

2009

SOUTHERN BRAZORIA
SHELTER RECOMMENDATIONS
SUMMARY

A & R CONSULTING SOLUTIONS, LLC
The Goodman Corporation

SOUTHERN BRAZORIA SHELTER RECOMMENDATIONS

BACKGROUND

The Lake Jackson/Angleton urbanized area is eligible to receive federal public transit stimulus funds under the American Recovery and Reinvestment Act (ARRA). One challenge to receiving funding is that fixed route transit service is currently not provided in Southern Brazoria County. However, regional stakeholders agreed to move forward with transit service towards a Fall 2009 implementation of fixed route transit service. Bus shelters would make sense only if fixed route transit service implementation occurred within Southern Brazoria County.

Based upon the consensus of regional stakeholders, field work was conducted to consider the potential location and costs of bus shelters that would provide a variety of attractive benefits:

- Desirable customer amenities at locations that were expected to generate significant levels of transit ridership;
- Alternative sustainable energy sources for lighting (solar powered lights)
- Provide accessible sidewalk and curbcuts in immediate area adjacent to shelters;
- Develop a superstop transit transfer location at Brazosport College designed to encourage increased regional patronage of the college;
- Federal funding of \$300,000 coming to the region without the need for local match.
- Related initiation of fixed route transit service would result in new jobs created in the Southern Braozria area as the result need to hire additional staff for bus drivers and supervisors to operate transit service (16-18 full time positions with Connect Transit).

Fourteen shelters were identified as a result of the field work with four located in Angleton, three in Lake Jackson, three in Clute, three in Freeport and the Brazosport College superstop. Three shelter locations have been deferred to Phase II since their locations are on private property and arrangements could not be completed prior to the deadline grant submission for ARRA Phase I Funds on May 31, 2009.

Table 1 below shows the listing of shelter locations in Southern Brazoria.

TABLE 1 -SOUTHERN BRAZORIA SHELTER LOCATIONS

Number	Shelter Location	Key Attractor(s)	Route Location	Timed Transfer Point	Need	Comments
1	Deborah Street in front of Bach Rehabilitation	Angleton - Danbury Medical Center	1 and 4	No	Shelter, Bench	Key regional attractor
2	East Henderson	Angleton HS	1 and 4	No	Bench and Shelter	Angleton HS is key regional attractor
3	Canaan just east of Velasco	Kroger and Community Center	1 and 4	No	Bench and Shelter	Multiple significant attractors
4	Velasco between Live Oak and Locust	Brazoria County Courthouse	1 and 4	Yes	Double Shelter, Bench and Information Kiosk	Major regional services / Angleton transfer location
5	College Blvd west of Business 288	Brazosport College	1 and 3	Yes	Double Shelter, Bench, Area and Kiosk	Large attractor - regional transfer location
6	W Brazosport east of Dixie	Brazoswood HS	3	No	Shelter and Bench	Regional attractor
7	Main Street east of Hargett	Clute City Hall	1	No	Bench and Shelter	City Hall, police station, retail
8	Plantation and Dixie	Kroger/Walgreen's	1, 2 and 3	Yes	Double Shelter, Bench and Information Kiosk	Transfer and major retail attractors - deferred to Phase II
9	Brazosport Hospital	Brazosport Hospital	2 and 4	No	Shelter and Bench	Hospital and adjacent medical facilities
10	Oak Drive west of TX 288	Lake Jackson City Hall	3	No	Shelter and Bench	Municipal facilities
11	Highway 322 west of TX 288	Brazos Mall	2 and 3	No	Shelter and Bench and information Kiosk	Largest regional retail attractor
12	N Gulf Blvd west of TX 288	Baywood Foods	1 and 2	Yes	Shelter and Bench and information Kiosk	Groceries and retail, transfer location
13	Avenue A east of Old River	Riverplace Park	2	No	Shelter and Bench	Large park
14	2nd avenue west of Cherry Street	Freeport City Hall	2	No	Shelter and Bench	City Hall, downtown and port

• Phase II shelter locations are shaded, all other shelters will be included in May 2009 grant submission

**TABLE 2
ESTIMATED COST FOR SHELTERS INCLUDING
INSTALLATION AND IMPROVEMENTS**

SHELTER LOCATIONS	TOTALS
Shelter 1 - Angleton / Danbury Medical Center	\$10,940.00
Shelter 2 - Angleton High School	\$10,940.00
Shelter 3 - Kroger / Community Center	\$19,340.00
Shelter 4 - County Courthouse	\$22,820.00
Shelter 5 - Brazosport College	\$146,500.00
Shelter 6 - Brazoswood High School	\$10,940.00
Shelter 7 - Clute City Hall	\$10,940.00
Shelter 8 - Kroger/Walgreen's	PHASE II
Shelter 9 - Brazosport Hospital	PHASE II
Shelter 10 - Lake Jackson City Hall	\$10,940.00
Shelter 11 - Brazos Mall	PHASE II
Shelter 12 - Baywood Foods	\$10,940.00
Shelter 13 - Riverplace Park	\$10,940.00
Shelter 14 - Freeport City Hall	\$10,940.00
TOTAL ESTIMATED PHASE I COST	\$264,300.00
CONTINGENCY(20% OF TOTAL)	\$52,860.00
TOTAL ESTIMATED PHASE I COST	\$317,160.00
TOTAL FEDERAL SHARE (ARRA)	\$317,160.00
TOTAL LOCAL SHARE (ARRA)	\$0.00

*Phase II shelter locations are shaded,
all other shelters will be included in May 2009 grant submission*

ANGLETON SHELTERS

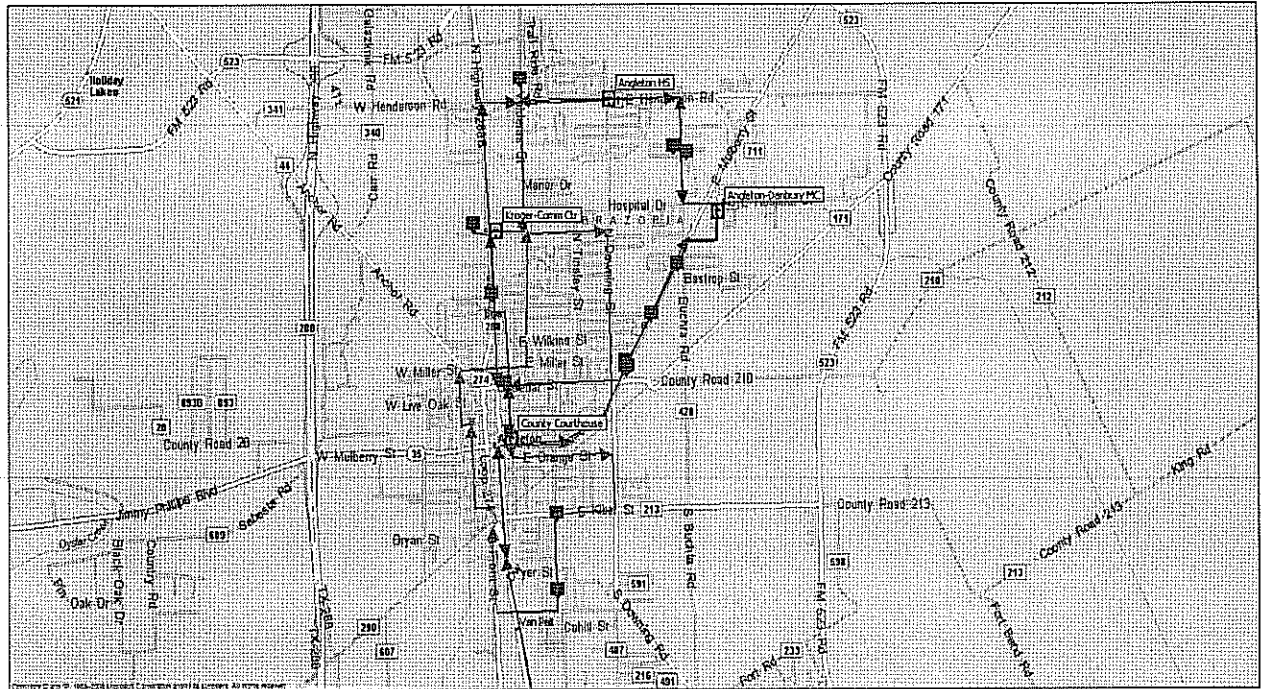
Given the geographic size of the Southern Brazoria County region, it is easiest to show the shelter locations in three segments: Angleton, Lake Jackson/Freeport. Angleton will be served by two routes and four buses. The regional route (in green) will run from Freeport through Clute (with a transfer point at Plantation and Dixie), Lake Jackson, Brazosport College (another transfer point) and provide service (primarily in a counterclockwise loop) to many of the county and social service attractors in Angleton. Two buses will provide hourly service on the regional route. Transfers to Angleton routes will be possible at the Brazoria County Court House.

Two circulators will run in Angleton hourly with each loop taking thirty minutes to complete. The northern loop (in purple) will run every half hour and will run clockwise on a route similar to the alignment of the regional route (but in the opposite direction). The southern/western loop (in bluegray) will cover parts of Angleton not serviced by the other two routes. All routes are very tentative and subject to change.

The four shelters are located at key attractors:

- Shelter 1 – Angleton/Danbury Medical Center (area medical center)- Public Right of Way (ROW)
- Shelter 2 - Angleton High School – Public (ROW)
- Shelter 3 – Kroger/Community Center – Public (ROW)
- Shelter 4 – County Courthouse – Public (ROW)

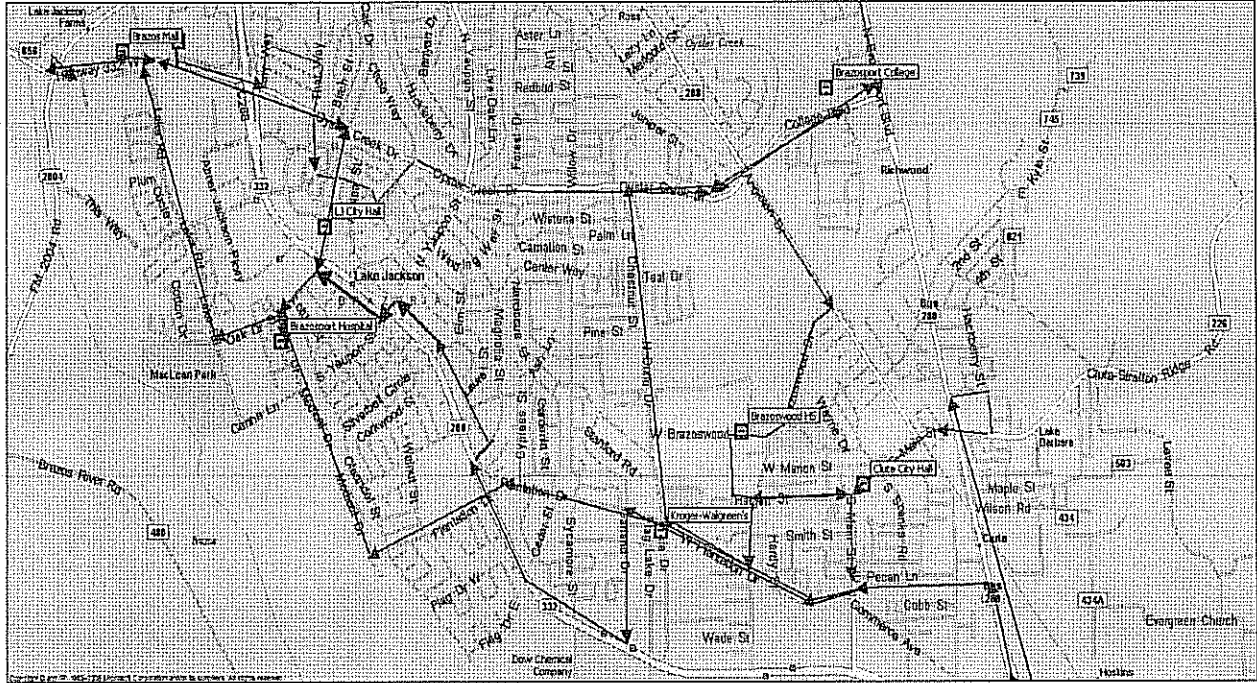
All shelters are slated for construction and installation in Phase I of ARRA funding and is subject to the Federal Transit Administration approval of the Lake Jackson/Angleton grant application.



LAKE JACKSON/CLUTE

The Southern Brazoria communities of Lake Jackson and Clute will comprise the central area of the Southern Brazoria Connect transit service. Three routes will provide service to Lake Jackson and Clute:

- Regional Route 1 (shown in green) will pass through Clute, Lake Jackson and Brazosport College on its north and southbound trips;
- Brazosport Route 2 (shown in blue) will pass through Freeport, Clute and Lake Jackson connecting with Clute, the Brazosport Hospital and the Brazos Mall.
- Lake Jackson/Clute Route 3 (shown in red) will connect most of the major attractors within the two communities and with the Regional and Brazosport Route respectively.



The seven shelters are located at key attractors:

- Shelter 5 – Brazosport College Superstop – College ROW
- Shelter 6 - Brazoswood High School - Public ROW
- Shelter 7 – Clute City Hall – Public ROW
- Shelter 8 – Kroger/Walgreen’s – Now Private ROW
- Shelter 9 – Brazosport Hospital – Hospital ROW?
- Shelter 10 – Lake Jackson City Hall – Public ROW
- Shelter 11 – Brazos Mall – Private ROW – no safe stop on street

Shelters a 5,6,7 and 10 are slated for construction and installation in Phase I of ARRA funding, Shelters 8,9 and 11 are deferred to Phase II.

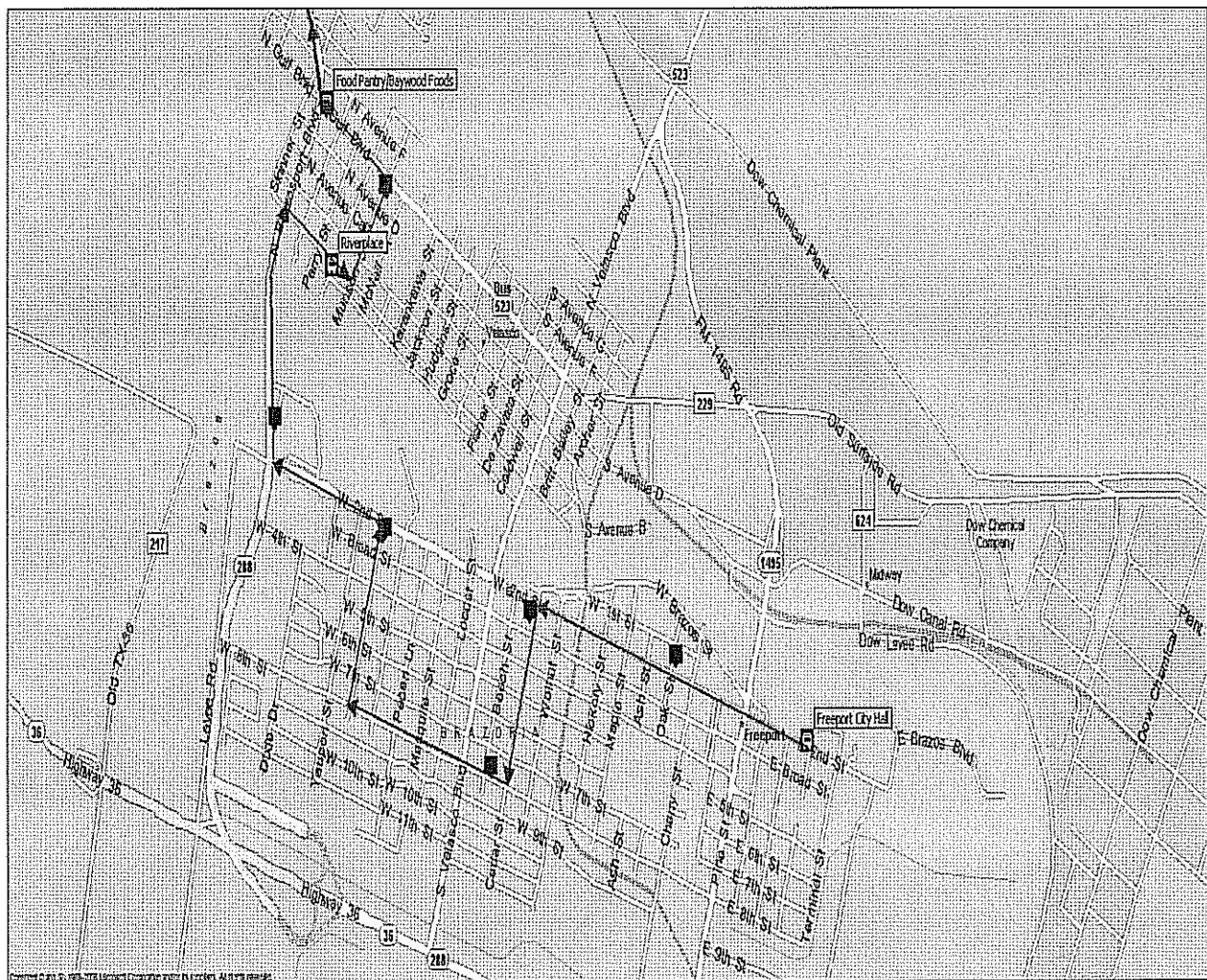
FREEPORT

Freeport will be served by two routes. First, the Brazosport Route (shown in blue) which will connect large portions of Freeport with Clute, Brazosport Medical Center and Brazos Mall. Second, the regional route (in green) will start on the northside of N Gulf Boulevard just east of 288 and on the other side of the street from Baywood Foods.

The three shelters are located at key attractors:

- Shelter 12 – Baywood Foods – Public ROW
- Shelter 13 – Riverplace Park – Public ROW
- Shelter 14 - Freeport City Hall – Public ROW

All shelters in Freeport are slated for construction and installation in Phase I of ARRA funding and is subject to the Federal Transit Administration approval of the Lake Jackson/Angleton grant application.



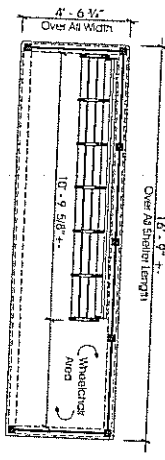
SOUTHERN BRAZORIA ESTIMATED FINANCIAL AND OPERATING PROJECTIONS

Annual Revenue Hours
18360

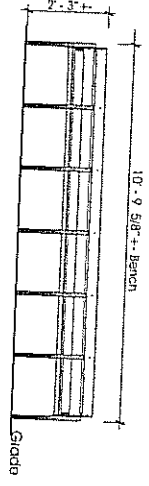
Year	Total Cost	Annual Riders	Average fare per rider	Farebox Revenue	Not Operating Deficit	YTA Section 5007 Operating	State Operating Funds	Gross Local Cost
2010	\$973,080	73,440	\$0.75	\$34,644	\$938,436	\$169,008	\$247,500	\$241,898
2011	\$973,080	110,160	\$0.75	\$82,620	\$890,460	\$445,230	\$247,500	\$197,730
2012	\$973,080	146,880	\$0.75	\$110,160	\$862,920	\$431,460	\$247,500	\$183,960
2013	\$1,009,800	154,224	\$0.75	\$115,668	\$894,132	\$447,066	\$247,500	\$199,565
2014	\$1,009,800	161,935	\$0.75	\$121,451	\$888,349	\$444,174	\$247,500	\$196,674
		Annual Riders 4.0 passengers per hour in 2010; 6.0 passengers per hour in 2011; 6.0 passengers per hour in 2012 with a 5% ridership increase in 2013 and 2014	Free fares first 60 days and Half Jit fares next 120 days and All fare last 180 days		Total cost minus farebox revenue	50 % of net operating cost	Estimated 75% of state allocation to Lake-Jackson urbanized area. The estimated state allocation for FY 2010 is 330K	Net project cost minus federal and state assistance
	County Funding/Lake Jackson Match	Galveston County Match	Municipal Share	Lake-Jackson Local Share	Angleton Local Share	Clute Local Share	Freepport Local Share	Municipal Government Share
2010	\$27,000	\$80,000	\$114,898	\$41,702	\$31,614	\$21,441	\$19,940	\$114,898
2011	\$27,000	\$40,000	\$130,730	\$47,973	\$35,931	\$24,460	\$22,747	\$130,730
2012	\$33,780	\$40,000	\$110,210	\$40,105	\$30,308	\$30,820	\$19,177	\$110,210
2013	\$33,780	\$40,000	\$125,816	\$45,784	\$34,599	\$33,840	\$21,892	\$125,816
2014	\$43,188	\$0	\$154,487	\$56,218	\$42,484	\$28,004	\$26,881	\$154,487
	Use FY 2009 and FY 2010 Galveston reimbursements for FY 2010 expenses. Transfer annual reimbursements to service for FY 2011, 2012 and 2013		Local Cost minus Galveston and county	36.39% is the Lake Jackson share based on route miles	27.5% is the Angleton share based on route miles	18.71% is the Clute Share based on Route Miles	17.4% is the Freepport share based on route miles.	Total of four municipalities share
	Reallocated from UZA 10 with 25% increase in FY 2012 and FY 2014							

Community	Route Miles	Percentage of Total
Lake Jackson	38.9	36.39%
Angleton	29.4	27.50%
Clute	20	18.71%
Freepport	18.6	17.40%
Total	106.9	100.00%

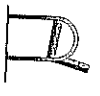
Route	Miles	Daily Trips (42)	Daily Miles	Annual Revenue Miles	Revenue Hours
Route 1 Regional Northbound	22.9	12	274.8	70,074	3,060
Route 1 Regional Southbound	22.6	12	271.2	69,156	3,060
Route 2 Brazosport Northbound	16.5	12	198	50,490	3,060
Route 2 Brazosport Southbound	16.7	12	200.4	51,102	3,060
Route 3 Lake Jackson/Clute	14.3	12	171.6	43,768	3,060
Route 4 Angleton (Both circulators)	13.9	12	166.8	42,534	3,060
Total All Routes	106.9	72	1282.8	327,114	18,360



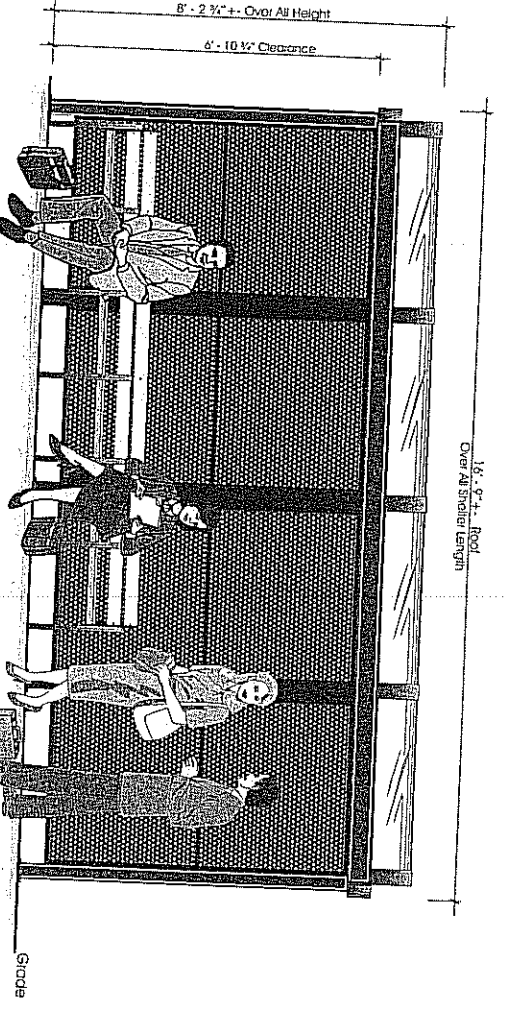
Plan View
1/4" = 1'-0"



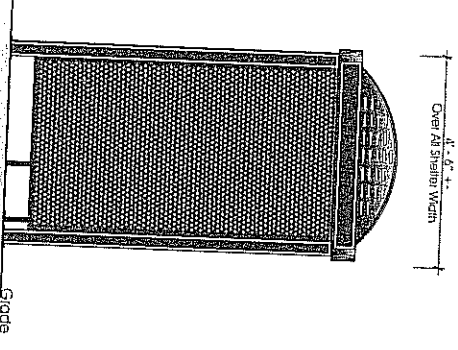
Front View of Bench
rolled pipe frame with composite material seating



End View
3/8" = 1'-0"



Front Elevation: Type D
1/4" = 1'-0"



End View
1/4" = 1'-0"

Shelter can be fabricated with optional lighting.
Shelter can be fabricated with optional lighting.



Designs • Fabricators • Erectors
Architectural Metal Products
1122 Leland Road Houston, Texas 77036
(281) 997-1144 fax (281) 997-9444

Job Name: DART Shelter Project
Salesperson: Hank Hink
Scale: shown 1/4" = 1'-0"
Sheet 1 of 1

Revisions: Various
Work Order No. JG020102
Artist: JG020102
Drawing No. 13188-GXD


Rev.	Description	Date
1		
2		
3		
4		

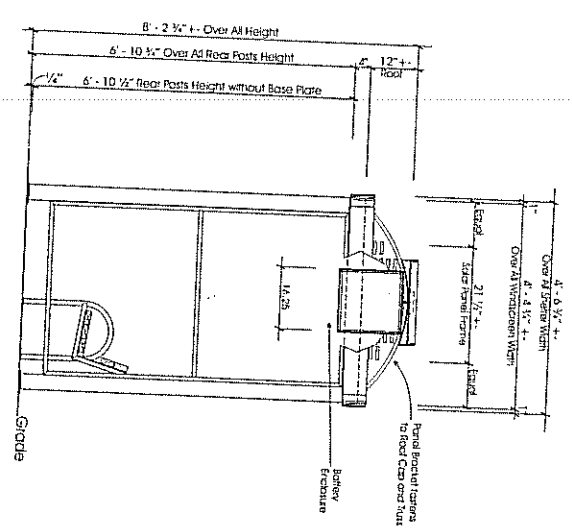
DART Shelter Type D
Borrel Vault Roof Shelter
4'-6 3/4" x 16'-9 3/4"

DART Shelter Project

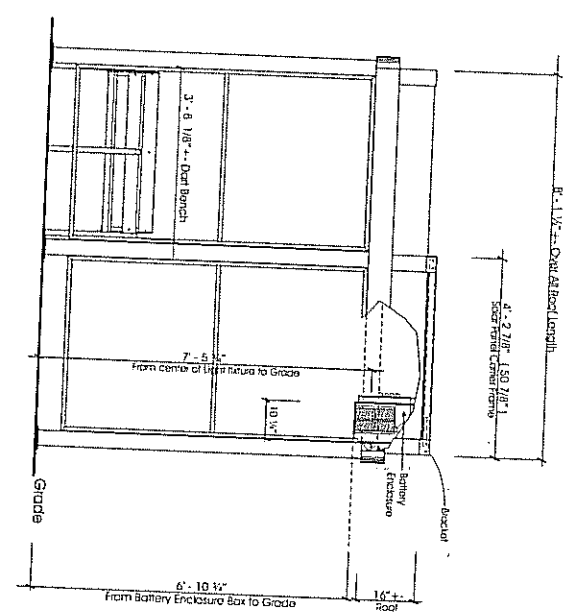
Solar Powered Shelter Type A

Sheet Number	Description
S-1	Index Sheet
S-2	End and Front Elevations: Battery Enclosure Box & Solar Panel
S-3	End View Section and Front View Section
S-4	Solar Panel Frame Details and Support Bracket Details
S-5	Electrical Components Section and Wiring Diagram

 <p> Designers • Fabricators • Erectors Architectural Metal Products 1122 Lodge Road Houston, Texas 77058 (281) 997-1144 Fax: (281) 997-2344 </p>	
Job Name: DART PROJECT Schedulers: Hank Hink Scale: N/A Steel: 1 of 5	Assignment: VARIOUS Work Order No. Artist: Jopprider Drawing No. 13811-GX
Approved for Fabrication Scheduler: Customer: Management:	Date: _____ Time: _____ Location: _____
Solar Powered Shelter Type A	



End View
1/2" = 1'-0"



Front Elevation
1/2" = 1'-0"

Shelter Type A with Solar Array contained to roof. Solar panel is contained to Corner Frame and Backrail. All dimensions are inclusive unless noted. Solar panel is powered by battery enclosed in enclosure box. All wiring is included in 1/2" diameter flexible conduit. All exposed hardware will be powder coated to match shelter.

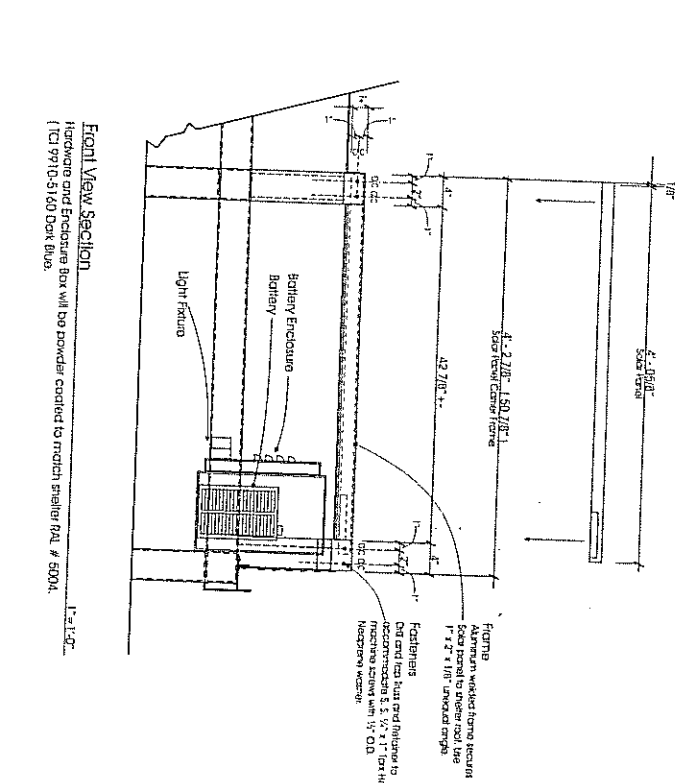
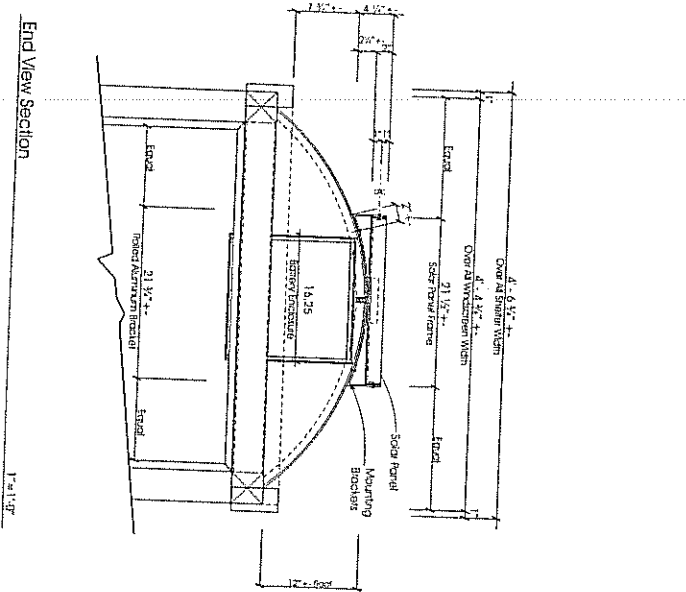
NEE
Designers • Fabricators • Erectors
Architectural Metal Products
1137 Lamer Road Houston, Texas 77059
(713) 987-1144 Fax: (713) 987-1443

Job Name: DART PROJECT
Scale: As Shown Date: 4-07-05
Sheet 2 of 5

Preparation: VARIOUS
Work Order No.
Artist: J. GORTZOLBZ
Drawing No. 13811-GX1


1	1	1
2	2	2
3	3	3
4	4	4

Solar Powered Shelter Type A
End View and Front Elevation



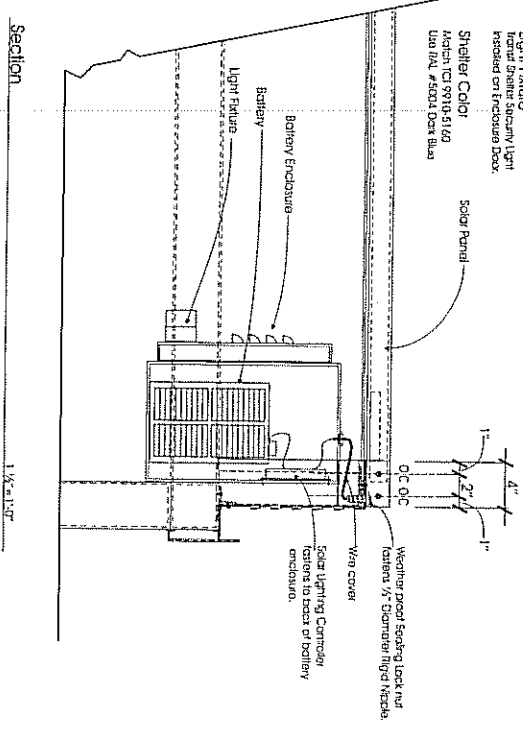
Front View Section
Hardware and Enclosure Box will be powder coated to match shailer RAL # 6004.
1"=1'-0"

End View Section
1"=1'-0"

 Designers • Fabricators • Erectors Architectural Metal Products 1123 Tanager Road Houston, Texas 77059 (281) 981-1144 Fax: (281) 987-9443	Job Name: Dorf Shailer Project Sole Sponsor: Honk Hink Scale: Shown Date: 4-07-05 Sheet 3 of 5	Preparation: VARIOUS Work Order No. _____ Artist: J. Donzquez Drawing No. 13811-GX2	Solar Powered Shailer Type A End View Section and Front View Section of Solar Power Components									
	Revision Table: <table border="1"> <tr> <th>Rev.</th> <th>Description</th> </tr> <tr> <td>1</td> <td></td> </tr> <tr> <td>2</td> <td></td> </tr> <tr> <td>3</td> <td></td> </tr> <tr> <td>4</td> <td></td> </tr> </table>			Rev.	Description	1		2		3		4
Rev.	Description											
1												
2												
3												
4												

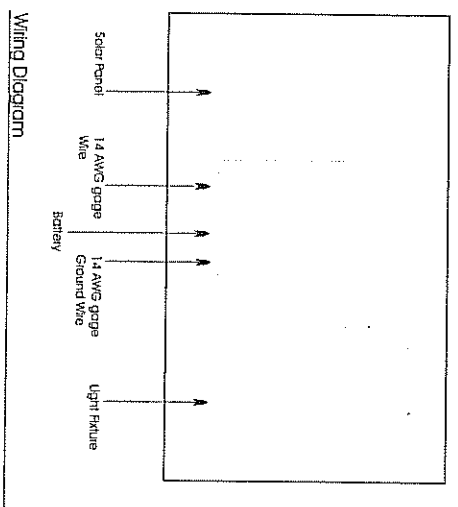
Component List

- Solar Panel
BP 300 Solar Panel
- Solar Lighting Controller
Sunlight - 10
- Battery
Type 12 Volt, Type 180334 Universal Battery
13 9/16" x 6 1/2" x 10 5/16" H
- Battery Enclosure
Heavy Duty Battery Enclosure with Battery System
connector, wiring and hardware. Enclosure and
hardware will be powder coated to match shelter
color.
- Light Fixture
Heavy Shelter Security Light
Installed on Enclosure Deck
- Shelter Color
Metallic Gray R1B-5169
Dark Blue, #5000 Dark Blue



Section

1/4" = 1'-0"



Wiring Diagram

NEO
Designers • Fabricators • Erectors
Architectural Metal Products
1123 Lander Road Houston, Texas 77036
(281) 937-1144 Fax (281) 933-2443

Job Name: Dorr Shelter Project
Scale: 5" = 1'-0"
Scale: 5" = 1'-0"
Scale: 5" = 1'-0"

Designer: VARIOUS
Work Order No.
Title: JGQZD18Z
Drawing No. 13811-GX4


NO.	REVISION
1	
2	
3	
4	

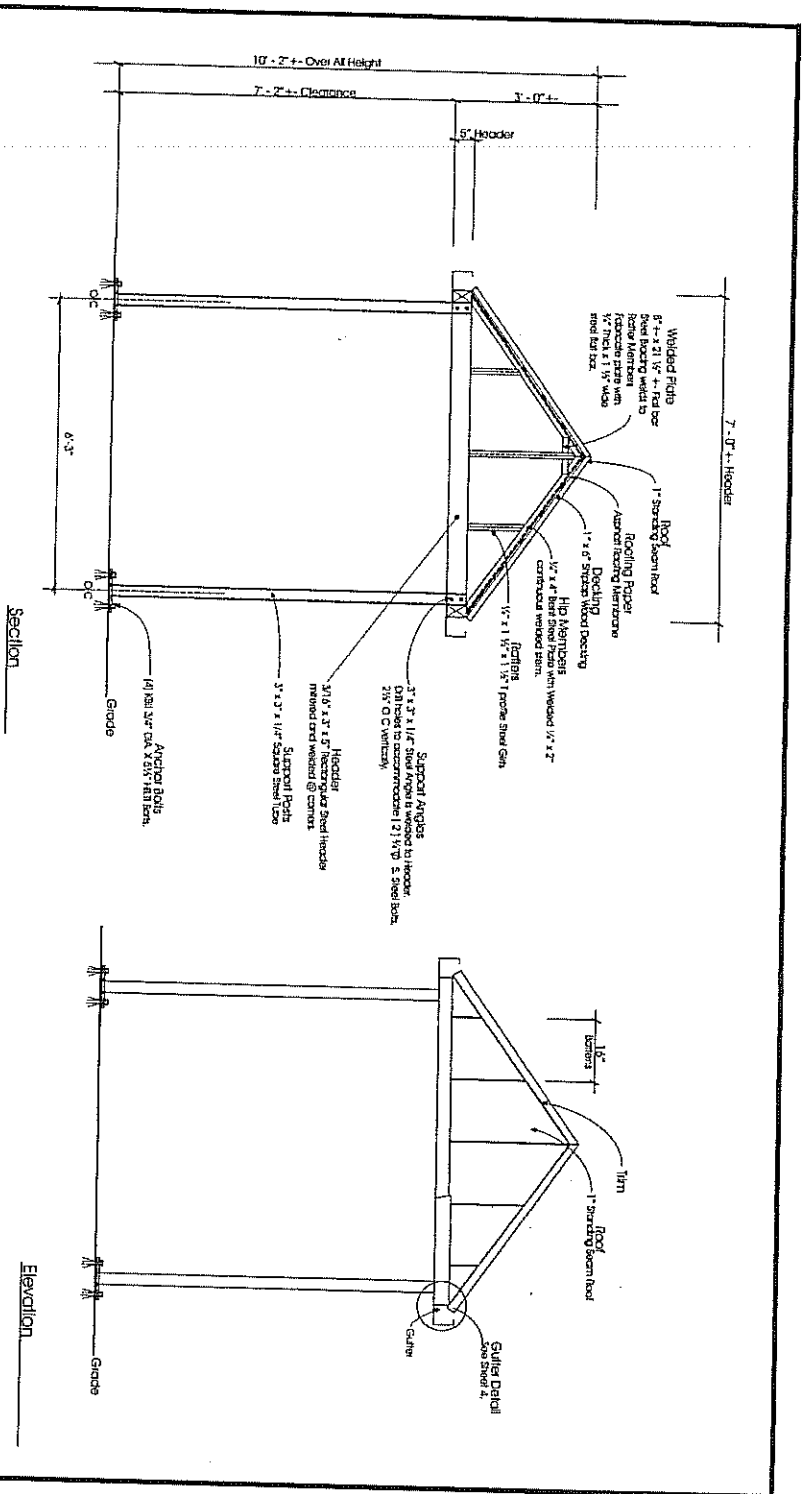
Solar Powered Shelter Type A
Electrical Components Section
and Wiring Diagram

Capital Metro Redline Downtown Station T/M Shelter

7' - 0" X 20' - 0" Shelter

Sheet Number	Description
S-1	Index Sheet
S-2	Shelter End View
S-3	Shelter Front View and Base Plate Detail
S-4	Shelter Roof Framing Plan, Fastening Detail and Gutter Detail

	
Designers • Fabricators • Erectors Architectural Metal Products 1127 Lakem Road Houston, Texas 77049 (281)987-7744 Fax (281)987-7413	
Job Name: Capital Metro Salesperson: Hank Hink Date: 11-11-08 Sheet 1 of 4	Revision Work Order No. Artist: Frank J. Kuracik Drawing No. 08F-3044
1 5.7.05 2 PK 3 4	Index Sheet 7' - 0" x 20' - 0" Shelter (As built)



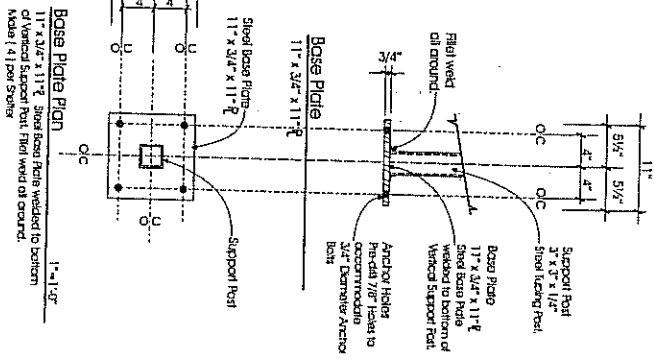
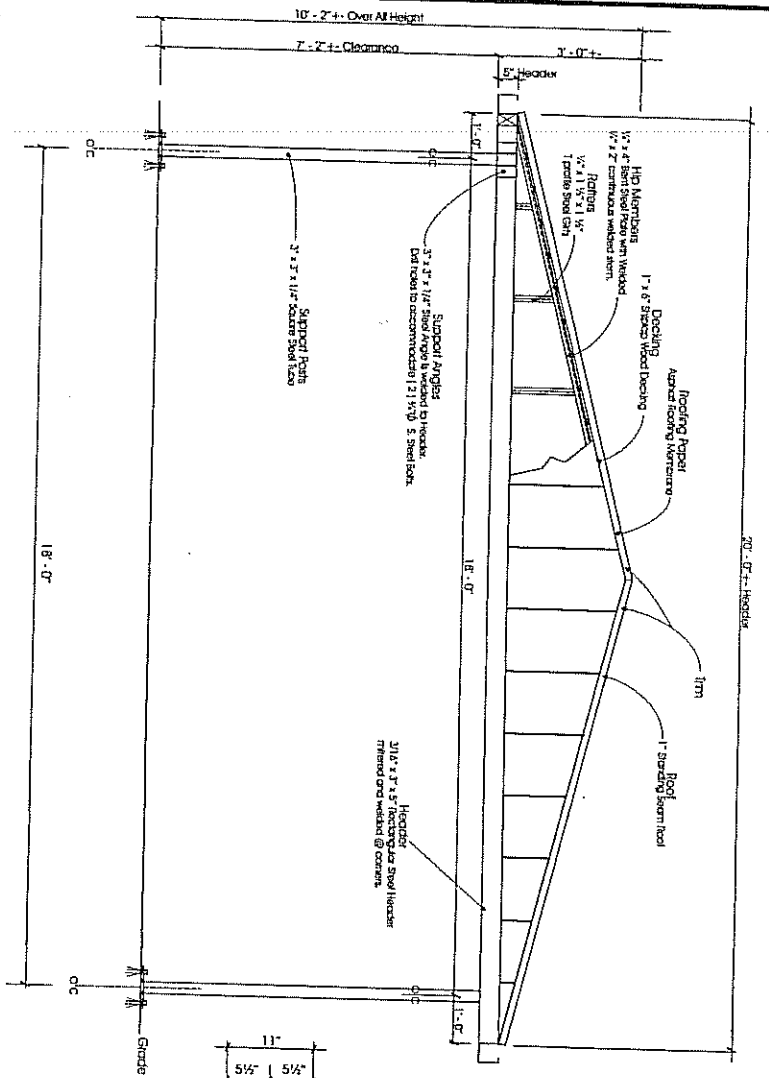
NEPC
 Designers • Fabricators • Erectors
 Architectural Metal Products
 1177 Leach Road, Haverhill, Mass 01830
 (781) 937-1122 Fax: (781) 937-2443

Job Name: Capitol Metro
 Salesperson: Hank Hink
 Scale: 1/2" = 1'-0" Date: 11-11-08
 Sheet 2 of 4

Application
 Work Order No.
 Artist: Frank J. Kiriopolo
 Drawing No. 08F-3044

Revision	Description
1	6-7-09 F.H.
2	
3	
4	

Shelter End View
 (As built)



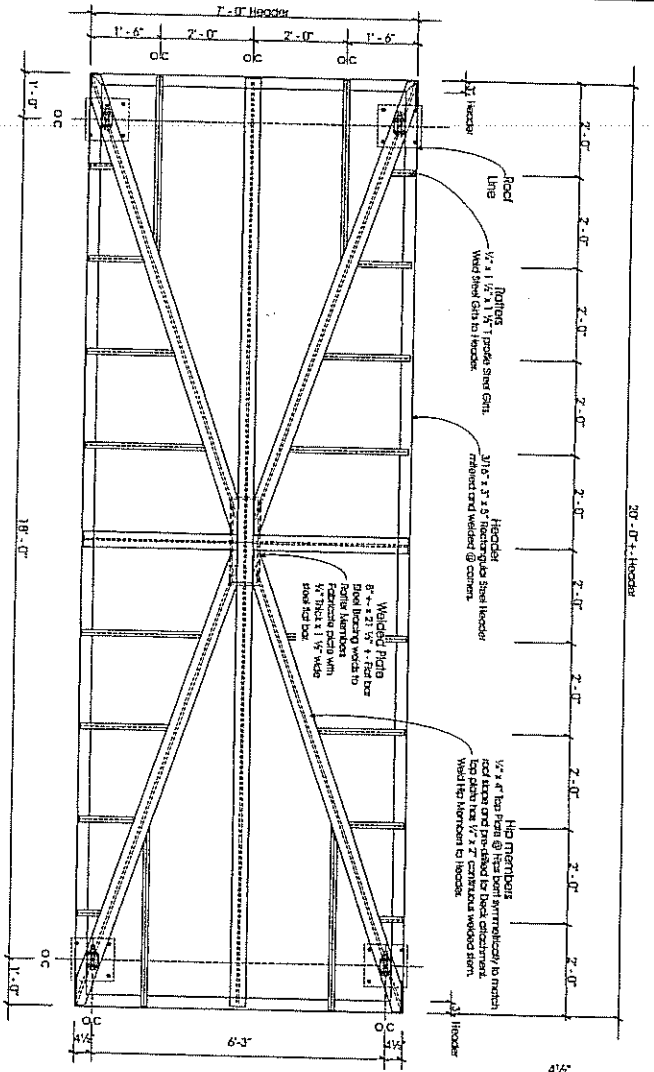
NEC
 Designers • Fabricators • Erectors
 Architectural Metal Products
 1127 Leaside Road Houston, Texas 77040
 (281) 937-1144 Fax (281) 937-4443

Job Name: Capital Mall
 Scale: 1/2" = 1'-0" Part: 1.1-1-08
 Sheet 3 of 4

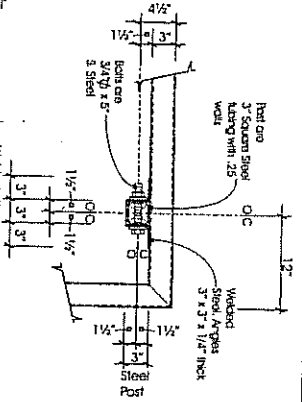
Work Order No.
 Artist: FOMK J. Kurodaga
 Drawing No. DR-3044

Revision
 1
 5/7/97
 1 R

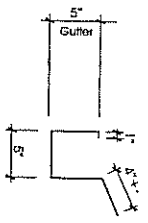
Shelter Front View
 and Base Plate Detail
 (As built)



Roof Framing Plan



Detail:
 3" x 3" x 1/4" INHX welded purlin will be 3" Steel Section tubing with .25 thick walls. Purlin will be welded to 3" x 3" x 1/4" INHX steel angle (see V1.2) 3/4" bolts at each corner of shelter. Total of (8) bolts per shelter.



Gutter Detail
 5" x 5" x 160 Gauge Aluor @ Corner
 N.I.S.

NEC
 Designers • Fabricators • Erectors
 Architectural Metal Products
 1121 Lakewood Road Houston, Texas 77039
 (281) 982-1124 Fax (281) 982-3443

Job Name: Capital Mall
 Soleperson: Hank Hink
 Scale: 1/4" = 1'-0"
 Sheet 4 of 4

Revision
 Mark Order No.
 Artist: Frank J. Kuroppa
 Drawing No. 08F-3047

Shelter Roof Framing Plan
 Fastener Detail and Gutter Detail
 (As built)