am so proud of the team – they did a fantastic job! The core team is made up of Amy Snyder, Chief of Staff; Jane Sullivan, Grants & Governmental Affairs Director; Eric Broga, Maintenance Director; Kirk Kirkland, Facilities Director; Chuck Wilson, Interim Operations Director; Drew Bargmann, Special Services Manager; and Josh Dhom, Illinois Terminal Manager.
- * BUILD grant applications are due July 15 and 5339 Bus & Bus Facilities grant applications are due June 21. Staff is working VERY hard to make these grant application deadlines for The Yards project.
- * Our Technology Services Department continuously works to improve our passenger information tools. This month, we added an improvement to mtd.org to give riders more options when planning a trip. We added the option to weight trips for less time, fewer transfers, or less walking. Previously, all trips were planned for the shortest time. While this remains the default and it normally results in the best trip, these options will put more control in passengers' hands.
- * Two new Hybrid buses were delivered from the manufacturer this week. These are 40-foot buses replacing two 2003 diesel units.
- * The Route Analysis project has begun. We are working with the consultant on establishing a brand for the project and organizing the first meeting with the Technical Advisory Committee.

MAJOR EFFORTS

Development Efforts

The Yards/Illinois Terminal Expansion – The City of Champaign and the MTD are both working on the financial side of the development agreements with the developers. As mentioned above, we are also simultaneously gearing up for the next round of BUILD and 5339 Bus & Bus Facilities grant applications.

ONGOING PROJECTS

Staff continues to work on:

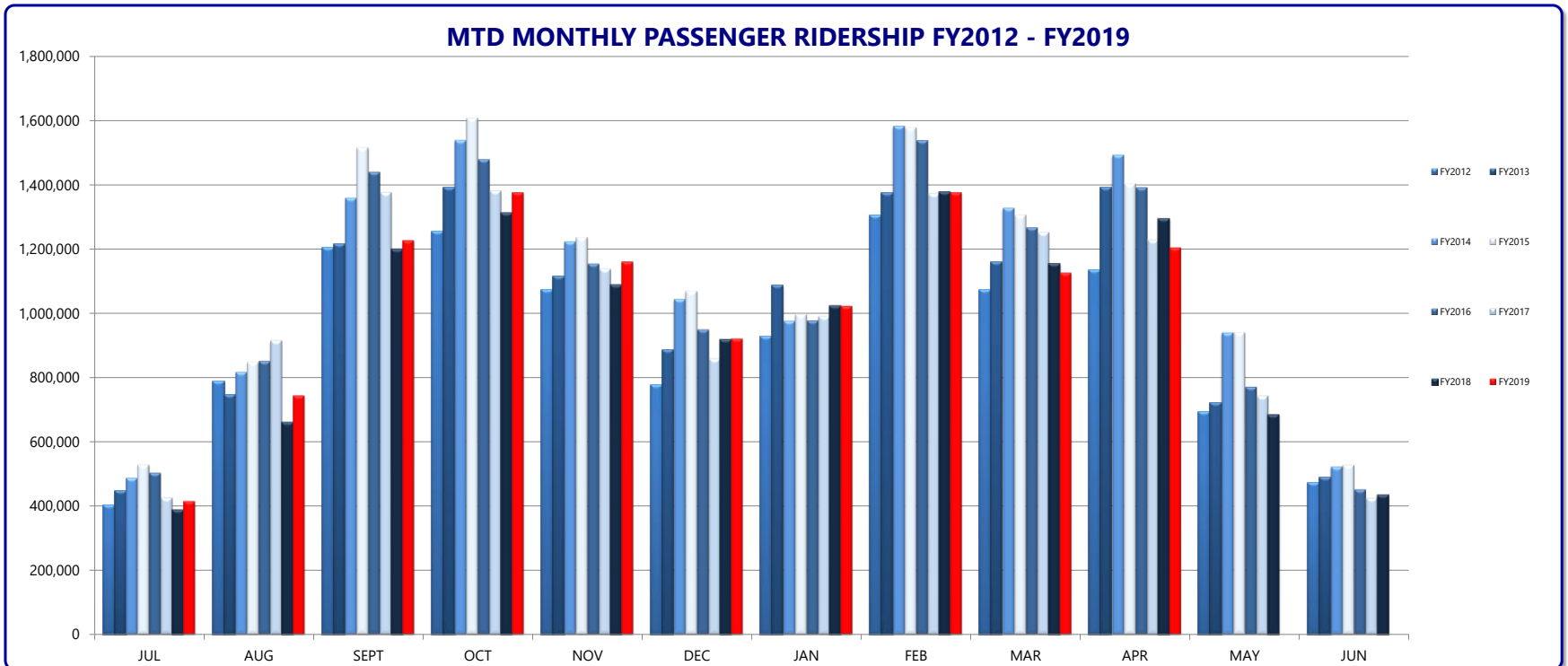
- MCORE – Construction and reroutes are now ongoing.
- The RFP to bid out station work (H2 production, storage, and fueling) for the H2 Fuel Cell Project will be opened next month. The facility modification RFP has been submitted to IDOT for their concurrence and then we will begin soliciting proposals.

Champaign-Urbana Mass Transit District
Fiscal-Year-to-Date Ridership Comparison

	Apr-19	Apr-18	% Change	FY19 YTD	FY18 YTD	% Change
Adult Rides	36,135	39,960	-9.6%	375,561	400,880	-6.3%
School Rides	45,136	45,581	-1.0%	376,748	364,292	3.4%
DASH/Senior - E & D Rides	50,437	50,063	0.7%	493,109	485,428	1.6%
U of I Faculty/Staff Rides	32,116	37,098	-13.4%	317,695	331,087	-4.0%
Annual Pass	51,582	55,422	-6.9%	539,708	650,733	-17.1%
U of I Student Rides	934,127	1,015,458	-8.0%	7,963,437	7,843,553	1.5%
All Day Passes	459	510	-10.0%	6,078	6,119	-0.7%
Transfers	12,089	11,262	7.3%	125,599	119,926	4.7%
Saferides	4,925	4,582	7.5%	28,292	27,621	2.4%
Monthly Pass	21,474	18,713	14.8%	209,823	70,122	-
Veterans Pass	4,097	2,772	47.8%	36,478	10,005	-
Total Unlinked Passenger Ride:	1,192,577	1,281,421	-6.9%	10,472,528	10,309,766	1.6%
Half-Fare Cab Subsidy Rides	1,133	1,192	-4.9%	11,869	13,177	-9.9%
ADA Rides	9,893	9,811	0.8%	84,962	84,771	0.2%
TOTAL	1,203,603	1,292,424	-6.9%	10,569,359	10,407,714	1.6%

	Apr-19	Apr-18
Weekdays	22	21
UI Weekdays	22	21
Saturdays	4	4
UI Saturdays	4	4
Sundays	3	4
UI Sundays	3	4
Champaign Schools Days	20	20
Urbana School Days	21	21
Holidays	1	1
Average Temperature	53	46
Total Precipitation	4.4	2.07
Average Gas Price	\$2.76	\$2.64

	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
JUL	401,883	447,178	487,363	529,018	503,481	424,915	389,398	415,476
AUG	787,817	745,337	817,249	848,165	851,098	914,496	661,178	743,728
SEPT	1,203,512	1,215,967	1,358,928	1,514,019	1,439,491	1,375,803	1,197,928	1,226,527
OCT	1,254,804	1,391,576	1,538,309	1,606,340	1,478,275	1,380,990	1,310,380	1,375,516
NOV	1,073,953	1,115,234	1,223,026	1,236,071	1,153,897	1,137,573	1,087,343	1,160,184
DEC	777,617	887,209	1,044,064	1,068,608	949,030	857,837	917,782	920,718
JAN	927,630	1,086,962	975,863	996,469	977,223	989,700	1,022,713	1,022,403
FEB	1,305,142	1,374,653	1,582,330	1,576,687	1,537,540	1,371,778	1,375,553	1,375,560
MAR	1,073,789	1,160,228	1,327,336	1,305,425	1,266,676	1,251,352	1,153,015	1,125,610
APR	1,134,560	1,392,237	1,492,613	1,402,475	1,391,286	1,228,127	1,292,424	1,203,603
MAY	693,620	722,264	939,758	940,147	770,860	742,253	684,678	
JUN	473,304	489,327	522,493	528,360	451,663	424,219	435,993	
TOTAL	11,107,631	12,028,172	13,309,332	13,551,784	12,770,520	12,099,043	11,528,385	10,569,325



Route Performance Report

April 2019

Weekdays

	Passengers	Revenue Hours	Passengers Per Revenue Hour	Revenue Hour Performance Comparison +	Revenue Miles	Passengers Per Revenue Mile	Revenue Mile Performance Comparison +
Daytime Campus Fixed Route	488,735	4,750.69	102.88		51,515.53	9.49	
1 YELLOWhopper	50,679	613.00	82.67	0.80	6,778.00	7.48	0.79
10 GOLDhopper	52,308	460.87	113.50	1.10	5,540.32	9.44	1.00
12 Teal	91,544	829.42	110.37	1.07	8,777.61	10.43	1.10
13 Silver	64,549	708.88	91.06	0.89	7,893.21	8.18	0.86
21 Raven	9,188	209.00	43.96	0.43	2,200.90	4.17	0.44
22 Illini	220,467	1,929.53	114.26	1.11	20,325.50	10.85	1.14
Daytime Community Fixed Route	401,258	12,010.99	33.41		168,536.83	2.38	
1 Yellow	53,204	1,201.73	44.27	1.33	16,016.59	3.32	1.40
2 Red	38,959	1,209.23	32.22	0.96	15,765.50	2.47	1.04
3 Lavender	22,664	655.03	34.60	1.04	8,976.29	2.52	1.06
4 Blue	14,737	557.50	26.43	0.79	7,176.57	2.05	0.86
5 Green	58,481	1,292.81	45.24	1.35	16,759.96	3.49	1.47
5 Green Express	13,012	334.89	38.85	1.16	5,093.00	2.55	1.07
5 GREENhopper	41,036	727.73	56.39	1.69	9,573.33	4.29	1.80
6 Orange	19,681	757.97	25.97	0.78	9,791.38	2.01	0.84
6 ORANGEhopper	7,780	288.50	26.97	0.81	3,406.52	2.28	0.96
7 Grey	34,942	1,094.98	31.91	0.96	14,849.42	2.35	0.99
8 Bronze	6,030	333.02	18.11	0.54	4,664.55	1.29	0.54
9 Brown	33,316	1,254.82	26.55	0.79	17,470.86	1.91	0.80
10 Gold	45,809	904.71	50.63	1.52	13,066.15	3.51	1.47
11 Ruby	998	116.70	8.55	0.26	2,221.27	0.45	0.19
14 Navy	6,441	465.80	13.83	0.41	9,056.76	0.71	0.30
16 Pink	4,168	815.57	5.11	0.15	14,648.69	0.28	0.12

* The Percent of Group Ridership shows how the ridership for the route compares to the group

+ Performance Comparison shows each Route's Passengers Per Revenue Hour or Mile compared to the Route Group's average. Routes that are continually above 1.5 or below 0.5 may need to be examined as they are not performing within the Group Standards.

	Passengers	Revenue Hours	Passengers Per Revenue Hour	Revenue Hour Performance Comparison +	Revenue Miles	Passengers Per Revenue Mile	Revenue Mile Performance Comparison +
Evening Campus Fixed Route	117,472	1,526.55	76.95		17,793.12	6.60	
120 Teal	23,412	305.43	76.65	1.00	3,569.60	6.56	0.99
130 Silver	9,495	165.97	57.21	0.74	1,891.00	5.02	0.76
220 Illini	84,565	1,055.15	80.15	1.04	12,332.52	6.86	1.04
Evening Community Fixed Route	53,991	1,937.03	27.87		27,749.59	1.95	
50 Green	15,640	456.47	34.26	1.23	6,407.21	2.44	1.25
50 GREENhopper	10,145	245.22	41.37	1.48	3,287.28	3.09	1.59
70 Grey	7,433	344.12	21.60	0.77	4,819.42	1.54	0.79
100 Yellow	18,768	652.17	28.78	1.03	8,897.59	2.11	1.08
110 Ruby	989	75.90	13.03	0.47	1,373.91	0.72	0.37
180 Lime	1,016	163.17	6.23	0.22	2,964.17	0.34	0.18
Total	1,061,456	20,225.26	52.48		265,595.08	4.00	

* The Percent of Group Ridership shows how the ridership for the route compares to the group

+ Performance Comparison shows each Route's Passengers Per Revenue Hour or Mile compared to the Route Group's average. Routes that are continually above 1.5 or below 0.5 may need to be examined as they are not performing within the Group Standards.

Route Performance Report

April 2019

Weekends

	Passengers	Revenue Hours	Passengers Per Revenue Hour	Revenue Hour Performance Comparison +	Revenue Miles	Passengers Per Revenue Mile	Revenue Mile Performance Comparison +
Saturday Daytime Campus Fixed Route	14,434	205.00	70.41		2,361.33	6.11	
120 Teal	7,155	94.53	75.69	1.07	1,029.94	6.95	1.14
130 Silver	5,028	73.25	68.64	0.97	842.56	5.97	0.98
220 Illini	2,251	37.22	60.48	0.86	488.84	4.60	0.75
Saturday Daytime Community Fixed Route	28,685	945.16	30.35		13,267.05	2.16	
20 Red	2,863	127.93	22.38	0.74	1,630.52	1.76	0.81
30 Lavender	1,853	87.22	21.25	0.70	1,350.53	1.37	0.63
50 Green	7,805	180.02	43.36	1.43	2,318.54	3.37	1.56
70 Grey	5,500	184.48	29.81	0.98	2,456.90	2.24	1.04
100 Yellow	8,720	216.40	40.30	1.33	2,883.22	3.02	1.40
110 Ruby	1,266	64.73	19.56	0.64	1,189.06	1.06	0.49
180 Lime	678	84.38	8.03	0.26	1,438.28	0.47	0.22
Saturday Evening Campus Fixed Route	24,109	378.93	63.62		4,432.88	5.44	
120 Teal	3,880	58.80	65.99	1.04	645.23	6.01	1.11
130 Silver	1,934	63.65	30.38	0.48	717.33	2.70	0.50
220 Illini	18,295	256.48	71.33	1.12	3,070.31	5.96	1.10
Saturday Evening Community Fixed Route	11,296	373.64	30.23		5,173.61	2.18	
50 Green	3,653	88.47	41.29	1.37	1,207.70	3.02	1.39
50 GREENhopper	2,009	40.00	50.23	1.66	514.10	3.91	1.79
70 Grey	1,378	70.07	19.67	0.65	935.88	1.47	0.67
100 Yellow	3,987	131.91	30.22	1.00	1,760.85	2.26	1.04
110 Ruby	155	13.07	11.86	0.39	236.80	0.65	0.30
180 Lime	114	30.13	3.78	0.13	518.27	0.22	0.10

* The Percent of Group Ridership shows how the ridership for the route compares to the group

+ Performance Comparison shows each Route's Passengers Per Revenue Hour or Mile compared to the Route Group's average. Routes that are continually above 1.5 or below 0.5 may need to be examined as they are not performing within the Group Standards.

	Passengers	Revenue Hours	Passengers Per Revenue Hour	Revenue Hour Performance Comparison +	Revenue Miles	Passengers Per Revenue Mile	Revenue Mile Performance Comparison +
Sunday Daytime Campus Fixed Route	8,968	122.85	73.00		1,424.02	6.30	
120 Teal	4,127	51.55	80.06	1.10	562.05	7.34	1.17
130 Silver	3,246	47.65	68.12	0.93	549.58	5.91	0.94
220 Illini	1,595	23.65	67.44	0.92	312.39	5.11	0.81
Sunday Daytime Community Fixed Route	9,208	326.80	28.18		4,695.01	1.96	
30 Lavender	972	53.60	18.13	0.64	828.59	1.17	0.60
70 Grey	2,488	103.25	24.10	0.86	1,381.87	1.80	0.92
100 Yellow	5,443	124.35	43.77	1.55	1,655.08	3.29	1.68
180 Lime	305	45.60	6.69	0.24	829.47	0.37	0.19
Sunday Evening Campus Fixed Route	14,981	247.52	60.53		2,881.82	5.20	
120 Teal	3,145	52.68	59.70	0.99	571.71	5.50	1.06
130 Silver	1,229	38.85	31.63	0.52	439.40	2.80	0.54
220 Illini	10,607	155.98	68.00	1.12	1,870.70	5.67	1.09
Sunday Evening Community Fixed Route	2,584	63.80	40.50		892.81	2.89	
50 Green	1,052	21.00	50.10	1.24	271.54	3.87	1.34
100 Yellow	1,532	42.80	35.79	0.88	621.28	2.47	0.85
Total	114,265	2,663.71	42.90		35,128.52	3.25	

* The Percent of Group Ridership shows how the ridership for the route compares to the group

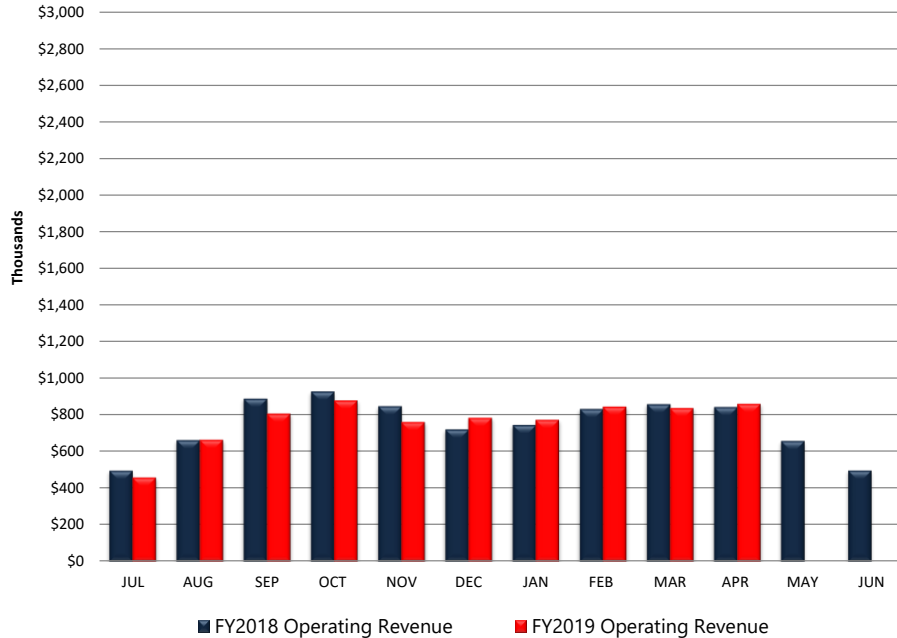
+ Performance Comparison shows each Route's Passengers Per Revenue Hour or Mile compared to the Route Group's average. Routes that are continually above 1.5 or below 0.5 may need to be examined as they are not performing within the Group Standards.

Champaign-Urbana Mass Transit District
Comparison of FY2019 vs FY2018 Revenue and Expenses

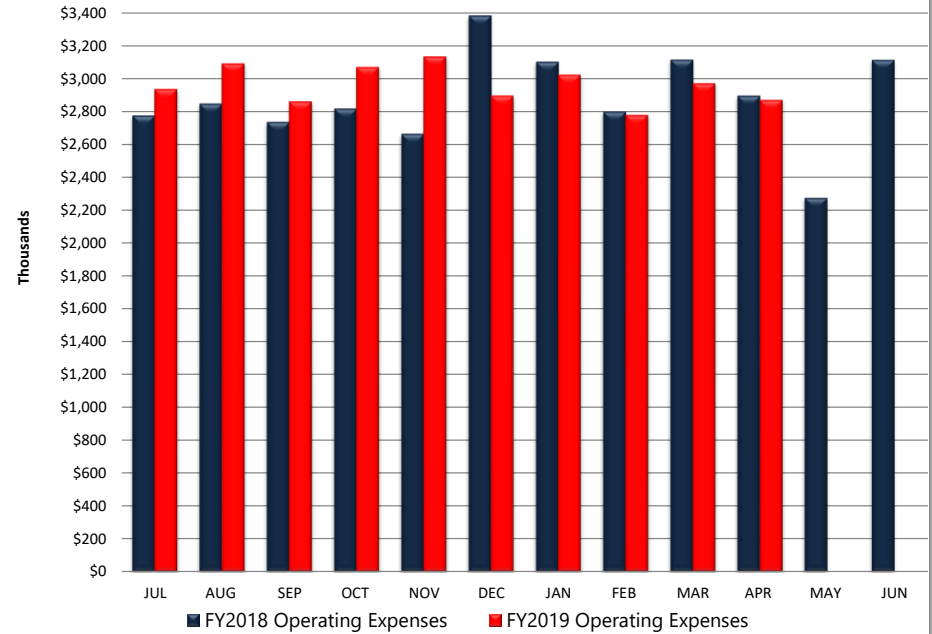
May 23, 2019

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
FY2018 Operating Revenue	\$493,748	\$659,475	\$885,352	\$924,676	\$844,802	\$718,583	\$741,955	\$828,737	\$855,026	\$839,891	\$655,141	\$494,560
FY2019 Operating Revenue	\$456,679	\$661,960	\$804,652	\$875,413	\$758,843	\$781,813	\$770,361	\$841,929	\$834,975	\$857,210		
FY2018 Operating Expenses	\$2,775,054	\$2,847,097	\$2,736,279	\$2,816,664	\$2,662,961	\$3,383,287	\$3,102,152	\$2,797,727	\$3,114,048	\$2,894,870	\$2,272,841	\$3,113,331
FY2019 Operating Expenses	\$2,936,660	\$3,091,733	\$2,862,044	\$3,070,492	\$3,134,232	\$2,896,837	\$3,023,403	\$2,779,377	\$2,971,048	\$2,870,550		
FY2018 Operating Ratio	17.79%	23.16%	32.36%	32.83%	31.72%	21.24%	23.92%	29.62%	27.46%	29.01%	28.82%	15.89%
FY2019 Operating Ratio	15.55%	21.41%	28.11%	28.51%	24.21%	26.99%	25.48%	30.29%	28.10%	29.86%		

Champaign-Urbana Mass Transit District
Comparison of FY2019 vs. FY2018
Operating Revenue



Champaign-Urbana Mass Transit District
Comparison of FY2019 vs. FY2018
Operating Expenses



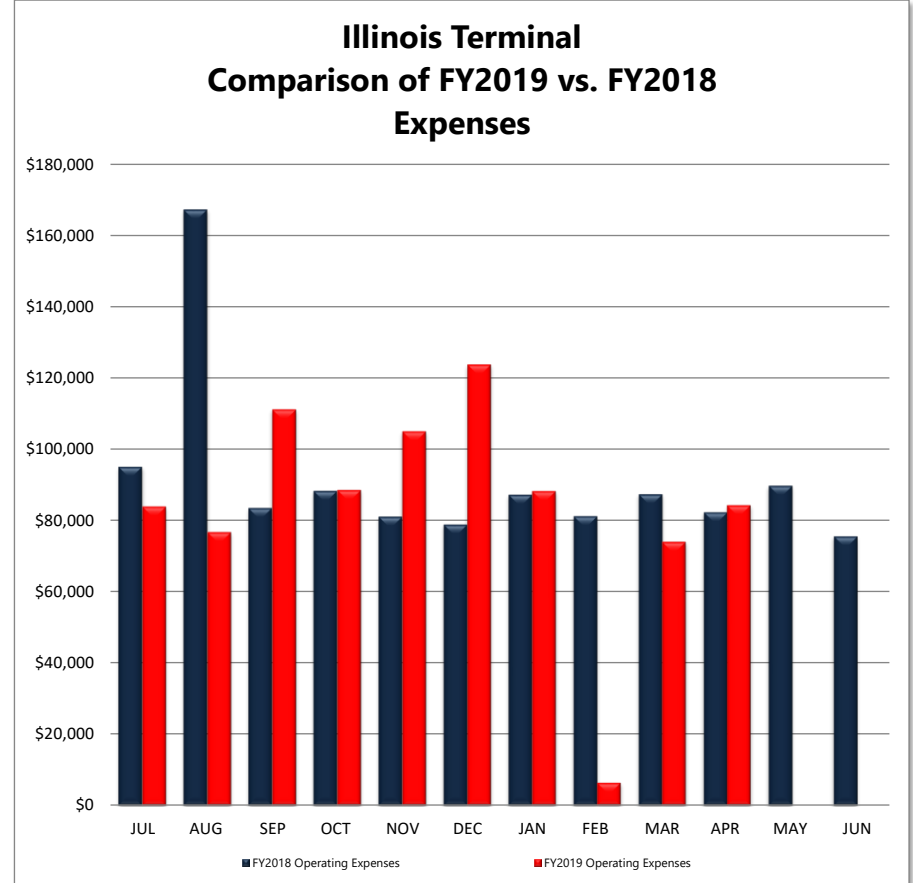
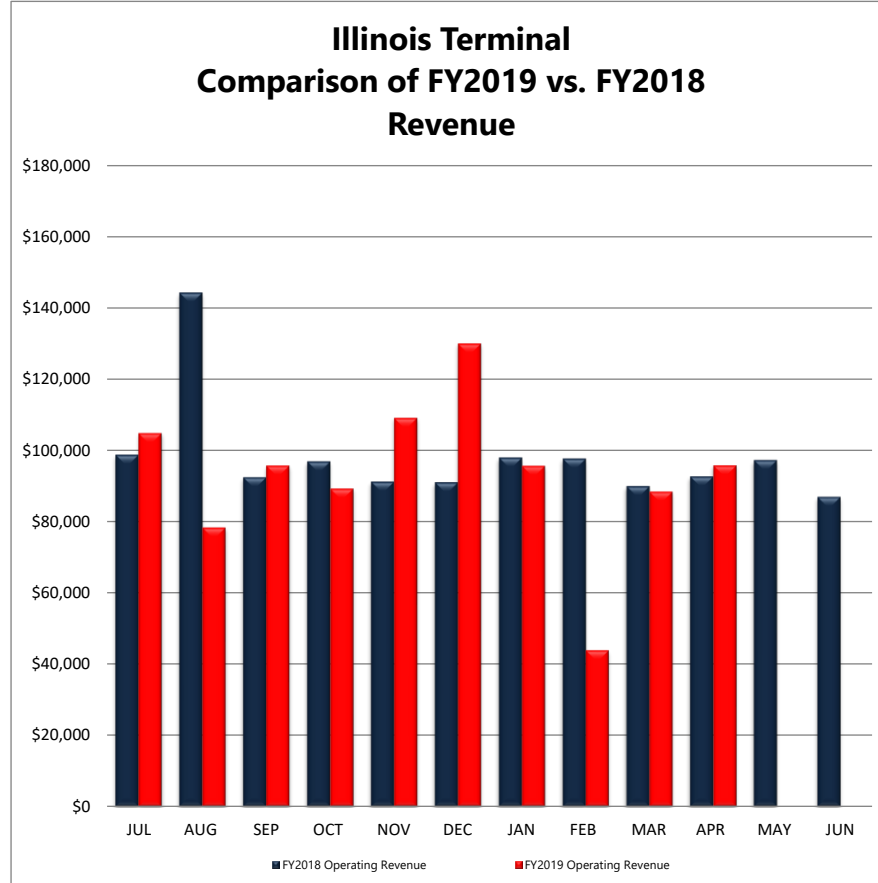
Champaign-Urbana Mass Transit District

Illinois Terminal

Comparison of FY2019 vs FY2018 Revenue and Expenses

May 23, 2019

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Last 12 Months
FY2018 Operating Revenue	\$98,678	\$144,131	\$92,338	\$96,825	\$91,134	\$90,970	\$97,915	\$97,623	\$89,888	\$92,618	\$97,194	\$86,863	Revenue
FY2019 Operating Revenue	\$104,815	\$78,390	\$95,733	\$89,298	\$109,118	\$129,955	\$95,655	\$43,921	\$88,422	\$95,772			\$1,115,136
FY2018 Operating Expense	\$95,062	\$167,281	\$83,524	\$88,337	\$81,114	\$78,855	\$87,254	\$81,207	\$87,387	\$82,312	\$89,792	\$75,562	Expenses
FY2019 Operating Expense	\$83,942	\$76,740	\$111,151	\$88,570	\$105,039	\$123,719	\$88,284	\$6,433	\$74,072	\$84,312			\$1,007,615
FY2018 Operating Ratio	103.8%	86.2%	110.6%	109.6%	112.4%	115.4%	112.2%	120.2%	102.9%	112.5%	108.2%	115.0%	Ratio
FY2019 Operating Ratio	124.9%	102.2%	86.1%	100.8%	103.9%	105.0%	108.4%	682.7%	119.4%	113.6%			110.7%



HOURS	Apr 2018	Apr 2019	% Change	FY2018 to Date	FY2019 to Date	% Change
Passenger Revenue	24,089.06	25,880.99	7.4%	228,614.69	235,923.09	3.2%
Vacation/Holiday/Earned Time	4,502.42	4,148.64	-7.9%	66,035.79	68,697.26	4.0%
Non-Revenue	6,662.44	9,566.96	43.6%	61,601.60	72,003.02	16.9%
TOTAL	35,253.92	39,596.59	12.32%	356,252.08	376,623.37	5.72%

REVENUE/EXPENSES	Apr 2018	Apr 2019	% Change	FY2018 to Date	FY2019 to Date	% Change
Operating Revenue	\$839,891.37	\$857,210.44	2.1%	\$7,792,245.72	\$7,643,836.54	-1.9%
Operating Expenses	\$2,894,869.71	\$2,870,550.49	-0.8%	\$29,130,138.78	\$29,636,377.22	1.7%
Operating Ratio	29.01%	29.86%	2.9%	26.75%	25.79%	-3.6%
Passenger Revenue/Revenue Vehicle Hour	\$27.91	\$24.92	-10.7%	\$26.37	\$24.50	-7.1%

RIDERSHIP	Apr 2018	Apr 2019	% Change	FY2018 to Date	FY2019 to Date	% Change
Revenue Passenger	1,270,159	1,180,488	-7.1%	10,936,955	10,819,364	-1.1%
Transfers	11,262	12,089	7.3%	119,926	125,599	4.7%
Total Unlinked	1,281,421	1,192,577	-6.9%	10,309,766	10,472,528	1.6%
ADA Riders	9,811	9,893	0.8%	84,771	84,962	0.2%
Half Fare Cab	1,192	1,133	-4.9%	13,177	11,869	-9.9%
TOTAL	1,292,424	1,203,603	-6.87%	10,407,714	10,569,359	1.55%

PASSENGERS/REVENUE HOUR	Apr 2018	Apr 2019	% Change	FY2018 to Date	FY2019 to Date	% Change
Hour	53.20	46.08	-13.4%	45.10	44.39	-1.6%

Champaign Urbana Mass Transit District

Budget Analysis Report

From Fiscal Year: 2019 Thru Fiscal Year: 2019		From Period 10 Thru Period 10		Division: 00 Champaign Urbana Mass Transit District			As of: 5/22/2019	
Apr-2019	Budget This Period	Apr-2018	Act/Bgt Var %		Actual Ytd	Jul-2018 thru Apr-2019 Budget Ytd	Last Ytd	Act/Bgt Var %
***** R E V E N U E *****								
** TRANSPORTATION REVENUE								
* PASSENGER FARES								
50,830.40	56,250.00	51,765.90	-9.63%	FULL ADULT FARES	520,797.27	562,500.00	514,479.88	-7.41%
1,041.00	1,500.00	1,047.00	-30.60%	STUDENT FARES	10,484.26	15,000.00	11,872.00	-30.10%
0.00	0.00	-18.00	0.00%	FARE REFUNDS	-85.61	0.00	-40.00	-100.00%
15,585.93	16,666.67	15,253.58	-6.48%	ANNUAL PASS REVENUE	162,735.25	166,666.70	146,508.82	-2.36%
5,850.05	7,083.33	6,188.75	-17.41%	HALF FARE CAB	61,613.63	70,833.30	66,347.04	-13.02%
3,831.00	4,166.67	3,684.00	-8.06%	ADA TICKETS & FARES	34,456.00	41,666.70	37,980.00	-17.31%
77,138.38	85,666.67	77,921.23	-9.96%	* TOTAL PASSENGER FARES	790,000.80	856,666.70	777,147.74	-7.78%
567,901.46	458,333.33	594,339.88	23.91%	U OF I CAMPUS SERVICE	4,991,212.05	4,583,333.30	5,251,950.27	8.90%
25,511.67	19,583.33	20,299.66	30.27%	ADA - U I & DSC CONTRACTS	264,337.70	195,833.30	202,996.60	34.98%
76,752.00	60,555.56	62,214.00	26.75%	SCHOOL SERVICE FARES	614,016.00	484,444.48	497,827.00	26.75%
2,142.80	0.00	1,778.50	100.00%	I.T. COMMISSIONS	19,771.78	0.00	25,839.01	100.00%
15,614.29	25,000.00	27,155.54	-37.54%	ADVERTISING REVENUE	188,740.35	250,000.00	254,255.75	-24.50%
765,060.60	649,138.89	783,708.81	17.86%	** TOTAL TRANSPORTATION REVENUE	6,868,078.68	6,370,277.78	7,010,016.37	7.81%
** NON - TRANSPORTATION REVENUES								
3,173.85	2,500.00	2,190.51	26.95%	SALE OF MAINTENANCE SERVICES	20,258.85	25,000.00	46,082.13	-18.96%
0.00	0.00	0.00	0.00%	RENTAL OF REVENUE VEHICLES	0.00	0.00	0.00	0.00%
39,613.81	29,925.00	39,059.44	32.38%	BUILDING RENTAL - IL TERMINAL	391,817.77	299,250.00	383,127.76	30.93%
2,001.05	17,575.00	1,336.96	-88.61%	BUILDING RENTAL - 801 & 1101	20,010.50	175,750.00	229,695.26	-88.61%
31,068.53	8,333.33	13,727.34	272.82%	INVESTMENT INCOME	199,142.91	83,333.30	123,444.87	138.97%
8,671.74	0.00	-7,475.60	100.00%	+/- FAIR VALUE OF INVESTMENT	68,178.87	0.00	-47,933.77	100.00%
23.49	0.00	51.50	100.00%	OVER OR SHORT	917.60	0.00	46.35	100.00%
3,300.50	0.00	0.00	100.00%	GAIN ON FIXED ASSET DISPOSAL	33,858.50	0.00	3,941.00	100.00%
4,296.87	0.00	7,292.41	100.00%	OTHER NONTRANS. REVENUES	41,572.86	0.00	43,825.75	100.00%
92,149.84	58,333.33	56,182.56	57.97%	** TOTAL NON - TRANSPORTATION REV.	775,757.86	583,333.30	782,229.35	32.99%
857,210.44	707,472.22	839,891.37	21.17%	*** TOTAL TRANS & NON - TRANS REV.	7,643,836.54	6,953,611.08	7,792,245.72	9.93%

Champaign Urbana Mass Transit District

Budget Analysis Report

From Fiscal Year: 2019		From Period 10		Division: 00 Champaign Urbana Mass Transit District				As of: 5/22/2019	
Thru Fiscal Year: 2019		Thru Period 10							
Apr-2019	Budget This Period	Apr-2018	Act/Bgt Var %		Actual Ytd	Jul-2018 thru Apr-2019 Budget Ytd	Last Ytd	Act/Bgt Var %	
** TAXES LEVIED DIRECTLY									
675,000.00	666,666.67	650,000.00	1.25%	PROPERTY TAX REVENUE	6,750,311.49	6,666,666.70	6,483,333.33	1.25%	
0.00	0.00	0.00	0.00%	PROPERTY TAX - UNCOLLECTIBLE RSRV	0.00	0.00	0.00	0.00%	
56,996.95	32,177.85	40,563.93	77.13%	REPLACEMENT TAX REVENUE	176,755.61	91,642.39	115,525.94	92.88%	
0.00	0.00	0.00	0.00%	MISCELLANEOUS PROPERTY TAXES	47,008.64	0.00	16,498.51	100.00%	
** STATE GRANTS & REIMBURSEMENTS									
1,868,836.71	2,950,000.00	1,658,087.86	-36.65%	OPERATING ASSISTANCE - STATE	19,776,718.43	29,500,000.00	21,233,686.02	-32.96%	
0.00	0.00	0.00	0.00%	CAPITAL GRANTS - STATE	339,051.00	0.00	0.00	100.00%	
0.00	0.00	0.00	0.00%	CAPITAL GRANTS - STATE - PASS THRU	0.00	0.00	0.00	0.00%	
0.00	0.00	0.00	0.00%	COUNTY REIMBURSEMENTS	0.00	0.00	0.00	0.00%	
0.00	0.00	0.00	0.00%	STATE REIMBURSEMENTS	0.00	0.00	5,445.03	0.00%	
0.00	0.00	0.00	0.00%	STATE REIMB - PASS THRU'S	0.00	0.00	0.00	0.00%	
** FEDERAL GRANTS & REIMBURSEMNT									
0.00	0.00	0.00	0.00%	OPERATING ASSISTANCE - FEDERAL	0.00	0.00	0.00	0.00%	
586,889.78	0.00	79,954.03	100.00%	CAPITAL GRANTS - FEDERAL	1,814,881.00	0.00	1,014,352.25	100.00%	
0.00	0.00	0.00	0.00%	FEDERAL GRANT PASS THROUGH \$'S	0.00	0.00	-36,714.40	0.00%	
0.00	0.00	0.00	0.00%	FEDERAL REIMBURSEMENTS	0.00	0.00	0.00	0.00%	
0.00	0.00	0.00	0.00%	OTHER SOURCES/SUBSIDIES (PTA \$)	0.00	0.00	0.00	0.00%	
4,044,933.88	4,356,316.74	3,268,497.19	-7.15%	**** TOTAL REVENUE ****	36,548,562.71	43,211,920.17	36,624,372.40	-15.42%	

Champaign Urbana Mass Transit District

Budget Analysis Report

From Fiscal Year: 2019		From Period 10		Division: 00 Champaign Urbana Mass Transit District			As of: 5/22/2019	
Thru Fiscal Year: 2019		Thru Period 10						
Apr-2019	Budget This Period	Apr-2018	Act/Bgt Var %		Actual Ytd	Jul-2018 thru Apr-2019 Budget Ytd	Last Ytd	Act/Bgt Var %
***** EXPENSES *****								
** LABOR								
862,677.84	851,945.16	788,500.23	1.26%	OPERATORS WAGES	7,830,736.44	8,069,425.07	7,468,489.53	-2.96%
95,959.19	125,000.00	93,401.76	-23.23%	MECHANICS WAGES - MAINT	927,969.78	1,250,000.00	948,538.28	-25.76%
63,994.11	70,833.33	56,673.75	-9.66%	MAINTENANCE WAGES - MAINT	618,385.46	708,333.30	553,482.93	-12.70%
88,769.44	93,416.67	88,921.91	-4.97%	SUPERVISORS SALARIES - OPS	958,609.42	934,166.70	925,132.19	2.62%
12,673.51	23,416.67	13,378.20	-45.88%	SUPERVISORS SALARIES - MAINT	152,778.69	234,166.70	148,379.54	-34.76%
35,996.70	69,083.33	49,816.40	-47.89%	OVERHEAD SALARIES - OPS	585,337.78	690,833.30	564,252.66	-15.27%
28,865.52	24,666.67	25,883.60	17.02%	OVERHEAD SALARIES - MAINT	335,494.19	246,666.70	249,199.14	36.01%
94,030.64	104,166.67	83,861.19	-9.73%	OVERHEAD SALARIES - G&A	1,007,851.96	1,041,666.70	908,970.10	-3.25%
4,269.20	4,666.67	5,786.34	-8.52%	OVERHEAD SALARIES - IT	48,028.52	46,666.70	83,017.56	2.92%
19,484.18	22,916.67	20,549.51	-14.98%	CLERICAL WAGES - OPS	239,945.53	229,166.70	219,596.62	4.70%
3,275.79	4,166.67	3,803.19	-21.38%	CLERICAL WAGES - MAINT	35,822.40	41,666.70	42,249.18	-14.03%
20,242.43	25,000.00	10,896.60	-19.03%	CLERICAL WAGES - G&A	190,616.01	250,000.00	147,067.35	-23.75%
9,507.21	9,666.67	7,192.11	-1.65%	CLERICAL WAGES - IT	93,302.40	96,666.70	72,718.98	-3.48%
12,726.69	16,250.00	9,713.69	-21.68%	SECURITY WAGES - IT	129,712.00	162,500.00	98,573.89	-20.18%
-5,038.11	0.00	-2,482.31	-100.00%	LABOR CREDIT - OPS	-39,134.62	0.00	-32,999.02	-100.00%
-3,251.22	0.00	-4,012.01	-100.00%	LABOR CREDIT - MAINT	-36,876.84	0.00	-42,314.24	-100.00%
-1,069.85	0.00	-3,413.83	-100.00%	LABOR CREDIT - G&A	-10,027.27	0.00	-11,828.92	-100.00%
7,274.45	11,666.67	9,048.13	-37.65%	MAINTENANCE WAGES - IT	73,987.25	116,666.70	107,822.98	-36.58%
1,350,387.72	1,456,861.85	1,257,518.46	-7.31%	** TOTAL LABOR	13,142,539.10	14,118,591.97	12,450,348.75	-6.91%
** FRINGE BENEFITS								
75,669.84	89,678.44	76,217.21	-15.62%	FICA - OPS	836,383.13	849,413.15	796,339.30	-1.53%
15,984.65	18,750.00	16,191.14	-14.75%	FICA - MAINT	178,986.87	187,500.00	174,184.56	-4.54%
7,195.68	7,083.33	6,337.16	1.59%	FICA - G&A	73,082.40	70,833.30	68,611.47	3.18%
2,591.73	3,333.33	2,908.88	-22.25%	FICA - IT	37,467.42	33,333.30	29,580.62	12.40%
114,645.44	248,857.67	119,101.38	-53.93%	IMRF - OPS	1,280,244.80	2,357,121.54	1,431,393.27	-45.69%
23,395.63	47,916.67	24,942.51	-51.17%	IMRF - MAINT	299,557.71	479,166.70	369,173.16	-37.48%
10,753.03	18,750.00	10,764.91	-42.65%	IMRF - G&A	198,495.15	187,500.00	129,577.31	5.86%
3,747.64	10,416.67	4,120.98	-64.02%	IMRF - IT	42,016.31	104,166.70	48,282.93	-59.66%
231,480.31	231,250.00	222,151.30	0.10%	MEDICAL INSURANCE - OPS	2,313,093.17	2,312,500.00	2,274,850.37	0.03%
52,714.40	54,166.67	52,367.99	-2.68%	MEDICAL INSURANCE - MAINT	527,557.27	541,666.70	512,159.73	-2.60%
25,742.55	24,583.33	21,211.50	4.72%	MEDICAL INSURANCE - G&A	228,189.37	245,833.30	228,064.78	-7.18%
11,626.63	13,750.00	12,101.35	-15.44%	MEDICAL INSURANCE - IT	126,303.75	137,500.00	135,311.04	-8.14%

Champaign Urbana Mass Transit District

Budget Analysis Report

From Fiscal Year: 2019		From Period 10		Division: 00 Champaign Urbana Mass Transit District				As of: 5/22/2019	
Thru Fiscal Year: 2019		Thru Period 10							
Apr-2019	Budget This Period	Apr-2018	Act/Bgt Var %		Jul-2018 thru Apr-2019			Act/Bgt Var %	
					Actual Ytd	Budget Ytd	Last Ytd		
0.00	0.00	0.00	0.00%	DENTAL INSURANCE - OPS	0.00	0.00	0.00	0.00%	
0.00	0.00	0.00	0.00%	DENTAL INSURANCE - MAINT	0.00	0.00	0.00	0.00%	
0.00	0.00	0.00	0.00%	DENTAL INSURANCE - G&A	0.00	0.00	0.00	0.00%	
2,685.44	1,666.67	5,322.98	61.13%	LIFE INSURANCE - OPS	24,388.96	16,666.70	24,734.03	46.33%	
392.79	666.67	1,403.60	-41.08%	LIFE INSURANCE - MAINT	5,236.07	6,666.70	6,874.86	-21.46%	
69.12	583.33	571.49	-88.15%	LIFE INSURANCE - G&A	1,637.16	5,833.30	4,270.43	-71.93%	
3.10	0.00	172.24	100.00%	LIFE INSURANCE - IT	1,229.16	0.00	1,078.11	100.00%	
0.00	0.00	0.00	0.00%	OPEB EXPENSE - OPS	0.00	0.00	0.00	0.00%	
0.00	0.00	0.00	0.00%	OPEB EXPENSE - MAINT	0.00	0.00	0.00	0.00%	
0.00	0.00	0.00	0.00%	OPEB EXPENSE - G&A	0.00	0.00	0.00	0.00%	
0.00	0.00	0.00	0.00%	OPEB EXPENSE - IT	0.00	0.00	0.00	0.00%	
0.00	0.00	0.00	0.00%	UNEMPLOYMENT INSURANCE - OPS	34,537.43	37,500.00	26,655.78	-7.90%	
0.00	0.00	0.00	0.00%	UNEMPLOYMENT INSURANCE - MAINT	6,783.68	7,500.00	5,572.65	-9.55%	
0.00	0.00	0.00	0.00%	UNEMPLOYMENT INSURANCE - G&A	3,429.07	2,250.00	1,766.69	52.40%	
0.00	0.00	0.00	0.00%	UNEMPLOYMENT INSURANCE - IT	1,750.64	2,250.00	1,254.82	-22.19%	
4,884.61	12,583.33	5,066.37	-61.18%	WORKERS COMP INSURANCE - OPS	81,853.58	125,833.30	78,231.87	-34.95%	
1,182.49	18,833.33	5,209.56	-93.72%	WORKERS COMP INSURANCE - MAINT	18,976.40	188,333.30	223,673.96	-89.92%	
363.62	416.67	363.62	-12.73%	WORKERS COMP INSURANCE - G&A	3,685.27	4,166.70	3,665.59	-11.55%	
140.97	2,083.33	2,368.25	-93.23%	WORKERS COMP INSURANCE - IT	-47,219.21	20,833.30	20,230.23	-326.65%	
14,273.28	14,217.07	13,705.04	0.40%	HOLIDAYS - OPS	151,033.28	156,653.84	151,011.92	-3.59%	
4,510.08	3,091.89	3,810.16	45.87%	HOLIDAYS - MAINT	44,279.92	34,604.59	42,643.44	27.96%	
0.00	571.43	0.00	-100.00%	HOLIDAYS - G&A	0.00	3,428.58	916.80	-100.00%	
570.32	0.00	259.52	100.00%	HOLIDAYS - IT	5,046.96	0.00	2,081.68	100.00%	
18,024.83	44,391.92	15,702.64	-59.40%	VACATIONS - OPS	462,624.96	443,919.20	421,028.87	4.21%	
3,672.80	13,583.33	7,930.64	-72.96%	VACATIONS - MAINT	107,956.99	135,833.30	118,509.76	-20.52%	
0.00	0.00	0.00	0.00%	VACATION - G&A	0.00	0.00	916.80	0.00%	
0.00	666.67	0.00	-100.00%	VACATIONS - IT	5,452.00	6,666.70	7,172.40	-18.22%	
3,430.38	2,958.42	1,823.84	15.95%	OTHER PAID ABSENCES - OPS	56,089.55	29,584.20	33,353.07	89.59%	
2,077.04	1,000.00	522.64	107.70%	OTHER PAID ABSENCES - MAINT	8,085.12	10,000.00	6,660.96	-19.15%	
0.00	0.00	0.00	0.00%	OTHER PAID ABSENCES - G&A	0.00	0.00	183.36	0.00%	
0.00	250.00	0.00	-100.00%	OTHER PAID ABSENCES - IT	175.76	2,500.00	321.36	-92.97%	
1,315.11	3,750.00	1,578.25	-64.93%	UNIFORM ALLOWANCES - OPS	25,461.93	37,500.00	28,008.94	-32.10%	
1,837.12	2,500.00	655.58	-26.52%	UNIFORM ALLOWANCES - MAINT	11,992.99	25,000.00	7,977.39	-52.03%	
164.50	416.67	85.35	-60.52%	UNIFORM ALLOWANCES - IT	2,085.01	4,166.70	1,578.15	-49.96%	
2,333.15	1,666.67	2,961.69	39.99%	OTHER FRINGE BENEFITS - OPS	12,631.27	16,666.70	9,028.38	-24.21%	
401.65	833.33	565.28	-51.80%	OTHER FRINGE BENEFITS - MAINT	13,455.43	8,333.30	7,767.99	61.47%	
3,223.91	4,250.00	2,461.15	-24.14%	OTHER FRINGE BENEFITS - G&A	38,750.21	42,500.00	29,919.44	-8.82%	
136.53	1,250.00	192.15	-89.08%	OTHER FRINGE BENEFITS - IT	1,013.26	12,500.00	564.37	-91.89%	

Champaign Urbana Mass Transit District

Budget Analysis Report

From Fiscal Year: 2019		From Period 10		Division: 00 Champaign Urbana Mass Transit District			As of: 5/22/2019	
Thru Fiscal Year: 2019		Thru Period 10						
Apr-2019	Budget This Period	Apr-2018	Act/Bgt Var %		Actual Ytd	Jul-2018 thru Apr-2019 Budget Ytd	Last Ytd	Act/Bgt Var %
76,897.78	135,299.83	92,216.50	-43.16%	EARNED TIME - OPS	1,288,045.11	1,352,998.30	1,211,371.87	-4.80%
16,403.73	18,750.00	17,415.14	-12.51%	EARNED TIME - MAINT	215,299.10	187,500.00	198,491.76	14.83%
1,421.16	833.33	4,380.76	70.54%	EARNED TIME - IT	24,421.11	8,333.30	24,074.58	193.05%
0.00	833.33	0.00	-100.00%	TOOL ALLOWANCE - MAINT	10,875.00	8,333.30	9,998.42	30.50%
4,235.70	2,958.42	1,099.21	43.17%	DISABILITY - OPS	21,904.62	29,584.20	38,814.50	-25.96%
0.00	583.33	0.00	-100.00%	DISABILITY - MAINT	1,828.81	5,833.30	0.00	-68.65%
0.00	0.00	0.00	0.00%	DISABILITY - IT	0.00	0.00	0.00	0.00%
0.00	0.00	0.00	0.00%	WORKERS COMP - PAYROLL - OPS	0.00	0.00	640.26	0.00%
0.00	0.00	0.00	0.00%	WORKERS COMP - PAYROLL - MAINT	518.33	0.00	2,716.71	100.00%
0.00	0.00	0.00	0.00%	WORKERS COMP - PAYROLL - IT	0.00	0.00	0.00	0.00%
0.00	8,333.33	-82,554.00	-100.00%	EARLY RETIREMENT PLAN - OPS	78,722.00	83,333.30	163,687.00	-5.53%
736.00	0.00	0.00	100.00%	EARLY RETIREMENT PLAN - MAINT	736.00	0.00	94,565.00	100.00%
0.00	0.00	0.00	0.00%	EARLY RETIREMENT PLAN - G&A	0.00	0.00	9,828.00	0.00%
0.00	0.00	0.00	0.00%	EARLY RETIREMENT PLAN - IT	0.00	0.00	0.00	0.00%
740,934.74	1,068,358.41	673,705.96	-30.65%	** TOTAL FRINGE BENEFITS	8,866,150.28	10,570,140.80	9,219,370.74	-16.12%
** SERVICES								
8,488.68	54,166.67	4,049.58	-84.33%	PROFESSIONAL SERVICES - G&A	280,860.62	541,666.70	411,108.83	-48.15%
0.00	250.00	1,372.50	-100.00%	PROFESSIONAL SERVICES - IT	938.91	2,500.00	2,067.64	-62.44%
0.00	0.00	0.00	0.00%	PROFESSIONAL SERVICES - IT - NON REIMB	25.00	0.00	0.00	100.00%
3,300.00	16,666.67	241,525.48	-80.20%	PROFESSIONAL SERVICES - G&A - NON REIMB	86,946.08	166,666.70	602,329.89	-47.83%
0.00	0.00	0.00	0.00%	TEMPORARY HELP - MAINT	0.00	0.00	0.00	0.00%
17,611.49	0.00	69,741.68	100.00%	TEMPORARY HELP - G&A	51,932.74	0.00	69,741.68	100.00%
17,729.52	0.00	365.57	100.00%	CONTRACT MAINTENANCE - OPS	146,144.92	0.00	8,444.95	100.00%
7,350.07	6,666.67	7,028.69	10.25%	CONTRACT MAINTENANCE - MAINT	89,249.30	66,666.70	76,520.35	33.87%
46,847.03	41,666.67	57,106.26	12.43%	CONTRACT MAINTENANCE - G&A	464,370.65	416,666.70	392,679.70	11.45%
2,115.07	3,333.33	1,227.48	-36.55%	CONTRACT MAINTENANCE - IT	25,481.59	33,333.30	25,838.32	-23.56%
0.00	0.00	0.00	0.00%	CONTRACT MAINTENANCE - IT - NON REIMB	0.00	0.00	0.00	0.00%
0.00	0.00	0.00	0.00%	CUSTODIAL SERVICES - MAINT	0.00	0.00	0.00	0.00%
2,119.50	4,166.67	6,869.37	-49.13%	PRINTING SERVICES - OPS	25,898.89	41,666.70	56,342.27	-37.84%
0.00	83.33	85.50	-100.00%	PRINTING SERVICES - MAINT	0.00	833.30	1,070.50	-100.00%
1,138.02	0.00	1,066.96	100.00%	PRINTING SERVICES - G&A	2,963.46	0.00	2,155.01	100.00%
0.00	0.00	85.50	0.00%	PRINTING SERVICES - IT	0.00	0.00	311.15	0.00%
0.00	0.00	0.00	0.00%	PRINTING SERVICES - IT - NON REIMB	0.00	0.00	0.00	0.00%
719.67	2,500.00	2,131.90	-71.21%	OTHER SERVICES - OPS	26,307.97	25,000.00	12,386.77	5.23%
0.00	583.33	0.00	-100.00%	OTHER SERVICES - MAINT	0.00	5,833.30	394.61	-100.00%

Champaign Urbana Mass Transit District Budget Analysis Report

From Fiscal Year: 2019		From Period 10		Division: 00 Champaign Urbana Mass Transit District				As of: 5/22/2019	
Thru Fiscal Year: 2019		Thru Period 10							
Apr-2019	Budget This Period	Apr-2018	Act/Bgt Var %		Actual Ytd	Jul-2018 thru Apr-2019 Budget Ytd	Last Ytd	Act/Bgt Var %	
10,856.84	3,333.33	872.50	225.71%	OTHER SERVICES - G&A	40,421.17	33,333.30	48,831.93	21.26%	
336.99	500.00	227.99	-32.60%	OTHER SERVICES - IT	1,914.92	5,000.00	2,929.85	-61.70%	
320.00	0.00	320.00	100.00%	OTHER SERVICES - IT - NON REIMB	320.00	0.00	3,218.37	100.00%	
0.00	0.00	0.00	0.00%	OTHER SERVICES - G&A - NON REIMB	0.00	0.00	0.00	0.00%	
118,932.88	133,916.67	394,076.96	-11.19%	** TOTAL SERVICES	1,243,776.22	1,339,166.70	1,716,371.82	-7.12%	

Champaign Urbana Mass Transit District

Budget Analysis Report

From Fiscal Year: 2019		From Period 10		Division: 00 Champaign Urbana Mass Transit District			As of: 5/22/2019	
Thru Fiscal Year: 2019		Thru Period 10						
Apr-2019	Budget This Period	Apr-2018	Act/Bgt Var %		Actual Ytd	Jul-2018 thru Apr-2019 Budget Ytd	Last Ytd	Act/Bgt Var %
***** E X P E N S E S *****								
** MATERIALS & SUPPLIES CONSUMED								
138,526.94	229,166.67	136,508.01	-39.55%	FUEL & LUBRICANTS - OPS	1,331,332.59	2,291,666.70	1,222,077.56	-41.91%
10,713.26	9,166.67	7,759.51	16.87%	FUEL & LUBRICANTS - MAINT	85,865.53	91,666.70	86,317.30	-6.33%
11,884.46	11,583.33	12,328.31	2.60%	TIRES & TUBES - OPS - MB DO	118,898.97	115,833.30	118,840.27	2.65%
609.72	916.67	323.36	-33.49%	TIRES & TUBES - MAINT - DR DO	3,317.72	9,166.70	9,321.84	-63.81%
0.00	0.00	0.00	0.00%	TIRES & TUBES - NON REVENUE VEHICLES	0.00	0.00	0.00	0.00%
4,311.68	3,333.33	222.41	29.35%	GARAGE EQUIPMENT - REPAIRS - MAINT	46,130.31	33,333.30	37,157.40	38.39%
27,330.50	8,333.33	8,737.85	227.97%	BLDG & GROUND REPAIRS - MAINT - 803	118,316.06	83,333.30	65,455.36	41.98%
6,917.42	5,000.00	1,646.00	38.35%	BLDG & GROUND REPAIRS - MAINT - 1101	20,744.99	50,000.00	29,853.27	-58.51%
6,518.37	13,333.33	10,118.87	-51.11%	BLDG & GROUND REPAIRS - IT	96,698.29	133,333.30	106,923.94	-27.48%
107.00	0.00	326.45	100.00%	BLDG & GROUND REPAIRS - IT - NON REIMB	4,833.62	0.00	9,381.50	100.00%
0.00	5,000.00	0.00	-100.00%	BLDG & GROUND REPAIRS - G&A - NON REIMB	1,089.55	50,000.00	879.00	-97.82%
0.00	0.00	0.00	0.00%	REVENUE VEHICLE REPAIRS - CORE RETURNS	180.10	0.00	-15,891.77	100.00%
104,068.98	158,333.33	117,496.44	-34.27%	REVENUE VEHICLES - REPAIRS	1,405,606.72	1,583,333.30	1,290,707.47	-11.22%
455.90	1,666.67	2,690.32	-72.65%	NON REVENUE VEHICLES - REPAIRS	12,302.13	16,666.70	13,607.10	-26.19%
4,309.84	4,583.33	6,383.54	-5.97%	SERVICE SUPPLIES - MAINT	44,487.31	45,833.30	49,498.23	-2.94%
1,725.64	2,083.33	1,475.54	-17.17%	SERVICE SUPPLIES - IT	19,119.95	20,833.30	16,379.31	-8.22%
796.46	2,500.00	747.17	-68.14%	OFFICE SUPPLIES - OPS	11,249.84	25,000.00	13,299.65	-55.00%
49.96	2,500.00	677.80	-98.00%	OFFICE SUPPLIES - MAINT	4,317.69	25,000.00	6,206.22	-82.73%
614.25	1,250.00	228.14	-50.86%	OFFICE SUPPLIES - G&A	6,896.35	12,500.00	7,291.21	-44.83%
60.54	1,250.00	87.14	-95.16%	OFFICE SUPPLIES - IT	4,411.36	12,500.00	2,223.29	-64.71%
0.00	0.00	0.00	0.00%	COMPUTER & SERVER - MISC EXP'S - OPS	10,460.52	0.00	9,507.28	100.00%
0.00	0.00	1,045.48	0.00%	COMPUTER & SERVER - MISC EXP'S - MAINT	1,787.64	0.00	9,854.02	100.00%
1,290.37	0.00	942.88	100.00%	COMPUTER & SERVER - MISC EXP'S - G&A	84,892.87	0.00	25,375.38	100.00%
0.00	0.00	1,653.75	0.00%	COMPUTER & SERVER - MISC EXP'S - IT	207.78	0.00	12,510.90	100.00%
660.41	0.00	0.00	100.00%	SAFETY & TRAINING	5,508.71	0.00	2,784.00	100.00%
0.00	0.00	0.00	0.00%	SAFETY & TRAINING - MAINT	1,422.33	0.00	7,500.00	100.00%
2,345.55	6,250.00	422.80	-62.47%	PASSENGER SHELTER - REPAIRS	31,237.99	62,500.00	35,366.04	-50.02%
0.00	3,750.00	0.00	-100.00%	SMALL TOOLS & EQUIP - OPS	1,042.18	37,500.00	2,050.32	-97.22%
553.95	5,000.00	351.57	-88.92%	SMALL TOOLS & EQUIP - MAINT	20,402.37	50,000.00	23,704.79	-59.20%
0.00	5,000.00	0.00	-100.00%	SMALL TOOLS & EQUIP - G&A	3,181.40	50,000.00	32,420.53	-93.64%
3,442.66	1,250.00	0.00	175.41%	SMALL TOOLS & EQUIP - IT	5,147.06	12,500.00	7,823.28	-58.82%
0.00	0.00	0.00	0.00%	SMALL TOOLS & EQUIP - IT - NON REIMB	10,463.85	0.00	1,275.49	100.00%
0.00	0.00	0.00	0.00%	SMALL TOOLS & EQUIP - G&A - NON REIMB	0.00	0.00	0.00	0.00%
0.00	0.00	0.00	0.00%	FAREBOX REPAIRS	0.00	0.00	0.00	0.00%
2,490.00	0.00	175.00	100.00%	CAD/AVL,CAMERA,RADIO REPAIRS - MAINT	52,176.38	0.00	48,350.98	100.00%

Champaign Urbana Mass Transit District Budget Analysis Report

From Fiscal Year: 2019 Thru Fiscal Year: 2019		From Period 10 Thru Period 10		Division: 00 Champaign Urbana Mass Transit District			As of: 5/22/2019		
Apr-2019	Budget This Period	Apr-2018	Act/Bgt Var %		Actual Ytd	Jul-2018 thru Apr-2019 Budget Ytd	Last Ytd	Act/Bgt Var %	
1,028.21	0.00	1,358.59	100.00%	ADA VEHICLE - REPAIRS - MAINT	9,674.90	0.00	33,046.06	100.00%	
330,812.07	481,249.99	313,706.93	-31.26%	** TOTAL MATERIAL & SUPPLIES	3,573,405.06	4,812,499.90	3,321,097.22	-25.75%	
63,979.92	18,933.48	19,544.27	237.92%	** UTILITIES - G&A	356,560.58	268,815.20	277,487.17	32.64%	
9,552.51	5,413.15	3,966.73	76.47%	** UTILITIES - IT	73,072.30	85,770.14	62,851.92	-14.80%	
4,990.72	1,079.69	2,003.99	362.24%	** UTILITIES - IT - NON REIMB	31,610.77	16,231.71	30,127.48	94.75%	
278.82	0.00	351.72	100.00%	** UTILITIES - G&A - NON REIMB	2,877.20	0.00	1,947.66	100.00%	
78,801.97	25,426.32	25,866.71	209.92%	**TOTAL UTILITIES	464,120.85	370,817.05	372,414.23	25.16%	
				** CASUALTY & LIABILITY COSTS					
4,236.41	4,583.33	4,414.55	-7.57%	PHYSICAL DAMAGE PREMIUMS - MAINT	40,680.11	45,833.30	41,496.05	-11.24%	
0.00	0.00	0.00	0.00%	PHYSICAL DAMAGE PREMIUMS - IT	0.00	0.00	0.00	0.00%	
-8,170.33	-2,083.33	-1,163.36	292.18%	PHYSICAL DAMAGE RECOVERIES - MAINT	-25,109.77	-20,833.30	-63,219.69	20.53%	
36,550.30	44,166.67	34,588.46	-17.24%	PL & PD INSURANCE PREMIUMS - G&A	368,504.62	441,666.70	346,438.72	-16.56%	
0.00	41,666.67	0.00	-100.00%	PL & PD INSURANCE PREMIUMS - IT	0.00	416,666.70	0.00	-100.00%	
43,617.24	0.00	40,066.36	100.00%	UNINSURED PL & PD PAYOUTS - G&A	430,991.58	0.00	398,817.50	100.00%	
4,758.12	0.00	2,461.46	100.00%	UNINSURED PL & PD PAYOUTS - G&A	28,069.20	0.00	24,614.60	100.00%	
80,991.74	88,333.34	80,367.47	-8.31%	** TOTAL CASUALTY & LIABILITY	843,135.74	883,333.40	748,147.18	-4.55%	
				** TAXES					
1,200.00	0.00	4,800.00	100.00%	PROPERTY TAXES	12,000.00	0.00	11,936.19	100.00%	
312.50	0.00	1,250.00	100.00%	PROPERTY TAXES - NON-REIMB	3,125.00	0.00	1,250.00	100.00%	
0.00	0.00	0.00	0.00%	VEHICLE LICENSING FEES - OPS	1,257.00	0.00	892.00	100.00%	
0.00	0.00	0.00	0.00%	VEHICLE LICENSING FEES - G&A	190.00	0.00	0.00	100.00%	
3,377.43	3,333.33	6,736.27	1.32%	FUEL TAX	30,731.21	33,333.30	30,286.34	-7.81%	

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Budget Analysis Report

From Fiscal Year: 2019 Thru Fiscal Year: 2019		From Period 10 Thru Period 10		Division: 00 Champaign Urbana Mass Transit District			As of: 5/22/2019	
Apr-2019	Budget This Period	Apr-2018	Act/Bgt Var %		Actual Ytd	Jul-2018 thru Apr-2019 Budget Ytd	Last Ytd	Act/Bgt Var %
4,889.93	3,333.33	12,786.27	46.70%	** TOTAL TAXES	47,303.21	33,333.30	44,364.53	41.91%
**** EXPENSES ****								
** PURCHASED TRANSPORTATION								
11,700.10	14,583.33	12,377.50	-19.77%	CABS	123,227.26	145,833.30	132,694.08	-15.50%
72,890.50	75,000.00	51,257.58	-2.81%	ADA CONTRACTS	728,905.00	750,000.00	512,575.80	-2.81%
84,590.60	89,583.33	63,635.08	-5.57%	**TOTAL PURCHASED TRANSPORTATION	852,132.26	895,833.30	645,269.88	-4.88%
** MISCELLANEOUS EXPENSES								
5,828.18	6,666.67	4,758.78	-12.58%	DUES & SUBSCRIPTIONS - G&A	68,367.61	66,666.70	65,501.57	2.55%
2,305.50	7,500.00	1,895.02	-69.26%	TRAVEL & MEETINGS - G&A	46,286.35	75,000.00	65,476.76	-38.28%
0.00	0.00	0.00	0.00%	BAD DEBT EXPENSE	0.00	0.00	0.00	0.00%
13,973.29	16,666.67	16,700.70	-16.16%	ADVERTISING EXPENSES - G&A	120,526.09	166,666.70	144,583.60	-27.68%
0.00	0.00	0.00	0.00%	ADVERTISING EXPENSES - IT	0.00	0.00	0.00	0.00%
1,150.00	666.67	1,250.00	72.50%	TRUSTEE COMPENSATION	3,550.00	6,666.70	5,000.00	-46.75%
0.00	666.67	61.69	-100.00%	POSTAGE	3,395.66	6,666.70	3,707.23	-49.07%
0.00	0.00	0.00	0.00%	LOSS/DISPOSAL FIXED ASSETS	0.00	0.00	0.00	0.00%
107.00	0.00	0.00	100.00%	ADVERTISING SERVICES EXPENSE	1,881.22	0.00	0.00	100.00%
1,050.00	0.00	1,284.30	100.00%	SUBSTANCE ABUSE PROGRAM	6,235.00	0.00	13,654.40	100.00%
2,667.44	1,500.00	1,462.67	77.83%	OTHER MISC EXPENSES - OPS	54,301.54	15,000.00	11,466.26	262.01%
207.75	1,000.00	25.00	-79.23%	OTHER MISC EXPENSES - MAINT	14,656.53	10,000.00	8,218.31	46.57%
4,358.18	9,416.67	4,318.87	-53.72%	OTHER MISC EXPENSES - G&A	51,197.78	94,166.70	26,210.77	-45.63%
204.25	916.67	233.50	-77.72%	OTHER MISC EXPENSES - IT	4,319.61	9,166.70	4,077.71	-52.88%
0.00	166.67	0.00	-100.00%	OTHER MISC EXPENSES - IT - NON REIMB	0.00	1,666.70	400.00	-100.00%
862.97	0.00	157.03	100.00%	OTHER MISC EXPENSES - G&A - NON REIMB	3,268.42	0.00	4,612.99	100.00%
22,085.08	0.00	7,261.31	100.00%	UNALLOCATED EXPENSES	22,085.08	0.00	7,261.31	100.00%
54,799.64	45,166.69	39,408.87	21.33%	** TOTAL MISCELLANEOUS EXPENSES	400,070.89	451,666.90	360,170.91	-11.42%
** EXPENSE TRANSFERS								
0.00	0.00	0.00	0.00%	** TOTAL EXPENSE TRANSFERS	0.00	0.00	0.00	0.00%

Champaign Urbana Mass Transit District

Budget Analysis Report

From Fiscal Year: 2019		From Period 10		Division: 00 Champaign Urbana Mass Transit District				As of: 5/22/2019	
Thru Fiscal Year: 2019		Thru Period 10							
Apr-2019	Budget This Period	Apr-2018	Act/Bgt Var %		Actual Ytd	Jul-2018 thru Apr-2019 Budget Ytd	Last Ytd	Act/Bgt Var %	
***** E X P E N S E S *****									
** INTEREST EXPENSES									
0.00	0.00	0.00	0.00%	INTEREST - LONG-TERM DEBTS	0.00	0.00	0.00	0.00%	
4,100.18	0.00	7,784.24	100.00%	INTEREST - SHORT-TERM DEBTS	67,175.65	0.00	132,183.65	100.00%	
4,100.18	0.00	7,784.24	100.00%	** TOTAL INTEREST	67,175.65	0.00	132,183.65	100.00%	
** LEASE & RENTALS									
0.00	1,666.67	0.00	-100.00%	PASSENGER REVENUE VEHICLES - OPS	0.00	16,666.70	0.00	-100.00%	
0.00	1,916.67	0.00	-100.00%	SERVICE VEHICLE LEASES	0.00	19,166.70	5,869.44	-100.00%	
2,725.64	4,500.00	2,651.00	-39.43%	GARAGE EQUIPMENT LEASES - MAINT	20,002.49	45,000.00	21,419.21	-55.55%	
0.00	0.00	0.00	0.00%	RADIO EQUIPMENT LEASES - OPS	0.00	0.00	0.00	0.00%	
0.00	0.00	0.00	0.00%	G.A. FACILITIES LEASES	0.00	0.00	0.00	0.00%	
11,516.39	0.00	20,264.53	100.00%	MISCELLANEOUS LEASES - OPS	116,410.59	0.00	103,932.90	100.00%	
119.53	0.00	1,360.58	100.00%	MISCELLANEOUS LEASES - MAINT	3,170.72	0.00	6,507.87	100.00%	
10,289.46	500.00	8,638.50	> 999.99%	MISCELLANEOUS LEASES - G&A	40,036.26	5,000.00	104,526.60	700.73%	
758.18	0.00	882.39	100.00%	MISCELLANEOUS LEASES - IT	18,923.55	0.00	10,327.50	100.00%	
0.00	0.00	0.00	0.00%	MISCELLANEOUS LEASES - IT - NON REIMB	0.00	0.00	0.00	0.00%	
0.00	0.00	0.00	0.00%	MISCELLANEOUS LEASES - G&A - NON REIMB	5,200.00	0.00	0.00	100.00%	
25,409.20	8,583.34	33,797.00	196.03%	** TOTAL LEASE & RENTALS	203,743.61	85,833.40	252,583.52	137.37%	
** DEPRECIATION									
0.00	0.00	0.00	0.00%	PASSENGER SHELTERS DEPR	178,254.01	0.00	134,131.11	100.00%	
0.00	0.00	0.00	0.00%	REVENUE VEHICLE DEPRECIATION	3,500,667.50	0.00	3,108,186.24	100.00%	
0.00	0.00	0.00	0.00%	SERVICE VEHICLE DEPRECIATION	49,747.63	0.00	35,917.26	100.00%	
0.00	0.00	0.00	0.00%	GARAGE EQUIP. DEPRECIATION - MAINT	12,238.04	0.00	9,308.86	100.00%	
0.00	0.00	0.00	0.00%	REVENUE VEHICLE RADIO EQUIP. DEPR	32,533.82	0.00	32,533.83	100.00%	
0.00	0.00	0.00	0.00%	COMPUTER EQUIPMENT DEPRECIATION	30,736.68	0.00	60,074.29	100.00%	
0.00	0.00	0.00	0.00%	REVENUE COLLECTION EQUIPMENT DEPR	42,893.06	0.00	42,893.06	100.00%	
0.00	0.00	0.00	0.00%	G.A. FACILITIES DEPRECIATION	1,145,893.84	0.00	1,372,342.59	100.00%	
0.00	0.00	0.00	0.00%	G.A. SYSTEM DEV.DEPRECIATION	0.00	0.00	0.00	0.00%	
0.00	0.00	0.00	0.00%	MISCELLANEOUS EQUIPMENT DEPR	41,610.14	0.00	53,133.66	100.00%	
0.00	0.00	0.00	0.00%	OFFICE EQUIPMENT DEPR.	2,095.73	0.00	2,095.73	100.00%	

Champaign Urbana Mass Transit District Budget Analysis Report

From Fiscal Year: 2019 Thru Fiscal Year: 2019		From Period 10 Thru Period 10		Division: 00 Champaign Urbana Mass Transit District			As of: 5/22/2019		
Apr-2019	Budget This Period	Apr-2018	Act/Bgt Var %		Actual Ytd	Jul-2018 thru Apr-2019 Budget Ytd	Last Ytd	Act/Bgt Var %	
0.00	0.00	0.00	0.00%	** TOTAL DEPRECIATION	5,036,670.45	0.00	4,850,616.63	100.00%	
0.00	0.00	0.00	0.00%	DEBT SERVICE ON EQUIPMENT & FACILITIES	0.00	0.00	0.00	0.00%	
2,874,650.67	3,400,813.27	2,902,653.95	-15.47%	**** TOTAL EXPENSES ****	34,740,223.32	33,561,216.72	34,112,939.06	3.51%	
1,170,283.21	955,503.47	365,843.24	22.48%	NET SURPLUS (DEFICIT)	1,808,339.39	9,650,703.45	2,511,433.34	-81.26%	

Champaign-Urbana Mass Transit District
Accounts Payable Check Disbursement List
BUSEY BANK OPERATING ACCOUNT

From Date: 4/01/2019

Thru Date: 4/30/2019

Check #	Check Date	Ref #	Payee	Total Paid	C-CARTS Portion	MTD Portion	Voided
145532	04-Apr-19	A0865	ABSOPURE WATER COMPANY	\$20.85	\$0.00	\$20.85	
145533	04-Apr-19	A1934	ADVANCE AUTO PARTS	\$150.87	\$0.00	\$150.87	
145534	04-Apr-19	A2487	** AFLAC	\$8,925.80	\$0.00	\$8,925.80	
145535	04-Apr-19	A2488	** AFLAC GROUP INSURANCE	\$362.24	\$0.00	\$362.24	
145536	04-Apr-19	A4804	ALPHA CONTROLS & SERVICES LLC	\$202.56	\$0.00	\$202.56	
145537	04-Apr-19	A5085	AMERENIP	\$1,175.45	\$0.00	\$1,175.45	
145538	04-Apr-19	A5115	AMERICAN PUBLIC TRANSIT	\$3,500.00	\$0.00	\$3,500.00	
145539	04-Apr-19	A8007	AT & T	\$1,789.40	\$0.00	\$1,789.40	
145540	04-Apr-19	A8720	AVAIL TECHNOLOGIES, INC.	\$2,160.00	\$0.00	\$2,160.00	
145541	04-Apr-19	B0090	BAE SYSTEMS CONTROLS, INC.	\$2,858.52	\$0.00	\$2,858.52	
145542	04-Apr-19	B0427	** BARBECK COMMUNICATION	\$284.76	\$284.76	\$0.00	
145543	04-Apr-19	B3555	BIRKEY'S FARM STORE, INC.	\$1,192.40	\$0.00	\$1,192.40	
145544	04-Apr-19	B4910	JASON BLUNIER	\$40.00	\$0.00	\$40.00	
145545	04-Apr-19	B8501	BUMPER TO BUMPER	\$363.26	\$0.00	\$363.26	
145546	04-Apr-19	C0362	CARLE FOUNDATION	\$650.00	\$0.00	\$650.00	
145547	04-Apr-19	C0410	** CAVALRY PORTFOLIO SERVICES, LLC	\$295.01	\$0.00	\$295.01	
145548	04-Apr-19	C1136	CCG, INC.	\$116.90	\$0.00	\$116.90	
145549	04-Apr-19	C1560	CDC PAPER & JANITOR	\$1,356.49	\$0.00	\$1,356.49	
145550	04-Apr-19	C2159	CENTRAL STATES BUS SALES, INC.	\$48.46	\$0.00	\$48.46	
145551	04-Apr-19	C2165	CENTRAL ILLINOIS TRUCKS	\$9,466.52	\$0.00	\$9,466.52	
145552	04-Apr-19	C3072	VILAIVONE GRIMM	\$40.00	\$0.00	\$40.00	
145553	04-Apr-19	C3105	CHEMICAL MAINTENANCE INC.	\$680.00	\$0.00	\$680.00	
145554	04-Apr-19	C3560	CIRCLE K FLEET	\$0.00	\$0.00	\$0.00	X
145555	04-Apr-19	C4588	CLEAN THE UNIFORM COMPANY HIGHLAND	\$416.23	\$0.00	\$416.23	
145556	04-Apr-19	C6257	** MARSHA L. COMBS-SKINNER	\$1,728.00	\$0.00	\$1,728.00	
145557	04-Apr-19	C6258	COLUMBIA STREET ROASTERY	\$93.75	\$0.00	\$93.75	
145558	04-Apr-19	C6259	COMMERCE BANK	\$6,305.97	\$0.00	\$6,305.97	
145559	04-Apr-19	C6284	CONSOLIDATED COMMUNICATIONS ENTERPRISE S	\$112.50	\$0.00	\$112.50	
145560	04-Apr-19	C6285	THOMAS C. CONRAD	\$40.00	\$0.00	\$40.00	
145561	04-Apr-19	C6685	CONSTELLATION NEWENERGY, INC.	\$12,126.81	\$0.00	\$12,126.81	
145562	04-Apr-19	D0271	** DANVILLE MASS TRANSIT	\$2,125.00	\$0.00	\$2,125.00	
145563	04-Apr-19	D2165	JOHN G. DEMPSEY	\$2,187.50	\$0.00	\$2,187.50	
145564	04-Apr-19	D2850	DEVELOPMENTAL SERVICES	\$41,005.25	\$0.00	\$41,005.25	
145565	04-Apr-19	D6389	DUTCH DOWERS	\$73.57	\$0.00	\$73.57	
145566	04-Apr-19	D7553	BENNIE DRAKE	\$79.16	\$0.00	\$79.16	
145567	04-Apr-19	D8587	DUST & SON OF CHAMPAIGN COUNTY, INC	\$85.91	\$0.00	\$85.91	
145568	04-Apr-19	F0367	FASTENERS ETC., INC.	\$103.07	\$0.00	\$103.07	
145569	04-Apr-19	F2013	F.E. MORAN, INC.	\$210.00	\$0.00	\$210.00	
145570	04-Apr-19	F6367	FORD CITY	\$146.11	\$0.00	\$146.11	
145571	04-Apr-19	G3484	GILLIG LLC	\$67.92	\$0.00	\$67.92	
145572	04-Apr-19	G4290	GLOBAL EQUIPMENT COMPANY	\$629.16	\$0.00	\$629.16	
145573	04-Apr-19	G6860	GROUND PENETRATING RADAR SYSTEMS, LLC	\$1,000.00	\$0.00	\$1,000.00	
145574	04-Apr-19	G7341	SUSAN GREER	\$40.00	\$0.00	\$40.00	
145575	04-Apr-19	G7375	GRIMCO, INC	\$1,618.64	\$0.00	\$1,618.64	
145576	04-Apr-19	H0325	DENNIS E. HARPER	\$120.00	\$0.00	\$120.00	
145577	04-Apr-19	H6115	MIKE HOFFMANN	\$4,000.00	\$0.00	\$4,000.00	
145578	04-Apr-19	I4751	ILLINI INSTITUTIONAL FOOD	\$355.11	\$0.00	\$355.11	
145579	04-Apr-19	I4790	ILLINOIS-AMERICAN WATER	\$2,114.03	\$0.00	\$2,114.03	
145580	04-Apr-19	I5904	INTERSTATE BATTERIES	\$245.90	\$0.00	\$245.90	
145581	04-Apr-19	I8235	I3 BROADBAND - CU	\$222.99	\$0.00	\$222.99	
145582	04-Apr-19	J3680	JEFFREY A. WILSEY	\$726.99	\$0.00	\$726.99	
145583	04-Apr-19	K2190	KEN'S OIL SERVICE, INC.	\$31,658.17	\$0.00	\$31,658.17	
145584	04-Apr-19	K8564	KURLAND STEEL COMPANY	\$143.85	\$0.00	\$143.85	
145585	04-Apr-19	M0368	MARK'S RADIATOR SHOP	\$160.00	\$0.00	\$160.00	
145586	04-Apr-19	M2149	MESIROW INSURANCE SERVICES, INC.	\$2,168.00	\$0.00	\$2,168.00	
145587	04-Apr-19	M2179	MENARD'S	\$165.08	\$0.00	\$165.08	
145588	04-Apr-19	M3408	MIDWEST TRANSIT EQUIPMENT, INC.	\$119.44	\$0.00	\$119.44	
145589	04-Apr-19	M6162	MOHAWK MFG. & SUPPLY CO.	\$489.72	\$0.00	\$489.72	
145590	04-Apr-19	N0320	NAPA AUTO PARTS	\$7,049.10	\$0.00	\$7,049.10	
145591	04-Apr-19	N0387	NATIONAL COATINGS & SUPPLIES	\$47.28	\$0.00	\$47.28	
145592	04-Apr-19	N2292	THE AFTERMARKET PARTS COMPANY, LLC.	\$0.00	\$0.00	\$0.00	X
145593	04-Apr-19	N2292	THE AFTERMARKET PARTS COMPANY, LLC.	\$22,612.24	\$0.00	\$22,612.24	
145594	04-Apr-19	N9686	** NYS CHILD SUPPORT PROCESSING CENTER	\$60.00	\$0.00	\$60.00	
145595	04-Apr-19	O7465	DON ORR	\$40.00	\$0.00	\$40.00	

Champaign-Urbana Mass Transit District
Accounts Payable Check Disbursement List
BUSEY BANK OPERATING ACCOUNT

From Date: 4/01/2019

Thru Date: 4/30/2019

Check #	Check Date	Ref #	Payee	Total Paid	C-CARTS Portion	MTD Portion	Voided
145596	04-Apr-19	P0990	PCM SALES, INC.	\$14.00	\$0.00	\$14.00	
145597	04-Apr-19	P4521	CYNTHIA HOYLE	\$2,795.00	\$0.00	\$2,795.00	
145598	04-Apr-19	P4522	SHERRY HELFER	\$857.66	\$0.00	\$857.66	
145599	04-Apr-19	Q8455	QUILL	\$174.96	\$0.00	\$174.96	
145600	04-Apr-19	R2015	REPUBLIC SERVICES	\$1,635.90	\$0.00	\$1,635.90	
145601	04-Apr-19	R2320	REYNOLDS TOWING SERVICE	\$315.00	\$0.00	\$315.00	
145602	04-Apr-19	R3488	RILCO OF PEORIA, INC.	\$3,040.23	\$0.00	\$3,040.23	
145603	04-Apr-19	R6120	ROGARDS OFFICE PRODUCTS	\$438.36	\$44.50	\$393.86	
145604	04-Apr-19	R8487	BRIAN RULON	\$40.00	\$0.00	\$40.00	
145605	04-Apr-19	S0060	SAFEWORKS ILLINOIS	\$826.00	\$0.00	\$826.00	
145606	04-Apr-19	S0260	SAMMY'S AUTO ELECTRIC	\$285.00	\$0.00	\$285.00	
145607	04-Apr-19	S3115	** DANIEL J. HARTMAN	\$132.00	\$132.00	\$0.00	
145608	04-Apr-19	T0007	TJ'S LAUNDRY & DRY CLEANING	\$44.00	\$0.00	\$44.00	
145609	04-Apr-19	T0474	TAYLOR & BLACKBURN	\$2,175.04	\$0.00	\$2,175.04	
145610	04-Apr-19	T7510	TROPHYTIME	\$152.00	\$0.00	\$152.00	
145611	04-Apr-19	T7590	TRUCK CENTERS, INC.	\$119.82	\$0.00	\$119.82	
145612	04-Apr-19	U5172	** U.S. DEPARTMENT OF EDUCATION AWG	\$209.29	\$0.00	\$209.29	
145613	04-Apr-19	U5174	** U.S. DEPT. OF EDUCATION	\$187.27	\$0.00	\$187.27	
145614	04-Apr-19	U7385	URBANA TRUE TIRES	\$1,524.30	\$0.00	\$1,524.30	
145615	04-Apr-19	V2215	VERITECH, INC.	\$1,744.00	\$0.00	\$1,744.00	
145616	04-Apr-19	V2233	** VERIZON WIRELESS	\$360.10	\$360.10	\$0.00	
145617	04-Apr-19	W6355	WORDEN-MARTIN, INC.	\$196.84	\$0.00	\$196.84	
145618	04-Apr-19	Z2333	ZF SERVICES NORTH AMERICA, LLC	\$692.52	\$0.00	\$692.52	
145619	05-Apr-19	C3560	CIRCLE K FLEET	\$7,881.15	\$3,441.72	\$4,439.43	
145620	05-Apr-19	J0005	J & R USED TIRE SERVICE, INC.	\$741.00	\$0.00	\$741.00	
145621	11-Apr-19	A1934	ADVANCE AUTO PARTS	\$228.91	\$0.00	\$228.91	
145622	11-Apr-19	A4804	ALPHA CONTROLS & SERVICES LLC	\$450.00	\$0.00	\$450.00	
145623	11-Apr-19	A5002	AMAZON	\$3,167.85	\$0.00	\$3,167.85	
145624	11-Apr-19	A5085	AMERENIP	\$1,581.22	\$0.00	\$1,581.22	
145625	11-Apr-19	A5115	AMERICAN PUBLIC TRANSIT	\$450.00	\$0.00	\$450.00	
145626	11-Apr-19	A7910	ASSURITY LIFE INSURANCE	\$4,199.53	\$14.33	\$4,185.20	
145627	11-Apr-19	A8007	AT & T	\$101.38	\$0.00	\$101.38	
145628	11-Apr-19	A8155	ATLAS CAB	\$4,802.00	\$0.00	\$4,802.00	
145629	11-Apr-19	B2230	BERNS, CLANCY & ASSOC. PC	\$588.85	\$0.00	\$588.85	
145630	11-Apr-19	B3555	BIRKEY'S FARM STORE, INC.	\$793.06	\$0.00	\$793.06	
145631	11-Apr-19	B8500	BUMPER TO BUMPER	\$151.16	\$0.00	\$151.16	
145632	11-Apr-19	C2156	CENTER FOR TRANSPORTATION & THE ENVIRONM	\$8,164.98	\$0.00	\$8,164.98	
145633	11-Apr-19	C2159	CENTRAL STATES BUS SALES, INC.	\$527.50	\$0.00	\$527.50	
145634	11-Apr-19	C2165	CENTRAL ILLINOIS TRUCKS	\$0.00	\$0.00	\$0.00	
145635	11-Apr-19	C2165	CENTRAL ILLINOIS TRUCKS	\$13,726.42	\$0.00	\$13,726.42	
145636	11-Apr-19	C2172	CMS/LGHP	\$381,123.00	\$1,960.00	\$379,163.00	
145637	11-Apr-19	C3045	CITY OF CHAMPAIGN	\$5,715.53	\$0.00	\$5,715.53	
145638	11-Apr-19	C3100	CHELSEA FINANCIAL GROUP, LTD.	\$7,061.88	\$0.00	\$7,061.88	
145639	11-Apr-19	C3105	CHEMICAL MAINTENANCE INC.	\$391.60	\$0.00	\$391.60	
145640	11-Apr-19	C3108	CHEMSTATION OF INDIANA	\$975.00	\$0.00	\$975.00	
145641	11-Apr-19	C4500	CLARK DIETZ ENGINEERS	\$472.50	\$0.00	\$472.50	
145642	11-Apr-19	C4511	CLARKE POWER SERVICES, INC.	\$7,590.52	\$0.00	\$7,590.52	
145643	11-Apr-19	C4588	CLEAN THE UNIFORM COMPANY HIGHLAND	\$877.20	\$0.00	\$877.20	
145644	11-Apr-19	C6258	COLUMBIA STREET ROASTERY	\$413.75	\$0.00	\$413.75	
145645	11-Apr-19	C6686	CONSTELLATION NEWENERGY - GAS DIV. LLC	\$8,610.28	\$0.00	\$8,610.28	
145646	11-Apr-19	D2848	DETAILER'S TRAINING	\$374.75	\$0.00	\$374.75	
145647	11-Apr-19	D3225	DH PACE COMPANY, INC.	\$3,543.30	\$0.00	\$3,543.30	
145648	11-Apr-19	D3630	DIXON GRAPHICS	\$190.00	\$0.00	\$190.00	
145649	11-Apr-19	D8520	DUNCAN SUPPLY CO. INC.	\$418.84	\$0.00	\$418.84	
145650	11-Apr-19	D8587	DUST & SON OF CHAMPAIGN COUNTY, INC	\$67.89	\$0.00	\$67.89	
145651	11-Apr-19	E3390	EIGHT 22, LLC	\$2,150.00	\$0.00	\$2,150.00	
145652	11-Apr-19	F0365	FASTENAL COMPANY	\$433.78	\$0.00	\$433.78	
145653	11-Apr-19	F0367	FASTENERS ETC., INC.	\$202.19	\$0.00	\$202.19	
145654	11-Apr-19	G3484	GILLIG LLC	\$3,731.39	\$0.00	\$3,731.39	
145655	11-Apr-19	G4293	GLOBAL TECHNICAL SYSTEMS, INC.	\$391.76	\$0.00	\$391.76	
145656	11-Apr-19	G7308	GRAINGER	\$579.58	\$0.00	\$579.58	
145657	11-Apr-19	G73301	GRAYBAR ELECTRIC COMPANY	\$29.55	\$0.00	\$29.55	
145658	11-Apr-19	H2235	HERITAGE PETROLEUM, LLC	\$15,424.47	\$0.00	\$15,424.47	
145659	11-Apr-19	I4747	ILLINI FS, INC.	\$168.00	\$0.00	\$168.00	

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Champaign-Urbana Mass Transit District
Accounts Payable Check Disbursement List
BUSEY BANK OPERATING ACCOUNT

From Date: 4/01/2019

Thru Date: 4/30/2019

Check #	Check Date	Ref #	Payee	Total Paid	C-CARTS Portion	MTD Portion	Voided
145660	11-Apr-19	I4750	ILLINI FIRE EQUIPMENT CO.	\$270.75	\$0.00	\$270.75	
145661	11-Apr-19	J0310	JANEK CORPORATION	\$2,570.00	\$0.00	\$2,570.00	
145662	11-Apr-19	J0320	JANITOR & MAINTENANCE SUPPLIES, INC.	\$453.15	\$0.00	\$453.15	
145663	11-Apr-19	K2166	KEMPER INDUSTRIAL EQUIP.	\$710.50	\$0.00	\$710.50	
145664	11-Apr-19	K2190	KEN'S OIL SERVICE, INC.	\$15,893.11	\$0.00	\$15,893.11	
145665	11-Apr-19	K3575	KIRK'S AUTOMOTIVE	\$700.00	\$0.00	\$700.00	
145666	11-Apr-19	L3395	LIFE FITNESS	\$127.50	\$0.00	\$127.50	
145667	11-Apr-19	L3504	THE LINCOLN NATIONAL LIFE INSURANCE CO.	\$2,516.49	\$3.36	\$2,513.13	
145668	11-Apr-19	L9642	LYNN A. UMBARGER	\$425.00	\$0.00	\$425.00	
145669	11-Apr-19	M0368	MARK'S RADIATOR SHOP	\$405.00	\$0.00	\$405.00	
145670	11-Apr-19	M0377	MARTIN ONE SOURCE	\$40.00	\$0.00	\$40.00	
145671	11-Apr-19	M1246	MCMaster-CARR SUPPLY CO.	\$102.83	\$0.00	\$102.83	
145672	11-Apr-19	M1269	MCS OFFICE TECHNOLOGIES	\$12,322.50	\$0.00	\$12,322.50	
145673	11-Apr-19	M3408	MIDWEST TRANSIT EQUIPMENT, INC.	\$1,053.16	\$0.00	\$1,053.16	
145674	11-Apr-19	M6162	MOHAWK MFG. & SUPPLY CO.	\$677.04	\$0.00	\$677.04	
145675	11-Apr-19	N0320	NAPA AUTO PARTS	\$1,082.59	\$0.00	\$1,082.59	
145676	11-Apr-19	N0350	KENNETH L. NAPPER	\$200.00	\$0.00	\$200.00	
145677	11-Apr-19	N2269	BRADFORD NEUMANN	\$19.61	\$0.00	\$19.61	
145678	11-Apr-19	N2292	THE AFTERMARKET PARTS COMPANY, LLC.	\$0.00	\$0.00	\$0.00	
145679	11-Apr-19	N2292	THE AFTERMARKET PARTS COMPANY, LLC.	\$13,198.46	\$0.00	\$13,198.46	X
145680	11-Apr-19	N2297	NEW PRAIRIE CONSTRUCTION COMPANY	\$2,950.00	\$0.00	\$2,950.00	
145681	11-Apr-19	O8113	OTIS ELEVATOR COMPANY	\$2,691.04	\$0.00	\$2,691.04	
145682	11-Apr-19	P0990	PCM SALES, INC.	\$282.44	\$0.00	\$282.44	
145683	11-Apr-19	P2255	PETTY CASH (GENERAL FUND)	\$10.51	\$0.00	\$10.51	
145684	11-Apr-19	Q8455	QUILL	\$76.27	\$0.00	\$76.27	
145685	11-Apr-19	R3488	RILCO OF PEORIA, INC.	\$3,246.44	\$0.00	\$3,246.44	
145686	11-Apr-19	R6120	ROGARDS OFFICE PRODUCTS	\$568.99	\$0.00	\$568.99	
145687	11-Apr-19	R6375	ROSS & WHITE COMPANY	\$3,908.16	\$0.00	\$3,908.16	
145688	11-Apr-19	R6380	LENA ROTHMUND	\$14.72	\$0.00	\$14.72	
145689	11-Apr-19	R6425	ROUTEMATCH SOFTWARE, INC	\$16,635.00	\$0.00	\$16,635.00	
145690	11-Apr-19	S0078	SAFETY-KLEEN CORP.	\$1,183.27	\$0.00	\$1,183.27	
145691	11-Apr-19	S2020	DONAVYN L. SEAY	\$40.00	\$0.00	\$40.00	
145692	11-Apr-19	S3086	SHERWIN-WILLIAMS	\$59.38	\$0.00	\$59.38	
145693	11-Apr-19	S3100	SHI INTERNATIONAL CORP.	\$33.96	\$0.00	\$33.96	
145694	11-Apr-19	S3115	DANIEL J. HARTMAN	\$3,342.20	\$0.00	\$3,342.20	
145695	11-Apr-19	S3187	SHOE CARNIVAL, INC.	\$172.45	\$0.00	\$172.45	
145696	11-Apr-19	S3487	SILVER MACHINE SHOP	\$80.00	\$0.00	\$80.00	
145697	11-Apr-19	S5191	STUART SMITH	\$80.00	\$0.00	\$80.00	
145698	11-Apr-19	S8511	SUNBELT RENTALS	\$872.45	\$0.00	\$872.45	
145699	11-Apr-19	S8560	SURFACE 51	\$8,035.00	\$0.00	\$8,035.00	
145700	11-Apr-19	T0007	TJ'S LAUNDRY & DRY CLEANING	\$71.50	\$0.00	\$71.50	
145701	11-Apr-19	T3060	DALKIN TMI LLC	\$920.00	\$0.00	\$920.00	
145702	11-Apr-19	T7590	TRUCK CENTERS, INC.	\$516.00	\$0.00	\$516.00	
145703	11-Apr-19	T9069	TWILIO INC	\$727.67	\$0.00	\$727.67	
145704	11-Apr-19	U5180	UNITED PARCEL SERVICE	\$10.20	\$0.00	\$10.20	
145705	11-Apr-19	U5996	UNIVERSITY OF ILLINOIS	\$866.00	\$0.00	\$866.00	
145706	11-Apr-19	U60295	ULINE	\$133.68	\$0.00	\$133.68	
145707	11-Apr-19	U7352	URBANA BUSINESS ASSOC.	\$500.00	\$0.00	\$500.00	
145708	11-Apr-19	U7355	U-C SANITARY DISTRICT	\$948.51	\$0.00	\$948.51	
145709	11-Apr-19	U7357	CITY OF URBANA	\$3,005.54	\$0.00	\$3,005.54	
145710	11-Apr-19	U7385	URBANA TRUE TIRES	\$1,574.32	\$0.00	\$1,574.32	
145711	11-Apr-19	U7653	US BANK VENDOR SERVICES	\$3,493.10	\$504.28	\$2,988.82	
145712	11-Apr-19	V2233	VERIZON WIRELESS	\$461.06	\$0.00	\$461.06	
145713	11-Apr-19	V3590	VITAL EDUCATION & SUPPLY, INC.	\$660.00	\$0.00	\$660.00	
145714	11-Apr-19	W3487	PAMELA WILSON	\$996.49	\$0.00	\$996.49	
145715	11-Apr-19	Y2150	YELLOW TRANSPORT, LTD.	\$8,861.00	\$0.00	\$8,861.00	
145716	11-Apr-19	Z2333	ZF SERVICES NORTH AMERICA, LLC	\$179.09	\$0.00	\$179.09	
145717	11-Apr-19	A7910	ASSURITY LIFE INSURANCE	\$4,394.03	\$14.33	\$4,379.70	
145718	18-Apr-19	A4820	AlphaVu	\$5,000.00	\$0.00	\$5,000.00	
145719	18-Apr-19	A5085	AMERENIP	\$530.01	\$0.00	\$530.01	
145720	18-Apr-19	A7545	ARROW GLASS COMPANY	\$72.81	\$0.00	\$72.81	
145721	18-Apr-19	A7910	ASSURITY LIFE INSURANCE	\$3,356.72	\$39.08	\$3,317.64	
145722	18-Apr-19	A8720	AVAIL TECHNOLOGIES, INC.	\$2,175.00	\$0.00	\$2,175.00	
145723	18-Apr-19	B3555	BIRKEY'S FARM STORE, INC.	\$1,673.58	\$0.00	\$1,673.58	

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145724	18-Apr-19	B4720	BLITT AND GAINES, P.C.	\$49.14	\$0.00	\$49.14	
145725	18-Apr-19	B6448	HOWARD BOVAN	\$81.74	\$0.00	\$81.74	
145726	18-Apr-19	C0276	CCMSI-INDEX/OFAC	\$31.30	\$0.00	\$31.30	
145727	18-Apr-19	C0410	CAVALRY PORTFOLIO SERVICES, LLC	\$294.18	\$0.00	\$294.18	
145728	18-Apr-19	C2165	CENTRAL ILLINOIS TRUCKS	\$11,809.83	\$0.00	\$11,809.83	
145729	18-Apr-19	C3005	CHAMP.CO.CHAMBER OF COMMERCE	\$50.00	\$0.00	\$50.00	
145730	18-Apr-19	C3045	CITY OF CHAMPAIGN	\$95.00	\$0.00	\$95.00	
145731	18-Apr-19	C3077	CHAMPAIGN URBANA PUBLIC HEALTH DISTRICT	\$320.00	\$0.00	\$320.00	
145732	18-Apr-19	C3105	CHEMICAL MAINTENANCE INC.	\$2,083.47	\$0.00	\$2,083.47	
145733	18-Apr-19	C3512	CINTAS FIRST AID & SAFETY	\$61.44	\$0.00	\$61.44	
145734	18-Apr-19	C6257	MARSHA L. COMBS-SKINNER	\$1,802.76	\$0.00	\$1,802.76	
145735	18-Apr-19	C6258	COLUMBIA STREET ROASTERY	\$275.00	\$0.00	\$275.00	
145736	18-Apr-19	C6271	COMP MC	\$56.17	\$0.00	\$56.17	
145737	18-Apr-19	C8450	CU HARDWARE COMPANY	\$4.44	\$0.00	\$4.44	
145738	18-Apr-19	C8515	MARK L. CUNNINGHAM	\$2,468.40	\$0.00	\$2,468.40	
145739	18-Apr-19	D2012	DEAN'S GRAPHICS	\$190.00	\$0.00	\$190.00	
145740	18-Apr-19	D3590	DISH PASSIONATE CUISINE	\$504.00	\$0.00	\$504.00	
145741	18-Apr-19	D8520	DUNCAN SUPPLY CO. INC.	\$103.56	\$0.00	\$103.56	
145742	18-Apr-19	D8587	DUST & SON OF CHAMPAIGN COUNTY, INC	\$295.77	\$0.00	\$295.77	
145743	18-Apr-19	E4733	STEVEN F. ELLIS	\$159.73	\$0.00	\$159.73	
145744	18-Apr-19	F6367	FORD CITY	\$64.47	\$0.00	\$64.47	
145745	18-Apr-19	F6414	RANDAL FOUTS	\$40.00	\$0.00	\$40.00	
145746	18-Apr-19	G3484	GILLIG LLC	\$509.26	\$0.00	\$509.26	
145747	18-Apr-19	G4293	GLOBAL TECHNICAL SYSTEMS, INC.	\$1,623.28	\$0.00	\$1,623.28	
145748	18-Apr-19	G5519	KARL P. GNADT	\$916.84	\$0.00	\$916.84	
145749	18-Apr-19	H2015	MICHAEL HEALEA	\$160.00	\$0.00	\$160.00	
145750	18-Apr-19	J0320	JANITOR & MAINTENANCE SUPPLIES, INC.	\$88.90	\$0.00	\$88.90	
145751	18-Apr-19	M1246	MCMMASTER-CARR SUPPLY CO.	\$382.33	\$0.00	\$382.33	
145752	18-Apr-19	M6162	MOHAWK MFG. & SUPPLY CO.	\$17.64	\$0.00	\$17.64	
145753	18-Apr-19	N0320	NAPA AUTO PARTS	\$197.77	\$0.00	\$197.77	
145754	18-Apr-19	N0387	NATIONAL COATINGS & SUPPLIES	\$93.32	\$0.00	\$93.32	
145755	18-Apr-19	N0395	NATIONAL SAFETY COUNCIL	\$907.97	\$0.00	\$907.97	
145756	18-Apr-19	N2295	THE NEWS GAZETTE	\$880.25	\$0.00	\$880.25	
145757	18-Apr-19	N9686	NYS CHILD SUPPORT PROCESSING CENTER	\$60.00	\$0.00	\$60.00	
145758	18-Apr-19	O5750	ONTARIO INVESTMENTS, INC.	\$2,388.13	\$0.00	\$2,388.13	
145759	18-Apr-19	R2175	RELIABLE PLUMBING & HEATING COMPANY	\$107.00	\$0.00	\$107.00	
145760	18-Apr-19	R6482	MICHAEL JOSEPH ROYSE	\$2,250.00	\$0.00	\$2,250.00	
145761	18-Apr-19	S0060	SAFEWORKS ILLINOIS	\$166.52	\$0.00	\$166.52	
145762	18-Apr-19	S0254	SAM'S CLUB	\$788.52	\$0.00	\$788.52	
145763	18-Apr-19	S3115	DANIEL J. HARTMAN	\$451.00	\$0.00	\$451.00	
145764	18-Apr-19	S8135	ROBERT W. STICKELS	\$40.00	\$0.00	\$40.00	
145765	18-Apr-19	S8506	JANE M. SULLIVAN	\$978.77	\$0.00	\$978.77	
145766	18-Apr-19	T2064	TEE JAY CENTRAL, INC.	\$2,179.42	\$0.00	\$2,179.42	
145767	18-Apr-19	U5172	U.S. DEPARTMENT OF EDUCATION AWG	\$167.03	\$0.00	\$167.03	
145768	18-Apr-19	U5174	U.S. DEPT. OF EDUCATION	\$174.52	\$0.00	\$174.52	
145769	18-Apr-19	U60295	ULINE	\$77.96	\$0.00	\$77.96	
145770	18-Apr-19	V3590	VITAL EDUCATION & SUPPLY, INC.	\$114.00	\$0.00	\$114.00	
145771	18-Apr-19	Z2333	ZF SERVICES NORTH AMERICA, LLC	\$450.16	\$0.00	\$450.16	
145772	18-Apr-19	A5085	AMERENIP	\$2,137.21	\$0.00	\$2,137.21	
145773	18-Apr-19	C3560	CIRCLE K FLEET	\$18,715.97	\$0.00	\$18,715.97	
145774	25-Apr-19	A1934	ADVANCE AUTO PARTS	\$20.70	\$0.00	\$20.70	
145775	25-Apr-19	A5085	AMERENIP	\$1,059.56	\$0.00	\$1,059.56	
145776	25-Apr-19	A7324	PDC/AREA COMPANIES	\$1,003.26	\$0.00	\$1,003.26	
145777	25-Apr-19	A8007	AT & T	\$215.29	\$0.00	\$215.29	
145778	25-Apr-19	B2180	BENEFIT PLANNING CONSULTANTS, INC.	\$812.38	\$0.00	\$812.38	
145779	25-Apr-19	B2227	BERG TANKS	\$1,750.00	\$0.00	\$1,750.00	
145780	25-Apr-19	B8501	BUMPER TO BUMPER	\$166.70	\$0.00	\$166.70	
145781	25-Apr-19	C0005	CARL SCHNEIDER	\$54.95	\$0.00	\$54.95	
145782	25-Apr-19	C0350	CARDMEMBER SERVICE	\$17,930.93	\$0.00	\$17,930.93	
145783	25-Apr-19	C1560	CDC PAPER & JANITOR	\$605.54	\$0.00	\$605.54	
145784	25-Apr-19	C3100	CHELSEA FINANCIAL GROUP, LTD.	\$3,267.07	\$0.00	\$3,267.07	
145785	25-Apr-19	C3105	CHEMICAL MAINTENANCE INC.	\$3,563.35	\$0.00	\$3,563.35	
145786	25-Apr-19	C4588	CLEAN THE UNIFORM COMPANY HIGHLAND	\$1,411.67	\$0.00	\$1,411.67	
145787	25-Apr-19	C6263	COMCAST CABLE	\$321.49	\$0.00	\$321.49	

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145788	25-Apr-19	C8450	CU HARDWARE COMPANY	\$42.66	\$0.00	\$42.66	
145789	25-Apr-19	D2012	DEAN'S GRAPHICS	\$107.00	\$0.00	\$107.00	
145790	25-Apr-19	D3630	DIXON GRAPHICS	\$153.02	\$0.00	\$153.02	
145791	25-Apr-19	E0351	E.L. PRUITT COMPANY	\$315.00	\$0.00	\$315.00	
145792	25-Apr-19	F0365	FASTENAL COMPANY	\$806.64	\$0.00	\$806.64	
145793	25-Apr-19	F0367	FASTENERS ETC., INC.	\$300.48	\$0.00	\$300.48	
145794	25-Apr-19	F7367	FREEDOM FLAG COMPANY	\$692.95	\$0.00	\$692.95	
145795	25-Apr-19	G3102	GHR ENGINEERS & ASSOCIATES, INC.	\$1,301.74	\$0.00	\$1,301.74	
145796	25-Apr-19	G6300	GOODYEAR TIRE & RUBBER CO	\$11,820.51	\$0.00	\$11,820.51	
145797	25-Apr-19	H2150	LARRY HELM	\$80.00	\$0.00	\$80.00	
145798	25-Apr-19	I1595	IDENTISYS INCORPORATED	\$676.47	\$0.00	\$676.47	
145799	25-Apr-19	I4747	ILLINI FS, INC.	\$896.12	\$0.00	\$896.12	
145800	25-Apr-19	I4750	ILLINI FIRE EQUIPMENT CO.	\$141.00	\$0.00	\$141.00	
145801	25-Apr-19	I4790	ILLINOIS-AMERICAN WATER	\$679.79	\$0.00	\$679.79	
145802	25-Apr-19	M0452	MATTEX SERVICE CO., INC.	\$3,128.00	\$0.00	\$3,128.00	
145803	25-Apr-19	M1246	MCMaster-CARR SUPPLY CO.	\$753.41	\$0.00	\$753.41	
145804	25-Apr-19	M2179	MENARD'S	\$966.79	\$0.00	\$966.79	
145805	25-Apr-19	M3375	MID ILLINOIS DEVELOPMENT, LLC	\$8,500.00	\$0.00	\$8,500.00	
145806	25-Apr-19	M34035	MIDWEST FIBER RECYCLING	\$315.00	\$0.00	\$315.00	
145807	25-Apr-19	N0320	NAPA AUTO PARTS	\$233.44	\$0.00	\$233.44	
145808	25-Apr-19	P2226	PERSONAL MOBILITY	\$430.00	\$0.00	\$430.00	
145809	25-Apr-19	P2256	PETTY CASH (CHANGE FUND)	\$0.00	\$0.00	\$0.00	X
145810	25-Apr-19	R0272	JOSEPH S. RANK	\$40.00	\$0.00	\$40.00	
145811	25-Apr-19	R6120	ROGARDS OFFICE PRODUCTS	\$234.27	\$0.00	\$234.27	
145812	25-Apr-19	S0060	SAFeworks ILLINOIS	\$595.00	\$100.00	\$495.00	
145813	25-Apr-19	S3100	SHI INTERNATIONAL CORP.	\$14,341.00	\$0.00	\$14,341.00	
145814	25-Apr-19	S5192	S.J. SMITH WELDING SUPPLY	\$94.62	\$0.00	\$94.62	
145815	25-Apr-19	S6666	RANDSTAD NORTH AMERICA, L.P.	\$225.00	\$0.00	\$225.00	
145816	25-Apr-19	S6672	ANDREW SPICER	\$645.99	\$0.00	\$645.99	
145817	25-Apr-19	T0007	TJ'S LAUNDRY & DRY CLEANING	\$44.00	\$0.00	\$44.00	
145818	25-Apr-19	T2225	TERMINAL SUPPLY COMPANY	\$308.97	\$0.00	\$308.97	
145819	25-Apr-19	T6230	TOKEN TRANSIT, INC.	\$19,425.00	\$0.00	\$19,425.00	
145820	25-Apr-19	U5180	UNITED PARCEL SERVICE	\$184.53	\$0.00	\$184.53	
145821	25-Apr-19	U5998	UNIVERSITY OF ILLINOIS	\$31,885.25	\$0.00	\$31,885.25	
145822	25-Apr-19	U60295	ULINE	\$1,515.52	\$0.00	\$1,515.52	
145823	25-Apr-19	U7355	U-C SANITARY DISTRICT	\$1,993.30	\$0.00	\$1,993.30	
145824	25-Apr-19	U7385	URBANA TRUE TIRES	\$954.53	\$0.00	\$954.53	
145825	25-Apr-19	W8564	WURTH USA MIDWEST, INC.	\$708.00	\$0.00	\$708.00	
145826	25-Apr-19	C2165	CENTRAL ILLINOIS TRUCKS	\$0.00	\$0.00	\$0.00	X
145827	25-Apr-19	C2165	CENTRAL ILLINOIS TRUCKS	\$12,857.95	\$0.00	\$12,857.95	
145828	25-Apr-19	C4511	CLARKE POWER SERVICES, INC.	\$49,227.48	\$0.00	\$49,227.48	
145829	25-Apr-19	G3484	GILLIG LLC	\$557.70	\$0.00	\$557.70	
145830	25-Apr-19	H2235	HERITAGE PETROLEUM, LLC	\$31,800.80	\$0.00	\$31,800.80	
145831	25-Apr-19	K2190	KEN'S OIL SERVICE, INC.	\$16,310.58	\$0.00	\$16,310.58	
145832	25-Apr-19	M6162	MOHAWK MFG. & SUPPLY CO.	\$397.60	\$0.00	\$397.60	
145833	25-Apr-19	M8518	MUNCIE RECLAMATION-SUPPLY	\$1,093.15	\$0.00	\$1,093.15	
145834	25-Apr-19	N2292	THE AFTERMARKET PARTS COMPANY, LLC.	\$0.00	\$0.00	\$0.00	X
145835	25-Apr-19	N2292	THE AFTERMARKET PARTS COMPANY, LLC.	\$22,448.78	\$0.00	\$22,448.78	
145836	25-Apr-19	T0474	TAYLOR & BLACKBURN	\$1,354.44	\$0.00	\$1,354.44	
145837	25-Apr-19	U5187	USSC ACQUISITION CORP	\$583.20	\$0.00	\$583.20	
4012019	03-Apr-19	S8030	** STATES DISBURSEMENT UNIT	\$1,901.03	\$0.00	\$1,901.03	
4051910	05-Apr-19	I5862	INTERNAL REVENUE SERVICE	\$2,450.80	\$2,450.80	\$0.00	
4052019	05-Apr-19	I5862	INTERNAL REVENUE SERVICE	\$180,598.25	\$0.00	\$180,598.25	
4061910	05-Apr-19	I4826	** ILLINOIS DEPT OF REVENUE	\$516.44	\$516.44	\$0.00	
4062019	05-Apr-19	I4826	** ILLINOIS DEPT OF REVENUE	\$30,834.97	\$0.00	\$30,834.97	
4082019	04-Apr-19	I0025	** VANTAGEPOINT TRANSFER AGENTS - 301281	\$15,421.45	\$0.00	\$15,421.45	
4092019	04-Apr-19	I0025	** VANTAGEPOINT TRANSFER AGENTS - 301281	\$5,385.40	\$0.00	\$5,385.40	
4101910	10-Apr-19	I4830	I.M.R.F.	\$3,071.65	\$3,071.65	\$0.00	
4102019	10-Apr-19	I4830	I.M.R.F.	\$215,030.89	\$0.00	\$215,030.89	
4112019	04-Apr-19	I0025	** VANTAGEPOINT TRANSFER AGENTS - 301281	\$6,660.87	\$0.00	\$6,660.87	
4122019	19-Apr-19	I0025	** VANTAGEPOINT TRANSFER AGENTS - 301281	\$16,023.22	\$0.00	\$16,023.22	
4132019	19-Apr-19	I0025	** VANTAGEPOINT TRANSFER AGENTS - 301281	\$5,385.40	\$0.00	\$5,385.40	
4142019	19-Apr-19	I0025	** VANTAGEPOINT TRANSFER AGENTS - 301281	\$6,620.47	\$0.00	\$6,620.47	
4152019	19-Apr-19	U7359	** URBANA MUNICIPAL EMPL. CREDIT UNION	\$44,838.52	\$0.00	\$44,838.52	

Champaign-Urbana Mass Transit District
Accounts Payable Check Disbursement List
 BUSEY BANK OPERATING ACCOUNT

From Date: 4/01/2019

Thru Date: 4/30/2019

Check #	Check Date	Ref #		Payee	Total Paid	C-CARTS Portion	MTD Portion	Voided
4172019	17-Apr-19	S8030	**	STATES DISBURSEMENT UNIT	\$1,901.03	\$0.00	\$1,901.03	
4191910	19-Apr-19	I5862		INTERNAL REVENUE SERVICE	\$2,608.28	\$2,608.28	\$0.00	
4192019	19-Apr-19	I5862		INTERNAL REVENUE SERVICE	\$162,737.12	\$0.00	\$162,737.12	
4201910	19-Apr-19	I4826	**	ILLINOIS DEPT OF REVENUE	\$535.00	\$535.00	\$0.00	
4202019	19-Apr-19	I4826	**	ILLINOIS DEPT OF REVENUE	\$29,137.29	\$0.00	\$29,137.29	
4802019	08-Apr-19	U7359	**	URBANA MUNICIPAL EMPL. CREDIT UNION	\$44,320.67	\$0.00	\$44,320.67	
					\$1,931,191.77	\$16,080.63	\$1,915,111.14	

** Pass through payment

Champaign Urbana Mass Transit District
Accounts Payable Check Disbursement List

Checking Account #: 011-8189-0

FLEX CHECKING-BUSEY BANK

From Date: 4/3/2019

Thru Date: 4/30/2019

Check #	Check Date	Ref #	Name	Amount	Voided
4252019	4/30/2019	F4640	FLEX-EMPLOYEE REIMB.	\$10,585.23	
5486	4/3/2019	F4640	FLEX-EMPLOYEE REIMB.	\$200.00	
5487	4/10/2019	F4640	FLEX-EMPLOYEE REIMB.	\$640.15	
Total:				\$11,425.38	

Champaign Urbana Mass Transit District

Accounts Payable Check Disbursement List

Checking Account #: 1005282347

FIRST BANK - OPERATING

From Date: 4/10/2019

Thru Date: 4/11/2019

Check #	Check Date	Ref #	Name	Amount	Voided
1038	4/11/2019	F3612	## FIRST MID BANK & TRUST	\$126,731.49	
4101910	4/10/2019	I4830	I.M.R.F.	\$0.00	<input checked="" type="checkbox"/>
4102019	4/10/2019	I4830	I.M.R.F.	\$0.00	<input checked="" type="checkbox"/>
Total:				\$126,731.49	

Final loan payment for 1207 E. University Ave. CDL training center. 65% of this payment was reimbursed to the District from IDOT as an eligible debt service expense.

Account Summary

Basic Securities Account

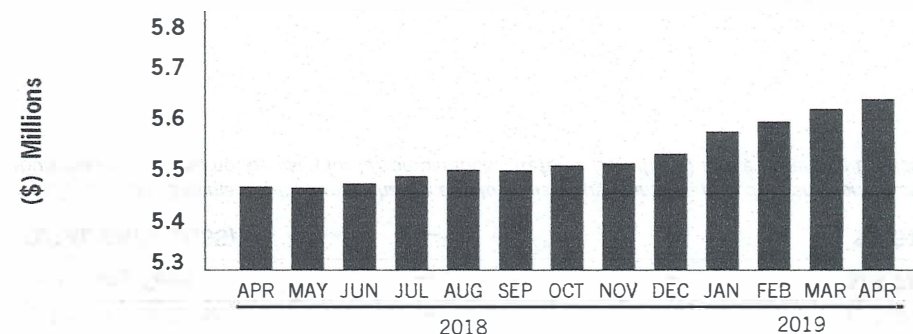
CHAMPAIGN URBANA MASS TRANSIT DIST
C/O KARL GNADT & BRENDA E EILBRACHT

CHANGE IN VALUE OF YOUR ACCOUNTS (includes accrued interest)

	This Period (4/1/19-4/30/19)	This Year (1/1/19-4/30/19)
TOTAL BEGINNING VALUE	\$5,613,040.41	\$5,526,632.33
Credits	—	—
Debits	—	—
Security Transfers	—	—
Net Credits/Debits/Transfers	—	—
Change in Value	18,886.86	105,294.94
TOTAL ENDING VALUE	\$5,631,927.27	\$5,631,927.27

MARKET VALUE OVER TIME

The below chart displays the most recent thirteen months of Market Value.

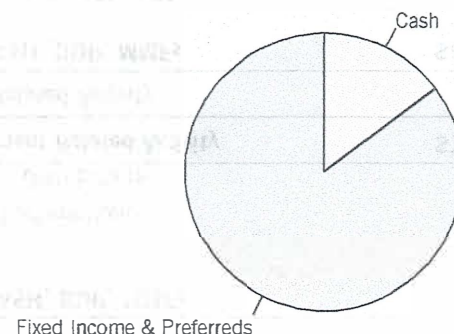


This chart does not reflect corrections to Market Value made subsequent to the dates depicted. It may exclude transactions in Annuities or positions where we are not the custodian, which could delay the reporting of Market Value.

ASSET ALLOCATION (includes accrued interest)

	Market Value	Percentage
Cash	\$827,274.79	14.69
Fixed Income & Preferreds	4,804,652.48	85.31
TOTAL VALUE	\$5,631,927.27	100.00%

FDIC rules apply and Bank Deposits are eligible for FDIC insurance but are not covered by SIPC. Cash and securities (including MMFs) are eligible for SIPC coverage. See Expanded Disclosures. Values may include assets externally held, which are provided to you as a courtesy, and may not be covered by SIPC. For additional information, refer to the corresponding section of this statement.



This asset allocation represents holdings on a trade date basis, and projected settled Cash/BDP and MMF balances. These classifications do not constitute a recommendation and may differ from the classification of instruments for regulatory or tax purposes.

Account Summary

Basic Securities Account

CHAMPAIGN URBANA MASS TRANSIT DIST
C/O KARL GNADT & BRENDA E EILBRACHT

BALANCE SHEET (^ includes accrued interest)

	Last Period (as of 3/31/19)	This Period (as of 4/30/19)
Cash, BDP, MMFs	\$47,179.03	\$827,274.79
Certificates of Deposit ^	5,565,861.38	4,804,652.48
Total Assets	\$5,613,040.41	\$5,631,927.27
Total Liabilities (outstanding balance)	—	—
TOTAL VALUE	\$5,613,040.41	\$5,631,927.27

INCOME AND DISTRIBUTION SUMMARY

	This Period (4/1/19-4/30/19)	This Year (1/1/19-4/30/19)
Interest	\$30,095.76	\$53,791.15
Income And Distributions	\$30,095.76	\$53,791.15
Tax-Exempt Income	—	—
TOTAL INCOME AND DISTRIBUTIONS	\$30,095.76	\$53,791.15

Taxable and tax exempt income classifications are based on the characteristics of the underlying securities and not the taxable status of the account.

CASH FLOW

	This Period (4/1/19-4/30/19)	This Year (1/1/19-4/30/19)
OPENING CASH, BDP, MMFs	\$47,179.03	\$23,483.64
Purchases	—	(250,000.00)
Sales and Redemptions	750,000.00	1,000,000.00
Income and Distributions	30,095.76	53,791.15
Total Investment Related Activity	\$780,095.76	\$803,791.15
Total Cash Related Activity	—	—
CLOSING CASH, BDP, MMFs	\$827,274.79	\$827,274.79

GAIN/(LOSS) SUMMARY

	Realized This Period (4/1/19-4/30/19)	Realized This Year (1/1/19-4/30/19)	Unrealized Inception to Date (as of 4/30/19)
Short-Term Gain	—	—	\$17,400.40
Long-Term Gain	—	—	4,711.16
Long-Term (Loss)	—	—	(13,493.84)
Total Long-Term	—	—	\$(8,782.68)
TOTAL GAIN/(LOSS)	—	—	\$8,617.72

The Gain/(Loss) Summary, which may change due to basis adjustments, is provided for informational purposes and should not be used for tax preparation. Refer to Gain/(Loss) in the Expanded Disclosures.



Basic Securities Account

CHAMPAIGN URBANA MASS TRANSIT DIST
C/O KARL GNADT & BRENDA E EILBRACHT

Account Detail

Investment Objectives (in order of priority): Income, Aggressive Income, Capital Appreciation
 Inform us if your investment objectives, as defined in the Expanded Disclosures, change.

Brokerage Account

HOLDINGS

This section reflects positions purchased/sold on a trade date basis. "Market Value" and "Unrealized Gain/(Loss)" may not reflect the value that could be obtained in the market. Fixed Income securities are sorted by maturity or pre-refunding date, and alphabetically within date. Estimated Annual Income a) is calculated on a pre-tax basis, b) does not include any reduction for applicable non-US withholding taxes, c) may include return of principal or capital gains which could overstate such estimates, and actual income or yield may be lower or higher than the estimates. Current Yield reflects the income generated by an investment, and is calculated by dividing the total estimated annual income by the current market value of the entire position. It does not reflect changes in its price. Structured Investments, identified on the Position Description Details line as "Asset Class: Struct Inv," may appear in various statement product categories. When displayed, the accrued interest, annual income and current yield for those with a contingent income feature (e.g., Range Accrual Notes or Contingent Income Notes) are estimates and assume specified accrual conditions are met during the relevant period and payment in full of all contingent interest. For Floating Rate Securities, the accrued interest, annual income and current yield are estimates based on the current floating coupon rate and may not reflect historic rates within the accrual period.

CASH, BANK DEPOSIT PROGRAM AND MONEY MARKET FUNDS

Cash, Bank Deposit Program, and Money Market Funds are generally displayed on a settlement date basis. You have the right to instruct us to liquidate your bank deposit balance(s) or shares of any money market fund balance(s) at any time and have the proceeds of such liquidation remitted to you. Estimated Annual Income, Accrued Interest, and APY% will only be displayed for fully settled positions.

Description	Market Value	7-Day Current Yield %	Est Ann Income	APY %
MORGAN STANLEY BANK N.A. #	\$582,259.37	—	\$1,455.65	0.250
MORGAN STANLEY PRIVATE BANK NA #	245,015.42	—	612.54	0.250
BANK DEPOSITS	\$827,274.79		\$2,068.19	

	Percentage of Holdings	Market Value	Est Ann Income
CASH, BDP, AND MMFs	14.69%	\$827,274.79	\$2,068.19

Bank Deposits are held at Morgan Stanley Bank, N.A. and/or Morgan Stanley Private Bank, National Association, affiliates of Morgan Stanley Smith Barney LLC and each a national bank and FDIC member.

CERTIFICATES OF DEPOSIT

Security Description	Trade Date	Face Value	Orig Unit Cost Adj Unit Cost	Unit Price	Orig Total Cost Adj Total Cost	Market Value	Unrealized Gain/(Loss)	Est Ann Income Accrued Interest	Current Yield %
CAPITAL ONE NA MCLEAN VA CD	10/14/15	250,000.00	\$100.000	\$99.832	\$250,000.00			\$2,438.00	0.98
Coupon Rate 1.950%; Matures 10/21/2019; CUSIP 14042RBA8			\$100.000		\$250,000.00	\$249,580.00	\$(420.00) LT	\$119.88	
Int. Semi-Annually Apr/Oct 21; Yield to Maturity 2.306%; Issued 10/21/15; Maturity Value = \$250,000.00; Asset Class: FI & Pref									
Goldman Sachs NEW YORK NY CD	10/14/15	250,000.00	100.000	99.832	250,000.00			2,438.00	0.98
Coupon Rate 1.950%; Matures 10/21/2019; CUSIP 38148JU58			100.000		250,000.00	249,580.00	(420.00) LT	119.88	
Int. Semi-Annually Apr/Oct 21; Yield to Maturity 2.306%; Issued 10/21/15; Maturity Value = \$250,000.00; Asset Class: FI & Pref									
HSBC BANK USA MCLEAN VA CD	4/11/17	250,000.00	100.000	99.668	250,000.00			2,125.00	0.85
Coupon Rate 1.700%; Matures 10/24/2019; CUSIP 40434YHQ3			100.000		250,000.00	249,170.00	(830.00) LT	69.67	

Account Detail

Basic Securities Account

CHAMPAIGN URBANA MASS TRANSIT DIST
C/O KARL GNADT & BRENDA E EILBRACHT

Security Description	Trade Date	Face Value	Orig Unit Cost Adj Unit Cost	Unit Price	Orig Total Cost Adj Total Cost	Market Value	Unrealized Gain/(Loss)	Est Ann Income Accrued Interest	Current Yield %
<i>Int. Semi-Annually Apr/Oct 24; Yield to Maturity 2.391%; Issued 04/24/17; Maturity Value = \$250,000.00; Asset Class: FI & Pref</i>									
SALLIE MAE BK SALT LAKE CITY UT CD	4/11/17	250,000.00	100.174	99.429	250,437.50			4,500.00	1.81
Coupon Rate 1.800%; Matures 03/23/2020; CUSIP 795450ZV0			100.054		250,135.82	248,572.50	(1,563.32) LT	476.90	
<i>Int. Semi-Annually Mar/Sep 22; Yield to Maturity 2.444%; Issued 03/22/17; Maturity Value = \$250,000.00; Asset Class: FI & Pref</i>									
discover GREENWOOD DE CD	6/23/17	250,000.00	100.000	99.181	250,000.00			4,375.00	1.76
Coupon Rate 1.750%; Matures 07/06/2020; CUSIP 2546725C8			100.000		250,000.00	247,952.50	(2,047.50) LT	1,377.76	
<i>Int. Semi-Annually Jan/Jul 06; Yield to Maturity 2.455%; Issued 07/06/17; Maturity Value = \$250,000.00; Asset Class: FI & Pref</i>									
AMEX CENTURION SALT LAKE CITY UT CD	4/10/18	250,000.00	99.445	99.640	248,611.25			5,500.00	2.21
Coupon Rate 2.200%; Matures 09/16/2020; CUSIP 02587DB31			99.445		248,611.25	249,100.00	488.75 LT	672.55	
<i>Int. Semi-Annually Mar/Sep 16; Yield to Maturity 2.466%; Issued 09/16/15; Maturity Value = \$250,000.00; Asset Class: FI & Pref</i>									
CAPITAL ONE BANK GLEN ALLEN VA CD	10/31/17	250,000.00	100.200	99.337	250,500.00			5,000.00	2.01
Coupon Rate 2.000%; Matures 10/19/2020; CUSIP 1404205P1			100.100		250,251.17	248,342.50	(1,908.67) LT	163.93	
<i>Int. Semi-Annually Apr/Oct 18; Yield to Maturity 2.462%; Issued 10/18/17; Maturity Value = \$250,000.00; Asset Class: FI & Pref</i>									
CITIBANK, NA CD SIOUX FALLS SD CD	4/10/18	250,000.00	100.199	100.431	250,500.00			6,750.00	2.69
Coupon Rate 2.700%; Matures 03/29/2021; CUSIP 17312QH77			100.131		250,328.09	251,077.50	749.41 LT	586.96	
<i>Int. Semi-Annually Mar/Sep 29; Yield to Maturity 2.467%; Issued 03/29/18; Maturity Value = \$250,000.00; Asset Class: FI & Pref</i>									
BANK BARODA NEW YORK BRH CD	4/11/17	250,000.00	100.000	99.387	250,000.00			5,375.00	2.16
Coupon Rate 2.150%; Matures 04/19/2021; CUSIP 06062Q3C6			100.000		250,000.00	248,467.50	(1,532.50) LT	190.92	
<i>Int. Semi-Annually Apr/Oct 17; Yield to Maturity 2.471%; Issued 04/17/17; Maturity Value = \$250,000.00; Asset Class: FI & Pref</i>									
ALLY BK SANDY UTAH	4/24/18	100,000.00	100.000	100.738	100,000.00			2,850.00	2.83
Coupon Rate 2.850%; Matures 05/03/2021; CUSIP 02007GCJ0			100.000		100,000.00	100,738.00	738.00 LT	1,401.38	
<i>Int. Semi-Annually May/Nov 03; Yield to Maturity 2.471%; Issued 05/03/18; Maturity Value = \$100,000.00; Asset Class: FI & Pref</i>									
BARCLAYS BANK CD WILMINGTON DE CD	7/18/17	250,000.00	100.000	99.014	250,000.00			5,125.00	2.07
Coupon Rate 2.050%; Matures 07/26/2021; CUSIP 06740KKQ9			100.000		250,000.00	247,535.00	(2,465.00) LT	1,330.80	
<i>Int. Semi-Annually Jan/Jul 26; Yield to Maturity 2.505%; Issued 07/26/17; Maturity Value = \$250,000.00; Asset Class: FI & Pref</i>									
third federal CLEVELAND OH CD	10/16/17	195,000.00	100.000	98.817	195,000.00			3,997.00	2.07
Coupon Rate 2.050%; Matures 10/27/2021; CUSIP 88413QBT4			100.000		195,000.00	192,693.15	(2,306.85) LT	32.77	
<i>Int. Semi-Annually Apr/Oct 27; Yield to Maturity 2.543%; Issued 10/27/17; Maturity Value = \$195,000.00; Asset Class: FI & Pref</i>									
BERKSHIRE BK PITTSFIELD MA CD	10/18/18	250,000.00	100.000	100.983	250,000.00			7,375.00	2.92
Coupon Rate 2.950%; Matures 10/29/2021; CUSIP 084601RD7			100.000		250,000.00	252,457.50	2,457.50 ST	20.15	
<i>Int. Semi-Annually Apr/Oct 29; Yield to Maturity 2.541%; Issued 10/29/18; Maturity Value = \$250,000.00; Asset Class: FI & Pref</i>									
COMENITY CAP BK SALT LAKE CITY UTAH CD	3/14/19	250,000.00	100.000	100.414	250,000.00			6,875.00	2.74
Coupon Rate 2.750%; Matures 03/29/2022; CUSIP 20033AS56			100.000		250,000.00	251,035.00	1,035.00 ST	19.09	
<i>Interest Paid Monthly Apr 29; Yield to Maturity 2.601%; Issued 03/29/19; Maturity Value = \$250,000.00; Asset Class: FI & Pref</i>									
MS BANK CD SALT LAKE CITY UT CD	3/26/18	250,000.00	100.000	100.551	250,000.00			7,000.00	2.78
Coupon Rate 2.800%; Matures 03/29/2022; CUSIP 61747MR45			100.000		250,000.00	251,377.50	1,377.50 LT	608.70	
<i>Int. Semi-Annually Mar/Sep 29; Yield to Maturity 2.602%; Issued 03/29/18; Maturity Value = \$250,000.00; Asset Class: FI & Pref</i>									



Account Detail

Basic Securities Account

CHAMPAIGN URBANA MASS TRANSIT DIST
C/O KARL GNADT & BRENDA E EILBRACHT

Security Description	Trade Date	Face Value	Orig Unit Cost Adj Unit Cost	Unit Price	Orig Total Cost Adj Total Cost	Market Value	Unrealized Gain/(Loss)	Est Ann Income Accrued Interest	Current Yield %
MEDALLION BK SALT LAKE CITY UT CD	3/29/18	250,000.000	100.000	100.543	250,000.00			7,000.00	2.78
Coupon Rate 2.800%; Matures 04/11/2022; CUSIP 58404DBP5			100.000		250,000.00	251,357.50	1,357.50 LT	401.64	
<i>Int. Semi-Annually Apr/Oct 09; Yield to Maturity 2.607%; Issued 04/09/18; Maturity Value = \$250,000.00; Asset Class: FI & Pref</i>									
CONTINENTAL BK SALT LAKE CITY UTAH CD	10/18/18	240,000.000	100.000	101.246	240,000.00			7,320.00	3.01
Coupon Rate 3.050%; Matures 05/09/2022; CUSIP 211163HQ6			100.000		240,000.00	242,990.40	2,990.40 ST	3,478.01	
<i>Int. Semi-Annually May/Nov 09; Yield to Maturity 2.619%; Issued 11/09/18; Maturity Value = \$240,000.00; Asset Class: FI & Pref</i>									
ENERBANK USA SALT LAKE CITY UTAH CD	10/15/18	250,000.000	100.000	101.875	250,000.00			8,125.00	3.19
Coupon Rate 3.250%; Matures 10/19/2022; CUSIP 29278TDR8			100.000		250,000.00	254,687.50	4,687.50 ST	248.23	
<i>Interest Paid Monthly Nov 19; Yield to Maturity 2.680%; Issued 10/19/18; Maturity Value = \$250,000.00; Asset Class: FI & Pref</i>									
JPMORGAN CHASE BK NA COLUMBUS OHIO FID	10/15/18	250,000.000	100.000	100.450	250,000.00			8,375.00	3.34
Coupon Rate 3.350%; Matures 10/19/2022; CUSIP 48128FZL9			100.000		250,000.00	251,125.00	1,125.00 ST	251.71	
<i>Int. Semi-Annually Apr/Oct 19; Callable \$100.00 on 10/19/19; Yield to Maturity 3.212%; Issued 10/19/18; Maturity Value = \$250,000.00; Asset Class: FI & Pref</i>									
UBS BK USA SALT LAKE CITY UT	10/18/18	250,000.000	100.000	102.042	250,000.00			8,250.00	3.23
Coupon Rate 3.300%; Matures 10/24/2022; CUSIP 90348JET3			100.000		250,000.00	255,105.00	5,105.00 ST	137.50	
<i>Interest Paid Monthly Nov 24; Yield to Maturity 2.682%; Issued 10/24/18; Maturity Value = \$250,000.00; Asset Class: FI & Pref</i>									

	Percentage of Holdings	Face Value	Orig Total Cost Adj Total Cost	Market Value	Unrealized Gain/(Loss)	Est Ann Income Accrued Interest	Current Yield %
CERTIFICATES OF DEPOSIT		4,785,000.000	\$4,785,048.75 \$4,784,326.33	\$4,792,944.05	\$(8,782.68) LT \$17,400.40 ST	\$110,793.00 \$11,708.43	2.31%
TOTAL CERTIFICATES OF DEPOSIT (includes accrued interest)	85.31%			\$4,804,652.48			
	Percentage of Holdings		Total Cost	Market Value	Unrealized Gain/(Loss)	Est Ann Income Accrued Interest	Current Yield %
TOTAL VALUE			\$4,784,326.33	\$5,620,218.84	\$(8,782.68) LT \$17,400.40 ST	\$112,861.19 \$11,708.43	2.00%
TOTAL VALUE (includes accrued interest)	100.00%			\$5,631,927.27			

Unrealized Gain/(Loss) totals only reflect positions that have both cost basis and market value information available. Cash, MMF, Deposits and positions stating 'Please Provide' or 'Pending Corporate Actions' are not included.

Account Detail

Basic Securities Account

CHAMPAIGN URBANA MASS TRANSIT DIST
C/O KARL GNADT & BRENDA E EILBRACHT

ALLOCATION OF ASSETS (^includes accrued interest)

	Cash	Equities	Fixed Income & Preferred Securities	Alternatives	Structured Investments	Other
Cash, BDP, MMFs	\$827,274.79	—	—	—	—	—
Certificates of Deposit ^	—	—	\$4,804,652.48	—	—	—
TOTAL ALLOCATION OF ASSETS ^	\$827,274.79	—	\$4,804,652.48	—	—	—

ACTIVITY

CASH FLOW ACTIVITY BY DATE

Activity Date	Settlement Date	Activity Type	Description	Comments	Quantity	Price	Credits/(Debits)
4/9		Interest Income	MEDALLION BK SALT LAKE CI	2.800% DUE2022-04-11 [58404DBP5]			\$3,490.41
4/17		Interest Income	BANK BARODA NEW YORK BRH CD	2.150% DUE2021-04-19 [06062Q3C6]			2,680.14
4/18		Interest Income	CAPITAL ONE BANK GLEN ALLEN VACD	2.000% DUE2020-10-19 [1404205P1]			2,493.15
4/18		Interest Income	BANK NEW ENG SALEM NH CD	1.100% DUE2019-04-18 [063847AN7]			210.96
4/18	4/18	Redemption	BANK NEW ENG SALEM NH CD	1.100% DUE2019-04-18 [063847AN7] REDEMPTION OF MATURED BOND	250,000.000	100.0000	250,000.00
4/22		Interest Income	JPMORGAN CHASE BK NA COLUMBUS OH	3.350% DUE2022-10-19 [48128FZL9]			4,176.03
4/22		Interest Income	CAPITAL ONE NA MCLEAN VA CD	1.950% DUE2019-10-21 [14042RBA8]			2,430.82
4/22		Interest Income	Goldman Sachs NEW YORK NY CD	1.950% DUE2019-10-21 [38148JU58]			2,430.82
4/22		Interest Income	WHITNEY BANK GULFPORT MS CD	1.650% DUE2019-04-22 [966594AY9]			2,079.45
4/22		Interest Income	ENERBANK USA SALT LAKE CITY UT	3.250% DUE2022-10-19 [29278TDR8]			690.07
4/22		Interest Income	wells fargo cd SIOUX FALLS SD CD	1.250% DUE2019-04-22 [9497484N4]			282.53
4/22	4/22	Redemption	wells fargo cd SIOUX FALLS SD CD	1.250% DUE2019-04-22 [9497484N4] REDEMPTION OF MATURED BOND	250,000.000	100.0000	250,000.00
4/22	4/22	Redemption	WHITNEY BANK GULFPORT MS CD	1.650% DUE2019-04-22 [966594AY9] REDEMPTION OF MATURED BOND	250,000.000	100.0000	250,000.00
4/24		Interest Income	HSBC BANK USA MCLEAN VA CD	1.700% DUE2019-10-24 [40434YHQ3]			2,119.18
4/24		Interest Income	UBS BK USA SALT LAKE CITY UT	3.300% DUE2022-10-24 [90348JET3]			700.68
4/29		Interest Income	BERKSHIRE BK PITTSFIELD MA CD	2.950% DUE2021-10-29 [084601RD7]			3,677.40
4/29		Interest Income	third federal CLEVELAND OH CD	2.050% DUE2021-10-27 [88413QBT4]			1,993.27
4/29		Interest Income	COMENITY CAP BK SALT LAKE CITYUT	2.750% DUE2022-03-29 [20033AS56]			583.90
4/30		Interest Income	MORGAN STANLEY BANK N.A.	(Period 04/01-04/30)			41.53
4/30		Interest Income	MORGAN STANLEY PRIVATE BANK NA	(Period 04/01-04/30)			15.42
NET CREDITS/(DEBITS)							\$780,095.76

MONEY MARKET FUND (MMF) AND BANK DEPOSIT PROGRAM ACTIVITY

Activity Date	Activity Type	Description	Credits/(Debits)
4/9	Automatic Investment	BANK DEPOSIT PROGRAM	\$3,490.41



Account Detail

Basic Securities Account

CHAMPAIGN URBANA MASS TRANSIT DIST
C/O KARL GNADT & BRENDA E EILBRACHT

MONEY MARKET FUND (MMF) AND BANK DEPOSIT PROGRAM ACTIVITY (CONTINUED)

Activity Date	Activity Type	Description	Credits/(Debits)
4/17	Automatic Investment	BANK DEPOSIT PROGRAM	2,680.14
4/18	Automatic Investment	BANK DEPOSIT PROGRAM	252,704.11
4/22	Automatic Investment	BANK DEPOSIT PROGRAM	512,089.72
4/24	Automatic Investment	BANK DEPOSIT PROGRAM	2,819.86
4/29	Automatic Investment	BANK DEPOSIT PROGRAM	6,254.57
4/30	Automatic Investment	BANK DEPOSIT PROGRAM	41.53
4/30	Automatic Investment	BANK DEPOSIT PROGRAM	15.42
NET ACTIVITY FOR PERIOD			\$780,095.76

REALIZED GAIN/(LOSS) DETAIL LONG-TERM GAIN/(LOSS)

Security Description	Date Acquired	Date Sold	Quantity	Sales Proceeds	Orig / Adj Total Cost	Realized Gain/(Loss)	Comments
BANK NEW ENG CD 1100 19AP18	10/12/16	04/18/19	250,000.000	\$250,000.00	\$250,000.00	\$0.00	
WHITNEY BANK 1650 19AP22	04/11/17	04/22/19	250,000.000	250,000.00	250,000.00	0.00	
wells fargo cd 1250 19AP22	04/15/16	04/22/19	250,000.000	250,000.00	250,000.00	0.00	
Long-Term This Period				\$750,000.00	\$750,000.00	\$0.00	
Long-Term Year to Date				\$1,000,000.00	\$1,000,000.00	\$0.00	
Net Realized Gain/(Loss) This Period				\$750,000.00	\$750,000.00	\$0.00	
Net Realized Gain/(Loss) Year to Date				\$1,000,000.00	\$1,000,000.00	\$0.00	

Treasury regulations require that we report on Form 1099-B a) adjusted cost basis on the sale of covered securities acquired on or after 1/1/11 (or the applicable date for the type of security), b) the gain or loss as either long-term or short-term, and c) basis adjustments on covered securities due to wash sales, certain corporate actions and transfers by gift or inheritance. This section may not reflect all the basis adjustments required when filing your tax return. Refer to the Expanded Disclosures.

MESSAGES

Senior Investor Helpline

For any inquiries or potential concerns, senior investors or someone acting on their behalf may contact our Firm by calling (800) 280-4534.

**CHAMPAIGN-URBANA MASS TRANSIT DISTRICT
PRELIMINARY BUDGET FOR FY2020**

	FY2019 BUDGET	FY2020 BUDGET
Operations	25,268,000	25,896,000
Maintenance	7,723,000	8,446,000
Administration	5,473,000	6,636,000
Illinois Terminal	<u>1,286,000</u>	<u>1,294,000</u>
Operating Expenses	39,750,000	42,272,000
Debt Service and Interest	<u>14,617,000</u>	<u>25,099,000</u>
Total Eligible Expenses	54,367,000	67,371,000
Total Ineligible Expenses	282,000	244,000
Total Capital	<u>1,800,000</u>	<u>3,332,000</u>
Total Appropriations	56,449,000	70,947,000

**CHAMPAIGN-URBANA MASS TRANSIT DISTRICT
ESTIMATE OF REVENUES AND EXPENSES**

FY2020

Cash on Hand	\$7,500,000
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REVENUE

State Operating Grant	44,000,000
Property Taxes	8,250,000
Operating Revenue/Fares	7,077,000
Rental & Miscellaneous	460,000
Interest	125,000
State Corporate Replacement Tax	150,000
ADA Fares	325,000
Advertising	300,000
Half Fare Cab Program	85,000
Capital Reserve Transfer	10,175,000
 Total Revenues & Cash on Hand	 \$78,447,000

EXPENSES

Eligible Operating Expenses	\$42,272,000
Eligible Debt Service	25,099,000
Ineligible Operating Expenses	244,000
100% Local Fixed Asset Additions	3,332,000
 Total Expenses	 \$70,947,000

Ending Balance	\$7,500,000
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Held in Reserve:

DOAP - Due from IDOT (Due to IDOT)	\$1,070,798
Carle Est. Tax Levy Appeal	(\$815,000)
Presence Est. Tax Levy Appeal	(\$304,000)

**CHAMPAIGN-URBANA MASS TRANSIT DISTRICT
PRELIMINARY BUDGET FOR FY2020**

OPERATIONS:	FY2019 BUDGET	FY2020 BUDGET
WAGES:		
Operators	9,500,000	9,500,000
Street Supervisors and Dispatchers	1,121,000	1,175,000
Other Supervisory	829,000	775,000
Clerical	275,000	325,000
Labor Credit	0	0
	11,725,000	11,775,000
FRINGE BENEFITS:		
FICA / Social Security	1,000,000	1,025,000
IMRF	2,775,000	2,700,000
Employee Health Insurance	2,775,000	3,023,000
Worker's Compensation	151,000	150,000
Unemployment Insurance	50,000	50,000
Paid Absences	2,374,499	2,490,000
Uniform Allowances	45,000	40,000
Early Retirement	100,000	100,000
Other Fringes (incl OPEB)	75,501	120,000
	9,346,000	9,698,000
SERVICES:		
Printing	50,000	50,000
Taxi	175,000	175,000
ADA Service	900,000	910,000
Other Services	30,000	95,000
	1,155,000	1,230,000
MATERIALS / SUPPLIES CONSUMED:		
Fuel, Lubrications	2,750,000	2,750,000
Fuel Tax - Urbana	40,000	40,000
Tires & Tubes	139,000	150,000
Small Equipment	45,000	10,000
Other Material and Supplies	30,000	48,000
	3,004,000	2,998,000
MISCELLANEOUS:		
Leased Equipment	20,000	175,000
Other	18,000	20,000
	38,000	195,000
TOTAL OPERATIONS EXPENSES:	25,268,000	25,896,000

**CHAMPAIGN-URBANA MASS TRANSIT DISTRICT
PRELIMINARY BUDGET FOR FY2020**

MAINTENANCE:	FY2019 BUDGET	FY2020 BUDGET
WAGES:		
Mechanics	1,500,000	1,450,000
Cleaners	850,000	825,000
Supervisors/Clerical	627,000	661,000
Labor Credit	0	0
	2,977,000	2,936,000
FRINGE BENEFITS:		
FICA / Social Security	225,000	235,000
IMRF	575,000	590,000
Employee Health Insurance	650,000	689,000
Worker's Compensation	226,000	200,000
Unemployment Insurance	10,000	10,000
Paid Absences	215,000	230,000
Uniforms and Tools Allowances	40,000	40,000
Early Retirement	0	50,000
Other Fringes	250,000	314,000
	2,191,000	2,358,000
SERVICES:		
Contract Maintenance	80,000	115,000
Other Services	8,000	6,000
	88,000	121,000
MATERIALS / SUPPLIES CONSUMED:		
Fuel/Lubricants	110,000	110,000
Garage Equipment Repairs	40,000	50,000
Building and Grounds Repairs	100,000	125,000
Revenue Vehicle Repairs	1,900,000	2,400,000
Service Vehicle Repairs	20,000	20,000
Service Supplies	55,000	60,000
Shop Tools and Equipment	60,000	70,000
Passenger Shelter Repairs	75,000	75,000
Other Material and Supplies Consumed	41,000	45,000
	2,401,000	2,955,000
MISCELLANEOUS:		
Leased Equipment	54,000	56,000
Other	12,000	20,000
	66,000	76,000
TOTAL MAINTENANCE EXPENSES:	7,723,000	8,446,000

**CHAMPAIGN-URBANA MASS TRANSIT DISTRICT
PRELIMINARY BUDGET FOR FY2020**

ADMINISTRATION	FY2019 BUDGET	FY2020 BUDGET
WAGES:		
Supervisors	1,250,000	1,350,000
Clerical	300,000	275,000
Labor Credit	0	0
	1,550,000	1,625,000
FRINGE BENEFITS:		
FICA / Social Security	85,000	95,000
IMRF	225,000	250,000
Employee Health Insurance	295,000	313,000
Worker's Compensation	5,000	5,000
Unemployment Insurance	3,000	3,000
Paid Absences	4,000	4,000
Early Retirement	0	10,000
Other Fringes	58,000	61,000
	675,000	741,000
SERVICES:		
Professional & Technical Services	650,000	1,493,000
Contract Maintenance & Temporary Help	500,000	610,000
Printing	0	3,000
Other Services	40,000	40,000
	1,190,000	2,146,000
MATERIALS / SUPPLIES CONSUMED:		
Office Supplies	15,000	10,000
Equipment	60,000	75,000
Building & Grounds Repair	60,000	60,000
	135,000	145,000
INSURANCE:		
IPTRMA Premium	530,000	500,000
IPTRMA Reserve Fund	500,000	525,000
Physical Damage	55,000	60,000
Recovery	-25,000	-25,000
Other	0	35,000
	1,060,000	1,095,000
MISCELLANEOUS:		
Utilities	335,000	365,000
Dues/Subscriptions	80,000	85,000
Travel & Meeting	90,000	90,000
Advertising / Public Information	200,000	200,000
Interest Expense	0	0
Advertising Services		
Leased Equipment	29,000	30,000
Other Expenses	129,000	114,000
	863,000	884,000
TOTAL GENERAL ADMINISTRATION EXPENSES:	5,473,000	6,636,000

**CHAMPAIGN-URBANA MASS TRANSIT DISTRICT
PRELIMINARY BUDGET FOR FY2020**

ILLINOIS TERMINAL	FY2019 BUDGET	FY2020 BUDGET
WAGES:		
Clerical	116,000	125,000
Security	195,000	195,000
Maintenance	140,000	140,000
Supervisory	56,000	70,000
	507,000	530,000
FRINGE BENEFITS:		
FICA / Social Security	40,000	50,000
IMRF	125,000	100,000
Employee Health Insurance	165,000	165,000
Worker's Compensation	25,000	25,000
Unemployment Insurance	3,000	3,000
Other Fringes (includes Early Retirement)	41,000	59,000
	399,000	402,000
SERVICES:		
Contract	40,000	40,000
Professional & Technical	3,000	3,000
Other Services	6,000	5,000
	49,000	48,000
MATERIALS / SUPPLIES CONSUMED:		
Service Supplies	25,000	28,000
Office Supplies	15,000	6,000
Equipment	15,000	20,000
Building & Grounds Repair	160,000	135,000
	215,000	189,000
UTILITIES:	105,000	90,000
MISCELLANEOUS	11,000	35,000
TOTAL ILLINOIS TERMINAL EXPENSES:	1,286,000	1,294,000

CHAMPAIGN-URBANA MASS TRANSIT DISTRICT - CAPITAL

DEBT SERVICE FOR FY2020

Hydrogen Fuel Cell Pilot Project	\$ 12,775,000
Maintenance In-Ground Hydraulic Vehicle Lifts	465,000
Illinois Terminal Fire Panel Replacement	21,000
Admin/Operations/Storage Rehab	515,000
MCORE Kiosks	56,000
Conference Room A/V Tech Upgrade	37,000
(5) 40ft Hybrid Buses	3,550,000
(6) 60ft Hybrid Buses	6,700,000
CAD/AVL Software Upgrades	361,000
Backbone Fiber Switch Upgrade	104,000
The Yards/Illinois Terminal Expansion	515,000

TOTAL	\$ 25,099,000
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LOCAL CAPITAL EXPENDITURES FOR FY2020

MCORE Capital Contribution	\$ 332,000
Architectural & Engineering	1,500,000
Shelters, Kiosks, Stops, & Associated Work	300,000
51 E. Chester Rehab	1,000,000
Miscellaneous Facility Improvements	200,000

TOTAL	\$ 3,332,000
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ORDINANCE NO. 2019-1
BUDGET AND APPROPRIATION ORDINANCE OF THE
CHAMPAIGN-URBANA MASS TRANSIT DISTRICT
CHAMPAIGN COUNTY, ILLINOIS
FOR THE FISCAL YEAR BEGINNING JULY 1, 2019 AND ENDING JUNE 30, 2020

WHEREAS, notice of a public hearing on the Tentative Budget and Appropriation Ordinance was given in the Champaign-Urbana News-Gazette on May 23, 2019, and
WHEREAS, a public hearing was held upon Tentative Budget and Appropriation Ordinance on the 26th day of June, 2019

BE IT ORDAINED BY THE BOARD OF TRUSTEES OF THE CHAMPAIGN-URBANA
MASS TRANSIT DISTRICT, Champaign County, Illinois, that:

Section 1. For the fiscal year ending June 30, 2020, the following sums of money are appropriated for the corporate purposes of the Champaign-Urbana Mass Transit District, Urbana, Illinois:

		AMOUNT APPROPRIATED	
1	OPERATIONS		
A	Wages		
	(1) Operators' Wages	\$9,500,000	
	(2) Supervisory Wages	1,950,000	
	(3) Clerical	325,000	
	Total		\$11,775,000
B	Benefits		
	(1) FICA	\$1,025,000	
	(2) Illinois Municipal Retirement Fund	2,700,000	
	(3) Employee Health Insurance	3,023,000	
	(4) Worker's Compensation Insurance	150,000	
	(5) Unemployment Insurance	50,000	
	(6) Paid Leave (Sick Leave, Holidays, etc.)	2,490,000	
	(7) Uniform Allowance	40,000	
	(8) Early Retirement	100,000	
	(9) Other Benefits	120,000	
	Total		\$9,698,000
C	Services		
	(1) Printing	\$50,000	
	(2) Half Fare Cab	175,000	
	(3) ADA Service	910,000	
	(4) Other	95,000	
	Total		\$1,230,000

D	Supplies		
	(1) Fuel and Lubricants	\$2,750,000	
	(2) Fuel Tax - Urbana	40,000	
	(2) Tires and Tubes	150,000	
	(3) Small Equipment	10,000	
	(4) Other Material and Supplies	48,000	
	Total		\$2,998,000
E	Miscellaneous		
	(1) Leased Equipment	\$175,000	
	(2) Other	20,000	
	Total		\$195,000
	TOTAL -- OPERATIONS		\$25,896,000

2 MAINTENANCE

A	Wages		
	(1) Mechanics' Wages	\$1,450,000	
	(2) Service Personnel Wages	825,000	
	(3) Supervisory Wages	661,000	
	Total		\$2,936,000
B	Benefits		
	(1) FICA	\$235,000	
	(2) Illinois Municipal Retirement Fund	590,000	
	(3) Employee Health Insurance	689,000	
	(4) Worker's Compensation Insurance	200,000	
	(5) Unemployment Insurance	10,000	
	(6) Paid Leave (Sick Leave, Holidays, etc.)	230,000	
	(7) Uniform Allowance	25,000	
	(8) Tool Allowance	15,000	
	(9) Early Retirement	50,000	
	(10) Other Benefits	314,000	
	Total		\$2,358,000
C	Services		
	(1) Contract Maintenance	115,000	
	(2) Other Services	6,000	
	Total		\$121,000

D	Materials / Supplies		
	(1) Fuel and Lubricants	110,000	
	(2) Garage Equipment Repairs	50,000	
	(3) Building / Ground Repairs	125,000	
	(4) Revenue Vehicle Repairs	2,400,000	
	(5) Service Vehicle Repairs	20,000	
	(6) Service Supplies	60,000	
	(7) Shop Tools and Equipment	70,000	
	(8) Passenger Shelter Repairs	75,000	
	(9) Other Material and Supplies	45,000	
	Total		\$2,955,000
E	Miscellaneous		
	(1) Leased Equipment	56,000	
	(2) Other	20,000	
			\$76,000
TOTAL -- MAINTENANCE			\$8,446,000

3 GENERAL ADMINISTRATION

A	Wages		
	(1) Administrative Salaries	\$1,350,000	
	(2) Clerical	275,000	
	Total		\$1,625,000
B	Benefits		
	(1) FICA	\$95,000	
	(2) Illinois Municipal Retirement Fund	250,000	
	(3) Employee Health Insurance	313,000	
	(4) Worker's Compensation Insurance	5,000	
	(5) Unemployment Insurance	3,000	
	(6) Early Retirement	10,000	
	(7) Other Benefits	65,000	
	Total		\$741,000
C	Services		
	(1) Professional & Technical Services	\$1,493,000	
	(2) Contract Maintenance	610,000	
	(3) Printing	3,000	
	(4) Other Services	40,000	
	Total		\$2,146,000
D	Supplies		
	(1) Office Supplies	\$10,000	
	(2) Equipment	75,000	
	(3) Building / Ground Repairs	60,000	
	Total		\$145,000

E	Utilities			
	(1) Utilities		365,000	
		Total		\$365,000
F	Insurance Premiums			
	(1) Illinois Public Transit Risk Management Association Premium Assessment		500,000	
	(2) Illinois Public Transit Risk Management Association Reserve Fund Assessment		525,000	
	(3) Physical Damage		60,000	
	(4) Recovery		-25,000	
	(5) Other		35,000	
		Total		\$1,095,000
G	Miscellaneous			
	(1) Dues and Subscriptions		85,000	
	(2) Travel and Meetings		90,000	
	(3) Public Information		200,000	
	(4) Trustee Compensation		8,000	
	(5) Postage		6,000	
	(6) Advertising Services			
	(7) Other Miscellaneous		100,000	
	(8) Leased Equipment		30,000	
	(9) Interest Expense			
	(10) Ineligible Expenses		204,000	
	(11) Debt Service Equipment		25,099,000	
		Total		\$25,822,000
	TOTAL -- GENERAL ADMINISTRATION			\$31,939,000

4 ILLINOIS TERMINAL

A	Wages			
	(1) Clerical		\$125,000	
	(2) Security		195,000	
	(3) Maintenance		140,000	
	(4) Overhead		70,000	
		Total		\$530,000
B	Benefits			
	(1) FICA		\$50,000	
	(2) Illinois Municipal Retirement Fund		100,000	
	(3) Employee Health Insurance		165,000	
	(4) Worker's Compensation Insurance		25,000	
	(5) Unemployment Insurance		3,000	
	(6) Paid Leave (Sick Leave, Holidays, etc.)		17,000	
	(7) Other Fringes		42,000	
		55	Total	\$402,000

C	Services		
	(1) Contract	40,000	
	(2) Professional & Technical Services	3,000	
	(3) Other	5,000	
	Total	<u> </u>	\$48,000
D	Materials / Supplies		
	(1) Service Supplies	28,000	
	(2) Office Supplies	6,000	
	(3) Equipment	20,000	
	(4) Building and Grounds	135,000	
	Total	<u> </u>	\$189,000
E	Utilities		
	(1) Utilities	90,000	
	(2) Ineligibles	40,000	
	Total	<u> </u>	\$130,000
F	Miscellaneous		
	(1) Miscellaneous	35,000	
	Total	<u> </u>	\$35,000
TOTAL -- ILLINOIS TERMINAL			\$1,334,000

5 CAPITAL EXPENDITURES

(1)	MCORE Capital Contribution	\$332,000	
(2)	Architectural & Engineering	1,500,000	
(3)	Shelters, Kiosks, Stops, & Associated Work	300,000	
(4)	51 E. Chester Rehab	1,000,000	
(5)	Miscellaneous Facility Improvements	200,000	
	TOTAL CAPITAL		\$3,332,000
TOTAL APPROPRIATIONS			\$70,947,000

Said appropriation items shall constitute the budget for the District for said fiscal period.

In support of said budget and as a part thereof, the following statement is made under Section 3 of "The Illinois Municipal Law" approved July 12, 1957, as amended:

A.	EXPECTED CASH ON HAND AT BEGINNING OF FISCAL PERIOD		\$7,500,000
B.	ESTIMATED RECEIPTS		
(1)	Cash Receipts		
	a) Operating Revenue	7,947,000	
	b) Advertising Revenue	300,000	
	c) Interest Income	125,000	
	Total		\$8,372,000
(2)	Cash Receipts -- IDOT Downstate Operating Assistance Funds		\$44,000,000
(3)	Corporate Replacement Tax		\$150,000
(4)	Capital Reserve Transfer		\$10,175,000
(5)	Estimated Receipts from Taxes to be Levied		
	a) General Levy	5,340,000	
	b) Social Security Levy	850,000	
	c) Illinois Municipal Retirement Fund Levy	1,350,000	
	d) Worker's Compensation	70,000	
	e) Liability Insurance and Claims Service and Claims	600,000	
	f) Unemployment Insurance	25,000	
	g) Auditing	15,000	
	Total		\$8,250,000
	TOTAL ESTIMATED RECEIPTS AND CASH ON HAND		\$78,447,000
C.	EXPECTED CASH ON HAND AT END OF YEAR		\$7,500,000

Section 2. This Ordinance shall be in full force and effect upon its passage.

Sections 3. The Secretary of the Board of Trustees is directed to file certified copy of this Ordinance with the County Clerk of Champaign County, Illinois.

This Ordinance is hereby by the affirmative vote, the "Ayes" and "Nays" being called, of a majority of the members of the Board of Trustees of the Champaign-Urbana Mass Transit District at a duly called Regular Meeting of the said Board of Trustees on the day of _____ pursuant to a roll call as follows:

AYES:

NAYS:

ABSTAIN:

ABSENT:

Approved by me this _____ day of _____.

Bradley Diel
Chair-Board of Trustees

ATTEST:

Jack Waaler, Secretary



To: Board of Trustees
From: Karl Gnadt, Managing Director
Date: 5/29/2019
Subject: 2019-2020 Champaign Unit 4 School District Agreement

- A. Introduction** – This Agreement is for transportation services for students going to and from Middle School or High School in the Champaign Unit 4 School District.
- B. Recommended Action** – Staff recommends that the Board of Trustees authorize the managing Director to execute the agreement between the District and Unit 4 in the amount of \$543,405. Based on a nine-month school year payment schedule, each billing will be \$60,378.
- C. Prior Trustee Action** – MTD has had annual agreements with Unit 4 since 1977.
- D. Advantages/Disadvantages** – Having Middle School and High School students use public transportation to get to and from school is the best way to educate them on the use of public transit. This is a critical life skill that these students gain that benefits them, their families, and the communities that they end up living in.
- E. Summary** – MTD is able to use Downstate Operating funds to pay for 65% of the total Unit 4 transportation cost. The remaining 35% will be paid by Unit 4. This results in a significant savings to Unit 4 for their transportation services. All of the service that MTD provides under this contract is open to the public and is published in our Maps & Schedules book.

**TRANSPORTATION AGREEMENT
BETWEEN
CHAMPAIGN-URBANA MASS TRANSIT DISTRICT
AND
CHAMPAIGN UNIT 4 SCHOOL DISTRICT
2019-2020**

The following shall constitute the Transportation Agreement for the 2019-2020 school year between the Champaign-Urbana Mass Transit District (MTD) and Champaign Unit 4 School District (Unit 4).

Champaign-Urbana Mass Transit District

1. Transport students on school days as designated by the calendar adopted by the Board of Education for the 2019-2020 school year.
2. Provide for loading and unloading of students in the immediate or close proximity to the respective schools.
3. Keep adequate liability insurance in force with limits not less than those currently in effect on the date of execution of this Agreement. Unit 4 shall be listed as an additional insured on the policy and cause a current certificate evidencing such coverage to be delivered to Unit 4.
4. Work cooperatively with Unit 4 to prevent overcrowding of buses and to minimize numbers of student standees.
5. Work cooperatively with Unit 4 in collection of statistical data on student ridership and quality of service relating to such student ridership.
6. Provide stickers for use on eligible high school and middle school ID's that do not have the MTD logo.

Champaign Unit 4 School District

1. Provide to eligible middle and high school students a photo ID with either the MTD logo or the appropriate semester sticker.
2. All eligible students must have the appropriate photo ID with the MTD logo or semester sticker by no later than September 30, 2019.
3. All early outs and late starts must be scheduled and given to the MTD in advance of the start of the school year.

4. Every effort must be taken by each school served to board students in a timely and efficient manner.
5. The appropriate school administrator/supervisor, from each school served, must be present and provide assistance in the supervision and control of students at all scheduled boarding times.

Payment Procedure

The cost for providing access to and from school for 2019-2020 from the following areas is \$543,405. This figure also includes access through-out the community to all schools per "School of Choice."

- | | |
|------------------------------|---|
| 1. Arbours | 19. Market Street Area |
| 2. Ashland Park | 20. Maynard Lake |
| 3. Ayrshire | 21. Parkland Ridge |
| 4. Boulder Ridge | 22. Providence at Thornberry |
| 5. Brookshire | 23. Robeson West |
| 6. Cherry Hills South | 24. Rolling Acres |
| 7. Colony West | 25. Sawgrass |
| 8. Copper Ridge | 26. State/Randolph Area |
| 9. Devonshire | 27. Timberline |
| 10. Devonshire South | 28. Town Center and Dobbins Downs |
| 11. Dobbins Downs (Franklin) | 29. Trails of Brittany |
| 12. Fifth and Bradley Area | 30. Turnberry Ridge |
| 13. Garden Hills | 31. Westlake |
| 14. Glenshire | 32. Wilbur Heights |
| 15. Ironwood | 33. Williamsburg Area |
| 16. Lincolnshire | 34. Windsor Park |
| 17. Lincolnshire Fields East | 35. Winfield Village and South First Street |
| 18. Lincolnshire Fields West | |

Additional Terms

1. During the 2019-2020 school year, MTD will operate a total of 34 school trips. Additionally, 36 late starts and 4 early-outs will need to be provided. Future adjustments in these totals will result in a change to the contract amount.
2. Unit 4 will provide access for an MTD orientation for all 5th grade students. The orientation will include, but not be limited to, comprehensive safety training, bus rider rules and regulations, expectations for student behavior and how to use the MTD system. MTD will offer bus evacuation training for all students grade 6-12 once per year.

3. The parties shall conclude negotiations and obtain respective Board approval on the contract for the 2020-2021 school year prior to May 31, 2020. However, either party may determine not to renew the contract for the 2020-2021 school year.

The MTD will bill Unit 4 on a monthly basis. Based on a total cost of \$543,405 on a nine-month schedule, each billing will be \$60,378.

Managing Director/CEO
Champaign-Urbana Mass Transit District

President, Board of Education
Champaign Unit 4 School District

DATE: _____

DATE: _____



To: Board of Trustees
From: Karl Gnadt
Date: May 29, 2019
Subject: Downstate Operating Assistance Grant Resolution – FY2020

- A. Introduction** – The Illinois Department of Transportation has reviewed and conditionally approved the District’s FY2020 Downstate Operating Assistance Grant application. The conditional approval is “subject to the Governor and State Legislature’s SFY2020 appropriation actions.” In other words, it is dependent upon the successful completion of the State’s FY2020 budget. The grant has been approved for the maximum amount of \$45,177,275 or 65% of our FY2020 projected eligible operating expenses (including debt service capital projects).
- B. Recommended Action:** Staff recommends Board approval of the FY2020 Downstate Operating Assistance Grant Resolution to authorize the Managing Director to enter into the Downstate Operating Assistance Grant agreement on behalf of the District.
- C. Prior Trustee Action** – The Board approves the Downstate Operating Assistance Grant resolution annually.

RESOLUTION NO. 2019-1

**RESOLUTION AUTHORIZING EXECUTION AND AMENDMENT OF DOWNSTATE OPERATING
ASSISTANCE GRANT AGREEMENT**

WHEREAS, the provision of public transportation service is essential to the people of Illinois; and

WHEREAS, the Downstate Public Transportation Act (30 ILCS 740/2-1 et seq.) (“Act”) authorizes the State of Illinois, acting by and through the Illinois Department of Transportation, to provide grants and to make funds available to assist in the development and operation of public transportation systems; and

WHEREAS, grants for said funds will impose certain obligations upon the recipient, including provision by it of the local share of funds necessary to cover costs not covered by funds provided under the Downstate Public Transportation Act.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF TRUSTEES OF THE CHAMPAIGN-URBANA MASS TRANSIT DISTRICT:

Section 1. That the Champaign-Urbana Mass Transit District enter into a Downstate Public Transportation Operating Assistance Agreement (“Agreement”) with the State of Illinois and amend such Agreement, if necessary, for fiscal year 2020, in order to obtain grant assistance under the provisions of the Act.

Section 2. That Karl P. Gnadt, Managing Director of the Champaign-Urbana Mass Transit District is hereby authorized and directed to execute the Agreement or its amendment(s) on behalf of the Champaign-Urbana Mass Transit District for such assistance for fiscal year 2020.

Section 3. That Karl P. Gnadt, Managing Director of the Champaign-Urbana Mass Transit District is hereby authorized to provide such information and file such documents as may be required to perform the Agreement and to request and receive the grant funding for fiscal year 2020.

Section 4. That while participating in said operating assistance program, the Champaign-Urbana Mass Transit District shall provide all required local matching funds.

PRESENTED AND ADOPTED THIS 29th day of May, 2019.

Bradley S. Diel

(Attest)

Chair of Champaign-Urbana
Mass Transit District Board of Trustees

Date



To: Board of Trustees
From: Michelle Wright, CPA
Finance Director
Date: May 29, 2019
Subject: Annual Loan Authorization

A. Introduction – The District currently has two lines of credit with First Mid Bank & Trust which expire on June 30, 2019.

B. Recommended Action – Staff recommends authorization of the Managing Director to establish two lines of credit with Prospect Bank as described below and in the attached proposal.

- a. \$ 6,000,000 revolving line of credit with a fixed rate of 4.5 % for 36 months to be used to supplement general cash flow as needed, secured by substantially all the assets of the District
- b. \$10,000,000 bank qualified, tax exempt revolving line of credit with a fixed rate of 3.55 % for 36 months to be used for the purchase of projects / equipment, secured by the capital assets purchased

Staff also requests authorization of the following District employees to initiate loan draws on these lines of credit: Managing Director, Karl Gnadt; Chief of Staff, Amy Snyder; Chief Administrative Officer, Brenda Eilbracht; Chief Operating Officer, Korbin Figg; Finance Director, Michelle Wright; and Comptroller, Jolene Gensler.

C. Prior Trustee Action – On April 25, 2018, the Board of Trustees provided approval to establish a \$ 6,000,000 revolving line of credit and a \$ 10,000,000 straight line of credit with First Bank.

D. Summary – The District issued a Request for Proposals (RFP-19006) for lines of credit on 4/26/19. Brenda Eilbracht, Chief Administrative Officer; Jolene Gensler, Comptroller; and Michelle Wright, Finance Director, served as the Evaluation Committee to review the proposals received from Busey Bank, Commerce Bank, First Mid Bank & Trust, Illinois National Bank, and Prospect Bank. All the proposals offered competitive interest rates, with four of the five banks proposing a fixed rate. Prospect Bank offered a 36 month term while the other proposers offered a 12 month term.

The lines of credit will be used as funding mechanisms to:

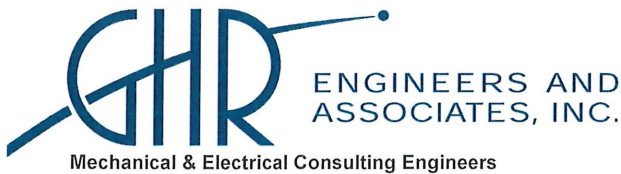
1. Fund State approved FY19 and FY20 debt service capital projects. Debt service projects are eligible for 65% reimbursement under the State of Illinois Downstate Operating Assistance Program (DOAP).
2. Provide emergency operating cash, if needed.

E. Budget & Staffing Impacts – The District is required to pay a 35 % match on all debt service projects. At this time, it is anticipated that local funds will be used for the match.



To: Board of Trustees
From: Brenda Eilbracht, Chief Administrative Officer
Date: May 29, 2019
Subject: Approval of Operations and Administration Facility Boiler Replacement Contract

- A. Introduction:** The District is utilizing Debt Service funds from the FY 2019 Downstate Operating Assistance Program to replace a sixteen-year-old boiler at the Operations and Administration Facility. The existing boiler is failing, and installation of two new high efficiency boilers will improve overall building performance and reduce gas usage.
- B. Recommended Action:** Staff recommends authorization of the Managing Director to enter into a contract with Mechanical, Inc. in the amount of \$46,262. IDOT concurrence was received before bids were advertised for this project. IDOT concurrence prior to contract award is not required.
- C. Prior Trustee Action:** None
- D. Summary:** On April 22, 2019, the District opened bids for the Operations and Administration Facility Boiler Replacement Project. Four bids were received. The low bid was submitted by Mechanical, Inc. in the amount of \$46,262. Mechanical, Inc. exceeded the DBE goal for this project by achieving 2.59% DBE participation.
- E. Background:** The current boiler serving the District's Operations & Administration Facility is 16 years old and not within a state of good repair. The equipment is unreliable and in poor condition. A cracked heat exchanger is causing the system to run at 50% capacity. The new boiler will decrease natural gas consumption, have redundancy capabilities, and have a useful life of 20 years.
- F. Budget & Staffing Impacts:** This project will be funded with 65% state funds through the Illinois Downstate Operating Assistance Program (DOAP) and 35% local funds.



JN Gleason, PE, LEED AP April 22, 2019
Chief Executive Officer

JW Aquino, AIA
President

LE McGill, PE, LEED AP, BD+C
Executive Vice President

KM Siuts
Secretary-Treasurer

Associates
GW Gaither, CET
TL Hinton, PE
LR Kienzler, PE
DB White, CDT/CCCA

Ms. Brenda Eilbracht
Chief Administrative Officer and FOIA Officer
Champaign-Urbana Mass Transit District
1101 East University Avenue
Urbana, IL 61802-2009

SUBJECT: 7107 Boiler Replacement for Room 172
1101 East University
Urbana, Illinois

Dear Brenda

Bids were opened on April 22, 2019 at 2:00 pm for the referenced project. Four Contractor Bids were received for this project. Submitted bid documentation was signed, sealed and included acknowledgment that Contractors received Addendum No. 1, Addendum No. 2 and Addendum No. 3. Their bids included pricing for the Base Bid Amount. Their Performance Bond information as specified was included with their bids.

The apparent low bidder is Mechanical, Inc. of Champaign, Illinois with a price of \$46,262.00. This compares to a construction price estimate of \$66,953 for the base bid.

We have spoken to Mechanical, Inc. and they are comfortable with their bid and pricing. The bid results are attached. Based on our review of the bids, we recommend that Champaign-Urbana Mass Transit District award a contract to Mechanical, Inc. for the base bid price of \$46,262.00.

If you have any questions, please feel free to contact me.

Very truly yours,

GHR ENGINEERS and ASSOCIATES, Inc.

John Meerdink
JGM/smh

cc: Jim Gleason - GHR

2019.04.22 BE.JGM.wpd

BID TABULATION

PROJECT

PROJECT NO. 7107

TITLE / DESCRIPTION Room 172 Boiler System Replacement

Headquarters Building Champaign-Urbana Mass Transit District

SECTION OF WORK Mechanical

ARCHITECT/ENGINEER GHR Engineers and Associates, Inc.

BID OPENING

DATE April 22, 2019

TIME 2:00 pm

LOCATION 1101 East University, Urbana

CONSTRUCTION ESTIMATE \$66,953

BIDDER	ADD REC'D			BID INFORMATION			REMARKS
CONTRACTOR NAME	No. 1	No. 2	No. 3	BASE BID AMOUNT	PERFORMANCE BOND	IDOT REQUIREMENTS	
Davis-Houk Mechanical Urbana, Illinois	✓	✓	✓	\$59,700			
United Mechanical Group, Inc. Champaign, Illinois	✓	✓	✓	\$61,400			
Reliable Plumbing & Heating Champaign, Illinois	✓	✓	✓	\$53,660			
Mechanical, Inc. Champaign, Illinois	✓	✓	✓	\$46,262			



To: Board of Trustees
 From: Jane Sullivan, Grants & Governmental Affairs Director
 Date: May 29, 2019
 Subject: Approval of Contract for Hydrogen Fuel Cell Electric Buses

- A. Introduction** – The District will utilize Federal and State grant funding for the purchase of two 60-foot hydrogen fuel cell electric buses to replace eighteen-year-old standard diesel buses.
- B. Recommended Action:** Staff recommends authorization of the Managing Director to execute an agreement with New Flyer in the amount of \$3,087,084 for two 60-foot hydrogen fuel cell electric buses.
- C. Prior Trustee Action**
- On May 30, 2018 the Board approved a contract with Fiedler Group for design & engineering services for the Maintenance Facility modifications associated with this project.
 - On March 28, 2018 the Board approved a contract with the Center for Transportation and the Environment (CTE) for technical assistance for this project.
- D. Summary:** New Flyer Industries will build and deliver two 60-foot articulated hydrogen fuel cell buses based on the District’s specifications. The vehicle cost has increased by roughly \$100,000 per vehicle since the budget was drafted in 2017. \$50,000 of this increase is due to PPI Index inflation increase from 2017 to 2019. The remainder of the increase is due to the addition of Mobileye Shield+ collision avoidance technology, 40-hour test period requirement, and extended warranty for fuel cell technology.
- E. Background:** In September 2017 the District was awarded \$1.45 million for the purchase of two hydrogen fuel cell buses and associated infrastructure through the Federal Transit Administration’s Low or No Emission Vehicle Program. The grant application was submitted by the District in partnership with New Flyer. New Flyer is the largest bus manufacturer of heavy-duty transit buses in North America and the only bus manufacturer that currently manufactures a 60-foot articulated fuel cell electric bus.
- F. Alternatives – advantages/disadvantages:** Authorizing the Managing Director to enter into a contract with New Flyer allows the District to carry out the Hydrogen Fuel Cell bus project successfully.
- G. Budget & Staffing Impacts:** Funding sources for contract with New Flyer and previously approved contracts with Fiedler Group and contract with CTE are identified below.

			Funding Sources:		
	Contractor	Total	Federal	State	Local
Quality Assurance & Inspection	CTE	\$50,000	-	-	\$50,000
Project Management & Tech. Assistance	CTE	\$473,225	-	-	\$473,225
Facility Design & Engineering	Fiedler Group	\$436,900	-	-	\$436,900
Bus Procurement	New Flyer	\$3,087,084	\$1,080,479	\$2,006,605	-
Total			\$1,080,479	\$2,006,605	\$960,125
			27%	50 %	24%



CHAMPAIGN-URBANA MASS TRANSIT DISTRICT
Two (2) XHE60 Fuel Cell Electric Buses

NEW FLYER
CONTRACT 2019-07

CONTRACT NO. 2019-07

BETWEEN

CHAMPAIGN-URBANA MASS TRANSIT DISTRICT

AND

New Flyer of America Inc

TWO (2) XHE60 Fuel Cell Electric Transit Buses



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THIS CONTRACT is made and entered into this _____ day of MONTH 2019, by and between the CHAMPAIGN-URBANA MASS TRANSIT DISTRICT, 1101 E University Avenue, Urbana, Illinois 61802, (hereinafter referred to as "MTD" or "DISTRICT"), and New Flyer of America Inc., 711 Kernaghan Avenue, Winnipeg, Manitoba, Canada R2C 3T4 (hereinafter referred to as "CONTRACTOR").

Commented [TP1]: Enter date

WITNESSETH:

WHEREAS, DISTRICT requires assistance from CONTRACTOR to manufacture and deliver two (2) 60-foot, zero-emission, XHE60 fuel cell electric transit buses; and

WHEREAS, said work cannot be performed by the regular employees of DISTRICT; and

WHEREAS, CONTRACTOR has represented that it has the requisite personnel, experience, and facilities, and is capable of delivering buses in accordance with DISTRICT's technical specifications; and

WHEREAS, CONTRACTOR wishes to perform the services required for the manufacturing and delivery of the buses;

NOW, THEREFORE, it is mutually understood and agreed by DISTRICT and CONTRACTOR as follows:

ARTICLE 1. General Conditions

1.1 SCOPE OF WORK

CONTRACTOR shall furnish the DISTRICT with **two (2) XHE60 fuel cell electric buses** as specified in and in full accordance with the Federal Transit Administration (FTA) Low or No Emission Vehicle Program 5339(c) and Illinois Department of Transportation (IDOT) requirements.

1.2 COMPONENT PARTS AND ORDER OF PRECEDENCE

A. This Contract shall consist of the following sections. In the event of a conflict in the provisions of the Contract, as accepted by the DISTRICT and as they may be amended, the following shall prevail in the order set forth below:



1. ARTICLE 1: General Conditions
2. ARTICLE 2: IDOT Terms and Conditions
3. ARTICLE 3: Special Terms and Conditions
4. EXHIBIT A: Price Quote and Payment Milestones
5. ARTICLE 8: Warranty
6. EXHIBIT B: Delivery Schedule
7. ARTICLE 4: Federal Terms and Conditions
8. EXHIBIT D: New Flyer Master Resolution List - Rev K
9. ARTICLE 5: Technical Specifications
10. ARTICLE 6: Quality
11. EXHIBIT C: Training and Publications

Commented [AMS2]: This will need to be updated.

- B. In the event the parties hereto cannot resolve a dispute or conflict, the final decision-making authority shall reside with the DISTRICT's Managing Director/CEO.

1.3 TERM OF AGREEMENT

This Agreement shall commence upon the effective date of Notice to Proceed of this Agreement, and shall continue in full force and effect through June 30, 2020 unless earlier terminated or extended as provided in this Agreement.

1.4 PERIOD OF PERFORMANCE

CONTRACTOR shall commence production of two (2) buses upon the DISTRICT issuing CONTRACTOR a Notice to Proceed and be complete and deliver all finished buses no later than the date negotiated by the parties as specified in the Notice to Proceed, unless extended by the parties. CONTRACTOR shall follow the delivery and deliverable schedule in EXHIBIT A: Delivery Schedule. CONTRACTOR shall not be held liable for delays resulting from problems of scheduling on the part of the DISTRICT.



1.5 CONTRACT PRICE

The DISTRICT agrees to pay the CONTRACTOR in accordance with Contractor's submitted Price Quote (see EXHIBIT A) dated MONTH _____, 2018. The total contract value will not exceed **TBD** for (a) two (2) delivered XHE60 Fuel Cell Electric buses, (b) warranty, (c) training, (d) manuals and (e) diagnostics and tools.

Commented [TP3]: Enter price

Price Adjustments Due to Regulatory Changes:

"Notwithstanding anything else to the contrary contained herein, in the event that a price adjustment is required in respect of changes that are mandatory as a result of legislation or regulations that become effective after the date of the proposal submission (such as changes in tariffs on goods or the cost of materials as a result of a termination or amendment to the North American Free Trade Agreement and associated regulations and policies), such price adjustment shall be negotiated in good faith by the District and the CONTRACTOR.

1.6 PAYMENT MILESTONES

- A. The CONTRACTOR will be paid in accordance with two (2) milestones 1- Conditional Acceptance 2- Final Acceptance (as additionally described in EXHIBIT A).
- B. Conditional Acceptance - Based on a bus price not to exceed **TBD**, the FIRST PAYMENT of **ninety percent (90%)** of the total amount due for each bus will be processed after the delivery of each bus to the DISTRICT and its Acceptance by the DISTRICT within 30 days. Acceptance will be granted after the DISTRICT has completed its Post Delivery Inspection (PDI), within fifteen (15) days of receipt of each bus, and all discrepancies identified in the PDI have been addressed by the CONTRACTOR to the satisfaction of the DISTRICT. The CONTRACTOR shall submit an invoice to the DISTRICT certifying that all discrepancies have been addressed, and the DISTRICT must concur that all discrepancies have been addressed to its satisfaction, prior to the DISTRICT processing its payment. CONTRACTOR must also submit Buy America Certifications to the DISTRICT before the DISTRICT will issue payment.
- C. Final Acceptance - The FINAL PAYMENT in the amount of **ten percent (10%)** of the total amount of each bus will be processed following forty (40) hours of continuous revenue service of each bus

Commented [JL4]: Insert final price negotiated with New Flyer.

Commented [JL5]: Insert actual amount in dollars after final price is determined.

Commented [JL6]: Insert the actual amount in dollars after final price is determined.



without any defects, and submittal of an invoice by the CONTRACTOR. The (40) hours shall be completed within (14) calendars days.

During the (40) hours of continuous revenue service, The CONTRACTOR shall remedy road calls related to the Fuel Cell Technology. This includes but is not limited to road calls related to the entire Siemens Elfa Drive System (electric drive motors, inverters, and DC-DC converter), fuel cell, high-voltage batteries, gas storage tanks, fueling system, high-pressure storage system, ZF center drive axle, and thermal management for all systems. In the event of a defect within the (40) hours, The District shall be eligible for additional (40) hours to be completed within an additional (14) calendar days. In the event that The District does not notify the CONTRACTOR of any defect, the bus shall be deemed Accepted.

- D. The DISTRICT and the CONTRACTOR must mutually agree upon any adjustments in payment. Invoices for goods delivered shall be submitted to Champaign-Urbana Mass Transit DISTRICT, Grant Manager, 1101 E University Avenue, Urbana, Illinois 61802. The DISTRICT agrees to make payment to the CONTRACTOR in accordance with EXHIBIT B.
- E. CONTRACTOR will reference the Contract Number and Purchase Order Number on all submitted invoices. Failure to do so could delay payment.

1.7 PROMPT PAYMENT

The DISTRICT shall pay properly submitted, undisputed invoices within 30 calendar days of initial receipt, providing the milestones as specified in Section 1.6 have been met. Within seven (7) calendar days of receipt of payment from the DISTRICT, the CONTRACTOR shall pay any subcontractors that have submitted undisputed invoices and report such activity to the the DISTRICT. Each invoice shall be accompanied by partial waivers of lien from all subcontractors and material suppliers in the full amounts of their respective portions of the previous request for payment along with the CONTRACTORS'S own partial waiver of lien for the full amount of such previous requests for payment.



1.8 NOTICES

- A. Any notice, consent or other communication ("Notice") required or permitted under this Contract shall be in writing and either delivered in person, mailed or electronically delivered as follows:

DISTRICT:

Champaign-Urbana Mass Transit District

Grant Manager

1101 E University Avenue

Urbana, Illinois 61802

CONTRACTOR:

New Flyer of America Inc."

Attn: Jennifer McNeill

711 Kernaghan Avenue

Winnipeg, Manitoba, Canada R2C 3T4

- B. A notice shall be deemed received at the time it is personally served, on the day it is sent by facsimile transmission or electronic delivery, on the second day after its deposit with any commercial air courier or express services or, if mailed, ten (10) days after the Notice is deposited in the United States mail as above provided. Any time period stated in a Notice shall be computed from the time the Notice is deemed received. Either party may change its mailing address or the person to receive Notice by notifying the other party as provided in this section.

1.9 ATTORNEY'S FEES

In the event that it becomes necessary for either party to bring a lawsuit to enforce any of the provisions of the Contract, the parties agree that the court having jurisdiction over such dispute shall have the authority to determine and fix reasonable attorney's fees to be paid to the prevailing party.

1.10 SEVERABILITY

If any provision of the Contract is declared void or unenforceable, such provision shall be deemed severed from this Contract, which shall otherwise remain in full force and effect.



1.11 BINDING EFFECT

All of the terms, provisions, and conditions of the Contract hereunder, shall be binding upon and inure the parties hereto and their respective successors, assigns, and legal representatives. This Contract may not be assigned except with prior written agreement of both parties.

1.12 CONFLICT OF INTEREST

By signing this Contract, the CONTRACTOR covenants that it presently has no interest, direct or indirect, which would conflict in any manner or degree with the performance of the services called for under this contract. The CONTRACTOR further covenants that in the performance of this agreement no person having such interest shall be employed by the CONTRACTOR, and the CONTRACTOR receives no such commissions or other payments from parties other than the DISTRICT as a result of work performed hereunder. Failure to comply with this provision serves as a basis for termination for default and the collection of damages.

1.13 GOVERNING LAW

This Contract, its interpretation and all work performed thereunder, shall be governed by the laws of the State of Illinois .

1.14 VENUE

In the event of a dispute or breach of contract, venue shall be in Champaign County, Illinois.

1.15 ENTIRE AGREEMENT

- A. This Contract represents the entire agreement of the parties with respect to the subject matter hereof, and all such agreements entered into prior hereto are revoked and superseded by this Contract, and no representations, warranties, inducements or oral agreements have been made by any of the parties except as expressly set forth herein, or in other contemporaneous written agreements.
- B. This Contract may not be changed, modified or rescinded except in writing, signed by all parties hereto, and any attempt at oral modification of this agreement shall be void and of no effect. In the



event of inconsistencies between requirements contained in different sections of the Contract, the order of precedence in section 1.2 shall govern.

IN WITNESS WHEREOF, the parties have executed this Contract on the dates set forth below.

CHAMPAIGN-URBANA MASS TRANSIT DISTRICT:	NEW FLYER OF AMERICA, INC New Flyer of America Inc."
Karl Gnadt	By: Paul Soubry
Managing Director	Title: President & CEO
Date:	Date:
Approved as to Form and Content:	
Brad? Fred?	By: Glenn Asham
[Name], General Counsel	Title: CFO
Date:	Date:

1.16 DEFINITIONS

The following are definitions of special terms used in this document:

Authorized Signer: The person who is executing this Contract on behalf of the CONTRACTOR and who is authorized to bind the CONTRACTOR.

Class 1 Failure (physical safety): A failure that could lead directly to passenger or operator injury and represents a severe crash situation.

Class 2 Failure (road call): A failure resulting in an in route interruption of revenue service. Service is discontinued until the bus is replaced or repaired at the point of failure.



Contract: The document defined by the sections defined by Article 1.2.

Managing Director/CEO: The person who is executing this Contract on behalf of the DISTRICT and who has complete and final authority except as limited herein.

CONTRACTOR: New Flyer, who is responsible for providing all buses and equipment described in the Contract documents.

Days: Unless otherwise stated, "days" shall mean calendar days.

Defect: Patent or latent malfunction or failure in manufacture, installation or design of any component or subsystem.

Deviation: Variance from a requirement or specification that does not alter the basis of a contract or adversely affects its performance.

DISTRICT: Champaign-Urbana Mass Transit DISTRICT

Extended Warranty: A warranty available for purchase above the standard warranty.

Fatigue Failure (Corrosion Fatigue): The mechanical degradation of a material under the joint action of corrosion and cyclic loading.

Pass-Through Warranty: A warranty provided by the CONTRACTOR but administered directly with the component Supplier.

Related Defect: Damage inflicted on any component or subsystem as a direct result of a separate Defect.

Superior Warranty: A warranty still in effect after all contractually required warranties have expired. The remaining warranty is administered directly between the sub-Supplier and the DISTRICT.



Supplier: Any manufacturer, company or Agency providing units, components or subassemblies for inclusion in the bus that are installed by the CONTRACTOR. Supplier items shall require qualification by type and acceptance tests in accordance with requirements defined in "Article 6: Quality."

Subcontractor: Any manufacturer, company or Agency providing units, components or subassemblies for inclusion in the bus that are installed by a Subcontractor. Subcontractor items shall require qualification by type and acceptance tests in accordance with requirements defined in "Article 6: Quality"

Work: Any and all labor, supervision, services, materials, machinery, equipment, tools, supplies and facilities called for by the Contract and necessary to the completion thereof.

1.17 MATERIALS AND WORKMANSHIP

The CONTRACTOR shall be responsible for all materials and workmanship in the construction of the bus and all accessories used, whether the same are manufactured by the CONTRACTOR or purchased from a Supplier. This provision excludes any equipment leased or supplied by the DISTRICT, except insofar as such equipment is damaged by the failure of a part or component for which the CONTRACTOR is responsible, or except insofar as the damage to such equipment is caused by the CONTRACTOR during the manufacture of the buses.

1.18 CONFORMANCE WITH SPECIFICATIONS AND DRAWINGS

- A. Materials furnished and Work performed by the CONTRACTOR shall conform to the requirements of the Technical Specifications and other Contract documents. Notwithstanding the provision of drawings, technical specifications or other data by the DISTRICT, the CONTRACTOR shall have the responsibility of supplying all parts and details required to make the bus complete and ready for service even though such details may not be specifically mentioned in the drawings and specifications. Items that are installed by the DISTRICT shall not be the responsibility of the CONTRACTOR unless their installation is included in this Contract.
- B. Omissions from the Contract specifications, or the inaccurate description of details of Work that are manifestly necessary to carry out the intent of the Contract specifications, or that are customarily performed, shall not relieve the CONTRACTOR from performing such omitted Work or inaccurately



described details of the Work, and they shall be performed as if fully and correctly set forth and described.

1.19 INSPECTION, TESTING AND ACCEPTANCE

1.19.1 General

- A. The DISTRICT's Representative shall at all times have access to the Work, the CONTRACTOR and, through the CONTRACTOR, its Suppliers. The CONTRACTOR and its Suppliers shall furnish every reasonable facility for ascertaining that the materials and the workmanship are in accordance with the requirements of the Contract Documents. All Work done shall be subject to the DISTRICT Representative's inspection and approval in accordance with the approved Work products developed as a result of the Contract Documents.
- B. The pre-delivery tests and inspections shall be performed at the CONTRACTOR's plant; they shall be performed in accordance with the procedures defined in "Article 6: Quality"; and they may be witnessed by the resident inspector. When a bus passes these tests and inspections, the resident inspector shall authorize release of the bus.

Conditional Acceptance within fifteen (15) calendar days after arrival at the designated point of delivery, the bus shall undergo the DISTRICT's post-delivery inspection. If the DISTRICT does not notify the Contractor of non-acceptance within 15 calendar days after delivery, or if the bus is placed into revenue service then initial acceptance of the bus and the FIRST PAYMENT of 90% of the total bus price by the DISTRICT occurs on the 15th day after delivery. If the bus fails inspection, it shall not be accepted until the repair procedures defined in "3.1.4 Repairs After Non-acceptance" have been carried out and the bus retested until it passes. Acceptance occurs earlier if the DISTRICT notifies the CONTRACTOR of early acceptance.

Conditional Acceptance and Final Acceptance are in accordance with payment milestones agreed upon on page 14.



1.19.2 Risk of Loss

The DISTRICT shall assume risk of loss of the bus on delivery, as defined in “3.3.1 Bus Delivery.” Prior to this delivery, the CONTRACTOR shall have risk of loss of the bus, including any damages sustained during the delivery regardless of the status of title or any payments related to the bus. Drivers shall keep a maintenance log in route, and it shall be delivered to the DISTRICT with the bus. If the bus is released back to the CONTRACTOR for any reason, the CONTRACTOR has the risk of loss upon such release.

1.20 TITLE AND WARRANTY OF TITLE

Adequate documents for registering the bus in Illinois shall be provided to the DISTRICT not less than 10 business days before delivery to the DISTRICT. Upon acceptance of each bus, the CONTRACTOR warrants that the title shall pass to the DISTRICT free and clear of all encumbrances.

1.21 INTELLECTUAL PROPERTY WARRANTY

- A. The DISTRICT shall advise the CONTRACTOR of any patent suit related to this Contract filed against the DISTRICT and provide all information available. The CONTRACTOR shall defend at its expense any suit or proceeding brought against the DISTRICT based on a claim that any equipment, or any part thereof, furnished under this Contract constitutes an infringement of any patent, and the CONTRACTOR shall pay all damages and costs awarded therein, including incidental and consequential damages, against the DISTRICT. In case said equipment, or any part thereof, is in such suit held to constitute infringement and use of said equipment or parts is enjoined, the CONTRACTOR shall, at its own expense and at its option, either procure for the DISTRICT the right to continue using said equipment or part, or replace same with non-infringing equipment, or modify it so it becomes non-infringing.
- B. The CONTRACTOR’s obligations under this section are discharged and the DISTRICT shall hold the CONTRACTOR harmless with respect to the equipment or part if it was specified by the DISTRICT and all requests for substitutes were rejected, and the CONTRACTOR advised the DISTRICT under “Questions, Clarifications and Omissions” of a potential infringement, in which case the CONTRACTOR shall be held harmless.



1.22 DATA RIGHTS

1.22.1 Proprietary Rights/Rights in Data

- A. The term “subject data” used in this clause means recorded information, whether or not copyrighted, that is delivered or specified to be delivered under the Contract: It includes, but is not limited to, the proprietary rights of the followings:
- i. Shop drawings and working drawings
 - ii. Technical data including manuals or instruction materials, computer or microprocessor software
 - iii. Patented materials, equipment, devices or processes
- B. The DISTRICT shall protect the subject data and proprietary information provided by the CONTRACTOR to the fullest extent of the law. The CONTRACTOR shall grant a non-exclusive license to allow the DISTRICT to utilize such information in order to operate and maintain the vehicles. In the event that the CONTRACTOR no longer provides the information as a result of bankruptcy, the DISTRICT has the right to reverse engineer patented parts and software.
- C. The DISTRICT reserves a royalty-free, non-exclusive and irrevocable license to use, the following subject data for the sole purpose of operating and maintaining the vehicles. The CONTRACTOR agrees to include the requirements of this clause, modified as necessary to identify the affected parties, in each subcontract and supply order placed under the Contract.

1.22.2 Access to Onboard Operational Data

The DISTRICT grants to the CONTRACTOR the right to inspect, examine, download, and otherwise obtain any information or data available from components provided by the CONTRACTOR, including, but not limited to, any electronic control modules or other data-collection devices, to the extent necessary to enable CONTRACTOR to perform reliability maintenance analysis, corrective action and/or other engineering type Work for the bus. This right expressly excludes access to information or data collected on any equipment not provided and installed by the CONTRACTOR.



1.23 CHANGES

1.23.1 CONTRACTOR Changes

Any proposed change in this Contract shall be submitted to the Grant Manager for its prior approval. Oral change orders are not permitted. No change in this Contract shall be made without the prior written approval of the Grant Manager. The CONTRACTOR shall be liable for all costs resulting from, and/or for satisfactorily correcting, any specification change not properly ordered by written modification to the Contract and signed by the Managing Director/CEO.

1.23.2 DISTRICT Changes

The DISTRICT may obtain changes to the Contract by notifying the CONTRACTOR in writing. As soon as reasonably possible but no later than thirty (30) calendar days after receipt of the written change order to modify the Contract, the CONTRACTOR shall submit to the Grant Manager a detailed price and schedule Proposal for the Work to be performed. This Proposal shall be accepted or modified by negotiations between the CONTRACTOR and the Grant Manager. At that time, a detailed modification shall be executed in writing by both parties. Disagreements that cannot be resolved within negotiations shall be resolved in accordance with "1.24.8 Disputes," below. Regardless of any disputes, the CONTRACTOR shall proceed with the Work ordered.

1.24 LEGAL CLAUSES

1.24.1 Indemnification

- A. The CONTRACTOR shall, to the extent permitted by law: (1) protect, indemnify and save the DISTRICT and its directors, officers, employees and agents, including consultants, harmless from and against any and all damages, awards, losses, costs, and expenses, including reasonable expenses, costs and attorneys' fees incurred by the DISTRICT and its directors, officers, employees and agents, including consultants, in the defense, thereof, for any injury, death, loss or damage to persons or property of any kind whatsoever, arising out of or resulting from the intentional misconduct or negligent acts, errors or omissions of the CONTRACTOR in the performance of the Contract, including intentional



misconduct, negligent acts, errors or omissions of its officers, employees, servants, agents, Subcontractors and Suppliers;

- B. The obligations of the CONTRACTOR under the above paragraph shall not extend to circumstances where the injury, death or damages are caused by the negligent acts, errors or omissions of the DISTRICT, its directors, officers, employees, agents or consultants. The obligations of the CONTRACTOR shall not extend to circumstances where the injury, death or damages are caused, in whole or in part, by the negligence of any third-party operator, not including an assignee or Subcontractor of the CONTRACTOR, subject to the right of contribution. In case of joint or concurrent negligence of the parties giving rise to a claim or loss against either one or both, each shall have full rights of contribution from the other to the extent allowed by law.

1.24.2 Suspension of Work

- A. The DISTRICT may at any time and for any reason within its sole discretion issue a written order to the CONTRACTOR suspending, delaying or interrupting all or any part of the Work for a specified period of time.
- B. The CONTRACTOR shall comply immediately with any such written order and take all reasonable steps to minimize costs allocable to the Work covered by the suspension during the period of work stoppage. To the extent feasible, CONTRACTOR shall continue the Work that is not included in the suspension and shall continue such ancillary activities as are not suspended. The CONTRACTOR shall resume performance of the suspended Work upon expiration of the notice of suspension, or upon direction from the DISTRICT.
- C. The CONTRACTOR shall be allowed an equitable adjustment in the Contract price (excluding profit) and/or an extension of the Contract time, to the extent that cost or delays are shown by the CONTRACTOR to be directly attributable to any suspension. However, no adjustment shall be made under this section for any suspension, delay or interruption due to the fault or negligence of the CONTRACTOR, or for which an equitable adjustment is provided for, or excluded under any other term or condition of the Contract. As soon as reasonably possible but no later than forty-five (45) calendar days, or any other period of time agreed to by the parties, after receipt of the written suspension of



work notice, the CONTRACTOR shall submit to the Grant Manager an updated detailed price and schedule Proposal for the suspension, delay or interruption.

1.24.3 Excusable Delays/Force Majeure

- A. If the CONTRACTOR is delayed at any time during the progress of the Work by the neglect or failure of the DISTRICT or by a cause as described below, then the time for completion and/or affected delivery date(s) shall be extended by the DISTRICT subject to the following cumulative conditions:
- i. The cause of the delay arises after the Notice of Award and neither was nor could have been anticipated by the CONTRACTOR by reasonable investigation before such award. Such cause may also include force majeure events such as any event or circumstance beyond the reasonable control of the CONTRACTOR, including but not limited to acts of God; earthquake, flood and any other natural disaster; civil disturbance, strikes and labor disputes; a stoppage of transportation or shipping ability on behalf of a supplier or logistics provider; fires and explosions; war and other hostilities; or embargo.;
 - ii. The CONTRACTOR demonstrates that the completion of the Work and/or any affected deliveries will be actually and necessarily delayed;
 - iii. The CONTRACTOR has taken measures to avoid and/or mitigate the delay by the exercise of all reasonable precautions, efforts and measures, whether before or after the occurrence of the cause of delay; and
 - iv. The CONTRACTOR makes written request and provides other information to the DISTRICT as described in paragraph E below.
- B. The DISTRICT reserves the right to rescind or shorten any extension previously granted, if subsequently the DISTRICT determines that any information provided by CONTRACTOR in support of a request for an extension of time was erroneous; provided, however, that such information or facts, if known, would have resulted in a denial of the request for an excusable delay. Notwithstanding the above, the DISTRICT will not rescind or shorten any extension previously granted if the CONTRACTOR acted in reliance upon the granting of such extension and such extension was based on information



which, although later found to have been erroneous, was submitted in good faith by the CONTRACTOR.

- C. No extension or adjustment of time shall be granted unless: (1) written notice of the delay is filed with the DISTRICT within fourteen (14) calendar days after the commencement of the delay and (2) a written application therefore, stating in reasonable detail the causes, the effect to date and the probable future effect on the performance of the CONTRACTOR under the Contract, and the portion or portions of the Work affected, is filed by the CONTRACTOR with the DISTRICT within thirty (30) calendar days after the commencement of the delay. No such extension or adjustment shall be deemed a waiver of the rights of either party under this Contract. The DISTRICT shall make its determination within thirty (30) calendar days after receipt of the application.

1.24.4 Termination

1.24.4.1 Termination for Convenience

- A. The performance of Work under this Contract may be terminated by the DISTRICT in accordance with this clause in whole, or from time to time in part, whenever the Managing Director/CEO shall determine that such termination is in the best interest of the DISTRICT. Any such termination shall be effected by delivery to the CONTRACTOR of a notice of termination specifying the extent to which performance of Work under the Contract is terminated, and the date upon which such termination becomes effective.
- B. After receipt of a notice of termination, and except as otherwise directed by the Managing Director/CEO or Grant Manager, the CONTRACTOR shall do the following:
- i. Stop Work under the Contract on the date and to the extent specified in the notice of termination.
 - ii. Place no further orders or subcontracts for materials, services or facilities, except as may be necessary for completion of such portion of the Work under the Contract as is not terminated.
 - iii. Terminate all orders and subcontracts to the extent that they relate to the performance of work terminated by the notice of termination; assign to the DISTRICT in the manner, at the times, and to the extent directed by the Managing Director/CEO, all of the right, title and interest of the



CONTRACTOR under the orders and subcontracts so terminated, in which case the DISTRICT shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.

- iv. Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, with the approval or ratification of the Managing Director/CEO, to the extent he or she may require, which approval or ratification shall be final for all the purposes of this clause. The CONTRACTOR shall be paid its costs, including contract close-out costs, and profit on work performed in accordance with the specifications up to the time of termination.
- v. Transfer title to the DISTRICT and deliver in the manner, at the times and to the extent, if any, directed by the Managing Director/CEO or Grant Manager the fabricated or un-fabricated parts, Work in process, completed Work, supplies and other material produced as part of, or acquired in connection with the performance of, the Work terminated, and the completed or partially completed plans, drawings, information and other property which, if the Contract had been completed, would have been required to be furnished to the DISTRICT, subject to the license with respect to subject data as set forth in the Contract.
- vi. Use its best efforts to sell, in the manner, at the times, to the extent, and at the price(s) directed or authorized by the Managing Director/CEO or Grant Manager, any property of the types referred to above, provided, however, that the CONTRACTOR shall not be required to extend credit to any purchaser, and may acquire any such property under the conditions prescribed by and at a price(s) approved by the Managing Director/CEO or Grant Manager, and provided further that the proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the DISTRICT to the CONTRACTOR under this Contract or shall otherwise be credited to the price or cost of the Work covered by this Contract or paid in such other manner as the Managing Director/CEO or Grant Manager may direct.
- vii. Complete performance of such part of the Work that is not terminated by the notice of termination.
- viii. Take such action as may be necessary, or as the Managing Director/CEO may direct, for the protection or preservation of the property related to this Contract that is in the possession of the CONTRACTOR and in which the DISTRICT has or may acquire an interest.



- C. The CONTRACTOR shall be paid its costs, including Contract close-out costs, on Work performed up to the time of termination. The CONTRACTOR shall promptly submit its termination claim to DISTRICT to be paid the CONTRACTOR. Settlement of claims by the CONTRACTOR under this termination for convenience clause shall be in accordance with the provisions set forth in Part 49 of the Federal Acquisition Regulations (48 CFR 49) except that wherever the word "Government" appears, it shall be deleted and the word "DISTRICT" shall be substituted in lieu thereof.

1.24.4.2 Termination for Default

- A. The DISTRICT may, by written notice of default to the CONTRACTOR, terminate the whole or any part of this Contract if the CONTRACTOR fails to make delivery of the supplies or to perform the services within the time specified herein or any extension thereof; or if the CONTRACTOR fails to perform any of the other material provisions of the Contract, or so fails to make progress as to endanger performance of this Contract in accordance with its terms, and in either of these two circumstances does not cure such failure within a period of ten (10) business days, or such longer period as the Managing Director/CEO may authorize in writing, after receipt of notice from the Managing Director/CEO specifying such failure.
- B. If the Contract is terminated in whole or in part for default, the DISTRICT may procure, upon such terms and in such manner as the Managing Director/CEO may deem appropriate, supplies or services similar to those so terminated. The CONTRACTOR shall be liable to the DISTRICT for any costs incurred in procuring such supplies and/or services, and shall continue the performance of this Contract to the extent not terminated under the provisions of this clause.
- C. Except with respect to defaults of Subcontractors, the CONTRACTOR shall not be liable for any of the DISTRICT'S costs under this Section if the failure to perform the Contract arises out of a cause beyond the control and without the fault or negligence of the CONTRACTOR. If the failure to perform is caused by the default of a Subcontractor, and if such default arises out of causes beyond the control of both the CONTRACTOR and Subcontractor, and without the fault or negligence of either of them, the CONTRACTOR shall not be liable for any excess costs for failure to perform, unless the supplies or services to be furnished by the Subcontractor were obtainable from other sources and in sufficient time to permit the CONTRACTOR to meet the required delivery schedule.



- D. Payment for completed supplies delivered to and accepted by the DISTRICT shall be at the Contract price. The DISTRICT may withhold from amounts otherwise due the CONTRACTOR for such completed supplies such sum as the Managing Director/CEO determines to be necessary to protect the DISTRICT against loss because of outstanding liens or claims of former lien holders.
- E. If, after notice of termination of this Contract under the provisions of this clause, it is determined for any reason that the CONTRACTOR was not in default under the provisions of this clause, or that the default was excusable under the provisions of this clause, the rights and obligations of the parties shall be the same as if the notice of termination had been issued pursuant to termination for convenience of the DISTRICT.

1.24.5 Compliance with Laws and Regulations

CONTRACTOR shall at all times comply with all applicable laws, regulations, policies, procedures and directives (together, the "Law"), including without limitation, IDOT and FTA regulations, policies, procedures and directives, including those listed directly or by reference in the agreement between the DISTRICT and IDOT and FTA that funds any part of this Contract, as they may be amended or promulgated from time to time during the term of this Contract. CONTRACTOR's failure to so comply shall constitute a material breach of this Contract.

1.24.6 Changes of Law

Changes of Law that become effective after the Contract Award may result in price changes. If a price adjustment is indicated, either upward or downward, it shall be negotiated between the Managing Director/CEO and the CONTRACTOR and the final Contract price will be adjusted in writing upwards or downwards using the change order process outlined in this contract to reflect such changes in Law. Such price adjustment may be audited, where required.



1.24.7 Governing Law and Choice of Forum

This Contract shall be governed by the laws of the State of Illinois without regard to conflict of law rules. The CONTRACTOR consents to the jurisdiction of any court of competent jurisdiction in County of Champaign, Illinois .

1.24.8 Disputes

Disputes arising in the performance of this Contract that are not resolved by agreement of the parties shall be decided in writing by the DISTRICT's Managing Director/CEO. This decision shall be final and conclusive unless, within 10 days from the date of receipt of its copy, the CONTRACTOR mails or otherwise furnishes a written appeal to the Managing Director/CEO. In connection with any such appeal, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its position. The decision of the Managing Director/CEO shall be binding upon the CONTRACTOR and the CONTRACTOR shall abide by the decision. Except as otherwise provided in this Contract, the parties shall attempt in good faith to resolve any dispute concerning a question of fact arising under or related to this Contract that is not disposed of by agreement. The parties may mutually agree to submit the matter to alternative dispute resolution process (which may include structured negotiations, mediation, or arbitration) or litigation. Pending final resolution of a dispute hereunder, the CONTRACTOR shall proceed diligently with the performance of the Contract and in accordance with the Managing Director/CEO's decision, as the case may be. Nothing in this Section shall be construed as a limitation of either party's right to pursue all available legal remedies to address the dispute.

1.24.9 Maintenance of Records; Access by DISTRICT; Right to Audit Records

To the extent provided by law, the CONTRACTOR shall permit the authorized representative of the United States Department of Transportation and of the Comptroller General of the United States to inspect and audit all data and records of the CONTRACTOR relating to its performance and its subcontracts, if any, under this contract with which Federal funds are used from the date of the contract through and until the expiration of three years after completion of the contract. The inspection and audit provided in the section



does not include an audit of the manufacturer's cost and/or profit, with the exception of single bid or sole source situations.

The following access to records requirements apply to this contract:

1. Where the DISTRICT is not a State but a "Special DISTRICT" and is the FTA Recipient or a subgrantee of the FTA Recipient in accordance with 49 C.F.R. 18.36(i), the Contractor agrees to provide the DISTRICT, the FTA Administrator, the Comptroller General of the United States or any of their authorized representatives access to any books, documents, paper and records of the CONTRACTOR which are directly pertinent to this contract for the purpose of making audits, examinations, excerpts and transcriptions. CONTRACTOR also agrees, pursuant to 49 C.F.R. 633.17 to provide the FTA Administrator or his/her authorized representatives including any PMO Contractor access to CONTRACTOR's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. 5302(a) 1, which is receiving federal financial assistance through the programs described at 49 U.S.C. 5307, 5309 or 5311.
2. The CONTRACTOR agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.
3. The CONTRACTOR agrees to maintain all books, records, accounts and reports required under this contract for a period of not less than three years after the date of termination or expiration of this contract, except in the event of litigation or settlement of claims arising from the performance of this contract, in which case CONTRACTOR agrees to maintain same until the DISTRICT, the FTA Administrator, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto. Reference 49 CFR 18.39(i) (11).

The requirements of this section are in addition to other audit, inspection and record-keeping provisions specified elsewhere in the Contract documents or by law.

1.24.10 Confidential Information

- A. Except as otherwise required by law, the DISTRICT will exempt from disclosure proprietary



information, trade secrets and confidential commercial and financial information submitted or disclosed during the Contract period. Any such proprietary information, trade secrets or confidential commercial and financial information that a CONTRACTOR believes should be exempted from disclosure shall be specifically identified and marked as such. Blanket-type identification by designating whole pages or sections as containing proprietary information, trade secrets or confidential commercial and financial information will not ensure confidentiality. The specific proprietary information, trade secrets or confidential commercial and financial information must be clearly identified as such.

- B. Upon a request for records from a third party regarding the Contract, the DISTRICT will notify the CONTRACTOR in writing. The CONTRACTOR must respond within five (5) days with the identification of any and all “proprietary, trade secret or confidential commercial or financial” information, and the CONTRACTOR shall defend, indemnify and hold the DISTRICT harmless for DISTRICT’s costs and damages associated with its refusal to produce such identified information; otherwise, the requested information may be released. If the information is required to be released pursuant to law, the DISTRICT will notify the CONTRACTOR of that fact prior to release.
- C. The DISTRICT shall employ sound business practices no less diligent than those used for the DISTRICT’s own confidential information to protect the confidence of all licensed technology, software, documentation, drawings, schematics, manuals, data and other information and material provided by the CONTRACTOR pursuant to the Contract that contain confidential commercial or financial information, trade secrets or proprietary information as defined in or pursuant to the State of Illinois against disclosure of such information and material to third parties except as permitted by the Contract or other applicable law. The CONTRACTOR shall be responsible for ensuring that confidential commercial or financial information, trade secrets or proprietary information, with such determinations to be made by the DISTRICT in its sole discretion, bears appropriate notices relating to its confidential character.
- D. During the performance of the Work under the Contract, it may be necessary for either party (the “Discloser”) to make confidential information available to the other party (the “Recipient”). The Recipient agrees to use all such information solely for the performance of the Work under the Contract and to hold all such information in confidence and not to disclose same to any third party



without the prior written consent of the Discloser, unless otherwise required by law. Likewise, the Recipient agrees that all information developed in connection with the Work under the Contract shall be used solely for the performance of the Work under the Contract, and shall be held in confidence and not disclosed to any third party without the prior written consent of the Discloser or as otherwise required by law.

E. This Confidentiality section shall survive the termination or expiration of the Contract.

1.24.11 Conflicts of Interest, Gratuities

No member, director, officer, or employee of the DISTRICT, shall have any interest, direct or indirect, in this Contract or the proceeds thereof. All laws and regulations governing conflicts of interest are in full force and effect with regard to this contract.

1.24.12 General Nondiscrimination Clause

In connection with the performance of Work provided for under this Contract, the CONTRACTOR agrees that it will not, on the grounds of race, religious creed, color, national origin, ancestry, physical disability, medical condition, marital status, sex, sexual orientation or age, discriminate or permit discrimination against any person or group of people in any manner prohibited by federal, state or local laws. The CONTRACTOR further agrees to provide to the DISTRICT's Grant Manager within seven (7) days of contract award, its Equal Employment Opportunity Plan that adheres to Executive Order 11246, as amended (EO11246), and any other requested documentation from said DISTRICT office for the purpose of validating compliance with EO 11246.

1.24.13 Amendment and Waiver

1.24.13.1 Amendment

Any modification or amendment of any provisions of any of the Contract documents shall be effective only if in writing, signed by authorized representatives of both the DISTRICT and CONTRACTOR, and specifically referencing this Contract.



1.24.13.2 Waiver

In the event that either party elects to waive its remedies for any breach by the other party of any covenant, term or condition of this Contract, such waiver shall not limit the waiving party's remedies for any succeeding breach of that or of any other term, covenant or condition of this Contract.

1.24.14 Remedies not Exclusive

The rights and remedies of the DISTRICT provided herein shall not be exclusive and are in addition to any other rights and remedies provided by law or under the Contract.

1.24.15 Counterparts

This Contract may be executed in any number of counterparts. All such counterparts shall be deemed to constitute one and the same instrument, and each of said counterparts shall be deemed an original thereof.

1.24.16 Severability

Whenever possible, each provision of the Contract shall be interpreted in a manner as to be effective and valid under applicable law. However, if any provision, or part of any provision, should be prohibited or invalid under applicable law, such provision, or part of such provision, shall be ineffective to the extent of such prohibition or invalidity without invalidating the remainder of such provision or the remaining provisions of the Contract.

1.24.17 Third-Party Beneficiaries

No provisions of the Contract shall in any way inure to the benefit of any third party, including the public at large, so as to constitute such person a third-party beneficiary of the Contract or of any one or more of the terms and conditions of the Contract or otherwise give rise to any cause of action in any person not a party to the Contract, except as expressly provided elsewhere in the Contract.



1.24.18 Assignment of Contract

Neither party will assign or subcontract its rights nor obligations under the Contract without prior written permission of the other party, and no such assignment or subcontract will be effective until approved in writing by the other party.

1.24.19 Independent Parties

The CONTRACTOR is an independent contractor with respect to the performance of all Work hereunder, retaining control over the detail of its own operations, and the CONTRACTOR shall not be considered the agent, employee, partner, fiduciary or trustee of the DISTRICT.

1.24.20 Survival

The following sections shall survive the nominal expiration or discharge of other Contract obligations, and the DISTRICT may obtain any remedy under law, Contract or equity to enforce the obligations of the CONTRACTOR that survive the manufacturing, warranty and final payment periods:

- "1.21 Intellectual Property Warranty"
- "1.22 Data Rights"
- "1.24.1 Indemnification"
- "1.24.7 Governing Law and Choice of Forum"
- "1.24.8 Disputes"
- "1.24.10 Confidential Information"
- "3.4.3 Parts Availability Guarantee"
- "4.1 Access to Records"
- "EXHIBIT C-1: Training"



ARTICLE 2. IDOT Terms and Conditions

The CONTRACTOR will adhere to, and support, the DISTRICT and the Center for Transportation and the Environment (CTE) in fulfilling all terms and conditions stipulated by the Illinois Department of Transportation.

2.1 FINANCIAL ASSISTANCE

This contract is subject to financial assistance contracts between the DISTRICT (and the United States Department of Transportation) and the Illinois Department of Transportation.

2.2 INTEREST OF MEMBERS OF CONGRESS

No member of or delegate to the Illinois General Assembly (or the Congress of the United States) shall be admitted to any share or part of this contract or to any benefit arising therefrom.

2.3 PROHIBITED INTERESTS

No member, or officer, or employee of the DISTRICT or a local public body with financial interest or control in this contract during tenure or for one year thereafter.

2.4 CONTRACT CHANGES

ANY PROPOSED CHANGE IN THIS CONTRACT SHALL BE SUBMITTED TO THE DISTRICT FOR ITS PRIOR APPROVAL.

2.5 SUBCONTRACTS

The CONTRACTOR shall not enter into any sub-contracts or agreements, or start any work by the work forces of the CONTRACTOR or use any materials from the stores of the CONTRACTOR with respect to this contract without the prior concurrence of the Illinois Department of Transportation. All such subcontracts, agreements, and force work and materials shall be handled as prescribed for third-party contracts, agreements, and force-account work by the IDOT manual for Public Transportation Capital Improvement Grants. All requests for concurrence shall be submitted to the DISTRICT for approval prior to submittal to IDOT.



2.6 MOTOR VEHICLES

Motor vehicles shall meet local, state, and federal regulations on air pollution, noise, and safety.

2.7 EQUAL EMPLOYMENT OPPORTUNITY

In the event of the CONTRACTOR's non-compliance with the provisions of the Equal Employment Opportunity Clause (Section 2, 2.30.9), the Illinois Human Rights Act, or the Rules and Regulations of the Illinois Department of Human Rights ("Department"), the CONTRACTOR may be declared ineligible for future contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations, and the contract may be cancelled or voided in whole or in part, and such other sanctions or penalties may be imposed or remedies invoked as provided by statute or regulation. During the performance of this contract, the CONTRACTOR agrees as follows:

- (1) That it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, marital status, national origin or ancestry, age, physical or mental , or an unfavorable discharge from military service; and further that it will examine all job classifications to determine if minority persons or women are underutilized and will take appropriate affirmative action to rectify any such underutilization.
- (2) That, if it hires additional employees in order to perform this contract or any portion thereof, it will determine the availability (in accordance with the Department's Rules and Regulations) of minorities and women in the area(s) from which it may reasonably recruit and it will hire for each job classification for which employees are hired in such a way that minorities and women are not underutilized.
- (3) That, in all solicitations or advertisements for employees placed by it or on its behalf, it will state that all applicants will be afforded equal opportunity without discrimination because of race, color, religion, sex, marital status, national origin or ancestry, age, physical or mental handicap unrelated to ability, or an unfavorable discharge from military service.



- (4) That it will send to each labor organization or representative of workers with which it has or is bound by a collective bargaining or other agreement or understanding, a notice advising such labor organization or representative of the CONTRACTOR's obligations under the Illinois Human Rights Act and the Department's Rules and Regulations. If any such labor organization or representative fails or refuses to cooperate with the CONTRACTOR in its efforts to comply with such Act and Rules and Regulations, the CONTRACTOR will promptly so notify the Department and the DISTRICT and will recruit employees from other resources when necessary to fulfill its obligations thereunder.
- (5) That it will submit reports as required by the Department's Rules and Regulations, furnish all relevant information as may from time to time be requested by the Department or the DISTRICT and in all respects comply with the Illinois Human Rights act and the Department's Rules and Regulations.
- (6) That it will permit access to all relevant books, records, accounts and work sites by personnel of the DISTRICT and the Department for purposes of investigation to ascertain compliance with the Illinois Human Rights Act and the Department's Rules and Regulations.
- (7) That it will include verbatim or by reference the provisions of this clause in every subcontract it awards under which any portion of the contract obligations are undertaken or assumed, so that such provisions will be binding upon such subcontractor. In the same manner as with other provisions of this contract, the CONTRACTOR will be liable for compliance with the applicable provisions of this clause by such subcontractors; and further it will promptly notify the DISTRICT and the Department in the event of any subcontractor fails or refuses to comply therewith. In addition, the CONTRACTOR will not utilize any subcontractor declared by the Illinois Human Rights Commission to be ineligible for contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations.



ARTICLE 3. Special Terms and Conditions

3.1 INSPECTION, TESTS, AND REPAIRS

3.1.1 Configuration and Performance Approval

In order to assess the CONTRACTOR's compliance with the Technical Specifications, the DISTRICT and the CONTRACTOR shall, at the Pre-Production Meeting, jointly develop a configuration and performance review document for review of vehicles. This document shall include appropriate performance standards for each test that is being required and the document shall become part of the official record of the pre-production meeting.

3.1.2 Inspection – Production

- A. The purpose of inspection is to confirm that any components, systems, subsystems, major assemblies, subassemblies, products, parts, apparatuses, articles and other materials comply with the Technical Specifications and other Contract documents.
- B. Where required by the Contract documents or requested by the DISTRICT, the CONTRACTOR shall cause inspections to be conducted. An inspection may include both a physical configuration inspection and a functional demonstration. Inspections shall be conducted at the CONTRACTOR or Subcontractor's facility. The CONTRACTOR shall furnish to the DISTRICT prior to each inspection a written inspection and demonstration plan for each item for review. The DISTRICT's inspectors will attend inspections unless the DISTRICT provides a written waiver of its right to attend any such inspection. The results of each first article inspection shall be documented by the CONTRACTOR in a format deemed acceptable by the DISTRICT, and all documents relating to the inspection shall be forwarded to the DISTRICT.

3.1.3 Post-Delivery Tests

- A. The DISTRICT will conduct acceptance tests on each delivered bus. These tests shall be completed within fifteen (15) days after bus delivery and shall be conducted in accordance with written test plans. The purpose of these tests is to identify Defects that have become apparent between the time



of bus release and delivery to the DISTRICT. The post-delivery tests shall include visual inspection and bus operations. No post-delivery test shall apply criteria that are different from the criteria applied in an analogous pre-delivery test (if any).

- B. Pre delivery inspection procedures performed by the contractor shall conform to contractor's inspection and quality assurance procedures. Any deviation to these procedures shall be documented and reported to the customer and its assigns.
- C. After the physical delivery of the bus to the DISTRICT's property and the CONTRACTOR's post-delivery tests are completed, the CONTRACTOR shall certify with a signature on company letterhead that the bus is ready for the DISTRICT's acceptance inspection. The DISTRICT's fifteen (15) day period to perform acceptance tests shall not start until the CONTRACTOR provides this certification.
- D. The acceptance tests to be conducted by DISTRICT and the criteria and standards in respect of such tests, shall be agreed upon by the DISTRICT and the CONTRACTOR prior to the CONTRACTOR building the buses. If a bus passes these tests or if the District does not notify the CONTRACTOR of non-acceptance within 15 calendar days after delivery of the bus, acceptance of the bus by the District shall be deemed to have occurred on the 15th day after delivery. Acceptance shall occur earlier if the District notifies the CONTRACTOR of early acceptance or places the bus into revenue service.
- E. Buses that fail to pass the post-delivery tests are subject to non-acceptance. The DISTRICT shall record details of all Defects on the appropriate test forms and shall notify the CONTRACTOR of acceptance or non-acceptance of each bus according to "Inspection, Testing and Acceptance" after completion of the tests. The Defects detected during these tests shall be repaired according to procedures defined in "Repairs after Non-Acceptance."
- F. To be fully accepted and paid for, each bus must complete forty (40) hours of continuous revenue service of each bus without any defects.

3.1.4 Repairs After Non-Acceptance

The CONTRACTOR, or its designated representative, shall perform the repairs after non-acceptance. If the CONTRACTOR fails or refuses to begin the repairs, or to make acceptable arrangements with the DISTRICT to begin repairs, within five (5) calendar days of the date CONTRACTOR receives written notice



of non-acceptance, then the Work may be done by the DISTRICT's personnel with reimbursement by the CONTRACTOR.

3.2 REPAIR PERFORMANCE

3.2.1 Repairs by CONTRACTOR

After non-acceptance of the bus, the CONTRACTOR must begin the repair work required by the DISTRICT within five (5) calendar days after receiving notification from the DISTRICT of failure of acceptance tests. The DISTRICT shall make the bus available to complete repairs in a timely manner, considering the CONTRACTOR repair schedule.

The CONTRACTOR shall provide, at its own expense, all spare parts, tools and space required to complete the repairs. At the DISTRICT's option, the CONTRACTOR may be required to remove the bus from the DISTRICT's property while repairs are being made. If the bus is removed from the DISTRICT's property, repair procedures must be diligently pursued by the CONTRACTOR's representatives, and the CONTRACTOR shall assume risk of loss while the bus is under its control.

3.2.2 Repairs by the DISTRICT

The DISTRICT will not take responsibility to correct Defects, except to replace defective parts as instructed by the CONTRACTOR.

3.2.3 Parts Used

- A. If the DISTRICT performs the repairs after non-acceptance of the bus, it shall correct or repair the Defect and any Related Defects using CONTRACTOR-specified parts available from its own stock or those supplied by the CONTRACTOR specifically for this repair. Reports of all repairs covered by this procedure shall be submitted by the DISTRICT to the CONTRACTOR for reimbursement or replacement of parts monthly, or at a period to be mutually agreed upon. The CONTRACTOR shall provide forms for these reports.
- B. CONTRACTOR-supplied parts. If the CONTRACTOR supplies parts for repairs being performed by the



DISTRICT after non-acceptance of the bus, these parts shall be delivered or shipped prepaid to the DISTRICT.

- C. Return of defective components. The CONTRACTOR may request that any defective parts covered by this provision be returned to the manufacturing plant at the sole expense of CONTRACTOR. The total costs for this action shall be paid by the CONTRACTOR.
- D. Reimbursement for labor. The DISTRICT shall be reimbursed by the CONTRACTOR for any labor expended in repairing defects under this section. The amount shall be determined by the DISTRICT for a qualified mechanic at a straight time wage rate which includes fringe benefits and overhead adjusted for the DISTRICT's most recently published rate in effect at the time the Work is performed, plus the cost of towing the bus, if such action was necessary. These wage and fringe benefits rates shall not exceed the rates in effect in the DISTRICT's service garage at the time the Defect correction is made.
- E. Reimbursement for parts. The DISTRICT shall be reimbursed by the CONTRACTOR for defective parts that must be replaced to correct the Defect. The reimbursement shall include taxes where applicable and a fifteen (15) percent handling cost.

3.3 DELIVERIES

3.3.1 Bus Delivery

Delivery of buses shall be verified by a receipt signed by the DISTRICT's Maintenance Director (or designee) at the following point(s) of delivery and may be preceded by a cursory inspection of the bus at the MTD Maintenance Facility, 803 E University Avenue, Urbana, Illinois 61802. Acknowledgement of delivery under this section does not constitute acceptance of the bus as without defect.

3.3.2 Delivery Schedule

Hours of delivery shall be 7:00 a.m. – 4:30 p.m., Monday through Friday, excluding holidays. Deliveries will be made in accordance to the schedule in EXHIBIT A.



3.3.3 Contract Deliverables

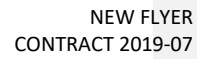
Contract deliverables associated with this Contract are set forth in Table 1, along with other pertinent information. Contract deliverables shall be submitted in accordance with Article 6: Technical Specifications. Due dates shown note the last acceptable date for receipt of Contract deliverables. The DISTRICT will consider early receipt of Contract deliverables on a case- by-case basis. The reference section designates the appropriate specification section(s) where the requirement is referenced.

Table 1
Contract Deliverables

Deliverable		DISTRICT Action	Reference Section	Due Date	Format	Quantity Due
1.	Bus Testing — Altoona Test Report	Review		Prior to lead production bus delivery	Hardcopy	1
2.	List of serialized units installed on each bus	Review		With each delivered bus	Electronic Media	1 per bus
3.	Copy of Manufacturers formal Quality Assurance Program	Review		Pre-award site visit	Hardcopy	1
4.	QA manufacturing certificate	Review		With each delivered bus	Hardcopy	1 per bus
5.	QA purchasing certifications acknowledging receipt of applicable specification	Review		30 days following first pre- production meeting	Hardcopy	1 per major Supplier
6.	Pre-Delivery Bus Documentation Package	Review		With each delivered bus	Hardcopy	1 per bus
7.	Pre-production meeting minutes	Approval		30 days after each meeting	Hardcopy	2 originals



	Deliverable	DISTRICT Action	Reference Section	Due Date	Format	Quantity Due
8.	Title documentation	Review		10 days prior to bus delivery	Hardcopy	1 per bus
9.	Performance bond	Review		14 days following execution of Contract	Hardcopy	1
10.	Insurance certificates	Approval		Before Work begins commences	Hardcopy	1
11.	Engineering support	Review		During pre-production meeting	Contracts	1
12.	Training instructor information	Approval		30 days prior to delivery of lead production bus		
13.	Training curriculum	Approval		30 days prior to delivery of lead production bus	Electronic Media	
14.	Teaching materials	Review		During classroom instruction	Hardcopy	1
15.	Professionally prepared mechanics' "Bus Orientation" training video	Review		30 days after the first production bus	Electronic Media	20 each

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	Deliverable	DISTRICT Action	Reference Section	Due Date	Format	Quantity Due
20.	Draft preventative maintenance manuals (DISTRICT approval/review period of 90 days from date of receipt)	Approval	delivered 90 days after last bus delivery or receipt of Champaign comments on draft manuals, whichever occurs first		Hardcopy	1 hardcopy 1 DVD
21.	Draft diagnostic procedures manuals (DISTRICT approval/review period of 90 days from date of receipt)	Approval	delivered 90 days after last bus delivery or receipt of Champaign comments on draft manuals, whichever occurs first	With lead production bus	Hardcopy	1 hardcopy 1 DVD
22.	Draft parts manuals. (DISTRICT approval/review period of 90 days from date of receipt)	Approval		With lead production bus	Hardcopy	1 hardcopy 1 DVD
23.	List of OEM component repair manuals	Approval		With lead production bus	Hardcopy	10
24.	Final operators' manuals	Review		30 days following DISTRICT approval of	Hardcopy	1 per bus
25.	Recommended spare parts list, including bill of materials	Review		during customer's first-bus delivery.	Hardcopy	1



	Deliverable	DISTRICT Action	Reference Section	Due Date	Format	Quantity Due
26.	Supply with Final bus parts manual	Approval		60 days prior to shipment of first bus	Hardcopy Spreadsheet	1 1
27.	Current price list	Review		during customer's first-bus delivery.	Hardcopy	20
28.	Electrical and air schematics	Review		30 days prior to production	Hardcopy	1
29.	Available on as-needed basis	Review		Available on as-needed basis	Electronic Media	1
30.	Undercoating system program	Approval		First pre-production meeting	Hardcopy	1
31.	Flooring certificate	Review		First pre-production meeting	Certificate /copy of purchase	1
32.	Interior features – fire-resistance certificates	Review		Prior to lead production bus completion	Certificate s	1
33.	Crashworthiness	Review		Pre-award audit	Certificate	1
34.	Technical review of electronic functionality	Approval		Prior to production	Hardcopy	1
35.	Interior security camera layout	Approval		Prior to lead production bus completion	Copies of interior	1 each
36.	Technical review of powerplant			Prior to production		
37.	Powerplant certifications	Review		Prior to lead production bus completion	Hardcopy	1 each
38.	Striping layout	Approval		Prior to production	Hardcopy	1



Deliverable		DISTRICT Action	Reference Section	Due Date	Format	Quantity Due
39.	Resolution of issues "subject to DISTRICT approval"	Approval		Prior to production	Hardcopy	1

3.4 SERVICE AND PARTS

3.4.1 CONTRACTOR Service and Parts Support

The CONTRACTOR shall state on the form CONTRACTOR Service and Parts Support Data the representatives responsible for assisting the DISTRICT, as well as the location of the nearest distribution center, which shall furnish a complete supply of parts and components for the repair and maintenance of the buses to be supplied. The CONTRACTOR shall provide the district with a recommendation of tools and spare parts required to maintain the buses no later than the preproduction meeting. The CONTRACTOR also shall state below, or by separate attachment, its policy on transportation charges for parts other than those covered by warranty.

3.4.2 Documentation

The CONTRACTOR shall provide current maintenance manual(s) to include preventative maintenance procedures, diagnostic procedures or trouble-shooting guides and major component service manuals, current parts manual(s), and standard operator's manual(s) as part of this Contract. The CONTRACTOR also shall exert its best efforts to keep bus maintenance and operator manuals for a period of six (6) years, and parts books up to date for a period of twelve (12) years. The supplied manuals shall incorporate all equipment ordered on the buses covered by this procurement. In instances where copyright restrictions or other considerations prevent the CONTRACTOR from incorporating major components information into the bus parts and service manuals, the CONTRACTOR will obtain and provide to the DISTRICT separate manual sets as published by the subcomponent Supplier.



3.4.3 Parts Availability Guarantee

- A. The CONTRACTOR hereby guarantees to provide, within reasonable periods of time, the spare parts, software and all equipment necessary to maintain and repair the buses supplied under this Contract for a period of at least twelve (12) years after the date of acceptance. Parts shall be interchangeable with the original equipment and shall be manufactured in accordance with the quality assurance provisions of this Contract. Prices shall not exceed the CONTRACTOR's published catalog prices at the time of the replacement.
- B. Where the parts ordered by the DISTRICT are not received within two working days of the agreed-upon time and date and a bus procured under this Contract is out of service due to the lack of said ordered parts, then the CONTRACTOR shall provide the DISTRICT, within twenty-four (24) hours of the DISTRICT's verbal or written request, the original Suppliers' and/or manufacturers' parts numbers, company names, addresses, telephone numbers and contact persons' names for all of the specific parts not received by the DISTRICT.
- C. Where the CONTRACTOR fails to honor this parts guarantee or parts ordered by the DISTRICT are not received within thirty (30) days of the agreed-upon delivery date, then the CONTRACTOR shall provide to DISTRICT, within seven (7) days of the DISTRICT's verbal or written request, the design and manufacturing documentation for those parts manufactured by the CONTRACTOR and the original Suppliers' and/or manufacturers' parts numbers, company names, addresses, telephone numbers and contact persons' names for all of the specific parts not received by the DISTRICT. The CONTRACTOR's design and manufacturing documentation provided to the DISTRICT shall be for its sole use in regard to the buses procured under this Contract and for no other purpose.

3.5 DISTRICT-FURNISHED PROPERTY

- A. In the event that equipment or other goods or materials are specified in the Technical Specifications to be furnished by the DISTRICT to the CONTRACTOR for incorporation in the Work, the following provisions shall apply: The DISTRICT shall furnish the equipment, goods or materials in a timely manner so as not to delay Contract delivery or performance dates. If DISTRICT-furnished property is received in a condition not suitable for the intended use, then the CONTRACTOR shall promptly notify



the DISTRICT, detailing the facts, and at the DISTRICT's expense repair, modify, return or take such other action as directed by the DISTRICT. The parties may conduct a joint inspection of the property before the CONTRACTOR takes possession to document its condition.

- B. The DISTRICT retains title to all DISTRICT-furnished property. Upon receipt of the DISTRICT-furnished property, the CONTRACTOR assumes the charge and care of the property and bears the risk of loss or damage due to action of the elements or from any other cause. The CONTRACTOR shall provide appropriate protection for all such property during the progress of the Work. Should any DISTRICT-furnished equipment or materials be damaged, such property shall be repaired or replaced at the CONTRACTOR's expense to the satisfaction of the DISTRICT. No extension of time will be allowed for repair or replacement of such damaged items. Should the CONTRACTOR not repair or replace such damaged items, the DISTRICT shall have the right to take corrective measures itself and deduct the cost from any sums owed to the CONTRACTOR.
- C. Warranty administration and enforcement for DISTRICT-furnished equipment are the responsibility of the DISTRICT, unless the parties agree to transfer warranty responsibility to the CONTRACTOR.

3.6 FEDERAL MOTOR VEHICLE SAFETY STANDARDS (FMVSS)

The CONTRACTOR shall submit one (1) manufacturer's FMVSS self-certification, Federal Motor Vehicles Safety Standards that the vehicle complies with relevant FMVSS or two manufacturer's certified statement that the contracted buses will not be subject to FMVSS regulations.

3.7 INSURANCE

3.7.1 Workers Compensation:

The CONTRACTOR shall maintain in effect during the term of this Contract, including any warranty period, at its own expense, at least the following coverage and limits of insurance: Statutory Workers Compensation and Employers Liability insurance and/or qualified self- insurance program covering YSupplier's employees while on DISTRICT property.



3.7.2 Commercial General Liability Insurance to include Product Liability Insurance and Excess Liability Insurance:

Bodily Injury and Property Damage, including Contractual Liability and excess liability insurance covering the indemnification contained herein, with a combination of \$20,000,000 per occurrence limit, and \$20,000,000 aggregate.

3.7.3 Automobile Liability Insurance:

Bodily Injury and Property Damage, \$1,000,000 combined single limits per occurrence.

CONTRACTOR shall deliver to the DISTRICT, within ten (10) days after receiving Notice of Award of this Contract, evidence of the above coverages. Prior to the expiration of any insurance during the time required, the CONTRACTOR shall furnish evidence of renewal to the DISTRICT's Contract Administrator.

3.7.4 Endorsement and Notice of Changes in Coverage:

All CONTRACTOR's policies will include a blanket additional insured endorsement and provide that written notice shall be given to DISTRICT location at least thirty (30) days prior to termination, cancellation or material reduction of coverage in the policy; provided, however, that such notice may be given on ten (10) days' notice if the termination is due to nonpayment of premium.

3.8 PERFORMANCE BOND

The CONTRACTOR shall furnish, at its own expense, performance guarantee in the form of a cashier's check, a letter of credit in a form approved by the DISTRICT before proposal submission, or a performance bond from a surety duly licensed to do business in the state of Illinois having a financial rating from A.M. Best Company of "A VIII" or better, in the amount equal to 100% of the contract purchase price. The bond shall cover all of the CONTRACTOR's obligations under the Contract except for the warranty and shall remain in force until said obligations have been fulfilled. The bond amount may be reduced as follows:



1. To sixty-five (65) percent of the original amount when fifty (50) percent of the required number of buses are delivered and accepted;
2. To zero (0) percent of the original amount when one hundred (100) percent of the required number of buses are delivered and accepted.

In the case that a surety becomes insolvent, its license is revoked or suspended, or in the case of a surety approved on the basis that it is listed as an approved federal surety and such federal approval is revoked or suspended, the CONTRACTOR, within five (5) days after notice by the DISTRICT, shall substitute other and sufficient surety or sureties. If the CONTRACTOR fails to do so, such failure shall be an event of default.

3.9 LIST OF SOFTWARE

Upon execution of the Contract, the CONTRACTOR shall provide the DISTRICT a list of all OEM software comprising proprietary works ("Proprietary Software") for all major vehicle subsystems. From time to time and only upon request, information contained within the listed software may be made available to the DISTRICT through the OEM of the vehicle subsystem. The CONTRACTOR and OEM are not obligated to provide copies of source code as this is proprietary intellectual property; however, the CONTRACTOR is obligated to assist the DISTRICT with any technical assistance for the duration of the life of the vehicle. It is the DISTRICT's prerogative to evaluate the long-term viability of the CONTRACTOR and its Subcontractors and Suppliers based upon the criteria set forth in "Qualification Requirements."

3.10 ENVIRONMENTAL SUSTAINABILITY

MTD has a environmental policy that includes the responsibility to make sure all of its contractors are informed of this policy. The DISTRICT recognizes that being sustainable (environmentally, economically and socially responsible) involves everyone, both internal and external to the DISTRICT. The DISTRICT expects CONTRACTOR to have its own sustainability policies and programs in place and to provide services in line with the principles established therein. Implementation of sustainable practices may include maximizing the use of environmentally and socially responsible materials and services, utilizing energy-efficient and non-polluting vehicles, equipment and processes, and ensuring employee awareness of sustainability initiatives.



ARTICLE 4. Federal Terms and Conditions

4.1 ACCESS TO RECORDS

The CONTRACTOR agrees to maintain all books, records, accounts and reports required under this Contract for a period of not less than three years after the date of termination or expiration of this Contract, except in the event of litigation or settlement of claims arising from the performance of this Contract, in which case CONTRACTOR agrees to maintain same until the DISTRICT, the FTA Administrator, the Comptroller General or any of their duly authorized representatives have disposed of all such litigation, appeals, claims or exceptions related thereto.

The following access to records requirements apply to this Contract:

4.1.1 Local Governments

In accordance with 49 CFR 18.36(i), the CONTRACTOR agrees to provide the DISTRICT, the FTA Administrator, the Comptroller General of the United States or any of their authorized representatives access to any books, documents, papers and records of the CONTRACTOR that are directly pertinent to this Contract for the purposes of making audits, examinations, excerpts and transcriptions. CONTRACTOR also agrees, pursuant to 49 CFR 633.17 to provide the FTA Administrator or his authorized representatives including any PMO Contractor access to CONTRACTOR's records and construction sites pertaining to a major capital project, defined at 49 USC 5302, which is receiving federal financial assistance through the programs described at 49 USC 5307, 5309 or 5311.

4.1.2 State Governments

The CONTRACTOR agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

4.2 FEDERAL FUNDING, INCORPORATION OF FTA TERMS AND FEDERAL CHANGES

The preceding provisions include, in part, certain standard terms and conditions required by the Department of Transportation, whether or not expressly set forth in the preceding Contract provisions.



All contractual provisions required by DOT, as set forth in FTA Circular 4220.1F or its successors are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this agreement. The CONTRACTOR shall not perform any act, fail to perform any act or refuse to comply with any DISTRICT requests that would cause DISTRICT to be in violation of the FTA terms and conditions.

The CONTRACTOR shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Master Agreement between the DISTRICT and FTA, as they may be amended or promulgated from time to time during the term of this Contract. CONTRACTOR's failure to so comply shall constitute a material breach of this Contract.

4.3 FEDERAL ENERGY CONSERVATION REQUIREMENTS

The CONTRACTOR agrees to comply with mandatory standards and policies relating to energy efficiency that are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

4.4 CIVIL RIGHTS REQUIREMENTS

The following requirements apply to this Contract:

1. **Nondiscrimination:** In accordance with Title VI of the Civil Rights Act, as amended, 42 USC § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 USC § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 USC § 12132, and Federal transit law at 49 USC § 5332, the CONTRACTOR agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the CONTRACTOR agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.
2. **Equal Employment Opportunity:** The following equal employment opportunity requirements apply to the underlying Contract:



- a) **Race, Color, Creed, National Origin, Sex:** In accordance with Title VII of the Civil Rights Act, as amended, 42 USC § 2000e, and Federal transit laws at 49 USC § 5332, the CONTRACTOR agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 CFR Parts 60 et seq., (which implement Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 USC § 2000e note), and with any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect construction activities undertaken in the course of the contract. The CONTRACTOR agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the CONTRACTOR agrees to comply with any implementing requirements FTA may issue.
- b) **Age:** In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 USC §§ 623 and Federal transit law at 49 USC § 5332, the CONTRACTOR agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the CONTRACTOR agrees to comply with any implementing requirements FTA may issue.
- c) **Disabilities:** In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 USC § 12112, the CONTRACTOR agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 CFR Part 1630, pertaining to employment of persons with disabilities. In addition, the CONTRACTOR agrees to comply with any implementing requirements FTA may issue.
- d) **Veterans Employment:** Recipients and sub-recipients of Federal financial assistance



under this chapter shall ensure that contractors working on a capital project funded using such assistance give a hiring preference, to the extent practicable, to veterans (as defined in section 2108 of title 5 U.S.C.) who have the requisite skills and abilities to perform the construction work required under the contract. This subsection shall not be understood, construed or enforced in any manner that would require an employer to give preference to any veteran over any equally qualified applicant who is a member of any racial or ethnic minority, female, an individual with a disability, or former employee.

3. The CONTRACTOR also agrees to include these requirements in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties.

4.5 NO GOVERNMENT OBLIGATION TO THIRD PARTIES

- A. The DISTRICT and CONTRACTOR acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the Solicitation or award of the underlying Contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this Contract and shall not be subject to any obligations or liabilities to the DISTRICT, CONTRACTOR, or any other party (whether or not a party to that Contract) pertaining to any matter resulting from the underlying Contract.
- B. The CONTRACTOR agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the Subcontractor who will be subject to its provisions.

4.6 PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS OR RELATED ACTS

- A. The CONTRACTOR acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 USC §§ 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 CFR Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying Contract, the CONTRACTOR certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying Contract or the FTA assisted



project for which this Contract Work is being performed. In addition to other penalties that may be applicable, the CONTRACTOR further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the CONTRACTOR to the extent the Federal Government deems appropriate.

- B. The CONTRACTOR also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a Contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 USC § 5307, the Government reserves the right to impose the penalties of 18 USC § 1001 and on the CONTRACTOR, to the extent the Federal Government deems appropriate.
- C. The CONTRACTOR agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the Subcontractor who will be subject to the provisions.

4.7 SUSPENSION AND DEBARMENT

- A. This Contract is a covered transaction for purposes of 49 CFR Part 29. As such, the CONTRACTOR is required to verify that none of the CONTRACTOR, its principals, as defined at 49 CFR 29.995, or affiliates, as defined at 49 CFR 29.905, are excluded or disqualified as defined at 49 CFR 29.940 and 29.945.
- B. The CONTRACTOR is required to comply with 49 CFR 29, Subpart C, and must include the requirement to comply with 49 CFR 29, Subpart C, in any lower-tier covered transaction it enters into.
- C. By signing and submitting this Contract, the CONTRACTOR certifies as follows:

The certification in this clause is a material representation of fact relied upon by the DISTRICT. If it is later determined that the CONTRACTOR knowingly rendered an erroneous certification, in addition to remedies available to the DISTRICT, the federal government may pursue available remedies, including but not limited to suspension and/or debarment. The CONTRACTOR agrees to comply with the requirements of 49 CFR 29, Subpart C, while this Contract is valid and throughout the period of any Contract that may arise



from this Proposal. The CONTRACTOR further agrees to include a provision requiring such compliance in its lower tier covered transactions.

4.8 DISADVANTAGED BUSINESS ENTERPRISE (DBE)

- A. This Contract is subject to the requirements of Title 49, Code of Federal Regulations, Part 26, and Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs.
- B. The CONTRACTOR shall maintain compliance with "DBE Approval Certification" throughout the period of Contract performance.
- C. The CONTRACTOR shall not discriminate on the basis of race, color, national origin or sex in the performance of this Contract. The CONTRACTOR shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of this DOT-assisted Contract. Failure by the CONTRACTOR to carry out these requirements is a material breach of this Contract, which may result in the termination of this Contract or such other remedy as the DISTRICT deems appropriate. Each subcontract the CONTRACTOR signs with a Subcontractor must include the assurance in this paragraph (see 49 CFR 26.13(b)).

4.9 CLEAN WATER REQUIREMENTS

- A. The CONTRACTOR agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 USC 1251 et seq. The CONTRACTOR agrees to report each violation to the DISTRICT and understands and agrees that the DISTRICT will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.
- B. The CONTRACTOR also agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FTA.

4.10 CLEAN AIR REQUIREMENTS

- A. The CONTRACTOR agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 USC §§ 7401 et seq. The CONTRACTOR agrees to report



each violation to the DISTRICT and understands and agrees that the DISTRICT will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

- B. The CONTRACTOR also agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FTA.

4.11 COMPLIANCE WITH FEDERAL LOBBYING POLICY

Contractors who apply or bid for an award of \$100,000 or more shall file the certification required by 49 CFR Part 20, "New Restrictions on Lobbying." Each tier certifies to the tier above that it will not and has not used federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any DISTRICT, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any federal Contract, grant or any other award covered by 31 USC 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-federal funds with respect to that federal Contract, grant or award covered by 31 USC 1352. Such disclosures are forwarded from tier to tier up to the recipient.

4.12 BUY AMERICA

- A. The CONTRACTOR agrees to comply with 49 USC 5323(j) and 49 CFR Part 661, which provide that federal funds may not be obligated unless steel, iron and manufactured products used in FTA- funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 CFR 661.7. A general public interest waiver from the Buy America requirements applies to microprocessors, computers, microcomputers, software or other such devices, which are used solely for the purpose of processing or storing data. This general waiver does not extend to a product or device that merely contains a microprocessor or microcomputer and is not used solely for the purpose of processing or storing data.
- B. Separate requirements for rolling stock are set out at 49 USC 5323(j) (2) (C) and 49 CFR 661.11. Rolling stock must be assembled in the United States and have a 60 percent domestic content.
- C. The CONTRACTOR must submit to the DISTRICT the appropriate Buy America Certification that are required by FTA funded contracts, except those subject to a general waiver.



4.13 TESTING OF NEW BUS MODELS

The CONTRACTOR agrees to comply with the FTA's implementing regulation at 49 CFR Part 665 and shall perform the following:

1. A manufacturer of a new bus model or a bus produced with a major change in components or configuration shall provide a copy of the final test report to the recipient at a point in the procurement process specified by the recipient, which will be prior to the recipient's final acceptance of the first vehicle.
2. A manufacturer who releases a report under Paragraph 1 above shall provide notice to the operator of the testing facility that the report is available to the public.
3. If the manufacturer represents that the vehicle was previously tested, the vehicle being sold should have the identical configuration and major components as the vehicle in the test report, which must be provided to the recipient prior to recipient's final acceptance of the first vehicle. If the configuration or components are not identical, the manufacturer shall provide a description of the change and the manufacturer's basis for concluding that it is not a major change requiring additional testing.

4.14 PRE-AWARD AND POST-DELIVERY AUDITS

The CONTRACTOR agrees to comply with 49 USC § 5323(l) and FTA's implementing regulation at 49 CFR Part 663 and to submit the following certifications:

1. **Buy America requirements:** The CONTRACTOR shall complete and submit a declaration certifying either compliance or noncompliance with Buy America. It shall submit documentation that lists (1) component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and (2) the location of the final assembly point for the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly.
2. **Federal Motor Vehicle Safety Standards (FMVSS):** The CONTRACTOR shall submit (1) manufacturer's FMVSS self-certification, Federal Motor Vehicle Safety Standards, that the vehicle



complies with relevant FMVSS or (2) manufacturer's certified statement that the contracted buses will not be subject to FMVSS regulations.

4.15 CARGO PREFERENCE

The CONTRACTOR agrees to the following:

1. To use privately owned U.S.-flag commercial vessels to ship at least fifty (50) percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners and tankers) involved, whenever shipping any equipment, material or commodities pursuant to the underlying Contract to the extent such vessels are available at fair and reasonable rates for U.S.-flag commercial vessels;
2. To furnish within twenty (20) working days following the date of loading for shipments originating within the United States or within thirty (30) working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill of lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the FTA recipient (through the CONTRACTOR in the case of a Subcontractor's bill-of-lading.)
3. To include these requirements in all subcontracts issued pursuant to this Contract when the subcontract may involve the transport of equipment, material or commodities by ocean vessel.

4.16 FLY AMERICA

The CONTRACTOR agrees to comply with 49 USC 40118 (the "Fly America" Act) in accordance with the General Services Administration's regulations at 41 CFR Part 301-10, which provide that recipients and sub recipients of federal funds and their contractors are required to use U.S. flag air carriers for U.S. government-financed international air travel and transportation of their personal effects or property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. The CONTRACTOR shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service by a U.S. flag air carrier was not available



or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. The CONTRACTOR agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

4.17 CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

1. **Overtime requirements:** Neither CONTRACTOR nor any Subcontractor contracting for any part of the Contract Work that may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any work week in which he or she is employed on such Work to work in excess of 40 hours in such work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.
2. **Violation; liability for unpaid wages; liquidated damages:** In the event of any violation of the clause set forth in paragraph 1 of this section, the CONTRACTOR and any Subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such CONTRACTOR and Subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph 1 of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 1 of this section.
3. **Withholding for unpaid wages and liquidated damages:** The DISTRICT shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any monies payable on account of work performed by the CONTRACTOR or Subcontractor under any such contract or any other Federal contract with the same CONTRACTOR or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same CONTRACTOR such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or Subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 2 of this section.



4. **Subcontracts:** The CONTRACTOR or Subcontractor shall insert in any subcontracts the clauses set forth in paragraphs 1 through 4 of this section and also a clause requiring the Subcontractors to include these clauses in any lower tier subcontracts. The CONTRACTOR shall be responsible for compliance by any Subcontractor or lower-tier Subcontractor with the clauses set forth in paragraphs 1 through 4 of this section.
5. **Accessibility:** The CONTRACTOR agrees to comply with the "Over-the-Road Buses," regulations within "U.S. DOT regulations, "Transportation Services for Individuals with Disabilities (ADA)," 49 C.F.R. Part 37, Subpart H, and with joint U.S. ATBCB/U.S. DOT regulations, "Americans With Disabilities (ADA) Accessibility Specifications for Transportation Vehicles," 36 C.F.R. Part 1192 and 49 C.F.R. Part 38.

4.18 PRIVACY ACT

The following requirements apply to the CONTRACTOR and its employees that administer any system of records on behalf of the Federal Government under any contract:

- A. The CONTRACTOR agrees to comply with, and assures the compliance of its employees with, the information restrictions and other applicable requirements of the Privacy Act of 1974, 5 U.S.C. § 552a. Among other things, the CONTRACTOR agrees to obtain the express consent of the Federal Government before the CONTRACTOR or its employees operate a system of records on behalf of the Federal Government. The CONTRACTOR understands that the requirements of the Privacy Act, including the civil and criminal penalties for violation of that Act, apply to those individuals involved, and that failure to comply with the terms of the Privacy Act may result in termination of the underlying Contract.
- B. The CONTRACTOR also agrees to include these requirements in each subcontract to administer any system of records on behalf of the Federal Government financed in whole or in part with Federal assistance provided by the FTA.



4.19 TRANSIT VEHICLE MANUFACTURER'S (TVM) CERTIFICATION

The CONTRACTOR agrees to comply with all the requirements of 49 CFR 23.67, as they apply to the procurement of transit vehicles under this Contract, including but not limited to, furnishing the DISTRICT with a certification that it is in full compliance with all the regulatory requirements of 49 CFR 23.67.

4.20 NOTIFICATION OF FEDERAL PARTICIPATION

The CONTRACTOR agrees to specify the amount of Federal assistance to be used in financing that acquisition of goods and services and to express the amount of that Federal assistance as a percentage of the total cost of that third party Contract.

ARTICLE 5. Technical Specifications

5.1 GENERAL REQUIREMENTS

5.1.1 Scope

These technical specifications define the requirements for two (2) fuel cell low floor sixty foot articulated coaches in accordance with the terms and conditions set forth in this Contract. Coaches shall have a total of (3) doors. Coaches must incorporate a method to safely board passengers with the designed platforms and allow level boarding at all the available doors. Coaches shall have a minimum expected life of twelve years (12) years or 500,000 miles, whichever occurs first and are intended for the widest possible spectrum of passengers, including children, adults, the elderly, and people with disabilities.

5.1.2 Requirements

These technical specifications are based on a general performance type specification pursuant to which the CONTRACTOR shall be responsible for. The contractor shall insure that the vehicles are in compliance with the requirements of the Contract Documents. Included within these requirements are specified components, equipment and systems usually accompanied by the phrase "or approved equal." Such components, equipment and systems, or deviations and substitute items specifically approved by the DISTRICT, shall be provided as part of the completed buses under this Contract. The DISTRICT's specification of such components, equipment and systems or the approval of such items, however, shall



not relieve the CONTRACTOR of any obligation under the Contract Documents since the DISTRICT expects and is relying on the CONTRACTOR, in designing and testing the bus, to verify the suitability and safety of materials, components, equipment, systems and items before incorporating them into the design, fabrication or assembly of the bus provided by CONTRACTOR.

5.1.3 Testing

Prior to acceptance the vehicle as described in this section must have completed the FTA-required "Altoona" test program. Any items that required repeated repairs or replacements during the Altoona test must undergo the corrective actions with supporting test and analysis. A report clearly describing and explaining the failures and corrective actions that were taken to ensure any and all such failures shall not reoccur shall be submitted to the DISTRICT before start of production of the first article vehicle.

5.1.4 Provisions

Without limiting the general provisions or other requirements of these specifications, all work included herein shall conform to or exceed the applicable requirements. Reference to other sections or specific provisions of the Contract, including these technical specifications, is only for the convenience of the CONTRACTOR. Failure of the DISTRICT to accurately or completely reference one requirement to other related requirements shall not relieve the CONTRACTOR of its obligation to fully understand and correlate all of the Contract's requirements.

5.1.5 References

Reference to standard specifications, manuals, or codes of any technical society, organization, or association, or to the codes, laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code, or laws or regulations in effect at the time of contract execution except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual, or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties



and responsibilities of the CONTRACTOR, agents, or employees from those set forth in the Contract Documents.

5.1.6 Clarifications

Whenever in the Contract Documents the terms "as ordered," "as directed," "as allowed," "as reviewed," "as approved," or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper," or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review, or judgment of the DISTRICT as to the work, it is intended that such requirement, direction review, or judgment shall be solely to evaluate the work for compliance with the Contract Documents, unless there is a specific statement indicating otherwise. "Approval" by the DISTRICT of any component, part, equipment or system as required herein shall not constitute any waiver or modification of Contract Documents unless such requirement is revised by change order.

The terms "coach," "vehicles" and "buses" are used interchangeably.

The CONTRACTOR shall fully cooperate at its own cost in providing test data and technical analyses, and in conducting additional tests and analyses, as the DISTRICT may require, to confirm to the DISTRICT's reasonable satisfaction that the bus shall meet the requirements of the Contract Documents.

To the maximum extent practicable, the materials, parts components and equipment utilized in the bus, including spare and warranty parts, shall be readily available from domestic U.S. commercial and manufacturing sources. The CONTRACTOR shall fully cooperate in the substitution of domestic parts in place of foreign manufactured or supplied parts at the request of the DISTRICT.

5.2 GENERAL CONFIGURATION GUIDELINES

This specification covers describes a three-axle heavy-duty transit-type bus equipped for use by both disabled and non-disabled passengers. The bus shall have a total of three passenger doors. Buses shall be equipped and arranged so that two forward facing passengers in wheelchairs can be accommodated. When such passengers are carried, three individual flip seats per wheelchair position may be folded out of the way to provide a securement area.



5.2.1 Dimensions

5.2.1.1 Length

Overall nominal length of 60-foot buses shall be 720 inches.

5.2.1.2 Width

Overall width of buses, excluding mirrors, lights, and fenders, shall be a maximum of 102 inches (259 cm).

5.2.1.3 Height

Maximum overall height of buses delivered under this contract with roof-mounted energy storage is 140 inches (355.6 cm). Height measurements, including the heights specified below, are with the air suspension system operating and fully adjusted, with the bus on proper tires correctly inflated, and with roof vents closed.

5.2.1.4 Step Height

The step height shall not exceed 14 inches (355.6 mm) at all doorways, without kneeling. Inclines, if necessary to accommodate localized variations in floor height, shall not exceed 4 degrees with respect to the horizontal plane. A maximum of two steps is allowed to accommodate a raised aisle floor in the rear of the bus.

5.2.1.5 General Aisle Width

The minimum clear aisle width between pairs of transverse seats with all attached hardware shall be at least 22 inches (558 mm).

5.2.1.6 Front Area Aisle Width

The aisle width between the front wheelhouses shall be at least 35.5 inches (901.7 mm), and the entire area between the front wheelhouses shall be available for passengers and mobility aid devices. It is a



requirement to allow adequate clearance for maneuvering a mobility aid device to and from the securement locations.

5.2.1.7 Headroom

The minimum clear headroom along the bus centerline shall be at least 69 inches (175.2 cm). Headroom may reduce to 56 inches (142.2 cm) over seating areas along the bus and at the rear.

5.2.2 Clearances

5.2.2.1 Ground Clearance

All buses shall maintain the minimum ground clearance as defined and shown in Figure 1-1 of SAE standard J689. Ground clearance shall be no less than 9 in., (8 in. @ the jacking point) except within the axle zone and wheel area. Axle zone clearance, which is the projected area between the tires and wheels on the same axial centerline, shall be no less than 5.4 in. Wheel area clearance shall be no less than 8 in. for parts fixed to the bus body and 6 in. for parts that move vertically with the axles. No part of the bus, other than wheels, tires or static strap, shall touch a flat road surface in a stopped condition with the tire(s) and/or air system suspension at any one wheel or dual wheel fully deflated. Any part of the bus that is lower than the wheel rims must have the approval of the DISTRICT.

5.2.2.2 Approach and Departure Angles

It shall be a design objective to attain the maximum angle of approach and angle of departure in order that buses may safely negotiate vertical curves in the service area of the DISTRICT. Buses shall have a minimum angle of approach of 9 degrees and a minimum angle of departure of 9 degrees.

Each coach shall have the approach and departure angles measured. This shall be accomplished by using a full coach-width wedge, designed to measure the angle by being placed under the front or rear of the coach and slid up to the tire-road contact point.

5.2.2.3 Breakover Angle

The breakover angle is the angle measured between two lines tangent to the front and rear tire static loaded radius and intersecting at a point on the underside of the vehicle that defines the largest ramp over which the vehicle can roll. Buses shall have a minimum breakover angle of 8.7 degrees.

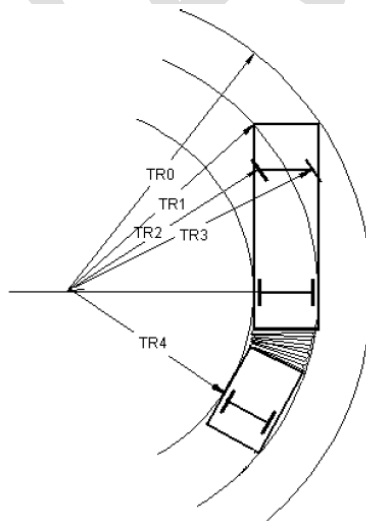
5.2.2.4 Turning Radius

Buses shall have a turning radius such that all parts of the bus body remain within the outer space envelope (TR0) of 44' feet. This shall occur both in left hand and right hand turns. All coaches shall be tested to verify these conditions.

The outside front axle (TR0) turning radius shall not exceed 44 feet.

Reference **Figure 1** for further information.

FIGURE 1
Turning Radius





5.2.3 Weight and Axle Loading

It shall be a design goal to construct each bus as light in weight as possible without degradation of safety, appearance, comfort, traction or performance.

Buses at the maximum GVWR shall not exceed the legal axle, tire factor weight, other component limitations, and speed limits specified in the motor vehicle laws of the State of Illinois , FMVSS or other applicable governing body. The CONTRACTOR's GAWR and GVWR for the bus shall, as a design goal, exceed the actual total weight and axle weight specifications of the bus with a full passenger load, seated and standing, as defined by the DISTRICT.

5.3 PERFORMANCE

Buses shall operate safely and reliably in revenue service at the minimum performance standards listed on Table 1-1. All buses delivered must meet such performance standards as long as the propulsion components are adjusted within the parameters specified in the maintenance manuals.

Table 1-1 Vehicle Performance Standards

Condition	Performance Requirement
Max Speed on Level Grade	65 mph (109 km/h)
Acceleration 0-20 mph (0-32 km/h) on Level Grade	<= 9 Seconds
Acceleration 0-45 mph (0-72 km/h) on Level Grade	<= 36 Seconds
Maintain Speed on 3.5% Grade	>= 43 mph (69 km/h)
Acceleration 0-20 mph (0-32 km/h) on 5% Grade	<= 14 Seconds
Acceleration 0-10 mph (0-16 km/h) on 9% Grade	<= 9 Seconds
Range	250 miles
All performance requirements listed are to be verified with vehicle at GVWR	



5.3.1 Test procedure

Acceleration time tests shall begin when the accelerator pedal is depressed. The lag time between depression of the accelerator pedal and movement of the bus shall be minimized. The DISTRICT may test bus acceleration with a Vericom 3000/4000 Performance Monitor or other means of its choice.

5.4 GENERAL QUALITY, PERFORMANCE AND LEGAL REQUIREMENTS

The CONTRACTOR shall design the bus and propulsion components so as to operate safely and reliably in revenue service conditions at the specified minimum performance levels set forth above. The CONTRACTOR shall provide capability in the bus performance beyond the specified minimums in recognition that buses may be operated, on occasion, for extended periods above or below maximum and minimum speed limits.

5.4.1 Top Speed on Downhill Grades

Vehicles supplied under this contract shall not be able to achieve a higher top speed greater than 65 MPH on an extended downgrade. All systems and components on the bus shall not be adversely affected by these higher speeds. The CONTRACTOR may propose a speed-limiting system to control top speed on downgrades.

5.4.2 Duty Cycles

Coaches shall be designed to be compatible to the terrain and environment found in the DISTRICT's service area. Also, coaches shall be capable of running continuously with capacity load in the terrain and environment conditions found in the DISTRICT's service area. These conditions include high humidity, rain, and temperature extremes.

Coaches shall be capable of continuous operation within the DISTRICT's service environment at a capacity load of Max GVRW in an ambient temperature of up to 115° F and down to -10° F without deleterious effects, overheating, or degradation of heating and cooling systems or any other operating component. Coaches shall operate in stop and go downtown traffic with no adverse effects. Coaches shall also be able



to safely and efficiently negotiate the conditions found in the DISTRICT's service area. Typical routes the coach shall take in normal revenue service may include high passenger loads, freeway and arterial travel.

5.4.3 Ride Quality

Each bus, at any load condition between empty and GVWR, shall produce a comfortable, stable ride quality on a variety of road surfaces of moderate to good condition, when driven at legal speeds. On poor quality road surfaces, the ride quality shall not contain excessive instability or bottoming when the bus is driven at prudent speeds for the road surface. The bus shall provide a safe and stable ride at freeway speeds and shall maintain this condition even when changing lanes.

The CONTRACTOR shall submit evidence, which may include technical analysis and comparisons or subjective tests, establishing that the design used produces a ride quality comparable to the best state of the art for heavy-duty buses. Ride quality shall conform to these guidelines with the bus loading ranging from empty to GVWR.

5.4.4 Appearance

Each bus shall be designed to hold a quality appearance, both on the exterior and the interior, during the entire service life of the bus. All materials, fabrics, colors, textures, painting schemes and all equipment and components relating to the interior decor of the bus shall be coordinated. Detailing shall be kept simple; add-on devices and trim should be minimized and where practical integrated into the basic design.

The interior layout shall be designed to convey a sense of spaciousness, pleasant surroundings, comfort, convenience and modern design, with a minimum of protrusions. There shall be no sharp corners, edges or gaps that could cut or trap a passenger's hands and/or fingers. The design shall avoid horizontal ledges and other 'dust catchers' and water traps.

5.5 PASSENGER, OPERATOR AND MAINTENANCE PERSONNEL SAFETY

All design factors shall take into consideration the safety of the passengers, operators and maintenance personnel. Items requiring safety consideration in design include, but are not limited to:



1. Elimination of sharp corners and edges
2. Locations for handrails and stanchions
3. Impact yielding handrails on seats
4. No obstructions in aisles
5. Implementation of Federal safety standards
6. Intensity and distribution of interior lighting
7. Elimination of interior driver area windshield glare
8. Exterior lighting at doorways
9. Steps
10. Elimination of pinch hazards on interior and exterior assemblies
11. Implementation of ADA requirements
12. Body construction
13. Side impact barriers, padding on seat back tops, yellow non-skid step nosing
14. Acceleration and Braking
15. Floor hatches

5.6 EMERGENCY EXITS

Buses shall be provided with adequate exits for quick passenger escape during emergency conditions, which comply with applicable codes and requirements and the best industry practice.

An air pressure relief valve shall be provided near each door to allow passengers to manually open the door in an emergency.

Most large passenger windows on the sides of the bus shall open outward to provide an emergency escape path. Based on FMVSS, windows in the rear, raised floor section should not be emergency exit windows. Exits shall be provided to allow passenger escape in a rollover situation, including the use of roof exits.



5.7 WINDSHIELD REFLECTIONS

Buses shall be designed so that a bus operator shall see no hazardous infractions or windshield reflections. The interior lighting design shall be coordinated with the design of the driver's station to minimize reflections off the windshield and other parts of the bus.

Buses may be operated in suburban areas on narrow roads without street lighting, and the driver's environment must be adequate for such use at night.

The CONTRACTOR shall provide information on how this requirement is to be met at the design review, and shall demonstrate the result on the first article bus, for the approval by the DISTRICT.

5.8 SERVICE LIFE

It is required that buses be designed and constructed to assure a minimum service life of at least 12 years or 500,000 miles (804,672 km), whichever comes first. The CONTRACTOR must submit evidence that the design is adequate to meet this.

5.9 FAILURES

Each bus shall be designed to minimize the potential for failure of components while the bus is in service.

The following specific examples are design goals for mean mileage between failures by failure class by bus, provided that all specified preventative maintenance procedures are followed.

1. **Physical safety** is defined as a failure that could lead directly to passenger or driver injury and represents a severe crash situation. Mean mileage between incidents shall be greater than 1,000,000 miles (1,609,344 km).
2. **Road call** is defined as a failure resulting in an interruption of revenue service. Service is discontinued until the coach is replaced or repaired at the point of failure. Mean mileage between incidents shall be greater than 20,000 miles (32,186 km).
3. **Coach change** is defined as a failure that requires removal of the coach from service during its assignments. The coach is operable to a rendezvous point with a replacement coach. Mean



mileage between incidents shall be greater than 16,000 miles (25,749 km).

4. **Road service** is defined as a failure that does not require the removal of the coach from service during its assignments but does degrade operation. The failure shall be reported by Operations and/or Maintenance. Mean mileage between incidents shall be greater than 10,000 miles (16,093 km).

5.10 MAINTAINABILITY

Prime consideration shall be given to the routine problems of maintaining the buses. All systems or components serviced as part of periodic maintenance or whose failure may result in a road service or coach exchange class failure shall be readily accessible for service and inspection.

To the extent practicable, removal or physical movement of components unrelated to the specific maintenance or repair tasks involved shall be avoidable. These areas shall include but not be limited to the bus propulsion system and its accessories and components, fueling, storage tanks, batteries, electrical controls, multiplex components, electrical fuse and breaker panels, lighting fixtures, door actuators, fluid and air filters, test connections, air compressor, HVAC systems, and air system components. It shall not be necessary to disassemble portions of the bus structure and equipment such as seats and flooring under seats in order to gain access to these areas.

Each bus shall be designed to facilitate the disassembly, re-assembly, servicing or maintenance thereof by use of tools and items that are normally available as commercial standard items. The powerplant compartment shall be designed, and equipment placed, to give maximum room possible for maintenance accessibility. There will be special tools for maintenance of the propulsion system as recommended by the contractor. Refer to the Section "Special Tools and Diagnostic Equipment".

The body and structure of all buses shall be designed for ease of maintenance and repair. Individual panels or other equipment, which may be damaged in normal service, shall be easily repairable or replaceable. Ease of repair shall be related to the vulnerability of the item to damage while in revenue service.



To the greatest extent practicable, all electronic devices on the bus down to the line replaceable unit level shall be repairable and maintainable by the DISTRICT.

5.11 ELECTRONIC NOISE CONTROL

Electrical and electronic sub-systems and components on all buses shall not emit electromagnetic radiation that will interfere with on-board sub-systems, components or equipment, telephone service, radio or TV reception or violate regulations of the Federal Communications Commission as well as requirements of UN/ECE Regulation R10

Electrical and electronic sub-systems on the coaches shall not be affected by external sources of Radio Frequency Interference (RFI), Electromagnetic Interference (EMI). This includes, but is not limited to, radio and TV transmission, portable electronic devices including computers in the vicinity of or onboard the buses, AC power lines and RFI/EMI emissions from other vehicles.

Electronic components that are subject to RFI/EMI shall have shielded power and data cabling. Deviations from this requirement shall require DISTRICT approval. On-board equipment can include but is not limited to automatic passenger counters, two-way radio, electronic, drive system, fuel cell and propulsion controls, automatic vehicle locating equipment, fare collection equipment, and destination signs and associated wiring.

If one coach and/or component are susceptible to RFI/EMI, it shall be assumed that all coaches suffer the same defect. Corrections shall be made on a fleet basis unless the DISTRICT grants relief.

Upon request of the DISTRICT, the CONTRACTOR shall submit test data or other evidence that all of the relevant standards are adhered to.

5.12 NOISE LEVELS

5.12.1 Interior Noise

The combination of inner and outer panels and any material used between them shall provide sufficient sound insulation so that a sound source with a level of 80 dBA measured at the outside skin of the bus



shall have a sound level of 65 dBA or less at any point inside the bus. These conditions shall prevail with all openings, including doors and windows, closed and with the drive system and accessories switched off.

The bus-generated noise level experienced by a passenger at any seat location in the bus shall not exceed 80 dBA and the operator shall not experience a noise level of more than 75 dBA at any time during normal operation of the vehicle. Ambient noise in the test area shall be at least 10 dBA lower than that of the bus under test.

5.12.2 Exterior Noise

Airborne noise generated by the bus and measured from either side shall not exceed 80 dBA under full power acceleration when operated at or below 35 mph at curb weight. The maximum noise level generated by the bus pulling away from a stop at full power shall not exceed 80 dBA. Bus-generated noise at curb idle shall not exceed 68 dBA. All noise readings shall be taken 50 feet from and perpendicular to, the centerline of the bus with all accessories operating. Instrumentation, test sites, and other general requirements shall be in accordance with SAE Standard J366. The pull away test shall begin with the front bumper even with the microphone. The curb idle test shall be conducted with the rear bumper even with the microphone.

5.13 VEHICLE REQUIREMENTS

5.13.1 Body Structure

5.13.1.1 Design

Integral design bus structure shall be used that consists or composes of parts that together constitute as a whole. Other types of structure may be used with the approval of the DISTRICT prior to contracting, after submission of evidence that the bus structure proposed is suitable and proven for heavy-duty transit service over the required lifetime.

Alternatives to the detailed requirements of this subsection may be proposed by the CONTRACTOR with proper data analysis for the DISTRICT's approval.



The exterior of each bus shall be of clean and simple shape. The skin shall be of smooth panels, securely fastened to structural members and in a way that permits easy replacement or repair, provides the necessary strength and rigidity for the design requirements of this specification, and protects the basic structure from minor damage. Of primary concern are ease of maintenance, durability, and consistency of appearance.

Reinforced fiberglass and plastic materials may be included in the basic body skin and/or structure, except for non-structural access doors, panels and caps.

Exceptions to this requirement may be proposed by the CONTRACTOR for approval by the DISTRICT.

Water deflecting roof gutters shall be provided above the doors and the driver's side window. The roof gutter over the driver's side window shall extend to the front of the bus. When the bus is accelerated, decelerated, coasting or stopped, water from the gutters shall not spill onto the outside mirrors, driver's window, and windshield or passenger doors.

Air flow characteristics around the moving vehicle shall not cause water, road dirt or tire thrown water to accumulate on the exterior mirrors, driver's side window or front door glass. Water from tires, particularly in turns, shall not be deposited on exterior mirrors.

5.13.1.2 Subfloor

Sub floor material shall be of 3/4-inch (19mm), 7-ply Veneer plywood, treated for exterior use, and with no voids. The material shall be wet and dry rot resistant and impervious to insects. All raw edges, wood-to-wood surfaces, and wood-to-metal surfaces shall be coated and totally waterproofed using an approved material prior to installation. The sub floor shall be finished and filled as necessary with waterproof filler after installation in the manner prescribed by the manufacturer of the floor covering so that no sub floor irregularities and/or seams are visible after installation of the finish flooring. All sub-flooring seams and/or joints shall be totally supported by structural framing.



The sub floor shall support a capacity load continually with the bus in service without perceptible flexing and it shall be free from squeaks. At GVWR, the floor shall have an elastic deflection of no more than 0.25 inches (6.3 mm) from the unloaded condition. The DISTRICT shall approve sub-flooring material and attaching methods.

5.13.2 Floor Covering

All aisles, steps, floor areas where people walk and floors in securement locations shall have slip-resistant surfaces. After assembly of the bus, any temporary protective coating on the flooring shall be washed off in the manner prescribed by the flooring manufacturer.

Floor coverings shall be attached continuously to the sub-flooring without voids or trapped debris, using methods and adhesives recommended by the floor-covering manufacturer. Adhesives used by the CONTRACTOR shall be compatible with regulations limiting use of high VOC compounds required by the Bay Area Air Quality Management DISTRICT in case repair is required while the bus is in service by the DISTRICT. The floor shall be neat in appearance, free of tripping hazards and easy to clean by dry methods and wet wash with cleaning solutions. Bus floors shall be undamaged for the life of the bus by routine cleaning with wet wash methods. It is expected that the floor covering (excluding step treads) shall last the life of the bus. The DISTRICT shall approve materials, adhesion methods and trim of the floor covering.

The outer edge of each entryway shall be marked with "RCA", or approved equal, 2.7mm step edge with integral adhesive strip, running the full width of the edge, in yellow color. A transverse standee line shall be provided at the aft end of the front door entrance area in yellow color.

Steps in the aisle shall meet the dimensional requirements of this Section, be the width of the aisle, be plainly marked and illuminated, be covered with "RCA" or approved equal step tread with 3/16 inch step nosings with integral abrasive strip or approved equal in yellow color.

The floor and front entrance area shall be covered with "RCA" or approved equal 2.7mm flooring, installed between the wheelhouses and running longitudinally from the rear seat to the front dash, interrupted only for the steps in the aisle.



The wearing area of the driver's station platform shall be covered with a 14-gauge aluminum plate covered with "Full Metal Jacket" or approved equal non-skid material. The plate shall be attached with screws, and a thin layer of non-hardening caulk shall be used under the plate to prevent water damage

5.13.2.1 Moldings

Interior trim molding around the base of the driver's platform, dash, rear seat riser, wheel housings and any raised seating areas shall be of anodized aluminum, stainless steel or other approved material. The edge of the driver's platform and any raised seating area shall have a right angle anodized aluminum or stainless steel molding. Any trim moldings shall be attached with stainless steel screws and sealed to the floor and vertical surface so as to exclude water and dirt. It shall provide a neat, finished appearance. Anodizing shall be free from scratches and quality control defects.

Any air ducts located at floor level shall be of smooth finish stainless steel of adequate strength to resist

5.13.2.2 Interior Paneling and Carpeting

The interior panels may be integral with the basic structure of the vehicle. Panels shall have sufficient strength to resist vandalism and to avoid resonant vibrations under operating conditions. The surface of lower sidewall panels and of ceiling panels shall be easily cleanable and resistant to scratches and marking. The interior panels shall be applied in sections and secured properly with a neat finish. All metal attaching hardware shall be stainless steel.

Ceiling panels shall be supported to prevent buckling, drumming or flexing. Panels shall be installed so they shall not discolor from contact with structural pieces behind them for the life of the bus. Trim strips at joints of ceiling panels shall be of SST type 430 with a satin brushed finish.

Lower sidewall panels shall be easy to remove for maintenance and replacement panels shall fit easily through the doorway of a finished bus. Sidewall and ceiling panel thickness shall be a minimum of 0.100 inch (2.5mm). All interior panels, panel size and installation shall be approved by the DISTRICT.



5.13.2.3 Wheel housings

Axle wheel housings shall be constructed of minimum 18 Gage (.0747 inch, 1.8974 mm) stainless steel. Front axle wheel housings may be fiberglass and charcoal gray in color. Wheel housings shall be reinforced to resist damage from stones, broken tire chains or tire fragments and to prevent any entry of such items into the passenger compartment. The design shall have no exterior ledges that will trap water and/or dirt.

Wheel housings shall provide clearance to permit the bus to be driven to a repair facility with one or more air suspension bellows deflated. There shall be a minimum of 4 inches (101.6 mm) of clearance, or 3.5 inches with pre-contract approval, between a fully inflated tire and the wheel housing on all sides. The DISTRICT shall approve design and colors of the wheel housings.

5.13.2.4 Entryways

The front platform area, including the aisle floor ahead of the wheelhouses, shall provide a passageway wide enough to meet the objectives of this section, past the driver's station and fare collection equipment and into the bus proper. The design shall accommodate passengers in mobility devices as well as on foot.

The vertical clearance between the top of all door opening and the floor shall be a minimum of 77 inches (195 cm).

The front doorway clear width, including door-mounted passenger assists, shall be no less than (33.5 inches). The middle and rear doorway clear width, including door-mounted passenger assists, shall be no less than (39.5 inches). Clear opening is measured between handrails.

The floor area just inside the doors shall be slightly sloped to prevent water from collecting. Sealing at the door bottom shall preclude water entry. Floor edge nosing (Section 2.5) shall be supplied.



5.13.2.5 Steps

Riser steps shall be vertical and they shall be 7.5 to 10 inches high (190 to 254 mm) with each step being of equal height within a variation of 0.5 inch (13 mm). Usable step tread depth between the nosing and the riser shall not be less than 11 inches (279 mm).

5.14 THERMAL AND SOUND INSULATION

The floor, walls, ceiling and propulsion compartment of all buses shall be adequately insulated to:

- Control body surface temperatures
- Assist in providing the required interior temperature environment
- Obtain the required noise control.

Insulation in the powerplant compartment must withstand grease, oil, dirt and steam cleaning all compounds used in the compartment for the life of the bus. Roof insulation shall be at least 1 inch (25.4 mm) in thickness.

The underside of the roof skin shall be coated with an approved undercoating material to reduce condensation in cold, damp weather, and noise.

Sidewall insulation shall be at least equal to the thickness of the sidewall in thickness. Material shall be selected and installed so insulating properties shall not be impaired during the life of the bus. Alternate configurations may be proposed for approval by the DISTRICT.

5.15 STRENGTH REQUIREMENTS

Each bus, at capacity load under dynamic and static conditions, shall not exhibit deformation or deflection that will damage panels or structural members or impair operation of doors, windows, or other mechanical elements. The CONTRACTOR shall be requested to provide a written certification or copies of actual test results or both for all requirements of this section. Static conditions include the case of a bus at rest with any one wheel or any combination of wheels mounted resting on a 6-inch (15 cm) curb.



Dynamic conditions include operation on a variety of road surfaces at prudent speeds up to the maximum for each type of bus and road irregularities such as potholes and railroad level crossings.

The structure of each bus, at the maximum practical passenger load, shall withstand without permanent deformation or damage, impact and inertial loads due to uneven roadways traversed at prudent speeds or, occasional aberrations at normal speeds.

The bus body and roof structure shall withstand a static load equal to 150 percent of the curb weight evenly distributed on the roof with no more than a 6 inch (152 mm) reduction in any interior dimension. Windows shall remain in place and shall not open under such a load, but shall be easily opened when used as emergency exits.

The bus shall withstand a 25 mph (40 km/h) impact by a 4,000 pound (1814 kg), post-1973, American automobile at any point, excluding doorways and bellows, along either side of the bus or front end with no more than 3 inches (76 mm) of permanent structural deformation at seated passenger hip height. This impact shall not result in sharp edges or protrusions in the bus interior.

Exterior panels below the window line and their supporting structural members shall withstand a static load of 2,000 pounds (907 kg) applied perpendicular to the bus anywhere below the floor line by a pad no larger than 5 inches (127 mm) square. This load shall not result in deformation that prevents installation of new exterior panels to restore the original appearance of the bus. Components located behind these panels cannot be damaged by this test method.

5.15.1 Resonance

Buses shall be designed and produced so that where all vibration frequencies of the body, panels and structure, including vertical, lateral and body torsional modes, are sufficiently outside the bandwidth of all primary and major harmonic operating frequencies of all rotating and reciprocating equipment, including the fuel cell/propulsion system, so as to preclude resonant vibrations.



5.15.2 Fatigue Life

The basic bus structure shall be designed so that fatigue damage shall not occur throughout the service life of the vehicle.

5.15.3 Exclusion of Water

Each bus shall be tested to assure that the underside, wheel houses, floor, exterior body, windows, passenger doors, lamps, access doors and other openings do not admit water into the interior of the bus or into any compartments covered by exterior doors during operation. Any equipment compartment located inside the coach shall be sealed from water entry.

Leak testing shall be performed in a suitable test chamber, to be approved by the DISTRICT. The CONTRACTOR's Quality Assurance inspector and the DISTRICT's inspector shall have properly working flashlights to assist with locating leakage.

The surface of the bus shall be direct sprayed (not run-off or deflected water) with fan spray nozzles that deliver a minimum of 1.8 gal/min at 35-40 PSI for each nozzle. The water test shall be a duration of 20 minutes. Nozzles shall cover the complete sides, underside and roof of the bus and shall be aimed directly at the bus body.

During production, preferably before interior components and insulation are installed, each bus must be tested in accordance with a water test proposed by the CONTRACTOR and approved by the DISTRICT. Approval must be given on duration of test, rate of water flow, amount and placement of nozzles, and nozzle pressure/pattern. Buses that fail any part of this test shall be repaired and the test will be restarted. This process will repeat until they pass.

Use of sealers externally applied around attached components to meet the water test requirement is prohibited. All exterior hardware must be installed. No temporary sealing methods can be used.



After delivery, the DISTRICT shall water test all buses in a bus wash rack. Leakage during this test shall be repaired by the CONTRACTOR, who shall also make appropriate corrections in the assembly line and factory water test.

5.15.4 Resistance to Corrosion

All exterior materials, finishes, surface treatments, and any other bus surfaces subject to the conditions below shall either be of non-corroding material or fully protected by the application of corrosion preventatives. Buses shall be subjected to tire-thrown rocks, puddles of water, saltwater air, commercial floor, ceiling and wall cleaning solutions, window washer solutions, human wastes, and extended periods of damp and rainy weather. Buses may be stored outdoors.

The underside of each bus shall be coated with a non-flammable material, "Corashield 7947 or approved equal. Cora Tube shall be applied to the inside structural tubing from the window line down. The corrosion inhibitor shall be of a light color (preferably white) to aid in under coach inspection and maintenance. Special attention shall be given to applying the inhibitor on all horizontal frame members, wheel housings and other dirt/water catchers. All bellows, valves, air system components, brake system components and electrical connectors shall be covered when applying the undercoating to facilitate easy replacement of parts when required. Application of the under coach corrosion inhibitor shall be approved by the DISTRICT.

The battery compartment and adjacent area shall be protected against corrosion from battery fluid. Specific information is in Section 2.22.

All unpainted exterior and interior hardware shall be non-magnetic stainless steel or steel coated with ASTM-8-633-85 Fe/Zn SC 3 (Type 2 - supplementary gold chromate treatment iridescent yellow). The DISTRICT reserves the right to request sample testing to determine conformity using methods referenced in ASTM-A-165, A-219 and/or 8-117. Other methods of corrosion protection may be used. Alternate hardware coating methods must demonstrate the same corrosion protection life results using the Salt Spray (Fog) Testing ASTM-B-117 and be approved by the DISTRICT. Exterior or interior component hardware that shall see removal and replacement to normally service the component must be non-magnetic stainless steel or other non-rusting material.



Completed unassembled frame structures, sub-assemblies or component parts shall not be stored or assembled in locations that allow moisture to rust the interior or exterior of the materials. No rusted or corroded metal may be used in the bus. After assembly, the interior of all sidewall tubing up to the roof and under floor frame (structure) tubing shall be coated with "Waxoyl Inc." 120-4, "Ashland Petroleum Co." Tectyl corrosion preventative, or approved equal, applied in accordance with the manufacturer's recommendations and with the manufacturer's approved application devices. Frame tubing shall have drain holes with an approved anti-plugging method installed to eliminate any water trapping or build-up. Any Waxoyl application hole not utilized as a water drain shall be closed and sealed using plastic plugs. The use of "CoraTube" material is strictly prohibited. The CONTRACTOR shall be responsible for providing an approved method and equipment to check for proper application.

Any bus body or chassis assembly carried on an ocean-going vessel must be carried below deck on a Role-on Role-off ship. Shipping methods and corrosion protection shall be approved by the DISTRICT.

All unexposed metal body parts shall be primed or painted prior to assembly. Joints between dissimilar metals shall be treated or protected so as to prevent electrolytic corrosion for the service life of the vehicle. All bright metal exterior components such as (but not limited to) lamp sockets, brackets, mirror assemblies, rivets and clamps shall not rust.

5.16 EXTERIOR FINISH

The CONTRACTOR shall execute the exterior finish of the vehicles, which shall include painting, decaling, or a combination thereof. Exteriors shall be executed to a design specification that shall be detailed at a later date at the pre-production meeting. The exterior paint scheme shall not exceed three colors. Prior to execution, the DISTRICT shall approve colors and materials to be used in the specified design.

5.16.1 Exterior Design

After execution of the Contract, the CONTRACTOR shall supply to the DISTRICT detailed drawings of the front, rear, both sides, and roof of the bus that shall be supplied. These drawings shall include



measurements and material specifications. Within 90 days of receipt of the drawings, the DISTRICT shall return these drawings to the CONTRACTOR with details of the color scheme and decals included.

5.16.2 Paint

The exterior of the bus shall be finished with “Axalta” (formerly Dupont) Imron Elite single stage low VOC paint, or approved equal. The finish coat shall be free of runs, sags, dirt and/or silicon contamination, orange peel and areas of no gloss. Finish coat thickness and application method shall be as specified by the finish coat manufacturer. All primers and fillers applied before the finish coat shall be approved as to material, thickness and application by the manufacturer of the final finish coat. Surface preparation of the substrate shall be similarly approved. The CONTRACTOR is required to submit procedures for the installation of any reflective tape. The CONTRACTOR shall supply copies of all required approvals to the DISTRICT before production. All exterior paint, primer, fillers, etc. shall be lead-free. There shall be no bare or exposed metal surfaces showing on the exterior of the bus, exclusive of ornamentation, accessories and bumpers.

5.16.3 Decals

All exterior and interior decals shall be provided by the contractor. Bus exterior decaling shall be executed to a design specification that is detailed at a later date. A decal wrap shall not exceed coverage of 85% of the vehicle. Perforated decaling over the windows may be required.

Exterior decals shall include but not limited to the DISTRICT’s branding (Logo, URL), the service branding (which shall be determined at a later date), 'Jacking Point', 'Electrical Main Switch', 'Air Tank Drain' Wheel Chair entrances” and Bicycle entrances. Interior decals shall be in English, Spanish, and Chinese. The CONTRACTOR shall supply copies of all required approvals to the DISTRICT before production. The CONTRACTOR shall supply final artwork files of the interior and exterior decals, subsequent to production.

5.16.4 Interior Finish

Bus interior ceiling and vertical surfaces not melamine, vinyl or bright metal, including certain areas of the driver's station, shall be painted with, DuPont" Imron Paint Code #F6812MR”, or approved equal



polyurethane enamel. Any ABS material not requiring paint may be color matched the meet the specification. Inside finish and primer coats shall be applied per the specifications of the finish coat manufacturer. The DISTRICT shall approve the degree of driver station paint 'flatness'. All interior paint, primer, fillers, etc. shall be lead-free. Colors and material shall be approved by the DISTRICT.

5.16.5 General Painting Preparations

All metallic and non-metallic surfaces shall be thoroughly cleaned, by methods in accordance with the paint manufacturer's recommendations, immediately before the first coat of paint is applied. All metal-to-metal joints shall be properly primed. Wood-to-metal surfaces shall be coated with anti-squeak compound. All paint and surface preparation methods shall be approved by the DISTRICT.

5.16.6 Fleet Numbers

Buses shall have fleet numbers applied in sequence with factory VIN numbers. Factory VIN numbers shall be in one sequential group per delivery group. The DISTRICT shall inform the CONTRACTOR of the fleet number sequence within 90 days of contract execution. The CONTRACTOR shall submit a complete list of fleet and VIN numbers for approval by the DISTRICT before the start of production.

Exterior fleet numbers shall appear on all four corners of the bus. Locations shall include above the rear windows, driver's window, above the front door, center of the rear of the bus and both front corners below the windshield. These numbers shall be 4-inch (127mm) reflective vinyl characters. Interior fleet numbers of the bus located above the windshield and above the rear window shall be provided by the DISTRICT. The DISTRICT shall approve the fleet number style and locations.

5.16.7 Builder's Plate

A metal builder's plate shall be installed on the inside of the front of the bus, listing the manufacturer's name, bus or chassis model, VIN number, date of manufacture and any other required information. The plate shall be installed with permanent metal fasteners. Alternatively, a non-removable foil tag mounted to an aluminum plate pop riveted to the bus may be supplied. The DISTRICT shall approve the Builders Plate location and content.



5.17 ELECTRICAL COMPARTMENTS

5.17.1 Low Voltage Battery Compartment

Each bus shall be equipped with a low voltage battery compartment and preferably a slide-out battery tray, accessible from outside only. The battery compartment shall be on the curb (right) side of the bus. The stowed batteries shall be perpendicular to the longitudinal centerline of the bus. The battery compartment shall be as far from heat as is practical and still be conveniently located for inspection, maintenance and battery replacement. The design of the battery compartment shall prevent the entry of dirt and water. In addition a metal 24 volt caution tag, approximately 12 inches long by 4 inches tall (305mm by 102mm) shall be provided on the inside of the battery compartment access door. This tag shall be held in place by a means other than glue. The tag shall have red Helvetica lettering on a white background. The DISTRICT shall approve the battery compartment and all components.

5.17.2 Low voltage battery tray

The frame and tray shall be constructed to provide ease of movement without deformation of members or mounting hardware. The compartment and tray shall be of stainless steel or polyethylene and hardware shall be of stainless steel. The compartment shall vent battery fumes and shall have drainage for washing batteries and compartment. Provision shall be made to securely latch the battery tray in the retracted position and, in addition, a detent or a spring activated positive type lock shall be provided in the extended position. There shall be no lip on the edge of the tray where the batteries are slid into and out of the tray. The battery tray shall easily accommodate any standard group 31 batteries from major manufacturers. New Flyer to provide a slide-out battery tray. The battery tray is not hinged to swing open.

5.17.3 Electronic Equipment Compartment

Each bus shall be equipped with a fully sealed and locked compartment located on the left front wheelhouse to provide a mounting location for a radio transceiver, data package, security camera controller, APC equipment, and other electronic equipment. The compartment shall contain four (4) slide-out shelves capable of height adjustment. Shelves shall securely latch in the stowed position. The



compartment shall be accessible from the exterior of the bus through a hinged, locked and sealed window or access door. All interior electrical compartment doors must have a keyed lock

The compartment shall be equipped with a power supply and shall be a minimum 30 inches high by 15 inches wide by 19 inches deep. The compartment shall be sealed and locked against the entry of water, and equipped with a lockable door, retained with approved fasteners. The DISTRICT shall approve the box design, shelves, and power supplies. The voltage should be switched and non-switched 12V and 24V buss. Compartment Door Key shall be a 751 CH key. The CONTRACTOR shall supply a compartment that shall be equipped with an exhaust fan. The Exhaust fan shall turn on when the interior compartment temperature reaches 80-deg F

5.18 TOWING AND LIFTING

Provision shall be made for lifting and towing the bus from the front with towing service tow trucks used by the DISTRICT. Buses shall be towed in the forward direction with the front of the bus lifted. All bus bodies shall be sufficiently strong to prevent permanent deformation or damage while being lifted or towed.

Alternate provisions for towing and lifting may be proposed for approval by the DISTRICT. The DISTRICT must approve all provisions for towing and lifting.

Hoisting and jacking points shall be provided on each bus for use with a pit hoist, post lift using one post per axle, platform hoist or a portable hoist under each wheel or axle.

With a tire or dual tire set completely flat and the bus on a hard level surface it shall be possible to safely jack up the bus with either a common 10 in (254 mm) high hand jack or a 10-ton floor jack.

If it is not possible to slide a floor jack under the jacking point with airbags deflated at any wheel end location, provide suitable jacking points on the outside of the body at each wheel opening.

With the bus at normal ride height, there shall be clearance to slide a 9.5-inch (241 mm) high portable hydraulic jack under a jacking point at each wheel.



These locations shall be sufficiently strong to withstand the jacking force required to lift that portion of the bus without damage to any vehicle components. The bus shall be capable of being lifted at any one or combination of three points without permanent deformation.

Towing points under the bus and hoisting and jacking points shall be marked with riveted, permanently attached metal tags of a contrasting color. A riveted, permanently attached metal diagram showing size and location of hoisting and jacking points shall be provided. The DISTRICT shall approve the design and location of the tags and diagram.

Provide sufficient bumper and frame strength to allow another bus or a maintenance push/tow vehicle to push the bus from either end without body, bumper or bike rack damage.

5.19 FURNISHINGS

5.19.1 Door Panel Configuration

The front door shall be of the slide-glide type, two sections, inward opening type, and the center and rear doors shall be wide Ameriview Vapor Slide Glide with 45.2" between panels of the slide glide or outward-opening type. The DISTRICT shall approve outward projection of door panels in any position. Alternative configurations may be proposed by the CONTRACTOR for approval by the DISTRICT. The DISTRICT shall approve door panels, handrails, glass, design and location.

Door panels shall be of adequate strength to perform their function without buckling or shaking. Doors may be made from aluminum sheet and extrusions, assembled with threaded fasteners. Fastening system shall be non-corroding per section 2.17.03. The intent is to provide a repairable door. Window glazing, retained by a rubber channel, preferably with an integral locking strip for easy replacement, shall be provided which covers at least 80 percent of the area of each door panel, with two-piece glazing required (Section 3.11.3). Sensitive edges shall be supplied on all doors except the front door panels.

Durable rubber weather stripping 2 to 3 inches (51-76 mm) per panel shall be provided on the mating edge of each door panel. The rubber mating edge of the forward panel of each door shall overlap the outside of the rear panel when closed. Additional approved weather stripping shall be provided around



all door panels and the doorway openings, as necessary, to preclude the entry of water, dirt, drafts or objectionable noises.

It shall be possible to open and close all passenger doors when the bus loaded to gross vehicle weight rating, is not knelt, and is parked with the tires touching a 9 inch high curb on a street sloping toward the curb so that the street side wheels are 5 inches higher than the curb side wheels.

5.19.2 Door Actuators and Linkages

A single door actuator as made by "Vapor Electric Door Actuator", or approved equal shall power each pair of door panels. The time to fully open or close shall be adjustable between 2 and 4 seconds. Doors shall remain in the closed position without rattling during bus operation. Actuators shall be designed to prevent doors from slamming open or closed under any combination of door control, front door air release, and door panel position. Alternative configurations may be proposed by the CONTRACTOR for approval by the DISTRICT. The DISTRICT shall approve door actuators, linkages, electronic control devices, enclosures and their designs. Proximity switches are strongly preferred to micro switches.

The actuator assembly shall be concealed from view and shall be located for easy servicing access. Access panels to the actuator assembly shall be hinged at the top with metallic 'piano' hinge material. Hinges shall be secured with nut and bolt type fasteners.

Each actuator access panel shall be equipped with 2 adjustable quarter turn spring latches, or other approved latches, easily operated by hand and requiring no tools. Each access panel shall be held open by means of an over-center spring, gas cylinder or approved prop. Access panels shall have a minimum travel of 130 degrees when opened and shall not interfere with other internal components.

Door actuator linkages shall be designed to preclude lubricant from becoming visible or from getting on surfaces that passengers may touch, throughout the service life of the bus. Any shafts and/or linkages exposed shall be enclosed with a metal shield, painted to match the area color. Operation of doors shall produce no pinch or trap hazard to passengers.



5.19.3 Door Controls

A removable door control handle shall be located in the operators' area within the hand reach envelope described in SAE Recommended Practice J287, "Driver Hand Control Reach." The driver's door control shall have a "Nilabond" coating (no chrome plating). The door control handle shall have a square end to be used to lock or unlock the tip-in passenger windows. The control device shall be protected from moisture. The door control buttons shall be free from interference by other equipment and have adequate clearance so as not to create a pinching hazard. All entrance and exit doors shall be fully electric operated with electric door actuators. The operator door control shall operate all doors. Alternative configurations may be proposed by the CONTRACTOR for approval by the DISTRICT. The DISTRICT shall approve all door controls and their locations.

The CONTRACTOR shall provide a method to override all passenger doors, in an emergency.

A control or valve in the driver's compartment shall shut off the power to, and/or dump the power from, the front door mechanism to permit manual operation of the front door with the bus shut down.

A master door override switch which is not within reach of the seated driver shall when set in the "off" position, close the doors, deactivate the door control system, release the interlocks and permit only manual operation of the doors.

5.19.4 USB Ports

USB ports for passenger use shall be installed on the ceiling or light panels. Placement of ports to be approved by DISTRICT at the pre-production meeting. A total of 16 USB ports shall be provided, with eight being located on the left side of the bus and eight being located on the right side of the bus. The USB ports shall be evenly distributed throughout the bus.



5.20 REAR AND CENTER DOOR SAFETY DEVICES

5.20.1 General

The DISTRICT shall approve the design, components and the operation of the rear and center door sensitive edges and the interlock systems. The closing door edge speed shall not exceed 12 inches per second, and opening door speed shall not exceed 19 inches per second. Doors shall not slam closed under any circumstance, even if the door is obstructed during the closing cycle. If a door is obstructed during the closing cycle, the pressure exerted on the obstruction shall not increase once initial contact has been made.

5.20.2 Sensitive Edges

Vapor sensitive edges shall be provided in the meeting edges of the rubber weather stripping of the center and rear doors. The design of the sensor shall be coordinated with the design of the door and the rubber so the following criteria are met:

The door edge system shall be designed to release the door-closing force and to reopen it sufficiently to immediately and fully release a person or object that is caught in the closing doors. It shall have rubber edges and/or seals (used to activate the automatic opening cycle on doors or alert driver to obstruction). If the door edges are used as a pressure-sensing device, sealed ends shall be vulcanized rubber. No silicon shall be used for this purpose.

Doors shall reopen when closing on a 1 inch smooth cylinder between the rubber edges. The door shall reopen when the 1 inch smooth cylinder is placed at all positions along the vertical edges, except within 2 inches from the edge at the top and within 2 inches from the edge at the bottom. The system shall be designed to react to this obstruction within no more than 1 second commencing from the time the sensor edges come in contact with the rod.

The system shall be designed and equipped to signal the driver if the doors completely close on any part of a person's body or any object. This signal shall be audible to the driver and shall sound when the edges



close on 1 inch smooth cylinder perpendicular to the plane of the door, except within 2 inches from the edge at the top and within 2 inches from the edge at the bottom.

The complete sensitive edge system shall be supplied by "Vapor Division" or approved equal and meet all State of Illinois Regulations.

5.20.3 Interlocks

The center and rear door interlock system shall be enabled when the master switch is in any position except off. The center and rear door shall be interlocked to prevent the bus from moving unless the door is fully closed and the operator makes a full brake application.

A brake interlock shall be provided and the brakes on at least one axle shall be applied when, or before, the center or rear door begins to open. Activation of the center or rear door interlock system shall activate the brake stop lamps. The brake interlock system shall incorporate a speed sensor to prevent engagement of the interlock over 3 mph (4.8 km/h). This speed sensor system shall fail to a condition of brake interlock operation at any speed.

An accelerator interlock shall also be provided to prevent the drive system from moving the vehicle (see "standstill system" described in this document) when the center or rear door interlock is actuated and the center or rear door is open. The accelerator pedal shall be released and free when the interlock is activated. The brakes cannot be released nor the accelerator applied while the doors are open except as listed under Interlock Override System. If the Interlock Override System is placed in the override position it shall actuate a warning consisting of an audible indicator and a red light indicator visible to the driver with a label integral with or adjacent to the light stating "Warning-Interlock Deactivated" in letters at least 3/16 inch high.

No more than 35 pounds (15.9 kg) of force shall be required to remove a 1 inch smooth cylinder after the rear door closes on the cylinder and the sensitive edge or safety device on the center or rear door is inoperative. This requirement also applies to the front and middle door.



5.20.4 Emergency Release Mechanism

An emergency release system means shall be provided to allow passengers to manually open the doors in an emergency, using a force of no more than 25 pounds (11.3 kg) with the coach resting on level road. The door interlock system shall apply the brakes to stop the bus when the center or rear door release is actuated, or alternatively when the center or rear door is moved from the closed position. The releases shall be in an easily accessible location with a frangible plastic cover, and shall be properly labeled. Doors that are required to be classified as “Emergency Exits” shall meet the requirements of FMVSS 217.

5.21 PASSENGER SEATING

5.21.1 Passenger Seating Layout

Passenger seating shall be provided with the exact layout subject to precise bus size, floor layout, location and size of wheelhouses, location of doors, etc. The minimum number of wheelchair tie down positions per bus shall be as given in the specification section that lists dimensions. The DISTRICT shall provide their preferred seating layout to CONTRACTOR. No rear-facing passenger seats shall be allowed. No seats will be allowed in the articulated joint area, but there will be leaning panels. Aisle facing seats shall be provided between the rear axle wheelhouses and the rear couch seat; otherwise forward-facing seats are preferred. Aisle-facing seats in the wheelchair securement area shall have the capability to be flipped individually.

5.21.2 Transverse

Transverse seats shall be cantilever-mounted to the inside wall of the bus. Raised seats shall be provided with a foot platform. The height of the non-compressed seat cushion above the floor or raised platform shall be approximately 17 inches (432 mm).

Transverse spacing shall be 30 7/8 to 32 inches (784 to 813 mm) center to center or a minimum of 27 inches hip-to-knee. 'Hip-to-knee' is defined as the horizontal distance measurement taken in a straight line from the lowest open point on an non-compressed vertical seat back cushion to any fixed panel, seat or other object located forward of the seat. All seats in every bus must meet these requirements. Each passenger seat shall be 18 inches (457 mm) wide.



Rear couch seats shall adequately fill the space or, approved closeouts shall be used. These closeouts shall be sloped so as to eliminate pockets and trash-catching areas. Rear couch seats shall be hinged to provide access to the rear drive system compartment hatch.

The detailed seating layouts shall be submitted to the DISTRICT prior to the pre-production meeting .

5.21.3 Priority Seating Signs

Priority seating signs shall be supplied by the CONTRACTOR and approved by the DISTRICT.

5.21.4 Seat Construction

Passenger seats shall be "4ONE" Model Gemini or approved equal, all seat back and bottom shall be plastic or approved equal. All seats shall be of a coordinated design including transverse seats, aisle facing seats, seats across the rear of the bus, and folding seats. Seat back and seat bottom throughout the bus shall be interchangeable to the maximum extent possible.

Seat bottoms and backs shall be plastic or approved equal. Color will be approved at the pre-production meeting. Certain transverse seats, per section 3.09, shall have provision for attachment of a seat- to-ceiling stanchion on the aisle side. Longitudinal and transverse seat and rear couch seat attachment methods shall be approved by the DISTRICT.

5.21.5 Tie-down Area Seating

The following arrangement shall be used in the ADA tie-down seating area:

Three-passenger individual folding flip aisle-facing seat with a transverse barrier shall be provided behind each front wheelhouse where passengers in mobility aid devices can be accommodated and to provide regular seating when no passengers using mobility aids are aboard. The transverse barrier shall be wide enough to allow both wheels of a standard size adult wheelchair to rest against the barrier in the same plane. CONTRACTOR will provide a longitudinal grab rail on the top of the three-passenger seat back, for the use of persons in the tie-down area.



Folding seats shall be individual flip seats with plastic inserts. These flip seats shall be easy and safe to stow and deploy, and designed for minimum thickness in the folded position. They shall not lock in the lowered position, and shall detent or lock into the stowed position with an easy to use release. Provide large, easy to grasp seat release latch handles, yellow in color shall be provided at the upper edge of seats when folded. Seat bottoms and back inserts shall be retained with tamper proof screws. Back and bottom inserts shall be removable separate from the seat frame.

A metal wheelchair tie down instruction plate shall be supplied in each tie down location. This plate and its placement shall require the approval of the DISTRICT.

Longitudinal passenger seats shall have individual back and bottom inserts. They shall have armrests on both fore and aft sides. With the approval of the DISTRICT, specific armrests can be eliminated if that side is placed against a barrier or panel. A barrier dark gray in color, with both sides finished, shall be attached to the armrest seat backs, or braced from, the coach sidewall to preclude deformation due to long term flexing.

5.21.6 Seat Handrail

Transverse seats shall have a passenger assist handgrip, which shall be upswept on the aisle end to provide a vertical handhold for standing passengers. The handgrip shall be cast aluminum coated with an energy-absorbing material, dark grey in color. The handgrip shall be securely mounted on the seat frame.

5.22 WHEELCHAIR SECUREMENT DEVICES

5.22.1 Design Load

Securement systems and their attachments shall restrain a force in the forward longitudinal direction of up to 2,000 pounds (907 kg) per securement leg or clamping mechanism and a minimum of 4,000 pounds (1,814 kg) for each mobility aid.



5.22.2 Location and Size

The securement system shall be placed as near to the accessible entrance as practicable and shall have a clear floor area of 30 inches by 48 inches (762 mm by 1219 mm) minimum. Such space shall adjoin and may overlap an access path. Not more than 6 inches (152 mm) of the required clear floor space may be accommodated for footrests under another seat provided there is a minimum of 9 inches (228.6 mm) from the floor to the lowest part of the seat overhanging the space. Securement areas shall have fold-down seats to accommodate other passengers when a wheelchair or mobility aid is not occupying the area, provided the seats, when folded up, do not obstruct the clear floor space required.

5.22.3 Mobility Aids Accommodated

The securement system shall secure common wheelchairs and mobility aids and shall either be automatic or easily attached by a person familiar with the system and mobility aid and having average dexterity.

5.22.4 Orientation

Either securement devices or systems shall secure the wheelchair or mobility aid, both forward-facing positions.

5.22.5 Movement

When the wheelchair or mobility aid is secured in accordance with manufacturer's instructions, the securement system shall limit the movement of an occupied wheelchair or mobility aid to no more than 2 inches (51 mm) in any direction under normal vehicle operating conditions.

5.22.6 Stowage

When not being used for securement, or when the securement area can be used by standees, the securement system shall not interfere with passenger movement, present any hazardous condition, be reasonably protected from vandalism, and readily accessed when needed for use.



5.22.7 Seat Belt and Shoulder Harness

For each wheelchair or mobility aid securement device provided, a passenger seat belt and shoulder harness, complying with all applicable provisions of 49 CFR part 571, shall also be provided for use by wheelchair or mobility aid users. Such seat belts and shoulder harnesses shall not be used in lieu of a device that secures the wheelchair or mobility aid itself.

The mobility and securement system shall consist of materials supplied by "Q-Straint." or approved equal. Passengers in mobility aids shall be restrained with separate retractable lap and shoulder belts, black in color. The shoulder belt shall be secured to a bus wall or separate structural member if a window precludes wall attachment. The occupant restraint shall provide properly positioned belts across both lap and shoulder regardless of whether a person is sitting in a wheelchair with armrests, a scooter or other mobility aid.

Mobility aids shall be secured with a four point system. The both rear belts, retractable, red in color and permanently mounted, shall have a belt loop and a buckle on the outer end. One shall be located near the intersection of the wall and floor, and the other near the aisle end of the barrier and the floor. Both front belts shall be red in color and permanently mounted near the intersection of the wall and floor at the front of the tie down area. The inner belt shall have a belt loop and a buckle at the outer end and be equipped with a hand-operated retractor. The outer front belt shall be able to be temporarily attached to an L-pocket floor attachment location and be equipped with a hand-operated retractor. Provided are one to two clips or temporary attachment points on the bottom of each folding seat so the driver can temporarily attach the wall side belts while prepping the area.

The securement system shall be easy to access and utilize by the bus driver, so as not to create awkward body movements exposing the driver to possible strain or back injury. Restraint belts, when not in use, shall retract, fold or stow so as to give a neat appearance, present no tripping or catching hazards, and cause no interference with the use of the folding seats.

Wheelchair position, chair restraints and passenger tie down shall meet all Federal and Illinois safety requirements.



5.23 STANCHIONS AND HANDRAILS

Each bus shall be equipped with stanchions and handrails to allow passengers to safely enter and exit and move about the interior of the bus.

Interior handrails and stanchions shall permit sufficient turning and maneuvering space for wheelchairs and other mobility aids to reach a securement location from the ramp.

Handrails and stanchions shall be provided in the entrance to the vehicle in a configuration which allows persons with disabilities to grasp such assists from outside the vehicle while starting to board, and to continue using such assists throughout the boarding and fare collection process.

A horizontal passenger assist shall be located across the front dash of the vehicle and shall prevent passengers from sustaining injuries on the fare collection device or windshield in the event of a sudden deceleration. Without restricting the vestibule space, the assist shall provide support for a boarding passenger from the front door through the boarding procedure. Passengers shall be able to lean against the assist for support while paying fares.

Overhead handrails shall be provided which shall be continuous except for a gap at the center and rear doorway.

Handrails shall be between 70 and 73 inches (178-185 cm) above the floor or raised foot platforms and 33 inches (84 cm) apart equally spaced from the bus centerline. In the event any portion of the floor is sloped or ramped, the horizontal handrails shall be sloped in coordination to preserve the 70-73 inch (178-185 cm) dimension. The curbside handrail shall be angled toward the bus sidewall just aft of the front doorway, if necessary, to provide clearance for de-boarding passengers. All stand-offs or brackets shall be stainless steel to compliment the coach interior. Horizontal handrails shall be separate from any vertical stanchion.

Flexible nylon webbed drop strap loops (grab straps) every three feet (91 cm) along the ceiling handrail shall be provided. Drop strap material, size, and attachment method shall be approved by the DISTRICT.



Handrails and stanchions shall be sufficient to permit safe boarding, onboard circulation, seating and standing assistance, and alighting by persons with disabilities.

Vertical stanchions immediately behind the driver shall be 'dog-legged' so that the floor attachment does not impede or interfere with wheelchair footrests. The driver seat platform, to the maximum extent practicable, shall not extend into the aisle or vestibule beyond the wheel housing.

The minimum interior height along the path from the ramp to the securement location shall be 68 inches (173 cm).

Vertical stanchions shall be provided at the inner aft corner of the front doorway, and at the second doorway; these shall be an integral part of the modesty panel at the aft side of the rear doorway. A vertical floor to ceiling stanchion shall be provided at the center and inner front corner of the rear doorway.

Vertical seat to ceiling stanchions shall be provided at alternate transverse seats. Groups of aisle-facing seats shall have a vertical stanchion at every other seating position with a minimum of two stanchions. Additional vertical stanchions may be required in the front of the coach because of extended spacing of seats forming the wheelchair securement areas. The aft stanchions at the aisle facing seats over the rear axle wheelhouses shall be reinforced in an approved manner to prevent deformation by passengers. .

Grab rails, stanchions and handrails shall have a cross-sectional diameter between 1.25 inches (32 mm) and 1.5 inches (38 mm) or shall provide an equivalent grasping surface, and have eased edges with corner radii of not less than 0.125 inch (3 mm). All items that could be used as a handrail shall be placed to provide a minimum 1.5 inches (38 mm) knuckle clearance from the nearest adjacent surface. Handrail or stanchion attachment points in doorways shall not trap drawstrings on clothing, backpacks or other items carried by passengers.

Grab rails, stanchions and handrails shall be stainless steel or stainless clad pipe type 304 ASTM 554. Fittings and connectors shall have no sharp corners. Welding of stanchions and/or brackets is prohibited. All bends shall be made cold with no heat applied. Vertical stanchions shall not be more than 0.25 inch



(6.25 mm) out of plumb; horizontal handrails shall not be more than 0.25 inch (6.35 mm) out of parallel with the bus floor and sidewall. Stanchion 'Ts' shall have an extra fastener to prevent movement.

Stanchions that connect between the ceiling or structures attached to it and the floor or structures (such as seats) attached to it (except for aisle-facing seats) shall have one end mounted in rubber to allow for flexing of the bus structure without placing undue stress on the stanchions or their hardware. The penetration of the stanchions into the seats shall be 80 percent of each cup.

The complete details of the stanchions and handrails, including detailed layout drawings of all hardware, supports, clamps, etc. shall be submitted to the DISTRICT prior to the design. Final approval shall be given at pre-production meeting.

5.24 DIVIDER PANELS

A two-piece divider panel shall be provided at the aft side of the center and rear doorways. The lower section beginning 1.17" from the floor and stopping at a height of 35.56 inches above the floor and the second section starting 35.56 inches and stopping at a height of 66.98 inches above the floor. There shall be no gaps between the panel and the sidewall that may allow a hand, foot or other body part to be caught in the panel assembly or pinched by passenger door operation. If an integral vertical stanchion is used as the securing point on the aisle (inboard) side, the second panel section shall have knuckle clearance for the entire vertical height distance of the second panel.

Lower divider panels shall be of 0.25-inch (6.4 mm) thick plastic laminate, with horizontal handrails along the top. Color and pattern for the lower section shall be Platinum D 315-60. The upper section shall be laminated safety glass at least 0.1875 inches (4.76 mm) thick fully enclosed and secured in a metal frame. Divider panels shall be adequately supported to prevent permanent or undue deformation in use and to prevent rattle and shake when the bus is in operation.



5.25 WINDSHIELD, DRIVER, SIDE AND DOOR WINDOWS

5.25.1 General

Openings shall be provided in the body structure to accommodate a front windshield, continuous flush side passenger windows and a driver's window. It is preferred that all side passenger window openings be identical. Side window openings shall be designed to provide good visibility to seated and standing passengers. All windows shall be fully supported by a metal sub-structure. Windows shall not be supported in any manner by fiberglass material. Color of glazing material in all side windows shall be grey with 44% light transmission.

Openings for windows set in rubber channels shall match the contour of the glass. The gap between the glass and the opening shall not exceed the gap allowed by the channel manufacturer. The plane of the glass shall match the plane of the opening.

Openings for windows with metal sash shall not exceed the gap allowed by the sash manufacturer. Shims are allowed between the window openings and sash only when allowed by the window manufacturer. Any non-compliant opening shall be replaced with a compliant opening before the bus is approved for shipment. Alternatives to the detailed requirements of this subsection may be proposed by the CONTRACTOR for approval by the DISTRICT. The DISTRICT shall approve the design for all glazing, including arrangement and hardware.

5.25.2 Windshield

The windshield of all buses shall be of laminated safety plate or float glass meeting the requirements of American Standard 1 (AS1), and shall be a nominal 0.25 inches (6.3 mm) thick. It shall be designed to optimize visibility for the driver during all driving and loading conditions, and it shall be designed to minimize reflections from the interior of the bus during night operations. It is required that the windshield be of two or more piece construction. The windshield shall have an integral shade band at the top, and the color of the glass shall be green laminated tinted with a minimum of 72% transmitted light.



5.25.3 Side Passenger Windows

All side windows shall be of tempered safety glass which meets the requirement of American Standard 2 (AS2) and shall be a nominal 0.25 inches (6.3 mm) thick. Tint for side and passenger windows shall be 56% grey. There shall be a blue shade band for all side windows.

If the side destination and route signs are located behind the upper part of a side window, there shall be a separate window in front of the sign(s), with no tint.

5.25.4 Driver's Window and Door Glazing

The driver's windows and door glazing shall be of laminated safety glass that meets the requirement of AS2 and shall be a nominal thickness of 0.25 inches (6.3 mm) thick. Tint for the driver's windows and door glazing shall be 44% transmitted light. The driver's window and door glazing shall be made of glass.

The driver's window shall be easily adjusted with a one hand operation, and it shall be of two half sections sliding horizontally. The front sliding section shall be provided with handles both inside and outside, and the outside handle shall be located approximately in the vertical center of the sash. The rear section shall have an inside latch. Handles shall have rounded corners. Machined and finished drain holes shall be provided to drain water to the exterior of the bus from the lower channels. There shall be no hand or finger pinch hazard when either half of the window is opened.

5.25.5 Window Hardware

All window sashes shall be "Arrow Global Storm-Tite without Rapid Replacement", or approved equal, finished with black anodized aluminum. All window hardware including screws retaining the window frame to the bus.



5.25.6 Emergency Exit Instruction Plates

Each emergency exit window location shall be labeled with a Lexan (polycarbonate) instruction plate glued in place. Instructions shall be in English, Spanish and Chinese languages transcribed on the plates. Design and placement of these instruction plates shall be approved by the DISTRICT.

5.25.7 Window, Modesty Panels and Door Liners

The bus manufacturer shall supply easily replaceable anti-graffiti shield 3M multilayer or approved equal to all passenger windows, doors, barriers, and modesty panels that are glass and/or polycarbonate material.

5.26 WINDSHIELD WIPERS AND WASHER

5.26.1 Wipers

Electrically powered windshield wipers shall be provided to clean each side of the windshield. The DISTRICT is particularly interested in cleaning as much of the right side of the curbside windshield as possible. The wipers shall have two speeds plus an intermittent control position. Failure of the intermittent wiper function shall not disable the wiper system. The control shall have a park position causing blades to be parked at or near the longitudinal centerline of the bus in the vertical position or in another position if approved by the DISTRICT. The windshield wiping system shall be "Bosch", "Sprague" or approved equal. It is preferred that motor(s) be rebuild able. Each wiper blade shall be replaceable within three minutes. The DISTRICT must approve maintenance accessibility of the wiper motor(s) and any electronic control system.

5.26.2 Washers

An electrically powered windshield washer shall be provided to spray cleaning solution onto the left and right sides of the windshield. The solution shall be sprayed on the windshield by a pump, from a translucent, corrosion resistant reservoir located in the dash compartment and filled from outside the bus without opening any major panels. The reservoir cap shall be attached by a cable to the filler neck. The



reservoir shall hold not less than 1 gallon (3.8 liters). The spray shall be applied by wet arm nozzles with a minimum of four streams per arm. Washer fluid shall hit the windshield over the entire length of the wiper blade. The DISTRICT must approve maintenance accessibility of the pump and reservoir.

5.27 LIGHTING

5.27.1 Main Interior Lighting

Ample glare free light shall be provided for reading by seated and standing passengers, for safe entry, exit and circulation within the bus, and as an aid in producing a pleasant, attractive interior appearance at all times of the day and night. The lighting system shall be of a coordinated design approved by the DISTRICT.

The system shall provide an average illumination of no more than 5 to 15 foot candles at the reading plane of a seated passenger, 33 inches (838 mm) above the floor at a 45-degree angle. The aisle floor shall be lit to allow safe passenger movement within the coach.

Lower mounted lamps that are on only when the front door is open may be used in the front of the bus. Lamps may be divided into two groups if necessary, controlled by "ON" and "PARTIAL" on the light switch. Lamps shall be single pin and have a 60,000-hour life expectancy. Colored sleeves may-not be used to reduce light levels. DISTRICT shall approve interior light levels.

Lighting shall be "TCB LED" or approved equal. The interior lighting system shall provide a min. 15 foot-candle illumination on a 1 square foot plane at an angle of 45 degree from horizontal, center 33 inches above the floor and 24 inches in front of the seat back at each seat position. Allowable average light level for the rear bench seats shall be 7 foot-candles. Floor surface in the aisles shall be a minimum of 10 foot-candles, vestibule area a minimum of 4 foot-candles with the front doors open and minimum of 2 foot-candles with the front doors closed. The front and rear doors in the door header area shall have an LED strip light. The front entrance area lights shall illuminate when the front door is open and master run switch is in the "Night" or "Park" positions. Rear exit area lights shall illuminate when rear door is unlocked.



5.27.2 Entryway and Curb Lamps

Any doorway immediately adjacent to the driver shall have, when the door is open, at least 2 foot-candles of illumination measured on the entryway. Other doorways shall have, at all times, at least 2 foot-candles of illumination measured on the entryway.

The vehicle doorways, including doorways in which ramps are installed, shall have an interior door header lamp(s) which, when the door is open, provide at least 1 foot-candle of illumination on the street surface for a distance of 3 feet (914 mm) perpendicular to all points on the bottom step tread outer edge. Such lamp(s) shall be shielded to protect the eyes of entering and exiting passengers from glare.

Additional lamps on the curb side of the bus shall be installed to provide additional lighting focused on the rear wheels during right hand turns for the operator to view any pedestrians in this area.

5.27.3 Exterior Lighting Equipment and Back-up Alarm

Turn signals, stop lamps, marker lamps, flashers, backup lamps and backup signals shall conform to all Federal and State of Illinois requirements. Exterior lamps shall be selected and positioned in a coordinated manner that will lend a pleasant appearance and clean lines to the exterior of the bus. All coach LED lighting shall be a nominal 12 volts DC. The DISTRICT shall approve all exterior lamps and their placement.

All LED lamps shall be easily replaceable by one person in less than 5 minutes. The inside of lamp lenses shall be easily cleanable. All lamp assemblies shall be sealed to prevent the entry of water and dirt. Exterior lamps shall not admit water into the bus body for the lifetime of the bus. All lamps shall have enough slack wiring length to allow easy removal and servicing. All lamp components shall have quick disconnects to allow easy replacement.

5.27.4 Head Lamps

Each bus shall be provided with LED / halogen headlamp assemblies, countersunk type, having tilt-ray features controlled by a sealed type foot-operated switch convenient to the driver's left foot. Headlamps shall be installed with supports and mountings that are sufficiently rugged to maintain adjustment under



road shock and service conditions. The lamps shall be replaceable in 5 minutes or less. Headlamps shall be aimed before coach delivery. Headlamp bezels shall be retained with machine screws and rivnuts or their equivalent.

5.27.5 Brake and Tail Lamps

Two combination brake and tail lamps meeting the requirements of SAE J1398 and J2040 and with a diameter of 4 inches (101.6 mm) each shall be provided on each side of the bus mounted vertically. Lamps shall not be mounted on a rear compartment door and shall be visible with the door open. Lamps shall be "Dialight" LED or approved equal. The brake lamps will be activated during regeneration events.

5.27.6 Back-up Lamps & Alarm

"Dialight" LED or approved equal backup lamps, one at each side of the rear of the bus above the bumper, shall be provided. An audible backup signal, "Floyd Bell, Inc.", "Ecco", or approved equal, shall be provided.

5.27.7 Turn Signals & Emergency Flashers

Turn signals shall be placed on the front of the bus, on the rear of the bus, and on each side directly above all axles. Height shall be approximately 40 inches (122 cm) above the ground. Turn signal lamps shall be amber in color and meet the requirements of SAE J1395. Provide a single lamp above each wheel opening. Side turn signal lamps shall be Dialight LED or approved equal. All side turn lamps shall be visible in the rear view mirrors by a seated driver.

Front LED turn signals may be included as part of the headlight cluster. Rear turn signals shall have a diameter of 4 inches (101.6 mm). Lamps to be "Dialight" LED or approved equal, mounted between the combination brake and tail lamps on each side. These signals shall be controlled by two sealed type foot-operated switches, "Cole Hersee" No: 12063 or approved equal, one for left turns and one for right turns, convenient to the drivers left foot. A short harness from the switches to a waterproof connector located near the base of the steering column shall be supplied. The turn signal switch mounting plate and switches shall be removed as a unit for servicing.



5.27.8 Directional Signals

Directional signals shall be equipped for flashing of all lamps for emergency use, controlled by an easily reached switch with an extended arm toggle located the side console. This control shall operate the directional signals with the master switch in any position. Special power requirements when directional signals are used as emergency flashers can be referenced in section 6.41.6. The emergency flasher shall provide an audible click to the driver Marker Lamps.

Buses shall be equipped with clearance, side marker and identification lamps as specified in SAE J2042.

The identification lamps shall be individual units and mounted in the center of the front and rear roof crown panels. The front lamps shall be "Dialight" amber LED marker lights and the rear lamps shall be "Dialight" red LED marker lamps or approved equal.

Corner roof marker lamps shall be provided at each corner of the bus with "Dialight" amber LED marker lamps in the front and red LED marker lamps or approved equal at the rear.

Additional "Dialight" amber LED marker lamps or approved equal shall be provided at the roof edge on the midpoint of the trailer and the midpoint of the tractor on each side of the bus.

5.27.9 License Plate Lamp

An LED rear license plate lamps shall be provided and installed in accordance with legal requirements. The LED lamp shall be shielded from direct view of following drivers. The lamps are to be shock resistant.

5.27.10 Third Brake Lamp

Two LED 18' x 1' third brake lamps in the rear of the coach, high enough to be clearly visible but positioned so as not to interfere with any access door, ad frame or other component shall be provided. Location of the third brake light shall be approved by the DISTRICT.



5.27.11 Drive System Compartment Hazard Lamps

If the rear directional signal lamps are obstructed or hidden when the drive system compartment door is in the open position, a second set of LED lamps shall be located so as to be visible when the door is open. These lamps shall be activated by the 4-way flasher control switch and be amber in color. The lamps shall be located to be visible for the same distance as the normal rear directional lamps. These lamps shall be mounted to resist shock in a protected location and shall not pose a head bump hazard for those working in or around the drive system compartment opening.

5.28 TOWING CONNECTOR

An electrical receptacle shall be provided behind the front bumper of each bus, adjacent to the air connector described elsewhere in this section, to receive power for illuminating the tail lamps, stop lamps and directional signals from a towing vehicle. The receptacle shall be a 7-way receptacle assembly, "Cole-Hersee" No. 12063 or approved interchangeable equal. The pins shall be coated with corrosion resistant paste. The termination end of the receptacle shall be strain relieved and sealed against water entry.

5.29 DESTINATION SIGNS

5.29.1 General

Provide an automatic, electronic destination sign system on each bus. When a reading is selected at the driver's station, it shall be automatically displayed on the front and curb side of the bus. The route number shall be automatically displayed on the rear and curb side of the bus. The DISTRICT shall approve the design and placement of the sign system and sign boxes. Readability of the signs shall be approved at the pre-production meeting. New Signs must be J1708 and RS232 compatible, be able to communicate with INIT, and perform per the DISTRICT's Computer Aided Dispatch (CAD), Automatic Vehicle Location (AVL) requirements which shall include the ability to automatically communicate via the RS232 interface.

A TwinVision Smart Series III LED Sign system shall be furnished and installed in the bus by the CONTRACTOR. The sign system shall have an operational temperature range of -30°C to +80°C. A defroster will be included in the front sign to reduce fogging. This 24-vdc system shall consist of:



Amber Displays

The displays shall consist of white colored Surface Mount Technology (SMT) LEDs. The LEDs shall be rated by their manufacturers for a minimum 50,000-hour life expectancy.

The characters formed by the LEDs shall meet the requirements of the Americans With Disabilities Act (ADA) of 1990 Reference 49 CFR Section 38.39. The DISTRICT shall furnish destination readings.

A minimum of 3 dimming levels shall be provided to allow the sign to be legible in various light conditions from bright sunlight to darkness.

5.29.2 Front Sign

The Front Sign display shall consist of a Twin Vision Smart Series 3, LED amber, 16 x 160 model. Light Emitting Diodes LED shall be used for superior outdoor environmental performance. LED's should be made of superior UV resistant Epoxy lens and offer superior resistance to the effects of moisture. Each pixel shall have a dedicated LED for illumination of that pixel in all lighting conditions.

The sign shall have the ability to rotate horizontally to enable interior access to the destination sign glass.

5.29.3 Curb Side Sign

The curb side sign shall be a Twin Vision Smart Series 3, LED, amber, 14 x 112 (42.25inches wide display) and located on the right side of the bus on the second window, either mounted near the top of an existing window or in a separate enclosed but accessible weather-proof compartment provided by the CONTRACTOR.

The side destination signs must be easily read from the sidewalk level and have equal readability of 65 degrees on either side of the line perpendicular to the center of the mean plane of the the display.

The signs shall be accessible to allow maintenance of the sign and to also allow cleaning of the vehicle side window. One sign shall be installed on the curbside of the vehicle. A second sign shall be installed on the streetside of the vehicle.



5.29.4 Rear Sign

The rear route sign display shall have no less than 768 LEDs, 16 rows by 48 columns, with a message display area of not less than 6.1 inches high by not less than 18.1 inches wide. If the vehicle has a rear facing window, the rear destination sign shall be mounted inside the vehicle.

5.29.5 Sign Control

The Multi Control Unit (MCU) shall be used to view and update display messages. It shall be capable of being recess mounted on the Bus vehicle front Sign compartment access cover, driver's sawtooth panel or in the drivers dash area. The system control console shall utilize a multiple function keyboard with tactile response, designed especially for the harsh transit environment.

The system control console shall contain a 4.3" color LCD touchscreen display. Programmable multifunction keys shall be used for basic operation while the touchscreen can be used for more advanced operations. The system control console shall provide audible feedback to alert the operator to view the display for a message, or beeps indicating that a key is depressed. The system control console shall continuously display the complete message associated with the selected destination code.

When the vehicle transmission is in 'Reverse' the MCU screen will switch to a live backup camera integrated in the rear sign housing. The display will automatically return to normal when the transmission is not in 'Reverse'.

The MCU shall be capable of accepting single point logon information by interfacing to other on board systems via RS232, or J-1587/1708 for automated destination code and public relations code selection.

The sign system shall be reprogrammable through the system control console by a standard USB Thumb Drive. The system shall also be capable of wireless message listing updates using 'store and forward' through an Ethernet connection to an on-board computer, or through a wireless router on the vehicle.

The MCU shall have the ability to accept a minimum of four discrete inputs for programmable functions including, but not limited to, displaying a wheelchair graphic on the signs when the wheelchair ramp is



deployed, or a 'Yield to Bus' display on the rear sign when triggered by a switch located on the dash panel while the vehicle is entering into the traffic flow.

The MCU shall contain a display of at least two-lines of 20-character capability. The MCU Unit shall continuously display the message associated with the selected destination readings (except the emergency message feature as noted above). The MCU shall also contain the capability to manually select the Block Number Sign information (from 1 to 4 Alpha-Numeric characters) to be sent to the Block Number sign, independent of any pre-programmed destination sign message information. Up to four digit route numbers shall be selectable by the driver and shall be independent from the destination sign message. Leading zeros shall not be displayed. The system shall have the additional ability to sequentially display multi-line destination messages, but with the route number portion remaining stable in a constant 'on' mode at all times.

5.29.6 Sign Features

No blank messages shall be shown during a message sequence unless specifically programmed. Sequential messages shall be displayed in a manner and at a rate that makes it easy to read and comprehend the complete reading. Readings shall be stored in electronic memory on plug-in circuit boards. The message displays shall not be adversely affected by continued exposure to sunlight or other environmental conditions normally associated with bus operation. The system shall incorporate an auto-blanking feature that shall cause the entire display area to be blank (black) within 30 seconds after the vehicle master power switch is turned off.

5.29.7 Sign Electronics

Flash memory integrated circuits shall be capable of storing and displaying up to 10,000 message lines. Message memory shall be changeable by the use of a Key Fob device sized according to the message listing noted herein. Download via a PCMCIA card or Memory Transfer Unit shall not be accepted.



The System shall have the ability to sequentially display multi-line destination messages, with the route number portion remaining in a constant “on” mode at all times, if so programmed. It shall also be capable of accepting manual entry of Route Alpha/Numeric information on any/all signs.

The various Signs shall be programmable to display independent messages or the same messages; up to two destination messages and one public relations message shall be pre-selectable. The operator shall be able to quickly change between the pre-selected messages without re-entering a message code. Public relations messages shall be capable of being displayed alternately with the regular text and route messages or displayed separately.

5.29.8 Sign Programming

A WINDOWS® compatible programming software package shall be supplied, under limited- use license, to generate message lists for the Sign system. The software must be able to operate in a VMware based virtual server environment.

The programming software package shall use the capacity of the virtual server to allow the KeyFob to be programmed directly from the PC. The program shall be designed for ease of deleting and adding messages to a destination Sign list in a WINDOWS® server based Operating Environment.

The Programming Software shall be intuitive, of design to facilitate ease of training, and use context-sensitive help features. On-site training support shall be provided with the software. This software shall provide capability for custom message writing by selection of preprogrammed standard variable width fonts. This allows for creation of a custom font by varying spacing between characters, words, or other message elements. This software also allows for creation of graphic displays with or without text; by selecting preprogrammed graphic Sign images and by allowing use of multiple fonts within the same message and graphic symbols placed anywhere within the display area.

A programming software package shall be furnished to generate message lists for the destination sign system. A USB thumb drive having a minimum of 512 Mbytes of memory shall be used to facilitate bus system programming.



5.29.9 Component Quality

Electronic circuit boards shall be of a quality to facilitate repeated repair cycles and maintain a 10-year minimum life. All connectors, including I.C. sockets and board edge connectors shall be plated with a noble metal, preferably gold. Boards shall be mounted to reduce vibration stress. The system shall operate at a nominal input voltage of 24 volts DC (+/- 6 volts DC). The sign system shall be internally protected against voltage transients and/or R.F. interference. Sufficient transient interference suppression shall be included so the system shall withstand transient pulses of 600 volts for 10 microseconds and 100 volts for 10 milliseconds.

5.29.10 Visibility

5.29.10.1 Front Sign

The front sign message shall be readable by a person with 20/20 vision from a distance not less than 350 feet for signs of display height greater than 8 inches and from a distance not less than 275 feet for display heights less than 8 inches. The front sign shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone.

5.29.10.2 Side Sign

The curb side signs message shall be readable by a person with 20/20 vision, from a distance of not less than 110 feet. The side signs shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone.



5.29.10.3 Rear Destination Sign

The rear sign shall be capable of independently displaying alpha-numeric characters. Its message shall be readable by a person with 20/20 vision, from a distance of not less than 225 feet. The rear sign shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full view cone.

5.29.10.4 Sign Lighting and Boxes

The LED intensity automatically adjusts to the ambient light. Special attention shall be given to using and mounting. LEDs shall not fail due to vibration stress when the coach is used in normal revenue service.

Sign mechanisms and boxes shall be constructed of materials designed to minimize static build-up and subsequent dirt accumulation. The front and rear destination sign cavities shall be sealed to prohibit the entry of dirt, dust, water and insects during normal revenue service.

Sign boxes shall not vibrate or rattle and shall be sealed to exclude dirt, dust, water and insects. Each sign shall be housed in a protective cover that is removable with the sign.

A means shall be provided on the side signs to prevent accumulation of dirt on the inside of the bus window or on the outside of the sign box window. Signs shall be visible at all times with no fogging of any glass.

Sign boxes shall have access doors to allow replacement of sign mechanisms and to allow servicing and cleaning. The front sign compartment access door shall have thumb latches. The front sign compartment access door shall have a metallic or nylon hinges running the entire width of the access door. If bottom hinged, provide appropriate retaining straps. No components shall need to be removed to allow full opening of the sign door. The sign is removed and installed through this door unless the DISTRICT agrees to other methods.



Front and rear exterior sign glass (defined as the glass attached to the coach body) shall be masked to keep sign wiring and other compartment items hidden from view. Sign visibility shall not be affected with masking installed. Material used shall be black. Installation, visibility and type of material used shall require approval of the DISTRICT.

5.29.11 Emergency Message Display

If required, a special emergency message can be activated by a switch. This message shall be displayed on signs facing outside the vehicle, while signs inside the vehicle, including the system control console, remain unchanged. The emergency message shall be canceled by entering a new destination code, or by removing the emergency signal.

5.30 EXTERIOR /INTERIOR ACCESS PANELS

All equipment requiring access from outside of the bus body shall be provided with metal-hinged access doors, hinged at the top or side and operable with one hand if possible. Panels shall be designed not to rattle, to remain and be secured in both the closed and full open position, and to be quickly and easily opened and closed during servicing and maintenance. All access doors and the surrounding panel material shall be reinforced as necessary to prevent distortion of body panels. Large panels shall open and close easily. If needed, special grab handles shall be used to enhance ease of use. If an access door is large or heavy, making it inconvenient to open easily, it shall be provided with an approved gas cylinder assist mechanism. Mounting brackets for the gas cylinder must be welded, bolted, or riveted to the door and body. Gas cylinders shall not be equipped with any mechanical locking mechanism in the open position. It is preferred that all under floor skirt panels be accessible, even if no equipment is immediately behind them. It is preferred that all doors open 180 degrees, or as close to that as practicable.

Panels shall be held securely in the closed position by gas cylinders, positive quarter turn adjustable latches or, if small, by spring loaded hinges or other approved latching methods. A nominal 5/16 inch (7.9 mm) square-end tool shall open all exterior access panel locks except the access door for the battery main switch. All fasteners that retain access panels shall be captive in the cover. Panels shall close against rubber stops (bumpers). Hinges, springs and latches shall be of non-corroding material.



Metal hinges are to be attached with the following fasteners, in descending order of preference: bolts and nuts; bucked rivets, monobolts, pop rivets. The DISTRICT requests metal hinges on all other access doors. Latches shall be adjustable.

All exterior compartments, other than the battery compartment, must be completely sealed; cable, harness, wire or piping entry is by watertight fittings. Duckbill drains are supplied. Compartment openings have a continuous bulb seal with formed corners. The outside access door makes continuous contact with this seal. Electrical or other components that should not be wet are preferably mounted on the sides, back, or top of the compartment.

Access panels shall not interfere, and/or suffer any damage when the coach is towed or lifted. Panels may be built to quick disconnect from the coach under towing and/or lifting circumstances. The DISTRICT shall approve methods used to obtain this result.

The DISTRICT requests that high-value components not be located near the doors in the compartments around the bottom of the bus where they shall be vulnerable to minor collision damage.

Access panels shall include, but not be limited to:

- Fuel cell powerplant Access
- Radiators
- Electrical Panels
- Air Cleaner Intake
- Batteries
- HVAC

Access panels shall be provided on the interior of the bus as required for servicing and maintenance. If hinged, they shall be hinged at the top or side and designed to remain and be secured in both the closed and full open position.



Access hatch to allow a mechanic to disconnect the drive shaft from the differential from inside the bus shall be provided. Floor or rear couch seat area access panels for the fuel cell or other components shall be easily fastened and unfastened and shall be finished to match the surrounding area. The access panel shall have a 'T' molding which is recessed into the floor rubber as necessary to preclude a tripping hazard. Fasteners shall be captive in the panel. The panel shall be supported by bus structure on all four sides. Floor hatches shall be sealed to prevent noise and fumes from entering the passenger area. Fuel cell and or other equipment access panels shall not be hidden behind additional sound proofing panels.

Access panels shall be designed to allow plenty of clearance for use of hands and all appropriate maintenance tools. Panels shall have positive stops to prevent hinge damage when opening. Use of adhesive backed foam tape as a door sealing method is prohibited. The DISTRICT shall approve access panels, floor hatches, locks and all associated hardware.

5.31 BUMPERS

Bumpers shall be installed front and rear to cushion, distribute and transmit collision shock to the bus structure. Bumper heights shall be selected considering S.A.E. standards to protect against automobile damage, and considering the optional bumper height provisions of FMVSS 215. Bumper design and placement shall be approved by the DISTRICT.

The front bumper shall be a black "Romeo-Rim" HELP semi-pneumatic, energy absorbing bumper of the wrap-around type, or approved equal. The bumper shall not have separate end caps. It shall be at least 8 inches (203 mm) high, and shall project at least 4 inches (102 mm) ahead of the foremost part of the bus. The bumper shall provide immediate, automatic resetting after impact without any adjustments or manual operations.

The bumper shall protect the bus from damage as a result of 6.5 mph (10.5 km/h) impacts at any point by the striker defined in FMVSS 215 loaded to 4000 lb. (1820 kg) parallel to the longitudinal centerline of the bus and 5.5 mph (8.8 km/h) impacts into the corners at a 30 degree angle to the longitudinal centerline of the bus. The bumper shall provide 5 mph (8 km/h) fixed barrier impact capability, without passenger load, with no damage to the bus.



The rear bumper shall be a black "Romeo-Rim" HELP semi-pneumatic energy absorbing bumper or approved equal. Rear bumper performance with the conditions given in section 3.22.02 shall be 4 mph (6.4 km/h), 4 mph (6.4 km/h) and 2 mph (3.2 km/h) respectively.

The bumper shall have integral anti-ride capability; adjacent body panels shall be designed to protect the bus while discouraging persons from standing on or hitching rides on the bumper.

It is preferred that there be a suitable bus structure between the rear bumper and the aft end of the rear axle wheel opening to protect these areas of the bus.

5.32 EXTERIOR FITTINGS

5.32.1 License Plate Holders

Provide four 1/4-20 rivnuts and four hex head cap screws with nylon washers front and rear shall be provided and installed for attaching U.S. standard size license plates at the front and rear of each bus. The attached license plates shall be generally flush with the outer surfaces of the bus to avoid being caught by the brushes of the bus washer. License plates shall be held securely to preclude rattling or scratching of adjacent surfaces.

5.32.2 Radio Antennas

All roof mounted antennas shall not interfere with any components on the roof. Unpainted antennas are mounted with splinted rivnuts and stainless steel machine screws, with installation to be approved by the DISTRICT. If the bus does not have a metal roof, suitable ground planes, to be approved by the DISTRICT, shall be installed. Antennas shall be mounted in the center of their ground planes. RF Radio and GPS antennas shall be installed on top of the bus, at least 4ft apart. Access panels to all antennas shall be provided.

Antenna specifications will be provided by INIT.



5.32.3 Reflectors

Two red reflectors shall be provided on the rear of each bus. At least three reflectors shall be provided on each side of all buses with the forward reflectors amber and the rear reflectors red. Care shall be taken in selection and placement of the reflectors to both provide appropriate warning to other vehicles and complement the overall exterior appearance of the bus. Mounting shall be with machine screws and rivnuts. Peel-and-stick reflectors are acceptable. Reflectors shall meet all applicable regulations.

5.32.4 Horn

Dual electric heavy-duty horns shall be provided and mounted to prevent entry of water and dirt into horn trumpets. The horns shall sound high and low notes and provide a sound that is effective as a warning without being unduly annoying. The horn shall be clearly audible over 75-dBA traffic noises at a distance of 300 feet (91 m).

5.32.5 Static Ground

A method of grounding static electricity shall be provided on each bus and shall be approved at the design review.

5.32.6 Splash Aprons

A splash apron consisting of three separate panels shall be provided across the entire bus at the rear of the driven wheels and separate splash aprons shall be provided behind all other wheels.

5.32.7 Fenders, Rub Rails

Any rubber fenders must be approved. Fenders to be attached with threaded fasteners. The wheel opening on the outside of the bus shall be neatly finished with no visible weld points. Metal rub rails are allowed only if they are necessary to cover a panel joint and if no rubber is in contact with the bus skin.



5.32.8 Bicycle Rack

Sportworks model #DL2-WP or approved equal bike rack assembly shall be provided by the CONTRACTOR and installed on the front bumper. This bike rack shall be stainless steel with satin antiglare finish. The bike rack assembly shall contain the appropriate sensor, wiring and related indicator light to make the operator aware the bike rack is deployed.

5.32.9 Roof Safety Features

If any roof-mounted equipment is provided (e.g. HVAC, or batteries), anti-skid walking surface, safety strap attachment points, and permanent no-step markings as necessary, shall be provided and approved by the DISTRICT.

5.33 PASSENGER SIGNAL

5.33.1 General

The main function of the chime signal systems is to enable any mobile passenger to inform the driver and the other passengers that the bus is requested to stop at the next bus stop (system A) and to alert the driver that a mobility aid passenger wishes to disembark (system B). These systems shall alert the driver, both visually and audibly, and separately from each other. The CONTRACTOR may propose integrated or separate system(s) that accomplish this. The DISTRICT shall approve the design, position, materials, and operation of both systems.

5.33.2 System A

The purpose of this system is to request stops and to alert the driver that a fully mobile passenger wishes to disembark. One solid-state electronic chime signal shall be provided. A separate light signal shall be provided on the driver's instrument panel and shall illuminate when the system is activated.

System A signals shall be actuated by wire-centered clear plastic cords running horizontally for the full length of each side of the bus except at door openings. These cords shall be located along the imaginary line separating the upper bin windows from the lower sections of the side windows, and shall not interfere



with opening of the side destination sign and route number sign for inspection. If the cord is not usable in the rear door area, a button to actuate the signal shall be placed on a nearby stanchion. Vertical drop cords shall be located at every side window pillar. These cords shall be secured to the horizontal chime cord with tiller clamps so they shall not slide or travel. They shall be anchored at the opposite (bottom) end by means of an eyelet attached to the bus sidewall, and secured with a tiller clamp. Use dual half-shell "Atwood Corp." tiller clamps, p.n. 8043-3 or approved equal with Torx screws at each chime cord crimp location. Cords shall not interfere with any window operation.

When system A is actuated by a passenger, a chime shall sound and the text message sign shall display 'stop requested' and the driver's dash mounted lamp shall illuminate. The chime shall be disabled while the displays are on. When any door is opened, the displays shall be on with the chime disabled. After all

5.33.3 System B

This system shall allow a mobility aid user to request a stop and alert the driver that he/she wishes to disembark. One solid-state electronic chime signal shall be provided. This chime shall produce a different sound than the system A chime. A separate light signal shall be provided on the driver's instrument panel and shall illuminate when the system is activated. Activation of this system shall illuminate the two lighted display signs.

Controls for system B shall be mounted no higher than 48 inches (1219 mm) and no lower than 15 inches (381 mm) above the floor. It shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate controls shall be no greater than 5 lb. (22.2 N). A touch tape on the bottom of the folding seat in each tie down location shall be provided. This touch pad shall be located where it shall not be accidentally activated by movement of the secured mobility aid device. The touch pad shall have an electrical disconnect plug to facilitate removal of the flip-up seat for maintenance. Plug to be accessible to maintenance and not visible to passengers.

When any tie down area stop request signal is activated, the system B chime shall sound and the driver's dash mounted lamp shall illuminate. The chime shall be disabled while the display is on. When any door is opened, the display shall be on with the chime disabled. After all doors close, the system shall be reset.



5.34 CAMERA SURVEILLANCE SYSTEM PROVISIONS

The surveillance camera systems shall be installed by the CONTRACTOR using the Mobileview video system. All Cameras must have the capability to be designated as IP cameras and shall have HD capability. Final camera locations and quantity shall be determined by the DISTRICT. Camera audio shall be recorded through a mic built into the camera. All wiring is to be marked and labeled for power wiring and camera identification. The wiring and termination locations for the video system power and cameras and the system layout of equipment and placement for camera views shall be approved by the DISTRICT. The main power wiring shall be a constant 24 volts and fused with a circuit breaker and then terminated in the electronics cabinet and marked and labeled. When battery cut-off switch is off, the constant 24V supply to DVR should not be maintained. The contractor shall provide two independent event marker switches. Switch one shall be wired to the Mobileview system, the other switch shall be wired to the emergency alarm switch.

5.35 PUBLIC ADDRESS SYSTEM PROVISIONS

Public address system provisions shall be provided on each bus for facilitating automated and driver-originated announcements to passengers. Driver-originated announcements shall override automated announcements. The PA system uses INIT or other equipment as an amplifier. Supplied components shall not contribute distortion or low voltage noise interference and shall produce a clean, clear sound. The DISTRICT at the design review shall approve the equipment and the locations of the components.

The hand held microphone mounting point shall be reinforced with a tapping plate and be in a convenient location for ease of driver access. Rivnuts and machine screws shall be used. The location where the microphone cable passes through the body shall have full chafe protection. Location of the hand microphone shall be approved by the DISTRICT.

The microphone cable shall terminate in the SDS box or on the left side of the instrument panel. Each cable end shall be terminated with a "Switchcraft" A4M or interchangeable approved equal connector. Also, it shall be mounted above the driver and final location to be determined by the DISTRICT.



At a minimum, 6 interior loudspeakers shall be provided, semi flush mounted, on alternate sides of the bus passenger compartment, installed with proper phasing. Total impedance at the input connecting end shall be between 4 and 8 ohms. Mounting shall be accomplished with machine screws, flat washers and nuts. One exterior speaker of weatherproof design shall be provided near each door. Speakers shall be installed so as to facilitate testing and replacement when necessary. There shall be a speaker control switch mounted within easy reach of the driver. This switch shall include 'INSIDE, OUTSIDE and BOTH' speaker selections.

5.36 ADVERTISING PROVISIONS

Interior advertising racks designed for advertising media 11 in (280 mm) high shall be provided running the interior length of the bus on both sides over the windows interrupted only as necessary for the doors. Grooves on the top and bottom shall accommodate media up to 0.090 inches (2.3 mm) thick. These racks may be combined as part of the interior lighting system (Section 3.13).

5.37 AUTOMATIC PASSENGER COUNTER PROVISIONS

A complete stand-alone APC system shall be installed by the Contractor. The APC system shall be IRMA Matrix or approved equal. The power wiring shall be fused with a circuit breaker at the bus electrical panel.

Each passenger door shall be wired for and equipped using APC sensors. The DISTRICT shall approve the final placement of the APC components.

5.38 SAFETY EQUIPMENT

5.38.1 Fire Extinguisher

A five pound dry chemical fire extinguisher, "Amerex" / "Ansul" or approved equal shall be provided by the contractor and installed on each bus. The extinguisher shall be mounted for easy access from the driver's station using bracket 5BRK. Provide an approved mount and mounting location for the extinguisher. If the extinguisher is located in a compartment, provide an approved 'Fire Extinguisher Inside' decal. The fire extinguisher shall have a manufacturer's inspection tag marked NEW with the date



installed, plus space for subsequent inspection entries. The DISTRICT at the design review shall approve the equipment and the locations of the fire extinguisher components.

5.39 FIRE PROTECTION- HYDROGEN DETECTION

There shall be an Amerex fire suppression system on the vehicles.

5.39.1 Operator's Fire or Hydrogen Leakage Alarm

The operator's area at a clearly visible location will be equipped with a Floyd Bell, or approved equal, whoop fire alarm, part # TXO-86-515-Q and TLM-87R-930-Q, that will emit a distinctive sound and warning light to alert the driver in case of an impending or detected fire related event. The feed for this alarm will be provided through the fire-suppression's control panel and it will be muted upon driver's acknowledgment of the event.

5.39.2 Hydrogen Detection

The bus will also be equipped with an on-board hydrogen detection system. The system will be integrated into the above fire detection system and at a minimum consist of multiple detectors located within the passenger compartment and areas most likely capable of fuel release, such as fuel storage, fuel cell compartment, confined areas where hydrogen gas/fuel may be introduced through the venting or HVAC systems into the passenger compartment, etc. The detectors will be suitable for the intended application and will provide 20 and 50% LEL detection. All sensors will be located at locations where remote viewing of display-light status is possible and servicing of the units is possible without requiring the removal of additional bus components. All hydrogen detectors' electrical connectors will be water proof and will be properly located, secured and treated to eliminate the penetration of water, dirt, moisture and humidity. The CONTRACTOR must provide documentation supporting the location of the detectors in the passenger compartment and in areas most likely capable of a fuel release. The supporting documentation will include certification of the system's acceptability to a registered, professional, fire protection engineer.



The hydrogen detection system will be equipped with a display panel, visible and accessible to the driver -while seated, constantly displaying, at the same time, each sensor, by location and status e.g. SENSOR XX is at 0% LEL ,– 20% LEL, – 50% LEL.

All incidents resulting from triggering any of the hydrogen detectors at a level of 20% LEL or higher will be:

- Logged
- Time stamped
- Sensor or sensors that triggered the event will be individually identified on the driver's display. Identification of activated sensors within a “loop” will not be acceptable.
- Sensor status will monitored and constantly displayed, in real time, on the driver's panel.
- Indication of hydrogen level reached.
- Duration of the incident.
- Driver’s acknowledgement button will not clear historical data.
- All historical data will be displayed, one incident at the time, using driver's display
- System will store historical data for a minimum of thirty days.

Historical data will be cleared only by a “password” protected procedure not accessible to the driver.

The system will incorporate an optional device, mounted on the outside of the bus, intended to provide a visible and audible warning to the driver that the system is/was in any stage of hydrogen alarm level/mode while the bus was left unattended. This device will be intrinsically safe and it will not worsen any ongoing condition/stage during its operation.

Additional operating parameters such as sequence of events, levels of warnings, and others associated with this display will be discussed during the pre-production meeting(s).



5.39.3 Reflector Triangles

Buses shall be equipped with a safety triangle reflector kit model number TSME035 manufactured by ABC or approved equal. This item shall be mounted neatly in the driver's area. The DISTRICT at the design review shall approve the equipment and the locations of the reflector triangle components.

5.39.4 S-1 Guard Deflectors

An S-1 GARD Danger zone Deflector or approved equal shall be mounted and installed in front of the right center and rear wheels of the bus, designed to deflect a person out of the path of the wheels.

5.40 FLEET MONITORING SYSTEM

A complete fleet monitoring system shall be installed on each bus by the CONTRACTOR. The power wiring shall be fused with a circuit breaker at the bus electrical panel. The complete fleet monitoring system shall be purchased and installed by CONTRACTOR. The location of the fleet monitoring system components shall be approved by the DISTRICT.

The fleet monitoring equipment shall be located in the electronic cabinet. The sensor shall be located in the destination sign area close to the curb side of the bus. The DISTRICT at the design review shall approve the equipment and the locations of the components.

5.40.1 Text Messaging Sign

Two interior next stop sign display signs shall be supplied, compatible with the auxiliary communication system INIT radio system. The signs shall be located so as to have at least one sign visible to all seated passengers in the bus. This sign shall be capable of displaying the next stop request sign function in addition to displaying the scrolled next stop announcement. The text message sign manufacturer shall be INIT PIDmobile3 or approved equal.

The interior stop request / next stop announcement displays shall: Be a single line 16 character, 29" x 3.5", amber LED display with clear 20/20 visibility at a minimum of 90 ft and with a +/- 75 degree view angle. Power requirements for the display shall not exceed 30W and shall be capable of operating on a



voltage between +10Vdc and +30Vdc. The display shall be addressable through the DISTRICT's radio system and have a SAE J1708/1587 compliant RS-485 serial communication interface. The system shall be capable of operating with temperatures between 0 and 40 deg. C., and at relative humidity between 10 and 90 %. The unit shall withstand temperatures between -40 and +70 deg. C. without damage or deterioration.

Have power supplied by the same source as the radio equipment over a minimum of 18 AWG two-conductor fused power cable with a twisted shielded cable pair for connecting the J1708 control signals.

Have the power cable and signal lines share a single split loom jacket. The connections are made with ring terminal lugs. There shall be four: two signal connections and two power connections.

5.41 DRIVER'S STATION AND CONTROLS

5.41.1 Design Factors

The design of the driver's station shall have as its primary objective the provision of an environment for the bus operator to manage the bus safely and efficiently for long periods of time without injury and with minimum fatigue. Human factors and design principles shall be used in the layout and proportioning of the driver's station and its components with attention given to safety, comfort, and body support. The size, shape and location of switches, levers, pedals, gauges, and all other factors that affect the design objective shall be considered.

The driver's station shall accommodate bus operators who are of various heights and body proportions by the use of human factors design in locating and proportioning the devices in the station and by the use of adjustable components such as the driver's seat and the steering column. It is required that the station accommodates persons within the range of the 5th percentile female to the 95th percentile male.

The CONTRACTOR shall, as a joint effort with the DISTRICT, determine the location of all equipment with respect to proper lighting, ease of operation, accessibility and passenger flow. Factors to be considered include, but are not limited to, the provision of mountings for and determining the location of the fare box, radio speaker, radio control head and any other equipment supplied by the DISTRICT. Complete



details of the driver's station design shall be presented at the design review and at the pre-production meeting for approval by the DISTRICT.

5.41.2 Driver's Seat

The driver's seat shall be adjustable to provide comfort for bus operators within the range of sizes given in the previous subsection. It shall have a full 9 inches (228.6 mm) of adjustment in the fore and aft direction without contacting any coach part. The seat back, seat cushion, and the seat height shall be adjustable. The seat shall be installed in the same location in all buses. All adjustments shall be easily made without the possibility of crushing or pinching the bus operator's hand or fingers. A dynamic load damper shall be provided on the seat to augment the springs and padding in the cushions. Under no operational condition shall the seat 'bottom out'. The airline connection to the seat shall have a shut off valve and a quick disconnect provision. The bus connector shall be a brass push-to-connect socket, 1/4-inch coupler size. The seat shall be equipped with a quick disconnect feature; the cap screws retaining the seat base to the driver platform shall be threaded into tapping plates or weld nuts under the platform. The driver's seat shall be a "Recaro Egro Metro" or approved equal with the following features: air suspension system; wide back with 20° recline; air lumbar support; mechanically adjustable side bolsters; leather upholstery; molded long life foam; ABS protective back shell; air slide release mechanism; 4 way adjustable headrest; 4" slanted steel riser with internal tethers; riser dust cover; 2 point lap belt system.

The entire face of the driver's seat and back cushions shall be leather and no welt cord shall be used. Seat cushions shall be of long lasting foam. Particular attention shall be given to providing a seat which is comfortable in warm, humid weather and which gives full consideration to long periods of occupancy.

The driver's seat shall be supplied with inertia locked retractable and adjustable lap belt assemblies. The belt systems shall extend from left to right and shall accommodate all drivers in all positions of the seat. All seatbelt assemblies shall come equipped with a warning switch device on the seat to remind operators to buckle up.



5.41.3 Barrier

An approved full height barrier shall be provided at the rear of the driver's station. This panel shall in no way interfere with the safe normal operation of the bus or restrict the movement of the driver's seat.

Vertical stanchions at the intersection of the back and curb side panels and at the forward edge of the curbside panel shall be provided. Stanchions shall have minimum 16 inches (406 mm) usable length, 3 inches (76 mm) knuckle clearance.

The barrier shall be aluminum, fiberglass or other approved material of color and finish. The barrier assembly shall be rigid, shall not shake or rattle in service, and shall withstand forces from passengers using it as a handhold. Any screws and/or bolts protruding through the barrier shall have rounded heads to eliminate passenger injury.

5.41.4 Controls and Switches

All controls shall be within the hand reach of the driver. Switches and other electrical controls located on the driver's side console shall be water resistant. The design, material, and location on all side console, instrument panel controls, and switches shall be approved by the DISTRICT at the pre-production meeting.

Accelerator and brake pedals shall be designed for ankle motion without fatigue.

The bus shall be equipped with Teleflex/Kongsberg, or approved equal, adjustable foot controls including brake and throttle pedals.

When the driver's foot is placed on the non-depressed accelerator or brake pedal, the ankle shall be at a neutral angle (the angle assumed when standing). This angle shall be approximately 45 degrees from true horizontal. Both accelerator and brake pedal surfaces shall be on the same plane. Both assemblies shall be equipped with heel rests. Foot surfaces shall be faced with wear-resistant, non-skid replaceable material. The accelerator shall be a "Williams" or approved equal, electronically operated. The brake control valve shall be a "Bendix" or approved equal. The DISTRICT shall approve pedal angles, placement and design at the pre-production meeting.



5.41.5 Parking and Emergency Brake Controls

The parking and emergency brake control shall be located to the left of the driver for easy ergonomic actuation by a seated driver. The parking brake handle shall have a yellow plastic handle. The preferred location is on the side console. Control location to be approved by DISTRICT.

5.41.6 Master Electrical Control (Master Switch)

The master control shall activate and disable certain subsystems. It shall have four positions, affecting bus subsystems according to Master Control Table and it shall be located on the primary panel. It shall be sized to accommodate maximum loads with an additional 150% operating margin (load factor). No heavy electrical loads shall be run through the master switch.

When the master switch is switched from OFF to 'Day Run' or 'Night Run', the indicator lights flash momentarily to signal that the bus is being asked to wake up. Other controls detailed below and elsewhere may affect these conditions. The brake lights, horn and emergency flashers shall be enabled in all positions of the master control.

Master Control Table

Position	Drive System	Interior Lamps	Head Lamps	Other Exterior Lamps	Indicators Alarms etc.	Rear Door Interlock
OFF	Stop	Off	Off	Off	Off	Off
DAY RUN	Run	On	On	Off	On	On
NIGHT RUN	Run	On	On	On	On	On
NIGHT PARK	Stop	On 50%	Off	On	Off	On

5.41.7 Fuel Cell Power Plant Start Button

It shall be interlocked and located on the side driver console. It shall be possible to drive bus on battery power only without Fuel Cell powerplant. The button shall be covered.



5.41.8 Fuel Cell Power Plant Controls

To be determined during pre-production process and subject to DISTRICT approval. A method for starting the fuel cell power plant shall be provided. CONTRACTOR shall include a dash indicator to inform the operator when the fuel cell is NOT operating.

The ability to operate the bus in battery-only mode shall be provided for service procedures.

5.41.9 Emergency Alarm

Shall be located below the side driver console

5.41.10 Ramp Controls

Located on the primary instrument panel, these controls shall function per section 6.76.1.

5.41.11 Public Address System Switch

Reference section 6.35.

5.41.12 General Interior Lighting Switch

A three-position switch, providing ON, PARTIAL, and OFF positions shall be provided on the instrument panel console.

5.41.13 Driver's Area Lamp Switch

The switch shall provide ON and OFF positions, located on the primary or secondary instrument panel.

5.41.14 Equipment Area Lamp Switch

Shall provide NORMAL and ON positions, located on the primary or secondary instrument panel.



5.41.15 Exterior Lamp Test Switch

Shall turn on all exterior lamps for 60 seconds when both turn signal foot switches are pressed simultaneously.

5.41.16 Indicator Test Switch

Supply a method located on the primary instrument panel to test operation of indicator lamps. Switch shall be rated to handle load requirements. If many wire terminations are required, an approved terminal strip board shall be used. The DISTRICT shall approve type of switch and installation.

5.41.17 Instrument Panel Dimmer Switch

Control shall be located on the primary or secondary instrument panel. This control shall operate all illumination lamps on both primary and secondary panels. Control shall have linear operation with smooth dimming. The fully bright setting shall be at the counter-clockwise end of travel. The control shall have a label clearly indicating the proper direction to accomplish dimming.

5.41.18 Operator Booster Fan Switch

Install a bus operator booster fan switch that shall provide an OFF, LOW and High position, located on the secondary instrumental panel.

5.41.19 Remote Mirror Control Switch

Install heavy duty, labeled mirror control switch on the secondary panel for the exterior mirrors

5.41.20 Kneeling Control Switch

Provide a control on the side console to kneel the right front corner of the bus. The control shall be labeled KNEEL and OFF.



5.41.21 Interlocks

Provide a labeled toggle switch in the front sign or other overhead compartment to override the rear door interlock, the ramp front door interlock. Activation of the interlock override(s) shall be indicated by a buzzer or electronic audio device. Location shall be approved by the DISTRICT.

5.42 INSTRUMENTS

The following gauges shall be included on the instrument panel. All gauges shall be illuminated and operate on 12 or 24 volts DC.

5.42.1 Speedometer

A dash mounted speedometer and odometer shall be provided. The needle and numbers shall be easily visible to the operator under all lighting conditions. It shall be a fully transistorized unit. The speedometer signal shall be from the propulsion system. The speedometer shall be approved by the DISTRICT.

5.42.2 Air Pressure Gauges

Supply mechanical gauges as follows: one needle per axle brake system plus one needle for auxiliary air. A maximum of 2 needles per gauge shall be provided.

5.42.3 Indicators

The following visual indicators shall be provided, augmented as shown below in Indicator Table with audible warnings. Indicators may be located on the instrument panel or other approved location. The audible alarm buzzer shall be noticeable to the driver, but not at a sound level or pitch that is objectionable. Audible alarms shall be electronic.

Indicator Table

Condition	Telltale	Lamp - Message	Color
Rear door open	None	EXIT DOOR	Red



Condition	Telltale	Lamp - Message	Color
Air brake application	None	STOP LAMP	Red
Headlight high beam	None	Symbol	Blue
Low air pressure	Buzzer	LOW AIR	Red
Turn indicator, R	None	Symbol	Green
Turn indicator, L	None	Symbol	Green
Emergency flashers	None	Symbol	Green
Parking brake on	None	PARK BRAKE	Red
24 Volt system no charge	None	DISCHARGE	Red
Passenger stop	Chime 1	PASS STOP	Yellow
Mobility aid user stop	Chime 2	Wheelchair Symbol	Yellow
Drive System fire alarm	Buzzer	Drive System fire alarm	Red
Rear door interlock off	Buzzer	WARNING INTERLOCK DEACTIVATED	Red
Ramp enabled	None	RAMP	Red
Excessive ramp angle	Buzzer	RAMP ANGLE	Red
Regeneration	None	Regeneration	Yellow
ABS working	None	ANTI-LOCK	Red
Rear door sensitive edge	Buzzer	DOOR ALARM	Red
Driver Seat Belt Light	Alarm	Seat Belt Symbol	Red
A/C Stop	Alarm	AC FAULT	Yellow
Drive System Fault, Advisory	Alarm	CHECK DRIVE SYSTEM	Yellow
Drive System, Serious	Alarm	SHUT DOWN DRIVE SYSTEM	Red

The instrument panel indicators shall be easily seen in bright and/or direct sunlight. If needed, an instrument panel sun shield shall be supplied. The DISTRICT shall approve design and placement of indicators.



5.42.4 Stowage of Personal Items

A coat hook and tieback loop shall be provided for the driver. The coat hook shall be attached with riv-nuts and machine screws. The DISTRICT shall approve the placement and material used.

A secure storage compartment for the bus operator's personal items shall be located in the driver's barrier. The DISTRICT shall approve the design, size and placement of the storage compartment.

5.42.5 Convenience Lamps

The following separate lamps shall be supplied, controlled by switches as described below and in section 6.41. Location of the lamps and their installation shall be approved by the DISTRICT.

5.42.6 Fare Equipment Area Lamp

An adjustable ceiling-mounted spotlight, in addition to any lamps in the fare equipment, shall be placed over the fare box to illuminate the fare equipment area when the front door is open and the master switch is not OFF. Special provisions shall be taken to assure no heat build-up if this lamp is operated for long periods of time. A separate override switch shall enable the driver to illuminate it at any time.

5.42.7 Driver's Area Lamp

Supply a lamp to provide general illumination of the driver's station, suitable for reading and recovery of items on the floor. This lamp shall be enabled in all master switch positions except OFF.

5.42.8 Sun Shades

Sunshades shall be provided for the driver on both street and curb sides of the windshield and driver's window. Shades shall operate with cantilever arms or rods to keep them close and parallel to the window. The cantilever arm shall allow easy deployment when pulled downward, remaining where placed until stowed by the driver.



The front shade shall be an “Auto Sun Shade” or approved equal and measure 63.5 inches in length and use a cantilever arm design. The side shade when pulled all the way down shall have a solid section on the bottom and a mesh section on the top. The requirements are to block direct sun, but still allow visibility through the windshields and to the left and right side mirrors.

This driver’s side shade shall cover the entire width and height of the driver side window. The edges of the side window shade shall be secured to the side rods to keep the shade from blowing out of the open side window. The shade design and materials shall be approved by the DISTRICT.

5.42.9 Ballard Diagnostic Display

Access to the Ballard Diagnostic from the driver’s screen shall be incorporated when it is made available.

5.43 DRIVER PLATFORM

The driver seat platform edges shall be neatly finished with no sharp edges or corners. The platform shall not extend into the aisle or front entrance area vestibule beyond the line of the wheel housing. The platform shall not interfere or impede wheelchairs or other mobility aids. Provide steps to reach the driver platform in a low floor bus. The driver’s platform steps shall have a non-skid coating and yellow edge. The DISTRICT shall approve the driver platform.

5.44 MIRRORS

5.44.1 Exterior Mirrors

Buses shall be equipped with two exterior rear vision mirrors, one at each side, firmly attached to the bus in a manner which precludes vibration at normal speeds and located so as to reflect to the driver an adequate view of the highway to the rear along both sides of the vehicle.

The DISTRICT shall approve exterior mirrors and their mountings; final approval for location shall be at the design review.



The left and right outside mirrors shall be "Hadley" remote controlled or approved equal. Both mirrors shall be split mirrors with 8 x 15". All mirrors shall be individually, electrically adjustable from the driver's station with separate controls. Mirrors shall be equipped with heating function and integrated turn signals coupled with the normal vehicle turn and emergency flasher systems.

The Curbside mirror shall be mounted to achieve as much clearance above the ground as possible, subject to the following: the mirror shall be placed so that it is seen through the portion of the windshield that is cleaned by the wipers, and so that it gives a view along the entire side of the bus whether the front door is open or closed.

Mirror arms shall not be visible in the mirrors. Left and right mirror mounts shall be spring-loaded mirror brackets by "Hadley" using solid look mirror arms and brackets, or approved equal. The left-right axis of the mirror head shall be perpendicular to the floor of the bus. The fore and aft axis shall be optimized for the range of drivers being accommodated. Mirrors shall be designed to fold flat against the bus during bus washing operations. Brackets shall be attached with cap screws and riv-nuts. Mirror heads and glass shall be easily replaceable. Mirror electrical connector shall be concealed beneath each side mirror. Harness routing from bus skin to connector to be approved. In the event of an accident, it is preferred that mirror assemblies shall break away without damaging the body attachment points. Exterior mirrors shall be approved by the DISTRICT.

5.44.2 Interior Mirrors

Interior mirrors and mounting hardware shall be finished in colors that match or are compatible with colors in the area in which they are mounted. Interior mirrors shall have a rubber edge. Mirrors shall be mounted in a manner that precludes vibration at idle and normal speeds, and they shall be mounted where they do not interfere with passengers or the opening of access panels. Mirrors shall be by "Acme Specialties Co.", "Rasco", "Lucerix" or approved equal. The DISTRICT shall approve interior mirrors and their mountings; final approval for location shall be at the pre-production meeting.

A fully adjustable convex mirror, of minimum size 8 by 15 inches (203 by 381 mm) shall be provided above and to the right of the bus operator for observation of passengers.



A 6-inch (152 mm) minimum diameter mirror shall be provided at the front windshield header, coordinated with a four 12-inch (305 mm) minimum diameter convex mirror located to the rear of the exit door. In combination they shall provide the driver with a complete view of the rear doorways.

A rectangular convex mirror, of minimum size 7 by 10 inches (178 by 254 mm), with adjustable brackets, shall be installed above the front door. This mirror shall provide the driver with a complete view of the front doorway despite the presence of people standing in the front platform area.

All interior mirror locations shall be approved by the DISTRICT.

A round convex mirror shall be located in the upper right hand corner of the windshield for the operator to view the exterior bike rack. This mirror shall not block the view of the exterior curbside mirror.

5.45 FARE COLLECTION EQUIPMENT

5.45.1 General

Each bus shall be equipped with provisions for mounting a GFI Transview 41" farebox or approved equal electronic fare box. The floor in the mounting area shall be of sufficient strength to prevent the floor mounted fare box from vibrating.

The box may be rotated slightly to accommodate mobility aid clearance, operator ingress and egress and vault changing. The fare box mounting shall be located as far forward as practicable and shall not obstruct traffic in the vestibule, especially wheelchairs or mobility aids.

5.45.2 Electrical

The electrical supply shall be rated at 20 amps, and protected by a circuit breaker.

5.45.3 Harness Specification

The fare box harness shall be a shielded cable, Belden PIN 8720, or approved equal, with 2 conductors of 12AWG wire, plus one 14AWG stranded, tinned copper drain wire.



5.45.4 Harness Termination

The shield shall terminate at the fare box end only, and shall be maintained to within 2 in. of the cable end. Protect the jacket/shield end with 1 in. of heat-shrink tubing. The cable shall terminate in a four-position plug connector, "AMP" with socket (female pin) (sockets on a strip) or (singles) or approved interchangeable equal. Pin out is as follows:

- Pin 1- Black Wire (24V Return)
- Pin 2- Clear Wire (+24Vdc)
- Pin 3- Bare Wire (Shield Drain)

The shield at the bus end shall be maintained to within 12 inches of the connection to the 20A circuit breaker, at which point the shield shall be cut back with the cable jacket. The strip-back shall be covered with a 1 in. minimum section of heat-shrink tubing to protect the shield from accidental contact with other conductive surfaces.

5.45.5 Ground Strap Installation

Provide and install a ground strap and stud for the GFI fare box equipment. The bolt and its attaching hardware shall be stainless steel; installation to be approved by the DISTRICT.

5.46 RADIO HANDSET AND CONTROL SYSTEM

5.46.1 General

The CONTRACTOR shall be responsible to design and install the mounting provisions for components used by the DISTRICT's CAD / AVL systems. The DISTRICT shall supply and install the radio and radio handset, driver display unit (DDU) CAD / AVL plus its active cradle. The contractor shall supply and ship loose all other components noted in this section unless otherwise indicated. The locations and mounting arrangements for the components shall be approved by the DISTRICT at the pre-production meeting.



A Radio communication system and location will be determined by the DISTRICT and the CONTRACTOR will pre-wire the vehicle. The DISTRICT will provide specifications, if wanted, for signal preemption system, AVL, and APCs. Conduit for these systems will be installed by the CONTRACTOR with locations to be identified during the pre-production meeting.

5.46.2 Handset

Each bus shall mount a radio handset convenient to the driver. A base plate shall be required to accomplish this mounting. It is preferred that the bracket be mounted on a horizontal plane.

5.46.3 Driver Display Unit

Each bus shall have a provision for mounting a Driver Display Unit (DDU) and its active cradle. The DDU and its bracket are supported on a mounting system and shall be approved by the DISTRICT. The mount must be attached to the bus structure by means of CONTRACTOR supplied bracket(s) and reinforcing plate(s). The bracket plate shall be $\frac{3}{4}$ " gauge.

5.46.4 Emergency Alarm

An Emergency Response Button mounted close to the left side of the driver below the driver side console shall be provided. The button type shall prevent false activation by the driver. The CONTRACTOR shall provide a switch, manufactured by Otto (p/n P3-90011) or approved equal. The location of the switch shall be approved by the DISTRICT at the pre-production meeting.

5.46.5 Cable Installation

The CONTRACTOR shall install all required wiring harnesses, hardware, and associated interfaces. The locations and mounting arrangements for these components shall be approved by the DISTRICT at the pre-production meeting.



5.47 REGISTRATION CERTIFICATE HOLDER

A certificate holder in the driver's area of a clear plastic cover to hold a State of Illinois vehicle registration certificate measuring 9 x 6 in shall be provided. The cover shall be attached with pop rivets. The design and location shall be approved by the DISTRICT.

5.48 DRIVETRAIN

5.48.1 Hydrogen Fuel Cell Drive System

The vehicle drive system shall be comprised of a Hydrogen Fuel Cell which shall be a Ballard HD-85 PEM (Proton Exchange Membrane) fuel cell. Electrical power generated by the fuel cell shall be managed and transmitted to the drive axle using Siemens Elfa 2 drive system components. A lithium ion based energy storage system shall augment the drive system by supplying high levels of power to assist in acceleration of the vehicle as well as storing energy during regeneration while braking. The fuel cell, energy storage system and electric drive system combination must have application testing and approval from their respective manufacturers.

5.48.2 Life Expectancy

The drive system shall be designed to operate for not less than 300,000 miles without major failure or significant deterioration. Components of the energy storage and its control system or both shall be designed to operate for not less than 150,000 miles without replacement or major service.

The drive system shall be equipped with an electronically controlled management system, compatible with 24-volt power distribution. Drive system control system shall be capable of transmitting and receiving electronic inputs and data from other drive train components, and transmit that data to other bus systems. The system shall be programmable to allow optimization of vehicle performance.

5.48.3 Drive System Controls

The drive system control system shall have onboard diagnostic capabilities able to monitor vital functions; store and time stamp out of parameter conditions in memory, and communicate faults and vital



conditions to service personnel. Diagnostic reader device connector ports, suitably protected against dirt and moisture, and power ports capable of supporting test equipment shall be provided in operator's area and near or inside power plant compartment (locations to be defined and agreed to by parties during pre-production review). The onboard diagnostic system shall inform the operator via visual or audible alarms or both when out of parameter conditions exist for vital drive system functions (definition of alarms and messages to be defined by the parties during pre-production review).

The drive system's control system shall protect the components and systems against progressive damage. The system shall monitor conditions critical for safe operation and automatically de-rate power or speed or both and initiate shutdown of systems as needed. The on-board diagnostic system shall trigger visual and audible alarms to the operator when any of the control units detect malfunctions.

5.48.5 Operator Warnings

If additional warning and monitoring systems/devices are engineered into the bus, all of them shall be operating under the same parameters/specifications.

6.48.6 Drive System Architecture

The CONTRACTOR shall supply a chart indicating all major drive system parameters such as:

Power of fuel cell

Power, energy storage and current performance of the energy storage system

Schedule of maintenance items with a listing of all of those parts that have maintenance intervals defined

5.48.7 Fuel cell powerplant Air Filtration

Air filter and ducting shall be provided. The duct inlet shall be located in a manner that shall not draw air from the fuel cell compartment, exhaust system, or from the rear wheel area.



The fuel cell cathode air inlet duct shall be located at a minimum height of five feet above the ground. Automatic gravity water drainage shall be provided at a location before the filter housing.

Air filtration shall system shall be compliant with the fuel cell power plant manufacturer's requirements.

All ducting and air intake hosing shall be provided and constructed with strict compliance with the FCPP manufacturer's requirements.

5.48.8 Drive system Mounting

The drive system shall be mounted and distributed in various locations throughout the vehicle. All drive system components shall be mounted according to the requirements of each sub system's manufacturer and shall be mechanically isolated to minimize transfer of vibration to the body structure. Mounts shall control movement of the drive system to eliminate strain in piping and wiring connections to all drive system components.

5.48.9 Service

All drive system components shall be arranged so that accessibility for all routine maintenance is assured. No special tools, other than dollies and hoists, shall be required to remove the drive system components.

5.49 ELECTRIC DRIVE SYSTEMS

5.49.1 Propulsion System Description

The bus shall be powered by an electric propulsion system.

Function and operation of the bus shall be transparent to the bus operator and passengers.

The CONTRACTOR shall ensure that the bus structure can successfully accept the installation of the propulsion system and maintain the required performance standards for a period of 12 years without structural failure.



The propulsion system shall comply with applicable local, state and/or federal emissions and useful life requirements.

The propulsion system shall comply with local, state and federal regulations and other applicable norms.

The propulsion system shall be rated for the GVWR of the bus plus customary allowances.

5.49.2 Propulsion System Service

The propulsion system shall be arranged so that accessibility for all routine maintenance is ensured.

No special tools, other than dollies and hoists, shall be required to remove the propulsion system or any subsystems.

The CONTRACTOR shall identify safe electrical work practices that are essential when servicing high-voltage components.

The CONTRACTOR shall provide a list of all specialty tools required and diagnostic equipment required for maintaining the propulsion system. DISTRICT shall purchase a laptop to service the vehicle separately.

5.49.3 Primary Propulsion Unit and Traction Motor(s)

The definition of motor in the context of this specification assumes that the device can provide or consume energy as well as provide or retard mechanical motion.

5.50 ENERGY STORAGE SYSTEM AND CONTROLLER

The Energy Storage System (ESS) shall be of a commercial design capable of operating in the DISTRICT's transit environment and be capable of meeting the stated performance requirements.

Design and performance of the ESS shall be provided to the DISTRICT.



The ESS shall be designed, sized, and selected to ensure that the vehicle performance specifications, compatibility with charging, and other related requirements are met or exceeded, bearing in mind cost/benefit and reliability variables as they relate to the characteristics of the different battery types.

The power source for the vehicle shall be derived from established battery technology that has a field-proven track record of safe, reliable, and durable operation in similar traction applications.

The primary charging of the energy storage system shall be accomplished by the FCPP as needed to meet the required duty cycle.

The Energy Storage System shall make use of regenerative braking.

The Energy Storage System shall comply with UN/DOT 38.3 requirements for lithium batteries or similar standards for non-lithium batteries.

The CONTRACTOR shall deliver the buses with an installed, fully charged, functioning ESS.

The ESS shall be fully formed, installed and tested in accordance with the battery manufacturer's recommended practices.

The ESS design, including containers, module bracing systems, thermal-management systems, battery-management systems, interconnections, fusing, and traction-controller and charger interfaces shall be completely described by the manufacturer

The manufacturer shall provide include a detailed analysis of expected battery performance in the stated performance requirements prior to the pre-production meeting.

The manufacturer shall also include a comprehensive statement of the warranty terms relating to the battery, including explanation of all disclaimers within the warranty.

A life-cycle cost analysis of the proposed battery system in the specified application shall be provided.



The battery system shall be capable of withstanding the high current and voltage profiles necessary to accomplish regular service events without reducing the life of the battery.

Thermal management shall be provided to ensure optimal life and performance of the ESS over the environmental operating range. The battery thermal management system shall be adequate to maintain the battery within the battery manufacturer's recommended temperature range during operation in the specified duty cycle and climatic conditions.

Manufacturer shall include complete descriptions of all life-cycle testing procedures used to validate the life of batteries used for this application at the proposed charging rates, charge durations, and expected ambient temperatures and operating profiles. The manufacturer shall include documented results of life-cycle testing. The manufacturer shall include certification of battery life-cycle testing by an independent testing agency.

Note that special attention to the effects that increased charge rates due to the inclusion of a FCPP into the drive system may have on cooling and other requirements may be necessary.

5.50.1 Energy Storage System Safety

The Energy Storage System shall be placed on the bus to optimize both interior space and vehicle weight distribution. The batteries shall be load distributed within the bus envelope to equalize weight between the wheels on the same axles and to achieve appropriate weight distribution between axles so as not to adversely affect handling of the bus.

The bus body shall be designed and constructed to ensure that passengers and the operator shall not be exposed to electrical current either in normal operation or in the event of a vehicle accident. Analysis and test data shall be provided to the DISTRICT. The energy storage system shall be designed and constructed to prevent gassing or fumes from the energy storage system from entering the interior of the bus, i.e., a vent path to the exterior, preferably at or above the roof, rearward.



Written confirmation from the battery manufacturer attesting to the safety of the proposed battery system in the specified application and charging profile shall be submitted by the manufacturer prior to the pre-production meeting, and shall include full disclosure and discussion of any and all issues or prior incidents relating to safety.

The manufacturer shall include complete descriptions of all safety standards followed in the design and manufacture of the battery system, safety testing procedures used to validate the safety of battery operation in this application, and documented results of safety testing to confirm that standards have been met. The manufacturer shall include certification of battery safety testing by New Flyer's Battery Supplier.

5.50.2 Battery Containers

Battery containers shall be constructed to withstand the rigors of transit service for the design life of the buses. Construction shall be of materials compatible with the battery electrolyte. Pack design must ensure the protection of battery cabling and vent system components during pack removal and installation. The batteries, when installed, shall be secured to prevent any movement while the vehicle is in operation.

Battery containers shall be supplied by the battery manufacturer. Battery containers supplied by the CONTRACTOR may be acceptable, provided that such containers are certified by the battery manufacturer and with the approval of DISTRICT; such certification shall be submitted to DISTRICT concurrent with or prior to delivery of the first bus.

5.50.3 Battery Management System

The battery management system must control state of charge, voltage, current and temperatures on a cell-to-cell level and provide diagnostic output at the lowest field-serviceable element. The diagnostic output must be made available to the maintainer.

As a minimum, the battery management system (BMS) must perform the following functions:



The BMS must be capable of monitoring the voltage level of cells within each battery pack. The BMS must be able to read individual battery or block voltages at a frequency of one data point per block every 1.5 s. The system must also monitor battery pack temperatures using no fewer than two thermocouples placed in and around each battery pack sampled at the same four-samples-per-minute frequency.

The BMS must be capable of communicating when a battery fault (as defined by the battery manufacturer) has occurred and must be able to identify and communicate the faulty battery in order to perform maintenance.

The BMS must be capable of engaging prudent safety interlocks when an unsafe battery condition has been detected.

The BMS must be able to monitor the battery state-of charge and update a gauge viewed by the operator at least once every 1.5 s.

The BMS must be able to communicate all data to the bus level information system for storage and communication.

5.50.4 Battery Thermal Management

Thermal management shall be provided to ensure optimal life and performance of the ESS over the environmental operating range. Battery thermal management must be powered from an onboard source at all times. Thermal management must be continuously monitored at all times with appropriate safety interlocks installed to react to adverse conditions, as stated in SAE J1772.

Battery temperatures must never exceed the manufacturer's recommended range during operation in the design operating profile and specified ambient conditions. Battery cooling must be sufficient to prevent the temperature from exceeding the battery manufacturer's recommended maximum temperature.



5.51 COOLING SYSTEMS

An all-electric cooling system shall be of sufficient size to maintain all fuel cell, ESS and drive system fluids at safe, continuous operating temperatures during the most severe operations possible and in accordance with fuel cell, ESS and drive system manufacturers' cooling system requirements. The cooling system fan controls shall sense the temperatures of the operating fluids and if any are above safe operating conditions the cooling fan shall be engaged. The fan control system shall be designed with a fail-safe mode of "fan on."

5.51.1 Filling System

It shall be possible to fill or top off the different coolant systems (fuel cell, drive system, battery pack) from roof level by installing quick disconnects fittings at the lowest points in the coolant system. Filling the cooling systems shall be possible without trapping air

5.51.2 Deaeration System

A system shall be provided to deaerate the cooling systems without technician intervention.

5.51.3 Sizing

An all-electric cooling system shall be of sufficient size to maintain manufacturer's recommended propulsion system and electric system component temperatures under all operating conditions for the design life of the vehicle's operating life at temperatures between 10 and 120 degrees F in all operating circumstances with all accessories on, at the rated gross vehicle weight during prolonged maximum acceleration and deceleration.

5.51.4 Cooling Systems Introduction

Cooling systems on advanced technology vehicles can be more complex and exacting than those of ICE buses. Because of this it is very important that each set of subcomponents receive the cooling that they need.



5.51.5 Fuel cell

Hydrogen fuel cell cooling must be adequate for the equipment and environment of the vehicle. Cooling systems shall be certified for use by the fuelcell powerplant manufacturer as being adequate for operation in the climatic and geographical environment where the vehicle shall operate.

Analysis shall be performed by the CONTRACTOR that verifies the adequacy of the FFCPP cooling system in the aforementioned environmental conditions.

A document from the FCPP manufacturer approving the FCPP cooling system shall be provided before first article vehicle delivery.

5.51.6 ESS Batteries

Energy storage system batteries must be equipped with appropriate cooling systems to prevent potentially catastrophic thermal events. In this regard, all ESS systems shall be equipped with appropriate cooling systems with the following salient characteristics:

5.51.7 Manufacturer's recommendations.

All battery-based energy storage systems must have cooling systems that meet the recommendations of all of the manufacturers of all of the components that make up the ESS used.

Documentation shall be provided by the CONTRACTOR demonstrating that the ESS component manufacturers approve of the use of the systems they have delivered that make up the ESS in the manner the CONTRACTOR intends to use said components.

Analysis of anticipated load and environmental conditions shall be performed by the CONTRACTOR to ensure that the ESS shall be capable of operating in the environment, both climatic and geographical where the vehicles are intended to be deployed. Analysis of these analyses shall be reviewed and approved by the ESS and ESS subcomponent manufacturers as part of the overall approval process for the ESS.



5.51.8 Drive Components

Drive system components used in heavy duty electric vehicle systems customarily are cooled actively with a liquid to air cooling system. These components normally are comprised of drive motors and motor drive inverters.

Motor drive inverters shall be liquid cooled and separated from the passenger compartment by bulkheads equivalent to those found in ICE vehicles.

The various drive system components shall be cooled by water/glycol-based, cooling systems that do not allow coolant loss during the operations. All system's cooling components shall be easily accessible for replacement. All below described shut off valves intended for the cooling system shall be ¼ turn valves. Shutoff valves shall allow filter replacement without coolant loss. Valves shall permit complete shutoff of lines for the heating and defroster units, and water booster pumps. The passenger heater water boost pump shall be a magnetically coupled, brushless design. All low points in the cooling system shall be equipped with drain valves. De-aeration lines plumbed back to each system's reservoir shall be fitted at high points in the cooling system.

Sight glasses to determine satisfactory coolant level shall be provided and shall be visible from roof level.

5.51.9 Heat Exchangers

All radiator type heat exchangers shall be of durable corrosion-resistant construction with welded tanks.

New Flyer to supply a roof top ESS chiller condenser.

5.52 ELECTRIC PROPULSION

The vehicle shall be propelled by a Siemens Elfa 2 electric propulsion system (EPS). This system is comprised of a Permanent Magnet (PEM) electrical machine (Drive Motor) which shall propel the vehicle through the third axle while under power and also slow the bus during braking by generating power which shall be routed to the ESS for later re-use.



The system shall also include a ZF AVE 130 powered drive axle which shall propel the vehicle through the second axle while under power and also slow the bus during braking by generating power which shall be routed to the ESS for later re-use.

The electronic controls of the EPS shall be compatible with multiplex wiring systems, capable of receiving inputs from the throttle, shift selector, FCPP and ESS. Communication between the EPS and other electronically controlled vehicle systems shall be made using the SAE J1939 Recommended Practice communication link. Electronic controls shall be compatible with 24 volt systems, provide consistent drive quality, and compensate for changing conditions, such as variations in vehicle weight and system power.

5.52.1 EPS Control

The EPS shall have on-board diagnostic capabilities, able to monitor functions, store out-of-parameter conditions in memory, and communicate faults and vital conditions to service personnel. A diagnostic reader device connector port, suitably protected against dirt and moisture, shall be located with the aforementioned drive system diagnostic system ports. The on-board diagnostic system shall trigger a visual alarm to the operator when the control unit detects a malfunction. The EPS shall contain built-in protection software to guard against severe damage.

5.52.2 Drive System Actuation

A brake pedal application of 9 to 15 psi by the operator shall be required to engage forward or reverse range from the neutral position.

5.52.3 Energy Recuperation - Regeneration

The powertrain shall be equipped with a regenerative braking system in lieu of a conventional transit vehicle retarder system. The application of brake regeneration shall cause a smooth blending of both brake regeneration and service brake functions without exceeding jerk requirements. Braking application and performance shall remain consistent regardless of ESS State of Charge (SOC) or other variances related to regenerative braking. The manufacturer shall also be responsible for a system design, submitted



at time of proposal, that takes into account any necessary regenerative braking cutout when the storage system becomes fully charged and the bus is still in a downhill braking situation.

The system shall be designed whereby increasing the pressure on the brake pedal increases the amount of regenerative capability up until a preset point is reached within the brake pedal travel whereby the mechanical brake is engaged. Regenerative braking shall continue to operate during mechanical braking. The regenerative braking shall be adjustable within the limits of the powertrain and activated as the driver reduces pressure on the accelerator pedal or when the brake pedal is depressed.

Brake lights shall illuminate when brake regeneration is activated.

5.52.4 Electric Drive System Jerk

Jerk, the rate of change of acceleration measured at the centerline, floor level of the bus, should be minimized throughout the acceleration, deceleration and recuperation system application and should be no greater than 0.3g/sec. for duration of a quarter-second or more.

5.53 FINAL DRIVE

A single heavy-duty axle at the rear and an electrically powered ZF AVE 130 drive axle shall drive the bus with a load rating sufficient for the bus loaded to GVWR. Transfer of gear noise to the bus interior shall be minimized. The drive axle shall be designed to operate for not less than 300,000 miles on the design operating profile without replacement or major repairs. The final drive axles shall be lubricated with long life synthetic oil. The lubricant drain plug shall be magnetic type, external hex head. If planetary gear designs are employed, the oil level in the planetary gears shall be easily checked through the plug or sight gauge. The drive shaft shall be guarded to prevent it striking the floor of the coach or the ground in the event of a tube or universal joint failure.

All drive shafts shall be certified as manufactured in the US using only US components supplied by reputable and recognized vendors. Chinese sourced components are strictly prohibited.



5.54 ACCESSORIES

All normally engine driven accessories in the case of fully electrically driven vehicles must be electrically driven. All such accessories (power steering pump, air compressor, etc.) shall be mounted for quick removal and repair. Accessory systems shall operate without unscheduled adjustment for not less than 50,000 miles on the design operating profile.

5.54.1 Hydraulic Systems

The hydraulic system shall operate within the allowable temperature range as specified by the lubricant manufacturer. The hydraulic system shall demonstrate a mean time between repairs in excess of 50,000 miles and it shall be filled with hydraulic fluid approved by all involved component manufacturers.

Hydraulic system service tasks shall be minimized and scheduled no more frequently than those of other major coach systems. All elements of the hydraulic system shall be easily accessible for service or unit replacement. Critical points in the hydraulic system shall be fitted with service ports so that portable diagnostic equipment may be connected or sensors for an off-board diagnostic system permanently attached to monitor system operation. All sight glasses shall be located in visible locations which shall be defined during the pre-production meeting.

All pressurized circuits, to the extent practical, shall be made of stainless steel pipes and tubing, properly secured using Swagelok, or approved equal, cushion clamps (split-blocks). All "transition" connections between rigid and non-rigid members of the bus, e.g. bus chassis to hydraulic pump, shall be made using high pressure hydraulic hoses routed and shielded with clamped snap-tite, hose guard, HGU-Polyurethane or approved equal, heavy duty, with 500 F degrees minimum operating range, permanently clamped and secured in one end so that failure of a line shall not allow the contents to spray or drain onto any component operable above the auto-ignition temperature of the fluid. This requirement, Snap-Tite sleeves, also applies to the low pressure and high flow circuits (return lines) in the hydraulic system.

All pressurized hydraulic lines/hoses, throughout the bus shall be equipped with permanently crimped, non-reusable Parker Seal-Lok, O-Ring Face Seal Fittings, or approved equal. All hydraulic hoses, pipes,



flex-lines and others shall be secured by means of using Swagelok, or approved equal, cushion clamps, tube support or bolted plastic clamp supports, subjected to the DISTRICT's approval. All fitting attachments to castings, housings and hydraulic components shall be SAE straight thread with O-ring seal rather than tapered pipe thread. These requirements are also applicable to the steering system/circuit.

5.54.2 Fluid Lines

All lines and piping shall be supported to prevent chafing damage, fatigue failures, and tension strain. Lines passing through a panel, frame, or bulkhead shall be protected by grommets (or similar device) that fit snugly to both the line and the perimeter of the hole that the line passes through to prevent chafing or wear or both. Lines shall be as short as practicable and shall be routed and shielded with clamped sleeves so that failure of a line shall not allow the contents to spray or drain onto any component operable above the auto-ignition temperature of the fluid. All fluid lines/pipes/hoses shall be secured, in a maximum of 15 inch centers, using Swagelok, or approved equal, cushioned clamp tube support or bolted plastic clamp supports subject to DISTRICT approval.

5.54.3 Coolant Piping, Hoses and Clamps

Coolant piping shall be stainless steel or brass tubing and hose quantity/length shall be minimized. Necessary hoses shall be a premium, silicone rubber type that is impervious to all bus fluids. All hoses shall be secured with premium, stainless steel clamps that provide a complete 360° seal. The clamps shall maintain a constant tension at all times, expanding and contracting with the hose in response to temperature changes and aging of the hose material.

5.54.4 Oil and Hydraulic Lines and Pipes

Oil and hydraulic lines and pipes shall be compatible with the substances they carry. The lines and pipes shall be designed and intended for use in the environment, which they are installed, i.e., high temperatures in drive system compartment, road salts, oils, etc. Lines and pipes shall be capable of withstanding maximum system pressures. To the extent practical, CONTRACTOR shall use stainless steel piping on all pressurized circuits. All hydraulic hoses, high and low pressure, high flow, etc. shall be



covered with Snap-Tite, or approved equal. All fluid lines shall be secured, in a maximum of 15 inch centers, using Swagelok, or approved equal, cushioned clamp tube support or bolted plastic clamp support

5.55 HYDROGEN FUEL SYSTEM

The fuel system within this section shall include the design, hardware and installation, as needed to transfer, store and supply the fuel requirement for the FCPP and extend to the necessary vehicle points of support, bus systems interface and fueling station. The physical extremes of the system shall be between the fuel receptacle, fuel tanks, vent receptacle, roof vent outlet and inlet fitting to the FCPP's low pressure regulator.

The following conceptual design represents an overall design goal, rather than a mandatory blueprint. If the CONTRACTOR's proposal differs, in part or all, from these set of specifications, the CONTRACTOR is responsible to provide, in writing, calculations, diagrams, drawing, fuel flow patterns, piping, layouts and any others necessary to highlight the advantage(s) and or support of its proposal(s).

A hydrogen fuel system consisting of fuel cylinders, filler provisions, fuel lines, pressure reduction and auxiliary equipment necessary to safely operate under all operating conditions to meet the performance requirements of this specifications shall be provided. The system shall be capable of refueling at pressures of up to 380 bar and at a rate of 3.6 kg/minute to 7.2 kg/minute.

5.55.1 Hydrogen Fuel System Overall Requirements

With full understanding that Hydrogen storage regulations for heavy duty vehicles continue to be in flux, the fuel system shall be expected to meet at minimum the following overall requirements:

- SAE J2578
- SAE J2579

As well as the CNG regulations listed herein. The goal is to acquire vehicles that shall be compliant with standards in development as well as those that are in effect at the time of this writing.



5.55.2 Fuel Capacity

Hydrogen capacity shall be sufficient to meet the required operating range of 225 miles in winter weather conditions (-10 F) while running heat at an average speed of 9.7 mph without mid-day refueling and without exceeding the maximum allowable bus configuration/specification and/or curb weight. The bus shall be able to complete the three duty cycles shown in figures 2, 3, and 4 below. CONTRACTOR, with its proposal, shall provide fuel consumption calculations, drive system characteristics, speed, bus weight, fuel pressure, fuel load, number of passengers, etc.) to support its claim of meeting the 225-miles required range.

FIGURE 2
Sample Speed Profile 1

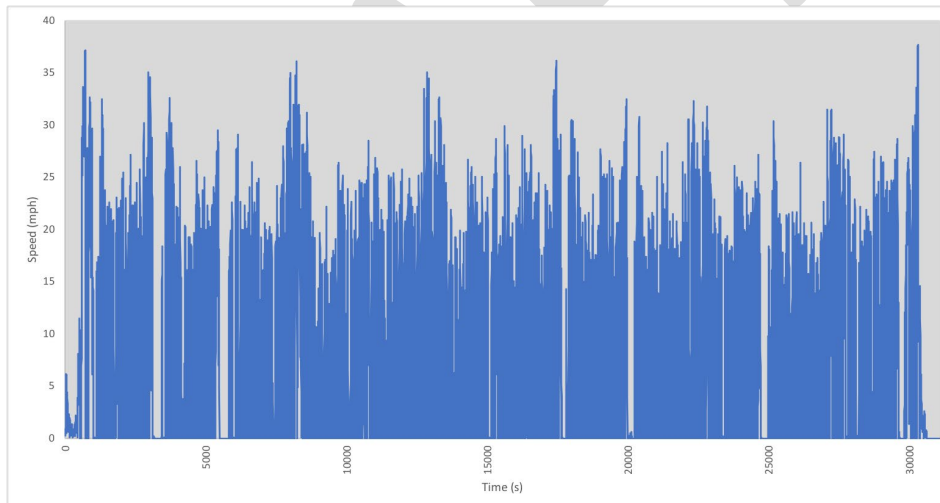




FIGURE 3
Sample Speed Profile 2

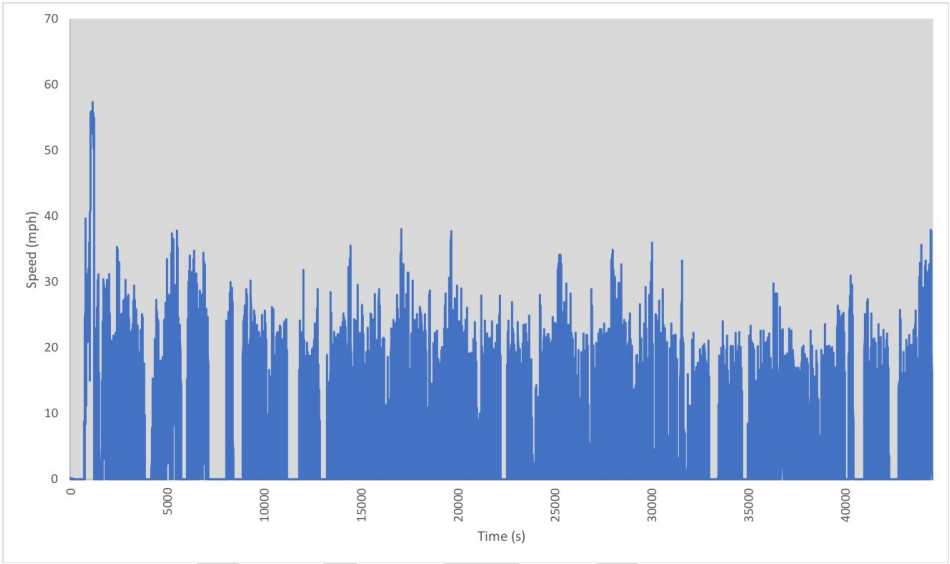
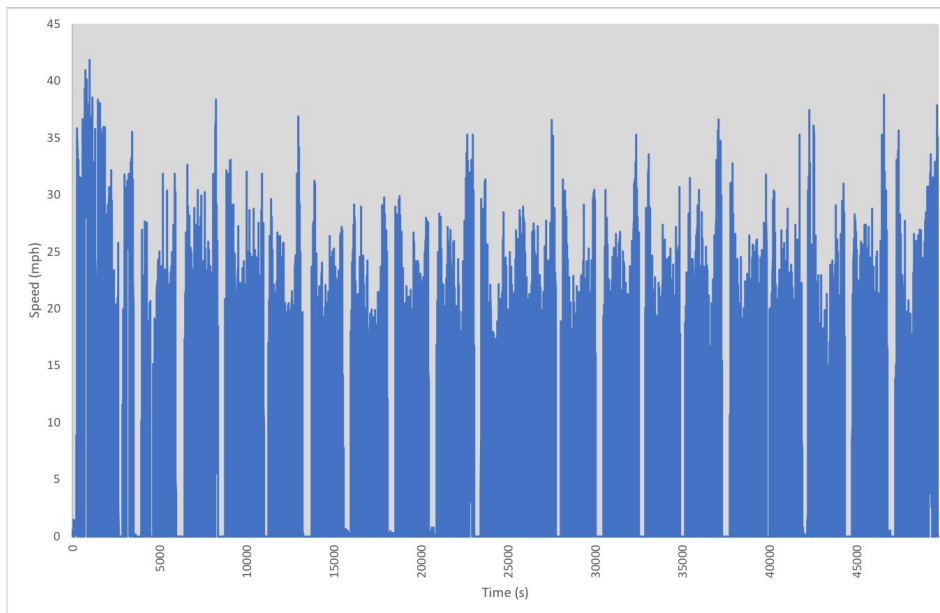


FIGURE 4
Sample Speed Profile 3



5.55.3 Installation of Hydrogen Storage Cylinders

Hydrogen fuel containers/cylinders must be designed, constructed, manufactured, and tested in accordance with at least one of the following:

Fuel cylinders shall be installed in accordance with ISO 21266-1_2018: Road Vehicles Compressed Gaseous Hydrogen (CGH2) and Hydrogen/Natural Gas Blends Fuel Systems, Part 1: Safety Requirements as applicable.

The placement of tanks shall be limited to the roof of the bus.

Fuel cylinders, attached valves, pressure relief devices, thermal pressure relief systems and mounting brackets should be installed and protected so that their operation is not affected by bus washers and



environmental agents such as rain, snow, ice or mud. All components shall be protected from significant damage caused by road debris or collision.

New Flyer to provide our standard tank mounting and guards will provide a 3D CAD images for review. The enclosure shall incorporate a hinged clamshell type access. The access panels shall be designed to offer protection from weather and sacrificial as a means of providing an escape path to atmosphere upon rapid enclosure pressure rise.

5.56 ACCESS PANELS

Access panels shall require a force less than 35 lbs. to open and to close throughout its entire opening and closing cycles. The access panels shall be locked in the closed position with positive-locked devices, subjected to DISTRICT's approval and, when in the open position, the access panels shall be positively secured by props locked at preset locations. Provisions shall be provided to securely stow away the props when not in use. The access panels shall also be interlocked via proximity sensors, such that, if other than in their fully closed/locked position, an interlock shall prevent drive system start up engagement, prevent selection of forward or reverse of drive system and shall apply the brake interlock at speeds less than 3 MPH. The latching systems shall utilize quick release captive hardware that can be demonstrated to last the life of the bus. Additional shielding shall be provided surrounding end fittings and valves as needed. Shields shall be attached to the bus structure hinged in a manner that permits one mechanic to unlatch and swing the shield open for routine inspections. As practical, electrical components shall not be located within the roof enclosure and if unavoidable, shall be intrinsically safe.

5.56.1 Override system

The access panel safety interlock system shall include an override switch to allow operation of the bus in the event that a failure occurs in the access panel safety system. The switch shall be located in a place that is not accessible to bus operators during normal service (location to be approved by DISTRICT). This override shall be used only in the event of a failure of the access panel interlock system and shall not be used when passengers are on the vehicle but shall only be used to return the vehicle to a maintenance facility for repair.



5.56.2 Fuel Pressure Gauges

An oil or glycerin filled gauge and a digital readout LCD or LED pressure gauge shall be located in the high-pressure manifold that shall indicate fuel system pressure. The fuel gauge shall have minimum 100-PSI increments, 0 to 10,000 PSI range, and shall be visible during fueling operations. Location to be approved by DISTRICT.

A digital readout shall be provided close by the filling port that is readable under low light conditions by fueling personnel.

A pressure gauge shall be included that indicates the pressure after the low pressure regulator so that the pressure delivered to the FCPP is known. The location shall be proposed by the manufacturer for approval of the DISTRICT.

5.56.3 Fuel Lines

All tubing shall be a minimum of seamless Type 304 stainless steel (ASTM A269 or equivalent). Fuel lines and fittings shall not be fabricated from cast iron, galvanized pipe, aluminum, plastic, or any alloy containing copper. Pipe fittings and hoses shall be clear and free from cuttings, burrs or scale. Pipe thread joining material may not be employed. Fuel lines shall be identifiable as fuel lines only.

High pressure Hydrogen lines shall be pressure tested to a minimum of 125% of system working pressure prior to fueling. Hydrogen, helium or nitrogen shall be used to pressure test the lines/assembly. The bus manufacturer shall have a documented procedure of testing the high pressure line assembly.

Fuel lines shall be securely mounted braced and supported using "split-block" type of clamps; all mounting clamps shall be mounted to a rigid structure to minimize vibration and shall be protected against damage, corrosion or breakage due to strain, rubbing, or wear. "Floating clamps" (not mounted to a rigid structure and use of "P" clamps shall not be permitted). Fuel lines shall not be used to secure other components (e.g. wires, air lines, etc.).



Manifolds connecting fuel containers shall be designed and fabricated to minimize vibration and shall be installed in protected location(s) to prevent line or manifold damage from unsecured objects or road debris.

Each assembly/bus/unit-test shall be recorded individually and copies of results, clearly signed, stamped and approved by the CONTRACTOR's engineers, shall be provided with each set of bus's documentation at the time of delivery.

5.56.4 Codes, Standards and Regulations

The CONTRACTOR shall be responsible for ensuring that the entire fuel system, to include, fuel containers, brackets, mounting systems, delivery lines, operating pressures, fuel pressure regulators, fuel cell, piping, connections, gauges, breakaway connections, valves, pressure relief devices, path for the fuel flow, fuel cell requirements and any other related to the hydrogen fuel system meets all applicable Federal, State and Local codes, and represent the highest state of industry practice. In the absence of applicable regulation or specification, decisions shall be based upon safety, reliability and ability to be maintained. Recommended practices and regulations from the following agencies and professional organizations:

- American Society of Mechanical Engineers (ASME)
- American National Standards Institute (ANSI)
- IL Vehicle Code
- Compressed Gas Association (CGA)
- Department of Transportation (DOT)
- Federal Motor Carrier Safety Administration (FMCSA)
- International Organization for Standardization (ISO)
- National Fire Prevention Association (NFPA), and
- Society of Automotive Engineers (SAE) Recommended Practices

Regulations include, but not limited to, are:



Organization/Code	Description
DOT 49 CFR 393.65, FMCSR	All Fuel Systems
ISO 21266-1_2018	Road Vehicles Compressed Gaseous Hydrogen (CGH2) and Hydrogen/Natural Gas Blends Fuel Systems, Part 1: Safety Requirements

5.57 HYDROGEN SYSTEM STANDARDS

NFPA does not currently have a standard that pertains to vehicular hydrogen fuel systems. Standards such as NFPA-52 (CNG only) and NFPA-2 (not related to vehicle fuel systems) are referenced only. In previous editions, hydrogen was part of NFPA-52, but was moved to NFPA-2 and has now been removed entirely. In the absence of an over arching standard, the standards were used in the development of the XHE40 Hydrogen Fuel Cell Bus.

5.57.1 Fuel Storage System

Code	Description
SAE J2579 Vehicles	Standard for Fuel Systems in Fuel Cell and Other Hydrogen
SAE J2578	Recommended Practice for General Fuel Cell Vehicle Safety
EC79/2009 vehicles	Council on type-approval of hydrogen-powered motor
NFPA-52	Vehicular Natural Gas Fuel Systems Code
CSA B109	Natural gas for vehicles installation code – Part 1 Compressed

5.57.2 Storage Tanks

Code	Description
ANSI/CSA HGV2	Compressed hydrogen gas vehicle fuel containers
EC79/EU 406	Council on type-approval of hydrogen-powered motor vehicles
SAE J2579	Standard for Fuel Systems in Fuel Cell and Other Hydrogen Vehicles



5.57.3 Tank Valves

Code	Description
ANSI/CSA HGV3.1	Fuel system components for compressed hydrogen gas powered vehicles
EC79/EU 406	Council on type-approval of hydrogen-powered motor vehicles

5.57.4 Thermal Pressure Relief Devices

Code	Description
ANSI/CSA HPRD 1	Thermally activated pressure relief devices for compressed hydrogen vehicle fuel containers
EC79/EU 406	Council on type-approval of hydrogen-powered motor vehicles
CGA G-5.5	Hydrogen Vent Systems

5.57.5 Fuel Handling System (Fuel Lines)

Code	Description
SAE J2579	Standard for Fuel Systems in Fuel Cell and Other Hydrogen Vehicles
EC79/EU 406	Council on type-approval of hydrogen-powered motor vehicles
NFPA-52	Vehicular Natural Gas Fuel Systems Code
CSA B109	Natural gas for vehicles installation code – Part 1 Compressed natural gas
NFPA-2	Hydrogen Technologies Code
ASME B31.12	Hydrogen Piping and Pipelines

5.57.6 Fill Receptacle

Code	Description
SAE J2601-2	Fueling Protocol for Gaseous Hydrogen Powered Heavy Duty Vehicles



5.57.7 Air intake, exhaust & cooling systems

Code	Description
SAE J2578	Recommended Practice for General Fuel Cell Vehicle Safety

5.57.8 Reliability

The fuel system shall be reliable, leak free and of the quality typically expected of a pressurized fuel system or refrigeration system. A “leak” shall be defined as observance of gas, liquid loss or bubbles at applied soap solution (Snoop) or both. Leak detection may be further supplemented by electronic or infra-red hydrogen detection or acoustic measurements. The design, selection of hardware and workmanship shall be in support of this objective.

Inspect ability, Maintainability and Serviceability

The fuel system shall be designed in a manner to facilitate ease and effectiveness of inspection, repair and serviceability. Examples of this objective to include, but not limited to, are isolation valves, system test ports and means of testing components inherently providing regulation via springs.

5.58 HYDROGEN FUEL SYSTEM PERFORMANCE REQUIREMENTS

The following shall represent minimum levels of system performance:

5.58.1 Vehicle Performance/Operating range

Useable hydrogen capacity shall provide a range of 250 miles in normal revenue service with all accessories in operation in all weather conditions for the geographic area of the DISTRICT.

DISTRICT will conduct a range test upon delivery of the first bus. The system shall be capable of meeting fuel flow/pressure/temperature requirements at maximum load under any condition.



5.58.2 System Functionality

The bus shall be capable of being reliably fueled to within 95 to 100 percent of the tank's useable capacity, regardless of beginning fuel tank(s) pressure. The fuel system shall incorporate provisions for individual tank de-fueling. De-fueling plan to be determined during pre-production process.

5.59 DUAL FUELING RECEPTACLES

TN1 and TN5 fueling receptacles shall be provided in a configuration whereby either receptacle can be used to refill the hydrogen storage system.

5.59.1 Fueling Nozzle Interface – TN1

The fueling port receptacle WEH TN1 H2 type, shall be an ANSI/AGA/ NFPA 2 certified receptacle. The bus shall be capable of being fueled by a TK16 High Flow (HF) nozzle that interfaces with the TN1 receptacle either at high or low flow rates. DISTRICT, at the pre-production meeting, shall provide detailed information about fueling nozzle. The TN1 fueling port receptacle shall be such that connection, by fueling personnel, shall be performed without physical strain or interference.

5.59.2 IrDA

TN1 hydrogen fueling receptacles shall be equipped with Infra-red (IrDA) communication systems to communicate temperature and pressure of fueling processes to hydrogen dispensers. As well as other data as available e.g. vehicle number, Life to date miles, fault codes, including alarms from Hydrogen gas – fire detection systems, etc. final configuration to be determined during design review with DISTRICT having final rights of approval.

5.59.3 Fueling Nozzle Interface - TN5

The TN5 fueling port receptacle shall be compliant with ANSI/AGA/ NFPA 2 regulations. The bus shall be capable of being fueled by a nozzle fully compatible with the TN5 receptacle. DISTRICT, at the pre-production meeting, shall provide detailed information about fueling nozzle. The fueling port receptacle



shall be such that connection, by fueling personnel, shall be performed without physical strain or interference.

5.59.4 Dust Caps

A “dust cap” shall be permanently “tethered” to each of the fueling port receptacles. The fueling port receptacles shall be equipped with an interlock sensor that shall disable the drive system’s starting system when the access door is open, to prevent drive-aways. The interlock shall be of the type such if the sensor fails, the bus shall not start.

5.59.5 Fueling Receptacle Location

Location of the fueling receptacle shall be determined at design review or pre-production meeting.

The bus shall be equipped with two static ground straps mounted on the undercarriage of the bus and a static ground plug installed near the fueling receptacle for grounding during refueling operations. The fuel fill receptacle and vent receptacle attachment shall be robust and capable of routine fueling connects/disconnects without deflection or metal fatigue, and capable of withstanding mechanical loads induced by a fueling drive away incident without attachment failure.

5.60 FUELING STATION INTERFACE

5.60.1 Bus Mounted Data Recorders

Each bus shall be supplied with a Fuel Master data logger.

5.60.2 Data Logger

Each data logger shall be mounted on the bus and shall be connected directly to a dedicated J1939 connector near the operator’s area in the destination sign or radio compartments. The transmitter (transceiver) portion shall be installed according to Fuel Master’s directions. Transmitter shall not be installed on a metal surface of any kind and shall be located in an area above the operator’s seated position and line of sight.



Bus-mounted data recorders shall be programmable with vehicle number and codes for defining the set of data to be recorded and reported. Five sets of programming software and hardware shall be provided to allow DISTRICT to program or re-program the bus-mounted data recorder units at any time. Bus-mounted data recorders provided shall include a minimum one-year warranty on all parts, including batteries, if applicable. Bus-mounted data recorders shall be programmed to respond to a beacon signal sent from a receiver unit, and upon receipt of such beacon signal shall transmit via radio frequency the bus number, and other defined data to the receiver unit. Bus-mounted data recorders shall at a minimum provide the following capability:

5.60.3 Data always collected and reported:

- Vehicle number
- Vehicle total mileage
- Vehicle total fuel cell hours
- Fault indicators captured and reported: Fault codes reported shall include subsystem ID and failure mode identifier as defined in SAE documentation. Record the last 10 unique active fault codes reported with the date and time of the beginning and ending of the last occurrence observed.
- Last value observed: the bus-mounted data recorder shall report the last value observed for 10 items. The user shall be able to define these 10 items using PGN and SPN codes as defined in SAE documentation.
- Maximum and minimum value observed in 24 hours: the bus-mounted data recorder shall report the maximum and minimum values observed during the previous 24-hour time period for 10 items



defined using PGN and SPN codes. The date and time of the minimum and maximum occurrences shall also be reported. The DISTRICT shall be able to define the codes for the items to be reported.

5.60.4 Fuel Master Installation Requirements

CONTRACTOR shall install Fuel Master data logger according to Fuel Master specifications.

5.61 HYDROGEN STORAGE SYSTEM

5.61.1 Fuel Containers – Cylinders

Tanks shall be Type IV and rated at 5,000 psig. The tank system shall provide a minimum useable quantity of Hydrogen gas as required to meet a 250 mile vehicle range under all weather conditions, and this useable quantity shall assume on-board pressure range between a fill of 5,000 psig (temperature corrected to 70 degrees F) down to 500 psig. Each tank shall be isolated via a “NC” valve and each tank shall be capable of individual isolation to allow repairs, servicing and replacement if necessary without having to perform a complete defueling of the bus. No pressure relief devices/valves (PRD’s) shall be shared among the fuel tanks. Using a laptop, the fuel cell system must be able to read the total pressure in each tank individually, for the purpose of repairs and necessary troubleshooting of the system.

The tank manufacturer shall permanently mark on every fuel tank the capacity, date of manufacture, manufacturer name, and certification of compliance to FMCSR, ASME or DOT. These markings shall be clearly visible when the fuel tank’s storage door is opened. DO NOT STEP ON THE HYDROGEN TANK shall be clearly, visible and permanently marked on all fuel tanks.

Additionally, every tank shall be permanently marked at every location where a securing strap or a fixed reference point is located to indicate if each fuel tank is experiencing physical displacement or rotating movement during the operation of the bus.



5.61.2 Design and construction

Hydrogen fuel containers/cylinders shall be designed, constructed, manufactured, tested and mounted in accordance with all applicable rules, practices and regulations at the time of manufacturing to include, among others, all applicable state and/or local standards specifically intended for hydrogen fuel containers.

5.61.3 Service Valves

A quarter turn valve shall be accessible through the fuel door that shall isolate the low-pressure manifold and fuel storage system from the rest of the fuel system. The valve function and open and closed positions shall be clearly marked. An additional $\frac{3}{4}$ " 2-way valve shall be provided for draining the high-pressure manifold and any fuel cylinder(s) through a service port. Type and location of the service port(s) shall be subject to DISTRICT's approval.

Isolation, manual valves, of packless type, shall be provided for tank isolation, gauge isolation and a means of isolation for components requiring isolation for inspection. Automated valves, of normally closed type, shall be provided at each tank fuel out line as close to the tank as practical and as necessary to shut down the fuel supply.

Vent valves, of packless type manual or pneumatic remote, shall be provided to vent each tank to a common poppeted vent port at the control enclosure and a common vent valve shall be provided to the common roof vent stack. The common vent stack shall serve as the vent and primary pressure relief valve exit and incorporate a means of condensate drain. The preferred vent stack shall terminate in a flapper style valve.

5.61.4 Pressure Relief Valves

Thermally activated pressure relief devices shall be provided for each tank. Pressure relief valves, primary and secondary pressure relief devices (PRDs) shall be provided at each tank and at all locations necessary for system pressure protection resulting from potential trapping. Pressure relief valves shall not be shared by hydrogen tanks.



Flow and check valves shall be provided as necessary for isolation, preventing reverse flow and minimize excessive flow resulting from gross product loss. The excess flow protection may also be supplemented by remote activation of the fuel system automated shutoff valves. Excess flow valves shall satisfactorily function regardless of mixed phase fluid flow, provide positive shut-off and not be influenced by typical g force occurring during vehicle roadway operation, bumps, dips, vibrations, etc.

Pressure regulators; pressure regulating valves shall be used to regulate fuel pressure entering the FCPP's fuel system and may be used to manage tank pressure. These valves shall incorporate a means of inspection, adjustment and ease of isolation without system depressurization.

5.61.5 Control Panel/Instrumentation

The fuel system filling receptacle, vent receptacle, vent valves and tank-system pressure gauges shall be located within an enclosure as previously defined.

5.61.6 Defueling

A valve shall be included in the high pressure manifold that will make it possible to rapidly defuel all of the hydrogen cylinders in a short time. This valve shall be safety wired in the off position so that it is required to cut a safety wire or other locking device in order to open the valve. The outlet of the defueling port shall exit through the roof of the vehicle.

5.62 HYDROGEN STORAGE SYSTEM DOCUMENTATION

The following documentation shall be provided in addition to the general requirements of this overall procurement specification:

5.63 DESIGN SUITABILITY/APPLICATION APPROVAL

The overall fuel system shall be suitable for the intended application and require application approval (note: Components of the system shall be subject to suitability at OEM level).



5.64 FUEL CELL POWER PLANT EXHAUST AND VENTILATION

5.64.1 Exhaust System

FCCP cathode exhaust gases and FCCP cabinet ventilation gases shall be combined in a mixing device that shall also coalesce entrained moisture to the best of its ability. The mixed exhausts of the two gas sources shall be discharged from the roadside rear corner of the roof. The exhaust pipe shall be of sufficient height to prevent exhaust gases from re-entering the envelope of the vehicle in any case.

The exhaust outlet shall be designed to minimize rain, snow or water generated from high-pressure washing systems from entering into the exhaust pipe and causing damage to any systems. The outlet shall also be designed to prevent freezing of the exhaust within the exhaust pipe.

The manufacturer shall take into account all potential ranges of motion that the exhaust system shall be exposed/subjected to during the bus's operation and shall design a system that does not requires any periodic adjustments and/or realignments of pipes, flex tubes or other exhaust system related components.

5.65 STEERING, SUSPENSION AND BRAKES

5.65.1 Axles

Suspension shall be by solid axles, unless other methods have pre-bid approval, and all components shall be of sufficient capacity to carry all static and dynamic loads imposed upon them on the severe transit bus duty cycle through the expected service life of the bus.

Drive axle gearing shall be designed for long life and quiet operation at all speeds and conditions of positive or negative torque and shall be easily accessible for lubrication. Hub reduction units may be used. Front and center axles to be "MAN" or approved equal. Center axle to be ZF, AVE 130 or approved equal. Rear axle to be the latest heavy duty "MAN" or approved equal, with gearing for quiet operation. All wheel hubs shall be painted Black. Axles shall be approved by the DISTRICT.



5.65.2 Wheel Bearings

Wheel bearings shall be sized for anticipated loads and shall provide smooth low friction rotation of the wheels under all conditions of temperature, loading and operating speed herein described. The bearings shall be easily accessible, serviceable and replaceable and shall be properly sealed to prevent leakage of lubricant. Non-drive axle wheel bearings shall be lubricated by grease system. Oil seals shall be the unitized type, "Chicago Rawhide" or approved equal, or another brand as recommended by the axle supplier. A "Stemco" or approved equal hubcaps on the front axle shall be provided if available by the axle manufacturer. "Unitized", non-serviceable, maintenance free grease filled wheel bearing shall be accepted if it is the only option from the axle manufacturer.

5.65.3 Suspension

Buses shall be provided with a full air suspension system. It shall include provisions for stabilizing and damping so as to produce a satisfactory ride quality as described in section 1.07 under all load conditions. All suspension components shall be sized for GAWR's. Methods of construction and materials used shall permit easy access to and convenient replacement of bellows, shock absorbers and other suspension components. A suspension torque chart attached to the bus shall be provided. The final location for placement of the torque chart shall be determined by the DISTRICT.

5.65.4 Bellows

Provide two or four air bellows on the front axle and four air bellows on the second and drive axle, with a heavy-duty "Koni", or approved equal, shock absorbers on each side of each axle. Air bellows should be placed as far outboard as possible. The air suspension system shall, by use of leveling valves, the air supply, and the bellows, automatically regulate air pressure to maintain constant spring characteristics and height of the bus body regardless of loading of the bus. The valves shall have a damping or compensating feature to prevent excessive consumption of air during rapid axle fluctuations. Leveling valve exhaust ports shall be protected to avoid plugging with road dirt. Leveling valves shall be approved by the DISTRICT.



5.65.5 Stabilizing Devices

If required, radius rods and other stabilizing devices shall be provided as necessary at the axles to control lateral, longitudinal and torsional movement of the suspension system. Anti-sway bars shall be provided at any axle as required to minimize bus sway while maneuvering in traffic. Radius rods and their wearing components shall be sized for allowable loads, engineered for long life, and designed and integrated into the bus for ease of accessibility for replacement.

5.65.6 Alignment

All normal alignment adjustments to steering axles shall be capable of being performed easily and without disassembly of suspension components. Steering linkages and components shall be adjustable using standard shop tools. All coaches shall have the axles aligned to the coach body and the front wheels aligned before delivery.

5.65.7 Lubrication

All joints and parts of the suspension and steering system requiring lubrication shall be provided with zero type fittings that are designed and located for ease of visual inspection, accessibility and serviceability. If 'lifetime-lubricated' steering system components are proposed, the DISTRICT shall approve their use.

5.66 KNEELING

New Flyer's SmartRider advanced bus kneel and smart leveling technology shall lower either the front door or the right side of the bus a minimum of 2.5 in. during loading or unloading operations regardless of load up to GVWR, measured at the longitudinal centerline of the front door by the driver. The kneeling control shall provide the following functions:

- Downward control must be held to allow downward kneeling movement.
- Release of the control during downward movement must completely stop the lowering motion and hold the height of the bus at that position.



- Upward control actuation must allow the bus to return to normal floor height without the driver having to hold the control.

The brake and throttle interlock shall prevent movement when the bus is kneeled. The kneeling control shall be disabled when the bus is in motion. The bus shall kneel at a maximum rate of 2 inches per second at essentially a constant rate. After kneeling, the bus shall rise within 3 seconds to a height permitting the bus to resume service and shall rise to the correct operating height within 7 seconds regardless of load up to GVWR. During the lowering and raising operation, the maximum vertical acceleration shall not exceed 0.2g, and the jerk shall not exceed 0.3g/second.

An indicator visible to the driver shall be illuminated until the bus is raised to a height adequate for safe street travel. An audible warning alarm shall sound simultaneously with the operation of the kneeler to alert passengers and bystanders. A warning light mounted near the curbside of the front door, a minimum 2.5 in. diameter amber lens, shall be provided that shall blink when the kneel feature is activated. Integrates suspension kneeling operation with wheelchair ramp deployment to facilitate single operation for wheelchair boarding.

5.67 STEERING SYSTEM

Buses shall be equipped with a steering mechanism that makes the bus easy to steer and which produces a natural and precise handling characteristic for the bus operator, free of wander and motions that are hard to predict. The steering system shall be power assisted with a hydraulic system. Design factors for this power source are given in section 6.54.1 (Hydraulic System). The DISTRICT shall approve the power steering system.

5.67.1 Steering Gear

The steering gear shall be an integral type with the use of flexible lines, minimizing the number and length. Steering torque applied by the driver shall not exceed 10 foot-pounds. Steering effort shall be measured with the coach at capacity load, stopped with the brakes released and the power steering pump running



at normal operating speed on clean, dry, level, commercial asphalt pavement and with tires inflated to recommended pressure.

Power steering failure shall not result in loss of steering control. With the coach at capacity load, power steering pump not functioning, vehicle coasting without drive system powered at 8 to 10 mph, the steering effort shall not exceed 55 pounds at the steering wheel rim and perceived free play in the steering system shall not materially increase as a result of power assist failure. Gearing shall require no more than seven turns of the steering wheel lock to-lock.

5.67.2 Steering Wheel and Column

The design and placement of the steering wheel and the design of the steering mechanisms as it relates to forces necessary to steer the bus shall be with consideration given to human factors. The steering wheel and steering mechanism shall be designed so the bus can be driven by bus operators defined in section 6.41.1 for long periods of time without undue effort or fatigue. The steering column shall be "Douglas Autotech" 9204 or approved equal, shall be telescoping and shall have two separate tilt locations, one near the top of the column and one at the universal joint below the floor where the column is connected to the right angle steering box; tilt and telescope are controlled by levers on the left side of the column. Bus operator knees shall not contact wheel spokes at any adjustment point.

The steering wheel shall be a 3-spoke 22-inch diameter hard plastic rim wheel from "VIP" or approved equal. It shall be provided with a horn button and with puller holes in the hub so that a standard or universal puller may be used.

5.68 BRAKING SYSTEM

Buses shall be equipped with brake systems that conform to the requirements of all Federal and State of Illinois regulations, designed so such conformance can be maintained throughout the normal adjustment cycle. The braking system shall include service brakes, a parking and emergency brake, and a hill holder.



5.68.1 Service Brakes

Service air brakes shall be furnished on all wheels of each bus. The DISTRICT shall approve the brake system including all components.

5.68.2 Control

The driver's brake pedal shall control the service brake and the supplemental brake in a coordinated manner to give a total braking effort depending on the position of the pedal up to the maximum capability of the braking system. The control shall make maximum practical use of the supplemental brake to minimize brake fade and to achieve maximum brake lining lifetimes. Braking forces shall be proportioned among the axles to assure balanced braking and equalize lining life between axles. Braking shall be initiated at the rear axle. The brake lamps shall illuminate only when the brake pedal is depressed (not when auxiliary braking is applied). The lamps shall illuminate during regenerative braking.

5.68.3 Disc Brakes

Disc brake shall be Knorr with Ferodo linings. Rotors shall be labeled with the minimum safety thickness for rotor refinishing.

5.68.4 Pad Wear Indicator

CONTRACTOR shall provide a method to monitor brake friction material thickness.

5.68.5 Air Brake Plumbing

Brake hoses shall be installed in locations where the possibility of damage is minimized. Hoses shall be clamped and supported by the bus structure to minimize long unsupported hose lengths and to eliminate rubbing and/or chafing.



5.68.6 Brake Chambers

Chambers shall be long-stroke, "MAXI", "MGM"-Tube style with push rod stroke indicator or approved equal with a brake adjustment indicator if available. Chambers shall be sealed to prevent entry of dirt or water. Rubber diaphragms shall be replaceable without removing the chamber from the coach. Geometry of the brake chambers in relation to the slack adjuster shall eliminate any possible contact between the push rod and the chamber housing.

5.68.7 Anti-Lock Braking

The buses shall be equipped with an all-wheel Anti-Lock Braking System (ABS) by "WABCO" or approved equal to reduce the possibility of tire skid on slippery roads and/or during panic stops.

This ABS system shall have sensors located at every wheel and the electronic/air controls and operation shall be fully automatic and transparent to the driver. The ABS system shall have onboard diagnostic capabilities able to monitor vital functions; store and time stamp out of parameter conditions in memory, and communicate faults and vital conditions to service personnel. Diagnostic reader device connector ports, suitably protected against dirt and moisture, shall be provided in an approved location. The DISTRICT shall approve the installation.

5.68.8 Brake Balance

It is required that brake wear be distributed approximately equally among the axles. To ensure this, the CONTRACTOR and the designer/supplier of the foundation braking system on each type of bus shall work with the DISTRICT to perform brake thermal balance testing on the first article bus at CONTRACTOR's facility in order to optimize the following parameters: crack pressure; application timing; pressure balance throughout the operating range during application and release; release timing; and thermal balance of the foundation brakes under load. Results shall be approved by the DISTRICT.



5.68.9 Parking and Emergency Brake

The parking and emergency brake shall be a spring applied/air released brake, acting on the drive axle, controlled by a manual valve located to the left of, and convenient to, the driver. The control valve shall be a "Bendix" Model PP-1, or approved equal valve incorporated with a yellow metal handle. It shall automatically apply if air system pressure falls below 60-65 psi or such other value as is recommended by the CONTRACTOR. This brake shall hold the bus with a GVWR on a 20% grade, both uphill and downhill, with new brake linings; it shall also keep the bus from moving under full throttle on level ground when the coach is in gear. The parking brake shall fully release within two seconds of pressing the PP1 valve.

5.68.10 Standstill brake application system

A system shall be included that shall, when the vehicle is in normal service and after standing still for a period to be defined by the DISTRICT, disengage drive motor torque production after setting the "interlock" aspect of the service brake system. When the operator subsequently depresses the accelerator pedal the drive motor shall again be programmed to generate torque. After the system is generating torque the brake standstill system shall release the air pressure to the service brakes so that the vehicle can again resume travel.

This system shall include a switch so that the bus operator can invoke the standstill at will while the bus is stopped even if the specified time interval has not been reached. This switch shall be a momentary contact switch which activates the system. Deactivation shall follow the same logic as though the system was invoked automatically. Location of switch subject to DISTRICT approval.

This system shall hold on a hill of 15% grade with the vehicle facing uphill and loaded to GVWR and shall prevent the vehicle from rolling backwards before forward movement resumes. The same shall be true while facing downhill.

This system shall also be incorporated into the interlock system so that any time the interlock system is invoked, the same order of functions shall occur while stopped and when commencing forward travel.



5.69 COMPRESSED AIR EQUIPMENT AND SUSPENSION COMPONENTS

5.69.1 Electric Compressed Air System

The electric powered compressor shall have pumping capacity sufficient to maintain all systems at rated pressure and makeup and shall be adequately cooled and lubricated so it shall last the service life of the bus without excessive maintenance. The compressor air intake shall be supplied with filtered clean air. The compressor shall provide its rated output at 130 psi.

5.69.2 Air Reservoirs

Non-corroding tanks or reservoirs shall be provided of sufficient capacity and quantity to supply all components that depend on the compressed air system. Tanks shall meet the requirements specified in S.A.E. J10. A 'ping' tank between the compressor and air dryer to smooth compressor output shall be provided. A means to drain this tank from beneath the bus, including a remote drain if necessary shall be provided. All tanks shall be provided with a readily accessible manually operated drain valve. The valves shall be protected to prevent accidental breakage.

5.69.3 Air Dryer

The air system shall be equipped with an air dryer located before the No.1 air tank and as far from the compressor as possible. The dryer shall be a "Bendix" Dual AD-IP desiccant dryer with heating element.

5.69.4 Valves Piping and Air Control Equipment

All valves, piping and air control equipment shall be of non-rusting and non-corroding materials. Flexible lines shall be provided where excessive vibration or flexing of lines would lead to failure of rigid lines. All air lines shall be installed to minimize freezing. All exhaust ports on the air system shall be protected to avoid plugging by road dirt or debris. A check valve or valves shall be provided to isolate air using equipment other than brakes from the air system so that brakes can operate despite failures such as ruptured air bags, etc. Air exhausting to the atmosphere from air filters, valves, dryers etc. shall be muffled



with permanent no-maintenance silencers to prevent annoying noise, particularly when the bus is stopped.

Air lines, except necessary flexible lines, shall conform to the installation and material requirements of SAE Standard J844-Type 1 for copper tubing with standard, brass, flared or ball sleeve fittings, or SAE Standard J844- Type 3B for nylon tubing if not subject to temperatures over 200 degrees F. Accessory and other non-critical lines may use Type 3A tubing. Nylon tubing shall be installed in accordance with the following color-coding standards:

- Green. Primary brakes and supply
- Red. Secondary brakes
- Brown. Parking brake
- Yellow. Compressor governor signal
- Black. Accessories
- Blue. Suspension

The air system shall have air pressure tap off ports to allow accurate measurement of air pressures at each pressure regulator valve. These ports shall be covered when not being used.

5.69.5 Air System Charging Connectors

Buses shall be provided with a front air charge connector supplied to the wet tank used for supplying air for releasing the bus brakes while towing. The connector shall be located in a closed box on the front panel of the bus above the bumper. The connector shall be easily accessible, but shall not be subject to damage from towing hardware connections.

Buses shall be provided with a rear air connector in or near the drive system compartment for supplying the coach with compressed air in the shop. Front and rear air connectors shall be plumbed through the air dryer. Both connectors shall be brass, industrial design, push-to-connect sockets. Milton S785 1/4-inch coupler size. Locations shall be approved by the DISTRICT. The front air charge connected will be a 1/4 inch male NPT fitting with a tag.



Provide a 1/4-inch coupler size Industrial design plug and a 90-degree fitting on the end of the wet and brake air tanks to apply shop air to the bus from a pit.

5.70 ELECTRIC POWERED HYDRAULIC SYSTEMS

The hydraulic system is defined as those components consisting of all the valves, fittings, lines, pumps, reservoirs, filters and accumulators required to serve its loads. These loads are defined as limited to the power steering, and/or any other approved load. The hydraulic system shall provide a separate hydraulic circuit for each load. Special attention shall be paid to joints, fittings, valves and welds to reduce the possibility of leakage. All lines shall be protected from chafing and rubbing. The hydraulic pump(s) shall be driven by electricity.

Filtering shall be provided as recommended by the manufacturers of the hydraulically powered units. Spin-on filters are preferred. Hydraulic reservoirs shall be located in easily accessible locations, approved by the DISTRICT. There shall be a sight glass or other approved fluid level checking method on each the hydraulic system reservoir and it shall be easily readable. The fluid level-checking requirement may be deleted with prior approval from the DISTRICT.

The All hydraulic systems shall have pressure tap ports to allow accurate measurement of hydraulic pressures at test points necessary for maintenance or troubleshooting. These ports shall be a quick disconnect in design and covered when not being used.

5.71 LOW-VOLTAGE ELECTRICAL AND ELECTRONIC SYSTEMS

The Low Voltage Electrical System consists of the vehicle batteries and all other equipment that generates, distributes and uses battery power throughout the vehicle (e.g., generator, voltage regulator DC-DC converter, wiring, relays, and connectors). Electronics are those components of the electrical system made up of discrete solid-state devices such as transistors, resistors, capacitors and diodes that are part of individual vehicle systems. Electronics also include the integrated circuits that are part of microprocessors that allow individual vehicle systems to process and store data.



Data Communication Systems shall be as specified in Section 6.72 in this document. These systems consist of the bi- directional communications networks that electronic devices use to share data with other electronic devices and systems. Communication networks are essential to integrate electronic functions both on and off the vehicle.

Data Communications Systems are divided into three levels to reflect the use of multiple data networks.

1. Drivetrain Level- Components related to the drive train including the power plant, drive system, traction control system (ASR) and anti-lock braking system (ABS).
2. Multiplex Level- Electrical devices controlled through input output signals such as discrete, analog, and serial data information (i.e., on/off switch inputs, relay or relay control outputs). Multiplexing is used to control components not typically found on the Drive train or Information Levels such as lights, ramp, doors, and HVAC systems.
3. Information Level -Components whose primary function is the collection, control or display of data that is not necessary to the safe drivability of the vehicle (i.e., those functions that when inoperable, shall still allow the vehicle to operate). These components typically consist of those required for automatic vehicle location (AVL) systems, destination signs, fare boxes, passenger counters, radio systems, automated voice and signage systems, video surveillance, and similar components.

Design of the electrical, electronic and data communication systems shall be modular so that each major component, apparatus panel, or wiring bundle is easily separable with standard hand tools or by means of connectors. Each module, except the main body wiring harness, shall be removable and replaceable in less than 1 hour by one mechanic. Power plant wiring shall be an independent wiring module. Replacement of the powerplant compartment wiring module(s) shall not require pulling wires through any bulkhead or removing any terminals from the wires.



5.71.1 Environmental and Mounting Requirements

The electrical system and its electronic components shall be capable of operating in the area of the vehicle in which they shall be installed as recommended in SAE J1455.

Electrical and electronic equipment shall not be located in an environment that shall reduce the performance or shorten the life of the component or electrical system. No vehicle component shall generate, or be affected by, electromagnetic interference or radio frequency interference (EMI/RFI) that can disturb the performance of electrical/electronic equipment as defined in SAE J1113.

The DISTRICT shall follow recommendations that must be provided by bus manufacturers and subsystem suppliers regarding methods to prevent damage from voltage spikes generated from welding, jump starts, shorts, etc.

5.71.2 Mounting

All electrical/electronic hardware shall be accessible and replaced by one mechanic in 30 minutes. It shall be mounted on an insulating panel to facilitate replacement. The mounting of the hardware shall not be used to provide the sole source ground, and all hardware shall be isolated from potential EMI/RFI.

All electrical/electronic hardware mounted in the interior of the vehicle shall be inaccessible to passengers and hidden from view unless intended to be viewed. The hardware shall be mounted in such a manner as to protect it from splash or spray.

All electrical/electronic hardware mounted on the exterior of the vehicle, that is not designed to be installed in an exposed environment, shall be mounted in a sealed enclosure.

All electrical/electronic hardware and its mounting shall comply with the shock and vibration requirements of SAE J1455.



5.71.3 Batteries

The system shall supply a nominal 12 VDC and 24 VDC batteries used for auxiliary power. The batteries shall be easily accessible for inspection and service from the outside of the vehicle only.

Two Optima, Odyssey or approved equal group 31 batteries conforming to SAE Standard J537 shall be provided. Each battery shall have a minimum of 1150 cold cranking amps. Each battery shall have a purchase date no more than 120 days before date of bus delivery and shall be fully maintained prior to shipment to the DISTRICT. The battery compartment must be well-ventilated to prevent hydrogen buildup while protecting the compartment from road spray, water intrusion and de-icing chemicals.

If possible, positive and negative terminal ends on the batteries shall have different size studs to prevent incorrect installation. Prior approval from the DISTRICT is required if same size terminal studs are to be provided. The battery terminal ends and cables shall be color-coded with red for the primary positive, black for negative, and another color for any intermediate voltage cables. Battery cables shall be flexible and sufficiently long to reach the batteries with tray in the extended position without stretching or pulling on any connection and shall not lie directly on top of the batteries. Cables shall not rub on the tray or compartment, shall not touch each other, and shall be securely clamped. Except as interrupted by the master battery switch and 24V busbar, wiring shall be cables with connections secured by bolted terminals; and shall conform to specification requirements of SAE Standard J1127-Type SGT or SGX and SAE Recommended Practice J541.

The battery-configuration scheme shall isolate the starting batteries (ESS) from the auxiliary batteries (group 31), not to interfere with the key-off electrical loads. The configuration shall prevent a vehicle from a no start condition.

5.71.4 Master Battery Switch

A single master switch shall be provided near the battery compartment for the disconnecting of all battery positives (12V & 24V) except for safety devices such as fire suppression system, the radio system, camera system and other systems as specified. The location of the master battery switch shall be clearly identified



on the exterior access panel, be accessible in less than 10 seconds for de-activation, and prevent corrosion from fumes and battery acid when the batteries are washed off or are in normal service. The master switch shall be capable of carrying and interrupting the total circuit load.

5.71.5 Voltage Equalizer

If the bus electrical system is 24 volts, a "Vanner" 100 amp battery equalizer, or approved equal, shall be used to provide 12 volts for exterior lights and other equipment.

5.71.6 Power Generation

The power generating system shall be able to accommodate all electrical loads. The vehicle manufacturer shall provide to the DISTRICT both at time of pre-production meeting and actual production an analysis of the estimated electrical load for each system. Over-voltage output protection shall be provided.

5.71.7 Power Distribution

Power distribution to all equipment requiring dedicated power and ground wiring to the batteries shall be accomplished by using power bus bars consisting of either a solid copper bar or heavy-duty terminal strip. One bus bar for each voltage potential, including ground, shall be located as close to the source of the potential as possible. Cabling from the bus bars to the equipment must be sized to supply the total current requirements with no greater than a 5 percent voltage drop across the length of the cable.

5.71.8 Special Equipment Circuits

A coil of wire under the floor powered by a dedicated circuit for later hookup of farebox power shall be provided if farebox is supplied by the DISTRICT.

A dedicated electrical circuit for the radio communication equipment shall be provided. This circuit shall be initiated at the batteries and terminated at the electronic equipment compartment (reference Section 2.23). It shall be isolated from the coach's starting batteries and all other electronic and electrical equipment. This circuit shall be independent of the electrical main switch, be capable of delivering 25



continuous amperes at 12 volts, measured at the electronic equipment compartment. It shall be protected at the source with an adequately sized, manually tripped and resettable circuit breaker. The radio equipment positive and negative cables shall be continuous from the battery compartment to the electronic equipment compartment and be installed to minimize pickup of electrical noise, and voltage transients. If a 24-volt coach electrical system is used for the bus, an "Electric Transit Laboratories Inc. (ETL)" or approved equal converter shall be provided in the electronic equipment compartment to supply the required power. A "Cole Hersee" 95517-A, or approved equal keyed switch with key no. 833S7 mounted on the front side of the electronic equipment compartment in an approved location shall be provided. The switch function is used to reset radio power.

The electronic equipment compartment shall also be equipped with the following labeled power supplies:

- (1)12 VDC 5A switched power
- (1)24 VDC 5A switched power
- (1)12 VDC 10A battery (unswitched) power
- (3) 24 VDC 10A battery (unswitched) power

5.71.9 Circuit Protection

All branch circuits, except battery-to-starting motor and battery-to-generator/alternator circuits, shall be protected by circuit breakers or fuses sized to the requirements of the load. Electronic circuit protection for the cranking motor shall be provided to prevent engaging of the motor for no more than 30 seconds at a time to prevent overheating. The circuit breakers or fuses shall be easily accessible for authorized personnel. Fuses shall be used only where it can be demonstrated that circuit breakers are not practicable. Circuit breakers shall be manually trippable and resettable, and shall provide visible indication of open circuits. Radio and camera power circuit breakers shall be specifically labeled with DISTRICT approved location.



Circuit breakers or fuses shall be sized to a minimum of 15 percent larger than the total circuit load current. The current rating for the wire used for each circuit must exceed the size of the circuit protection being used.

5.71.10 Grounds

The battery shall be grounded to the vehicle chassis/frame at one location only, as close to the batteries as possible. When using a chassis ground system, the chassis shall be grounded to the frame in multiple locations, evenly distributed throughout the vehicle to eliminate ground loops. No more than four ground connections shall be made per ground stud. Electronic equipment requiring an isolated ground to the battery (i.e., electronic ground) shall not be grounded to the chassis.

5.71.11 Wiring and Terminals

All power and ground wiring shall have double electrical insulation, shall be waterproof, and shall conform to specification requirements of SAE Recommended Practice J1127, J1128 and J1292. Double insulation shall be maintained as close to the junction box, electrical compartment, or terminals as possible.

Wiring shall be grouped, embossed numbered, and color-coded (with at least six colors). Wiring harnesses shall not contain wires of different voltage classes unless all wires within the harness are insulated for the highest voltage present in the harness. Kinking, grounding at multiple points, stretching, and exceeding minimum bend radius shall be prevented.

Strain-relief fittings shall be provided at points where wiring enters all electrical compartments. Grommets or other protective material shall be installed at points where wiring penetrates metal structures outside of electrical enclosures. Wiring supports shall be protective and non-conductive at areas of wire contact and shall not be damaged by heat, water, solvents, or chafing. Wiring shall be strain-relieved near terminations.

To the extent practicable, wiring shall not be located in environmentally exposed locations under the vehicle. Wiring and electrical equipment necessarily located under the vehicle shall be insulated from



water, heat, corrosion, and mechanical damage. Where feasible, front to rear electrical harnesses should be installed above the window line of the vehicle.

All wiring harnesses over five feet long and containing at least five wires shall include 10 percent (minimum one wire) excess wires for spares. This requirement for spare wires does not apply to data links and/or communication cables. Wiring length shall allow end terminals to be replaced twice without pulling, stretching, or replacing the wire. Wire terminals shall be crimped and may be soldered only if the wire is not stiffened above the terminal and no flux residue remains on the terminal. Battery cable connectors shall be crimped and soldered.

Terminals shall be crimped, corrosion-resistant and full ring type or interlocking lugs with insulating ferrules. When using pressure type screw terminal strips, stranded wire only shall be used. Insulation clearance shall ensure wires have a minimum of 'visible clearance' and a maximum of two (2) times the conductor diameter or 1/16 inch whichever is less. When using shielded or coaxial cable, upon stripping of the insulation, the metallic braid shall be free from frayed strands that can penetrate the insulation of the inner wires.

Ultra-sonic and T-splices may be used with 7 AWG or smaller wire. When a T-splice is used it shall meet these additional requirements: include a mechanical clamp in addition to solder on the splice; the wire supports no mechanical load in the area of the splice; and the wire is supported to prevent flexing. All splicing shall be staggered in the harness so that no two splices are positioned in the same location within the harness.

For wiring harness connectors, pins shall be removable, crimp contact type of the correct size, and rated for the wire being terminated. All supply-side terminations shall end in a socket, not a pin. Unused pin positions shall be sealed with sealing plugs. Adjacent connectors shall either use opposing pin genders, different insert orientations, or different connectors to prevent incorrect connections. All cable connectors shall be placed to provide adequate space for ease of removal and disconnection. All electrical connectors subjected to environmental exposure outside the passenger compartment shall be corrosion resistant and splash proof.



5.71.12 Electrical Components

All electrical components, including switches, relays, flashers, and circuit breakers, shall be heavy-duty designs with either a successful history of application to heavy-duty vehicles, or design specifications for an equivalent environment. These components shall be replaceable in less than 5 minutes by one mechanic.

All electric motors shall be either heavy-duty brushless type where practical, or have a constant duty rating of no less than 40,000 hours (except cranking motors and wiper motors). All electric motors shall be easily accessible for servicing.

5.71.13 Electrical Compartments

All relays, controllers, flashers, circuit breakers, and other electrical components shall be mounted in easily accessible electrical compartments. All compartments exposed to the outside environment shall be corrosion resistant and sealed. The components and circuits in each electrical compartment shall be identified and their location permanently recorded on a drawing attached to the inside of the access panel or door.

The drawing shall be protected from oil, grease, fuel, and abrasion. The front compartment shall be completely serviceable from the operator's seat, vestibule, or from outside.

5.72 GENERAL ELECTRONIC REQUIREMENTS

If an electronic component has an internal clock, it shall provide its own battery backup to monitor time when battery power is disconnected. Any component with its own real-time clock shall be set to Central Standard Time.

All electronic component suppliers shall ensure that their equipment is self-protecting in the event of shorts in the cabling, and also in over-voltage and reverse polarity conditions. If an electronic component is required to interface with other components, it shall not require external pull-up and/or pull-down



resistors. Kinking, grounding at multiple points, stretching, and exceeding minimum bend radius shall be prevented.

5.72.1 Discrete I/O (Inputs/Outputs)

All wiring to I/O devices, either at the harness level or individual wires, shall be labeled, stamped or color-coded in a fashion that allows unique identification. Labels shall be resistant to rubbing (hot stamped tubing and protected printing are service-proven examples of acceptable labels). Wiring for each I/O device shall be bundled together. If the I/O terminals are the same voltages, then jumpers may be used to connect the common of each I/O terminal.

5.72.2 Shielding

All wiring that requires shielding shall meet the following minimum requirements. A shield shall be generated by connecting to a ground, which is sourced from a power distribution bus bar or chassis. A shield shall be connected at one location only, typically at one end of the cable. When using shielded or coaxial cable, upon stripping of the insulation, the metallic braid shall be free from frayed strands, which can penetrate the insulation of the inner wires. To prevent the introduction of noise, the shield shall not be connected to the common side of a logic circuit.

5.72.3 Communications

The data network cabling shall be selected and installed according to the selected protocol requirements. The physical layer of all network communication systems shall not be used for any other purpose other than communication between the system components, unless provided for in the network specifications.

Communications networks that use power line carriers (e.g. data modulated on a 24V-power line) shall meet the most stringent applicable wiring and terminal specifications.



5.72.4 Radio Frequency (RF)

RF components, such as radios, video devices, cameras, global positioning systems (GPS), etc., shall use coaxial cable or twisted pair as required to carry the signal. All RF systems require special design consideration for losses along the cable. Connectors shall be minimized, since each connector and crimp has a loss, which shall attribute to attenuation of the signal.

Cabling should allow for the removal of antennas or attached electronics without removing the installed cable between them. The corresponding component vendors shall be consulted for proper application of equipment including installation of cables.

5.72.5 Audio

Cabling used for microphone level and line level signals shall be 22 AWG minimum with shielded twisted pair and with drain wire. Cabling used for amplifier level signals shall be 18 AWG minimum.

5.73 MULTIPLEXING

5.73.1 General

All vehicles shall be equipped with a multiplexing system. The primary purpose of the multiplexing system is control of components necessary to operate the vehicle. This is accomplished by processing information from input devices and controlling output devices through the use of an internal logic program. This system shall meet the network communications requirements of Section 6.72. The DISTRICT shall approve the multiplex system.

Versatility and future expansion shall be provided for by expandable system architecture. The multiplex system shall be capable of accepting new inputs and outputs through the addition of new modules and/or the utilization of existing spare inputs and outputs. All like components in the multiplex system shall be modular and interchangeable with self-- diagnostic capabilities. The modules shall be easily accessible for troubleshooting electrical failures and performing system maintenance. Multiplex input/output modules shall use solid-state devices to provide extended service life and individual circuit protection.



Ten percent (10%) of the total number of inputs and outputs (or at least one each) at each zone location shall be designated as spares. Zone locations include but are not limited to: (1) behind the rear bulkhead; (2) forward of the bulkhead above the window line; and (3) forward of the bulkhead below the window line.

5.73.2 System Configuration

Multiplexing may either be distributed or centralized. A distributed system shall process information on multiple control modules within the network. A centralized system shall process the information on a single control module. Both systems shall consist of several modules connected to form a control network.

5.73.3 I/O (Input/Output) Signals

The input/output for the multiplex system may contain three types of electrical signals: discrete, analog, or serial data.

Discrete signals shall reflect the on/off status of switches, levers, limit switches, lights, etc. Analog signals shall reflect numerical data as represented by a voltage signal (0-12V, 10-24V, etc.) or current signal (4-20mA). Both types of analog signals shall represent the status of variable devices such as rheostats, potentiometers, temperature probes, etc. Serial data signals shall reflect ASCII or alphanumeric data used in the communication between other on-board components.

5.74 DATA COMMUNICATIONS SYSTEMS

5.74.1 General

All data communication networks shall be either in accordance with a nationally recognized interface standard such as those published by SAE, IEEE, or ISO, or shall be published to the DISTRICT with the following minimum information:

- Protocol requirements for all timing issues (bit, byte, packet, inter-packet timing, idle line timing, etc.) packet sizes, error checking, and transport (bulk transfer of data to/from the device)



- Data definition requirements that ensure access to diagnostic information and performance characteristics
- The capability and procedures for uploading new application or configuration data
- Access to revision levels of data, application software and firmware
- The capability and procedures for uploading new firmware or application software
- Any electronic vehicle components used on a network shall be conformance tested to the corresponding network standard. All components on the Drive train network shall communicate data over the network. The Multiplex Level shall use a communications network that meets all requirements.

5.74.2 Drive Train Level

Drive train components, consisting of the fuel cell, drive system, energy storage system, anti-lock braking system, and all other related components shall communicate data using a combination of the SAE Recommended Communications Protocols J1939 and/or J1708/J1587, or other open protocols.

5.74.3 Diagnostics & Fault Detection

Drive train performance, maintenance and diagnostic data, and other electronic messages shall be formatted and transmitted on the communications networks. The Drive train Level shall have the ability to record abnormal events in memory and provide diagnostic codes and other information to service personnel. At a minimum, this network level shall provide live/fail status, current hardware serial number, software/data revisions, and uninterrupted timing functions.

5.74.4 Data Access

Access to Drive train data shall be provided through diagnostic device connector ports. Location of these diagnostic ports shall comply with relevant Sections of this document for the fuel cell, drive system, energy storage and brake actuation systems. Diagnostic connector ports shall be placed at the front and rear of the bus interior. These ports shall include a CAN communication connector to diagnose all the different systems that are connected to the CAN bus. These systems include: fuel cell, drive system, storage tank



pressures/temperatures, battery parameters/values, bus multiplex system. These ports shall also include a 110 volt AC electrical outlet, rated at 20 amps, to be able to plug in, run and charge a laptop computer during bus troubleshooting/diagnosis. Location of these ports and other systems are subject to approval by the DISTRICT

5.74.6 Multiplex Data Access

At a minimum, information shall be made available via a communication port on the multiplex system. The location of the communication port shall be easily accessible.

5.74.7 Diagnostics and Fault Detection

The multiplex system shall have a proven method of determining its status (system health and input/output status) and detecting either active (Online) or inactive (Offline) faults through the use of on-board visual/audible indicators. In addition to the indicators, the system shall employ an advanced diagnostic and fault detection system, which shall be accessible via either a personal computer (PC) or a hand held unit. Either unit shall have the ability to check logic function.

5.74.8 Programmability (Software)

The multiplex system shall have security provisions to protect its software from unwanted changes. This shall be achieved through any or all of the following procedures: password protection, limited distribution of the configuration software, limited access to the programming tools required to change the software, and hardware protection that prevents undesired changes to the software.

Provisions for programming the multiplex system shall be possible through a PC or Laptop. The multiplex system shall have proper revision control to insure that the hardware and software is identical on each vehicle equipped with the system. Revision control shall be provided by all of the following: hardware component identification where labels are included on all multiplex hardware to identify components; hardware series identification where all multiplex hardware displays the current hardware serial number and firmware revision employed by the module; and software revision identification where all copies of



the software in service displays the most recent revision number, and a method of determining which version of the software is currently in use in the multiplex system.

5.75 HEATING VENTILATION AND AIR CONDITIONING SYSTEM

5.75.1 Capacity and Performance

The Heating, Ventilation and Air Conditioning (HVAC) climate control system, full hermetic (electric) (HVAC) system, shall be supplied. The HVAC system shall be capable of maintaining the interior of the bus at the temperature and humidity levels defined in the following paragraphs.

The HVAC unit shall be rear and roof-mounted. Accessibility and serviceability of components preferably shall be provided without requiring maintenance personnel to climb-up on the roof of the bus.

With the bus running at the design operating profile with corresponding door opening cycle, and carrying a number of passengers equal to the GVWR, the HVAC system shall maintain an average passenger compartment temperature within a range between 65° and 80° F, while controlling the relative humidity to a value of 50 percent or less. The system shall maintain these conditions while subjected to any outside ambient temperatures within a range of -10° to 95°F and at any ambient relative humidity levels between 5 and 50 percent.

When the bus is operated in outside ambient temperatures of 95° to 115° F, the interior temperature of the bus shall be permitted to rise one degree for each degree of exterior temperature in excess of 95° F.

System capacity testing, including pull down/warm-up, stabilization and profile, shall be conducted in accordance to the APTA "Recommended Instrumentation and Performance Testing for Transit Bus Air Conditioning System" and approved by the DISTRICT.

The heating system shall have sufficient capacity to maintain an interior air temperature of 55° F (13° C) with an outside temperature of 15° F (-9° C) with the doors cycled open 15% of the test time, evenly distributed throughout the test duration. The cooling system fluid shall be at normal operating



temperature. The fuel cell, drive system and cooling system temperatures shall be monitored. A cold room may be used to simulate the environmental factors.

From a cold start, the heating system shall be able to increase the interior air temperature by 15° F (8° C) within 20 minutes, and reach specified inside air temperature within 40 minutes, with an outside temperature of 15° F (-9° C).

Additional testing shall be performed as necessary to ensure compliance with performance requirements stated herein.

The air conditioning portion of the HVAC system shall be capable of reducing the passenger compartment temperature from 110° F to 90° F in less than 20 minutes after vehicle start-up. During the cool-down period the refrigerant pressure shall not exceed safe high-side pressures and the condenser discharge air temperature, measured 6 inches from the surface of the coil, shall be less than 45° F above the condenser inlet air temperature. The appropriate solar load requirements shall meet the APTA "Recommended Instrumentation and Performance Testing for Transit Bus Air Conditioning System". There shall be no passengers on board, and the doors and windows shall be closed.

The air conditioning system shall meet these performance requirements using HFC R407.

The climate control blower motors and fan shall be designed such that their operation complies with the interior noise level requirements as specified in this document

HVAC unit and controls to be "Thermo King" or approved equal. An additional data port in or near the driver's area shall be provided with location approved by the DISTRICT.

5.75.2 Controls and Temperature Uniformity

The HVAC system excluding the operator's heater/defroster shall be centrally controlled with an advanced electronic/diagnostic control system with provisions for extracting/reading data. Driver's control shall be



a 6-position switch labeled OFF/ Cool / Vent High/ Vent Low/ Heat Low/ Heat High. The DISTRICT shall approve the location of the IntelligAIRE III or approved equal standard four-key keypad.

After manual selection and/or activation of climate control system operation mode, all interior climate control system requirements for the selected mode shall be attained automatically to within $\pm 2^{\circ}\text{F}$ of specified temperature control set point. The temperature control set point for the system in the cooling mode shall be 70°F and 68°F in the heating mode. CONTRACTOR shall provide all HVAC programming options to the DISTRICT. The DISTRICT shall select initial settings. The operator shall have full control over the defroster and operator's heater. The operator shall be able to adjust the temperature in the operator's area through air distribution. The interior climate control system shall switch automatically to the ventilating mode if the refrigerant compressor or condenser fan fails.

Interior temperature distribution shall be uniform to the extent practicable to prevent hot and/or cold spots. After stabilization with doors closed, the temperatures between any two points in the passenger compartment in the same vertical plane, and 6 inches to 72 inches above the floor, shall not vary by more than 5°F with doors closed. The interior temperatures, measured at the same height above the floor, shall not vary more than $\pm 5^{\circ}\text{F}$, from the front to the rear, from the average temperature determined in accordance to APTA "Recommended Instrumentation and Performance Testing for Transit Bus Air Conditioning System". Variations of greater than $\pm 5^{\circ}\text{F}$ shall be allowed for limited, localized areas provided the majority of the measured temperatures fall within the specified requirement.

5.75.3 Air Flow

Passenger Area: The cooling mode of the interior climate control system shall introduce air into the bus at or near the ceiling height at a minimum rate of 25 cubic feet per minute (cfm) per passenger based on the standard configuration bus carrying a number of passengers equal to 150 percent of the seated load. Airflow shall be evenly distributed throughout the bus with air velocity not exceeding 100 feet per minute on any passenger. The ventilating mode shall provide air at a minimum flow rate of 20 cfm per passenger.

Airflow may be reduced to 15 cfm per passenger (Max GVWR) when operating in the heating mode. The fans shall not activate until the heating element has warmed sufficiently to assure at least 70°F air outlet



temperature. The heating air outlet temperature shall not exceed 120° F under any normal operating conditions.

5.75.4 Bus Operator Area

The bus interior climate control system shall deliver at least 100 cfm of air to the operator's area when operating in the ventilating and cooling modes. Adjustable nozzles shall permit variable distribution or shutdown of the airflow. Airflow in the heating mode shall be reduced proportionally to the reduction of airflow into the passenger area. The windshield defroster unit shall meet the requirements of SAE Recommended Practice J382, Windshield Defrosting Systems Performance Requirements, and shall have the capability of diverting heated air to the operator's feet and legs. The defroster or interior climate control system shall maintain visibility through the operator's side window.

5.75.5 Controls for the Climate Control System (CCS)

The controls for the operator's compartment for heating, ventilation, and cooling systems shall be integrated and shall meet the following requirements.

A separate switch that has an "Off" position and at least two positions for speed control shall control the heat/defrost system fan. All switches and controls shall preclude the possibility of clothing becoming entangled and shields shall be provided, if required. A manually operated control ball valve shall control the coolant flow through the heater core.

If a cable operated manual control valve is used, the cable length shall be kept to a minimum and it shall be well supported to reduce cable seizing. Heater water control valves shall be 'positive' type, closed or open. The DISTRICT shall approve the method of operating remote valves.

5.75.6 Bus Operator Compartment Requirements

A separate heating, ventilation, and defroster system for the operator's area shall be provided and shall be controlled by the operator. The system shall meet the following requirements:



1. The heater and defroster system shall provide heating for the operator and heated air to completely defrost and defog the windshield, operator's side window, and the front door glasses in all operating conditions. Fan(s) shall be able to draw air from the bus body interior and/or the exterior through a control device and pass it through the heater core to the defroster system and over the operator's feet. A minimum capacity of 100cfm shall be provided. The operator shall have complete control of the heat and fresh airflow for their area.
2. The defroster supply outlets shall be located at the lower edge of the windshield. These outlets shall be unbreakable and shall be free of sharp edges that can catch clothes during normal daily cleaning. The system shall preclude foreign objects such as coins or tickets to not allow entry into the defroster air outlets. Adjustable ball vents shall be provided at the left of the operator's position to allow direction of air onto the side windows.
3. A ventilation system shall be provided to ensure operator comfort and shall be capable of providing indirect fresh air to the operator. Vents shall be controllable by the operator from the normal driving position. Decals shall be provided indicating, 'operating instructions' and 'open' and 'closed' positions as well.
4. If a ram-type ventilator is used it shall not allow water entry into the driver's area under any operating condition, including freeway speeds, and it shall be provided on the front of the bus to bring fresh air into the driver's station. This ventilator and associated ducting shall be no smaller than 12 inches by 6 inches (305 mm by 152 mm). Control of airflow shall be easily accessible to the operator and an extension handle shall be provided if necessary. When closed, the vent shall be sealed against drafts.

5.75.7 Air Filtration

Cabin return air shall be filtered before entering the evaporator core(s) and or heater core(s). The filter(s) shall be reusable and cleanable and shall meet the ANSI/ASHRAE 52.1 requirement for 5 percent or better atmospheric dust spot efficiency, 50 percent weight arrestance, and a minimum dust holding capacity of 120 gram per 1,000 cfm cell. More efficient air filtration may be provided to maintain efficient heater and/or evaporator operation. Air filters shall be easily removable for service.



5.75.8 Roof Ventilators

Ventilators in the roof of the bus, one approximately over each axle shall be provided. Each ventilator shall be easily opened and closed manually by a 50th percentile female. If roof ventilator(s) cannot be reached by a 50th percentile female, then a tool shall be provided to allow this. Location and mounting of the roof ventilator tool shall be approved by the DISTRICT. When open with the bus in motion, this ventilator shall provide fresh air inside the bus. Ventilator shall cover an opening area no less than 425 square inches and shall be capable of being positioned as a scoop with either the leading or trailing edge open no less than 4 inches, or with all four edges raised simultaneously to a height of no less than 3-1/2 inches.

An escape hatch shall be incorporated into the roof ventilator. Roof ventilator(s) shall be sealed to prevent entry of water when closed. Roof ventilators shall be "Transpec Worldwide" or approved equal.

5.75.9 Maintainability

Manually controlled shutoff valves in the refrigerant lines shall allow isolation of the compressor, receiver and dehydrator filter for service. To the extent practicable, self-sealing couplings utilizing O-ring seals shall be used to break and seal the refrigerant lines during removal of major components, such as the refrigerant compressor. Shut-off valves may be provided in lieu of self-sealing couplings. The condenser shall be located to efficiently transfer heat to the atmosphere, and shall not ingest air warmed above the ambient temperature by the bus mechanical equipment, or to discharge air into any other system of the bus. The location of the condenser shall preclude its obstruction by wheel splash, road dirt or debris. HVAC components located within 6 inches of floor level shall be constructed to resist damage and corrosion.

Coolant boost pumps shall be "EG&G Rotron Inc." ECDC Seal-less or approved equal. It is preferred the pumps operate on 24 volts. These pumps shall be wired to be electrically 'off' when the HVAC system is not calling for heat. In the event of a charging system failure, the pumps shall be deactivated. CONTRACTOR shall supply brass ball valves with hand-operated quarter turn handles on each side (inlet and outlet) of all boost pumps.



5.76 PASSENGER ACCOMMODATION SYSTEMS

5.76.1 Wheelchair Ramp

A deployable 1:7 ramp at the curbside front door shall be provided for mobility aid. The ramp shall be equipped with side rails, and any surfaces designed to be walked on shall be covered with flooring or non-skid material. Wheelchair ramp floor pocket shall have yellow edge/stripe visible when ramp is deployed to warn passengers of an uneven floor surface.

The ramp shall be controlled by a toggle switch on the dash. Ramp operation shall actuate brake and acceleration interlocks. Front door operation shall be interlocked with ramp operation. Visual and adjustable audible warning devices shall alert passengers that the ramp is in operation. The ramp shall be straight electric with a manual backup system approved by the DISTRICT.

5.77 WHEELS AND TIRES

5.77.1 Wheels

Wheels shall be aluminum one piece, hub-piloted style made by "ALCOA" or approved equal. They shall be the self-ventilating disc type, and all shall be interchangeable wheel to wheel and coach to coach. Wheels shall be polished aluminum with Durabright and Duraflange finish treatment. Mating surfaces on dual wheel assemblies shall be corrosion protected without the use of paint. Wheels and attachment system shall be approved by the DISTRICT.

5.77.2 Tires

The CONTRACTOR, together with the DISTRICT's tire supplier, is responsible for choosing tires of adequate load rating. When this is determined, the DISTRICT shall supply tires to a CONTRACTOR's plant. The CONTRACTOR shall be responsible for shipping tires to any other location. The DISTRICT uses leased radial tubeless mileage tires. Tires and wheels shall not be the limiting factors in the GVWR or the speed of the bus.



5.77.3 Balancing

All wheel and tire assemblies shall be spin balanced. Weights used shall be specifically approved for use on these wheels.

5.77.4 Wheel Attachment System

Wheel studs and nuts shall be sized to the GVWR and transit duty cycle and shall meet J429 and J1102 (studs) and J995 (nuts).

5.78 MATERIALS

5.78.1 Materials and Construction

For economy in maintenance, it is essential that parts and units be arranged so that rapid assembly and disassembly shall be possible. All units or parts not specified shall be the CONTRACTOR's standard items, conforming in material, design and workmanship to the best practices in the heavy vehicle industry.

All parts shall be new and in no case shall used, reconditioned, repaired or obsolete parts be accepted. Any one part used shall be an exact duplicate in each of the buses.

Workmanship throughout shall conform to the highest standard of commercially accepted practice for the class of work and shall result in a neat and finished appearance. All exposed surfaces and edges shall be smooth, free from burrs, scratches, mars, discolorations and other deviations from a neat, quality finish. All bolted and torqued metal-to-metal joints must have corrosion protection on the facing surfaces while not allowing any coating elasticity to loosen correctly torqued fasteners.

No slotted head screws shall be used. All screws shall use Phillips type heads unless otherwise specified. The DISTRICT prefers very limited use of pop-rivets. Access covers and any cover or component removed for maintenance access shall be secured with riv-nuts and machine screws. Use of any type of sheet metal screw or well nut is prohibited. Any tapping plate shall be the thickness of a standard nut, minimum.



5.78.2 Hazardous Materials

It shall be a design objective to eliminate from the buses, all materials that are or may become hazardous to passengers, drivers or maintenance workers. Of particular concern are materials that produce toxic smoke or gases when heated, possibly due to an accidental fire or when bodywork using welding equipment or cutting torches is necessary. No asbestos shall be used in any part of the bus including gaskets; no PCBs shall be used in the bus. Any use of polyurethane foam material shall require DISTRICT approval.

The CONTRACTOR shall identify any hazardous materials and coatings used and provide information on how to safely deal with them under normal maintenance conditions, when discarding or in response to destruction by fire. The CONTRACTOR shall provide Material Safety Data Sheets (MSDS) for all coatings, paints, adhesives and insulation used on the bus. The CONTRACTOR shall also supply, in a timely manner, MSDS for any other materials on the bus at the request of the DISTRICT. All documentation shall be supplied in advance of the Design Review for approval by the DISTRICT.

5.78.3 Welding

All welding shall be in accordance with the requirements of the American Welding Society as specified in the current AWS specification. Work performed outside the U.S. must conform to U.S. welding standards as approved by the DISTRICT. An English language copy of these standards shall be made available to the DISTRICT for review. The CONTRACTOR shall supply descriptions on the components making up the weld process. This description should include (but may not be limited to) material composition (types of steel used in the basic body and chassis frame), weld wire composition, and types of welding machines used for each differing function.

The CONTRACTOR shall have an on-going quality control program of inspection, non-destructive and destructive testing to insure quality welds. The CONTRACTOR shall supply complete documentation as to how its welders are certified and monitored. Complete documentation shall be provided describing, in specific detail to this Contract, the type of weld testing performed, frequency of the tests and actions taken if defective workmanship is found. Documentation shall also be supplied on the testing and



monitoring of the welding devices used. All documentation shall be supplied in advance of the Design Review for approval by the DISTRICT.

5.78.4 Fire Resistance

The FTA/DOT Notice of Recommended Fire Safety Practices for Transit Bus and Van Materials must be adhered to the adoption of these recommended fire safety practices to help minimize a fire threat in the buses and, thereby reduce injuries and damages resulting from possible fire. If any material proposed by the DISTRICT shall not pass these requirements, the CONTRACTOR is responsible to propose alternative materials.

The DISTRICT shall require certification that the materials to be used in the construction of the buses have been tested by a recognized testing laboratory and that the results are within the recommended limits. The CONTRACTOR shall supply complete test report results before the shipment of the first bus.

5.79 TECHNICAL SPECIFICATION DEFINITIONS

Alternative. An alternative specification condition to the default bus configuration. The DISTRICT may define alternatives to the default configuration to satisfy local operating requirements. Alternatives for the default configuration shall be clearly identified.

Ambient Temperature. The temperature of the surrounding air. For testing purposes, ambient temperature must be between 16 °C (50 °F) and 38 °C (100 °F).

Analog Signals. A continuously variable signal that is solely dependent upon magnitude to express information content. NOTE: Analog signals are used to represent the state of variable devices such as rheostats, potentiometers, temperature probes, etc.

Audible Discrete Frequency: An audible discrete frequency is determined to exist if the sound power level in any 1/3-octave band exceeds the average of the sound power levels of the two adjacent 1/3-octave bands by 4 decibels (dB) or more.



Battery Compartment. Low-voltage energy storage, i.e. 12/24 VDC batteries.

Battery Management System (BMS). Monitors energy, as well as temperature, cell or module voltages, and total pack voltage. The BMS adjusts the control strategy algorithms to maintain the batteries at uniform state of charge and optimal temperatures.

Braking Resistor. Device that converts electrical energy into heat, typically used as a retarder to supplement or replace the regenerative braking.

Burst Pressure. The highest pressure reached in a container during a burst test.

Capacity (fuel container). The water volume of a container in gallons (liters).

Cells. Individual components (i.e., battery or capacitor cells).

Code. A legal requirement.

Container. A pressure vessel, cylinder, or cylinders permanently manifolded together used to store HYDROGEN GAS.

Container Appurtenances. Devices connected to container openings for safety, control or operating purposes.

Container Valve. A valve connected directly to a container outlet.

Curb Weight. Weight of vehicle, including maximum fuel, oil and coolant; and all equipment required for operation and required by this Specification, but without passengers or driver.

dBA. Decibels with reference to 0.0002 microbar as measured on the "A" scale.

DC to DC Converter. A module which converts a source of direct current (DC) from one voltage level to another.



Default Configuration Bus. The bus described if no alternatives are selected. Signing, colors, the destination sign reading list and other information must be provided by the DISTRICT.

Destroyed. Physically made permanently unusable.

Discrete Signal. A signal that can take only pre-defined values, usually of a binary 0 or 1 nature where 0 is battery ground potential and 1 is a defined battery positive potential.

Driver's Eye Range. The 95th-percentile ellipse defined in SAE Recommended Practice J941, except that the height of the ellipse shall be determined from the seat at its reference height.

Energy Density. The relationship between the weight of an energy storage device and its power output in units of watt-hours per kilogram (Wh/kg).

Energy Storage System (ESS). A component or system of components that stores energy and for which its supply of energy is rechargeable by a PPU and/or an off-vehicle energy source.

FCPP. Fuel Cell Power Plant

Flow Capacity. For hydrogen gas flow, this is the capacity in volume per unit time (normal cubic meters/minute or standard cubic feet per minute) discharged at the required flow rating pressure.

Fuel Line. The pipe, tubing or hose on a vehicle, including all related fittings, through which Hydrogen gas passes.

Fusible Material. A metal, alloy or other material capable of being melted by heat.

Fire Resistant. Materials that have a flame spread index less than 150 as measured in a radiant panel flame test per ASTM-E 162-90.

Fireproof. Materials that shall not burn or melt at temperatures less than 2000 °F.



Free Floor Space: Floor area available to standees, excluding the area under seats, area occupied by feet of seated passengers, the vestibule area forward of the standee line, and any floor space indicated by CONTRACTOR as non-standee areas such as, the floor space “swept” by passenger doors during operation. Floor area of 1.5 sq. ft shall be allocated for the feet of each seated passenger that protrudes into the standee area.

GAWR (Gross Axle Weight Rated). The maximum total weight as determined by the axle manufacturer, at which the axle can be safely and reliably operated for its intended purpose.

Gross Load. 150 lbs. for every designed passenger seating position, for the driver, and for each 1.5 square feet of free floor space.

GVW (Gross Vehicle Weight). Curb weight plus gross load.

GVWR (Gross Vehicle Weight Rated): The maximum total weight as determined by the vehicle manufacturer, at which the vehicle can be safely and reliably operated for its intended purpose.

High Pressure. Those portions of the Hydrogen gas fuel system that see full container or cylinder pressure.

High Voltage (HV). Greater than 50 volts (AC and DC power).

Hose: Flexible line.

Inverter. A module that converts DC power to and from AC power.

Labeled. Equipment or materials to which has been attached a label, symbol or other identifying mark of an organization, which is acceptable to the authority having jurisdiction and concerned with product evaluation, which maintains periodic inspection of production labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

Leakage. Release of contents through a Defect or crack. See Rupture.



Line: All tubes, flexible and hard, that carry fluids.

Local Regulations. Regulations below the state level.

Low-Floor Bus. A bus that, between at least the front (entrance) and rear (exit) doors, has a floor sufficiently low and level so as to remove the need for steps in the aisle between the doors and in the vicinity of these doors.

Low Voltage (LV). 50 volts or less (AC and DC power).

Lower Explosive Limit. The lowest concentration of gas where, given an ignition source, combustion is possible.

Maximum Service Temperature. The maximum temperature to which a container/cylinder shall be subjected in normal service.

Metallic Hose. A hose whose strength depends primarily on the strength of its metallic parts; it can have metallic liners or covers, or both.

Module. Assembly of individual components

Motor (Electric). A device that converts electrical energy into mechanical energy.

Motor (Traction). An electric motor used to power the driving wheels of the bus.

Operating Pressure. The varying pressure developed in a container during service.

Physical Layer. The first layer of the seven-layer International Standards Organization (ISO) Open Systems Interconnect (OSI) reference model. This provides the mechanical, electrical, functional and procedural characteristics required to gain access to the transmission medium (e.g., cable) and is responsible for transporting binary information between computerized systems.

Pipe: Nonflexible line.



Power. Work or energy divided by time

Power Density. Power divided by mass, volume or area.

Propulsion System. System that provides propulsion for the vehicle proportional to operator commands.

Real-Time Clock (RTC). Computer clock that keeps track of the current time.

Regenerative Braking. Deceleration of the bus by switching motors to act as generators, which return vehicle kinetic energy to the energy storage system.

Retarder. Device used to augment or replace some of the functions of primary friction based braking systems of the bus.

Rupture. Sudden and unstable damage propagation in the structural components of the container resulting in a loss of contents. See Leakage.

Seated Load. 150 lbs. for every designed passenger seating position and for the driver.

SLW (Seated Load Weight). Curb weight plus seated load.

Serial Data Signals. A current loop based representation of ASCII or alphanumeric data used for transferring information between devices by transmitting a sequence of individual bits in a prearranged order of significance.

NOTE: An example is the communication that takes place between two or more electronic components with the ability to process and store information.

Service Pressure. The settled pressure at a uniform gas temperature of 21 °C (70 °F) and full gas content. It is the pressure for which the equipment has been constructed, under normal conditions. Also referred to as the nominal service pressure or working pressure.

Settled Pressure. The gas pressure when a given settled temperature, usually 21 °C (70 °F), is reached.



Settled Temperature. The uniform gas temperature after any change in temperature caused by filling has dissipated.

Solid State Alternator. A module that converts high-voltage DC to low-voltage DC (typically 12/24 volt systems).

Sources of Ignition. Devices or equipment that because of their modes of use or operation, are capable of providing sufficient thermal energy to ignite flammable Hydrogen gas-air mixtures when introduced into such a mixture, or when such a mixture comes into contact with them

Special Tools. Tools not normally stocked by the DISTRICT.

Specification. A particular or detailed statement, account, or listing of the various elements, materials, dimensions, etc. involved in the manufacturing and construction of a product.

Standard. A firm guideline from a consensus group.

Standards. Standards referenced in “Part 5: Technical Specifications” are the latest revisions unless otherwise stated.

Standee Line. A line marked across the bus aisle to designate the forward area that passengers may not occupy when the bus is moving.

State of Charge (SOC). Quantity of electric energy remaining in the battery relative to the maximum rated Amp hour (Ah) capacity of the battery expressed in percent. This is a dynamic measurement used for the energy storage system. A full SOC indicates that the energy storage system cannot accept further charging from the FCPP or the regenerative braking system.

Stress Loops. The “pig-tails” commonly used to absorb flexing in piping.



Structure. The structure shall be defined as the basic body, including floor deck material and installation, load bearing external panels, structural components, axle mounting provisions and suspension beams and attachment points.

Wheelchair. A mobility aid belonging to any class of three- or four-wheeled devices, usable indoors, designed for and used by individuals with mobility impairments, whether operated manually or powered.

5.80 MANUALS & SCHEMATICS

Both bus manufacturer and major component OEM supplier technical manuals can be supplied for the buses built under this specification. The bus manuals should describe each system and component to a reasonable level of detail. In cases where detailed major component OEM manuals are available, they should be supplied to supplement the bus manuals and avoid duplication or copyright infringements. The bus manuals shall be build specific and not generic. The major OEM component supplier manual can include more than one component model. Manual types to supply include:

- Bus Operator's Guides
- Bus Service Manuals (incl PM, R&R, Troubelshooting, fueling/defueling info)
- Bus Parts Manuals
- Bus System Schematics and diagrams (Air, elect, PLC, H2 Gas, Hydraulic, Cooling)
- Bus DVD (including all Bus Technical Manuals above)
- HV Propulsion System (any available Service/Repair/Troubleshooting/Parts Manuals)
- HV ESS (any available Service/Repair/Troubleshooting/Parts Manuals)
- Fuel Cell (any available Service/Repair/Troubleshooting/Parts Manuals)
- Bus Service Manual should include all available H2 Gas Tank specifications such as gross volume, useable capacity, gas flow/pressure, estimated vehicle range. ~~Also all available system FMEA information.~~



One hard copy and two DVDs (manuals in PDF format) sets of draft bus Service, Parts, Operational Manuals and schematics shall be delivered with the first article. Final versions in the same quantities should be supplied within 90 days after last bus delivery.

DRAFT



Article 6. Quality

6.1 CONTRACTOR'S IN-PLANT QUALITY ASSURANCE REQUIREMENTS

The CONTRACTOR, the CONTRACTOR's manufacturing plant and organization shall be certified to the appropriate QS-9000/ISO 9000 series of standards or demonstrate compliance with an equivalent standard.

6.1.1 Quality Assurance Organization Establishment

The CONTRACTOR shall establish and maintain an effective in-plant quality assurance organization. It shall be a specifically defined organization and should be directly responsible to the CONTRACTOR's top management.

6.1.2 Control

The quality assurance organization shall exercise quality control over all phases of production, from initiation of design through manufacture and preparation for delivery. The organization shall also control the quality of supplied articles.

6.1.3 Authority and Responsibility

The quality assurance organization shall have the authority and responsibility for reliability, quality control, inspection planning, establishment of the quality control system, and acceptance/rejection of materials and manufactured articles in the production of the transit buses.

6.2 QUALITY ASSURANCE ORGANIZATION FUNCTIONS

6.2.1 Minimum Functions

The quality assurance organization shall include the following minimum functions:



6.2.2 Quality System Documentation:

The contractor's quality management system shall be properly documented in keeping with ISO 9000 series norms. This documentation shall accurately reflect the system proposed to be used in the manufacturer of the buses supplied under this contract.

6.2.3 Work instructions:

The quality assurance organization shall verify inspection operation instructions to ascertain that the manufactured product meets all prescribed requirements.

6.2.4 Records maintenance:

The quality assurance organization shall maintain and use records and data essential to the effective operation of its program. These records and data shall be available for review by the resident inspectors. Inspection and test records for this procurement shall be available for a minimum of one year after inspections and tests are completed.

6.2.5 Corrective action:

The quality assurance organization shall detect and promptly ensure correction of any conditions that may result in the production of defective transit buses. These conditions may occur in designs, purchases, manufacture, tests or operations that culminate in defective supplies, services, facilities, technical data or standards.

6.3 BASIC STANDARDS AND FACILITIES

The following standards and facilities shall be basic in the quality assurance process:

6.3.1 Configuration control:

The CONTRACTOR shall maintain drawings, assembly procedures and other documentation that completely describe a qualified bus that meets all of the options and special requirements of this



procurement. The quality assurance organization shall verify that each transit bus is manufactured in accordance with these controlled drawings, procedures and documentation.

6.3.2 Measuring and testing facilities:

The CONTRACTOR shall provide and maintain the necessary gauges and other measuring and testing devices for use by the quality assurance organization to verify that the buses conform to all specification requirements. These devices shall be calibrated at established periods against certified measurement standards that have known, valid relationships to national standards.

6.3.3 Production tooling as media of inspection:

When production jigs, fixtures, tooling masters, templates, patterns and other devices are used as media of inspection, they shall be proved for accuracy at formally established intervals and adjusted, replaced or repaired as required to maintain quality.

6.3.4 Equipment use by resident inspectors:

The CONTRACTOR's gauges and other measuring and testing devices shall be made available for use by the resident inspectors to verify that the buses conform to all specification requirements. If necessary, the CONTRACTOR's personnel shall be made available to operate the devices and to verify their condition and accuracy.

6.4 MAINTENANCE OF CONTROL

The CONTRACTOR shall maintain quality control of purchases:

6.4.1 Supplier control:

The CONTRACTOR shall require each Supplier to maintain a quality control program for the services and supplies that it provides. The CONTRACTOR's quality assurance organization shall inspect and test materials provided by Suppliers for conformance to specification requirements. Materials that have been inspected, tested and approved shall be identified as acceptable to the point of use in the manufacturing



or assembly processes. Controls shall be established to prevent inadvertent use of nonconforming materials.

6.4.2 Purchasing data:

The CONTRACTOR shall verify that all applicable specification requirements are properly included or referenced in purchase orders of articles to be used on transit buses.

6.4.3 Controlled conditions:

The CONTRACTOR shall ensure that all basic production operations, as well as all other processing and fabricating, are performed under controlled conditions. Establishment of these controlled conditions shall be based on the documented Work instructions, adequate production equipment and special working environments if necessary.

6.4.4 Completed items:

A system for final inspection and test of completed transit buses shall be provided by the quality assurance organization. It shall measure the overall quality of each completed bus.

6.4.5 Nonconforming materials:

The quality assurance organization shall monitor the CONTRACTOR's system for controlling nonconforming materials. The system shall include procedures for identification, segregation and disposition.

6.4.6 Statistical techniques:

Statistical analysis, tests and other quality control procedures shall be used when appropriate in the quality assurance processes.



6.4.7 Inspection status:

A system shall be maintained by the quality assurance organization for identifying the inspection status of components and completed transit buses. Identification may include cards, tags or other normal quality control devices.

6.5 INSPECTION SYSTEM

The quality assurance organization shall establish, maintain and periodically audit a fully documented inspection system. The system shall prescribe inspection and test of materials, Work in process and completed articles. As a minimum, it shall include the following controls:

6.5.1 Inspection personnel:

Sufficient trained inspectors shall be used to ensure that all materials, components and assemblies are inspected for conformance with the qualified bus design.

6.5.2 Inspection records:

Acceptance, rework or rejection identification shall be attached to inspected articles. Articles that have been accepted as a result of approved materials review actions shall be identified.

Articles that have been reworked to specified drawing configurations shall not require special identification. Articles rejected as unsuitable or scrap shall be plainly marked and controlled to prevent installation on the bus.

Articles that become obsolete as a result of engineering changes or other actions shall be controlled to prevent unauthorized assembly or installation.

Unusable articles shall be isolated and then scrapped. Discrepancies noted by the CONTRACTOR or resident inspectors during assembly shall be entered by the inspection personnel on a record that accompanies the major component, subassembly, assembly or bus from start of assembly through final inspection. Actions shall be taken to correct discrepancies or deficiencies in the manufacturing processes,



procedures or other conditions that cause articles to be in nonconformity with the requirements of the Contract specifications.

Inspection personnel shall verify the corrective actions and mark the discrepancy record. If discrepancies cannot be corrected by replacing the nonconforming materials, then the Agency may approve the modification, repair or method of correction to the extent that the Contract specifications are affected as its discretion.

6.5.3 Quality assurance audits:

The quality assurance organization shall establish and maintain a quality control audit program. Records of this program shall be subject to review by the DISTRICT.

6.6 INSPECTION

6.6.1 Inspection Stations

Inspection stations shall be at the best locations to provide for the Work content and characteristics to be inspected. Stations shall provide the facilities and equipment to inspect structural, electrical, hydraulic and other components and assemblies for compliance with the design requirements.

Stations shall also be at the best locations to inspect or test characteristics before they are concealed by subsequent fabrication or assembly operations. These locations shall minimally include underbody structure completion, body framing completion, body prior to paint preparation, water test, engine installation completion, underbody dress-up and completion, bus prior to final paint touchup, bus prior to road test and bus final road test completion.

6.7 MATERIAL, EQUIPMENT, WORKMANSHIP, AND WARRANTY

6.7.1 Workmanship

Material and equipment shall be new and of a quality equal to that specified or accepted as the best industry practice. Mechanical, electrical and electronic equipment and components shall be the products



of manufacturers of established good reputations regularly engaged in the fabrication of such equipment and components.

The Work shall be executed in conformity with the best accepted standard practice of the trade so as to contribute to maximum efficiency of operation, accessibility, pleasing appearance and minimum cost of maintenance.

The fit and finish of exterior and interior components shall be to the best industry standards of the automotive trade.

6.8 QUALITY ASSURANCE

Whenever under the Contract Documents it is provided that the CONTRACTOR shall furnish materials or manufactured components or shall do work for which no detailed specifications are set forth, the work performed shall be in full conformity and harmony with the intent to secure the best standards of manufacture in the work as a whole or in part. No advantage shall be taken by the CONTRACTOR in the omission of any part or detail which goes to make the bus complete and ready for service, even though such part or detail is not mentioned in the Specifications or in the CONTRACTOR's approved design.

6.8.1 Material Conformity

Components shall be current manufactured items that have been in successful transit revenue operation under comparable conditions for a period of at least two (2) years. This time requirement may not apply to minor details or to thoroughly demonstrated improvements in design or in materials of construction. Components not conforming to the time requirement may be used as proposed by the CONTRACTOR and approved by the DISTRICT. The use of such components may require, at the option of the DISTRICT, an extended warranty on the component or subsystem.

The two (2) year time requirement shall not apply to changes to components made by the CONTRACTOR in response to changes in government regulatory requirements.



6.8.2 Material and Equipment Specified by Name

Whenever any material or equipment is specified by patent, proprietary name or by the name of the manufacturer, such specification shall be considered as used for the purpose of describing the level of quality of the material or equipment desired and shall be considered as if followed by the words or approved equal, whether or not such words appear.

6.8.3 Proof of Compliance with Contract

In order that the DISTRICT may determine whether the CONTRACTOR has complied with the requirements of the Contract Documents not readily determinable through inspection and test of equipment, components or materials utilized in the work, the CONTRACTOR shall, at any time when requested, submit to the DISTRICT properly authenticated test results, design documents or other satisfactory proof as to its compliance with such requirements.

6.8.4 Defective Workmanship and Materials

When and as often as the DISTRICT determines that the Work done or being done under the Contract, or the kind or quality of components, equipment or materials supplied in connection therewith, is not fully and completely in accordance with any requirement of the Contract Documents, it may give notice of such noncompliance to the CONTRACTOR in writing, and the CONTRACTOR shall immediately upon receipt of such notice do all things required to remedy such noncompliance to DISTRICT satisfaction, at no additional cost to the DISTRICT.

6.9 DISTRICT/CONTRACTOR RELATIONS

6.9.1 Performance of the Work

The performance of the Work shall be done in complete conformance with the Contract documents, and consistent with the best standards within the industry for the manufacture of the transit buses.

It is expressly stipulated, however, that these Specifications and other Contract documents do not purport to control the means or methods of performing the CONTRACTOR's Work. The CONTRACTOR assumes the



entire responsibility for planning, design and testing and for methods of manufacturing and assembling the buses.

The Work performed and the buses delivered to the DISTRICT shall demonstrate the CONTRACTOR's consistent adherence to the best industry standards of design, manufacture and assembly.

6.9.2 DISTRICT Representatives

The Grant Manager is the DISTRICT's designated representative for all contacts by the CONTRACTOR. The Grant Manager will be designated by the DISTRICT at the time of award of this Contract and this person's name, address, phone number, fax number, and email address will be given to the CONTRACTOR.

The DISTRICT's Grant Manager shall answer or give progress updates to all written communications from the CONTRACTOR within seven (7) working days from receipt.

The DISTRICT will appoint a Fleet Inspector. It is the DISTRICT's intention to have one or more representatives present at the site of the Contractor's worksites during the manufacture or assembly of the buses. The Inspector will nominally be available eight (8) hours per day, five (5) days per week at the CONTRACTOR's worksite(s). Overtime, holiday work, swing shift, graveyard shift or split shift work will be at the discretion of the DISTRICT. The failure of the DISTRICT to provide an on-site representative for other than day shift work will not be a reason or excuse for delay in the manufacture and delivery of the buses.

6.9.3 Communications

The CONTRACTOR shall answer or give progress updates to all written communications from the DISTRICT's Inspector within seven (7) working days from receipt.

The function of the Inspector is to represent the DISTRICT at the site of the CONTRACTOR as required to:

- Perform technical liaison functions
- Assist in the non-legally binding interpretation of Contract Documents
- Inspect and approve the Work as it progresses for conformity to the Contract



- Witness performance and quality assurance tests
- Conduct the pre-shipment inspection of production units.

The DISTRICT's Inspector shall have complete access to any and all design offices, testing facilities and workshops at all times when work is being performed on this Contract, including subcontractor workshops where any major component, subassembly or assembly is being fabricated or assembled. The CONTRACTOR shall provide the Inspector with all information, equipment or facilities necessary to perform assigned tasks, including insuring conformity of the material or equipment to the specifications as required by the Inspector. The Inspector shall have authority to retain components for examination and testing and to document by photography or video or both all parts of the buses as well as any disputed process or technique used in the manufacture of the buses. The CONTRACTOR shall give a minimum of three (3) Work Days prior notice on any tests or inspections at which the presence of the Inspector is required by the Contract or requested by the Inspector.

Whenever the inspector (s) is (are) present at the CONTRACTOR's worksite, the CONTRACTOR shall make available at its cost a private and lockable office adjacent to the final inspection area with:

- Lockable desk (one per inspector)
- A minimum of one bookcase
- A minimum of one four-drawer file cabinet
- Telephone service providing all inside lines, one outside line; (CONTRACTOR pays telephone charges)
- Office supplies as needed.
- Interpreter, if necessary
- Internet access either by Wi-Fi or Ethernet
- Printer and scanner compatible with Windows 10 based computers



If English is not the prevalent language used at the worksite, an interpreter fluently proficient in the other language(s) used and in English shall be available to the Inspector during all working hours. All documentation shall be supplied in English including, but not limited to design drawings, inspection reports and any other Contract documentation.

In the event the DISTRICT's Inspector or a delegate is or becomes unacceptable to the CONTRACTOR, the CONTRACTOR will notify the DISTRICT's Contract Officer. The DISTRICT and the CONTRACTOR will promptly discuss the matter and attempt to arrive at a mutually satisfactory remedy or replacement.

6.9.4 CONTRACTOR's Appointed Representative(s)

At the time of execution of the Contract, the CONTRACTOR shall appoint a representative as a point of contact for the DISTRICT. The CONTRACTOR shall immediately supply the name, address, phone number, fax number, and email address of this person to the DISTRICT's Grant Manager. This representative shall be the contract liaison agent through whom the DISTRICT will communicate with the CONTRACTOR. The CONTRACTOR shall respond to all written communications from the DISTRICT's Grant Manager within seven (7) working days from receipt by CONTRACTOR's representative.

The CONTRACTOR shall also appoint a representative who will be the contact point in the CONTRACTOR's plant for the DISTRICT's Inspector. The CONTRACTOR's plant representative shall be the contract liaison agent through whom the DISTRICT's Inspector will communicate with the CONTRACTOR.

Correspondence from the CONTRACTOR's representative(s) will be binding on the CONTRACTOR.

The Inspector and the CONTRACTOR will jointly establish in a timely manner the procedure to be followed relating to identification and control of letters of transmittal, telephone memoranda, reports and drawings, and the CONTRACTOR shall comply with such procedure. The CONTRACTOR shall answer or give progress updates to all written communications from the DISTRICT's Inspector within seven (7) working days from issuance.



In the event a CONTRACTOR's appointed plant representative is or becomes unacceptable to the DISTRICT, the CONTRACTOR shall promptly discuss and consider the matter with the DISTRICT and attempt to arrive at a mutually satisfactory solution. If no such solution is developed, the CONTRACTOR shall replace the plant representative with a person acceptable to the DISTRICT.

6.9.5 Paragraph Headings

Headings to parts, sections, forms, articles and sub-articles are inserted for convenience of reference only and shall not affect the interpretation of these Contract Documents.

6.9.6 Successor's Obligation

All grants, covenants, provisos, and claims, rights, powers, privileges and liabilities contained in the Contract Documents shall be read and held as made by and with and granted to and imposed upon the CONTRACTOR and the DISTRICT and their respective heirs, executors, administrators, successors and assigns.

6.9.7 CONTRACTOR's Plant, Equipment and Employees

The CONTRACTOR alone shall at all times be responsible for the availability, adequacy, efficiency and sufficiency of its and its subcontractor's plant, equipment and employees.

6.9.8 Assignment of Contract

The CONTRACTOR is prohibited from assigning or subcontracting its rights or obligations under the Contract without the prior written permission of the DISTRICT, and no such assignment or subcontract will be effective until approved in writing by the other party. Involuntary assignment of the Contract caused by the CONTRACTOR being adjudged bankrupt, assignment of the Contract for the benefit of CONTRACTOR's creditors or appointment of a receiver on account of CONTRACTOR's insolvency shall all be considered as a failure to comply with the provisions of the Contract and subject to the termination for default provisions contained herein.



6.9.9 Subcontracts

The CONTRACTOR shall perform, with its own organization, not less than one third of the Work and shall not sublet to one subcontractor or supplier more than one half of the Work without the previous written consent of the DISTRICT. No subcontractor or supplier will be recognized as having a contract with the DISTRICT and all persons engaged in the Work will be considered employees of the CONTRACTOR or subcontractor. All subcontractor and supplier Work shall be subject to the provisions of the Contract through the terms and provisions of their subcontract that shall comply, in all pertinent respects, with the Contract Documents. No provision herein is intended to allocate or determine liability or responsibility between the CONTRACTOR and its subcontractors and suppliers. The provisions herein allocate or determine liability and responsibility only between the CONTRACTOR and the DISTRICT.

The CONTRACTOR will provide to auditors representing or designated by the DISTRICT, the name, address, phone number, fax number, and email address of any subcontractor or supplier who is engaged in the Work or supplying parts for the CONTRACTOR as it relates to this Contract. If such Work or parts information is needed for the specific purpose of certifying the Buy America requirements or any other requirements of this Contract, or if otherwise reasonably required, the DISTRICT reserves the right to audit or otherwise inspect the subcontractor's facilities, equipment and records.

6.9.10 Service of Notices

Any notice, order, direction, request or other written communication given by the DISTRICT to the CONTRACTOR under the Contract shall be deemed to be well and sufficiently given the CONTRACTOR if delivered to the CONTRACTOR's appointed representative, or if hand carried, sent by mail, or sent by email or by fax to the CONTRACTOR at the address or fax number designated as that of the CONTRACTOR's appointed representative with receipt thereof acknowledged. Notice shall also be deemed to be well and sufficiently given three (3) days after mailing said notice by registered mail to the CONTRACTOR's last known place of business.



6.9.11 Deviation from Contract

The CONTRACTOR shall not make any alterations or variation in or addition to or deviation or omission from the terms of this Contract without the prior written consent of the DISTRICT.

6.9.12 Suggestions to CONTRACTOR

Any plan or method of work suggested by the DISTRICT to the CONTRACTOR, but not specified or required in writing under the Contract, if adopted or followed by the CONTRACTOR in whole or part shall be used at the risk and responsibility of the CONTRACTOR, and the DISTRICT shall assume no responsibility therefore.

6.10.4 Build Schedule

The CONTRACTOR's contract administrator shall supply a fleet build production schedule based on the dates in the Notice to Proceed, and a description of the CONTRACTOR's schedule for plant operations.

The production schedule should contain specific milestone dates, such as:

- First vehicle on production line (date on which any work will begin);
- First vehicle off production line;
- First vehicle through manufacturer's quality assurance inspections;
- First vehicle shipped to the DISTRICT;
- Last vehicle on production line;
- Last vehicle off production line; and
- Last vehicle shipped to the DISTRICT.

6.10.5 Plant Tour (if meeting at CONTRACTOR's location)

The DISTRICT will review the entire process from start to finish and review the work completed at each line station, including quality control measures



6.11 LEAD PRODUCTION VEHICLE PRODUCTION

The CONTRACTOR shall conduct acceptance tests at its plant on each bus following completion of manufacture and before delivery to the DISTRICT. These pre-delivery tests shall be in conformance with the CONTRACTOR's published quality standards and procedures and shall include visual and measured inspections, as well as testing the total bus operation. The tests shall be conducted and documented in accordance with written test plans approved by the DISTRICT. The underfloor equipment shall be available for inspection by the resident inspectors, using a pit or bus hoist provided by the CONTRACTOR. A hoist, scaffold or elevated platform shall be provided by the CONTRACTOR to easily and safely inspect bus roofs. Delivery of each bus shall require written authorization of the primary resident inspector. Authorization forms for the release of each bus for delivery shall be provided by the CONTRACTOR. An executed copy of the authorization shall accompany the delivery of each bus.

Additional tests may be conducted at the DISTRICT's discretion to ensure that the completed buses have attained the required quality and have met the requirements in the APTA "Standard Bus Procurement Guidelines RFP," Section 6: Technical Specifications. The DISTRICT may, prior to commencement of production, demand that the CONTRACTOR demonstrate compliance with any requirement in that section if there is evidence that prior tests have been invalidated by the CONTRACTOR's change of supplier or change in manufacturing or quality assurance/control processes. Such demonstration shall be by actual test, or by supplying a report of a previously performed test on similar or like components and configuration. Any additional testing shall be recorded on appropriate test forms provided by the CONTRACTOR and shall be conducted before acceptance of the bus.

The pre-delivery tests shall be scheduled and conducted with 30 days' notice so that they may be witnessed by the resident inspectors, who may accept or reject the results of the tests. The results of pre-delivery tests, and any other tests, shall be filed with the assembly inspection records for each bus.

6.11.1 Visual and Measured Inspections

Visual and measured inspections shall be conducted with the bus in a static condition. The purpose of the inspection testing includes verification of overall dimension and weight requirements, that required



components are included and are ready for operation, and that components and subsystems designed to operate with the bus in a static condition do function as designed.

6.11.2 Total Bus Operation

Total bus operation shall be evaluated during road tests. The purpose of the road tests is to observe and verify the operation of the bus as a system and to verify the functional operation of the subsystems that can be operated only while the bus is in motion.

Each bus shall be driven for a minimum of 15 miles during the road tests. If requested, computerized diagnostic printouts showing the performance of each bus shall be produced and provided to the DISTRICT. Observed defects shall be recorded on the test forms. The bus shall be retested when defects are corrected and adjustments are made. This process shall continue until defects or required adjustments are no longer detected.

6.11.3 Post-delivery tests

The DISTRICT shall conduct acceptance tests on each delivered bus. These tests shall be completed within 15 days after bus delivery and shall be conducted in accordance with the DISTRICT's written test plans. The purpose of these tests is to identify defects that have become apparent between the time of bus release and delivery to the DISTRICT. The post-delivery tests shall include visual inspection and bus operations. No post-delivery test shall apply new criteria that are different from criteria applied in a pre-delivery test.

Buses that fail to pass the post-delivery tests are subject to non-acceptance. The DISTRICT shall record details of all defects on the appropriate test forms and shall notify the CONTRACTOR of acceptance or non-acceptance of each bus, after completion of the tests. The defects detected during these tests shall be repaired according to procedures defined in the contract.



6.11.4 Lead Production Vehicle Acceptance

In order to assess the CONTRACTOR's compliance with the Technical Specifications, the DISTRICT and the CONTRACTOR shall, at the pre-production meeting, jointly develop a Configuration and Performance Review document for review of the lead production vehicle. This document shall become part of the official record of the pre-production meeting.

CONTRACTOR shall produce its "presentation for delivery" documentation for review and discussion during this process.

Potential dimensional/performance tests that may be included in the Configuration and Performance Review include the following:

- Complete electrical system audit
- Dimensional requirements audit
- Seating capacity
- Water test
- Water runoff test
- Function test of systems/subsystems and components
- Sound/noise level tests
- Vehicle top speed
- Acceleration tests
- Brake stop tests
- Airflow tests
- PA function tests
- Air/brake system audit
- Individual axle weight
- Standee capacity



- Body deflection tests
- Silent alarm function test
- Interior lighting
- Exterior lighting
- Gradability test
- Kneeling system function
- HVAC pulldown/heat
- Speedometer
- Outside air infiltration (smoke)
- Wheelchair ramps
- Powertrain performance qualification
- Turning radius

This test shall be jointly conducted by the CONTRACTOR and powerplant manufacturer (including but not limited to charge air cooler performance, air to boil test, loss of coolant, fuel system electrical inputs and power plant protection system).

6.11.5 Buy America Audit

A post-delivery Buy America audit is required for federally funded bus procurements (see 49 CFR Part 663 for additional information). The onsite resident inspectors are to monitor the production processes to verify compliance with final assembly requirements identified by the Buy America pre- award audit. This audit is to verify compliance with final assembly requirements and final documentation of Buy America compliance and must be completed prior to title transfer.

6.12 RESIDENT INSPECTION PROCESS FOR SERIAL PRODUCTION

At the discretion of the DISTRICT, a decision is made to perform resident inspection using the DISTRICT's personnel, a contract inspector, or a combination of both. The decision is based on factors such as the



availability of personnel, knowledge/expertise in bus build project management, the size of the bus order, etc.

6.12.1 Inspector Responsibilities

The resident inspection process for the serial production of the buses begins according to the serial bus production schedule. Resident inspectors should represent the DISTRICT for all build- related issues (quality, conformance, etc.). Resident inspectors can also address contractual type issues but should only do so under the consult of the DISTRICT. Resident inspectors are sent to the CONTRACTOR's facility according to a Resident Inspection Schedule. Typically, one or two inspectors arrive on site at the manufacturing facility about one week prior to actual production to set up the resident inspection process and to begin preliminary quality assurance inspections for items such as power plant build-up and wire harness production, and to inspect incoming parts, fasteners, fluids, etc., that will be used in the production of the buses. During the serial production of the buses, the resident inspectors should monitor the production of each bus, verifying the quality of materials, components, sub-assemblies and manufacturing standards. In addition, the configuration of each vehicle should be audited using the CONTRACTOR's Build Specification and other documents to ensure contract compliance and uniformity.

6.12.2 Inspector Rotation/Scheduling

During the resident inspection phase, a single inspector or multiple inspectors could be used. If it is decided to use multiple inspectors, then the inspectors could be rotated on a biweekly to monthly basis as required. During the rotation of inspectors, a sufficient period of overlap should be provided to guarantee the consistency of the resident inspection process.

6.12.3 Resident Inspector Orientation

A resident inspector orientation by the CONTRACTOR should take place upon the arrival of the initial inspection team. The orientation should include expectations for the use of personal protective equipment (safety shoes, safety glasses, etc.), daily check-in and check-out requirements, lines of communication, use of production documents such as speed memos and line movement charts,



inspector/production meetings, inspector office arrangements, and anything else pertinent to the inspection team's involvement during the build. Many of the above items should already be formalized during the pre-production meeting.

6.12.4 Audits, Inspections and Tests

The resident inspection process monitors the production of each vehicle. Inspection stations should be strategically placed to test or inspect components or other installations before they are concealed by subsequent fabrication or assembly operations. These locations typically are placed for the inspection of underbody structure, body framing, electrical panels and harnesses, air and hydraulic line routings, installation of insulation, power plant build-up and installation, rust inhibitor/undercoating application, floor installation, front suspension alignment, and other critical areas.

6.12.5 Vehicle Inspections

Each bus is subjected to a series of inspections after the bus reaches the point of final completion on the assembly line. Typically, the vehicle manufacturer performs its own quality assurance inspections following assembly line completion before releasing each bus to the resident inspectors. The inspections for each vehicle are documented, signed off upon passing and included in the vehicle record.

These are the typical inspections performed on each bus by the resident inspectors:

- Water test inspection
- Road test inspection
- Interior inspection (including functionality)
- Hoist/undercarriage inspection
- Exterior inspection (including roof)
- Electrical inspection
- Wheelchair ramp/lift inspection



6.12.6 Water Test Inspection

The water test inspection checks the integrity of the vehicle's body seams, window frame seals and other exterior component close-outs for their ability to keep rainwater, road splash, melting snow and slush, and other exterior water from entering the inside of the vehicle. The duration of these tests shall be up to the discretion of the resident inspector or DISTRICT representative. The vehicle's interior is inspected for signs of moisture and water leaks. To perform the leak inspection, interior ceiling and side panels are removed, and access doors are opened. If any moisture or water is detected, then the source of the leak will be located and repaired by the CONTRACTOR, and the vehicle will be tested again.

6.12.7 Road Test Inspection

The road test inspection checks all the vehicle's systems and sub-systems while the vehicle is in operation. Typically, the road test inspection is performed immediately following the water test inspection to reveal any standing water that may be present due to a leak, but was not noticed during the "static" water test. Objectionable vibrations, air leakage and other factors that affect ride quality are recorded and reported to the vehicle manufacturer for resolution. Vehicle stability, performance, braking and interlock systems, HVAC, and other critical areas are checked to ensure that the vehicle is complete and ready to provide safe and reliable service.

The road test must include 1000 kilometers of driving at a minimum. The 1000 kilometer requirement can be met in an incremental fashion; the 1000 kilometers do not need to be continuous.

6.12.8 The following tests may be performed and recorded during the road test:

- Acceleration test
- Top speed test
- Gradability test
- Service brake test
- Parking brake test



- Turning effort test
- Turning radius test
- Shift quality
- Quality of retarder or regenerative braking action

During the road test, a vehicle may be taken to a weigh station to record the vehicle's front axle weight, rear axle weight and total vehicle (curb) weight.

6.12.9 Interior Inspection

The interior inspection checks the fit and finish of the interior installations.

In addition, the inspection also verifies the installation and function of systems and subsystems according to the Build Specification. All systems and functions accessed from the interior are inspected for functionality, appearance and safety.

Examples of systems/functions inspected include the following:

- Interior and exterior lighting controls
- Front and rear door systems
- Flooring installation
- Passenger and operator's seat systems
- Wheelchair securement and ramp systems
- Fire suppression system
- Electrical installations (multiplex, tell-tale wiring, panels, etc.)
- Energy storage system
- Fuel cell power plant and support systems
- Hydrogen storage and distribution
- Window systems and emergency escape portals



- Operator dash/side panel controls/indicators

6.12.10 Hoist/Undercarriage Inspection

The hoist/undercarriage inspection checks the installation of components, wiring, air lines, presence of fluid leaks, etc., located under the vehicle. Typically, this inspection is performed following the road test. The vehicle is lifted onto a hoist or pulled over a pit for the inspection. Areas inspected are the front suspension, air bags, airline routings, electrical connections and routings, drive-train components, linkages, and any other system or component that may be prone to early failure due to inadequate installation techniques. All lines, cables, hoses, etc., are inspected for proper securement and protection to prevent rubbing, chafing or any other condition that could result in a failure. The power plant/powerplant and HVAC compartments are also inspected during this time.

6.12.11 Exterior Inspection

The exterior inspection checks the fit and finish of components installed on the exterior of the vehicle. Access panels are opened and accessories are inspected for proper installation. In addition, vehicle paint, graphics and proper decals are also inspected. Acceptable paint finish quality (orange peel, adhesion, etc.) should be agreed on with the vehicle manufacturer prior to production to ensure consistency of inspections.

6.12.12 Electrical Inspection

The vehicle's main electrical panels and other sub-panels are inspected for proper components, to include relays, fuses, modules, terminal strips, decals, etc. In addition, electrical harnesses are inspected for proper wiring and termination techniques, bulkhead protection, looming and other items that could result in future electrical failure. Onboard vehicle compartment schematics are verified for accuracy.

6.12.13 Wheelchair Ramp Inspection

The wheelchair ramp assembly is inspected for proper installation and performance. Clearances critical to the operation of the ramp are verified, and the ramp's electrical systems are inspected to ensure



appropriate wire routings and protection. The successful integration of the ramp assembly into the vehicle is verified, and the vehicle interlocks are checked during automatic and manual ramp operation.

6.13 AUDITS

During production of the buses quality assurance inspection tests may be performed to ensure that the manufacturer's quality standards are being followed. These inspection audits could be on items such as torque wrench calibrations, proper techniques for fastener installations, proper use and type of adhesives, use of correct installation drawings on the production line, etc.

6.13.1 Communications

The lines of communications, formal and informal, should be discussed and outlined in the pre- production meeting. As previously discussed, resident inspectors should represent the DISTRICT for all bus-build related issues (quality, conformance, etc.). Resident inspectors can relay communications addressing contractual type issues but should do so only under the consult of the DISTRICT. Actual personnel contacts for the manufacturing facility should be established during resident inspector orientation. These contacts could include quality assurance, production, material handling, engineering, and buy-off area personnel.

6.13.2 Documentation

The following documents/reports are typically generated during the bus build process:

- Vehicle Build Specification
- Sales Order
- Pre-production meeting notes
- Production correspondence (vehicle build file)
- Manufacturer's Vehicle Record (Warranty file)
- Vehicle line documents
- Serialization documents (Warranty file) Alignment verification
- Brake testing



- HVAC testing and checkout Manufacturer's QA checklist and signoff
- Weight Slip (Warranty file)
- Performance Tests document (vehicle build file)
- Acceleration Test Top Speed Test Gradability Test
- Interior Noise Test A – Stationary Interior Noise Test B –
- Dynamic Exterior Noise Test A – Pull Away Exterior Noise Test B – Pass-By Exterior Noise Test C – Curb Idle Turning Radius Test
- Turning Effort Test Parking Brake Test Service Brake Test
- Vehicle Acceptance Inspections – Production (Warranty file)
- Water Test Inspection Report Road Test Inspection Report Interior Inspection Report
- Hoist/Undercarriage Inspection Report Exterior Inspection Report
- Electrical Inspection Report
- Wheelchair Inspection Report
- Speed Memos (Warranty file)
- DISTRICT Vehicle Inspection record (Warranty file) Release for Delivery documentation (Warranty file)
- Release for delivery documentation (Warranty file)
- Post-Production Acceptance – Certificate of Acceptance (Accounting)
- Post-Delivery Inspection Report – (Fleet Management & Warranty files)

6.13.2 Vehicle Release for Delivery

Upon satisfactory completion of all inspection, audit and test criteria, and resolution of any outstanding issues affecting the purchase of any or all buses, proper documentation (the Release for Delivery) is signed by the designated resident inspector authorizing the CONTRACTOR to deliver the vehicle to the DISTRICT's facility, where it will undergo a post-delivery inspection process and final acceptance. The satisfactory sign-off of the Release for Delivery should complete the resident inspector's duties for each bus. In final



preparation for delivery, the CONTRACTOR may request the resident inspector to do a final walk-through of the bus after it has been cleaned and prepped for shipping.

6.13.3 Sequestration of Buses Released for Delivery

Buses approved for delivery by the DISTRICT shall be placed in an area where the buses' physical safety shall be protected. In addition, the CONTRACTOR shall secure the buses so that there is no possibility of misappropriation of parts or equipment from the completed buses to occur before delivery.

ARTICLE 7. Warranty

7.1 BASIC PROVISIONS

The proposed warranties shall start on the date of final acceptance of each bus by DISTRICT, which will require completion and corrections of all, and any discrepancies noted during the Quality Assurance (QA) and Quality Control (QC) inspection processes. **The acceptance process will require that each bus operate in revenue passenger service for a period of forty (40) hours of continuous service without any failures.** The QA/QC process shall be documented via DISTRICT's Work Order Control System.

The CONTRACTOR shall be formally informed in writing by the DISTRICT of the official final acceptance date of each bus, in order to commence the warranty terms. The CONTRACTOR shall provide verification of warranty registration immediately upon the registration of each bus. The CONTRACTOR shall ensure that such suppliers, sub suppliers, vendors, and subcontractors satisfactorily perform warranty related work.

The CONTRACTOR shall ensure in its procurement arrangements that the warranty requirements of this Contract are enforceable through and against the CONTRACTOR's suppliers, vendors, material suppliers and subcontractors. Any inconsistency or difference between the warranties extended to the DISTRICT by the CONTRACTOR and those extended to the CONTRACTOR by its suppliers, vendors, material suppliers and subcontractors shall be at the risk and expense of the CONTRACTOR. Such inconsistency or difference will not excuse the CONTRACTOR's full compliance with its obligations under the Contract Documents



Upon request of the DISTRICT, the CONTRACTOR promptly shall provide to the DISTRICT complete copies of all written warranties or guarantees and documentation of any other arrangement relating to such warranties or guarantees extended by the CONTRACTOR's suppliers, sub suppliers, vendors, and subcontractors covering parts, components, and systems utilized in the bus.

Unless specified otherwise, all warranty service shall be provided by at the operating division where the bus needing such service is normally domiciled; which may be at any of the DISTRICT's operating facilities in Urbana, Illinois.

No administration fees, registration fees, filing fees, travel miles, technician fees or any other fees shall be charged to DISTRICT for all or any steps, processes, etc., required or associated with any aspect of the provided warranties and or power plant/bus registrations.

7.2 WARRANTY REQUIREMENTS

7.2.1 CONTRACTOR Warranty

Warranties in this document are in addition to any statutory remedies or warranties imposed on the CONTRACTOR. Any warranties extended by component or subsystem manufacturers/suppliers that exceed the warranty terms shall be provided at no cost to the DISTRICT. Consistent with this requirement, the CONTRACTOR warrants and guarantees to the DISTRICT each complete bus, and specific subsystems and components as follows.

7.2.2 Complete Bus

The complete bus, propulsion system, components, major subsystems, and body and chassis structure, shall be warranted to be free from Defects and Related Defects for two (2) years or 100,000 miles, whichever comes first, beginning on the date of final acceptance. The warranty is based on regular operation of the bus under the operating conditions prevailing in the DISTRICT's locale.



7.2.3 Body and Chassis Structure

The body, body structure, bolted and non- bolted components, frames, skeletal, cages, enclosures, structural elements of the suspension, such as the primary load carrying members of the bus structure, shall be warranted from corrosion, failure and/or fatigue, for 12 years or 500,000 miles, whichever comes first.

7.2.4 Propulsion System

The complete fuel-cell system, to include the fuel cell, motor drives, batteries, electric drives, controllers and drive and non-drive elements of the propulsion system shall be warranted to be free from Defects and Related Defects for six years unlimited miles.

7.2.5 Major Subsystems

Major subsystems shall be warranted to be free from Defects and Related Defects, as outlined in the table below.

New Flyer XHE60 Warranty Table

Component/System	Year(s)	Mileage
Field Service, Warranty and Service Support (New Flyer will support the buses for the life of the bus, however, this should not be interpreted as full-time on-site support.)	12	500,000
On-site service support (field tech)	1.5	UNLIMITED
Chassis structure including all elements of the suspension systems	12	500,000
Corrosion Warranty (bolted hydrogen racks and axle bunks)	12	500,000
Complete Bus Warranty "Bumper to Bumper"	2	100,000



Component/System	Year(s)	Mileage
Basic Bus Structure	3	150,000
Brackets	2	100,000
Clamps	2	100,000
Hinges, access doors, protective panels, walls,	3	150,000
New Flyer "Connect" includes service fees, data monitoring system, and telematics with real-time data tracking during the six-year warranty and service and support period	6	UNLIMITED
Fuel cell power train. Includes service and support for fuel cells and batteries (lithium-ion battery system and energy management hardware and software)	6	UNLIMITED
Propulsion System, including traction motor, inverters, and controller	6	UNLIMITED
Fuel System including plumbing, controllers, valves, fittings, solenoids, fuel nozzles, pressure gauges, pressure regulators, pressure relief valves, heat exchangers, fuel pressure sensors, and pressure transducers	2	100,000
High Voltage* motors, drives, controllers, coolers, and sensors * High Voltage is defined as any unit, component, controller, or system operating at a nominal voltage higher than 24-Volts.	6	UNLIMITED
24 V DC-DC converter/inverter, or equivalent	2	100,000
Hydrogen Fuel Tanks – Warranty	15	UNLIMITED
Hydrogen Fuel Tanks – Service Life	20	UNLIMITED
Fire Suppression System & Hydrogen Detection Systems	2	100,000
Power Steering Pump	2	100,000
HVAC, Heating, & Ventilation	3	UNLIMITED
Air Compressor	2	100,000
Air Dryer	2	100,000



Component/System	Year(s)	Mileage
Axle Front	5	300,000
Axle Rear	5	300,000
Brake System	3	150,000
Air system, including tanks, mountings, solenoids, relays, and application valves	2	100,000
Cooling System	3	150,000
Decals	6	UNLIMITED
Destination Signs	6	UNLIMITED
Door System, including motors and actuators	3	150,000
Electrical System; Vansco, Controllers, 24 V Batteries, relays,	3	150,000
LED Exterior Lights	12	500,000
LED Interior Lights	12	500,000
LED Headlights	6	UNLIMITED
Operator's Seat	5	UNLIMITED
Passenger Seats: Frames and mounting	5	UNLIMITED
Passenger Seats: Fabric and cushions	2	100,000
Wheelchair Ramp – Complete, including controllers, reservoirs, solenoids, and sensors	2	100,000
ADA Equipment; Q-Pod system, tie downs, and stop request	5	UNLIMITED
Windows and window frames	2	100,000
Wiper system, including wiper motors and mechanism	2	100,000
RCA flooring and material	12	500,000
Paint	5	UNLIMITED
Towing	2	100,000
Automatic Passenger Counters	5	300,000
Camera System	5	Unlimited
INIT system	5	Unlimited



7.2.6 Extension of Warranty

If, during the warranty period, repairs or modifications on any bus, made necessary by defective design, materials or workmanship are not completed due to lack of material or inability to provide the proper repair for 30 (thirty) calendar days, the applicable warranty period shall be extended by the number of days equal to the delay period.

7.3 VOIDING OF WARRANTY

The warranties shall not apply to the failure of any part or component of the bus that directly results from misuse, negligence, accident, or repairs not conducted in accordance with the CONTRACTOR provided maintenance manuals and with workmanship performed by adequately trained personnel in accordance with recognized standards of the industry. The warranty shall also be void if the DISTRICT fails to conduct normal inspections and scheduled preventive maintenance procedures as recommended in the CONTRACTOR's maintenance manuals and that omission caused the part or component failure. The DISTRICT shall maintain documentation, auditable by the CONTRACTOR, verifying service activities in conformance with the CONTRACTOR's maintenance manuals.

7.3.1 Exceptions and Additions to Warranty

The warranties shall not apply to the following scheduled maintenance items, normal wear-out items, and items furnished by the DISTRICT, except insofar as such equipment may be damaged by the failure of a part or component for which the CONTRACTOR is responsible.

The warranties shall not apply to components and major subsystems specified by the DISTRICT, and required by the DISTRICT to be installed on the bus by the CONTRACTOR, if the following conditions apply: the DISTRICT has rejected the CONTRACTOR's requests for approved equal under Section I of the DISTRICT's solicitation, and the component or major subsystem supplier declines to participate in this warranty; and the CONTRACTOR notifies the DISTRICT in writing with, or before submitting, CONTRACTOR's original Offer. The CONTRACTOR shall pass on to the DISTRICT any warranty, offered by a component supplier, that is superior to that required herein.



7.4 DETECTION OF DEFECTS

If the DISTRICT detects a Defect within the warranty periods defined in "Warranty Requirements", it shall within 20 (twenty) working days, notify the CONTRACTOR's representative. Within five working days after receipt of notification, the CONTRACTOR's representative shall either agree that the Defect is in fact covered by warranty, or reserve judgment until the subsystem or component is inspected by the CONTRACTOR's representative or is removed and examined at the DISTRICT's property or at the CONTRACTOR's plant. At that time, the status of warranty coverage on the subsystem or component shall be mutually resolved between the DISTRICT and the CONTRACTOR. Work shall commence to correct the Defect within 10 (ten) working days after receipt of notification and shall be conducted in accordance with "Repairs by CONTRACTOR" in the Contract.

7.4.1 Scope of Warranty Repairs

When warranty repairs are required, the DISTRICT and the CONTRACTOR's representative shall agree within five (5) working days after notification on the most appropriate course for the repairs and the exact scope of the repairs to be performed under the warranty. If no agreement is obtained within the five-day period, the DISTRICT reserves the right to commence the repairs in accordance with "Repairs by DISTRICT".

7.5 FLEET DEFECTS

7.5.1 Occurrence and Remedy

A fleet defect is defined as cumulative failures of any kind in the same components in the same or similar application where such items covered by the warranty and such failures occur on both buses delivered under this contract during the warranty period .

The contractor or contractor's supplier will correct a fleet defect under the warranty provisions and to the satisfaction of the DISTRICT. After notification of a fleet defect by the DISTRICT, the CONTRACTOR will present a remediation plan for that fleet defect to the DISTRICT.



The DISTRICT will have the right to reject any remediation plan that the DISTRICT deems to not be in the best interest of the DISTRICT. In the event of such a rejection of a remediation plan the CONTRACTOR will either submit an acceptable plan or apply for arbitration. When a suitable remediation plan is accepted by the DISTRICT, the CONTRACTOR or CONTRACTOR's supplier will then schedule the implementation of that plan with the DISTRICT's approval.

The CONTRACTOR shall correct a fleet defect under the warranty provisions defined in "Repair Procedures". After correcting the Defect, the DISTRICT and the CONTRACTOR shall mutually agree to and the CONTRACTOR shall promptly undertake and complete a work program reasonably designed to prevent the occurrence of the same Defect in all other buses and spare parts purchased as necessary to maintain the buses. Where the specific Defect can be solely attributed to particular identifiable part(s), the work program shall include redesign and/or replacement of only the defectively designed and/or manufactured part(s). In all other cases, the work program shall include inspection and/or correction of all of the buses in the fleet via a mutually agreed to arrangement.

7.5.2 Exceptions to Fleet Defect Provisions

The fleet defect warranty provisions shall not apply to the DISTRICT supplied items such as fareboxes, radio and fare collection equipment, communication systems, and tires.

Fleet defect warranty provisions shall not apply to components and major subsystems specified by the DISTRICT and required by the DISTRICT to be installed on the bus by the CONTRACTOR, if the following conditions apply: the DISTRICT has rejected the CONTRACTOR's requests for approved equal and the component or major subsystem supplier declines to participate in this warranty; and the CONTRACTOR notifies the DISTRICT in writing with, or before submitting, CONTRACTOR's original Offer. The CONTRACTOR shall pass on to the DISTRICT any warranty, offered by a component supplier, that is superior to that required herein.



7.6 REPAIR PROCEDURES

7.6.1 Repair Performance

To the extent practicable, the DISTRICT will allow the CONTRACTOR or its designated representative to perform such work. At its discretion, the DISTRICT may perform such work if it determines it needs to do so based on transit service or other requirements, except for major component repairs (Propulsion System, Hydrogen Fuel Cell, Hydrogen Storage System, Energy Storage System, HVAC, and Destination Signs). Such work shall be reimbursed by the CONTRACTOR including parts, labor and towing costs.

7.6.2 Repairs by CONTRACTOR

The CONTRACTOR or its designated representative shall begin work on warranty covered repairs, within three calendar days after receiving notification of a Defect from the DISTRICT. The DISTRICT shall make the bus available to complete repairs timely with the CONTRACTOR repair schedule. The CONTRACTOR shall provide at its own expense all spare parts, and tools required to complete repairs. This allows CONTRACTOR to work with the DISTRICT to get buses back into revenue service as quickly as possible.

7.7 REPAIRS BY THE DISTRICT

7.7.1 Parts Used

If the DISTRICT performs the warranty-covered repairs, it shall correct or repair the Defect and any Related Defects utilizing parts supplied by the CONTRACTOR specifically for this repair. At its discretion, the DISTRICT may use CONTRACTOR-specified parts available from its own stock if deemed in its best interest. Reports of all parts loaned to the CONTRACTOR, covered by this warranty shall be submitted by the DISTRICT to the CONTRACTOR for reimbursement or replacement of parts monthly, or at a period to be mutually agreed upon. The CONTRACTOR shall replace or reimburse the DISTRICT at full value all parts loaned to the CONTRACTOR within ten days after receiving the report.



7.7.2 CONTRACTOR Supplied Parts

If the DISTRICT requests that the CONTRACTOR supply new parts for warranty-covered repairs these parts shall be shipped prepaid to the DISTRICT from any source selected by the CONTRACTOR within 10 (ten) working days of receipt of the request for said parts. Parts supplied by the CONTRACTOR shall be Original Equipment Supplier (OEM) equivalent or superior to that used in the bus original manufacture.

7.7.3 Defective Components Return

The CONTRACTOR may request that parts covered by the warranty be returned to the manufacturing plant. The total cost for this action shall be paid by the CONTRACTOR. Materials should be returned in accordance with CONTRACTOR's instructions.

7.7.4 Failure Analysis

The CONTRACTOR shall, upon specific request of the DISTRICT, provide a failure analysis of fleet defect- or safety-related parts, or major components, removed from buses under the terms of the warranty, that could affect fleet operation. Such reports shall be delivered within 45 days of the receipt of failed parts.

7.8 REIMBURSEMENTS

7.8.1 Reimbursement for Labor

The DISTRICT shall be reimbursed by the CONTRACTOR for labor. The amount shall be determined by multiplying the number of man hours actually required to correct the Defect by a per hour, mechanic, straight wage rate, plus 25% percent fringe benefits and 58% overhead rate $[SWR \times 125] \times 1.58$, plus the cost of towing in the bus if such action was necessary and if the bus was in the normal service area. These wage and fringe benefit rates shall not exceed the rates in effect in the DISTRICT's service garage at the time the Defect correction is made.



7.8.2 Reimbursement for Parts

The DISTRICT shall be reimbursed by the CONTRACTOR for defective parts and for parts that must be replaced to correct the Defect. The reimbursement shall be at the current price at the time of repair and shall include taxes where applicable and 15% (fifteen) percent handling costs not to exceed \$150.

7.8.3 Reimbursement Requirements

The CONTRACTOR shall reimburse the DISTRICT for warranty labor and/or parts within 45 calendar days from the date of approval.

7.9 WARRANTY AFTER REPLACEMENT/REPAIRS

If any component, unit, or subsystem is repaired, rebuilt or replaced by the CONTRACTOR or by the DISTRICT with the concurrence of the CONTRACTOR, the component, unit, or subsystem shall have the unexpired warranty period of the original. Repairs shall not be warranted if CONTRACTOR-provided or authorized parts are not used for the repair unless the CONTRACTOR has failed to respond within five days, in accordance with "Scope of Warranty Repairs".

The warranty on items determined to be fleet defects shall be extended for the time and/or miles of the original warranty remaining at the time the fleet defect was identified. This extended warranty shall begin on the repair/replacement date for corrected items on each bus.



CHAMPAIGN-URBANA MASS TRANSIT DISTRICT
Two (2) XHE60 Fuel Cell Electric Buses

NEW FLYER
CONTRACT 2018-1421

EXHIBIT A: PRICE QUOTE AND PAYMENT MILESTONES



**New Flyer Price Quote 2 XHE60
CUMTD SRxxxx
[m/d/yr]**

Firm-fixed pricing per bus as specified in the Technical Specifications, including services, supplies, direct and indirect expenses, profit and applicable taxes. Pricing shall remain firm for two (2) buses.

Description	Quantity	Unit Price	Total
Base Price	2	\$ -	\$ -
Warranty	2	\$ -	\$ -
Training	1	\$ -	\$ -
Tools	1	\$ -	\$ -
Publications	2	\$ -	\$ -
ADA Equipment	2	\$ -	\$ -
Delivery Charges	2	\$ -	\$ -
XHE60 TOTAL (2)			\$ -



CUMTD Payment Milestones (m/d/yr)		
<p>New Flyer will be paid in accordance with two milestones. Based on a bus price not to exceed TBD, the first payment of TBD/bus will be processed after the delivery of each bus to CUMTD and its "Acceptance" by CUMTD. Acceptance will be granted after CUMTD has completed its Post Delivery Inspection (PDI), within 15 days of receipt of each bus, and all discrepancies identified in the PDI have been fixed by New Flyer. The final payment in the amount of TBD/bus will be processed following forty (40) hours of continuous revenue service of each bus without any defects. A payment of TBD for tools (Exhibit D-2) will be processed following their delivery along with the delivery of the first bus.</p>		
	Payment Milestones ¹⁾	Payment Amount
	New Flyer Price Quote/Bus (including warranty, publications, and training)	\$ -
	Issue Contract Notice to Proceed	**
1st Bus	3 Acceptance of first bus (85% of total price)	\$ -
	4 Following 40 hours of continuous revenue service without defects (15% of total price)	\$ -
	Subtotal – First Bus	\$ -
2nd Bus	3 Acceptance of second bus (85% of total price)	\$ -
	4 Following 40 hours of continuous revenue service without defects (15% of total price)	\$ -
	Subtotal – Second Buses	\$ -
	Total All Two (2) Buses	\$ -
Footnotes		\$0.00 Tools
	1) Payments to be processed in accordance with AC Transit payment terms, after milestones have been met and New Flyer has submitted invoices.	\$ -
	2) Completion dates are estimates.	TOTAL ORDER
	** To be determined by AC Transit.	



CHAMPAIGN-URBANA MASS TRANSIT DISTRICT
Two (2) XHE60 Fuel Cell Electric Buses

NEW FLYER
CONTRACT **2018-1421**

EXHIBIT B: DELIVERY SCHEDULE

DRAFT



CHAMPAIGN-URBANA MASS TRANSIT DISTRICT
Two (2) XHE60 Fuel Cell Electric Buses

NEW FLYER
CONTRACT **2018-1421**

EXHIBIT C: TRAINING AND PUBLICATIONS

DRAFT



EXHIBIT C-1: TRAINING

Tooling

Warranty

DRAFT



CHAMPAIGN-URBANA MASS TRANSIT DISTRICT
Two (2) XHE60 Fuel Cell Electric Buses

NEW FLYER
CONTRACT 2018-1421

DRAFT



CHAMPAIGN-URBANA MASS TRANSIT DISTRICT
Two (2) XHE60 Fuel Cell Electric Buses

NEW FLYER
CONTRACT ~~2018-1421~~

EXHIBIT C-2: PUBLICATIONS

DRAFT



CHAMPAIGN-URBANA MASS TRANSIT DISTRICT
Two (2) XHE60 Fuel Cell Electric Buses

NEW FLYER
CONTRACT 2018-1421

EXHIBIT D: NEW FLYER MASTER RESOLUTION LIST – REV K

[See File “Exhibit B – SR 2178 MRL Rev J.xls”]



To: Board of Trustees
From: Jane Sullivan, Grants & Governmental Affairs Director
Date: May 29, 2019
Subject: Review and Approval of Revisions to Procurement Manual

- A. Introduction** – The purpose of the Procurement Manual is to reflect the District’s policies, procedures, and practices for the procurement of equipment, services, and supplies which ensure compliance to applicable federal, state, and local laws and regulations.
- B. Recommended Action:** Staff recommends approval of the Procurement Manual and appendices dated May 2019.
- C. Prior Trustee Action**
- On September 26, 2018 the Board of Trustees reviewed and approved changes to the Procurement Manual related to changes in the Micro-Purchase Threshold.
 - On January 25, 2018 the Board of Trustees reviewed and approved changes to the Procurement Manual.
- D. Summary:** The following documents have been modified/added:
- Six new appendices have been added and referenced in the Procurement Manual (page 2) to assist with the District’s DBE efforts.
 - Appx. 2.5b DBE Participation Form
 - Appx. 2.5c Good Faith Effort Guidance
 - Appx. 2.5d Subcontractor Termination Request Form
 - Appx. 2.5e DBE Project Compliance Review Checklist
 - Appx. 2.5f DBE Field Log
 - Appx. 2.6 Bidders List
 - Appx. 3.4a Procurement of Architectural, Engineering, and Land Survey has been created.
 - Appx. 3.1a Procurement Threshold Policy has been modified and changed to “Construction & Equipment Procurement Policy”.
 - Appx. 4.5 Protest Policy has been modified
 - Changes have been made through the Manual and appendices to respond to recent updates/changes to Staff positions (Finance Director, Grants & Governmental Affairs Director)
- E. Background:** The Board’s January 2018 approval included granting the Managing Director authority to approve changes to select appendices without presenting for Board approval. The Procurement Manual document and those appendices identified as policies still require Board approval.
- F. Alternatives – advantages/disadvantages**
1. Approve the Procurement Manual and appendices dated April 2019. This allows the District to operate under the updated requirements.
 2. Do not approve the Procurement Manual and provide further direction to staff.
-



Originated	Revision #6	Approved
K. Gnadt	J. Sullivan	Board of Trustees
06/28/2006	04/24/2019	

Procurement Manual

CHAMPAIGN-URBANA MASS TRANSIT DISTRICT

1101 EAST UNIVERSITY AVENUE

URBANA, ILLINOIS 61802-2009

(217) 384-8188

MAY 2019

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SECTION 1: INTRODUCTION

This Procurement Manual is a guide for those persons involved with the procurement of equipment, services, and supplies for the Champaign-Urbana Mass Transit District (“MTD” or “the District”). The Champaign-Urbana Mass Transit District utilizes the following procurement procedures which conform to applicable Federal, State, and local laws and regulations.

The governing documents used to formulate this Procurement Manual are the rules, regulations, laws, and guidelines contained in the following:

- Federal Transit Administration (FTA) Circular 4220.1F, Third Party Procurement ([Rev. 4, March 18, 2013](#));
- FTA Master Agreement ([FTA MA\(23\) updated October 1, 2016](#));
- Illinois Department of Transportation – Office of Intermodal Project Implementation (IDOT-IPI) Capital Improvement Grants Manual ([September, 1982](#));
- Illinois Grant Accountability and Transparency Act (GATA) ([44 Ill. Adm. Code 7000 Subtitle F](#)); and
- Other Federal and State governing rules, acts, regulations, and laws may also be incorporated or referenced, as appropriate, within this Procurement Manual.

SECTION 2: PLANNING

2.1 Organizational Roles and Responsibilities

The District maintains adequate third-party contracting capability to undertake procurements effectively and efficiently in compliance with applicable Federal, State, and local requirements. No employee undertakes any procurement function without delegated authority and guidelines.

Refer to **Appx. 2.1 Procurement Roles & Responsibilities** for an outline of the roles and responsibilities of individuals involved in procurement-related activities.

2.2 Standards of Conduct

MTD maintains written standards of conduct covering conflicts of interest and governing the actions of its employees engaged in the selection, award, and administration of contracts. In general, District employees must strictly avoid any conflict of interest or the appearance of a conflict of interest in recipient-contractor relationships. Refer to **Appx. 2.2 Procurement Ethics Policy**.

2.3 Competition

All procurement transactions must be conducted in a manner providing full and open competition. Refer to **Appx. 2.3 Competition Policy**.

2.4 Organizational Conflicts of Interest

Engaging in practices that result in organizational conflicts of interest is prohibited. Refer to **Appx. 2.2 Procurement Ethics Policy**.

2.5 Disadvantaged Business Enterprise (DBE)

The District takes all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible. Refer to **Appx. 2.5a Disadvantaged Business Enterprise Policy**.

Appx. 2.5b DBE Participation Form should be completed by all bidders to indicate the percentage of DBE participation in the bid. A DBE Subcontractor Form must be completed for each DBE subcontractor listed.

Appx. 2.5c Good Faith Effort Guidance provides guidance to the District and bidders on determination of good faith efforts to achieve DBE goals. This includes examples of acceptable and unacceptable efforts.

Appx. 2.5d Subcontractor Termination Request Form must be used when a contractor requests termination of a DBE subcontractor. Contractor must follow and document the appropriate steps, including efforts to replace DBE subcontractor with another DBE firm. This form is used to document the District's consent of the termination request.

Appx. 2.5e DBE Project Compliance Review Checklist is used to verify proper pre-award, post-award, project in-progress, and post-project activities related to DBE requirements.

Appx. 2.5f DBE Field Log is used on the project site to verify DBE participation in each project.

2.6 Bidders List

The District maintains a bidders list (as of April 2019). This list provides data about the universe of DBE and non-DBE contractors and subcontractors who seek work on the District's State- and Federally-assisted contracts. **Appx. 2.6 Bidders List** is included in each RFP and IFB to collect this information.

2.7 Pass-Through Requirements

The District may serve as a pass-through entity to a subrecipient. MTD is responsible for ensuring that subrecipients administer procurements in accordance with Federal and State requirements. Refer to **Appx. 2.7 Oversight of FTA Subrecipients**.

2.8 Contract Provisions

MTD's Federal- and State-funded contracts must contain the applicable provisions described in the following:

- a) For Federally-funded contracts, refer to FTA Contract Provisions.
- b) For State-funded contracts, refer to IDOT Contract Provisions.

2.9 Federal Awarding Agency or Pass-Through Entity Review

The District understands that it must make available upon request, for the Federal awarding agency or pass-through entity, pre-procurement review, procurement documents, such as requests for proposals or invitations for bids, or independent cost estimates, when:

- a) MTD's procurement procedures or operation fails to comply with the Federal procurement standards;
- b) The procurement is expected to exceed \$250,000 (the Federal Simplified Acquisition Threshold) and is to be awarded without competition or only one bid or offer is received in response to a solicitation;
- c) The procurement, which is expected to exceed \$250,000 (the Federal Simplified Acquisition Threshold) specifies a "brand name" product;
- d) The proposed contract is more than \$250,000 (the Federal Simplified Acquisition Threshold) and is to be awarded to other than the apparent low bidder under a sealed bid procurement; or
- e) A proposed contract modification changes the scope of a contract or increases the contract amount by more than \$250,000 (the Federal Simplified Acquisition Threshold).

2.10 FTA Certifications & Assurances

As a recipient of federal assistance, MTD must annually certify compliance with the Certifications and Assurances within 90 days from the date they are published in the Federal Register. Refer to **Appx. 2.10 FTA Certifications & Assurances**.

SECTION 3: TYPES OF CONTRACTS

3.1 Procurement Thresholds and Methods

The anticipated dollar amount of the procurement and the source of funding determines the District's options for the appropriate procurement method(s). Refer to **Appx. 3.1a Construction & Equipment Procurement Policy**. The District utilizes one of the following methods of procurement outlined in **Appx. 3.1b Procurement Methods**.

3.1.1 Time and Materials Contract

MTD may use a time and materials type contract only after a determination that no other contract is suitable and if the contract includes a ceiling price that the contractor exceeds at its own risk.

3.1.2 Avoid Unnecessary or Duplicative Items

MTD's practice is to avoid acquisition of unnecessary or duplicative items. Consideration is always given to consolidating or breaking out procurements to obtain a more economical purchase. Where appropriate, an analysis is made of lease versus purchase alternatives, and any other appropriate analysis, to determine the most economical approach.

3.1.3 Promote Shared Services

To foster greater economy and efficiency, and in accordance with efforts to promote cost-effective use of shared services across the Federal Government, staff understand the District is encouraged to:

- a) Enter into state and local intergovernmental agreements or inter-entity agreements where appropriate for procurement or use of common or shared goods and services;
- b) Use Federal excess and surplus property in lieu of purchasing new equipment and property whenever such use is feasible and reduces project costs;
- c) Use value engineering clauses in contracts for construction projects of sufficient size to offer reasonable opportunities for cost reductions. Value engineering is a systematic and creative analysis of each contract item or task to ensure that its essential function is provided at the overall lower cost; and
- d) For reasons of economy, FTA permits the assignment of unneeded contract rights (“piggybacking”). However, FTA discourages the assignment of another recipient’s contract rights as a substitute for stand-alone procurement. Refer to **Appx. 3.1b Procurement Methods**.

3.2 Construction Contracts

Construction contracts mandate specific third-party contracting requirements. Refer to **Appx. 3.2 Construction Contracts**.

3.3 Rolling Stock Contracts

Rolling stock contracts mandate specific third party contracting requirements. Refer to **Appx. 3.3a Rolling Stock Procurement**.

The term “rolling stock” applies to vehicles used to transport passengers and includes buses, vans, or sedans. Light duty vehicles such as vans, sedans, and pick-up trucks used for administrative and maintenance purposes are considered equipment.

3.4 Professional Service Contracts

Architects, Engineers, and Land Surveyors

Procurement must include public notice, evaluation, selection, and contract negotiation as defined in **Appx. 3.4a Procurement of Architects, Engineers, and Land Surveyors**, unless an emergency situation or a satisfactory relationship for services exists.

When procuring A&E services for an FTA-funded project, a qualifications-based method must be used. A&E services includes the following:

- a) Program management
- b) Architectural engineering
- c) Construction management

- d) Feasibility study
- e) Preliminary engineering, design, architectural, engineering, surveying, mapping, or related services

Refer to **Appx. 3.1b Procurement Methods** and **Appx. 3.4b Qualifications-Based Procurements for A&E (RFQ)**.

3.5 Options Policy

The District must ensure that options in contracts reflect reasonably foreseeable need and are evaluated prior to contract award. Refer to **Appx. 3.3a Rolling Stock Procurement**.

SECTION 4: EVALUATION OF PROPOSALS AND CONTRACT AWARD

4.1 Responsibility of Contractor

The District will only make awards to responsible contractors possessing the ability, willingness, and integrity to perform successfully under the terms and conditions of the contract. Refer to **Appx. 4.1 Determination of Bidder Responsibility**.

4.2 Evaluation Process

The District follows documented evaluation processes for competitive sealed bids, competitive proposals, two-step procurement, and sole source proposals. Refer to the following for the appropriate evaluation process for each procurement method:

- **Appx. 4.2a Competitive Sealed Bids (IFB)**
- **Appx. 4.2b Competitive Proposals (RFP)**
- **Appx. 4.2c Two-Step Procurement**
- **Appx. 4.2d Sole Source Procurement**

4.3 Cost & Price Analysis

MTD performs a cost or price analysis in connection with every Federal procurement action in excess of \$250,000 (the Federal Simplified Acquisition Threshold) including contract modifications. The District must make independent cost estimates before receiving bids or proposals. After receiving bids or proposals, the District conducts either a cost or price analysis. Refer to **Appx. 4.3 Cost and Price Analysis**.

4.4 Award Procedures

Offerors should be advised not to start work until a contract has been signed by both parties.

The Managing Director has the authority to approve and execute contracts less than \$50,000, or when an emergency procurement is required. The Managing Director has the authority to make the determination of an emergency procurement. Refer to **Appx. 3.1a Construction & Equipment Procurement Policy**.

Contract awards generally follow one of the following procedures:

- a) Offer and Acceptance - When the District is fully in agreement with all of the terms and conditions of the offer and desires to make an immediate contract award it may use a simple offer and acceptance form as the awarding document. For example, when a Purchase Order is issued, rather than a comprehensive contract.
 - i. All that is required is that the District official sign the "acceptance" block on the form and issue it to the contractor. The form may reference documents such as the RFP, which contains the terms and conditions upon which the offer is based.
- b) Bilateral Contract - In many cases there will have been changes to the RFP terms or the proposal terms during the course of discussions and negotiations with the offerors.
 - i. In such cases the District may want to issue a preliminary notice of award notifying the successful offeror that it has been selected for award and that an integrated bilateral contract document will be forthcoming.
 - ii. This integrated contract would incorporate the final negotiated terms and conditions, including price, specifications, warranty provisions, etc. Having the offeror sign the contract with the final terms and conditions avoids the problem of confusion as to what the final agreement actually was, which could happen if the offer and acceptance format were used after revisions were discussed.

4.5 Protest Procedures

The District is responsible, in accordance with good administrative practice and sound business judgement, for the settlement of all contractual and administrative issues arising out of procurements. These issues include, but are not limited to, source evaluation, protests, disputes, and claims.

Refer to **Appx. 4.5 Protest Procedures** for further detail.

SECTION 5: CONTRACT AND GRANT ADMINISTRATION

5.1 Contractor Oversight

MTD maintains oversight to ensure that contractors perform in accordance with the terms, conditions, and specifications of the District's contracts and purchase orders.

5.2 Contract Changes

The District is responsible for issuing, evaluating, and making necessary decisions involving any change to third party contracts, and any change orders or modifications issued. The cost of the change, modification, change order, or constructive change must be allowable, allocable, within the scope of the grant, and reasonable for the completion of project scope. It is the responsibility of the Grants & Governmental Affairs Director and the Project Manager (if applicable) to:

- a) Ensure that executed change orders are within the scope of the original contract; and
- b) Evaluate and document change orders including cost justification and approval by authorized official (Managing Director).

5.3 Claims, Grievances, and Other Disputes with Contractors

MTD alone is responsible, in accordance with good administrative practice and sound business judgment, for the settlement of all contractual and administrative issues arising out of procurements. Refer to **Appx. 5.3 Contractor Disputes**.

5.4 Monitoring and Reporting Program Performance

The District is responsible for oversight of the operations of the Federal or State award supported activities. MTD must monitor its activities under Federal and State awards to assure compliance with applicable requirements and performance expectations are being achieved. Monitoring by MTD must cover each program, function or activity.

Refer to **Appx. 5.4a Managing FTA Funds** and **Appx. 5.4b FTA Reporting Requirements**.

5.5 Procurement History

The District maintains and makes available to FTA and IDOT written records detailing the history of each procurement action associated with FTA or IDOT funding for a period of three years after a final expenditure report is submitted. Note that different retention periods may apply in the event of litigation or other limited circumstances. Refer to **Appx. 4.2a Competitive Sealed Bids (IFB)** and **Appx. 4.2b Competitive Proposals (RFP)** for detailed documentation requirements for these specific procurements.

These records include, but are not necessarily limited to, the following:

- a) Rationale for method of procurement
- b) Selection of contract type
- c) Contractor selection or rejection
- d) Basis for contract price

5.6 Internal Controls

The following internal controls exist:

- a) The District's accounting system identifies the receipt and expenditure of program funds separately for each grant/contract;
- b) The District's accounting system allows for adequate controls to prevent improper payment amounts, duplicate payments, and insufficient documentation;
- c) Transactions for State or Federally-funded expenditures must obtain multiple approvals. Refer to **Appx. 5.6 Payment Request Form**;
- d) The Chart of Accounts is adequate to ensure that transactions are properly recorded according to categories of the approved budget;
- e) General ledger accounts are reconciled on a monthly basis;
- f) Annual financial statements are prepared in accordance with Generally Accepted Accounting Principles (GAAP);
- g) MTD maintains performance measures that tie to financial data;

- h) The accounting system includes organizational budgetary controls to monitor incurring expenses in excess of total funds available for a grant;
- i) Adequate controls are in place to ensure necessary budget revisions receive prior approval from the grantor;
- j) Requirements for cost principles are understood by all staff with grant administration duties.
- k) Fiscal staff are trained to determine allowability of cost;
- l) Only necessary, reasonable, and allowable costs are charged to grant awards;
- m) Accounting staff ensures that costs are reported net of credits, including discounts, refunds, rebates, and insurance recoveries;
- n) Credits are excluded from costs and not applied to meet cost sharing or matching requirements of other state or federally financed awards; and
- o) The Board of Trustees is actively engaged in the approval of organizational budgets and always approves major expenditures. Financial information is provided to the Board of Trustees regularly.



Appendix 2.5b DBE Participation Form

Originated	Revision #
J. Sullivan	
3/15/2019	

DBE Participation Form

Project Name: _____ Prime Contractor: _____

<u>A</u> DBE Firm Name ¹	<u>B</u> Contract Amount (\$) ²	<u>C</u> % counted towards goal ³	<u>D</u> Amount (\$) of Participation ⁴

Total DBE Participation: \$ _____

Full Bid Amount: \$ _____

Percentage of DBE Participation⁵: _____ %

Y
☐

N
☐

DBE Goal established by the District for this contract has been met.

Bidder hereby certifies commitment use the DBE subcontractors listed above.

Name of Authorizing Individual: _____

Title: _____

Signature: _____

Date: _____

A DBE Subcontractor form shall be completed for each DBE subcontractor listed in the table above.

¹ If DBE firm is utilized for multiple categories of work (different NAICS codes) as listed in **DBE Subcontractor Form**, utilize multiple rows for a single firm (one row for each category of work).

² From **DBE Subcontractor Form**

³ Count **100%** of the portion of a contract that is performed by the DBE's own forces. If the materials or supplies are obtained from a DBE manufacturer, **count 100%** of the cost of the materials or supplies. When purchasing materials or supplies from a DBE regular dealer, **count 60%** of the cost of the materials or supplies toward DBE goals. Refer to 49 CFR 26 (26.55) for more information.

⁴ Amount in **Column B** multiplied by **Column C**.

⁵ **Total DBE Participation** divided by **Full Bid Amount**.

DBE Subcontractor Form

Project Name: _____ DBE Firm: _____

DBE Address: _____

Description of work	Applicable NAICS code ¹	Contract Amount (\$)

TOTAL: \$

DBE firm listed above hereby confirms participation as a subcontractor in the above listed project in the kind and amount of work provided above.

Name of Authorizing Individual: _____

Title: _____

Signature: _____

Date: _____

Phone: _____

For reporting purposes, please indicate which DBE group this firm belongs to:

- _____ Black Americans
- _____ Hispanic Americans
- _____ Native Americans
- _____ Asian-Pacific Americans
- _____ Subcontinent Asian Americans
- _____ Women
- _____ Other

¹ To count toward meeting a goal, each DBE firm must be certified in a NAICS code applicable to the kind of work the firm would perform on the contract.



Originated	Revision #
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Good Faith Effort and Guidance

I. DBE Contract Goal

1. When the District has established a DBE contract goal, contract will only be awarded to a bidder/offeree who makes good faith efforts to meet it.
2. The District shall determine that a bidder/offeree has made good faith efforts if the bidder/offeree does either of the following things:
 - (a) Documents that it has obtained enough DBE participation to meet the goal; or
 - (b) Documents that it made adequate good faith efforts to meet the goal, even though it did not succeed in obtaining enough DBE participation to do so.
3. If the bidder/offeree does document adequate good faith efforts as stated in item 2 (b), the District will not deny award of the contract on the basis that the bidder/offeree failed to meet the goal. Refer to item III. Guidance Concerning Good Faith Efforts for further information on the District's determination of the adequacy of a bidder/offeree's good faith efforts.
4. When a non-DBE subcontractor was selected over a DBE for work on the contract, documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder.
5. The District will make sure all information is complete and accurate and adequately documents the bidder/offeree's good faith efforts before committing yourself to the performance of the contract by the bidder/offeree.

II. Reconsideration

1. If the District determines that the apparent successful bidder/offeree has failed to meet the requirements, the bidder/offeree is provided an opportunity for administrative reconsideration, before awarding the contract.
2. As part of this reconsideration, the bidder/offeree will have the opportunity to provide written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so.
3. The District's decision on reconsideration will be made by an official who did not take part in the original determination that the bidder/offeree failed to meet the goal or make adequate good faith efforts to do so.
4. The bidder/offeree will be offered the opportunity to meet in person with the reconsideration official to discuss the issue of whether it met the goal or made adequate good faith efforts to do so.
5. The District will send the bidder/offeree a written decision on reconsideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so.
6. The result of the reconsideration process is not administratively appealable to the Department of Transportation.

III. Guidance Concerning Good Faith Efforts

1. When a contract goal for DBE participation is established, a bidder must, in order to be responsible and/or responsive, make sufficient good faith efforts to meet the goal.
2. If bidder is unable to meet the goal by documenting commitments for participation by DBE firms, the bidder can document adequate good faith efforts.
3. "Adequate good faith efforts" means that the bidder shows that it took all necessary and reasonable steps to achieve a DBE goal, by their scope, intensity, and appropriateness.
4. The District has the responsibility to make a fair and reasonable judgment whether a bidder that did not meet the goal made adequate good faith efforts. The District will consider the quality, quantity, and intensity of the different kinds of efforts that the bidder has made, based on the regulations and the guidance.
5. The efforts employed by the bidder should be those that one could reasonably expect a bidder to take if the bidder were actively and aggressively trying to obtain DBE participation sufficient to meet the DBE contract goal. Mere pro forma efforts are not good faith efforts to meet the DBE contract requirements.
6. The following is a list of types of actions which the District would consider as part of the bidder's good faith efforts to obtain DBE participation. It is not intended to be a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases.

(a) Conducting market research to identify small business contractors and suppliers and soliciting through all reasonable and available means the interest of all certified DBEs that have the capability to perform the work of the contract. The bidder should solicit this interest as early in the acquisition process as practicable to allow the DBEs to respond to the solicitation and submit a timely offer for the subcontract. This may include:

- (i) attendance at pre-bid meetings and events
- (ii) advertising and/or written notices
- (iii) posting of Notices of Sources Sought and/or Requests for Proposals
- (iv) written notices or emails to all DBEs listed [IDOT's UCP Directory](#) that specialize in the areas of work desired and which are located in the area or surrounding areas of the project.

The bidder should determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.

(b) Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes the following, where appropriate:

- (i) breaking out contract work items into economically feasible units (for example, smaller tasks or quantities) to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces.

- (ii) establishing flexible timeframes for performance and delivery schedules in a manner that encourages and facilitates DBE participation.
- (c) Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation with their offer for the subcontract.
- (d) Negotiating in good faith with interested DBEs. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes:
 - (i) names, addresses, and telephone numbers of DBEs that were considered;
 - (ii) a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and
 - (iii) evidence as to why additional Agreements could not be reached for DBEs to perform the work.
- (e) Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities.
- (f) Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or contractor.
- (g) Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.
- (h) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, State, and Federal minority/women business assistance offices; and other organizations as allowed on a case-by case basis to provide assistance in the recruitment and placement of DBEs.

7. The District will review the performance of other bidders in meeting the contract goal for assistance in this determination.

8. When a non-DBE subcontractor is selected over a DBE for work on the contract, bidder must submit copies of each DBE and non-DBE subcontractor quote submitted to the bidder.

IV. Unacceptable/Insufficient Efforts

The following are example of unacceptable or insufficient efforts to prove good faith effort in meeting the contract DBE goal.

1. The contractor's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations are not legitimate causes for the rejection or non-solicitation of bids in the contractor's efforts to meet the project goal.
2. Rejection of the DBE because its quotation for the work was not the lowest received. The fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason

for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. However, the bidder is not required to accept unreasonable quotes in order to satisfy contract goals.

When a non-DBE subcontractor is selected over a DBE for work on the contract, bidder must submit copies of each DBE and non-DBE subcontractor quote submitted to the bidder for District review and determination.

3. In the case of DBE subcontractor termination:

(a) a prime contractor's inability to find a replacement DBE at the original price is not alone sufficient to support a finding that good faith efforts have been made to replace the original DBE.

(b) the fact that the contractor has the ability and/or desire to perform the contract work with its own forces does not relieve the contractor of the obligation to make good faith efforts to find a replacement DBE, and it is not a sound basis for rejecting a prospective replacement DBE's reasonable quote.

4. The ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Prime contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

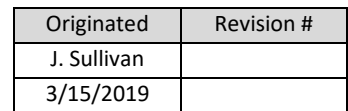
5. A promise to use DBEs after contract award is not considered to be responsive to the contract solicitation or to constitute good faith efforts.

6. Pro forma mailings to DBEs requesting bids are not alone sufficient to satisfy good faith efforts under the rule.

V. References

49 CFR 26: Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs.

§26.53 and Appendix A to Part 26.



DBE Subcontractor Termination Request Form

DBE Firm subject to Termination: _____ Date: _____

Y	N	
<input type="checkbox"/>	<input type="checkbox"/>	Written notice of intent to request termination has been provided to DBE firm (attach).
<input type="checkbox"/>	<input type="checkbox"/>	DBE firm provided response within 5 days of issuance of notice (if yes, attach).
<input type="checkbox"/>	<input type="checkbox"/>	DBE has objected to the proposed termination.

Prime Contractor must select one or more of the following causes of termination and provide a detailed explanation:

- | | |
|--------------------------|---|
| <input type="checkbox"/> | The listed DBE subcontractor failed or refused to execute a written contract. |
| <input type="checkbox"/> | The listed DBE subcontractor failed or refused to perform the work of its subcontract in a way consistent with normal industry standards. |
| <input type="checkbox"/> | The listed DBE subcontractor failed or refused to meet the prime contractor's reasonable, nondiscriminatory bond requirements. |
| <input type="checkbox"/> | The listed DBE subcontractor has become bankrupt, insolvent, or exhibits credit unworthiness. |
| <input type="checkbox"/> | The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings. |
| <input type="checkbox"/> | The listed DBE subcontractor is determined not a responsible contractor. |
| <input type="checkbox"/> | The listed DBE subcontractor voluntarily withdraws from the project and has provided written notice of its withdrawal. |
| <input type="checkbox"/> | The listed DBE is ineligible to receive DBE credit for the type of work required. |
| <input type="checkbox"/> | A DBE owner has died or become disabled with the result that the listed DBE contractor is unable to complete its work on the contract. |
| <input type="checkbox"/> | Other documented good cause that compels the termination of the DBE subcontractor. |

Detailed explanation of cause(s) selected above.



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Step 3: Planned Replacement of Terminated DBE firm

- ☐ (a) New contract with another DBE firm
☐ (b) Modification of existing contract with another DBE firm
☐ (c) New contract with a non-DBE firm
☐ (d) Modification of existing contract with a non-DBE firm
☐ (e) Prime Contractor's own forces

If options (a) or (b) are chosen, *DBE Subcontractor Participation Form* must be included with this submission. If options (c), (d), or (e) are chosen, evidence of good faith efforts will be requested upon District approval in Step 4.

Step 4: Written Consent from the District

Y N
☐ ☐

The District hereby agrees, for reasons stated in this request form, that the prime contractor has good cause to terminate the DBE firm.

Name of Authorizing Individual: _____
Title: _____
Signature: _____
Date: _____

Step 5 a): Provide New/Modified Contract

If options (a) or (b) are chosen in Step 3, contractor shall submit a new or modified contract with replacement DBE subcontractor.

If options (a) or (b) are chosen, this procedure is complete upon completion of this step.

Step 5 b): Good Faith Efforts

If options (c), (d), or (e) are chosen in Step 3, contractor shall submit documentation of good faith efforts within 7 days of return on this form with Step 4 completed. Refer to *Good Faith Effort Guidance*.

Step 6: Approval of Good Faith Efforts

Y N
☐ ☐

The District hereby accepts good faith effort documentation provided by contractor.

Name of Authorizing Individual: _____
Title: _____
Signature: _____
Date: _____

Step 7: Provide New/Modified Contract

Upon approval in Step 6, contractor shall submit new or modified contract with non-DBE subcontractor.



Appendix 2.5e DBE Project Compliance Review Checklist

Originated	Revision #
B. Eilbracht	
12/31/2018	

Project Name/Description: _____

Prime Contractor: _____

MTD Project Manager: _____

On-Site Monitor(s): _____

Pre-Award Checklist

- _____ DBE certification(s) for all subcontractors, if applicable
- _____ UCP Documentation of subcontractor(s) DBE status
- _____ DBE "good faith" worksheet, if project goals were not met

Post-Award Checklist

- _____ Collect fully executed subcontracts for all DBE firms listed on the DBE Participation Statement (Form 2025)
 - _____ Review DBE subcontract(s) to ensure firms listed and scope of work is consistent with what is listed on form 2025
 - _____ Ensure dollar value of DBE subcontract(s) is/are equal to or greater than the amount(s) listed on form 2025
- _____ Establish schedule with prime contractor to determine date(s) DBE work is to be completed
- _____ Designate personnel responsible for on-site DBE monitoring

Project In-Progress Checklist

- _____ Provide monitoring of DBE participation
 - _____ Verify that business names on equipment and vehicles are not covered with paint or magnetic signs (visual inspection on site)
 - _____ Verify who employs the workers on site (visually inspect badges/ids; establish reporting relationships of workers on site/review certified payrolls)
 - _____ Collect DBE participation field logs from designated on-site monitors
 - _____ Review supplier invoices and cancelled checks to verify what firm orders and pays for the necessary supplies being used by the DBE subcontractor
- _____ Ensure DBE firms are paid promptly

Appendix 2.5b DBE Project Compliance Review Checklist

- _____ Document and file any correspondence related to terminations, substitutions or deletions of DBE firms
 - _____ Ensure documentation is included which verifies DBE firm received sufficient notice and time to respond
 - _____ If terminations, substitutions or deletions were approved, collect documentation of prime contractor's good faith effort to find a replacement firm prior to performance of the work originally to be performed by the DBE firm being replaced

Post-Project Checklist

- _____ Ensure DBE goal has been achieved
 - _____ If the DBE goal has not been met, complete and retain a shortfall analysis and develop and implement a corrective action plan



Appendix 2.5f Participation Field Log

Originated	Revision #
B. Eilbracht	
12/31/2018	

DBE Participation Field Log

I _____, serving as _____
Name Title

Witnessed the below DBE firms working on MTD project _____ on the date specified below.

DBE FIRM NAME	DATE VERIFIED	WORK PERFORMED	NUMBER OF EMPLOYEES	NUMBER OF DBE VEHICLES	COMMENTS

Signature _____ Date: _____



Appendix 2.6 Bidders List

Originated	Revision #
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3/15/2019	

Bidders List

Prime Contractor

Firm Name	Firm Address	Age of Firm	Annual Gross Receipts of Firm (check box)
			Less than \$500,000
			\$500,000 - \$1,000,000
Applicable NAICS Code(s):			\$1,000,000 – \$2,000,000
Contact Name, Phone, Email:			Greater than \$2,000,000

DBE Subcontractors (use additional pages if necessary)

Firm Name	Firm Address	Age of Firm	Annual Gross Receipts of Firm (check box)
			Less than \$500,000
Amount Committed to DBE:			\$500,000 - \$1,000,000
Applicable NAICS Code(s):			\$1,000,000 – \$2,000,000
Contact Name, Phone, Email:			Greater than \$2,000,000
			Less than \$500,000
Amount Committed to DBE:			\$500,000 - \$1,000,000
Applicable NAICS Code(s):			\$1,000,000 – \$2,000,000
Contact Name, Phone, Email:			Greater than \$2,000,000
			Less than \$500,000
Amount Committed to DBE:			\$500,000 - \$1,000,000
Applicable NAICS Code(s):			\$1,000,000 – \$2,000,000
Contact Name, Phone, Email:			Greater than \$2,000,000
			Less than \$500,000
Amount Committed to DBE:			\$500,000 - \$1,000,000
Applicable NAICS Code(s):			\$1,000,000 – \$2,000,000
Contact Name, Phone, Email:			Greater than \$2,000,000

Appendix 2.6 Bidders List

Non-DBE Subcontractors (use additional pages if necessary)

Firm Name	Firm Address	Age of Firm	Annual Gross Receipts of Firm (check box)	
			Less than \$500,000	
Amount Committed to Subcontractor:			\$500,000 - \$1,000,000	
Applicable NAICS Code(s):			\$1,000,000 – \$2,000,000	
Contact Name, Phone, Email:			Greater than \$2,000,000	
			Less than \$500,000	
Amount Committed to Subcontractor:			\$500,000 - \$1,000,000	
Applicable NAICS Code(s):			\$1,000,000 – \$2,000,000	
Contact Name, Phone, Email:			Greater than \$2,000,000	
			Less than \$500,000	
Amount Committed to Subcontractor:			\$500,000 - \$1,000,000	
Applicable NAICS Code(s):			\$1,000,000 – \$2,000,000	
Contact Name, Phone, Email:			Greater than \$2,000,000	
			Less than \$500,000	
Amount Committed to Subcontractor:			\$500,000 - \$1,000,000	
Applicable NAICS Code(s):			\$1,000,000 – \$2,000,000	
Contact Name, Phone, Email:			Greater than \$2,000,000	
			Less than \$500,000	
Amount Committed to Subcontractor:			\$500,000 - \$1,000,000	
Applicable NAICS Code(s):			\$1,000,000 – \$2,000,000	
Contact Name, Phone, Email:			Greater than \$2,000,000	
			Less than \$500,000	
Amount Committed to Subcontractor:			\$500,000 - \$1,000,000	
Applicable NAICS Code(s):			\$1,000,000 – \$2,000,000	
Contact Name, Phone, Email:			Greater than \$2,000,000	
			Less than \$500,000	
Amount Committed to Subcontractor:			\$500,000 - \$1,000,000	
Applicable NAICS Code(s):			\$1,000,000 – \$2,000,000	
Contact Name, Phone, Email:			Greater than \$2,000,000	



Originated	Revision #2	Approval
J. Sullivan	J. Sullivan	Board of Trustees
12/20/2017	04/04/2019	9/26/2018

Appendix 3.1a Construction & Equipment Procurement Policy

This document outlines the requirements for **construction and equipment** procurement based on the funding source and amount. If more than one funding source is used, the more restrictive requirements must be followed, unless otherwise approved by the funding agency. Purchases may not be split to avoid requirements. All purchases must be made in accordance with the **Appx. 2.3 Competition Policy**. Refer to **Appx. 3.4a Procurement of Architectural, Engineering, and Land Survey** for requirements for procurements of that nature.

State Capital Funding	
\$0 - \$5,000	Contracts may be negotiated. Constitutes as an eligible operating expense under the Downstate Operating Assistance Program (DOAP). Managing Director has authority to approve contract.
\$5,000 - \$10,000	Awarded based on informal bidding (quotes by letter, email, phone). Bids obtained from at least three suppliers, if possible. Contract awarded to lowest responsive, responsible bidder unless approved by Managing Director . Constitutes as an eligible operating expense under DOAP. Utilize Appx. 3.1c Purchase Order Procedure . Managing Director has authority to approve contract.
10,000+	Must be awarded to the lowest responsible bidder based on free and open bidding, through formal advertisement, solicitation, and formal bid opening. Refer to Appx. 4.2a Competitive Sealed Bids (IFB) . Methods other than open-bid third-party contracts may be used with IDOT concurrence, such as competitive proposals (RFP), two-step procurement, or sole source procurement, as appropriate. Managing Director has authority to approve contracts less than \$50,000. If greater than \$50,000, Board of Trustees approval required prior to award. \$10,000 - \$100,000: IDOT pre-bid concurrence required, pre-award only if awarding to other than the apparent low bidder. \$100,000+: IDOT pre-bid and pre-award concurrence required.

State Operating Funding	
\$0 - \$5,000	Determine price to be fair and reasonable and supplier to be qualified, obtaining competitive quotes is not required. Managing Director has the authority to approve contract.
\$5,000 - \$50,000	Obtain quotes from an adequate number (typically three) of qualified sources. Appx. 3.1c Purchase Order Procedure must be followed. Managing Director has the authority to approve contract.
\$50,000+	Must use competitive sealed bids (IFB), competitive proposals (RFP), two-step procurement, or sole source procurement, as appropriate. Board of Trustees approval required prior to award.

Federal Funding	
\$0 - \$10,000 <i>Micro-Purchase</i>	Determine price to be fair and reasonable and supplier to be qualified, obtaining competitive quotes is not required. These purchases should be distributed equitably among qualified suppliers in the local area. Davis-Bacon prevailing wage requirements will apply to construction contracts exceeding \$2,000. Managing Director has the authority to approve contract.
\$10,000 - \$250,000 <i>Small Purchase</i>	Obtain quotes from an adequate number (typically three) of qualified sources. Managing Director has the authority to approve contracts less than \$50,000. If greater than \$50,000, Board of Trustees approval required prior to award.
\$250,000+	Must use competitive sealed bids (IFB), competitive proposals (RFP), two-step procurement, or sole source procurement, as appropriate. Board of Trustees approval required prior to award.

Local Funding	
\$0 - \$5,000	Determine price to be fair and reasonable and supplier to be qualified, obtaining competitive quotes is not required. Managing Director has the authority to approve contract.
\$5,000 - \$50,000	Obtain quotes from an adequate number (typically three) of qualified sources. Appx. 3.1c Purchase Order Procedure must be followed. Managing Director has the authority to approve contract.
\$50,000+	Must use competitive sealed bids (IFB), competitive proposals (RFP), two-step procurement, or sole source procurement, as appropriate. Board of Trustees approval required prior to award.



Originated	Revision #
J. Sullivan	
4/29/2019	

Appendix 3.4a Procurement of Architects, Engineers, and Land Surveyors

Procurement of Architects, Engineers, and Land Surveyors

Section I. Policy

Consistent with the Brooks Act (Federal 40 USCA 541 et seq), the Local Government Professional Services Selection Act (50 ILCS 510/1 et seq) and the regulations of the Federal Transportation Administration, it is the policy of MTD to negotiate and enter into contracts for architectural, engineering and land surveying services on the basis of demonstrated competence and qualifications for the type of services required and at fair and reasonable compensation. If a satisfactory relationship for services exists, this procedure is not required.

Section II. Public Notice

1. In the procurement of architectural, engineering or land surveying services, MTD permits firms engaged in the lawful practice of their professions to annually file a statement of qualifications and performance data with MTD on mtd.org.
2. Whenever a project requiring architectural, engineering or land surveying services is proposed, MTD will, unless it has a satisfactory relationship for services with one or more firms, do one of the following **at least 14 days** prior to evaluation start date:
 - a. Email a notice requesting a statement of interest in the specific project to all firms who have a current statement of qualifications and performance data on file with MTD; or
 - b. Place an advertisement for professional services on mtd.org requesting a statement of interest in the project. The professional services advertisement will include a description of each project and the time and place for interested firms to submit its letter of interest, statement of qualifications, and performance data, as required.

Section III. Evaluation Procedure

1. A selection committee will be formed for each selection process, including three or more individuals. The selection committee must be non-biased with at least a baseline understanding of the project and procurement procedures.
2. The selection committee will evaluate the firms submitting letters of interest, taking into account qualifications, ability of professional personnel, past record and experience, performance data on file, willingness to meet time requirements, location, workload of the firm, and such other qualifications-based factors as the MTD may determine in writing are applicable.
3. MTD may choose to conduct discussions with and require public presentations by firms deemed to be the most qualified regarding their qualifications, approach to the project, and ability to furnish the required services.
4. In no case will MTD, prior to selecting a firm for negotiation, seek formal or informal submission of verbal or written estimates of costs or proposals in terms of dollars, hours required, percentage of construction cost, or any other measure of compensation.

Section IV. Selection procedure

1. On the basis of evaluations, discussions and presentations, selection committee will select no less than three firms which they determine to be the most qualified to provide services for the project and rank them in order of qualifications to provide services regarding the specific project.
2. If fewer than three firms submit letters of interest and selection committee determine that one or both of those firms are qualified, selection committee may proceed to negotiate a contract.
3. Selection committee will then contact the firm ranked most preferred and attempt to negotiate a contract at a fair and reasonable compensation.

Section V. Contract negotiation

1. Selection committee will prepare a written description of the scope of the proposed services to be used as a basis for negotiations and will negotiate a contract with the highest qualified firm at compensation that selection committee determines in writing to be fair and reasonable.
 - a. In making this decision selection committee shall take into account the estimated value, scope, complexity and professional nature of the services to be rendered.
2. If selection committee unable to negotiate a satisfactory contract with the firm which is most preferred, negotiations with that firm will be terminated.
 - a. Selection committee shall then begin negotiations with the firm which is next preferred.
 - b. If selection committee is unable to negotiate a satisfactory contract with that firm, negotiations with that firm will be terminated. Selection committee shall then begin negotiations with the firm which is next preferred.
3. If selection committee is unable to negotiate a satisfactory contract with any of the selected firms, selection committee will re-evaluate the architectural, engineering or land surveying services requested, including the estimated value, scope, complexity and fee requirements. Selection committee will then compile a second list of at least three qualified firms and proceed in accordance with the provisions of this procedure.

Section VI. Waiver of competition

The MTD Board of Trustees may waive the requirements of Sections II, III, IV, and V if it determines, by resolution, the following:

1. An emergency situation exists, and a firm must be selected in an expeditious manner; or
2. The cost of architectural, engineering, and land surveying services for the project is expected to be less than \$40,000. This amount shall be increased annually by a percentage equal to the annual unadjusted percentage increase, if any, as determined by the consumer price index.

Reference: [50 ILCS 510 Local Government Professional Services Selection Act](#)



Originated	Revision #1	Approval
J. Sullivan	J. Sullivan	Board of Trustees
1/5/2018	04/04/2019	1/25/2018

Appendix 4.5 Protest Policy

MTD alone is responsible, in accordance with good administrative practice and sound business judgment, for the settlement of all contractual and administrative issues arising out of procurements. These issues include, but are not limited to, source evaluation, protests, disputes, and claims. These standards do not relieve the District of any contractual responsibilities under its contracts. The Federal awarding agency will not substitute its judgment for that of MTD unless the matter is primarily a Federal concern. Violations of law will be referred to the local, state, or Federal authority having proper jurisdiction.

I. General Protest Policy

In general, protests will only be accepted from prospective bidders or offerors whose direct economic interest would be affected by the award of a contract or refusal to award a contract. The Grants & Governmental Affairs Director will consider all such protests, whether submitted before or after the award of a contract. If oral objections are raised and the matter cannot be resolved to the satisfaction of the objector, a written protest shall be required before any further consideration is given. Protest submissions should be concise, logically arranged, and clearly state the grounds for the protest. Protests must include at least the following information:

- 1) Name, address, and telephone number of protestor; Identification of the solicitation or contract number;
- 2) A detailed statement of the legal and factual grounds of protest including copies of relevant documents; and,
- 3) A statement as to what relief is requested.

All protest documents received shall be stamped with date and time received and logged into a protest file folder.

II. Protests Before Award

Protests before award must be submitted within the times specified in the solicitation documents. If the written protest is not received by the time specified, evaluation process shall continue in the normal manner unless the Grants & Governmental Affairs Director, upon investigation, finds that remedial action is desirable, in which event such action shall be taken.

Any protest addressing the adequacy of Invitation for Bids, RFP's, including, without limitation, the pre-award procedure, the Instructions to Bidders, General Terms and Conditions, Specifications and Scope of Work, must be filed with the Procurement Department no later than three days before the scheduled bid opening or proposal due date. Thereafter, such issues are deemed waived by all interested parties.

Notice of protest and the basis therefor shall be given to all bidders or offerors. In addition, when a protest against the making of an award is received and the Grants & Governmental Affairs Director determines to withhold the award pending disposition of the protest, the bidders whose bids might become eligible for award shall be requested, before expiration of the time for acceptance of their bids, to extend the time for acceptance (with consent of sureties, if any) to avoid the need for re-advertising.

When a written protest against the making of an award is received, award shall not be made until five days after the matter is resolved, unless the Grants & Governmental Affairs Director determines that the

items to be procured are urgently required; or delivery or performance will be unduly delayed by failure to make the award promptly; or failure to make prompt award will otherwise cause undue harm to MTD or the State or the Federal Government.

In the event the Grants & Governmental Affairs Director determines that the award is to be made during the five-day period or during the pendency of a protest, he/she shall notify FTA prior to making such award. FTA reserves the right not to participate in such procurements.

If award is made, the Grants & Governmental Affairs Director shall document the file to explain the need for an award, and shall give written notice of the decision to proceed with the award to the protestor and, as appropriate, to all others concerned.

III. Protests After Board Approval of Award

Protests against award must be filed with the Procurement Department within fifteen (15) calendar days immediately following **Board of Trustee approval of** the award. The Grants & Governmental Affairs Director shall review the protests. The contractor shall be furnished with the notice of protest and the basis therefor. Also, when it appears likely that an award may be invalidated and a delay in receiving the supplies or services is not prejudicial to MTD's interest, the Grants & Governmental Affairs Director shall inform the contractor that MTD will not be responsible if the award is set aside and that the contractor proceeds with performance at his/her own risk.

IV. Decision on Protest

The Grants & Governmental Affairs Director shall forward all protests to the Managing Director, with all applicable supporting documentation, who will review the reasons for the protest and will respond to each issue noted in the protest. The Contracting Officer will discuss his/her findings with the MTD Board of Trustees before a final decision is made concerning the protest.

The Grants & Governmental Affairs Director shall provide a final decision to the protesting Vendor/Contractor in writing within thirty (30) calendar days from the receipt of the written protest and shall provide notice of such decision to all interested parties.

If Federal funding is used, following an adverse decision by the Grants & Governmental Affairs Director, the protestor may file a protest with FTA. FTA Circular 4220.1F, as amended, states that FTA will only review protests regarding the alleged failure of a grantee to have written protest procedures or alleged failure to follow such procedures.